Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

NOV 18 2014

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Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Bldg.1
Santa Fe, NM 87505-6303

Subject: Transmittal of the Final Audit Report for CBFO Audit A-14-26, SNL/CCP TRU Waste Characterization and Certification Activities

Dear Mr. Kieling:

This letter transmits the Final Audit Report for the Carlsbad Field Office (CBFO) Audit A-14-26 of the Sandia National Laboratories/Central Characterization Program (SNL/CCP) performing characterization and certification activities as required by Part 2, Section 2.3.2.3 of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit. The initial certification audit was conducted August 5-7, 2014. The report contains the results of the audit of SNL/CCP programs and activities for characterizing remote-handled Summary Category Group S5000 debris wastes.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions concerning the enclosed Audit Report, please contact Michael R. Brown, Director, CBFO Quality Assurance Division, at (575) 234-7476.

Sincerely,

DC Bryson for

Jose R. Franco, Manager
Carlsbad Field Office

Enclosure

141125

CBFO:QAD:MRB:RMS:14-1382:UFC 2300.00

cc: w/Report Narrative

D. Bryson, CBFO	* ED
M. Brown, CBFO	ED
C. Gadbury, CBFO	ED
J.R. Stroble, CBFO	ED
G. Basabilvazo, CBFO	ED
D. Miehls, CBFO	ED
M. Navarrete, CBFO	ED
M. Pinzel, CBFO	ED
N. Castaneda, CBFO	ED
G. Beausoleil, DOE-SNL	ED
J. Todd, DOE-SNL	ED
M. Spoerner, SNL	ED
R. McQuinn, NWP	ED
J. Blankenhorn, NWP	ED
J. Harris, NWP	ED
F. Sharif, NWP/CCP	ED
D. E. Gulbransen, NWP/CCP	ED
V. Cannon, NWP/CCP	ED
A.J. Fisher, NWP/CCP	ED
M. Walker, NWP/CCP	ED
W. Ledford, NWP/CCP	ED
J. Carter, NWP/CCP	ED
J. Hoff, NWP/QA	ED
B. Allen, NWP/QA	ED
S. Punchios, NWP/QA	ED
S. Escareno-Soto, NWP/QA	ED
T. Peake, EPA	ED
L. Bender, EPA	ED
E. Feltcorn, EPA	ED
R. Joglekar, EPA	ED
S. Ghose, EPA	ED
R. Lee, EPA	ED
R. Maestas, NMED	ED
S. Holmes, NMED	ED
C. Smith, NMED	ED
V. Daub, CTAC	ED
R. Allen, CTAC	ED
P. Martinez, CTAC	ED
B. Pace, CTAC	ED
P. Gomez, CTAC	ED
D. Harvill, CTAC	ED
G. White, CTAC	ED
Site Documents	ED
WWIS/WDS Database Administrators	ED
R. Chavez, RES	ED
W. Most, RES	ED
J. Haschets, RES	ED
B. Carlsen, RES	ED
A. Urquidez, RES	ED
RCRA Chronology Record	ED

*ED denotes electronic distribution

cc: w/enclosure

WIPP Operating Record	* EF
CBFO QA File	EF
CBFO M&RC	EF

*EF denotes electronic format

U.S. Department of Energy
Carlsbad Field Office

CONTENT MAP

Final Audit Report of Audit A-14-26 of the Sandia National Laboratories/ Central Characterization Project

Audit Number A-14-26
August 5 – 7, 2014

CONTENT MAP

This box contains the Final Audit Report of CBFO Audit A-14-26 of the Sandia National Laboratories/Central Characterization Project (SNL/CCP) conducted August 5 – 7, 2014. The box also contains a list of objective evidence used to conduct the audit. The documents have been organized into color-coded folders, one each for the SNL/CCP Implementing Procedures (purple folder), Final Audit Report (manila folder), the C-6 Checklists (brown folder), General Information (green folder), Acceptable Knowledge (blue folder), and Visual Examination (yellow folder). The list below identifies each document by name and number and indicates where each may be found.

CONTENT MAP	**Black Folder**

Final Audit Report	**Manila Folder**

Final Audit Report
- Attachment 1: Personnel Contacted During the Audit
- Attachment 2: Personnel Contacted During the Audit by Area
- Attachment 3: Objective Evidence
- Attachment 4: Table of Audited Procedures
- Attachment 5: List of Processes and Equipment Reviewed

C6 Checklists		**Brown Folder**
C6-1	Waste Analysis Plan (WAP) Checklist	
C6-2	Acceptable Knowledge (AK) Checklist	
C6-4	Visual Examination (VE) Checklist	

SNL/CCP Implementing Procedures Audited	**Purple Folder**
See Final Report Attachment 4 for List of Audited SNL/CCP Procedures	

Attachment 3 - Objective Evidence

General Information (Checklist C6-1) Waste Analysis Plan (WAP)		**Green Folder**
GEN1	Batch Data Reports - SNLRHVE14001 and SNLRHVE14002	
GEN2	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1	
GEN3	CP:14:01199 – Second Quarter 2014 Visual Examination Quarterly Repeat of Data Generation Level Review of Sandia National Laboratories – Remote Handled AK Summary Report	
GEN4	CH and RH Nonconformance Report Log for Project Level and Data Generation Level 2013/2014	
GEN5	Nonconformance Report (NCR) - NCR-RHSNL-0762-14	
GEN6	CCP RH Records Inventory and Disposition Schedule (RIDS)	
GEN7	RH Program – SNL List of Qualified Individuals dated 05/27/2014	
GEN8	Characterization data packages ,“WDS Master Template.xls” data spreadsheet reports, Container Information Summary (CIS) reports, and excerpt pages from batch data reports and measurement reports	

	showing characterization data values that were entered for RH Container Packages
GEN9	Qualification records for selected CCP personnel
Acceptable Knowledge (Checklist C6-2)	**Blue Folder**
AK1	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S2.0
AK2	Waste Stream Profile Form and attachments for waste stream SNL-HCF-S5400-RH
AK3	QMIS Approval for AK Summary for waste streams SNL-HCF-S5400-RH
AK4	AK Source Document Summaries for waste stream SNL-HCF-S5400-RH
AK5	AK Documentation Checklist, Attachment 1, for waste stream SNL-HCF-S5400-RH
AK6	Acceptable Knowledge Information List
AK7	AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-RH
AK8	AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH
AK9	AK attachment 8 container list
AK10	IDC Database with “reject” field
AK11	AK Tracking Spreadsheet
AK12	AK Discrepancy Resolutions
AK13	Batch Data Report - SNLRHVE14001
AK14	Batch Data Report - SNLRHVE14002
AK15	Draft Waste Stream Characterization Checklist Lot 3
AK16	AK Accuracy Report Lot 1
AK17	Internal Surveillance
AK18	AK Source Document Summary for Waste Stream: SNL-HCF-S5400-RH
AK19	Container input forms/historical data
Visual Examination (Checklist C6-4)	**Yellow Folder**
VE1	VEE Appointment letter and training records

U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE

FINAL AUDIT REPORT

OF THE

SANDIA NATIONAL LABORATORIES
CENTRAL CHARACTERIZATION PROGRAM

CARLSBAD, NEW MEXICO

AUDIT NUMBER A-14-26

AUGUST 5 – 7, 2014

TRU WASTE CHARACTERIZATION AND CERTIFICATION

Prepared by: _____ **Date:** 11-5-2014
Paul C. Gomez, CTAC
Audit Team Leader

Approved by: _____ FOR **Date:** 11-5-14
Michael R. Brown, Director
CBFO Quality Assurance Division

1.0 EXECUTIVE SUMMARY

U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Audit A-14-26 was performed to evaluate the adequacy, implementation, and effectiveness of programs for transuranic (TRU) waste characterization activities performed for the Sandia National Laboratories (SNL) by the Nuclear Waste Partnership LLC (NWP) Central Characterization Program (CCP). The audit team evaluated the programs, procedures, and processes for characterizing remote-handled (RH) Summary Category Group (SCG) S5000 debris wastes utilizing the visual examination (VE) process. This initial certification audit was conducted relative to the requirements of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP) and the *CBFO Quality Assurance Program Document* (QAPD).

CBFO Surveillance S-14-33 was conducted June 16–17, 2014, at the SNL Technical Area V Hot Cell Facility (HCF) in Albuquerque, New Mexico, to observe performance of VE characterization activities prior to the A-14-26 Audit conducted at the Skeen-Whitlock Building in Carlsbad, New Mexico, August 5–7, 2014. Overall, the audit team concluded that the SNL/CCP technical and quality assurance (QA) programs evaluated were adequately established for compliance with applicable upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. However, WWIS/WDS implementation of the data entry and certification process was deemed indeterminate.

2.0 SCOPE AND PURPOSE

2.1 Scope

The audit team evaluated the following SNL/CCP programs and processes for RH TRU waste characterization and certification activities for RH SCG S5000 debris waste, as required by Attachment C6, Section C6-3 of the HWFP Waste Analysis Plan (WAP) dated February 2014.

The following general areas were audited:

- Results of Previous Audits
- Changes in Programs or Operations
- New Programs or Activities Being Implemented
- Changes in Key Personnel

The following QA elements were audited:

- Personnel Qualification and Training
- Nonconformances
- Records

The following waste characterization technical elements were audited:

- Acceptable Knowledge (AK)
- Project Level - Validation and Verification (V&V)
- Visual Examination (VE)
- WIPP Waste Information System/Waste Data System (WWIS/WDS)
- Waste Certification (e.g., Waste Stream Profile Form)

Evaluation of adequacy of SNL/CCP documents was based on the current revisions of the following documents:

- *Quality Assurance Program Document* (QAPD), DOE/CBFO-94-1012
- Waste Isolation Pilot Plant Hazardous Waste Facility Permit, NM4890139088-TSDF

Programmatic and technical checklists were developed from the current revisions of the following documents:

- *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (QAPjP), CCP-PO-001
- Related CCP technical and QA implementing procedures

2.2 Purpose

Audit A-14-26 was conducted to evaluate the degree of adequacy and effective implementation of program requirements for the characterization and certification of RH SCG S5000 debris waste for compliance to HWFP WAP requirements. The audit team also evaluated applicable QA elements relating to WAP requirements.

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Dennis Miehls	Management Representative, CBFO Quality Assurance Division
Paul C. Gomez	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)
Greg Knox	Auditor, CTAC
Tammy Ackman	Auditor, CTAC
Jim Schuetz	Auditor, CTAC
Dick Blauvelt	Technical Specialist, CTAC
Porf Martinez	Technical Specialist, CTAC

OBSERVERS

Ricardo Maestas	New Mexico Environment Department (NMED)
Steve Holmes	NMED
Coleman Smith	NMED

4.0 AUDIT PARTICIPANTS

The SNL/CCP personnel contacted during the audit process are identified in Attachment 1. A pre-audit meeting was held on August 5, 2014, at the Skeen-Whitlock Building in Carlsbad, New Mexico. Daily management briefings were provided to update CCP management and staff on audit progress and identified concerns. A post-audit meeting was held on August 7, 2014, at the Skeen-Whitlock Building in Carlsbad, New Mexico. Attachment 2 lists personnel contacted during the audit by subject area.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy, Implementation, and Effectiveness

The audit team concluded that, based on personnel interviews, observance of operations, and review of associated documentation and records, the SNL/CCP TRU waste characterization program and activities for characterizing RH SCG S5000 debris waste are adequately established, satisfactorily implemented, and effective in achieving the desired results.

Attachment 3 consists of objective evidence compiled and reviewed during the audit (provided in boxes), Attachment 4 lists the audited documents, and Attachment 5 lists the processes and equipment reviewed.

5.2 General Activities

5.2.1 Results of Previous Audit

The results of the last CBFO surveillance of SNL/CCP (S-14-33) were examined. There were no WAP-related issues identified from that surveillance.

5.2.2 Changes in Programs or Operations

This is an initial certification audit of the SNL/CCP RH program; therefore, there are no changes in programs or operations to be reported.

5.2.3 New Programs or Activities Being Implemented

This is an initial certification audit of the SNL/CCP RH program. CCP introduced "RH Projects" management and operations for characterizing RH waste as part of its organization.

5.2.4 Changes in Key Personnel

This is an initial certification audit of the SNL/CCP RH program. The initial key personnel are in place.

5.3 WAP-Related Quality Assurance Activities

The audit team evaluated the applicable QA elements for personnel qualification and training, nonconformances, and records for compliance with requirements in the HWFP WAP. The evaluation results for each area audited are described below.

5.3.1 Personnel Qualification and Training

The audit team conducted interviews with responsible personnel and reviewed implementing procedure CCP-QP-002, Rev. 37, *CCP Training and Qualification Plan,* to determine the degree to which the procedure adequately addresses upper-tier requirements. Results of the review indicate that the procedure adequately addresses those requirements.

Personnel training records associated with AK, VE, and Project Level V&V were examined to verify compliance with associated requirements and to confirm that personnel are appropriately trained/qualified. Record reviews included qualification of VE Operator/Independent Technical Reviewers (ITRs); VE Expert (VEE) appointment documentation; AK Expert qualifications; and Site Project Manager (SPM) qualification cards. The audit team also reviewed the RH Program-SNL List of Qualified Individuals dated May 27, 2014.

No WAP-related deficiencies regarding personnel qualification and training were identified. The procedures reviewed and objective evidence assembled provided evidence to confirm that the applicable requirements for personnel qualification and training were adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results.

5.3.2 Nonconformances

The audit team conducted interviews with responsible personnel and reviewed implementing procedure CCP-QP-005, Rev. 24, *CCP TRU Nonconforming Item Reporting and Control,* to determine the degree to which the procedure adequately addresses upper-tier requirements. Results of the review indicate that the procedure adequately addresses upper-tier requirements.

The audit team interviewed the CCP project office QA engineer; reviewed the RH VE Nonconformance Report Log; and selected the following nonconformance reports (NCRs) for review:

NCR-SNL-0762-14, Rev. 0
NCR-SNL-0763-14, Rev. 0

The team concluded that deficiencies are being appropriately documented and tracked through resolution as required. There have been no "reportable" NCRs generated. All the NCRs examined were verified to have been entered, managed, and tracked in both the CCP Integrated Data Center (IDC) and the CCP NCR Logs.

No WAP-related deficiencies regarding NCRs were identified. The procedures reviewed and objective evidence assembled provided evidence to confirm that the applicable requirements for nonconformances are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results.

5.3.3 Records

The audit team conducted interviews and reviewed implementing procedures relative to the control and administration of QA records to determine the degree to which the procedures adequately address upper-tier requirements. The audit team reviewed procedures CCP-PO-001, Rev. 21, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*; CCP-QP-008, Rev. 22, *CCP Records Management;* and CCP-QP-028, Rev. 15, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning*. Results of the review indicate that the procedures adequately address upper-tier requirements.

Control of records was verified through review of the RH Records Inventory and Disposition Schedule dated June 18, 2014, and through interviews with responsible personnel.

No WAP-related deficiencies regarding records were identified during the audit. The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for QA records are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.4 Technical Activities

Each technical area audited is discussed in detail in the following sections. The method used to select objective evidence is discussed, the objective evidence used to assess compliance with the HWFP is cited, and the result of the assessment is provided.

5.4.1 Table C6-1, WAP Checklist

The C6-1 WAP checklist addresses general program requirements from an overall management perspective. The general requirements checklist addresses both technical requirements and specific WAP-related QA programmatic requirements that, when collectively implemented, ensure effective overall management of TRU waste characterization and certification activities. Requirements are integrated into controlled

documents to ensure the waste characterization strategy as defined in the WAP is accomplished and documented in accordance with controlled processes and procedures.

Technical activities evaluated for characterization and certification activities consisted of data-generation and project-level V&V, AK, VE, preparation of waste stream profile forms (WSPFs) for RH SCG S5000 debris waste, and WWIS/WDS data entry. Objective evidence was selected and reviewed to evaluate the implementation of the associated characterization activities. Batch data reports (BDRs), sampling records, and personnel qualification and training documentation were included in the evaluation. Where possible the audit included direct observation of actual waste characterization activities. This took place during CBFO Surveillance S-14-33 conducted June 16–17, 2014, at the SNL Technical Area V Hot Cell Facility (HCF) in Albuquerque, New Mexico, to observe performance of VE characterization activities prior to this audit conducted at the Skeen-Whitlock Building in Carlsbad, New Mexico, August 5–7, 2014. Each characterization process involves:

- Collecting raw data
- Collecting quality assurance/quality control samples or information
- Reducing the data to a usable format, including a standard report
- Review of the report by the data generation facility and the site project office
- Comparing the data against program data quality objectives (DQOs)
- Reporting the final waste characterization information to the WIPP

The flow of data from the point of generation to inclusion in the WSPF for each characterization technique was reviewed to ensure that all applicable requirements were captured in the site operating procedures. Specific procedures audited and the objective evidence reviewed are described in the following sections.

SNL/CCP demonstrated compliance with the waste characterization requirements of the HWFP WAP through documentation and by performing characterization activities.

Project Level Validation and Verification

The audit team verified the CCP project level V&V program. The CCP RH Projects Manager provided two VE BDRs for the audit team to review:

SNLRHVE14001
SNLRHVE14002

The project level verified that the current version of the AK document was used for the characterization review of the data provided by the data generation level. The project level also provided adequate information regarding quarterly data generation review of VE data. The use of the project level checklist for VE from CCP-TP-500, Rev. 13, *CCP*

Remote-Handled Waste Visual Examination, was verified to be implemented and effective in meeting the objectives of the HWFP.

WIPP Waste Information System/Waste Data System

Procedure CCP-TP-530, Rev. 11, *CCP RH TRU Waste Certification and WWIS/WDS Data Entry*, was evaluated with respect to requirements of the CBFO QAPD, Rev. 11, section 2.1 – *Work Processes*. The audit team determined that requirements are adequately addressed and that the procedure contains adequate flow-down of QAPD requirements related to waste data management and container certification using the WIPP Waste Information System/Waste Data System (WWIS/WDS).

The audit team interviewed CCP Waste Certification Officials (WCOs) and reviewed CCP training records and determined that the WCOs are qualified to perform certification activities for RH waste from SNL and all other CCP host site locations. Waste Certification Assistants (WCAs) were also verified to be qualified to perform data management activities and WWIS/WDS data entry activities for RH waste from SNL and all other CCP host site locations.

The audit team interviewed CCP WCOs and reviewed documentation for certification of new WSPFs for the SNL host location. Certification data were entered into the WWIS, and WSPFs were approved and added to the WDS in accordance with CCP procedures.

The audit team evaluated a sample of data entry packages for evidence of WWIS/WDS RH waste data entry. Data are entered from excerpts of record BDRs and other measurement reports, verified in spreadsheet applications, and submitted electronically to the WWIS/WDS database. Data entry packages for RH containers include Container Information Summary (CIS) lists, radiation survey documentation, WDS Master Template.xls data spreadsheet reports, and excerpts from VE BDRs.

A single data entry package was available at the time of the audit and contained data from BDRs that had been through SPM review and approval. The package was in DRAFT status because the WDS Master Template.xls data spreadsheet identified a discrepancy in the fissile gram equivalent values compared to those on the BDR. An NCR was generated and the containers were not certified. The audit team observed an NCR notation in the BDR and verified there was an open NCR associated with the containers. Because all of the containers presented to the audit team for evaluation had an open NCR and the certification process could not be completed, the effectiveness of the data entry and certification process was deemed indeterminate. The process is similar to that for RH waste data entry and waste container certification at other CCP host locations, so determination of effectiveness should be achievable once the NCR is resolved and the data package is completed. This will be evaluated by surveillance at a date to be determined.

The audit team evaluated WDS Master Template.xls spreadsheet and IDC software applications used for data entry, electronic verification of data, and transfer of data to the WWIS/WDS. Application of software QA and control of these software items was deemed to be adequate.

The audit team identified no additional issues related to WWIS/WDS data entry and waste certification. Overall, the team concluded that the upper-tier requirements in the CBFO QAPD adequately flow down into CCP procedures. However, due to the open NCR described above, implementation of the data entry and certification process was deemed indeterminate. The effectiveness of the program can be determined once the NCR is resolved and an evaluation of the entire WWIS/WDS data entry and waste certification process is performed.

5.4.2 Table C6-2, Acceptable Knowledge/Waste Certification

The audit team reviewed implementing procedures CCP-QP-021, Rev. 10, *CCP Surveillance Program*; CCP-TP-002, Rev. 26, *CCP Reconciliation of DQOs and Reporting Characterization Data*; CCP-TP-005, Rev. 26, *CCP Acceptable Knowledge Documentation*; CCP-TP-506, Rev.5, *CCP Preparation of the RH TRU Waste AK Characterization Reconciliation Report*; and WP 13-QA.03, Rev. 23, *Quality Assurance Independent Assessment Program*, to determine the degree to which the procedures adequately address upper-tier requirements. The results of the review indicate that the referenced procedures adequately address upper-tier requirements.

The audit team examined waste stream SNL-HCF-S5400-RH. A primary document in the review process was CCP-AK-SNL-500, Rev. 6, *CCP Acceptable Knowledge Summary Report for Sandia National Laboratories RH Hot Cell Facility TRU Waste (Debris)*. The portion of the waste stream examined during this audit included fuel fragments that had been previously stored as "accountable" material, but have been released for shipment to WIPP. The characteristics of this portion of the waste stream are consistent with those of the debris waste examined in earlier audits.

The audit was based upon the requirements contained in the WIPP Resource Conservation and Recovery Act permit and described in the WAP. The team reviewed documentation to support all AK requirements, the WAP C6-2 and C6-1 checklists, and compiled and reviewed objective evidence to demonstrate compliance.

The objective evidence reviewed and compiled included the AK Summary Report mentioned above, relevant AK source documents, an approved WSPF and attachments, and BDRs for VE characterization activities occurring since the A-12-15 SNL/CCP close-out audit conducted in 2012.

With regard to the WAP requirements, in addition to the AK Summary Report, AK source document summaries, and other relevant AK records cited above, the audit team reviewed completed attachments for the waste stream as required by CCP procedure CCP-TP-005: Attachment 1 - *Acceptable Knowledge Documentation Checklist*; Attachment 4 - *Acceptable Knowledge Information List*; Attachment 5 - *Hazardous*

Constituents; Attachment 6 - *Waste Form, Waste Material Parameters, Prohibited Items, and Packaging*, along with the applicable justification memorandum for waste material parameter weight estimates; and Attachment 8 - *Waste Containers List*, with an add-container memorandum.

Examples of the resolution of AK discrepancies in the AK record, a WAP-compliant AK Accuracy Report, and the most recent internal surveillance were also collected and examined along with screenshots from the IDC database and a copy of the AK Tracking Spreadsheet. Requisite training records for AK Experts and SPMs were reviewed by the designated QA auditor based upon names provided by the AK auditors. The WAP-required container traceability exercise was conducted for two waste containers from the total available population of seven. Original SNL container disposal request forms or historic database information for these two containers were compiled as available.

Additional supporting documentation for the WAP requirements included a draft Characterization Reconciliation Report for shipping lot 3, and an AK Accuracy Report, CCP-AK-SNL-501, Rev. 3, for this waste stream. Examples from the AK record were reviewed to assure that all of the DQOs were met. In addition, the auditors examined the AK record regarding the methods for qualification of AK information.

Overall, the AK program was adequate in addressing the requirements of the WAP as applicable, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.4.3 Table C6-3, Radiography Checklist

Radiography was not in the scope of the audit for SNL/CCP.

5.4.4 Table C6-4, Visual Examination Checklist

The audit team evaluated the SNL/CCP VE characterization process for newly-generated RH SCG S5000 debris waste. On June 16 and 17, 2014, CBFO conducted a surveillance for VE operations performed at the Sandia National Laboratories, as documented in CBFO Surveillance Report S-14-33. The scope of Audit A-14-26 was to complete the evaluation of the VE process to requirements of the HWFP by evaluating completed VE BDRs and verifying training requirements were met.

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-500, Rev. 13, *CCP Remote-Handled Waste Visual Examination*, and CCP-QP-002, Rev. 37, *CCP Training and Qualification Plan*, to determine the degree to which the procedures adequately address upper-tier requirements. Results of the review indicate that the procedures adequately address upper-tier requirements.

SNL/CCP uses the two-operator method when performing VE characterization. The two qualified operators visually examine the waste as it is placed into containers. The audit team interviewed VE operators and the VEE.

The audit team examined the following RH VE BDRs generated from operations performed in the SNL HCF to verify implementation and compliance with the requirements in CCP-TP-500:

SNLRHVE0001
SNLRHVE0002

The audit team concluded that VE operations for newly-generated RH SCG S5000 debris waste, using CCP-TP-500, Rev. 13, *CCP Remote-Handled Waste Visual Examination,* are adequate in meeting upper-tier requirements, and the procedures are satisfactorily implemented and effective.

6.0 CORRECTIVE ACTIONS AND OBSERVATIONS

6.1 Corrective Action Reports

During the audit, the audit team may identify conditions adverse to quality (CAQs), as defined below, and document such conditions on Corrective Action Reports (CARs).

> Condition Adverse to Quality (CAQ) – Term used in reference to failures, malfunctions, deficiencies, defective items, and non-conformances.
>
> Significant Condition Adverse to Quality – A condition which, if uncorrected, could have a serious effect on safety, operability, waste confinement, TRU waste site certification, compliance demonstration, or the effective implementation of the QA program.

No WAP-related deficiencies necessitating a CAR were identified during the audit.

6.2 Deficiencies Corrected During the Audit

During the audit, the audit team may identify CAQs. Audit team members, the Audit Team Leader (ATL), and the CBFO QA representative evaluate the CAQs to determine if they are significant. Once a determination is made that the CAQ is not significant, the audit team member, in conjunction with the ATL and the CBFO QA representative, determines if the CAQ is an isolated case requiring only remedial action and therefore can be corrected during the audit.

Upon determination that the CAQ is isolated, the audit team member, in conjunction with the ATL and the CBFO QA representative, evaluates/verifies any objective evidence/actions submitted or taken by the audited organization and determines if the condition was corrected in an acceptable manner. Once it has been determined that the CAQ has been corrected, the CBFO QA representative categorizes the condition as corrected during audit (CDA) according to the definition below:

CDAs – Isolated deficiencies that do not require a root cause determination or actions to preclude recurrence. Correction of the deficiency can be verified prior to the end of the audit. Examples include one or two minor changes required to correct a procedure (isolated), one or two forms not signed or not dated (isolated), and one or two individuals that have not completed a reading assignment.

No WAP-related deficiencies were identified and corrected during this audit.

6.3 Observations

During the audit, the audit team may identify potential problems that should be communicated to the audited organization. The audit team members, in conjunction with the ATL, evaluate these conditions and classify them as Observations using the following definition:

Observation – A condition that, if not controlled, could result in a CAQ.

Once a determination is made, the audit team member, in conjunction with the ATL, categorizes the condition appropriately.

No WAP-related Observations were identified during Audit A-14-26.

7.0 LIST OF ATTACHMENTS

Attachment 1: Personnel Contacted During the Audit
Attachment 2: Personnel Contacted During the Audit by Subject Area
Attachment 3: Objective Evidence Reviewed During the Audit (provided in boxes)
Attachment 4: Table of Audited Documents
Attachment 5: List of Processes and Equipment Reviewed

PERSONNEL CONTACTED DURING AUDIT A-14-26				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Michele Billett	NWP/CCP NTPC Training Coordinator		X	
Michael Brown	Director of CBFO Quality Assurance Division	X		X
Norma Castaneda	CBFO NTP Representative			X
A. J. Fisher	NWP/CCP Support Services		X	X
Ed Gulbransen	NWP/CCP Manager	X		X
Joe Harvill	NWP/CCP NDA Support			X
Steve Holmes	NMED Observer			X
Laura Jones	NWP/CCP QAE		X	
Irene Joo	NWP/CCP RH Projects Manager	X	X	X
Creta Kirkes	NWP/CCP WCO Team Lead		X	
Wayne Ledford	NWP/CCP QA Specialist	X	X	X
Ricardo Maestas	NMED Observer	X		
Dennis Miehls	CBFO QA Representative	X		X
Spencer Pattee	NWP/CCP VEO/VEE		X	
Sheila Pearcy	NWP/CCP NTPC Records Manager	X	X	
Wes Root	NWP/CCP VE ITR		X	
Coleman Smith	NMED Observer			X
Mak Walker	NWP/CCP QA			X

PERSONNEL CONTACTED DURING THE AUDIT BY SUBJECT AREA

Personnel Qualification and Training	Michele Billett A. J. Fisher
Control of Nonconforming Items	Laura Jones Mak Walker
Records	Sheila Pearcy
WIPP Waste Information System (WWIS)/Waste Data System (WDS)	Creta Kirkes
Waste Certification/Project Level Data V&V	Irene Joo
Acceptable Knowledge	Trey Greenwood Irene Joo
Visual Examination	Irene Joo Wes Root Spenser Pattee

OBJECTIVE EVIENCE REVIEWED DURING THE AUDIT

The objective evidence supporting Audit A-14-26 is included in the box(es) submitted with this report. Included in the box(es) is a "Content Map" describing the location (using color coding) and identity of all required objective evidence supporting the performance of the audit.

Table C6-1 Waste Analysis Plan (WAP) Checklist
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Waste Analysis Plan (WAP) General Checklist for use at DOE's Generator/Storage Sites

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	WASTE STREAM IDENTIFICATION					
1	Does the generator/storage site define "waste stream" as waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity? (Attachment C Section C-0a)	CCP-PO-001, S. C-0a CCP-TP-005, S. 4.4.11 NOTE above	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)**	Y	
2	Are procedures in place to ensure that the generator/storage site assigns one of the Summary Category Groups (S3000-homogeneous solids, S4000-soils/gravel, S5000-debris waste) to each waste stream? (Section C-1b)	CCP-TP-005, S. 4.4.14 S. 4.4.15 CCP-TP-002, S. 4.3 Att. 2	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S2.0 **(AK-1)** Waste Stream Profile Form and attachments for waste stream SNL-HCF-S5400-RH **(AK-2)**	Y	
3	Are procedures in place to ensure that the generator/storage site assigns Waste Matrix Code Groups (e.g., solidified inorganics, solidified organics, salt waste, soils, combustible waste, filters, graphite, heterogeneous debris waste, inorganic nonmetal waste, lead/cadmium metal, uncategorized metal) to each waste stream? (Section C-0a)	CCP-TP-005, S. 4.4.13 NOTE Above CCP-TP-002, S. 4.3 Att. 2	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S2.0 **(AK-1)** Waste Stream Profile Form and attachments for waste stream SNL-HCF-S5400-RH **(AK-2)**	Y	
4	Are procedures in place to ensure that the generator/storage site assigns a Waste Stream WIPP Identifier (ID) to each waste stream? (Section C3-6b(1))	CCP-TP-002, S. 4.3 Att. 2	Y	Waste Stream Profile Form and attachments for waste stream SNL-HCF-S5400-RH **(AK-2)**	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
4a	Are procedures in place for generator/storage sites to submit an AK Sufficiency Determination (Determination Request) to the Permittees to meet all or part of the waste characterization requirements including: • All information specified in Permit Attachment C4, Section C4-3d • Identification of relevant hazardous constituents, and correctly identifies all toxicity characteristic and listed hazardous waste numbers • All hazardous waste number assignments must be substantiated by supporting data and, if not, whether this lack of substantiation compromises the interpretation • Resolution of data discrepancies between different AK sources must be technically correct and documented • The AK Summary includes all the identification of waste material parameter weights by percentage of the material in the waste stream, and determinations are technically correct • All prohibited items specified in the TSDF-WAC should be addressed, and conclusions drawn are technically adequate and substantiated by supporting information • If the AK record includes process control information specified in Permit Attachment C4, Section C4-3b, the information should include procedures, waste manifests, or other documentation demonstrating that the controls were adequate and sufficient. • The site must provide the supporting information necessary to substantiate technical conclusions within the Determination Request, and this information must be correctly interpreted. (Section C-0b, Section C4-3d)	CCP-TP-005, S. 4.7	Y	N/A	N/A	An AK Sufficiency Determination has not been requested for this waste stream
4b	If a generator/storage site does not submit a Determination Request or if the Determination Request is not approved, are procedures in place for the generator/storage site to perform radiography or VE on 100% of the containers in a waste stream as specified in Permit Attachment C1? (Section C-0b)	CCP-PO-001, S. C-0b CCP-TP-001, S. 3.1.1 CCP-TP-500, (All)	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	No Determination Requests were submitted.

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
4c	Are procedures in place to ensure that the generator/storage sites complete a Waste Stream Profile Form (WSPF) and Characterization Information Summary (CIS) as specified in Permit Attachment C3, Sections C3-6b(1) and C3-6b(2)? (Section C-0c)	CCP-PO-001, S. C-0c CCP-TP-002, (All)	Y	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
6	Are procedures in place to ensure that the generator/storage site assigns EPA hazardous waste numbers associated with the waste? If so, do these assigned EPA hazardous waste numbers correspond to the permitted EPA hazardous waste numbers in Table C-5? Are there any assigned EPA hazardous waste numbers that are not permitted EPA hazardous waste numbers on the Table C-5? If so, did the generator/storage site reject the waste for shipment to and disposal at WIPP? Did the generator assign a state hazardous waste codes or numbers? If so, is it assigned to waste that is permitted at WIPP? (Section C-1b)	CCP-TP-005, S. 4.4.16 - 4.4.21 Att. 5	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3, tables 9 and 10 **(AK-1)** AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-RH **(AK-7)**	Y	
7	Are procedures in place to ensure that Summary Category Groups are defined as follows: S3000- Homogeneous solids are solid material, inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste excluding soils, that do not meet NMED criteria for classification as debris and are at least 50 percent by volume homogeneous solids or comprise the majority of the waste stream S4000- Waste streams that are at least 50 percent by volume soil/gravel, or comprise the majority of the waste stream S5000- Waste streams that are at least 50 percent volume materials that meet the NMED criteria for debris, or comprise the majority matrix of materials. The criteria for debris are solid materials intended for disposal that exceed 2.36 inch particle size and is a manufactured object, plant or animal matter, or natural geologic material. Particles smaller than 2.36 inches in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material. (Section C-0a)	CCP-TP-005, S. 4.4.14	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S2.0 **(AK-1)** Waste Stream Profile Form and attachments for waste stream SNL-HCF-S5400-RH **(AK-2)**	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
8	Does the generator/storage facility have procedures in place to ensure that the following waste characterization parameters will be obtained: • Determination whether TRU mixed waste streams comply with the applicable provisions of the TSDF-WAC • Determination whether TRU mixed wastes exhibit a hazardous characteristic per 20.4.1.200 NMAC (incorporating 40 CFR 261 Subpart C) • Determination whether TRU mixed wastes are listed per 20.4.1.200 NMAC (incorporating 40 CFR 261 Subpart D) • Estimation of waste material parameter weights (Section C-2)	**AK** CCP-TP-005, S. 4.4.16 S. 4.4.17 S. 4.4.26 S. 4.4.30 S. 4.4.33[K], [L] & [M] CCP-TP-500, S. 4.0 **PL** CCP-TP-005, (All) CCP-TP-500, S. 4.1 [I.12] and Att.1	Y	B1- AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3.4, 5.4.3.5, 5.4.4 **(AK-1)** AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)** SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** B2&3- AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3, tables 9 and 10 **(AK-1)** AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-RH **(AK-7)** B4- AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.1.2, table 3 **(AK-1)** Memo attached to AK Att. 6, Waste Form, Waste Material Parameters,	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
				Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)** SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**		
9	Are procedures in place to ensure that waste streams identified to contain incompatible materials or materials incompatible with waste containers cannot be shipped unless treated to remove the incompatibility? (Section C-1c)	CCP-TP-005, S. 4.4.30 & 4.4.33[K] CCP-TP-001, S. 2.7 & 4.1, 4.2 CCP-TP-500, S. 4.0	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S, 5.4.4 **(AK-1)** AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)** SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** IDC Database with "reject" field **(AK-10)**	Y	
10	Are procedures in place to ensure that the generator/storage site uses acceptable knowledge and, as necessary, radiography and visual examination analysis as specified in Table C-1? (Section C-3)	**AK** CCP-TP-005, S. 4.4 S. 4.5 **PL**	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH,	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
		CCP-TP-500, S. 1.1 & Att. 1-3		CCP-AK-SNL-500 R6, **(AK-1)** SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**		
	UNACCEPTABLE WASTE					

12	Are procedures in place to ensure that the generator/storage site ensures, through administrative and operational procedures and characterization techniques, that waste containers do not include the following unacceptable waste:
	• liquid waste is not acceptable at WIPP. Liquid in the quantities delineated below is acceptable
	  • Observable liquid shall be no more than 1 percent by volume of the outermost container at the time of radiography or visual examination
	  • Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited
	  • Containers with Hazardous Waste number U134 assigned shall have no observable liquid
	  • Overpacking the outermost container that was examined during radiography or visual examination or redistributing untreated liquid within the container shall not be used to meet the liquid volume limits
	• non-radionuclide pyrophoric materials
	• hazardous wastes not occurring as co-contaminants with TRU wastes (non-mixed hazardous wastes)
	• wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other
		CCP-TP-500, S. 1.1 & Att. 1-3	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**
				
				CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**
					Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	wastes • wastes containing explosives or compressed gases (continued below)					
12a	• wastes with polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization • wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003) • waste that has ever been managed as high-level waste and waste from tanks specified in Table C-4, unless specifically approved through a Class 3 permit modification • any waste container from a waste stream (or waste stream lot) which has not undergone either radiographic or visual examination of a statistically representative subpopulation of the wastes stream in each shipment pursuant to Permit Attachment C7 • any waste container from a waste stream which has not been preceded by an appropriate, certified Waste Stream Profile Form (see Section C-1d) (Section C-1c)	CCP-TP-500, S. 1.1 & Att. 1-3	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
	WASTE ACCEPTANCE CONTROL					
14	Are procedures in place to ensure that the generator/storage site uses a Waste Stream Profile Form (WSPF) which includes, at a minimum, the information indicated on the attached WSPF found in Figure C-1 and a Characterization Information Summary (CIS) prior to waste disposal at the WIPP? (Section C-1d)	CCP-PO-001, S. C-1d CCP-TP-002, (All)	Y	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
16	Are procedures in place to ensure that additional WSPFs are provided to WIPP and NMED for waste streams or portions of waste streams that are reclassified based upon waste characterization information? (Section C-1d)	CCP-PO-001, S. C-1d CCP-TP-002, (All)	Y	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	No reclassified waste streams encountered.
16a	Are criteria in place to determine the specific circumstances under which a WSPF is revised versus when a new WSPF is required? (Section C-1d)	CCP-TP-002, S. 4.7	Y	N/A	N/A	The WSPF for this waste stream has not been revised
	GENERAL CHARACTERIZATION REQUIREMENTS					
25	Are procedures in place to ensure that Acceptable Knowledge is used in waste characterization activities to delineate TRU mixed waste streams, to assess whether	CCP-TP-005, S. 4.4.11	Y	AK Summary Report for SNL/NM RH Hot Cell	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	TRU mixed wastes comply with the TSDF-WAC, to assess whether TRU mixed waste exhibits a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR 261 Subpart C), and to assess whether TRU wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR 261 Subpart D), and to estimate waste material parameter weights? (Section C-3a)	S. 4.4.16 S. 4.4.17 S. 4.4.26 S. 4.4.30 S. 4.4.33[K], [L] & [M] CCP-TP-500, S. 4.0		Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S2.0 **(AK-1)** AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S 5.4.3.4, 5.4.3.5, 5.4.4 **(AK-1)** AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)** SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3, tables 9 and 10 **(AK-1)** AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-RH **(AK-7)** AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6,		

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
				S5.4.1.2, table 3 **(AK-1)** Memo attached to AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)**		
26	Are procedures in place to ensure that radiography and/or visual examination are used as necessary to: • Examine a waste container to determine the physical form • Identify observable liquid in excess of TSDF-WAC limits and containerized gases • Verify the physical form matches the waste stream description (Section C-3b)	CCP-TP-500, S. 1.1, Table 1 & Att. 1	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
28	Are procedures in place to ensure that the following characterization activities shall occur: • Acceptable Knowledge for all wastes, with testing as necessary to augment AK including; - Visual examination or radiography for all waste containers	**AK** CCP-TP-005, S. 4.4 S. 4.5 **PL** CCP-PO-001, S. C-0b CCP-TP-500 , (All)	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, **(AK-1)** SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** Draft Waste Stream Characterization Checklist Lot 3 **(AK-15)** SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
				Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**		
	DATA GENERATION, VERIFICATION, VALIDATION, DOCUMENTATION, AND QUALITY ASSURANCE					
30	Are procedures in place to ensure that the following Data Quality Objectives are met: • Use Acceptable Knowledge to delineate TRU mixed waste streams, assess whether TRU mixed wastes comply with the applicable requirements of the TSDF-WAC, assess whether TRU mixed wastes exhibit a hazardous characteristic, assess whether TRU mixed wastes are listed and to estimate waste material parameter weights • Use radiography or visual examination to verify the physical form of the waste matches its waste stream description as determined by AK and to verify the absence of prohibited items (Section C-4a(1))	**AK** CCP-TP-005, S.4.4.11 S. 4.4.16 S. 4.4.17 S. 4.4.26 S. 4.4.30 S. 4.4.33[K], [L] & [M] CCP-TP-500, S. 4.0 **PL** CCP-TP-500, S. 1.1 & Att. 1-3	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S2.0 **(AK-1)** AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3.4, 5.4.3.5, 5.4.4 **(AK-1)** AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)** SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3, tables 9 and 10 **(AK-1)** AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
				RH **(AK-7)** AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.1.2, table 3 **(AK-1)** Memo attached to AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)** SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**		
31	Are procedures in place to ensure that the following Quality Assurance Objectives are adequately defined and assessed for each characterization method: • Precision as a measure of the mutual agreement among multiple measurements. • Accuracy as the degree of agreement between a measurement result and a true or known value. • Completeness is a measure of the amount of valid data obtained from a method compared to the total amount of data obtained that is expressed as a percentage. • Comparability is the degree to which one data set can be compared to another data set. • Representativeness as an expression of the degree to which data	CCP-TP-500, Att. 2 & 3	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	represent characteristics of a population. (Section C-4a(2))					
32	With respect to data generation, are procedures in place to ensure that the generator/storage site's waste characterization program meets the following general requirements: • Testing data packages and batch data reports must be reported accurately in a pre-approved format, must be maintained in permanent files, and must be traceable? • All data must receive a technical review by another qualified operator? (Section C3-4a)	CCP-TP-500, S. 4.3 & 5.1 Att. 1-5	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
33	Are procedures in place to ensure that the generator/storage site performs validation of waste characterization data for each waste container? (Section C-4)	CCP-TP-500, S. 4.3.5 – 4.3.8, 4.4, Att. 1-3	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
34	Are procedures in place to ensure that the generator/storage site has a pre-approved format for reporting waste characterization data? (Section C-4a(3))	**VE** CCP-TP-500 S. 4.3 & 4.4 Att. 1-5	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
35	Are procedures in place to ensure that the generator/storage site prepares testing batch data reports to meet the requirements of their own site-specific QAPjP and/or SOPs? (Section C-4a(3))	**VE** CCP-PO-001, S. C-4A(3) CCP-TP-500, S. 4.3, 4.4 Att. 1-5	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
36	Are procedures in place to ensure that all raw data is collected and managed at the data generation level in accordance with the following criteria: • All raw data shall be signed and dated in reproducible ink by the individual collecting the data, or signed and dated using electronic signatures • All data shall be recorded clearly, legibly, and accurately in field records • All changes to original data shall be lined out, initialed, and dated by the individual making the change. Original data may not be obliterated or otherwise be made unreadable • All data shall be transferred and reduced from field records completely and accurately • All field records shall be maintained as specified in Table C-2 of Attachment C • Data shall be organized into standard reporting formats for reporting purposes • All electronic and video data must be stored to ensure that waste container and QC data are readily retrievable (Section C3-4a)	**VE** CCP-TP-500, S. 4.3 & 5.0 Att. 2	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
37	Are procedures in place to ensure that 100 % of batch data reports are subject to independent technical review by an individual qualified to review the data who was not involved in the generation or recording of the data under review. The reviewer shall release the data through signature with an associated review checklist prior to characterization of the associated waste and shipment to the WIPP. The review shall ensure the following, as applicable: • Data generation and reduction were conducted according to the methods used and reported in the proper units and significant figures • Calculations have been verified by a valid calculation program, a spot check of verified calculation programs, and/or a 100 percent check of all hand calculations • The data have been reviewed for transcription errors • The testing QA documentation for BDRs is complete and includes, as applicable, raw data, calculation records, calibration records • Radiography tapes are reviewed on a waste container basis at a minimum of once per testing batch or once per day of operation, whichever is less frequent. The radiography tape will be reviewed against the data on the radiography form to ensure that data are complete and correct • QAOs have been met (Section C3-4a(1))	**VE** CCP-TP-500, S. 4.3.5 – 4.3.8, 4.4, Att. 2 & 3	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
40	Are procedures in place to ensure that 100 percent of all batch data reports receive a Site Project Manager signature release with an associated review checklist prior to characterization of the associated waste and shipment to the WIPP. This release shall ensure the following: • Testing batch QC checks were properly performed. Radiography data are complete and acceptable based on evidence of videotape review of one waste container per day or once per testing batch, whichever is less frequent • Data generation level independent technical review, validation, and verification have been performed as evidenced by the completed review checklists and appropriate signature releases. • Independent technical reviewers were not involved in the generation or recording of the data under review. • Batch Data review checklists are complete • Batch Data Reports are complete and data properly reported • Verify that data are within established data assessment criteria and meet all applicable QAOs (Section C3-4b(1))	CCP-TP-500, S. 4.4 & Att. 1-5	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
42	Are procedures in place to ensure that a repeat of the data review process at the data generation level will be performed on a minimum of one randomly chosen waste container every quarter to determine if the verification and validation is performed according to documented procedures? (Section C3-4b)	CCP-PO-001, S. C3-4b CCP-TP-001, S. 4.3	Y	CP:14:01199 – Second Quarter 2014 Visual Examination Quarterly Repeat of Data Generation Level Review of Sandia National Laboratories – Remote Handled AK Summary Report **(GEN-3)**	Y	
43	Are procedures in place and checklists are available to prepare a Site Project Manager (SPM) Summary and a Data Validation Summary (the summaries may be in the same document)? The SPM Summary includes a validation checklist for each batch that is of sufficient detail to document all aspects of a batch data report that could affect data quality. The Data Validation Summary must identify each Batch Data Report reviewed, describe how the validation was performed, identify all problems, and identify all acceptable and unacceptable data. Summaries must include release signatures. (Section C3-4b(2))	CCP-TP-500, S. 4.4 & Att. 1-5	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
44	Are procedures in place to ensure that non-administrative, WAP-related nonconformances first identified at the site project manager level are reported to the	CCP-QP-005, S. 4.4.1 [D.3 &	Y	CH and RH Nonconformance Report	Y	There are no reportable NCRs associated with this audit.

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	Permittees within seven calendar days of identification, that nonconformance reports are prepared within 30 calendar days, and that corrective action is implemented prior to waste shipment? (Section C3-7)	D.4] & Att. 4		Log for Project Level and Data Generation Level 2013/2014 **(GEN-4)**		
45	Are procedures in place to ensure that any waste container for which a nonconformance report (**NCR**) has been written will not be shipped to the WIPP facility unless the condition that led to the NCR for that container is appropriately identified, reconciled, corrected, and documented? Are nonconformance reports prepared for nonconformances identified? Are nonconformances identified and tracked, and does the Site Project Manager oversee the nonconformance report process? (Section C3-7)	CCP-QP-005, (All)	Y	CH and RH Nonconformance Report Log for Project Level and Data Generation Level 2013/2014 **(GEN-4)** Nonconformance Report (NCR): • NCR-RHSNL-0762-14 **(GEN-5)**	Y	
	DATA TRANSMITTAL					
48	Are procedures in place to ensure that the generator/storage site transmits data by hard copy or electronic copy from the data generation level to the site project level? If electronic, does the generator/site have a hard copy available on demand? (Section C-4a(5))	CCP-TP-500, S. 4.4.5	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
50	Are procedures in place to ensure that the generator/storage site inputs the data into the WWIS manually or electronically? (Section C-4a(5))	CCP-TP-530, (All)	Y	Characterization data packages for the following containers were reviewed including DRAFT CCP "WDS Master Template.xls" data spreadsheet reports, Container Information Summary (CIS) reports, and excerpt pages from batch data reports and measurement reports showing characterization data values that were entered. RH Container Packages: Container; SNL001401 Container; SNL001402 Container; SNL001403 **(GEN-8)**	Y	Certification of these waste containers has not been completed and the waste container files have not been promoted to a status to allow placement/assembly of the SNL containers into an RH waste canister.
51	Are procedures in place to ensure that the generator/storage site enters the data into the WWIS in the exact format required by the database?	CCP-TP-530, (All)	Y	Characterization data packages for the following containers were	Y	Certification of these waste containers has not been completed and the waste

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	(Section C-4a(5))			reviewed including DRAFT CCP "WDS Master Template.xls" data spreadsheet reports, Container Information Summary (CIS) reports, and excerpt pages from batch data reports and measurement reports showing characterization data values that were entered. RH Container Packages: Container; SNL001401 Container; SNL001402 Container; SNL001403 **(GEN-8)**		container files have not been promoted to a status to allow placement/assembly of the SNL containers into an RH waste canister.
52	Are procedures in place to ensure all of the data presented on Table C-3 of the Permit is transmitted to the WWIS? (Table C-3)	CCP-TP-530, (All)	Y	Characterization data packages for the following containers were reviewed including DRAFT CCP "WDS Master Template.xls" data spreadsheet reports, Container Information Summary (CIS) reports, and excerpt pages from batch data reports and measurement reports showing characterization data values that were entered. RH Container Packages: Container; SNL001401 Container; SNL001402 Container; SNL001403 **(GEN-8)**	Y	Certification of these waste containers has not been completed and the waste container files have not been promoted to a status to allow placement/assembly of the SNL containers into an RH waste canister.
	RECORDS AND RECORD MANAGEMENT					
55	Are procedures in place to ensure that the generator/storage site's hard copy and/or electronic data reports follow the Permittees' format requirements? (Section C-4a(3))	CCP-TP-500, S. 4.4.5	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
				HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**		
56	Are procedures in place to ensure that hard copy or electronic Waste Stream Profile Form will include the following: • Generator/storage site name • Generator/storage site EPA ID • Date of audit report approval by NMED (if obtained) • Original generator of waste stream • Whether waste is Contact-Handled or Remote-Handled • Waste Stream WIPP Identification Number • Summary Category Group • Waste Matrix Code Group • Waste Material Parameter Weight Estimates per unit of waste • Waste stream name • A description of the waste stream • Applicable EPA hazardous waste codes numbers • Applicable TRUCON codes • A listing of acceptable knowledge documentation used to identify the waste stream • The waste characterization procedures used and the reference and date of the procedure • Certification signature of Site Project Manager, name, title, and date signed (Section C3-6b(1))	CCP-TP-002, S. 4.3 and Att. 2	Y	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
56a	Are procedures in place to ensure that hard copy or electronic Characterization Information Summary will include the following: • Data reconciliation with DQOs • Radiography and visual examination summary to document that all prohibited items are absent in the waste and to verify that the physical form of the waste matches its waste stream description as determined by AK (if applicable) • A complete listing of all container identification numbers used to generate the Waste Stream Profile Form, cross-referenced to each Batch Data	CCP-TP-002 , S. 4.4 & Att. 3-5	Y	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	Report • Complete AK summary, including stream name and number, point of generation, waste stream volume (current and projected), generation dates, TRUCON codes, Summary Category Group, Waste Matrix Code(s) and Waste Matrix Code Group, other TWBIR information, waste stream description, areas of operation, generating processes, RCRA determinations, radionuclide information, all references used to generate the AK summary, and any other information required by Permit Attachment C4, Section C4-2b. • Method for determining Waste Material Parameter Weights per unit of waste. • List of any AK Sufficiency Determinations requested for the waste stream • Certification through acceptable knowledge or testing that any waste assigned the hazardous waste number of U134 (hydrofluoric acid) no longer exhibits the characteristic of corrosivity. This is verified by ensuring that no liquid is present in U134 waste. • A justification for the selection of radiography and/or VE as an appropriate method of characterizing the waste. (Section C3-6b(2))					
56b	Are procedures in place to assure that ongoing container characterization results are cross referenced to Batch Data Reports? (Section C3-6b)	CCP-TP-002, S. 4.4.2 & Att. 4	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
58	Are procedures in place to ensure that project level reports are compiled into Characterization Information Summaries? (Section C3-6b)	CCP-TP-002, S. 4.4 & Att. 3-5	Y	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
59	Are procedures in place to ensure that the generator/storage site uses forms for data reporting that are pre-approved forms in site-specific documentation? (Section C3-6)	**VE** CCP-TP-500, S. 4.3 Att. 1-5	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
60	Are procedures in place to ensure that the generator/storage site's site project manager submits to the WIPP facility a summary of the waste stream information and reconciliation with data quality objectives (DQOs) once a waste stream is characterized? (Section C-4a(5))	CCP-TP-002, S. 4 & Att. 1-5	Y	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
61	Are procedures in place to ensure that the generator/storage site project office completes a WSPF based on the Batch Data Reports? (C3-6b)	CCP-TP-002 , S. 4 & Att. 1-5	Y	SNLRHVE14001 SNLRHVE14002 **(GEN-1)** CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
62	Are procedures in place to ensure that the generator/storage Site Project Manager submits the WSPF to the Permittees for DOE's approval along with the accompanying Characterization Information Summary for that waste stream? (Section C-4a(5))	CCP-TP-002, S. 4.6 & Att. 1-5	Y	CP:12:01265 – Transmittal of Waste Stream Profile Form SNL-HCF S5400 – Remote Handled, Sandia National Laboratories/CIS Lot 1 **(GEN-2)**	Y	
63	Are procedures in place to ensure that the generator/storage site maintains records related to waste characterization testing activities in the testing facility files, or site project files for those facilities located on-site? (Section C-4a(6))	CCP-QP-008, (All) CCP-QP-028, (All)	Y	CCP RH Records Inventory and Disposition Schedule (RIDS) **(GEN-6)**	Y	
64	Are procedures in place to ensure that the appropriate documented training and indoctrination is performed for all individuals and that procedures are documented in site specific QAPjPs and procedures? (Section C3-8)	CCP-PO-001, (All) CCP-QP-002, S. 4.0	Y	RH Program – SNL List of Qualified Individuals dated 05/27/2014 **(GEN-7)** Qualification records for selected CCP personnel **(GEN-9)**	Y	
66	Are procedures in place to ensure that the generator/storage site has an appropriate records inventory and disposition schedule (RIDS) or equivalent that was prepared and approved by appropriate site personnel? (Section C-4a(6))	CCP-QP-008, S. 3.1.2 CCP-QP-028, S. 3.1.1	Y	CCP RH Records Inventory and Disposition Schedule (RIDS) **(GEN-6)**	Y	
67	Are procedures in place to ensure that the generator/storage site maintains all records relevant to an enforcement action, regardless of disposition, until they are no longer needed for enforcement action, and then dispositioned per the approved	CCP-QP-008, S. 4.15.1 (NOTE)	Y	CCP RH Records Inventory and Disposition Schedule (RIDS)	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	RIDS? (Section C-4a(6))	CCP-QP-028, (All)		**(GEN-6)**		
68	Are procedures in place to ensure that the generator/storage site maintains records that are designated as Lifetime Records for the life of the waste characterization program plus six years or that the records have been transferred to the WIPP Records Archive facility? Lifetime Records include: • Test facility Batch Data Reports, • Waste Stream Characterization Package, • Data reduction, validation, and reporting documentation, • Acceptable knowledge documentation, • WSPF and Characterization Information Summary (Section C-4a(6), Table C-2)	CCP-PO-001, S. C-4a(6) TABLE C-2 CCP-QP-008, S. 2.3.11 S. 4.10.1 2nd NOTE CCP-QP-028, (All)	Y	CCP RH Records Inventory and Disposition Schedule (RIDS) **(GEN-6)**	Y	
69	Are procedures in place to ensure that the generator/storage site maintains records that are designated as Non-Permanent Records for ten years from the date of record generation, and then dispositioned according per the approved RIDS or transferred to the WIPP Records Archive facility? Non-Permanent Records include: • Nonconformance documentation, • Variance documentation, • Assessment documentation, • Calculations and related software documentation, • Training/qualification documentation, • QAPjP documentation (all revisions), • Calibration documentation, • Procurement documentation, • QA procedures (all revisions), • Technical implementing procedures (all revisions), and • Audio/video recording (radiography, visual, etc.). (Section C-4a(6), Table C-2)	CCP-PO-001, S. C-4a(6), TABLE C-2 CCP-QP-008, S. 2.3.17 S. 4.10.1 2nd NOTE CCP-QP-028, (All)	Y	CCP RH Records Inventory and Disposition Schedule (RIDS) **(GEN-6)**	Y	
70	Are procedures in place to ensure that the generator/storage site has raw data that is identifiable and legible, and provides documentary evidence of quality? (Section C-4a(6))	**VE** CCP-TP-500, Att. 1, 2 & 3	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	

	WAP Requirement[1] *SNL/CCP* Audit *A-14-26* Table C6-1 Waste Analysis Plan (WAP) Checklist [1]	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
71	Are procedures in place to ensure that if the generator/storage site ceases to operate, that all records be transferred before closeout? (Section C-4a(6))	CCP-QP-008, S. 4.10.2	Y	N/A	N/A	This site has not ceased operations.
	SHIPMENT					
72	Are procedures in place to ensure that the generator/storage site accurately completes an EPA Hazardous Waste Manifest prior to shipping the waste to WIPP that contains the following information: • Generator/storage site name and EPA ID • Generator/storage site contact name and phone number • Quantity of waste • List of up to six state and/or federal hazardous waste numbers in each line item • Listing of all container IDS • Signature of authorized generator representative (Section C-5b)	N/A	N/A	N/A	N/A	Transportation was not evaluated at the time of this certification audit since the WIPP events of February 2014. Transportation will be evaluated once shipments are approved to resume to the WIPP.
73	Are procedures in place to ensure that the generator/storage site accurately completes the following container specific information: • Waste stream identification number • List of hazardous waste numbers per container • Certification data • Shipping data (Section C-5b)	N/A	N/A	N/A	N/A	Transportation was not evaluated at the time of this certification audit since the WIPP events of February 2014. Transportation will be evaluated once shipments are approved to resume to the WIPP.

1. The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

GEN1

Attachment 3 – Visual Examination Site Project Manager Checklist

Batch Data Report No.: SNLRHVE14001

1. Has all the data received an independent technical review as evidenced by a completed checklist (Attachment 2) and the appropriate ITR signature?		☐ NO	☒ YES
2. Are BDR contents complete and match the Visual Examination Batch Data Report Table of Contents?		☐ NO	☒ YES
3. Is the BDR complete (appropriately filled in forms for each container)?		☐ NO	☒ YES
4. Have the RH Quality Assurance Objectives (QAOs) for VE been met?			
Precision – reconciled discrepancies between operators		☐ NO	☒ YES
Accuracy – trained operators		☐ NO	☒ YES
Representativeness – description of container contents		☐ NO	☒ YES
Completeness – completed data form and/or recording		☐ NO	☒ YES
Comparability – proper training and adequate AK for unopened containers		☐ NO	☒ YES
5. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☒ N/A

Comments

No NCRs

SPM:

Laura Nelson
Printed Name

Laura Nelson
Signature

5/15/14
Date

CCP RECORDS ORIGINAL
DATE REC'D 5/16/14

Attachment 4 – Visual Examination Batch Data Report Cover Sheet

Batch Data Report No.: SNLRHVE14001 Date: 03/26/14

	Waste Container ID Number:
1	SNL001401
2	SNL001402
3	SNL001403
4	
5	
6	
7	
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9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

SP 3/26/14

N A

CCP RECORDS ORIGINAL
DATE REC'D 3/14/14

1

Attachment 5 – Visual Examination Batch Data Report Table of Contents

Batch Data Report No.: SNLRHVE14001 Date: 03/26/14

Item	Description	Page No.
1	Visual Examination Batch Data Report Cover Sheet (Attachment 4)	1
2	Visual Examination Batch Data Report Table of Contents (Attachment 5)	2
3	Visual Examination Data Forms (Attachment 1)	3
4	Visual Examination Independent Technical Reviewer Checklist (Attachment 2)	15
5	Copy of NCRs (N/A [If not applicable])	N/A

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL	
Examination Date: 03/05/14	Batch Number: SNLRHVE14001
Procedure #: CCP-TP-500	Revision #: 13 / Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A / Recording Stop: N/A
Initial Container ☒ N/A	Final Container ☐ N/A
Container or Package ID Number:	Container or Package ID Number: SNL001401
Container Type:	Container Type: 55 GAL
Waste Matrix Code:	Waste Matrix Code: S5400
Waste Stream:	Waste Stream: SNL-HCF-S5400-RH
	Rigid Liner: ☐Y ☒N Type: / Rigid Liner Lid: ☐ Y ☒N
	Rigid Liner Vented or Hole Size: N/A
Percent Fill: / Percent Organic Waste:	Percent Fill: 85 / Percent Organic Waste: ~~0~~ 10 SP 4-24-14
Layers of Confinement: / Closure Method:	Layers of Confinement: 1 ~~0~~ SP 3/14/14 / Closure Method: SP 3/14/14 ~~N/A~~ Filtered
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-019DS, SERIAL # FN-2205	

Waste Description:

30 GALLON DRUM (ID# SNL001401) (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number _SNL001401_____

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

4-24-14

Visual Examination Operator 1:

Spencer Pattee — Print Name
Signature — 03/05/14 Date

3/14/14

Visual Examination Operator 2:

Dav id Hemsing — Print Name
AVG HEMSING — Signature — 02/05/14 Date

03/14/14

AVG HEMSING

04/24/14

AVG HEMSING

4

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 02/28/14	Batch Number: SNLRHVE14001		
Procedure #: CCP-TP-500	Revision #: 13	Video Number N/A:	
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start :N/A	Recording Stop: N/A	

Initial Container ☐ N/A	Final Container ☒ N/A
Container or Package ID Number:SNL001401	Container or Package ID Number:
Container Type: 30 GAL. DRUM	Container Type:
Waste Matrix Code:S5400	Waste Matrix Code:
Waste Stream:SNL-HCF-S5400-RH	Waste Stream:
	Rigid Liner: ☐Y ☐N Type: / Rigid Liner Lid: ☐ Y ☐N
	Rigid Liner Vented or Hole Size:
Percent Fill: 95 / Percent Organic Waste: 10	Percent Fill: / Percent Organic Waste:
Layers of Confinement: 0 / Closure Method: N/A	Layers of Confinement: / Closure Method:

Comments (e.g., filter information, NCRs):
Filter: NUCFIL-013, Serial # FN-833
Container Closed: 03/05/14

Waste Description:
EXPERIMENTAL ASSEMBLIES: C00210018, C00210014, C00186636, C00187138, C00186629, C00210023

DRUM BAG (P)	QUARTZ WINDOWS (0IM)
PRESSURE TRANSDUCERS (P) (IM) (OM)	LIGHT BULB MOUNTING BASE (P) (OIM) (IM)
HARDWARE (IM)	WIRE (0M) (P)
O-RINGS (R)	PRESSURE SOLENOID VALVES (OM) (IM) (P)
MIRROR MOUNTING BRACKETS (IM)	CONTAINER LABELS (C)
MIRRORS (OIM)(OM)	EYE BOLTS (IM)
LIGHT BULBS (OIM)(OM)	ASSEMBLY HOUSINGS (AM)
LAMP ASSEMBLIES (OIM)(IM)(OM)	BREACHED AND EMPTY BAGS (P)
FUEL PELLETS AND PIECES (OM)	TAPE (P)
FUEL MOUNTING FIXTURES (OM)	WIPES (C)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number __SNL001401_____

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

03/05/14
Date

Visual Examination Operator 2:

David Hemsing
Print Name

Dave Hemsing
Signature

03/05/14
Date

6

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/13/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start:N/A	Recording Stop:N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number:SNL001402	
Container Type:		Container Type: 55 GAL	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream:SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill:85	Percent Organic Waste: ~~0~~ 10 SP 4-24-14
Layers of Confinement:	Closure Method:	Layers of Confinement: 1 ~~0~~ SP 3/14/14	Closure Method: Filtered ~~N/A~~ SP 3/14/14
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-019DS, SERIAL# FN-2226			

Waste Description:

30 GALLON DRUM (ID# SNL001402) (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001402

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature 4-24-14

Date 3/13/14

3/14/14

Visual Examination Operator 2:

David Hemsing
Print Name

Signature DAVE HEMSING 03/13/14

Date

DAVE HEMSING 03/14/14

DAVE HEMSING 04/24/14

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/06/14	Batch Number: SNLRHVE14001		
Procedure #: CCP-TP-500	Revision #: 13	Video Number:N/A	
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A	Recording Stop: N/A	

Initial Container ☐ N/A	Final Container ☒ N/A
Container or Package ID Number: SNL001402	Container or Package ID Number:
Container Type: 30 GALLON DRUM	Container Type:
Waste Matrix Code: S5400	Waste Matrix Code:
Waste Stream: SNL-HCF-S5400-RH	Waste Stream:
	Rigid Liner: ☐Y ☐N Type: / Rigid Liner Lid: ☐ Y ☐N
	Rigid Liner Vented or Hole Size:
Percent Fill: 95 / Percent Organic Waste: 10	Percent Fill: / Percent Organic Waste:
Layers of Confinement: 0 / Closure Method: N/A	Layers of Confinement: / Closure Method:

Comments (e.g., filter information, NCRs):
FILTER: NUCFIL-013 SERIAL # FN-858
CLOSURE DATE: 03/13/14

Waste Description:
EXPERIMENTAL ASSEMBLIES: C00210015, C00210033, C00210021, C00210024, C00210026, C00210022

DRUM BAG (P)	LIGHT BULBS (OIM) (OM)
PRESSURE TRANSDUCERS (P) (AM) (OM) (IM)	ASSEMBLY HOUSINGS (AM)
VALVE ASSEMBLIES (AM) (OM) (IM)	O-RINGS (R)
HARDWARE (IM) (P)	FUEL PELLETS AND PIECES (OM)
QUARTZ WINDOWS (OIM)	FUEL MOUNTING FIXTURES (OM)
LAMP ASSEMBLIES (OIM) (OM) (IM)	WIRE (OM) (P)
MIRROR MOUNTING BRACKETS (IM)	BREACHED AND EMPTY BAGS (P)
MIRRORS (OIM) (OM)	PRESSURE VALVES (IM) (OM)
LIGHT BULB MOUNTING BASES (P) (OIM) (IM)	CONTAINER LABELS (C)
ELECTRIC MOTORS (IM) (OM) (P)	WIPES (C)
TAPE (P)	

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number _SNL001402_

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

3/13/14
Date

Visual Examination Operator 2:

David Hemsing
Print Name

DAVE HEMSING
Signature

03/13/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/26/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start:N/A	Recording Stop:N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number:SNL001403	
Container Type:		Container Type: 55 GAL	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream:SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill:85	Percent Organic Waste: ~~0~~ 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-019DS, SERIAL# FN-2210			

Waste Description:

30 GALLON DRUM (ID# SNL001403) (IM)

GP 4-24-14

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001403

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name; Signature; 4-24-14 — Date

3/26/14

Visual Examination Operator 2:

David Hemsing — Print Name; Signature; 03/26/14 — Date

Dave Hemsing 04/24/14

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/14/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A

Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: SNL001403		Container or Package ID Number:	
Container Type: 30 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 100	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:

Comments (e.g., filter information, NCRs):
FILTER: NUCFIL-013, SERIAL # FN-838
CLOSURE DATE: 03/26/14

Waste Description:
EXPERIMENTAL ASSEMBLIES: C00210011, C00210016, C00210017, C00186124, C00191876, C00191470, C00186919

DRUM BAG (P)
HARDWARE (IM)
PRESSURE TRANSDUCERS (P) (AM) (OM) (IM)
VALVE ASSEMBLIES (AM) (OM) (IM)
QUARTZ WINDOWS (OIM)
LAMP ASSEMBLIES (OIM) (OM) (IM)
MIRROR MOUNTING BRACKETS (IM)
MIRRORS (OIM) (OM)
LIGHT BULB MOUNTING BASES (OIM) (OM) (P)
PRESSURE VALVES (IM) (OM)
OPEN AND EMPTY PIPE (IM)
CONTAINMENT LID (OM)
WIPES (C)

ASSEMBLY HOUSINGS (AM)
FUEL PELLETS AND PIECES (OM)
O-RINGS (R)
FUEL MOUNTING FIXTURES (OM)
LIGHT BULBS (OIM) (OM)
WIRE (OM) (P)
CONTAINER LABELS (C)
ELECTRIC MOTORS (OM) (IM) (P)
EYE BOLTS (IM)
BREACHED AND EMPTY BAGS (P)
OPEN AND EMPTY CONTAINMENT (OM)
BREACHED INNER VESSEL (OM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001403

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

3/26/14
Date

Visual Examination Operator 2:

David Hemsing
Print Name

Signature

03/26/14
Date

Attachment 2 – Visual Examination Independent Technical Reviewer Checklist

Batch Data Report No.: SNLRHVE14001

1. Were data generation and reduction conducted in a technically correct manner in accordance with the methods (procedure) used?	☐ NO	☒ YES	☐ N/A
2. Was the correct revision of the operating procedure used?	☐ NO	☒ YES	☐ N/A
3. Were all the transcription errors corrected?	☐ NO	☐ YES	☒ N/A
4. Are BDR contents complete and match the Visual Examination Batch Data report Table of Contents?	☐ NO	☒ YES	☐ N/A
5. Does the BDR include VE for no more than 20 containers?	☐ NO	☒ YES	☐ N/A
6. Is all data recorded signed and dated in reproducible ink?	☐ NO	☒ YES	☐ N/A
7. Is all raw data recorded clearly, legibly, and accurately?	☐ NO	☒ YES	☐ N/A
8. Are all changes to original data lined out, initialed and dated by the individual making the changes or an individual authorized to make the change?	☐ NO	☒ YES	☐ N/A
9. Is there an adequate written description of the contents?	☐ NO	☒ YES	☐ N/A
10. Were the recording equipment checks satisfactory?	☐ NO	☐ YES	☒ N/A
11. Has each container in this BDR been evaluated for the presence of prohibited wastes?	☐ NO	☒ YES	☐ N/A
12. Has the physical waste form in each container in this BDR been evaluated against the Waste Stream Description and the Waste Matrix Code?	☐ NO	☒ YES	☐ N/A
13. Have the RH Quality Assurance Objectives (QAOs) for VE been met?	☐ NO	☒ YES	☐ N/A
Precision – reconciled discrepancies between operators or between the operator and ITR.	☐	☒	☐
Accuracy – trained operators	☐	☒	☐
Representativeness – description of container contents	☐	☒	☐
Completeness – completed data form and/or recording	☐	☒	☐
Comparability – proper training and adequate AK source documents are available for unopened containers.	☐	☒	☐
14. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☒ N/A

Comments: None

Independent Technical Reviewer:

F. Wesley Root	F. Wesley Root	05-01-14
Printed Name	Signature	Date

DIVIDER PAGE ONLY

Not part of page count

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record
[ ] Fax Record
[ ] Electronic Record
[ ] Copy

Attn:	Danette Acosta	From:	Laura Nelson
Ship to:	CCP Records	Site:	Denver
	4021 National Parks Highway	Company:	NWP
	MS:GSA:212	Telephone Number:	505-400-8984
	Carlsbad, NM 88220	Date Sent:	5/15/14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14001	SPM Checklist	5/15/14	1
	NA		

Comments

NA

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

Records Accepted [X]	D Acosta	Danette Acosta	5/16/14
	Signature	Printed Name	Date
Records Rejected [ ]			
	Signature	Printed Name	Date

Reason for Rejection:

Re-submittal:

Signature	Printed Name	Date

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	4235
DESTINATION TEL #	913038432208
DESTINATION ID	DENVER
ST. TIME	05/16 10:35
TIME USE	00'14
PAGES SENT	1
RESULT	OK

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record [ ] Copy
[ ] Fax Record
[ ] Electronic Record

Attn:	Danette Acosta	From:	Laura Nelson
Ship to:	CCP Records	Site:	Denver
	4021 National Parks Highway	Company:	NWP
	MS:GSA:212	Telephone Number:	505-400-8984
	Carlsbad, NM 88220	Date Sent:	5/15/14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14001	SPM Checklist	5/15/14	1
	NA		

Comments

NA

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

DIVIDER

PAGE

Attachment 3 – Visual Examination Site Project Manager Checklist

Batch Data Report No.: SNLRHVE14002

1.	Has all the data received an independent technical review as evidenced by a completed checklist (Attachment 2) and the appropriate ITR signature?	☐ NO	☑ YES
2.	Are BDR contents complete and match the Visual Examination Batch Data Report Table of Contents?	☐ NO	☑ YES
3.	Is the BDR complete (appropriately filled in forms for each container)?	☐ NO	☑ YES
4.	Have the RH Quality Assurance Objectives (QAOs) for VE been met?		
	Precision – reconciled discrepancies between operators	☐ NO	☑ YES
	Accuracy – trained operators	☐ NO	☑ YES
	Representativeness – description of container contents	☐ NO	☑ YES
	Completeness – completed data form and/or recording	☐ NO	☑ YES
	Comparability – proper training and adequate AK for unopened containers	☐ NO	☑ YES
			LJ 8/7/14
5.	Were NCRs generated included in the BDR?	☐ NO	☒ YES ~~☑ N/A~~

Comments

~~No NCRs~~ LJ 8/7/14
NCR-RHSNL-0764-14 Rev. 1 initiated to correct layers of confinement field for containers SNL001501

SPM:

Laura Turner	Laura Turner	7/30/14
Printed Name	Signature	Date
Irene Joo	Irene Joo	8/7/14

CCP RECORDS ORIGINAL
DATE REC'D 7/30/14

Attachment 4 – Visual Examination Batch Data Report Cover Sheet

Batch Data Report No.: SNLRHVE14002 Date: 07/02/2014

	Waste Container ID Number:
1	SNL001501
2	SNL001502
3	SNL001503
4	SNL001504
5	
6	
7	
8	
9	
10	
11	N A
12	
13	SP
14	07/02/14
15	
16	
17	
18	
19	
20	

001
CCP RECORDS ORIGINAL
DATE REC'D 7/30/14

Attachment 5 – Visual Examination Batch Data Report Table of Contents

Batch Data Report No.: SNLRHVE14002 Date: 07/02/2014

Item	Description	Page No.
1	Visual Examination Batch Data Report Cover Sheet (Attachment 4)	001
2	Visual Examination Batch Data Report Table of Contents (Attachment 5)	002
3	Visual Examination Data Forms (Attachment 1)	003
4	Visual Examination Independent Technical Reviewer Checklist (Attachment 2)	035
5	Copy of NCRs (N/A [If not applicable])	36 ~~N/A~~

SP 8/06/14

Attachment 5 – Visual Examination Batch Data Report Table of Contents

Batch Data Report No.: SNLRHVE14002 Date: 07/02/2014

Item	Description	Page No.
1	Visual Examination Batch Data Report Cover Sheet (Attachment 4)	001
2	Visual Examination Batch Data Report Table of Contents (Attachment 5)	002
3	Visual Examination Data Forms (Attachment 1)	003
4	Visual Examination Independent Technical Reviewer Checklist (Attachment 2)	035
5	Copy of NCRs (N/A [If not applicable])	N/A

Superseded by page 2
8/7/14

8/7/14
002A

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 4/29/2014		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number: SNL001501	
Container Type:		Container Type: 55 GAL. DRUM	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream: SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:N/A	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill: 85	Percent Organic Waste:30
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): Filter: NUCFIL-019DS, Serial # FN-2227			

Waste Description:

30 GALLON DRUM (ID#SNL001501) (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001501

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does NOT match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags NOT defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: ~~N/A~~ SP 8/06/14 SP 8/06/14
Re-Signed Due To Corrections on INNer Container

Visual Examination Operator 1
Print Name: Spencer Pattee Signature: Spencer Pattee Date: 4/29/14 8/06/14

Visual Examination Operator 2:
Print Name: David Hemsing Signature: DHEMSING Date: 04/29/14 08/06/14
DAVID HEMSING DHEMSING

004

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001501

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
Spencer Pattee — Print Name
Signature
4/29/14 — Date

Visual Examination Operator 2:
David Hemsing — Print Name
Signature
04/29/14 — Date

Superseded by page 4
8/7/14

8/7/14
004A

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 04/25/14		Batch Number:SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #:13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A

Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number:SNL001501		Container or Package ID Number:	
Container Type: 30 GAL. DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 60	Percent Organic Waste: 40	Percent Fill:	Percent Organic Waste:
Layers of Confinement: ~~N/A~~ 0	Closure Method: N/A	Layers of Confinement:	Closure Method:

8/06/14

Comments (e.g., filter information, NCRs):
Filter: NUCFIL-013, Serial # FN-856
Container Closed 4/29/2014

Waste Description:

CONTAINS ITEMS FROM PACO CASK C00210271

3/16" THICK STAINLESS STEEL INNER CONTAINMENT SLEEVE CUT IN TWO PIECES (IM)

BAGS (P)
HARDWARE (IM) (AM)
FUEL FRAGMENTS (OM) (IM)
EPOXY FRAGMENTS (P)
SLIDE CONTAINERS (P)
FUEL AND CLADDING (IM) (OM)
MET MOUNTS (P)
WIRE (OM)
OPEN PAINT CANS (IM)
WIRE BAILS (IM)
PAINT CAN LIDS (IM)
FILTER CARTRIDGES (AM) (C)
BROKEN BOTTLES (P)
KERF (OM) (IM) (P)
O-RINGS (R)
SCOTCH BRITE PADS (P)
TAPE (P)
MASSELIN (C)
INNER CONTAINMENT LID (IM)

005

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL		
Examination Date: 04/25/14	Batch Number:SNLRHVE14002	
Procedure #: CCP-TP-500	Revision #:13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A	Recording Stop: N/A

Initial Container ☐ N/A	Final Container ☒ N/A
Container or Package ID Number:SNL001501	Container or Package ID Number:
Container Type: 30 GAL. DRUM	Container Type:
Waste Matrix Code: S5400	Waste Matrix Code:
Waste Stream: SNL-HCF-S5400-RH	Waste Stream:
	Rigid Liner: ☐Y ☐N Type: / Rigid Liner Lid: ☐ Y ☐N
	Rigid Liner Vented or Hole Size:
Percent Fill: 60 / Percent Organic Waste: 40	Percent Fill: / Percent Organic Waste:
Layers of Confinement: N/A / Closure Method: N/A	Layers of Confinement: / Closure Method:

Comments (e.g., filter information, NCRs):
Filter: NUCFIL-013, Serial # FN-856
Container Closed 4/29/2014

Waste Description:

CONTAINS ITEMS FROM PACO CASK C00210271

3/16" THICK STAINLESS STEEL INNER CONTAINMENT SLEEVE CUT IN TWO PIECES (IM)

BAGS (P)
HARDWARE (IM) (AM)
FUEL FRAGMENTS (OM) (IM)
EPOXY FRAGMENTS (P)
SLIDE CONTAINERS (P)
FUEL AND CLADDING (IM) (OM)
MET MOUNTS (P)
WIRE (OM)
OPEN PAINT CANS (IM)
WIRE BAILS (IM)
PAINT CAN LIDS (IM)
FILTER CARTRIDGES (AM) (C)
BROKEN BOTTLES (P)
KERF (OM) (IM) (P)
O-RINGS (R)
SCOTCH BRITE PADS (P)
TAPE (P)
MASSELIN (C)
INNER CONTAINMENT LID (IM)

Superseded by page 5 8/7/14 JB

JB 8/7/14 005A

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001501

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 80 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does NOT match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags NOT defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1 — Spencer Pattee — 8/06/14

Print Name: Spencer Pattee — Signature — Date: 4/29/14

Visual Examination Operator 2 — David Hemsing — 08/06/14

Print Name: David Hemsing — Signature — Date: 04/29/14

DAVID HEMSING

006

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001501

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments. N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name; Signature; 4/29/14 — Date

Visual Examination Operator 2:

David Hemsing — Print Name; Signature; 04/29/14 — Date

Separated by PSB 8/7/14

By 8/7/14
006 A

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/12/14		Batch Number:SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number:SNL001502	
Container Type:		Container Type: 55 GALLON DRUM	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream:SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:N/A	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill:85	Percent Organic Waste: 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): Container Filter : NUCFIL-019DS, Filter # : FN-2228 Container Closed on 06/12/14			

Waste Description:

30 GALLON DRUM #SNL001502 (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001502

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A
SP 7/25/14

Visual Examination Operator 1:
SPENCER PATTEE — Print Name
Signature
6/12/14 — Date

Visual Examination Operator 2:
DAVE HEMSING — Print Name
DAVE HEMSING — Signature
06/12/14 — Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06-11-2014		Batch Number:SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: SNL001502		Container or Package ID Number:	
Container Type: 30 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): Container Filter: NUCFIL-013 Serial # : FN-843 Container Closed: 06/12/2014			

Waste Description:

DRUM LINER BREACHED (P)

7 GALLON DRUM #1308, BOTTOM (IM)

7 GALLON DRUM #1307, TOP (IM)

WIPES (C)

TAPE (P)

009

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001502

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does NOT match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags NOT defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments:

N/A

Visual Examination Operator 1:

SPENCER PATTEE — Print Name

Signature — Date 6/12/14

Visual Examination Operator 2:

DAVE HEMSING — Print Name

Signature — Date 06/12/14

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 05/27/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 1307		Container or Package ID Number:	
Container Type: 7 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): Closure Date: 5/27/14			

Waste Description:

SHIELD POT # 8351 (IM) (OM)

BRACING (IM)

011

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 1307

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments:

N/A

Visual Examination Operator 1:

SPENCER PATTEE — Print Name

Signature — Date 5/27/14

Visual Examination Operator 2:

DAVE HEMSING — Print Name

DAVE HEMSING — Signature

Date 05/27/14

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 05/27/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number :N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 8351		Container or Package ID Number:	
Container Type: SHIELD POT		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 80	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): Closure Date: 05/27/14 CONTAINS CONTENTS FROM C00210019			

Waste Description:

CONTAINER: ¾ INCH LEAD LINED SHIELD POT

FUEL AND CLADDING (OM) (IM)

HARDWARE (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 8351

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
SPENCER PATTEE — Print Name
Signature — Date: 5/27/14

Visual Examination Operator 2:
DAVE HEMSING — Print Name
Signature — Date: 05/27/14

014

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/01/2014		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 1308		Container or Package ID Number:	
Container Type: 7 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): CONTAINER CLOSED: 6/11/2014			

Waste Description:

SHIELD POT # 8352 (IM) (OM)

BRACING (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 1308

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments:

N/A

Visual Examination Operator 1

SPENCER PATTEE — Print Name

Signature — Date 6/11/14

Visual Examination Operator 2

DAVE HEMSING — Print Name

DAVE HEMSING — Signature

06/11/14 — Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/01/2014		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number :N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 8352		Container or Package ID Number:	
Container Type: SHIELD POT		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 80	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:

Comments (e.g., filter information, NCRs):
CONTAINS CONTENTS FROM C00210020, C00190022, C00219360, C00188432, C00219374
CONTAINER CLOSED: 6/11/2014

Waste Description:

CONTAINER: ¾ INCH LEAD LINED SHIELD POT

FUEL AND CLADDING (OM) (IM)

EPOXY (P)

PELLET HOLDERS (P)

HARDWARE (IM)

SWEEPINGS AND CUTTINGS (IM) (OM) (P)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 8352

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does NOT match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags NOT defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

SPENCER PATTEE — Print Name

Signature — Date 6/11/14

Visual Examination Operator 2:

DAVE HEMSING — Print Name

Signature — Date 06/11/14

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 07/02/14		Batch Number: SNLRHVE14002	
Procedure #:CCP-TP-500		Revision #:13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number: SNL001503	
Container Type:		Container Type: 55 GALLON DRUM	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream: SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type: N/A	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill: 85	Percent Organic Waste: 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): DRUM LID FILTER : NUCFIL – 019DS Serial # : FN-2215 DRUM CLOSURE DATE : 07/02/14			
Waste Description: 30 GALLON DRUM # SNL001503 (IM)			

019

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001503

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name
Signature
07/02/14 — Date

Visual Examination Operator 2:

Dave Hemsing — Print Name
Signature
07/02/14 — Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 6-17-14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: SNL001503		Container or Package ID Number:	
Container Type: 30 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 100	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:

Comments (e.g., filter information, NCRs):
Contains Material contents of Containers: C00218134, C00188180, C00188425
Contains Non-Radiological Debris Items from Containers: C00210019, C00210003, C00190022, C00219360, C00210020, C00188432, C00219374
FILTER: NUCFIL-013 SERIAL #:FN-848
CLOSED; 07/02/14

Waste Description:

BREACHED DRUM BAG (P)	BRASS CAPS (OM) (IM)
OPEN AND EMPTY 1R CONTAINER (IM) (OM)	O-RINGS (R)
LIDS (IM) (OM)	FUEL WITH CLADDING (OM) (IM)
VERMICULITE (OIM)	WIPES (C)
OPEN PAINT CANS (IM)	SWEEPINGS AND CUTTINGS (IM) (OM) (P)
KERF (OM) (IM)	FUEL PIECES (OM)
TAPE (P) (C)	FILTERS (IM)
OPEN AND EMPTY 2R CONTAINERS (IM) (OM)	STEEL WOOL (IM)
SCRAP PAPER (C)	SCRAP PLASTIC (P)
HARDWARE (IM) (P) (C)	FOAM (P)
OPEN AND EMPTY TUBES (IM) (OM)	SLIDE CASE (P)
OPEN 2 GALLON CAN (IM)	SPACER (C)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001503

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name
Signature
07/02/14 — Date

Visual Examination Operator 2:

Dave Hemsing — Print Name
Signature
07/02/14 — Date

022

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 07/02/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number: SNL001504	
Container Type:		Container Type: 55 GALLON DRUM	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream: SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type: N/A	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill: 85	Percent Organic Waste: 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): DRUM LID FILTER : NUCFIL – 019DS Serial # : FN-2220 DRUM CLOSURE DATE : 07/02/14			
Waste Description: 30 GALLON DRUM # SNL001504 (IM)			

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001504

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name
Signature
07/02/14 — Date

Visual Examination Operator 2:

Dave Hemsing — Print Name
Signature
07/02/14 — Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: SNL001504		Container or Package ID Number:	
Container Type: 30 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-013 SERIAL # FN-855 CLOSED: 07/02/14			

Waste Description:

BREACHED DRUM LINER BAG (P)

7 GALLON DRUM #1310 BOTTOM (IM)

7 GALLON DRUM #1309 TOP (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001504

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A
SP 7-25-14

Visual Examination Operator 1:

Spencer Pattee — Print Name
Signature
07/02/14 — Date

Visual Examination Operator 2:

Dave Hemsing — Print Name
Signature
07/02/14 — Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 1309		Container or Package ID Number:	
Container Type: 7 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): CLOSED 06/30/14			

Waste Description:

SHIELD POT #8353 (IM) (OM)

BRACING (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 1309

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
Spencer Pattee
Print Name
Signature
6/30/14
Date

Visual Examination Operator 2:
Dave Hemsing
Print Name
Dave Hemsing
Signature
06/30/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 8353		Container or Package ID Number:	
Container Type: SHIELD POT		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 40	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): CONTAINS CONTENTS OF: C00210003 CLOSED: 06/30/14			

Waste Description:

CONTAINER TYPE: ¾ INCH LEAD LINED SHIELD POT

FUEL AND CLADDING (IM) (OM)

CUTTINGS (IM) (OM)

FUEL PIECES (OM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 8353

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated bipnenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1: Spencer Pattee Print Name	Signature	6/30/14 Date
Visual Examination Operator 2: Dave Hemsing Print Name	DAVE HEMSING Signature	06/30/14 Date

Attachment 1 – Visual Examination Data Form

Site ID:RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 1310		Container or Package ID Number:	
Container Type: 7 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): CLOSED: 06/30/14 CONTENTS FROM C00210003			

Waste Description:

SHEILD POT # 8354 (OM) (IM)

BRACING (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 1310

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name

Signature

6/30/14 — Date

Visual Examination Operator 2:

Dave Hemsing — Print Name

Signature

06/30/14 — Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #:13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start:N/A	Recording Stop:N/A

Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number:8354		Container or Package ID Number:	
Container Type: SHEILD POT		Container Type:	
Waste Matrix Code:S5400		Waste Matrix Code:	
Waste Stream:SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 40	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:

Comments (e.g., filter information, NCRs):
CONTAINS CONTENTS OF: C00210003
CLOSED: 06/30/14

Waste Description:
CONTAINER TYPE : ¾ INCH LEAD LINED SHEILD POT

FUEL WITH CLADDING (IM) (OM)

CUTTINGS (IM) (OM)

SPRING (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 8354

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does NOT match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags NOT defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
Spencer Pattee — Print Name
Signature
6/30/14 — Date

Visual Examination Operator 2:
Dave Hemsing — Print Name
Dave Hemsing — Signature
06/30/14 — Date

Attachment 2 – Visual Examination Independent Technical Reviewer Checklist

Batch Data Report No.: SNLRHVE14002

1. Were data generation and reduction conducted in a technically correct manner in accordance with the methods (procedure) used?	☐ NO	☒ YES	☐ N/A
2. Was the correct revision of the operating procedure used?	☐ NO	☒ YES	☐ N/A
3. Were all the transcription errors corrected?	☐ NO	☐ YES	☒ N/A
4. Are BDR contents complete and match the Visual Examination Batch Data report Table of Contents?	☐ NO	☒ YES	☐ N/A
5. Does the BDR include VE for no more than 20 containers?	☐ NO	☒ YES	☐ N/A
6. Is all data recorded signed and dated in reproducible ink?	☐ NO	☒ YES	☐ N/A
7. Is all raw data recorded clearly, legibly, and accurately?	☐ NO	☒ YES	☐ N/A
8. Are all changes to original data lined out, initialed and dated by the individual making the changes or an individual authorized to make the change?	☐ NO	☒ YES	☐ N/A
9. Is there an adequate written description of the contents?	☐ NO	☒ YES	☐ N/A
10. Were the recording equipment checks satisfactory?	☐ NO	☐ YES	☒ N/A
11. Has each container in this BDR been evaluated for the presence of prohibited wastes?	☐ NO	☒ YES	☐ N/A
12. Has the physical waste form in each container in this BDR been evaluated against the Waste Stream Description and the Waste Matrix Code?	☐ NO	☒ YES	☐ N/A
13. Have the RH Quality Assurance Objectives (QAOs) for VE been met?	☐ NO	☒ YES	☐ N/A
Precision – reconciled discrepancies between operators or between the operator and ITR.	☐	☐	☒
Accuracy – trained operators	☐	☒	☐
Representativeness – description of container contents	☐	☒	☐
Completeness – completed data form and/or recording	☐	☒	☐
Comparability – proper training and adequate AK source documents are available for unopened containers.	☐	☒	☐
		WR 8-6-14	
14. Were NCRs generated included in the BDR?	☐ NO	☑ YES	~~☒~~ N/A

Comments: ~~None~~ WR 8-6-14
BDR reworked per NCR-RHSNL-0764-14 Rev 1

Independent Technical Reviewer:

F. Wesley Root	F. Wesley Root	07-26-14
Printed Name	Signature	Date
F. Wesley Root	F. Wesley Root	8-6-14

Attachment 2 – Visual Examination Independent Technical Reviewer Checklist

Batch Data Report No.: SNLRHVE14002

1. Were data generation and reduction conducted in a technically correct manner in accordance with the methods (procedure) used?	☐ NO	☒ YES	☐ N/A
2. Was the correct revision of the operating procedure used?	☐ NO	☒ YES	☐ N/A
3. Were all the transcription errors corrected?	☐ NO	☐ YES	☒ N/A
4. Are BDR contents complete and match the Visual Examination Batch Data report Table of Contents?	☐ NO	☒ YES	☐ N/A
5. Does the BDR include VE for no more than 20 containers?	☐ NO	☒ YES	☐ N/A
6. Is all data recorded signed and dated in reproducible ink?	☐ NO	☒ YES	☐ N/A
7. Is all raw data recorded clearly, legibly, and accurately?	☐ NO	☒ YES	☐ N/A
8. Are all changes to original data lined out, initialed and dated by the individual making the changes or an individual authorized to make the change?	☐ NO	☒ YES	☐ N/A
9. Is there an adequate written description of the contents?	☐ NO	☒ YES	☐ N/A
10. Were the recording equipment checks satisfactory?	☐ NO	☐ YES	☒ N/A
11. Has each container in this BDR been evaluated for the presence of prohibited wastes?	☐ NO	☒ YES	☐ N/A
12. Has the physical waste form in each container in this BDR been evaluated against the Waste Stream Description and the Waste Matrix Code?	☐ NO	☒ YES	☐ N/A
13. Have the RH Quality Assurance Objectives (QAOs) for VE been met?	☐ NO	☒ YES	☐ N/A
Precision – reconciled discrepancies between operators or between the operator and ITR.	☐	☐	☒
Accuracy – trained operators	☐	☒	☐
Representativeness – description of container contents	☐	☒	☐
Completeness – completed data form and/or recording	☐	☒	☐
Comparability – proper training and adequate AK source documents are available for unopened containers.	☐	☒	☐
14. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☒ N/A
Comments: None			

Independent Technical Reviewer:

F. Wesley Root — Printed Name

F. Wesley Root — Signature

07-26-14 — Date

Superseded by pgf 8/7/14

pgf 8/7/14
035A

Attachment 1 – CCP Nonconformance Report (NCR)

CCP NONCONFORMANCE REPORT (NCR)

(Use NCR Continuation, Attachment 3, if necessary)

NCR No. NCR-RHSNL-0764-14 Revision 1

1. Lot No., Heat No., or Serial No. (if applicable): N/A	2. Process (e.g., NDA, NDE, VE, Other): RH-VE	3. Batch Data Report #(s): SNLRHVE14002
4. Order/Work Order/Job Control Number (if applicable): N/A	5. PO # (if applicable): N/A	Container #(s): SNL001501
	6. Supplier (if applicable): N/A	

DESCRIPTION OF NONCONFORMANCE

7a. NCR Description: ☐ < 100 nCi/g ☐ Prohibited Item ☐ E-Flag ☐ Receipt Inspection ☐ Transportation ☐ WWIS/WDS ☒ Other

7b. Requirement(s) (Enter Implementing Procedure No., Revision, Section No., & Quoted Text):
CCP-TP-500, revision 13, section 4.1.2, step [l.9], states in part, "Enter the number of Layers of Confinement for the package."

7c. Actual Condition:
The layers of confinement for the 30 gallon inner container for the drum listed in block 3 was incorrectly listed as "N/A", and needs to be listed as "0".

Reason for revision 1: To revise the steps in the final disposition, adding one to note the NCR on the Table of Contents.

7d. Have the CCP HOLD TAGS associated with this NCR been applied? ☐ YES ☒ NO If no is checked, explain:
Due to ALARA considerations, NCR tagging will not be applied for this NCR. Administrative control will be applied through container entry in the CCP Data Center. In addition a listing of containers will be posted on the CCP ship site identifying those containers where NCR tagging is not being applied. Container information for this NCR will be included in the listing which is to alert Mobile Loading Unit personnel as a second control mechanism for non-tagged containers.

8. NCR Originator:

Laura Turner (printed name) — Laura Turner (signature) — 8/6/14 (date)

9. Does the identified condition have the potential to impact AK? ☐ YES ☒ NO ☐ INDETERMINATE
If YES or INDETERMINATE, enter Trend Code L in Block 10

10. Trend Code: A

11. Responsible Manager: **Laura Turner**

12. Significant Condition? ☐ YES ☒ NO
(If Yes, enter WIPP Form No.):

13. Recurring Condition? ☐ YES ☒ NO
(If Yes, list NCRs and WIPP Forms.):

14. QA Engineer or QA Designee validation

Laura Jones (printed name) — Laura Lawrence Jones (signature) — 08/06/2014 (date)

Attachment 1 – CCP Nonconformance Report (NCR) (Continued)

NCR No. NCR-RHSNL-0764-14 Revision 1

INTERIM DISPOSITION

15a. Interim Disposition (Check Only One):

☒ N/A (See Final Disposition) ☐ Hold ☐ Conditionally Accept ☐ Conditionally Use

☐ Sort ☐ Reinspect or Retest ☐ Remediate

15b. Instructions for Completion of the Interim Disposition:

INTERIM DISPOSITION APPROVALS

16a. Responsible Manager or Individual:

printed name signature date

16b. QA Engineer or QA Designee:

printed name signature date

Additional Approval:

printed name signature date

Additional Aporoval:

printed name signature date

COMPLETION OF INTERIM DISPOSITION

17. Interim Disposition Complete – Responsible Manager or Individual

printed name signature date

18. Interim Disposition Verified – QA Engineer

printed name signature date

Attachment 1 – CCP Nonconformance Report (NCR) (Continued)

NCR No. NCR-RHSNL-0764-14 Revision 1

FINAL DISPOSITION

19. Final Disposition (Check Only One: Use-As-Is, Repair, Reject, Rework, or Scrap)
☐ Use-As-Is ☐ Repair

19a. Technical Justification – Required for Use-As-Is or Repair dispositions. [☒ N/A for Reject, Rework, or Scrap]

☐ Reject ☒ Rework ☐ Scrap

19b. Instructions for Completion – Required for Reject, Repair, Rework, or Scrap [☐ N/A for Use-As-Is]

1. Have a qualified operator correct the layers of confinement listed for the inner container in the container listed in block 3 and resign the Attachment 1
2. Note the addition of the NCR to the BDR on the Table of Contents.
3. Have the ITR review the changes made, note the NCR on the ITR checklist and re-sign the ITR checklist.
4. Have the SPM review the changes made, note the NCR on the SPM checklist and re-sign the SPM checklist.

19c. Corrective Actions (Actions to Prevent Recurrence – For Repair or Rework, if applicable.
[☒ N/A if not applicable, and for Use-As-Is, Reject, and Scrap]

FINAL DISPOSITION APPROVALS

20. Responsible Manager or Individual

Laura Turner (printed name) Laura Turner (signature) 3/10/14 (date)

21. QA Engineer or QA Designee

Laura P. Jones (printed name) Laura P. Jones (signature) 3/10/2014 (date)

Additional Approval

printed name signature date

Additional Approval

printed name signature date

CLOSURE

22. Final Disposition Complete - Responsible Manager or Individual.

printed name signature date

23. Attachments.

24a. HOLD TAG removal has been verified and reconciled for all nonconforming items on the NCR: ☐
24b. If HOLD TAG is not applicable, check ☒ and explain:

25. Final Disposition Verified – NCR Closed QA Engineer

printed name signature date

DIVIDER PAGE ONLY

Not part of page count

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record
[ ] Fax Record
[ ] Electronic Record
[ ] Copy

Attn:	Sheila Pearcy	From:	Wes Root
Ship to:	S.M. Stoller Rec. Mgmt. Govt.	Site:	ANL-E
	CCP Records	Company:	Nuclear Waste Partnership LLC
	4021 National Parks Hwy	Telephone Number:	630-252-8306
	Carlsbad, NM 88220	Date Sent:	7-26-14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14002	Batch Data Report – Waste Container ID Numbers: SNL001501, SNL001502, SNL001503, SNL001504.	7-2-14	35
	WR 7-26-14		

Comments

Completed BDR for Sandia National Laboratory.

(When the Record accepted line has been completed, the rest of the page below may be left blank.)

Acceptance/Rejection Signature and Date

Records Accepted [X]	[signature]	Danette Acosta	7/30/14
	Signature	Printed Name	Date
Records Rejected [ ]			
	Signature	Printed Name	Date

Reason for Rejection:

Re-submittal:

Signature	Printed Name	Date

```
*********************
***   TX REPORT   ***
*********************
```

TRANSMISSION OK

TX/RX NO	0101
DESTINATION TEL #	916302526706
DESTINATION ID	WES ROOT
ST. TIME	07/30 07:02
TIME USE	00'16
PAGES SENT	1
RESULT	OK

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record
[ ] Fax Record
[ ] Electronic Record
[ ] Copy

Attn:	Sheila Pearcy	From:	Wes Root
Ship to:	S.M. Stoller Rec. Mgmt. Govt.	Site:	ANL-E
	CCP Records	Company:	Nuclear Waste Partnership LLC
	4021 National Parks Hwy	Telephone Number:	630-252-8306
	Carlsbad, NM 88220	Date Sent:	7-26-14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14002	Batch Data Report – Waste Container ID Numbers: SNL001501, SNL001502, SNL001503, SNL001504.	7-2-14	35
	WR 7-26-14		

Comments

Completed BDR for Sandia National Laboratory.

(When the Record accepted line has been completed, the rest of the page below may be left blank.)

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record
[ ] Fax Record
[ ] Electronic Record
[ ] Copy

Attn:	Danette Acosta	From:	Laura Nelson
Ship to:	CCP Records	Site:	Denver
	4021 National Parks Highway	Company:	NWP
	MS:GSA:212	Telephone Number:	505-400-8984
	Carlsbad, NM 88220	Date Sent:	7/30/14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14002	SPM Checklist	7/30/2014	1
	NA		

Comments

NA

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

Records Accepted [X] D Acosta — Signature | Danette Acosta — Printed Name | 7/30/14 — Date

Records Rejected [ ] _____ Signature | _____ Printed Name | _____ Date

Reason for Rejection:

Re-submittal: _____ Signature | _____ Printed Name | _____ Date

```
**********************
***   TX REPORT   ***
**********************

TRANSMISSION OK

TX/RX NO                0113
DESTINATION TEL #       913038432208
DESTINATION ID          DENVER
ST. TIME                07/30 09:29
TIME USE                00'17
PAGES SENT                1
RESULT                  OK
```


Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record
[ ] Fax Record
[ ] Electronic Record
[ ] Copy

Attn:	Danette Acosta	From:	Laura Nelson
Ship to:	CCP Records	Site:	Denver
	4021 National Parks Highway	Company:	NWP
	MS:GSA:212	Telephone Number:	505-400-8984
	Carlsbad, NM 88220	Date Sent:	7/30/14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14002	SPM Checklist	7/30/2014	1
	NA		

Comments

NA

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

GEN2

GEN2

URS

Washington TRÛ Solutions LLC

CP:12:01265
UFC:5900.00

INTER-OFFICE CORRESPONDENCE

DATE: May 30, 2012

FROM: I. S. Quintana LOCATION: CCP Project Management - Remote-Handled

TO: CCP Records Custodian GSA-212 LOCATION: Retrieval, Characterization and Transportation

SUBJECT: TRANSMITTAL OF WASTE STREAM PROFILE FORM FOR WASTE STREAM SNL-HCF-S5400-RH, SANDIA NATIONAL LABORATORY

Please accept the attached Waste Stream Profile Form for SNL-HCF-S5400-RH, managed at the Sandia National Laboratory, to be placed in records.

ISQ:yhs

Attachment

cc: (without attachment)
L. M. Nelson ED

CCP RECORDS ORIGINAL
DATE REC'D 5-31-12

Attachment 2 –CCP Waste Stream Profile Form

(1) Waste Stream Profile Number: SNL-HCF-S5400-RH					
(2) Generator site name: Sandia National Laboratory/New Mexico			(4)Technical contact: Irene Quintana		
(3) Generator site EPA ID: NM5890110518			(6) Technical contact phone number: 575-499-4579		
(5) Date of audit report approval by New Mexico Environment Department (NMED): 11/10/2011					
(7) Title, version number, and date of documents used for WAP Certification: CCP-PO-001, CCP Transuranic Waste Characterization Quality Assurance Project Plan, Revision 20, June 16, 2011 CCP-PO-002, CCP Transuranic Waste Certification Plan, Revision 26, July 14, 2011 CCP-PO-510, CCP/SNL Interface Document, Revision 0, November 18, 2010 CCP-AK-SNL-500,Central Characterization Project Acceptable Knowledge Summary Report for Sandia National Laboratories/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris) Waste Stream: SNL-HCF-S5400-RH Rev. 4, November 30, 2011					
(8) Did your facility generate this waste?	YES	X	NO		
(9) If no, provide the name and EPA ID of the original generator: NA					
Waste Stream Information[1]					
(10) WIPP ID: SA-W135			(11) Summary Category Group: S5000		
(12) Waste Matrix Code Group: Heterogeneous Debris Waste			(13) Waste Stream Name: Sandia National Laboratory/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris)		
(14) Description from the TWBIR: Heterogeneous RH debris from SNL/NM Hot Cell Facility D&D Project and other miscellaneous waste generators.					
(15) Defense TRU Waste:	YES	X	NO		
(16) Check One:	CH		RH	X	
(17) Number of SWBs: NA	(18) Number of Drums: NA			(19) Number of Canisters: 10^3	
(20) Batch Data report numbers supporting this waste stream characterization: See Characterization Information Summary (CIS) Correlation of Container Identification Numbers to Batch Data Report Numbers					
(21) List applicable EPA Hazardous Waste Numbers:[2] D004, D005, D006, D007, D008, D009, D011, D019, D022, D028, F002 and F005					
(22) Applicable TRUCON Content Numbers: SN 321					
(23)**Acceptable Knowledge Information**[1]					
[For the following, enter the supporting documentation used (i.e., references and dates)]					
Required Program Information					
(23A) Map of site: CCP-AK-SNL-500, Revision 4, November 30, 2011 Figures 1 & 2					
(23B) Facility mission description: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 4.2					
(23C) Description of operations that generate waste: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 4.4					
(23D) Waste identification/categorization schemes: CCP-AK-SNL-500, Revision 4, November 30, 2011 Sections 4.5.2 and 5.3					
(23E) Types and quantities of waste generated: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 4.5.1					
(23F) Correlation of waste streams generated from the same building and process, as applicable: CCP-AK-SNL-500 Rev. 4, November 30, 2011 Section 4.5.3					

(24) Waste certification procedures: CCP-TP-53, CCP RH TRU Waste Certification and WWIS/WDS Data Entry, Revision 10, April 25, 2011			
(25)Required Waste Stream Information			
(25A) Area(s) and building(s) from which the waste stream was generated: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 5.1			
(25B) Waste stream volume and time period of generation: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 5.2			
(25C) Waste generating process description for each building: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 4.4			
(25D) Waste Process flow diagrams: NA			
(25E) Material inputs or other information identifying chemical/radionuclide content and physical waste form: CCP-AK-SNL-500, Revision 4, November 30, 2011 Sections 5.3			
(25F) Waste Material Parameter Weight Estimates per unit of waste: See table entitled "Waste Stream SNL-HCF-S5400-RH Waste Material Parameters" of the Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH			
(26) Which Defense Activity generated the waste: (check one)			
	Weapons activities including defense inertial confinement fusion		Naval Reactors development
	Verification and control technology	X	Defense research and development
	Defense nuclear waste and material by products management		Defense nuclear material production
	Defense nuclear waste and materials security and safeguards and security investigations		
(27)Supplemental Documentation			
(27A) Process design documents: See C1013, C1014, C1016, C1017, I1002, P1003, P1004, P1044, U1004 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27B) Standard operating procedures: See C1041, I1002, I1024, I1028, I1031, I1033, I1034, I1035, I1036, I1039, I1040, I1046, I1048, M1014, M1020, P1101, U1009, U1012, in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27C) Safety Analysis Reports: See I1013, I1038, I1039, M1014, P1104, U1012 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27D) Waste packaging logs: See M1013, M1016, M1019, M1020, P1105 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27E) Test plans/research project reports: See C1012, I1002, I1004, I1005, I1006, I1007, I1009, I1010, I1012, I1020, I1021, I1022, I1028, I1031, I1032, M1014, P1001, P1002, P1004, P1005, P1006, P1007, P1008, P1009, P1010, P1011, P1012, P1014, P1016, P1018, P1019, P1020, P1021, P1022, P1025, P1026, P1027, P1033, P1034, P1035, P1036, P1037, P1038, P1039, P1040, P1045, P1046, P1047, P1048, P1051, U1001, U1002, U1009, U1011, U1012, U1014, U1022 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27F) Site databases: See C1005 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27G) Information from site personnel: See C1026 and C1037 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27H) Standard industry documents: See I1023, I1030, M1014, P1025, U1012 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27I) Previous analytical data: See C1021, C1027, DR1001, I1001, I1025, M1010, M1011, M1013, M1016, M1020, M1021, in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27J) Material safety data sheets: See I1030, M1007, P1102 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27K) Sampling and analysis data from comparable/surrogate Waste: N/A			

(27L) Laboratory notebooks: See I1007, I1022 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents	
Confirmation Information[2]	
For the following, when applicable, enter procedure title(s), number(s) and date(s)	
(28)	Radiography: NA
(29)	Visual Examination: CCP-TP-500, Rev. 11, April 21, 2011
(30)Comments: For a list of the waste characterization procedures used and date of the respective procedures see the list of procedures on the attached CIS.	

Reviewed by AK Expert: YES [X] **Date: 11/30/11**

Reviewed by STR (if necessary): YES [X] NA [ ] **Date: 11/30/11**

Waste Stream Profile Form Certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

(31)	(32) Irene Quintana	(33) 12/06/2011
Signature of Site Project Manager	Printed Name	Date

NOTE: (1) Use back of sheet or continuation sheets, if required.
(2) If, radiography, visual examination were used to confirm EPA Hazardous Waste Numbers, attach signed Characterization Information Summary documenting this determination.
(3) This waste stream consists of 28 55-gallon drums that will be loaded into 10 RH canisters.

CHARACTERIZATION INFORMATION SUMMARY

WSPF # SNL-HCF-S5400-RH

Lot 1

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CIS-001

CCP Characterization Information Summary Cover Page

Waste Stream #	SNL-HCF-S5400-RH	Lot #:	1
AK Expert Review:	Steve Schafer	Date:	11/28/2011
SPM Review:	Laura Nelson	Date:	11/30/2011

SPM signature certifies that through Acceptable Knowledge testing and/or analysis that the waste identified in this summary is not corrosive, ignitable, reactive, or incompatible with the TSDF.

A summary of the Acceptable Knowledge regarding this waste stream containing specific information about the corrosivity, reactivity, and ignitability of the waste stream is included as an attachment to the Waste Stream Profile Form. By reference, that information is included in this lot.

List of procedures used:

Headspace Gas Sampling and Analysis (HSG):

CCP-TP-093	Rev. 15	3/10/2011	CCP Sampling of TRU Waste Containers
CCP-TP-093	Rev. 16	9/7/2011	CCP Sampling of TRU Waste Containers
CCP-TP-106	Rev. 7	12/29/10	CCP Headspace Gas Sampling Batch Data Report Preparation
CCP-TP-173	Rev. 1	09/30/09	CCP Analysis of Gas Samples for VOCs by GC/FID
CCP-TP-175	Rev. 2	12/29/10	CCP Analysis of Gas Samples for VOCs by GC/MS
CCP-TP-175	Rev. 3	06/02/11	CCP Analysis of Gas Samples for VOCs by GC/MS

Visual Examination (VE):

CCP-TP-500	Rev. 10	12/29/10	CCP Remote-Handled Waste Visual Examination
CCP-TP-500	Rev. 11	04/21/11	CCP Remote-Handled Waste Visual Examination

Project Level Data Validation / DQO Reconciliation:

CCP-TP-001	Rev. 19	12/29/10	CCP Project Level Data Validation and Verification
CCP-TP-002	Rev. 23	12/29/10	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-003	Rev. 18	12/29/10	CCP Data Analysis for S3000, S4000, and S5000 Characterization
CCP-TP-005	Rev. 22	04/21/11	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 23	06/30/11	CCP Acceptable Knowledge Documentation
CCP-TP-530	Rev. 10	04/25/11	CCP RH TRU Waste Certification and WWIS/WDS Data Entry

WAP Certification:

CCP-PO-001	Rev. 20	06/16/11	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-510	Rev. 0	11/18/10	CCP/SNL Interface Document

WAC Certification:

CCP-PO-002	Rev. 26	7/14/2011	CCP Transuranic Waste Certification Plan

Page 1 of 1

CIS-002

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream: # SNL-HCF-S5400-RH

Lot # 1

Container ID Number	Historical Container ID	NDA BDR or Radiological Characterization BDR	RTR BDR	VE BDR	Solids Sampling BDR	Solids Analytical BDR	Load Management/ Overpack Yes	Permit Required Headspace Gas BDR			Transportation BDR
								Sample	Analysis		
SNLNM005339	NA	SNLRHDTC11001	N/A	RHSNLVE100001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007007	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007008	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007009	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007010	NA	SNLRHDTC11001	N/A	RHSNLVE110002	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007011	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007020*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007021*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007023*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007024*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007119	NA	SNLRHDTC11002	N/A	SNLRHVE11010	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007118	NA	SNLRHDTC11002	N/A	SNLRHVE11010	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007116	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007117	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007115	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007113	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007112	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007019	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007026	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA	NA

* Containers are not eligible for certification as the radiological scaling factor has not been developed. These containers are included for the characterization WWIS/WDS module for the HSG data only.

Laura Nelson
Signature of Site Project Manager

Laura Nelson
Printed Name

11/30/2011
Date

CAS 3
CAS-003

CCP Headspace Gas UCL_{90} Evaluation Form

WSPF #: SNL-HCF-S5400-RH **Waste Stream Lot Number** 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (ppmv)	Mean (ppmv)	SD (ppmv)	UCL_{90} (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA Code
Benzene	Log	4	10	-0.06	-2.64	1.36	-2.05	10	2.30		
Bromoform	Log	0	10	-2.25	-4.24	1.08	-3.76	10	2.30		
Carbon tetrachloride	Log	0	10	-1.26	-3.26	1.09	-2.78	10	2.30		
Chlorobenzene	Log	0	10	-1.44	-3.43	1.09	-2.96	10	2.30		
Chloroform	Log	1	10	-1.04	-2.94	1.19	-2.41	10	2.30		
Cyclohexane [a]	Log	0	10	-0.88	-2.86	1.09	-2.39	10	2.30		
1,1-Dichloroethane	Log	0	10	-0.29	-2.30	1.09	-1.82	10	2.30		
1,2-Dichloroethane	Log	0	10	-0.89	-2.89	1.09	-2.41	10	2.30		
1,1-Dichloroethylene	Log	0	10	-1.34	-3.35	1.09	-2.87	10	2.30		
trans-1,2-Dichloroethylene	Log	0	10	-1.11	-3.10	1.09	-2.62	10	2.30		
Ethyl benzene	Log	6	10	1.59	-1.76	2.03	-0.88	10	2.30		
Ethyl ether	Log	0	10	-0.36	-2.38	1.09	-1.90	10	2.30		
Methylene chloride	Log	1	10	-0.89	-3.02	1.27	-2.46	10	2.30		
1,1,2,2-Tetrachloroethane	Log	0	10	-1.63	-3.62	1.08	-3.15	10	2.30		
Tetrachloroethylene	Log	0	10	-1.56	-3.55	1.09	-3.07	10	2.30		
Toluene	Log	8	10	1.76	-0.93	1.26	-0.38	10	2.30		
1,1,1-Trichloroethane	Log	0	10	-1.27	-3.26	1.09	-2.79	10	2.30		
Trichloroethylene	Log	0	10	-1.17	-3.17	1.09	-2.70	10	2.30		
1,1,2-Trichloro-1,2,2-trifluoroethane	Log	0	10	-1.80	-3.79	1.09	-3.31	10	2.30		
1,2,4-Trimethylbenzene[a]	Log	0	10	-1.37	-3.37	1.09	-2.89	10	2.30		
1,3,5-Trimethylbenzene[a]	Log	0	10	-1.27	-3.26	1.09	-2.79	10	2.30		
m/p-Xylene[b]	Log	7	10	2.71	-0.94	2.54	0.17	10	2.30		
o-Xylene	Log	7	10	1.39	-1.67	2.01	-0.79	10	2.30		
Acetone	Log	10	10	4.94	1.63	2.35	2.66	100	4.61		
Butanol	Log	4	10	1.85	-1.74	2.17	-0.79	100	4.61		
Methanol	Log	0	10	2.74	2.69	0.02	2.70	100	4.61		
Methyl ethyl ketone	Log	9	10	3.71	0.26	2.09	1.18	100	4.61		
Methyl isobutyl ketone	Log	5	10	2.64	-1.06	2.51	0.04	100	4.61		
Chloromethane[c]	Log	2	10	0.53	-2.14	1.48	-1.49	10	2.30		
Carbon Disulfide[a]	Log	3	10	-1.31	-2.80	1.04	-2.34	10	2.30		

CCP Headspace Gas UCL_{90} Evaluation Form

WSPF #: SNL-HCF-S5400-RH **Waste Stream Lot Number** 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (ppmv)	Mean (ppmv)	SD (ppmv)	UCL_{90} (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA Code
1,2-Dichloropropane[a]	Log	0	10	-1.01	-3.00	1.09	-2.53	10	2.30		
Trichlorofluoromethane[c]	Log	0	10	-1.17	-3.16	1.08	-2.69	10	2.30		

[a] These compounds are from the TRAMPAC and or CH TRUCON Appendix B and are flammable VOCs that do not appear in the QAPjP or the WIPP WAP. These are not part of the target analyte list, but samples may be analyzed for these compounds.

[b] These xylene isomers cannot be resolved by the analytical methods employed in the program. m-Xylene and p-Xylene will be reported as "Total m-p-Xylene."

[c] Noted analytes are not required but are reported by the Environmental Chemistry Laboratory at Idaho and are included on the UCL90 for completeness.

Comments:

(1) For analytes where there were no samples measured above the MDL value, 1/2 of the MDL value was used. (Per section C4 of the WAP, 1/2 of the MDL value is used in calculating the mean concentration.)

Laura Nelson
Signature of Site Project Manager

Laura Nelson
Printed Name

12/7/2011
Date

CCP Headspace Gas Summary Data

Waste Stream Number SNL-HCF-S5400-RH Lot Number (s) 1

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	% Detected
None	None	None	None

Data Supports EPA Hazardous Waste Numbers Assigned by AK? Yes ☑ No ☐

If no, describe the basis for assigning the EPA Hazardous Waste Codes:

SPM Signature Laura Nelson Date 12/7/2011

CCP RTR/VE Summary of Prohibited Items and AK Confirmation

Waste Stream Number: SNL-HCF-S5400-RH

Lot #: 1

Container Number	RTR Prohibited Items [a]	Visual Examination Prohibited Items [a]
See correlation of container ID numbers for list of remaining drum numbers in this Lot.	RTR was not used to certify any containers in this lot.	None of the containers in this Lot had prohibited items identified during Visual Examination technique.

a. See Batch Data Reports

Justification for the selection of RTR and/or VE: VE was selected as the characterization method for this lot because the containers were newly generated and met all the Data Quality Objectives for VE for waste stream SNL-HCF-S5400-RH

Laura Nelson

Site Project Manager Signature

Laura Nelson

Printed Name

12/7/2011

Date

CCP Reconcilliation with Data Quality Objectives

WSF# SNL-HCF-S5400-RH

Lot # 1

Sampling Completeness

VE
Number of Valid Samples: 15
Percent Complete: 100 (QAO is 100%)
Number of Total Samples Analyzed: 15

RTR
Number of Valid Samples: NA
Percent Complete: NA (QAO is 100%)
Number of Total Samples Analyzed: NA

NDA
Number of valid samples: 15
Percent Complete: 100 (QAO is 100%)
Number of Total Samples Analyzed: 15

HSG
Number of Valid Samples: 10
Percent Complete: 100 (QAO is ≥90%)
Number of Total Samples collected: 10

Total VOC
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples collected: NA
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples analyzed: NA

Total SVOC
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples collected: NA
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples analyzed: NA

Total Metals
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples collected: NA
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples analyzed: NA

CCP Reconcilliation with Data Quality Objectives

WSF# SNL-HCF-S5400-RH Lot # 1

	Y/N/NA	Reconcilliation Parameter
1	Y	Waste Matrix Code.
2	Y	Waste Material Parameter Weights.
3	Y	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	Y	The TRU activity reported in the BDRs for each container demonstrates with a 95% probability that the container of waste contains TRU radioactive waste.
5	N	AK Sufficiency. Is there an approved AK sufficiency Determination for this waste stream?
6	Y	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for each VOC in the HSG of each container were calculated and compared with the program required quantitation limits, as reported in CCP TP 003, Attachment 3, and additional Environmental Protection Agency (EPA) Hazardous Waste Numbers were assigned as required. Samples were randomly collected (when appropriate).
7a	NA	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for solids VOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003-Attachment 4, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.
7b	NA	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for solids SVOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP TP 003 Attachment 5, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.
7c	NA	Mean concentrations, (UCL90) values for the mean concentration, standard deviations, and the number of samples collected for total metals were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP TP 003 Attachment 6, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.

CCP Reconcilliation with Data Quality Objectives

WSF# SNL-HCF-S5400-RH Lot # 1

8	Y	The data demonstrates whether the waste stream exhibits a toxicity characteristic under Title 40 Code of Federal Regulations (CFR), Part 261, Identification and Listing of Hazardous Waste, Subpart C, Characteristics of Hazardous Waste.
9	Y	Does the waste stream contain listed waste found in 20.4.1.200 NMAC incorporating 40 CFR Part 261, Subpart D, Lists of Hazardous Wastes.
10	Y	Waste stream can be classified as hazardous or nonhazardous at the 90-percent confidence level.
11	Y	Appropriate packaging configuration and Drum Age Criteria (DAC) is applied and documented in the headspace gas sampling documentation, and the drum age met prior to sampling.
12	Y	TICs were appropriately identified and reported in accordance with the requirements of Section C3-1 of the QAPjP.
13	Y	The PRQLs for headspace gas VOCs were met for all analyses as evidenced by the analytical batch data reports.
14		The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in CCP-PO-001 Sections C3-2 through C3-9 prior to submittal of a waste stream profile form for a waste steam or waste stream lot.

	Completeness	Comparability	Representativeness
Radiography	NA	NA	NA
VE	Y	Y	Y
Headspace Gas Analysis	Y	Y	Y
Solids Sampling	NA	NA	NA
Solids VOCs	NA	NA	NA
Solids SVOCs	NA	NA	NA
Solids Metals	NA	NA	NA

Comments: N/A

Laura Nelson
Signature of Site Project Manager

Laura Nelson
Printed Name

12/7/2011
Date

SUMMATION OF ASPECTS OF AK SUMMARY REPORT: WASTE STREAM SNL-HCF-S5400-RH

Overview:

Waste stream SNL-HCF-S5400-RH is Remote Handled (RH) mixed heterogeneous debris originally packaged during Sandia National Laboratories/New Mexico (SNL/NM) Hot Cell Facility (HCF) decontamination activities conducted from 1995 to 1997. The waste has been stored at the Manzano Bunkers located at Manzano Base within Kirtland Air Force Base and is being repackaged at the Auxiliary Hot Cell Facility (AHCF). This waste stream consists of organic and inorganic debris generated during the destructive and nondestructive examinations conducted in the HCF, and includes personal protective equipment (PPE) and plastic from decontamination and repackaging activities. The waste will be characterized by the Central Characterization Project (CCP) prior to shipment to the Waste Isolation Pilot Plant (WIPP).

WIPP requires generator sites to determine that Transuranic (TRU) waste streams to be disposed of at WIPP meet the definition of TRU defense waste. TRU waste is eligible for disposal at WIPP if it has been generated in whole or part by one of the atomic energy defense activities listed in Section 10101(3) of 42 U.S.C 10101, *Nuclear Waste Policy Act of 1982* (NWPA). Based on the review of Acceptable Knowledge (AK) there is sufficient evidence to demonstrate that TRU wastes generated by the HCF operations are contaminated with materials from atomic energy defense research activities associated primarily with projects conducted to support safety programs for reactors with defense missions.

The United States has historically operated and continues to operate reactors used for the development of nuclear energy technology. Additionally, these reactors have been utilized to produce radioisotopes for medical, industrial, and military purposes; to generate neutron environments for scientific research; and to conduct irradiation experiments in support of the government's defense, space, fusion, and advanced reactor programs. Collectively referred to as test and research reactors, these facilities have been typically operated by private contractors for the Department Of Energy (DOE). Mixed oxide, carbide, and alloy fuels for, or tests in, the DOE breeder reactor research and testing program were manufactured with plutonium obtained primarily from DOE production reactors at the Hanford and Savannah River Site (SRS) sites. DOE test and research reactor facilities include the Argonne National Laboratory – West (ANL-W) Experimental Breeder Reactor-II (EBR-II) and Hanford Fast Flux Test Facility (FFTF) reactors.

In 1967 the U.S. Atomic Energy Commission (AEC) initiated the Liquid Metal Fast Breeder Reactor (LMFBR) Program for developing and demonstrating fast breeder reactor technology for safe, reliable, and economical energy production. Critical to this demonstration program was the design, development, and construction or modification of facilities capable of manufacturing, testing, and examining these reactor materials. The ANL-W EBR-II and Hanford FFTF reactors were the most important facilities in the LMFBR Program. The FFTF was

constructed to produce higher neutron flux and testing capabilities than produced by EBR-II. Even though the primary mission of the DOE test and research reactors was focused on the development of commercial energy technology, the reactors had an underlying defense mission and ongoing defense research and development experiments were conducted in these facilities. The HCF supported the development of the LMFBR technology by conducting experiments to simulate core disruptive accident conditions utilizing irradiated EBR-II mixed oxide reactor.

EBR-II supported ongoing defense experiments conducted throughout the 30-year operating life of the reactor (1964-1994). In 1968-1969, the reactor was converted to a fast-reactor irradiation test facility. Test fuels and materials were placed in the core assemblies identical to those holding the driver fuel assemblies. In addition to supporting the LMFBR Program, numerous experiments were conducted for defense applications, including support of the Bettis Atomic Power Laboratory dedicated to supporting the Naval Nuclear Propulsion Program. Other defense program experiments conducted at EBR-II included radiation of thermionic elements and tritium production test materials. During its final year, experiments included a cooperative effort between Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) to demonstrate disposition of weapons plutonium in a fast reactor.

The EBR-II and FFTF reactors also supported the irradiation of experimental fuel pins manufactured at the LANL as part of the SP-100 Fuel Pin Irradiation Testing program during the late 1980s and early 1990s. This program, initiated in 1983, was jointly funded by National Aeronautics and Space Administration (NASA), DOE, and the Strategic Defense Initiative Organization (SDIO). The SDIO (better known as the "Star Wars" program) was established to pursue technology in the development of a viable and comprehensive ballistic missile defense program. The SP-100 program's objective was to verify and validate the design of a compact, fast-spectrum nuclear reactor fuel for a broad range of national defense-related space applications. SNL/NM was involved in the development of SDIO technology associated with the Fission Activated Laser Concept (FALCON) project conducted in Building 6580. This program involved the development of a high-power, steady state, nuclear reactor-pumped laser concept being developed for the DOE Defense Program.

SNL/NM involvement with the New Production Reactor (NPR) program tests were in support of research relating to the production of tritium for weapons production. Historically tritium was produced at the K Reactor and other reactors at the Savannah River Site (SRS). As the reactors were shut down, tritium production declined and halted altogether in 1988 when the K Reactor was shut down for safety upgrades. In the same year, DOE initiated the NPR project to develop a long term source of tritium to replace the aging K Reactor.

Many of the HCF experiments were irradiated in the Annular Core Research Reactor (ACRR). The ACRR is a pool type research reactor capable of pulsed operation, steady-state operation, and a tailored transient rod withdrawal operation. The reactor was designed to produce a high yield of high-energy neutrons in the central irradiation dry cavity and other experimental facilities over a very short time-range pulse. This reactor supported DOE and U.S. Department

of Defense (DOD) defense experiments, including the irradiation of components for defense programs and tritium production research.

Based on a review of the waste management practices in the HCF, commingling of the material from the defense related projects described above would have occurred. In addition to cross contamination introduced during the storage of test materials in common storage areas in the HCF, waste materials from ongoing process operations remained in the work areas and were repackaged and moved between areas during decontamination campaigns. Waste materials from the programs were combined during repackaging, contamination from cutting, grinding, and polishing activities and would also remain in the area contaminating surfaces and equipment. This contamination would remain in the area to commingle with wastes generated during subsequent examinations. Additionally, project tooling, equipment, and instruments were shared between projects resulting in further cross-contamination. As a result of the waste management practices and destructive analytical nature of the operations conducted in the HCF, segregation of cross-contaminated non-defense waste from defense-related waste is not feasible. Based on a review of the AK record, there was no generator documentation indicating the intentional segregation of materials originating from defense experiments from nondefense experiments. Therefore, waste stream SNL-HCF-S5400-RH is eligible for disposal at WIPP as a commingled defense waste stream generated "in part" by the atomic energy defense activities described in this section.

This Summation of Aspects supports Waste Stream Profile Form (WSPF) number SNL-HCF-S5400-RH and is based on *CCP-AK-SNL-500, Central Characterization Project Acceptable Knowledge Summary Report for Sandia National Laboratories/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris), Waste Stream: SNLHCF-S5400-RH, Revision 4.*

Waste Stream Identification Summary:

Waste Stream Name:	Sandia National Laboratories/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris)
Waste Stream Number:	SNL-HCF-S5400-RH
Waste Stream Volume, Current:	10 canisters [1]
Waste Stream Volume, Projected:	No future generation is expected
Generation Dates (Original HCF decontamination packaging)	1995 - 1998

[1] Waste has been repackaged into 10 canisters, containing 28 55-gallon drums with 30-gallon inner drums,

Summary Category Group:	S5000
Waste Matrix Code Group:	Heterogeneous Debris Waste
Waste Matrix Code:	S5400
TRUPACT-II Content Code (TRUCON):	SN 321
Annual Transuranic Waste Inventory Report Identification Number:	SA-W135

Waste Stream Description and Physical Form:

The Waste Isolation Pilot Plant Hazardous Waste Facility Permit - Waste Acceptance Plan (WIPP-WAP) defines a waste stream as waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity. Based on a review of the AK record and SNL/NM waste management practices, TRU debris waste from HCF decontamination operations was segregated to be managed as RH and CH waste streams. One CH TRU debris waste stream and one RH debris waste stream have been delineated based on the WIPP-WAP waste stream definition.

The basis and rationale for delineating this waste stream is as follows:

- Waste stream SNL-HCF-S5400-RH was generated by HCF research operations associated with pre- and post-irradiation examination experiments and the associated decontamination waste from the areas performing these experiments.

- Based on the review of the container documentation, the waste materials in waste stream SNL-HCF-S5400-RH consist predominantly of organic and inorganic debris materials with lesser amounts of homogeneous solids (e.g., vermiculite, Quik Solid, and Aquaset). Though the composition (e.g., cellulosics, plastic, metal) of the individual debris waste items vary between containers the materials are similar in physical form.

- Waste stream SNL-HCF-S5400-RH consists of the RH portion of the TRU waste inventory generated during the HCF decontamination process and has been characterized and delineated consistently with CH waste stream ID-SNL-HCF-S5400.

- Nuclear material storage, historic process operations, waste management, decontamination operations and subsequent waste management and repackaging operations resulted in the RH and CH TRU waste materials to be contaminated with similar radiological and chemical constituents. These containers have been segregated from the CH stream, solely due to elevated radiological content of these materials. Based

on review of the AK record the following resulted in comingling of chemical and radiological contamination in the TRU waste materials:

- Storage and frequent movement of the nuclear test materials in common HCF storage areas;
- Transfer of materials, specimens, equipment, and waste between research areas;
- Contamination from previous destructive experiments on research area surfaces and from waste from previous experiments stored in the area;
- Historic sharing of equipment between areas;
- Fume hood operations involving the preparation of experimental chemicals and the decontamination of equipment for HCF areas;
- Combination of RH waste parcels originating from CH repackaging operations conducted in the Radioactive and Mixed Waste Management Facility (RMWMF);
- The nature of the HCF decontamination program segregation of low-level, CH, and RH waste materials resulted in this RH waste stream containing predominantly post-irradiated experimental materials and contamination; and
  Cross contamination introduced during the final packaging of RH waste parcels in the same area in the AHCF.

Based on the rational above, waste stream SNL-HCF-S5400-RH meets the WIPP-WAP waste stream definition.

Waste stream SNL-HCF-S5400-RH consists of organic and inorganic debris generated during the destructive and nondestructive examinations conducted in the HCF, and includes PPE and plastic from decontamination and repackaging activities. The following are examples of materials in this waste stream:

Cellulosic: items including paper, paper wipes, cardboard, cotton coveralls, hoods, and gloves, HEPA filter media and frames, pre-filter frames, swipes, masslin cloth, vacuum cleaner bags and parts, absorbent pads, and wood chips.

Plastic: materials including PPE, Herculite cloth, bottles, jars, buckets, dishes, pipettes, tygon tubing, pipe, bags, filter cartridges, sheeting, vials, tape, synthetic mop head, and epoxy residue.

Rubber: items including non-leaded glovebox gloves, nitrile and latex gloves, gloves and booties, tubing, foam rubber, wire/cord insulation, O-rings, and gaskets

Other inorganic items: including glass jars, vials, lens, and other miscellaneous lab glassware; Absorbents including Aquaset, Quik-solid, and kitty litter types.

Metal items (ferrous materials): including stainless steel hardware; steel cans, buckets, foils, plates, trays, equipment, machinery, and electronics with steel parts, filters, tubing, fittings, rods, and tools.

Non-ferrous metals: including aluminum, brass, copper, lead, and silver. Items include foils, tools, wire, rods, tubing, fittings, gaskets, gauges, and plates.

In addition to the debris materials described above, waste stream SNL-HCF-S5400-RH may also contain lesser amounts (less than 50 percent in any container) of homogeneous organic and inorganic materials. (Note – homogeneous organic material was not specifically identified during compilation of the Waste Material Parameter (WMP) estimates, however AK indicates that it could be in the waste) Clay and vermiculite based absorbents are used during the neutralization and solidification of liquids. Solidification agents such as Quik Solid and Aquaset were also used to immobilize small amounts of unspecified acidic solutions. Although specific liquids are not Identified in container information, based on AK, solidified solutions may have included acidic and basic solutions such as nitric acid and sodium hydroxide, and solvents such as acetone,methanol, and methylene chloride.

Point of Generation: SNL/NM Building 6580, Decontamination of the HCF

Area and/or Building of Generation: Glovebox Laboratory (GBL), Steel Containment Boxes (SCBs), and Zone 2A of HCF

Generating Processes:

Description of Waste Generating Processes

The HCF in the basement of Building 6580 has been providing essential support for the reactor and other radiation facilities within TA-V since the early 1960s. In 1984, a major modification was conducted to provide additional hot cell facilities and systems in Building 6580 and to increase the capabilities of the existing HCF. The materials in waste stream SNL-HCF-S5400-RH were generated during historic experimental waste and associated decontamination of the HCF process areas. Contamination was the result of pre- and post-test processes associated with reactor fuel studies conducted in the GBL, SCBs, and Zone 2A of the HCF during the late 1970s to mid-1990s. These studies primarily involved the preparation of (Light Water Reactor) LWR and Liquid Metal Fast Breeder Reactor (LMFBR) experimental assemblies to be irradiated in the SNL/NM reactors to simulate severe accident scenarios. Following irradiation, the HCF capabilities allowed for post-irradiation examination of these assemblies. The data generated from many of these experiments was used by SNL/NM in the development of the Methods for Estimation of Leakages and Consequences of Releases (MELCOR) computer software that

models the complex physical phenomena that occur in a nuclear power plant accident. Work began on MELCOR in 1982, with the first widely distributed release of the software in 1989.

Details of HCF operations depend on specific experiment and project requirements. All involve either radioactive materials, fissile materials, or both. Types of operations conducted in the SCBs, Zone 2A, and the gloveboxes included packaging and unpackaging materials; loading materials into experiment packages; disassembly of irradiated and unirradiated packages and experiments containing radioactive or fissile materials; cutting, sectioning, coring, potting, mounting, grinding, polishing, and coating samples and materials for microscopic and other analytical examination; photography of samples; gamma counting and other radiation-emission analytical examinations; and physical properties measurements. Due to the research and development nature of the projects conducted in the HCF, development of a comprehensive process flow diagram was not feasible; however, the physical, chemical, and radiological properties of waste items was assessed to ensure that these items were consistent with the activities that were determined to generate TRU waste materials. The AK record was reviewed to compile a comprehensive list of chemicals and materials used during historic operations that may be contained in the waste stream.

Review of the AK record identified the primary research programs conducted in the SCBs, Zone 2A, and GBL described below. Waste from the SCBs and Zone 2A of the HCF primarily resulted from four experiments conducted from 1986 to 1993. These four experiments were: Melt Progression (MP) experiments, the Source Term (ST) experiments, the Damaged Fuel (DF) experiment, and the NPR experiments. The Fuel Disruption (FD), Effective Equation of State (EEOS), Sandia Transient Axial Relocation (STAR), and FALCON programs were primarily conducted in the GBL and adjacent supporting areas.

Melt Progression

The MP program included two experiments irradiated in the ACRR. MP-I was irradiated in 1989, and MP-2 was irradiated in 1992. These experiments were designed to investigate the successive melting and solidification of core materials found in a LWR during a severe accident. The initial geometry of the test section was built to simulate a partially degraded core based on the findings of the post-accident examination of Three Mile Island (TMI), Unit II core.

The MP project included the insertion of the test section into the experiment package, which was then subjected to a neutron field in the ACRR. The experiment simulated the continuation of a severe accident beyond the end stage of the TMI accident. Fission heating in the experiment simulated the fission product decay heating of a severe accident. The experiment was allowed to proceed until preset temperature limits on the supporting structures were reached or a preset fraction of the test section material had relocated due to damage. Waste

materials from the MP work include post-test preparation for metallurgical examination materials.

Source Term

The focus of the ST program was on the investigation of fission product release under severe accident conditions. Four short rods of non-irradiated fuel and four short rods of previously irradiated fuel were placed in a test section and neutronically heated 2,400 Kelvin to observe fission product release. The non-irradiated fuel rods were fabricated at Battelle Pacific Northwest Laboratories. The previously irradiated fuel was obtained from the Belgian Reactor 3 Reactor in Mol, Belgium, and was reworked in the HCF shielded glovebox. Several sample tubes with filters were sequentially opened and closed during the experiment to collect samples of the released substances. There were two tests run under this program, ST-I performed on April 28, 1987, and ST-2 performed on November 19, 1987. The materials from this program are those generated from the post irradiation examination. This examination for ST used the SCBs more extensively than any other program and included both a metallurgical examination and a chemical analysis of the filters from the sample tubes core.

Damaged Fuel

In general, the purpose of the DF program was to investigate the initial reaction of intact fuel rods during a severe accident sequence, specifically, a station blackout sequence. There were four tests in the DF experimental program. Of the four tests, only DF-4 included work in the SCBs or Zone 2A. In addition, DF-4 differed from the previous tests done in this series because the geometry of the test section was based on the boiling water reactor (BWR) geometry rather than the pressurized water reactor (PWR) geometry. The DF assembly included non-irradiated fuel enriched to 10% U-235 in zircaloy clad rods. The DF-4 experiment was irradiated on November 21, 1987, subjected to a neutron flux field in the ACRR for a period of approximately two hours. Waste included in this waste stream are those generated from the post-test preparation for metallurgical examination.

New Production Reactor

The primary goal of the NPR program tests was to assess the behavior of the fuel under transient, fuel melting conditions. The fuel was a uranium-aluminum alloy and produced significantly less particulate when cutting or polishing than the ceramic fuels. Four tests were conducted under this program, including one without radioactive materials to calibrate the thermal response of using a flooded ACRR cavity. Of the three remaining experiments, one was conducted with non-irradiated fuel and two with high burnup fuel.

All fuel used in the NPR experiments came from the SRS and was sectioned in HCF to generate samples for performing experiments in the ACRR. The non-irradiated fuel test was irradiated in the ACRR during November 1991, and the two tests using high-burnup fuel occurred between November 1991, and April 1992. Additional fuel cutting and repackaging was performed in the first quarter of 1996 so that the larger fuel section could be returned to the SRS as part of the HCF decontamination program. This additional work generated some contaminated equipment, lay-down material and fuel cuttings.

Fuel Disruption (also referred to as Fuel Dynamics)

The purpose of the FD experiments was to determine breeder reactor fuel behavior under a number of disruption models, such as cracking and breakup of solid fuel, liquid state frothing, and radial spray from molten fuel. Between 1977 and 1983, over 30 in-pile experiments were performed in the ACRR to investigate fuel disruption behavior for LMFBR loss of flow (LOF) accidents. In all experiments the timing and mode of the fuel disruption were observed with a high speed camera, enabling detailed comparisons with a fuel pin code, SANDPIN. The project involved the cutting of irradiated breeder reactor fuel. Most of the fuel was irradiated in the late 1960s and early 1970s in the EBR-II. Cutting of the fuel occurred in GB2 in an inert atmosphere, and was performed dry. Glovebox 1 was used to load the fuel pin segments into the test apparatus, prior to irradiation in the ACRR.

Effective Equation of State

The EEOS program consisted of a series of experiments designed to determine the effective vapor pressure from irradiated mixed-oxide reactor fuels heated in closed volume to a very high temperature, simulating LMFBR core disruptive accident conditions. A series of similar EEOS experiments involving unirradiated fuel were conducted in the GBL during 1982 and 1983. Planning of the irradiated fuel experiments began in 1986 and they were completed by 1993.

The experiments involved two separate assemblies containing a pressure cell and calorimeter. Assembly and fueling was done in HCF prior to irradiation at the ACRR. Fueling was performed in shielded glovebox GB9, with each experiment using 0.9 to 1.5 grams of fuel from an EBR-II irradiated pin. After irradiation, the assemblies were returned to HCF for disassembly and examination. Leak testing was conducted using a bell jar and mass spectrographic technique.

Sandia Transient Axial Relocation

The STAR program was a series of seven in-pile experiments conducted between 1983 and 1985. The objective of the STAR experiment program was to study the transient cladding and fuel relocation during the initiation phase of LMFBR hypothetical accidents. The STAR program

was an extension of the FD program that investigated the time and mode of fuel disruption during hypothetical LMFBR accidents.

In these experiments unprotected loss-of-flow accident conditions were simulated, and the accident-induced clad motion and fuel dispersal were recorded using high speed photography. Both unirradiated and irradiated EBR-II fuels were used in the STAR experiments. Assembly and disassembly of the test apparatuses involving single and multiple pins were done primarily in gloveboxes GB1 and GB2 in Room 112. Irradiation was performed at the ACRR.

Fission Activated Laser Concept

Sandia was the lead laboratory for the FALCON reactor-driven laser program from 1986 to 1995. The FALCON experiments were an SDIO defense program examining the feasibility of high power systems pumped directly by the energy from a nuclear reactor. In this concept, the highly energetic fission fragments from neutron-induced fission were used to excite a large-volume laser medium. Disassembly and reassembly of the experiment was done in the fume hood located in Room 112. Samples from the experiment were analyzed on the mass spectrometer in GB9. Fabrication of the fission foils containing enriched uranium used in the experiment were done in Room 203 and not included in this waste stream.

HCF Decontamination

During 1994, Scientific Ecology Group, Inc., prepared a Decontamination Plan for the HCF. The Decontamination Plan was intended to meet the SNL/NM requirements for decontamination, nuclear safety, As Low As Reasonably Achievable (ALARA), and waste management activities, by establishing a project organizational structure, levels of authority, and lines of communication.

This work was to be done as part of HCF routine operations and maintenance. The tentative acceptance criteria for the HCF were based on allowing future work in the area to be conducted with minimal protective clothing and reasonable stay-times. The tentative decontamination criteria were as follows:

- Removable Alpha Contamination — <100 disintegration per minute (dpm)/100 square centimeters (cm^2)
- Removable Beta-Gamma Contamination — <5,000 dpm/100 cm^2
- General Area Dose Rate — <5 milliroentgen equivalent man per hour (mrem/hr)

The Scope of Work for the Decontamination Plan included remediation of the following areas: Zone 2A; Zone 2 (also referred to as Rooms 111 and 112); reactor rooms 108 and 109; and room 212A, a small room located above reactor room 109. The work associated with Zone 2A included decontamination, dismantling, and removal of the SCBs followed by decontamination of the canyon surfaces. Other components in Zone 2A, including the overhead crane, crane rails, overhead components, and floor rails were scheduled to be removed, sectioned and packaged as required. Removal of the interior airlocks was also identified as part of the Zone 2A scope of work.

The primary task associated with rooms 108 and 109 involved the removal of sources of radioactive waste and loose surface contamination. Special consideration was given for the removal of high activity waste to an outside storage location. Zone 2 (Rooms 111 and 112) included the removal of shielded and low activity gloveboxes. This task included the removal of all debris and equipment from within the gloveboxes.

The nondestructive cleaning unit (NDC) was used sporadically during the HCF decontamination project to decontaminated equipment that was stored in the gloveboxes in Room 112, in the SCBs, and in the general HCF area. The NDC mobile decontamination facility was designed for cleaning hand tools, small parts, and larger items up to 4,000 lbs. The process could handle both metal objects and softer materials such as wood, plastics and rubber. The facility consisted of a decontamination room for cleaning larger objects, a decontamination cell (glovebox) for cleaning tools, small parts and fixtures, a count room, a liquid carbon dioxide (CO_2) storage vessel and compressor, and the ventilation/exhaust system. The decontamination room operated at a negative pressure of 1.5 inches of water vacuum to prevent airborne exhaust of radioactive materials.

The unit used dry compressed air to propel CO_2 pellets (dry ice) onto the contaminated surface. The pellets shatter, flash into dry CO_2 gas and undergo roughly a ten-fold increase in volume upon impact with the surface to be decontaminated. The cleaning action results from the rapidly expanding gas penetrating the surface of the item to be cleaned. Loose particles of contamination were flushed away by expanding gas. Dislodged microscopic particles were captured on the exhaust system air filter, and larger particles that were dislodged fell to the bottom of the containment area and were vacuumed away to dry air filters.

The unit's air filtration system consisted of three sets of filters in series. Ideally, the filters were replaced when the exposure rate at the external filter housing reached 25 mrem/hr, and exposure rates were not to exceed 200 mrem/hr.

RCRA Determinations – Hazardous Waste Determinations

Historical Waste Management

The assignment of these EPA HWNs was based on a review of the available AK documentation assessing chemical inputs to the hot cell operations to identify hazardous material potentially contaminating waste stream SNL-HCF-S5400-RH. In addition, material safety data sheets (MSDSs) and other manufacturer information were obtained for the commercial products to determine the presence of RCRA regulated constituents. The table below, titled Hot Cell Facility Chemical Identification and Use Summary, lists the specific chemicals identified and associated HWNs assigned to the waste stream.

Based on a review of SNL/NM historic waste management practices and characterization performed previously, the EPA HWNs assigned to HCF TRU waste containers have been maintained. The HWNs historically assigned to HCF decontamination TRU waste containers were D005 (barium), D006 (cadmium), D007 (chromium), D008 (lead), D011 (silver), and F005 (toluene). SNL/NM has historically characterized the HCF TRU debris waste on a container basis and segregated specific waste items containing or potentially mixed with hazardous constituents for on-site waste management purposes. The TRU debris waste from the HCF does consist of containers historically segregated by the generator into separate mixed and non-mixed waste streams based on the hazardous constituent identified for specific containers. However, the TRU waste materials originated from the same process and the waste population would have originally contained these items resulting in similar chemical and radiological contaminants in the TRU waste streams. For this reason, the assignment of EPA HWNs to waste stream SNL-HCF-S5400-RH considered the HWNs assigned by TRU waste generators to HCF TRU waste debris containers, in addition to the review of the AK record described below.

Hot Cell Facility Chemical Identification and Use Summary

Chemical/Material	Use/Description	AK Source	EPA HWNs
1,2-dichloroethane	Found in sample analysis of filters from Glovebox 6/7.	C1021, M1010	D028
1,1,1-Trichloroethane	Found in sample analysis of filters and materials from Gloveboxes 4/5 and 6/7. Used in the HCF.	M1010, P1104	F002
1,1,2-Trichloro-1,2, 2-trifluoroethane (Freon-113, Freon TF)	Found during sampling of the Tool Decontamination Unit (TDU) micro filter and TDU charcoal filter for Glovebox 9. Used as a solvent in the TDU. Used as a cutting lubricant in Gloveboxes 4-7 and 9. Found during the cleanup of Glovebox 4/5 and 6/7. Used as a coolant during drilling of test section from ST-1 and ST-2. Used as a lubricant for sample polishing for the Damaged Fuel Program and NPR Program.	C1021, M1010, P1015, P1102	F002
Arsenic	Found in sample analysis of materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood.	C1021	D004
Barium	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Fission product present in analysis of the ST-1 and ST-2 experiments.	C1021, M1010, P1018, P1025, P1046	D005*
Benzene	Found in sample analysis of materials from Glovebox 4/5. Used in the HCF.	C1021, M1010, P1104	F005
Brass	Items found during the cleanup of Gloveboxes 1, 2, and 4/5. Found during the cleanup of SCB 3. Materials present in 005940 TRU-HCF-97-06 C980391 and 005940 TRU-HCF-97-05 C980392.	M1010, M1013, P1015, P1102	D008
Cadmium	Cadmium filters and ring used in the pressure cell and the calorimeter for the EEOS experiments. Used in the HCF, possibly in the metal evaporator/coater. Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7, and 9, and the fume hood. Component of the control rod for the DF-3 experiment. Used in uranium alloy experiments. Present as tramp material in the aluminum alloys used in the New Production Reactor Program.	C1010, C1012, C1021, I1001, I1002, I1003, I1004, I1005, M1010, M1011, P1004, P1005, P1006, P1007, P1008, P1011, P1022, P1102, P1104	D006*
Carbon tetrachloride	Found in sample analysis of filters from Glovebox 6/7. Used in the unshielded gloveboxes.	C1021, M1010, P1104	D019
Chloroform (trichloromethane)	Used in the HCF.	P1104	D022
Chromel/Aluminel (nickel-chromium/nickel-magnesium-aluminum)	Wires used in thermocouples for EEOS, DFR, and ST-2 experiment.	I1004, I1019, I1028, U1012	D007

Chemical/Material	Use/Description	AK Source	EPA HWNs
Chromium	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Present as tramp material in the aluminum alloys used in the New Production Reactor Program. Present in the MP-2 prefabricated construction.	C1021, M1010, P1102	D007*
Chromium oxide	Used in the EEOS experiments.	P1001	D007
Lead	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Used for shielding in the HCF and in various experiments processed through the HCF. In the form of bricks, blankets, sheets, shot, pellets, wool, pigs, etc. Used as counter weights on manipulator arms. Found in analysis of filter material (HEPAs and prefilters). Used as shielding in the containment and filter structure for the EEOS experiments. Screens and filters used when performing gamma-ray tomography. Possibly present in solder pieces and in electrical components present in waste parcels.	C1021, I1001, I1002, , I1021, I1028, I1039, I1046, I1048, I1053, M1001, M1003, M1004, M1006, M1010, M1011, M1013, M1014, M1016, P1005, P1006, P1008, P1015, P1022, P1104, U1012	D008*
Methylene chloride	Found in sample analysis of filters and materials from Gloveboxes 4/5 and 6/7. Used in the HCF.	C1021, M1010, P1104	F002
Methyl ethyl ketone (MEK)	Found in sample analysis of materials from Gloveboxes 4/5 and 6/7. Used in the HCF.	C1021, M1010, P1104	F005
Mercury	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Mercury vapor lamps used in UV-ozone box in the HCF.	C1021, M1010, P1001	D009
Nichrome oxide	Component of mica used in the EEOS experiments.	P1001	D007
Pyridine	Used in the HCF.	P1104	F005
Silver	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Wire and coupons used in the ST-1 and ST-2 experiments. Parts used in construction of the ST-1 and ST-2 experiments. Component of the control rod for the DF-3 experiment. Present in the solder used in electronic parts in the HCF and in thermocouples for the EEOS experiments. Present in the Melt Progression Program test section. Possibly present in solder pieces and in electrical components present in waste parcels. Wire used for silver plating present in waste parcels.	C1021, I1004, I1005, I1023, I1039, I1053, M1010, M1013, M1016, P1004, P1007, P1011, P1015, P1022, P1025, P1102, P1104	D011*
Silver chloride	Used in the calibration solution for an ion-selective electrode.	P1102	D011
Silver nitrate	Used in the HCF.	P1104	D011

Chemical/Material	Use/Description	AK Source	EPA HWNs
Toluene	Used in the unshielded gloveboxes. Found in sample analysis of filters for Gloveboxes 6/7 and 9.	C1021, M1010, P1104	F005*
Trichloroethylene (trichloroethene)	Found in sample analysis of filters from Glovebox 6/7. Used to ultrasonically clean EEOS components. Used in the unshielded gloveboxes.	C1021, M1010, M1011, P1001, P1004, P1008, P1104	F002

*EPA HWN also assigned by the generator to containers in this waste stream.

Ignitability, Corrosivity, and Reactivity

The materials in this waste stream do not meet the definition of ignitability (D001) as defined in 40 CFR 261.21. The materials are not liquid and liquids were not added to containers during packaging. This material will not cause fire through friction, absorption of moisture, or spontaneous chemical changes, and procedures did not allow packaging of pyrophoric materials. This material is not a compressed gas or an oxidizer. Liquids are solidified with absorbent (i.e., Aquaset, Petroset). The materials in this waste stream are therefore not ignitable wastes (References P1015, M1016, and P1102).

The materials in this waste stream do not meet the definition of corrosivity (D002) as defined in 40 CFR 261.22. The materials are not liquid and liquids were not added to containers during packaging. In addition, absorbents (e.g., Aquaset, Petroset) were added to liquids when generated. . AK indicated that the HCF used absorbent to solidify nitric acid leachates and ion chromatography solutions. The materials in this waste stream are therefore not corrosive wastes (References P1015, M1016, and P1102).

The materials in this waste stream do not meet the definition of reactivity as defined in 40 CFR 261.23. The materials are stable and will not undergo violent chemical change. The materials will not react violently with water, form potentially explosive mixtures with water, or generate toxic gases, vapors, or fumes when mixed with water. Although sodium and sodium-potassium bonded fuel capsules were disassembled and examined, the sodium and sodium-potassium were removed and neutralized with alcohol (e.g., n-butyl alcohol) during capsule disassembly or examination. The materials do not contain cyanides or sulfides, and are not capable of detonation or explosive reaction. The materials are not liquid and liquids were not added to containers during packaging. The materials in this waste stream are therefore not reactive wastes (Reference P1104).

Based on SNL/NM waste management practices, the materials contained in waste stream SNL-HCF-S5400-RH do not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003) as defined in 40 CFR 261.21, 261.22, and 261.23, respectively. The containers

in this waste stream will be evaluated in accordance with the WIPP-WAP using visual examination prior to shipment to ensure the waste is not ignitable, reactive, or corrosive.

Toxicity Characteristic Constituents

Based on review of AK relative to inputs to the hot cell and glovebox operations conducted in the HCF, waste stream SNL-HCF-S5400-RH is contaminated with toxicity characteristic compounds as defined in 40 CFR 261.24. Where a constituent has been identified and there is no or limited quantitative data available to demonstrate that the concentration of a constituent is below regulatory threshold levels, the applicable EPA HWN is applied to the waste stream.

Heterogeneous debris waste from the HCF contains or is contaminated with toxicity characteristic metals. Based on the references identified in the preceding Hot Cell Facility Chemical Identification and Use Summary table, EPA HWNs D004, D005, D006, D007, D008, D009, and D011 are assigned to waste stream SNL-HCF-S5400-RH (References DR1001 and DR1003).

The AK sources identified the use of organic toxicity characteristic compounds, including benzene (D018), carbon tetrachloride (D019), chloroform (D022), 1,2-dichloroethane (D028), methyl ethyl ketone (D035), pyridine (D038), and trichloroethylene (D040). Trichloroethylene is identified as an F-listed solvent and is assigned EPA HWN F002. Specific uses were not found in the AK for benzene, methyl ethyl ketone, and pyridine, therefore EPA HWN F005 was assigned for these compounds. Because the more specific F-listed EPA HWN has been assigned for these compounds, assignment of the corresponding toxicity characteristic HWNs (D018, D035, D038, and D040) is not necessary. HWNs D019, D022 and D028 are assigned to waste stream SNL-HCF-S5400-RH (References DR1001, DR1003, C1021, M1010, M1011, P1001, P1004, P1008, P1015, P1102, and P1104).

F-Listed Constituents

Based on review of AK relative to inputs to waste stream SNL-HCF-S5400-RH, this waste stream may contain or be mixed with F-listed hazardous wastes from nonspecific sources listed in 40 CFR 261.31. As shown in the preceding Hot Cell Facility Chemical Identification and Use Summary table , F002 and F005 listed solvents were used in operations conducted in the HCF. F001 constituents, including methylene chloride, 1,1,1-trichloroethane, trichloroethylene, 1,1,2-trichloro-1,2, 2-trifluoroethane, and carbon tetrachloride were used in HCF operations. However, EPA has provided a regulatory clarification that the F001-listing is only appropriate when listed solvents are used in a large-scale degreasing operation, such as cold cleaning or vapor degreasing on an industrial scale. This waste was not generated from large-scale

degreasing operations, and therefore, EPA HWN F001 will not be assigned to the waste stream. F003 constituents, including acetone, butyl alcohol, ethanol, methanol, methyl isobutyl ketone, and xylene are listed solely because these solvents are ignitable in liquid form. The waste stream does not exhibit the characteristic of ignitability because it is not liquid; therefore, F003 is not assigned. Waste stream SNL-HCF-S5400-RH is assigned F-listed EPA HWN F002 for methylene chloride, 1,1,1-trichloroethane, trichloroethylene, and 1,1,2-trichloro-1,2, 2-trifluoroethane. Waste stream SNL-HCF-S5400-RH is also assigned F-listed HWN F005 for benzene, methyl ethyl ketone, pyridine, and toluene. Trichlorofluoromethane (Freon-11) was used as a fuel simulant, not as a solvent, and therefore HWN F002 was not assigned for this chemical (References DR1001, C1004, C1021, M1010, M1011, P1001, P1004, P1008, P1015, P1102, and P1104).

No specific solvent use was identified for some F-listed constituents. If documentation is not available to demonstrate a non-solvent use for an F-listed constituent, the F-listed EPA HWN is assigned to the waste stream. For this reason, the appropriate F-listed EPA HWN has been assigned for chemicals identified in facility inventories for chemicals that are commonly used for their solvent properties.

P-, U-, and K-Listed Wastes

Based on review of AK relative to inputs to the HCF process, decontamination, and waste repackaging operations, waste stream SNL-HCF-S5400-RH does not contain and is not mixed with a discarded commercial chemical product, an off-specification commercial chemical product, or a container residue or spill residue thereof as defined in 40 CFR 261.33 (References DR1001, DR1003, I1042, I1053, M1016, and P1101).

Beryllium was in the HCF in the form of an oxide. The identified source of beryllium in the AK record indicates that solid beryllium oxide was used as a thermocouple insulator in DFR experiments. Since beryllium powder, was not utilized the waste stream does not meet the definition of P015 as defined in 40 CFR 261.33 (References DR1001, DR1003, I1042, I1053, M1016, and P1101).

The review of the AK source documentation did not identify the disposal of unused hydrofluoric acid (U134) or disposal of materials contaminated with spills of this acid; therefore the EPA HWN U134 is not assigned to waste stream SNL-HCF-S5400-RH.

Waste stream SNL-HCF-S5400-RH does not include any of the manufacturing process wastes from the specific industries or sources listed in 40 CFR 261.32. Waste Stream SNL-HCF-S5400-RH is not assigned any U-, K-, or P-Listed EPA HWNs.

Other Waste Streams generated From the Same Buildings and Processes

There is an identically generated contact-handled waste stream ID-SNL-HCF-S5400.

Polychlorinated Biphenyls

No sources of polychlorinated biphenyls (PCBs) were identified as inputs into waste stream SNL-HCF-S5400-RH. PCB items, such as light ballasts, are not identified in the RH TRU debris waste (Reference M1016).

Prohibited Items

Based on a review of AK, waste stream SNL-HCF-S5400-RH potentially could contain the following prohibited items:

- Unpunctured aerosol cans (e.g., spray paint cans)
- Prohibited liquids
- Sealed containers exceeding 4 liters (e.g., buckets, bottles, cans)

The containers in this waste stream will be evaluated in accordance with the WIPP-WAP using visual examination prior to shipment to ensure the waste does not contain prohibited items. Waste drums with prohibited items will be treated and/or repackaged to remove the items prior to shipment

Method for Determining Waste Material Parameter Weights Per Unit of Waste

The WMP weight percentages for this waste stream were estimated by reviewing the container paperwork. Since container paperwork did not always indicate weights for individual items placed in a parcel or drum, these weights were estimated based on the waste description. For most parcels, the net weights were taken from the SNL Radioactive Waste/Nuclear Material Disposition Department Radiological Form included in the DR documentation. A few parcels had other Disposal Request documentation that was viewed as more accurate so that was used. The WMP data are presented in the following table.

Waste Stream SNL-HCF-S5400-RH Waste Material Parameters

Waste Material Parameter	Average Weight Percent (Wt%)	Wt% Range[1]
Iron-based Metals/Alloys	62.1%	3.0% - 95.0%
Aluminum-based Metals/Alloys	10.1%	1.0% - 100.0%
Other Metals	3.8%	1.0% - 80.0%
Other Inorganic Materials	7.7%	0.1% - 100.0%
Cellulosics	5.6%	0.5% - 50.0%
Rubber	1.6%	0.5% - 11.1%
Plastic (waste materials)	8.3%	0.5% - 50.0%
Inorganic Matrix	0.8%	3.3% - 10.0%
Organic Matrix	0.0%	0.0% - 0.0%
Soils/Gravel	0.0%	0.0% - 0.0%
Total Inorganic Waste Average	**84.5%**	
Total Organic Waste Average	**15.5%**	

[1] Range includes lowest non-zero estimated values for parcels prior to repackaging

List of AK Sufficiency Determinations

There are no AK sufficiency determination requests for this waste stream.

Transportation

This waste stream meets the requirements for TRUCON code SN 321.

Beryllium

Beryllium oxide was in the HCF as an insulator in some thermocouples. The identified sources of beryllium in the AK record do not indicate that significant quantities of beryllium were utilized. Based on the identified presence and use of beryllium, beryllium is not expected to exceed one percent in any payload container.

Radionuclide Information

To compile a summary of generator reported radionuclide data for waste stream SNL-HCF-S5400-RH, DR forms were reviewed for historical NDA data for the 32 waste parcels originally presented to comprise the waste stream. (Note – After initial development of the Reported Radionuclides Table, several parcels were determined not to be RH, but the Table was not updated because the changes would not have been significant.) The table, Waste Stream SNL-HCF-S5400-RH Reported Radionuclides, below indicates the waste is contaminated mainly with cesium (Cs-137), strontium (Sr-90), and cobalt (Co-60), and lesser quantities of americium (Am-241 and Am-243), plutonium (Pu-238, Pu-239, Pu-240, and Pu-242), uranium (U-234, U-235, and U-238), cesium (Cs-134), and thorium (Th-234).

Payload management will not be utilized for this waste stream.

Waste Stream SNL-HCF-S5400-RH Reported Radionuclides

Radio-nuclide	Number of Parcels with Report-ed Radio-nuclide	Total Radio-nuclide Weight %[1,5]	Total Radio-nuclide Curie %[2,5]	Radionuclide Wt% Range for Individual Parcels[3,5]	Radionuclide Ci% Range for Individual Parcels[4,5]	Average Ci/Parcel	Expected Present
WIPP Required Radionuclides							
Am-241	32	0.85%	1.24%	0.2 - 3.87%	Trace[5] - 4.72%	6.03E-02	Yes
Pu-238	31	0.07%	0.50%	0 - 4.57%	0 - 1.28%	2.45E-02	Yes
Pu-239	32	17.66%	0.47%	4.7 - 95.31%	Trace - 2.09%	2.27E-02	Yes
Pu-240	18	0.18%	0.02%	0 - 8.75%	0 - 0.05%	8.47E-04	Yes
Pu-242	4	0.02%	Trace	0 - 29.33%	0 - 0.04%	1.31E-06	Yes
U-233	Not Reported						No
U-234	4	0.12%	Trace	0 - 0.14%	0 - Trace	1.51E-05	Yes
U-238	4	54.25%	Trace	0 - 64.76%	0 - Trace	3.78E-07	Yes
Cs-137	32	1.59%	59.25%	0.2 - 88.85%	44.57 - 96.97	2.87E+00	Yes
Sr-90	32	0.38%	21.94%	0.0 - 7.28%	1.36 - 47.24	1.06E+00	Yes
Additional Radionuclides							
U-235	4	24.78%	Trace	0 - 29.57%	0 - Trace	1.11E-06	Yes
Am-243	2	Trace	Trace	0 - 1.25%	0 - 0.10%	1.92E-06	Yes
Co-60	22	0.03%	12.90%	0 - 7.67%	0 - 54.02	6.26E-01	Yes
Th-234	2	Trace	Trace	0 - Trace	0 - Trace	3.11E-07	Yes
Cs-134	27	Trace	0.02%	0 - Trace	0 - 0.45%	8.84E-04	Yes

1. This listing indicates the total weight percent of each radionuclide over the entire waste stream.
2. This listing indicates the total activity (curie) percent of each radionuclide over the entire waste stream.
3. This listing is the weight percent range of each radionuclide on a container-by-container basis. Some containers with "0" listed as the lower range, will not contain the specified radionuclide.
4. This listing is the curie percent range of each radionuclide on a container-by-container basis.
5. "Trace" indicates <0.01 weight percent or activity percent for that radionuclide.

AK SOURCE DOCUMENTS

Tracking Number	Title	Document Number	Date
C1001	Memo from Gwendolyn J. Pirtle to Charles G. Thomas, David S. Barber, and Carlos S. Medrano re: Hot Cell Facility Decontamination	NA	05/04/1995
C1002	Letter from Ted R. Schmidt, Manager of Reactor Development and Applications Department, to A.R. Chernoff re: Sandia Hot Cell Facility Operational Safety Requirements Addendum	NA	12/12/1990
C1003	Memos relating to the Nondestructive Cleaning Rental and H&S Information	NA	1995
C1004	Reactor Accident Experiments and Funding	NA	Summer 1978
C1005	Memo from Cathy A. Ottinger re: Candidate Auxiliary Hot Cell Facility Containers	NA	02/09/1999
C1006	Memo from F. Gonzalez and D. Fenstermcher to S. Wright re: Loading of Experiment FD4.4 and FD4.5	NA	11/17/1982
C1008	Memo from D.M. Haaland to R.L. Coats re: High Temperature Equation-of-State Studies of Fast Breeder Reactor Fuels: Evaluations Summary	NA	08/14/1975
C1009	Memo from K.T. Stacicer to Picard re: Radiometric Temperature Measurement	NA	02/12/1983
C1010	Memos, re: SRSC, ACRR, ACPR, RCSC, & ACPR Meeting Minutes; TRAN-GAP Fuel Loading Procedure and Approval; Fuel Loading Procedures for Exp in Bldg. 6597; Removal and Encapsulation of ST-1 Fuel Assembly; ST-1 Cutting Procedure; Handling Procedures for WLM Ex	C010	04/75 to 1989
C1011	Memo: Explosive Valves in the ST-2 Experiment	C011	November 2, 1987
C1012	Memos: draft Section 5 and 6 of the ARSR quarterly reports	C012	February 1983

Tracking Number	Title	Document Number	Date
C1013	Memo: Suggested Instrumentation for the Fuel Disruption Tests.	NA	January 13, 1982
C1014	Memos: Working Document for Preliminary DFR Test Section Design Concepts; DFR Visual Diagnostics; Preliminary Calculations for the DFR Steam System.	C014	September 28, 1981
C1015	Memo: Hydrogen Flow in DFR-PWR Experiments	C015	February 10, 1984
C1016	Memo: Fission Product Release Rates for Proposed DFR Pre-Irradiated Fuel Experiments	C016	December 22, 1982
C1017	Memo: Preliminary Evaluation of Pre-Irradiated Fuel Experiments for the DFR Program	C017	February 7, 1983
C1018	Sandia Hot Cell Facility Operational Safety Requirements Addendum and associated memos	SAND88-1723 Addendum	12/12/1990
C1019	Memo from J. A. Reuscher re: Handling and Accountability of Special Nuclear Materials in TA-V	NA	02/15/1979
C1020	Memo from Susan Bourcier, SNL to Manny Trujillo and Tanio Hake re: ST 1/2 SNM Accountability Closeout	NA	06/20/1995
C1021	Memo from Susawn Longley to File re: Characterization of waste from Glove Box 9	NA	02/05/1997
C1022	Memo from Michael Enghauser to Susan Longley re: Characterization of HCFRW1, HCFRW5, and KC95-02	NA	09/11/1996
C1023	Memo from Susan Longley to Sherron Hirdman re: Transuranic activity levels in waste from glove boxes 1/2 and 9	NA	02/12/1997
C1024	Memo from Michael Enghauser to Susan Longley re: Characterization of GB1CAN1, GB1CAN2, GB1CAN3	NA	09/12/1996
C1025	Memos Concerning a 2 kg. Pu-239 puck to be transferred from SNL to LANL.	NA	03/01/1995
C1026	Memo Concerning Revision to SNLA Application for Acceptance of LLW at NTS	NA	09/09/1994

Tracking Number	Title	Document Number	Date
C1027	Memo Concerning Management Readiness Review of Pu Repackaging Project at the RMWMF	NA	11/02/2000
C1028	Memo Concerning Independent Surveillance Report	NA	06/28/1995
C1029	Memo Concerning Area V Hot Cell Glove Box Waste Characterization	NA	07/18/1995
C1030	Memo Concerning the Characterization of Samples LSAs #1573 (19000902), #1560 (19000903), #1559 (19000904), #1572 (19000905), #1564 (19000906), and #1575 (19000910)	NA	01/28/2002
C1031	In-Pile Vapor Pressure Measurements on UO_2 and $(U, Pu)O_2$	KfK3939	08/1985
C1032	Preparation of Gas Sampling Cylinders for Waste Packaging at the TA-V Hot Cell Facility (HCF)	005963	07/31/1997
C1033	Characterization of Sample LSA Box 1561	NA	08/01/2001
C1034	Characterization of Samples SAF-T-drums #503047 (19000907) and #503048 (19000908)	NA	01/29/2002
C1035	Characterization of Sample Metal Shield and Bracket/Cavity (19000909)	NA	01/30/2002
C1036	Status of Sandia's Disposition Program	NA	07/15/1996
C1037	Ken Reil Interview; Betty Humphrey	NA	2/19/2008
C1038	Ken Reil Interview; John Kleckner	NA	2/3/2010
C1039	Waste Material Parameter Memorandum for Waste Stream SNL-HCF-S5400-RH	NA	2/1/2010
C1040	Memo re: Changes to SRS-NPR Irradiated Fuel Sample Cutting Instructions; Letter from SRS to Argonne, re: Information on the MK22/K-13 Fuel Assemblies; SNL Memo, re: Closeout of Modification/Expenditure Form No. 2691 (XR2 recovered depleted fuel pellets)	NA	1991; 09/12/1989
C1041	Memos re: Falcon Experiment procedure; Summary of Action Items from August 2, 1984 Meeting; Modification of Hot Cell Bell Jar/Mass Spec	NA	08/03/1984; 1986

Tracking Number	Title	Document Number	Date
C1042	Memorandum to Ines Triay: Determination and Findings, Defense Origin of Nuclear Waste, Kerr-McGee Waste	NA	4/15/2005
C1043	Memorandum to CCP Central Records, Evaluation of Kerr-McGee Fuel Production and FFTF History	NA	6/28/2004
C1047	Record of Communication between J. Kleckner and T. Mojica regarding RH final packaging configuration	NA	2/21/2011
DR1001	Discrepancy resolution for the assignment of EPA Hazardous Waste Numbers	NA	02/15/2011
DR1002	Discrepancy Resolution for Container #P1110154 (Parent Container C980313)	NA	04/21/2011
DR1003	Discrepancy Resolution: Assignment of EPA Hazardous Waste Numbers	Revision 1	8/12/2011
I1001	EEOS Mass of Cadmium, Lead, and Remaining Package	NA	NA
I1002	Experiment Plan for Effective Equation of State (EEOS) Experiments with Irradiated Fuel	I002	January 1986
I1003	Design of EEOS Pressure Cell and In-Pile Calorimeter	NA	NA
I1004	Damaged Fuel Relocation (DFR) Experiment DF-2: Results and Analyses	SAND86-1441	December 1989
I1005	Damaged Fuel Experiment DF-4: Test Result Report	NA	NA
I1006	Summary of Heating Conditions and Disruption for Each Fuel Disruption Experiment	NA	October 1981
I1007	Fuel Disruption Notes: FD1, FD2, HRR, FF and IF FF	NA	NA
I1009	Fuel Disruption Experiment Plan for the FD2/4 Series	NA	July 1981
I1010	ACRR Source Term Tests, Project Overview	NA	NA
I1011	ST-2 Operation Checklist	Number 19 through 21	11/19/1987
I1012	Star-5 Quick Look Report	NA	06/27/1985

Tracking Number	Title	Document Number	Date
I1013	STAR-6 Very Short Quick Look Report	NA	NA
I1014	Non Destructive Cleaning, Mobile Decontamination Unit, Narrative Log	NA	08-01-1995
I1015	Effective Equation of State Experiments	5222	NA
I1016	ACRR Source Term Experiments, Program Overview	NA	NA
I1017	Annular Core Research Reactor Experiment Plan	NA	08/26/1983
I1018	Project/ Experiment Quality Plan for Damaged Fuel Relocation (DFR)	Form RREP-II-5-1	06/01/1983
I1019	Annual Core Pulse Reactor Experiment Plan for EEOS with Report (EEOS Experiments)	NA	03/31/1975
I1020	Analysis of the DF-1 Experiments using SCDAP	I020	August 1985
I1021	Damaged Fuel Relocation (DFR) Experiments Damage Fuel (DF) Series ACRR Experiment Plan	I021	July 1983
I1022	Handwritten Notes of a proposal for an Experimental Program	NA	NA
I1023	Catalog pages of Hardware for the Source Term Experiments	NA	NA
I1024	Detailed ST-2 Procedures and Gas Manifold Operations; ST-1 Procedures for Gas Manifold Operation; Procedure for Gas Manifold Operation for ST-2	NA	November 1987
I1025	Project/Experiment Quality Plan for ACRR Source Term Experiments	RREP-II-5-1	March 1986
I1026	Severe Accident Source Term Information Needs and Capabilities	NA	April 9-11, 1984
I1027	Notes of Ken Reil regarding severe accident experiments.	NA	August 27, 1982
I1028	Damaged Fuel Relocation (DFR) Experiments: Damaged Fuel (DF) Series DF-2 ACRR Experiment Plan	NA	August 1984
I1030	Hot Cell Facility (HCF) Decontamination Plan	NA	December 13, 1994

Tracking Number	Title	Document Number	Date
I1031	DF-2 Experiment Quick Look Report	NA	NA
I1032	Notes describing the differences between DF-1 and DF-2 Experiments	NA	NA
I1033	Procedures for Gas Manifold Operation, Leak Rate Measurement (Room 107 and Hot Cell) and Back Fill Operations for ST-1.	NA	NA
I1034	ST-1 Procedures in Hot Cell	NA	NA
I1035	Hot Cell Requirements for the Source Term Experiments	NA	NA
I1036	Safe Operating Procedures for Source Term Outside Cask Handling Operations	NA	NA
I1037	Operational Safety Requirements for the Hot Cell Facility	NA	September 24, 1986
I1038	Safe Operating Procedures for the Hot Cell Facility in the Basement of Building 6580	NA	December 1986
I1039	ST-1 Filter Wire Analysis Procedures	NA	NA
I1040	HCF Procedures for the Recovery of the Fuel/Target and gas sample bottles from the NPR C Series	NA	April 6, 1992
I1041	AHCF Campaign Planning Procedure	AP/AHCF-CT/04-001	NA
I1042	Work Instructions for Repackaging TRU Waste at Sandia National Laboratories/New Mexico DRAFT	SNL-WP-001, R0	NA
I1043	New Production Reactor Program QA Manual	NA	08/28/1992
I1044	Quality Assurance Program Experiment Requirements Annular Core Research Reactor Facility	NA	NA
I1045	Core Operating Documents: Administrative Procedures, Instructions, Guidelines, and Directives	AHCF/AP/01	12/01/04
I1046	Characterization of Excess Lead	6432 OP-03-002	August 6, 2003
I1047	Radioactive Material Handling and Storage	6782 AP/04-001	05/27/2005

Tracking Number	Title	Document Number	Date
I1048	Lead Characterization and Repackaging	CHAR/AHCF COP/2004-01	NA
I1049	Radioactive Material Inventory Control Procedure	NDC-OP-2	July 24, 1995
I1050	Decontamination Operation Procedure	NDC-OP-1	08/01/1995
I1051	Equipment Decontamination Request Instruction	NDC-INST-1	07/28/95
I1052	NDC Instruction Facility Maintenance Request Instruction	NDC-INST-2	07/20/1995
I1053	Transuranic Waste Repackaging Plan	NA	04/30/2008
I1054	Radioactive Material Handling and Storage in the RML	RML-AP-001	NA
M1001	Sandia National Laboratories Primary Hazard Screening (PHS)	SNL9A00349-007	07/08/2003
M1002	Sandia National Laboratories Primary Hazard Screening (PHS)	PHS Number: SNL9A00349-006	05/19/2003
M1003	Hazards Analysis (HA): Hot Cell Facility	SNL9A00349-006	May 27, 2003
M1004	Radiological Survey Form for Post Job and Lead Brick Release and associated supporting data	NA	03/22/1996
M1005	NDC Operations Logs, Decontamination Operations Checklists, Equipment Decontamination Requests	NA	1995 through 1996
M1006	Completed Equipment Decontamination Requests; Radiological Work Permits; Decontamination Operations Checklists, etc. for NDC Trailer	NA	1995
M1007	Collection of MSDSs	NA	Various
M1010	Disposal Request #005934	NA	March 31, 1998
M1011	Disposal Request #005934	NA	March 31, 1998
M1012	AHCF Instrument and Detection Slides	NA	NA
M1013	Review of TRU Disposal Requests: 001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080	NA	NA

Tracking Number	Title	Document Number	Date
M1014	Readiness Assessment Plan for the Non-Destructive Cleaning Mobile Decontamination Unit	NA	July 20, 1995
M1015	Miscellaneous Articles and Public Extracts	NA	1976 to 2008, not inclusive
M1016	TRU waste Disposal Requests	NA	Various
M1019	Collection of Spreadsheets listing initial HCF CH and RH TRU waste Invetories and Miscellaneous Data	NA	Various
M1020	Process Knowledge Evaluations (PKE) for radiological ratios (e.g., PKE00044 and PKE00047)	NA	Various
M1021	Memo to Record, re: Evaluation of Radionuclide Activity Ratios for Hot Cell Facility Wastes (PKE00044 and PKE00047); Memo to Record, re: PKE000047 Radionuclide Activity Ratios	NA	06/24/2004; 06/24/2004
P1001	Contamination Control in Sandia Equation of State Experiments	SAND80-1277	October 1980
P1002	In-Pile Calorimetry in the Joint Sandia/KfK Equation of State Experiments on Nuclear Fuel	SAND80-2575	February 1981
P1003	A Model for Effective Equation of State of Irradiated Fast Reactor Fuel	NA	July 9, 1991
P1004	Joint In-Pile Equations of State Series on Nuclear Fuels at Sandia National Laboratories	SAND80-1794	November 1980
P1005	Vapor Pressure Measurements on Liquid Uranium Oxide and (U,Pu) Mixed Oxide	NA	January 1989
P1006	Measurements of the Total Pressure from Irradiated (U,Pu) Mixed Oxide	NA	August 1990
P1007	Proceedings of the International ANS/ENS Topical Meeting on Thermal Reactor Safety, Results of the ACRR-DFR Experiments	ISBN Number 0-89448-121-5 Volume 3	February 2-6, 1986
P1008	In-Pile Vapor Pressure Measurements on $(U)O_2$ and $(U,Pu)O_2$	Kfk 3939	August 1985
P1009	Analysis of Mixed Oxide Fuel Irradiated in EBR-II Measured as Predicted Burn-Up	HEDL-TME 77-60, UC-79b	May 1978

Tracking Number	Title	Document Number	Date
P1010	In-Pile Determination of Fuel Disruption Mechanisms under LMFBR Loss of Flow Accident Conditions		October 1985
P1011	The DF-4 Fuel Damage Experiment in ACRR with a BWR Control Blade and Channel Box	NUREG/CR-4671, SAND86-1443	November 1989
P1012	Fuel-Disruption Experiments Under High-Ramp-Rate Heating Conditions	NUREG/CR-3662, SAND81-0413	October 1983
P1013	Technical Safety Requirements for the Auxiliary Hot Cell Facility	SAND2003-4491	February 2004
P1014	Fission Rates, Burnup, and Neutron Flux-Fluence-Spectra Characterization for Mixed Oxide Fuel Experiments in the EBR-II	HEDL-TME 75-74, UC-79b,d	January 1976
P1015	Sampling and Analysis Plan for Characterization of Waste Arising From Hot Cell Facility Glovebox Decontamination	PLA 95-28	October 12, 1995
P1016	In-Pile Observation of Fuel and Clad Relocation During LMFBR Core-Disruptive Accidents	SAND 86-1416	April 1989
P1018	Fission Product Release and Fuel Behavior of Irradiated Light Water Reactor Fuel Under Severe Accident Conditions, The ST-1 Experiment	NA	November 1990
P1019	DOE Reactor-Pumped Laser Program	SAND93-27196	NA
P1020	FALCON Reactor-Driven Laser Experiments Show Potential	NA	October 1991
P1021	Fission Activated Laser as Primary Power for CW Laser	SAND93-1524C	December 1993
P1022	Damaged Fuel Experiment DF-1	SAND86-1030	January 1990
P1023	Design and Performance Characteristics of the Annular Core Research Reactor	SAND79-0129C	1978
P1024	Utilization of the Sandia ACRR as a Fast Reactor Safety Test Facility	SAND79-0109A	1978
P1025	ACRR Fission Product Release Tests: ST-1 and ST-2	SAND88-0597C	August 1988
P1026	LMFBR Mixed Oxide Fuels Development Semi-Annual Report, July-December 1975	HEDL-TME 76-24	February 1976

Tracking Number	Title	Document Number	Date
P1027	Fabrication, Irradiation, and Post-Irradiation Examination of Mixed Oxide Fuel Pins, PNL-3-23, 27, and 33	HEDL-TME 76-6	January 1976
P1028	Leak Path Factor Evaluation: A MELCOR Application for Nonreactor Nuclear Facilities	WSRC-MS-2004-00296	NA
P1029	Highly Enriched Uranium Working Group Report on Environmental Safety and Health Vulnerabilities Associated with the Departments Storage of Highly Enriched Uranium	DOE/EH-0525	December 1996
P1030	Plutonium, The First 50 Years	NA	NA
P1031	Modifications to MELCOR for the Analysis of Heavy-Water Moderated, U-Al Fuel Reactors	WSRC-MS 90-9	May 11, 1990
P1032	Uncertainty Analyses Using the MELCOR Severe Accident Analysis Code	NA	NA
P1033	Guernsey Fast Reactor Safety Topical In-Pile Observations of Fuel and Clad Relocation During LMFBR Initiation Phase Accident Experiments, The STAR Experiments	SAND 85-1279C	NA
P1034	Visual Observations of Fuel Disruption in In-Pile LMFBR Accident Experiments	SAND 81-2246C	NA
P1035	Analysis of In-Pile Fuel Disruption Experiments	SAND78-0363C	February 1978
P1036	Visual In-Pile Fuel Disruption Experiments	SAND 78-0515C	NA
P1037	First Visual In-Pile Fuel Disruption Experiments	SAN 78-0266C or SAND 78-0622	NA
P1038	Visual Investigation of Reactor Fuels Response to Simulated LOF Heating Conditions, First Series	SAND79-0940	October 1979
P1039	Fuel Disruption Mechanisms Determined In-Pile in the ACRR	SAND83-1750	September 1984
P1040	In-Core Fuel Disruption Experiments Simulating LOF Accidents for Homogeneous and Heterogeneous Core LMFBRs: FD2/4 Series	SAND82-0136C	NA
P1041	Sandia National Laboratories/New Mexico Environmental Information Document, Volume II	SAND99-2022/2	September 1999

Tracking Number	Title	Document Number	Date
P1042	Sandia National Laboratories/New Mexico, Environmental Information Document, Volume I	SAND99-2022/2	September 1999
P1043	Summary of MELCOR 1.8.2 Calculations for Three LOCA Sequences (AG, S2D, and S3D) at the Slurry Plant	SAND93-2042	March 1994
P1044	The Department of Energy's Tritium Production Program	RL30425	November 2, 2001
P1045	LWR Severe Core Damage Phenomenology Program Plan – Volume I: Melt-Progression Phenomenology and Damaged Fuel Relocation Programs	NUREG/CR-2725 and SAND82-1115	November 1982
P1046	Summary Report: Special Committee on Source Terms	NA	September 1984
P1047	NPR/FCI EXO-FITS Experiments Series Report	SAND91-1544	January 1993
P1048	MELCOR 1.8.0: A Computer Code for Nuclear Reactor Severe Accident Source Term and Risk Assessment Analysis	SAND90-0364	January 1991
P1049	MELCOR 1.8.1 Assessment: ACRR Source Term Experiments ST-1/ST-2	SAND91-2833	April 1992
P1050	Project Plan: Fabrication of ACRR Fuel Rods	TD1699	January 14, 1983
P1051	The Global Nuclear Future, The Next Era of Nuclear Power		Spring 2002
P1100	Programmatic Waste Acceptance Criteria	POL-95-01	October 7, 1997
P1101	Waste Handling	FOP 00-02	June 26, 2006
P1102	Building 6580 Hot Cell Facility, Steel Containment Boxes and Zone 2A Process Knowledge Documentation: Isotope Production Program, Hot Cell Facility Decontamination Project	NA	June 26, 1996
P1104	Hot Cell Facility (HCF) Safety Analysis Report, Main Report and Appendices	SAND94-2650	10/21/1994
P1105	Series of Plans/Procedures beginning with *Appendix A-AHCF Campaign Plan: Characterization and Repackaging of TRU Waste Containers – C980373, C980379, C980380, C980396*	AHCF-AP-003.02	8/30/2010
U1001	Star 1 Quick Look Report	U001	November 29, 1983

Tracking Number	Title	Document Number	Date
U1002	Star -7 Data Report	U002	July 1987
U1004	Plan for ACRR Source Term Experiments	U004	NA
U1009	DFR TLM Demonstration Test	NA	September 4, 1983
U1010	Radionuclide Release from Severely Damaged Light Water Reactor Fuel, Annular Core Research Reactor Inpile Test Program Plan	SAND84-1582	July 1984
U1011	Reassessment of the Technical Bases for Estimating Source Terms (Draft Report for Comment)	NUREG-0956	July 1985
U1012	ST-2 Experiment Plan, Corrections, and Appendix of Instrumentation, also includes QAP and SOP	NA	October 19, 1987
U1014	The USNRC Severe Fuel Damage Research Program	NA	NA
U1015	Task Quality Plan for the Transient Fuel and Target Performance Cask	TWP No. 2840.131	04/30/1991
U1021	Collection of Modifications/Expenditures of Nuclear Materials Forms Pertaining to C0, C3, C6, NPR/ACRR, and SRS/NPR and Nuclear Radioactive Material Transfer Forms	NA	07/09/1991 thru 06/10/1992, not inclusive
U1022	Procedure for STAR Experiments; STAR Handling Procedures	NA	not dated; 1984
U1025	Instructions: NPRP Instruction for SRS Fuel Element Cutting; SRS-NPR Irradiated Fuel Sampling Cutting Instructions; SRS-NPR Unirradiated Fuel Sampling Cutting Instructions	NA	1990; 07/03/1991; 1991
U1026	Procedure for fabricating uranium oxide fission foils by electrodeposition	NA	1986
U1027	Procedures: Glovebox Clean-up Procedure; Bldg 6580/rm 203 procedure for coating Aluminium Oxided Tubes with Uranium	NA	NA
U1028	Procedure for DF experiment	NA	NA
U1029	CCP Calc Package: SNLRH-01, Sample Data Input Check Calc-PKE00044	SNL-RH-01	05/06/2011

Tracking Number	Title	Document Number	Date
U1030	CCP Calc Package: SNL-RH-02, Scaling Factor Development-PKE00044	SNL-RH-02	05/06/2011
U1031	CCP Calc Package: SNL-RH-03, Determination of Reportable Radionuclides – PKE00044	SNL-RH-03	05/06/2011
U1032	CCP Calc Package: SNL-RH-04, Drum Dose-to-Curie Derivation for Cs-137	SNL-RH-04	05/27/2011
U1033	CCP Calc Package: SNL-RH-05, Uncertainty Analysis for Drums – PKE00044	SNL-RH-05	05/27/2011
U1034	CCP Calc Package: SNL-RH-06, DTC and Related Calculations for Drums – PKE00044	SNL-RH-06	06/01/2011

GEN3

GEN3

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

CP:14:01199
UFC:5900.00

INTER-OFFICE CORRESPONDENCE

DATE: July 28, 2014

FROM: L. M. Turner L. Turner — LOCATION: RH Projects

TO: T. Pattee ED — LOCATION: Host Site Operations, Sandia National Laboratory

SUBJECT: SECOND QUARTER 2014 (APRIL 1, 2014 THROUGH JUNE 30, 2014) VISUAL EXAMINATION QUARTERLY REPEAT OF DATA GENERATION LEVEL REVIEW AT THE SANDIA NATIONAL LABORATORY - REMOTE-HANDLED ACCEPTABLE KNOWLEDGE SUMMARY REPORT CCP-AK-SNL-500 WASTE STREAM SNL-HCF-S5400-RH

Remote-Handled (RH) Visual Examination (VE) at the Sandia National Laboratory (SNL) has completed 91 days of reporting from April 1, 2014 through June 30, 2014. Container number SNL001403, in Batch Data Report (BDR) SNLRHVE14001, was randomly selected from among all the drums processed through Site Project Manger reviews during this period. This container will be processed through the Quarterly Repeat of Data Generation Level (DGL) Review as described in CCP-TP-001, *CCP Project Level Data Validation and Verification*. The original letter will be retained in the letter correspondence file.

Please forward the attached single drum BDR to a qualified VE operator for the completion of an Independent Technical Review quarterly repeat. The attached BDR has all the pertinent information to complete the review. Not all containers included in the original BDR will be included for this review. Only the selected drum noted above must be reviewed along with any quality control information.

Please perform the quarterly repeat of VE DGL review and return the attached BDR with the naming convention "SNLRHVE14001_QTR0214" by August 4, 2014 to the Central Characterization Program Records Department.

If you have any questions, please call me at (505) 400-8984.

LMT:jmc

Attachment

cc: (without attachment)
I. S. Joo ED
D. W. Moody ED

(with attachment)
CCP Records Custodian GSA-212

CCP RECORDS ORIGINAL
DATE REC'D 7/31/14

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/26/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start:N/A	Recording Stop:N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number:SNL001403	
Container Type:		Container Type: 55 GAL	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream:SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill:85	Percent Organic Waste: ~~0~~ 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-019DS, SERIAL# FN-2210			
Waste Description: 30 GALLON DRUM (ID# SNL001403) (IM)			

ST 4-24-14

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001403

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name | Signature | 4-24-14 — Date

3/26/14

Visual Examination Operator 2:

David Hemsing — Print Name | Signature | 03/26/14 — Date

04/24/14

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/14/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: SNL001403		Container or Package ID Number:	
Container Type: 30 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 100	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-013, SERIAL # FN-838 CLOSURE DATE: 03/26/14			

Waste Description:
EXPERIMENTAL ASSEMBLIES: C00210011, C00210016, C00210017, C00186124, C00191876, C00191470, C00186919

DRUM BAG (P)

HARDWARE (IM)

PRESSURE TRANSDUCERS (P) (AM) (OM) (IM)

VALVE ASSEMBLIES (AM) (OM) (IM)

QUARTZ WINDOWS (OIM)

LAMP ASSEMBLIES (OIM) (OM) (IM)

MIRROR MOUNTING BRACKETS (IM)

MIRRORS (OIM) (OM)

LIGHT BULB MOUNTING BASES (OIM) (OM) (P)

PRESSURE VALVES (IM) (OM)

OPEN AND EMPTY PIPE (IM)

CONTAINMENT LID (OM)

WIPES (C)

ASSEMBLY HOUSINGS (AM)

FUEL PELLETS AND PIECES (OM)

O-RINGS (R)

FUEL MOUNTING FIXTURES (OM)

LIGHT BULBS (OIM) (OM)

WIRE (OM) (P)

CONTAINER LABELS (C)

ELECTRIC MOTORS (OM) (IM) (P)

EYE BOLTS (IM)

BREACHED AND EMPTY BAGS (P)

OPEN AND EMPTY CONTAINMENT (OM)

BREACHED INNER VESSEL (OM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001403

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

3/26/14
Date

Visual Examination Operator 2:

David Hemsing
Print Name

Signature

03/26/14
Date

GEN4

GEN4

RH NCRLOG - SNL

NCR ID	WHC	Site ID	NCR Status	Work Process	Supplier Name	NCR Description	Actual Condition	Init Date
NCR-RHSNL0762140	RH	SNL	Closed	RH_VE	NA	Other	The number of Layers of Confinement listed on the VE data sheet does not match the number of Layers of Confinement listed in the AK Summary Report.	6/5/2014
NCR-RHSNL1554120	RH	SNL	Closed	VE	NA	Other	The time recorded for the Field Duplicate was recorded incorrectly.	8/16/2012
NCR-RHSNL2350111	RH	SNL	Closed	RH_VE	NA	Other	Waste does not meet waste stream description or waste matrix code listed in CCP-AK-SNL-500, Rev. 1. Reason for Revision 1: To update the Procedure Revision to Revision 11 and to change the Final Disposition from rework to reject.	11/14/2011
NCR-RHSNL2353110	RH	SNL	Closed	RH_DTC	NA	< 100 nCi/g	Tru Alpha Concentration less than 100 nCi/g.	11/8/2011
NCR-RHSNL2354110	RH	SNL	Closed	RH_DTC	NA	< 100 nCi/g	Tru Alpha Concentration less than 100 nCi/g.	11/8/2011
NCR-RHSNL2347111	RH	SNL	Closed	RH_DTC	NA	Other	The containers in section 3 require different Dose-To-Curie Conversion Record spreadsheets to be used rather than the one used. Reason for Revision 1: To include procedure revision number.	10/10/2011
NCR-RHSNL2349111	RH	SNL	Closed	RH_VE	NA	Other	Drum SNLNM007012 measured less than 200 mrem/hr. Reason for Revision 1: To correct the BDR ID and to reflect the new revision of DOE/WIPP-02-3214 Remote Handled TRU Waste Characterization Program Implementation Plan Rev. 2 which was released on 04-27-2011.	9/15/2011
NCR-RHSNL3217110	RH	SNL	Closed	OTHER	NA	Other	Container SNLNM007114 measured less than 200 mrem/hr on contact.	8/4/2011

NCR-RHSNL3216110	RH	SNL	Closed	RH_HSG	NA	Other	On Attachment 1 of SNHSG1101 the ambient pressure was not listed as a whole number, the location was incorrectly noted and the Field Blank had a Waste Stream ID listed in place of a NA.	7/14/2011
NCR-RHSNL2349110	RH	SNL	Superseded	RH_VE	NA	Other	Drum SNLNM007012 measured less than 200 mrem/hr. Reason for Revision 1: To correct the BDR ID and to reflect the new revision of DOE/WIPP-02-3214 Remote Handled TRU Waste Characterization Program Implementation Plan Rev. 2 which was released on 04-27-2011.	7/13/2011
NCR-RHSNL2348110	RH	SNL	Closed	HSG	NA	Other	Two compounds in the first of three FRS collected and analyzed were less than70% R.	6/22/2011
NCR-RHSNL2351111	RH	SNL	Closed	RH_Sampling	NA	Other	The Sampling and Analysis Plan (SAP) CCP-AK-SNL-505 for waste stream SNL-HCF-S5400-RH segregates the three principal sources of waste generation into three radiological categories. Based on the AK packaging information, parent container C080216 container 1 parcel from PKE00027/54 and two parcels from PKE00047. Instead the waste is commingled in the parent container. Reason for Revision 1: Corrected container number from P1110156 to P1110155.	6/13/2011
NCR-RHSNL2347110	RH	SNL	Superseded	RH_DTC	NA	Other	The containers in section 3 require different Dose-To-Curie Conversion Record spreadsheets to be used rather than the one used. Reason for Revision 1: To include procedure revision number.	6/8/2011

NCR-RHSNL2352110	RH	SNL	Closed	RH_DTC	NA	< 100 nCi/g	TRU Alpha Activity Concentration is less than 100 nCi/g.	6/7/2011
NCR-RHSNL2346110	RH	SNL	Closed	RH_DTC	NA	Other	The dose-to-curie spreadsheet, SCO 1162 DTC for PKE00044 list the 55-gallon container as 27.7 kg to subtract to calculate the waste weight. Sandia uses a thinner wall container and only weighs 22.73 kg.	6/1/2011
NCR-RHSNL2351110	RH	SNL	Superseded	RH_Sampling	NA	Other	The Sampling and Analysis Plan (SAP) CCP-AK-SNL-505 for waste stream SNL-HCF-S5400-RH segregates the three principal sources of waste generation into three radiological categories. Based on the AK packaging information, parent container C080216 container 1 parcel from PKE00027/54 and two parcels from PKE00047. Instead the waste is commingled in the parent container. Reason for Revision 1: Corrected container number from P110156 to P110155.	5/3/2011
NCR-RHSNL2345111	RH	SNL	Closed	VE	NA	Other	On Attachment 1 for the container listed in block 3 the Parent container was not listed in the Comments section therefore the AKE could not complete an update to the Attachment 8 for this waste stream. Reason for Revision 1: Changed the page that needed to be corrected from Page 3 to Page 5.	4/12/2011

NCR-RHSNL2350110	RH	SNL	Superseded	RH_VE	NA	Other	Waste does not meet waste stream description or waste matrix code listed in CCP-AK-SNL-500, Rev. 1. Reason for Revision 1: To update the Procedure Revision to Revision 11 and to change the Final Disposition from rework to reject.	4/6/2011
NCR-RHSNL2345110	RH	SNL	Superseded	VE	NA	Other	On Attachment 1 for the container listed in block 3 the Parent container was not listed in the Comments section therefore the AKE could not complete an update to the Attachment 8 for this waste stream.	4/4/2011

GEN5

Attachment 1 – CCP Nonconformance Report (NCR)

CCP NONCONFORMANCE REPORT (NCR)

(Use NCR Continuation, Attachment 3, if necessary)

NCR No. NCR-RHSNL-0762-14 **Revision 0**

1. Lot No., Heat No., or Serial No. (if applicable): N/A	2. Process (e.g., NDA, NDE, VE, Other): RH-VE	3. Batch Data Report #(s): SNLRHVE14001
4. Order/Work Order/Job Control Number (if applicable): N/A	5. PO # (if applicable): N/A	Container #(s): SNL001401 SNL001402 SNL001403
	6. Supplier (if applicable): N/A	

DESCRIPTION OF NONCONFORMANCE

7a. NCR Description: ☐ < 100 nCi/g ☐ Prohibited Item ☐ E-Flag ☐ Receipt Inspection ☐ Transportation ☐ WWIS/WDS ☒ Other

7b. Requirement(s) (Enter Implementing Procedure No., Revision, Section No., & Quoted Text):
CCP-TP-500 , revision 13, section 4.1.2, step [I.9] states in part, "Enter the number of Layers of Confinement for the package."

7c. Actual Condition:
The number of Layers of Confinement listed on the VE data sheet does not match the number of Layers of Confinement listed in the AK Summary Report.

7d. Have the CCP HOLD TAGS associated with this NCR been applied? Due to ALARA considerations, NCR tagging will not be applied for this NCR. Administrative control will be applied through container entry in the CCP Data Center. In addition a listing of containers will be posted on the CCP sftp site identifying those containers where NCR tagging is not being applied. Container information for this NCR will be included in the listing which is to alert Mobile Loading Unit personnel as a second control mechanism for non-tagged containers ☐ YES ☒ NO If no is checked, explain:

8. NCR Originator:
Laura Nelson (printed name) Laura Nelson (signature) 6/5/14 (date)

9. Does the identified condition have the potential to impact AK? ☐ YES ☒ NO ☐ INDETERMINATE
If YES or INDETERMINATE, enter Trend Code L in Block 10.

10. Trend Code: LRS 06/18/14 A L

11. Responsible Manager: **Laura Nelson**

12. Significant Condition? ☐ YES ☒ NO
(If Yes, enter WIPP Form No.):

13. Recurring Condition? ☐ YES ☒ NO
(If Yes, list NCRs and WIPP Forms):

14. QA Engineer or QA Designee validation:
Laura R Jones (printed name) Laura Ramona Jones (signature) 6/18/2014 (date)

CCP RECORDS ORIGINAL
DATE REC'D 6/24/14

Attachment 1 – CCP Nonconformance Report (NCR) (Continued)

NCR No. NCR-RHSNL-0762-14 Revision 0

INTERIM DISPOSITION

15a. Interim Disposition (Check Only One):

☐ N/A (See Final Disposition) ☒ Hold ☐ Conditionally Accept ☐ Conditionally Use

☐ Sort ☐ Reinspect or Retest ☐ Remediate

15b. Instructions for Completion of the Interim Disposition:

Have the AKE review the VE data sheets and revise the AK summary report for Layers of Confinement.

INTERIM DISPOSITION APPROVALS

16a. Responsible Manager or Individual:

printed name	signature	date
Laura Turner	Laura Turner	6/18/14

16b. QA Engineer or QA Designee:

printed name	signature	date
Laura R. Jones	Laura Raven Jones	6/18/14

Additional Approval:

printed name	signature	date

Additional Approval

printed name	signature	date

COMPLETION OF INTERIM DISPOSITION

17. Interim Disposition Complete – Responsible Manager or Individual:

printed name	signature	date
Laura Turner	Laura Turner	6/18/14

18. Interim Disposition Verified – QA Engineer:

printed name	signature	date
Laura R. Jones	Laura Raven Jones	6/18/14

Attachment 1 – CCP Nonconformance Report (NCR) (Continued)

NCR No. NCR-RHSNL-0762-14 Revision 0

FINAL DISPOSITION

19. Final Disposition (Check Only One: Use-As-Is, Repair, Reject, Rework, or Scrap):
☒ Use-As-Is ☐ Repair

19a. Technical Justification – Required for Use-As-Is or Repair dispositions. [☐ N/A for Reject, Rework, or Scrap]
CCP-AK-SNL-500 rev. 6 has been issued and the AKE has updated the waste packaging to include the new maximum layers of confinement. The containers in block 3 are now detailed in the AK and can be used as is.

☐ Reject ☐ Rework ☐ Scrap

19b. Instructions for Completion – Required for Reject, Repair, Rework, or Scrap [☒ N/A for Use-As-Is]

19c. Corrective Actions (Actions to Prevent Recurrence – For Repair or Rework, if applicable.
[☒ N/A if not applicable, and for Use-As-Is, Reject, and Scrap]

FINAL DISPOSITION APPROVALS

20 Responsible Manager or Individual

printed name	signature	date
Laura Turner	Laura Turner	6/18/14

21. QA Engineer or QA Designee:

printed name	signature	date
Laura R Jones	Laura Rawson Jones	6/23/2014

Additional Approval:

printed name	signature	date

Additional Approval:

printed name	signature	date

CLOSURE

22. Final Disposition Complete - Responsible Manager or Individual

printed name	signature	date
Laura Turner	Laura Turner	6/23/14

23. Attachments: 1.- CCP-AK-SNL-500. Rev. 6 2.- Email Documenting Reportability.

24a. HOLD TAG removal has been verified and reconciled for all nonconforming items on the NCR: ☐
24b. If HOLD TAG is not applicable, check: ☒ and explain:
See 7d.

25. Final Disposition Verified – NCR Closed QA Engineer:

printed name	signature	date
Laura R Jones	Laura Rawson Jones	6/23/14

containers during packaging. The materials in this waste stream are therefore not reactive wastes (HWN D003) (Reference P1104).

Based on SNL/NM waste management practices, the materials contained in waste stream SNL-HCF-S5400-RH do not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003) as defined in 20 NMAC 4.1.200 which incorporates by reference 40 CFR 261.21, 261.22, and 261.23, respectively (References 16 and 17). Real-time radiography (RTR) and/or visual examination (VE) will also be used to verify the absence of prohibited materials.

5.4.3.5 Polychlorinated Biphenyls (PCBs)

Although polychlorinated biphenyls (PCBs) were identified in the CH waste stream, SNL-HCF-S5400 (Reference M1016), no sources of PCBs were identified as inputs into waste stream SNL-HCF-S5400-RH. Potential sources of PCBs including light ballasts, oil-filled electrical equipment, and hydraulic oils are not identified in the RH TRU debris waste. Therefore, waste stream SNL-HCF-S5400-RH is not regulated as a *Toxic Substance Control Act* (TSCA) waste under 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions* (References 18, M2003, M2004, M2010, M2021, and P2001). If PCB containing material is identified during RTR and/or VE, it will be managed in accordance with PCB disposal requirements of the WIPP-WAC (Reference 4).

5.4.4 Prohibited Items

Based on a review of AK, waste stream SNL-HCF-S5400-RH potentially could contain the following prohibited items (Reference M1016):

- Unpunctured aerosol cans
- Prohibited liquids
- Sealed containers exceeding 4 liters (buckets, bottles, and cans)

VE will be performed prior to shipment to WIPP. Waste drums with prohibited items will be treated and/or repackaged to remove the items prior to shipment. Therefore, the waste stream will not include the prohibited items identified above, unblocked or unbraced heavy/sharp objects, or U.S. Department of Transportation (DOT) Class 1 explosives, oxidizers, and forbidden materials identified in 18 NMAC 23.17 which incorporates by reference 49 CFR 173.21 (References 19, 20, I1042, I1053, P1101, P2002, and P2005).

5.5 Waste Packaging

Waste stream SNL-HCF-S5400-RH will be repackaged to meet WIPP transportation and disposal requirements. Waste material will be repackaged inside a 30-gallon metal drum with a WIPP compliant filter. The 30-gallon drum may contain two 7-gallon drums each containing a lead-lined shield pot (Reference M2024). Any plastic inner bags will

be breeched, and the 7-gallon drums are not sealed, so there is no layer of confinement within the 30-gallon drum. The 30-gallon drum will be placed inside a WIPP compliant 55-gallon metal drum. The final package configuration will have one layer of confinement if the inner 30-gallon drum is closed and fitted with a WIPP compliant filter (References C1047, P1105, P2002, and P2005).

NCR -RHSNL-0762-14 Rev. 0

Attachment 1 Page 2 of 2

Jones, Laura - NWP

From: Ramirez, Mike - NWP
Sent: Wednesday, June 18, 2014 10:22 AM
To: Jones, Laura - NWP
Subject: RE: New NCR-RHSNL-0762-14

Not Reportable

Mike Ramirez
Central Characterization Project
Nuclear Waste Partnership LLC
Contractor for the U.S. Department of Energy
(575)-234-7034

From: Jones, Laura - NWP
Sent: Wednesday, June 18, 2014 8:28 AM
To: Nelson, Laura - NWP; Joo, Irene - NWP; Kantrowitz, Rich - NWP; Ramirez, Mike - NWP; Pearcy, Sheila - Stoller; Acosta, Danette - Stoller
Cc: Waldram, Veronica - NWP; Walker, Mak (Maryann) - NWP; Jones, Laura - NWP
Subject: New NCR-RHSNL-0762-14

Laura/Irene/Rich – For your information
Mike – Please review for notification purposes
Danette – Please post this open NCR.

Thanks and Best Regards

Laura R. Jones
Quality Assurance NCR Coordinator
Nuclear Waste Partnership LLC
Contractor for the U.S. Department of Energy
Office: (575) 234-7244
Email: laura.jones@wipp.ws
Fax: (575) 234-7071

NCR - RHSNL-0762-14 R.0
Attachment 2 Page 1 of 2

Jones, Laura - NWP

From: IDC <SQLMaster@wipp.ws>
Sent: Wednesday, June 18, 2014 10:23 AM
To: DL CCP QA CBFO Notify
Subject: Project Office NCR [NCR-RHSNL0762140] was just reviewed.

Certification Manager/Designee has just reviewed the project office NCR NCR-RHSNL0762140 and has indicated that it [should **NOT**] be reported to CBFO. IDC has already updated the NCR for you.

NCR -RHSNL-0762-14 R.0
Attachment 2 Page 2 of 2

GEN6

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 1 of 48

3. Organization Unit (Creating or Custodial Unit)	4. Date
Nuclear Waste Partnership (NWP)/Central Characterization Project (CCP)/National TRU Program Certification (NTPC)/Remote Handled (RH) for All Sites **4021 National Parks Highway, GSA 212** **Carlsbad, New Mexico 88220**	06/18/2014

5. Signatures (of Appropriate Personnel)

Prepared By	Sheila Pearcy – Lead Records Custodian Sheila Pearcy	Date 7/15/14	Records Liaison Officer	N/A	Date
Approved By	Ed Gulbransen CCP Manager A.J. Fisher for	Date 7/15/14	Records Officer Approval	Michael Fox Michael Fox	Date 7/17/14

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
1	**CCP RH TRAINING DOCUMENTATION FILES** Documentation pertaining to the training and qualification of CCP RH Personnel.			

COPY

COPY

COPY

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 2 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
1(a)	CCP RH Employee Individual Training/Qualification Documentation Contractor employee individual folders that contain item 1.29.1.a records AND also contain: attendance/completion records of training courses or sessions that include subjects dealing with hazardous materials directly applicable to the employee's job or position. Documents the training and qualification and re-qualification of CCP RH Personnel. May include but not limited to the following: appointment letters; qualification letters; correspondence; On-the-Job (OJT) records; completed exams; completed qualification cards; certificates of completion; test drum data sheets; training drum evaluation data sheets; resumes; and Waste Acceptance Plan (WAP) briefings. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **PRIVACY ACT** **Quality Assurance (QA) Records/Nonpermanent/ Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alphabetically Inclusive Dates: 2005 to Present Location: CCP Records – Skeen Whitlock Building (SWB) and/or Waste Isolation Pilot Plant (WIPP) Records Archive (WRA)	ADM 1.29.1.b	Cut off at the time of separation or transfer of the employee. Screen out and destroy all item 1.29.1.a(4) records. Transfer folders with remaining documents to the local Federal records center. Destroy 75 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 3 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
1(b)	Employee Individual Medical Examination Contractor employee individual training folders that contain ONLY the following documents: results of medical examinations (only pass/fail and restrictions); balance of results are to be retained in the medical file. Documentation pertaining to the eye examinations performed on the Nondestructive Examination (NDE), Helium Leak Detector (HLD), and Pressure Change Leak Testing (PCLT) personnel on an annual basis. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **EPIDEMIOLOGICAL** **PRIVACY ACT** **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alphabetically Inclusive Dates: 2005 to Present Location: CCP Records – SWB and/or WRA	ADM 1.29.1.a.(4)	Cut off at the time of separation or transfer of the employee. Screen out and destroy all item 1.29.1.a.(4) records. Transfer folders with remaining documents to the local Federal Records Center. Destroy 4 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 4 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
1(c)	<u>CCP Test Drum Audio/Video Media of Test Drum Qualification</u> Contractor employee individual folders that contain item 29.1.a records AND also contain: attendance/completion records of training courses or sessions that include subjects dealing with hazardous materials directly applicable to the employee's job or position. Contains CCP audio/video media of qualification test performed by NDE personnel. This audio/video media of qualification test is performed by NDE personnel and is the second piece of the qualification. It supports the documentation captured on the supporting hard copy record(s). May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **PRIVACY ACT** **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Audio/Video Tape or DVD (Primary and Backup) Filing Order: Alpha-Numeric Inclusive Dates: 2005 to Present Location: CCP Records - SWB and/or WRA	ADM 1.29.1.b	Cut off at the time of separation or transfer of the employee. Screen out and destroy all item 1.29.1.a.(4) records. Transfer folders with remaining documents to the local Federal Records Center. Destroy 75 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 5 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
1(d)	<u>CCP NDE Test Drum Inventories</u> Documentation pertaining to the assembly of NDE test and training drums which are used to qualify radiography operators per CCP-PO-001, CCP Transuranic (TRU) Waste Characterization QA Project Plan (QAPjP) and CCP-QP-002, CCP Qualification and Training Plan. The drum assembly is representative of the Waste Matrix Codes (WMCs) for Waste Stream Profile Forms. CCP NDE Test Drum Inventory Sheet has the Test Drum Identification Number, Date, Summary Category Group, if it has a plastic liner and the contents of the drum. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Chronologically Inclusive Dates: 2005 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending National Archives and Records Administration (NARA) Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 6 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
1(e)	List of Qualified Individuals (LOQI) List of Qualified Individuals is a document that confirms and establishes to the field personnel who is to perform different areas of operations. It is updated each time there is a change to the qualifications of the project personnel. Is no longer generated as record. **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Chronologically Inclusive Dates: 2002 to September 2008 Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval.	UNSCHEDULED -Do Not Destroy-	Retain in CCP Record until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
1(f)	LOQI- Nonrecord List of Qualified Individuals is a document that confirms and establishes to the field personnel who is to perform different areas of operations. It is updated each time there is a change to the qualifications of the project personnel. Record is the captured in the individual personnel's qualification training files. Media Type: Hard Copy Filing Order: Chronologically Inclusive Dates: September 2008 to Present Location: CCP Records - SWB and/or WRA	Nonrecord	Not Applicable	Retain in CCP Record until completion of characterization process for each site or when no longer needed in project files to support daily functions. Screen and purge as needed.
2	**CCP RH CORRECTIVE ACTION MANAGEMENT DOCUMENTATION** Documentation pertaining to the identification, classification, control, and correction of conditions adverse to quality and nonconforming items, activities, and processes associated with the CCP RH – All Sites.			

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 7 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
2(a)	CCP RH Nonconformance Reports (NCRs) Audit and investigative case files and reports that pertain to environmental, health, and safety topics, cases or concerns, but ARE NOT covered by items 22.1.a.(1) or 22.2.a.(1). NCRs created for the CCP RH sites which document the process for identifying, documenting, controlling, evaluating, and dispositioning nonconforming items. May include Carlsbad Field Office (CBFO) notifications and supporting documentation such as copies of applicable procedures, etc. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ADM 22.4	Cutoff upon completion of audit or investigation. Destroy when 75 years old.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention
2(b)	NCR Log Reconciliation Report NCR Log Reconciliation Report documents and verifies that all NCR numbers at the end of each calendar year are reconciled against the Master Log and in the Nonconformance Report Module (NCRM). Includes as attachment the information from NCR logs. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Chronologically Inclusive Dates: 2005 to Present Location: CCP Records – SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process or when no longer needed in project files to support daily functions or audits. Transfer to the WRA for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 8 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
2(c)	CCP RH Corrective Action Reports (CARs) Audit and investigative case files and reports that pertain to environmental, health, and safety topics, cases or concerns, but ARE NOT covered by items 22.1.a.(1) or 22.2.a.(1). CCP RH CARs created for all RH sites which document the process for identifying, documenting, controlling, evaluating, dispositioning, and verifying completion of corrective actions for conditions adverse to quality related failures, malfunctions, deficiencies, and technical inadequacies. May include supporting documentation such as copies of applicable procedures and/or Deficiency Evaluation Form if applicable, Corrective Action Plan and CBFO Notifications. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ADM 22.4	Cut off upon completion of audit or investigation. Destroy when 75 years old.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 9 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
2(d)	CCP RH CAR Log Indexes, lists, registers, and other finding aids used only to provide access to records authorized for destruction, EXCLUDING records containing abstracts or other information that can be used as an information source apart from the related records. CAR log is a document that is used to assign unique CAR numbers. It identifies the numbers assigned for both issued and voided CARs. The numbering system helps to identify the individual CAR number, facility and facility designee number and the calendar year issued. **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy/Electronic Filing Order: Chronologically Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ADM 23.9	Destroy or delete with the related records.	Print out at the end of each calendar year. Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 10 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
2(e)	<u>CCP RH Trend Reports</u> Audit and investigative case files and reports that pertain to environmental, health, and safety topics, cases or concerns, but ARE NOT covered by items 22.1.a.(1) or 22.2.a.(1). CCP RH Trend Reports are a review and evaluation of NCRs and CARs generated during the designated reporting period. Reports show negative trends such as quantities of NCRs or CARs generated by site, quantities and types of NCRs/CARs by process, identification of types of nonconformance by process, and programmatic noncompliance by trend codes. **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Chronologically Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ADM 22.4	Cut off upon completion of audit or investigation. Destroy when 75 years old.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 11 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
3	**CCP RH OPERATION LOGBOOKS** Environmental administration records include program or project management records, reports, and records documenting protection and preservation of natural resources. Logbooks/fieldbooks that document a chronological history which provides a summary of shift and daily activities related to program and functions. Logbooks may support calibration activities, problem resolution, sampling, monitoring, and reporting. Records may include, but are not limited to results, notes, drawings/sketches, and field information. Logbooks listing significant action, daily surveillances and maintenance activities occurring during normal operations of applicable facility. Operational Logbooks are used for CCP RH personnel to document technical work processes and daily activities during characterization activities. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 1.e.(6)	Destroy when 75 years old.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
4	**CCP QA SUMMARY REPORTING, ASSESSMENT/AUDIT, AND SURVEILLANCE DOCUMENTATION** QA documentation pertaining to the reporting, assessment/audit, and surveillance activities of the CCP RH QA program.			

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 12 of 49

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
4(a)	CCP RH Surveillance Program Documentation Audit and investigative case files and reports that pertain to environmental, health, and safety topics, cases, or concerns, but ARE NOT covered by items 22.1.a.(1) or-22.2.a.(1). Documentation pertaining to the planning, performing, documenting, and reporting independent surveillances of TRU CCP RH waste characterization activities. Includes surveillance plan formats, surveillance reports, and surveillance checklists. May include supporting documentation. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ADM 22.4	Cut off upon completion of audit or investigation. Destroy when 75 years old.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 13 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
4(b)	CCP RH Surveillance Log Indexes, lists, registers, and other finding aids used only to provide access to records authorized for destruction, EXCLUDING records containing abstracts or other information that can be used as an information source apart from the related records. CCP RH Surveillance log is a document that is used to assign unique surveillance numbers. The numbering system helps to identify the individual surveillance number, facility and facility designee number and the calendar year issued. **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy/Electronic Filing Order: Chronologically Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ADM 23.9	Destroy or delete with the related records.	Print out at the end of each calendar year. Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 14 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
5	**CCP RH TRU SOFTWARE QA (SQA) Documentation** Database system development records and documentation records which support the maintenance and operation of tracking systems. CCP RH TRU SQA documentation pertains to the development, procurement, maintenance, and use of computer software that is important to the waste characterization and certification for the CCP RH. Includes but not limited to the following documentation for: Exempt Software, Commercial Off the Shelf (COTS) Software, Application within COTS, Qualified Supplier Software, Non-Qualified Supplier Software, CCP Software. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Site and Alphabetically by Software Name Inclusive Dates: 2006 to Present Location: CCP Records – SWB and/or WRA	ENV 1.g.(3)(b)	Destroy or delete upon authorized deletion of related system.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
6	**CCP RH VISUAL EXAMINATION (VE) BATCH DATA REPORTS (BDR)** VE constitutes opening a container and physically examining its contents and verifying its physical form. VE is also used to confirm that the physical form of the waste matches its waste stream description. Removal of prohibited items can be performed in this process.			

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 15 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
6(a)	CCP RH VE BDRs Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. CCP RH VE BDRs document the physical form of the waste and absence of prohibited items and is performed at the time the waste is actually being placed into the waste container or of video media. BDRs will include but not limited to the following: VE Data Form(s), VE Independent Technical Reviewer (ITR) Checklist, VE Site Project Manager (SPM) Checklist, VE BDR Cover Sheet, VE BDR Table of Contents, and copy of NCR if applicable. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 16 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
6(b)	CCP RH Audio/Visual Recording DVD for VE Audio/visual recorded DVDs created for previously packaged waste. VE review is performed using this historical audio/visual media. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Audio/Visual DVDs Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 17 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
6(c)	CCP RH VE Quarterly Reports Environmental monitoring reports provided to identify the progress on the environmental monitoring plans or on other related subjects. VE quarterly reports pertain to the quarterly review performed on randomly selected data completed through SPM review, within the last 3 months. The reports give information regarding the repeat of data generation level review, Validation & Verification (V&V) performed on a minimum of one randomly chosen waste container each quarter. The SPM uses this information to document that the data generation level data review is being performed according to procedures. This includes the request and results correspondence. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature on memorandum.** Media Type: Hard Copy Filing Order: Chronological and Quarter Number Inclusive Dates: 2007 to Present Location: CCP Records - SWB and/or WRA	ENV 1.d(8)(a)	Destroy when 75 years old. Cutoff when reports are superseded, obsolete, or canceled.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
7	**CCP RH DOSE-to-CURIE (DTC) DOCUMENTATION** DTC Process is used to determine the total TRU activity concentrations and the individual isotopic activity in containers of RH TRU waste. Various calibrated probes are used to determine the gamma dose rate.			

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 18 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
7(a)	CCP RH Waste DTC BDR Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. CCP RH Waste DTC BDRs are assembled data that is generated during the process and compiled to create a BDR package. The BDR includes the following: Measurement Control Report, Container Data Sheet(s), Waste Container DTC Conversion Record(s), Cover Sheet, Table of Contents, Narrative Summary, ITR Checklist, SPM Checklist and copy of NCRs if applicable. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
7(b)	CCP RH Waste Container DTC Conversion Record CCP RH Waste Container DTC Conversion Record is the electronic file created during the DTC process. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date on associated BDR.** Media Type: Electronic – CD Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
8	**CCP RH SAMPLING and ANALYSIS OF GAS SAMPLES BDRs** CCP RH Sampling and Analysis of Gas Samples BDRs are reports that document the analysis of gas samples of Volatile Organic Compounds (VOCs) in Headspace Gas (HSG) samples contained in SUMMA® canisters.			
8(a)	CCP RH Analysis of Gas Samples BDRs Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. CCP RH Analysis of Gas Samples BDRs are reports that document the analysis of gas samples of VOCs in HSG samples contained in SUMMA® canisters. May include but not limited to the following: Data Report Cover page and Table of Contents, Sample Identification Table/Analysis Request Form, Sample Custody Documents and Sample Tags, Sample Results, Quality Control (QC) Measurement Results, Calibration Results, and Data Review Checklists and SPM Project Level Checklist. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
8(b)	CCP RH HSG BDRs – Summa Sampling Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. CCP HSG – Summa BDRs that are processed both at data generation level through Project Level V&V in the HSG-Summa Sampling process. May include but not limited to the following: Cover Sheet, Table of Contents, HSG ITR Checklist, HSG Technical Supervisor (TS) Review checklist, HSG Facility QA Officer Review Checklist, 72-hour Temperature Equilibration Plots, Chain-of-Custody/Canister Tag, Sample Drum Data Form, Shipment Request Form (or equivalent), and copy of NCR(s) if applicable. Also includes SPM Checklists. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: March 2004 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
8(c)	CCP RH HSG Transportation BDRs Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. CCP RH HSG Transportation BDRs pertain to the process that implements the process to establish the concentration of flammable gas/VOCs, hydrogen, and methane in a waste container intended for shipment in the TRU Package Transporter-II, (TRUPACT-II) or HalfPACT Packaging. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
8(d)	CCP RH HSG Transportation Initial Calibration (ICAL) This document which is the ICAL report for the process that implements the process to establish the concentration of flammable VOCs, hydrogen and methane in a waste container intended for shipment in the TRUPACT-II or HalfPACT packaging. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
8(e)	CCP RH HSG Transportation Method Determination Level (MDL) Reports MDL reports is documentation that supports the process that describes and implements the process to establish the concentration of flammable gas/VOCs, hydrogen and methane in a waste container intended for shipment in the TRUPACT-II or HalfPACT packaging. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
8(f)	CCP RH HSG Random Sample Selection Memorandums HSG Random Selection Memorandum document the random selection for HSG sampling and analysis. It includes at a minimum a memorandum identifying the random selection with attached HSG Random Sample Selection Listing. **QA Record/Nonpermanent/Validated by authorized signature/initial and date.** Media Type: Hard Copy Filing Order: Chronological and Waste Stream Number Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
8(g)	CCP RH HSG Quarterly Reports Environmental monitoring reports provided to identify the progress on the environmental monitoring plans or on other related subjects. HSG quarterly reports pertain to the quarterly review performed on HSG data. The reports give information regarding the repeat of data generation level review. V&V performed on a minimum of one randomly chosen waste container each quarter. The SPM uses this information to document that the data generation level data review is being performed according to procedures. This includes the request and results correspondence. **QA Record/Lifetime/Validated by authorized signature/initial and date.** Media Type: Hard Copy Filing Order: Chronological Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 1.d.(8)(a)	Destroy when 75 years old. Cutoff when reports are superseded, obsolete, or canceled.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
9	**FIELD REFERENCE STANDARD (FRS) MEMORANDUM** FRS Memorandum is collected to assess the accuracy with which the sampling equipment collects the VOC into SUMMA canisters. The FRS is collected with the first sampling event at a newly certified site and analyzed. The FRS shall contain a minimum of six analytes at concentrations within a range of 10 to 100 ppmv greater than the MDL for each compound. **QA Record/Lifetime/Validated by authorized signature/initial and date.** Media Type: Hard Copy Filing Order: Chronological Inclusive Dates: 2008 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
10	**SOLIDS SAMPLING BDRs** Documentation pertaining to the process of Solids Sampling which is the random sample collection and sample data collection.			

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
10(a)	Solids Sampling BDRs Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. Documentation pertaining to the process of Solids Sampling which is the random sample collection and sample data collection. The BDR may include but is not limited to the following: Sample Tracking Form, Sample Chain-of-Custody Form, Sampling ITR Checklist, Sampling TS Review Checklist, Sampling Facility QA Officer (FQAO) Review Checklist, Sampling BDR – Table of Contents, Solids Sampling BDR – Cover Sheet, Copy of CCP Waste VE Technique Data Form, Copy of NCR(s) if applicable, Temperature Data Logger Sheets, Certification of Cleanliness for Sampling Equipment, and V&V checklists. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2008 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
10(b)	Solids Analysis BDRs – Analytical Laboratories Department (ALD) These data packages consist of documentation generated during transport and receipt of field samples (e.g., chain of custody), sample movement in the laboratory, preparation for analysis, laboratory analyses output, raw and processed data, analytical results (analysis reports), reanalysis, quality control sample results, and instrument calibration data, plus a summary of	ENV 5.c.(1)	Destroy in 75 years.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
	final results for each batch. May include validation and/or verification documentation. Analytical laboratory data packages consisting of documentation generated during transport and receipt of field samples, sample movement in the laboratory, preparation for analysis, laboratory analyses output, raw and processed data, analytical results, reanalysis, QC sample results and instrument calibration data, plus a summary of final results for each batch. CCP RH Analysis of Solid Sample BDRs are reports that document the analysis of solid samples of VOC, non-halogenated volatile compounds (NHVOC), semi-volatile compounds (SVOC), Metals, Actinides; Gamma; Inductively-Coupled Plasma Mass Spectrometry (ICP-MS), Liquid Scintillation Counting (LSC); Radiochemistry Analysis; and Radiostrontium. May include but not limited to the following: Data Report, Cover Page, Table of Contents, Sample Custody Documents, Sample Results, QC Results, Calibration Results, Data Review Checklists and SPM Project Level Checklist. May also include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2008 to Present Location: CCP Records - SWB and/or WRA			within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
10(c)	CCP Solid Analysis BDRs – Raw Data Supporting Data Package These data packages consist of documentation generated during transport and receipt of field samples (e.g., chain of custody), sample movement in the laboratory, preparation for analysis, laboratory analyses output, raw and processed data, analytical results (analysis reports), reanalysis, quality control sample results, and instrument calibration data, plus a summary of final results for each batch. May include validation and/or verification documentation. Analytical laboratory data packages consisting of documentation generated during transport and receipt of field samples, sample movement in the laboratory, preparation for analysis, laboratory analyses output, raw and processed data, analytical results, reanalysis, QC sample results and instrument calibration data, plus a summary of final results for each batch. CCP RH Solid Analysis BDRs raw data supporting data packages that document the analysis of VOC, NHVOC, SVOC and metals in solid analysis. These packages may contain but are not limited to the following: Raw Data/Instrument Printouts, copies of applicable pages of Digestion Record and copies of applicable pages of logbooks. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2008 to Present Location: CCP Records - SWB and/or WRA	ENV 5.c.(1)	Destroy in 75 years.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
10(d)	Solids Sampling Random Selection Memorandum Solids Sampling Random Selection Memorandums document the random selection for solids sampling and analysis. It includes at a minimum a memorandum identifying the random selection with attached Solids Random Sample List/Waste Stream Container List. **QA Record/Nonpermanent/Validated by authorized signature/initial and date.** Media Type: Hard Copy Filing Order: Chronological Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
10(e)	Completed Chain-of-Custody Forms These data packages consist of documentation generated during transport and receipt of field samples (e.g., chain of custody), sample movement in the laboratory, preparation for analysis, laboratory analyses output, raw and processed data, analytical results (analysis reports), reanalysis, quality control sample results, and instrument calibration data, plus a summary of final results for each batch. May include validation and/or verification documentation. These data packages consist of documentation generated during transport and receipt of field samples, sample movement in the laboratory, preparation for analysis, laboratory analyses output, raw and processed data, analytical results, reanalysis, quality control sample results and instrument calibration data, plus a summary of final results for each batch. Chain-of-Custody Forms which have been completed document all transfers of sample custody from collection to disposal. The form contains at a minimum, the sample numbers, the date and times of transfers, and the signatures of the relinquishing and accepting parties. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2008 to Present Location: CCP Records - SWB and/or WRA	ENV 5.c.(1)	Destroy in 75 years.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
11	**CCP RH ACCEPTABLE KNOWLEDGE (AK) DOCUMENTATION** AK Documentation supports the knowledge used for waste characterization, which is based on the materials and processes used to generate a waste. AK includes information about the physical form of the waste, the base materials composing the waste (especially hazardous and radioactive materials) and the process that generated the waste. AK is used to define waste streams, assign summary categories, assign United States Environmental Protection Agency (EPA) hazardous waste numbers, estimate the weight fraction of cellulose, plastic, and rubber (CPR), and estimated isotopic ratios.			
11(a)	CCP RH AK Documentation Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. AK documentation is compiled, reviewed, evaluated, confirmed and reported. It supports the related AK Summary Report. The following documentation may include but is not limited to: AK Documentation Checklist; Record of Communication; AK Source Document Summary - Attachments 3's- may included attached CCP generated source documents – prior to 11/01/2010 the Attachment 3's included as attachment both the site generated and CCP generated source documents; AK Source Document Reference List; Hazardous Constituents Waste Form(s); Waste Form, Waste Material Parameters, Prohibited Items and Packaging Forms with Waste Material Parameter Evaluation Memorandum; Radionuclides Forms – may include Nondestructive Assay (NDA) Memorandum; Waste Containers List – may have additional Memorandums as addendums to the Attachment 8; Acceptable Knowledge Re-evaluation Checklist; AK Source Document Discrepancy Resolution – includes AK	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
	Source Document Source Summary Forms as attachments; CCP Waste Stream Characterization Checklist; CCP TRU Waste Correlation and Surrogate Summary Form; AK Sufficiency Determination Request - memorandum and SPM notifications (emails, letters, memorandums, etc.), as applicable. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature/initial and date.** Media Type: Hard Copy Filing Order: By Site and AK Report or AK Library Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA			

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
11(b)	AK Historical Source Documents Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. AK historical source documents are external records that have been generated by the waste generating sites. Copies are collected and submitted to support the listing of AK source documents referenced in the correlating AK Summary Report. They may be categorized as follows: Correspondence; Documents; Miscellaneous; Procedures and Published Documents; Discrepancy Resolution; and Unpublished Documents. These records must be maintained in parallel to the correlating AK Document Summaries and CCP source documents. Media Type: Electronic - PDF files, databases, video Filing Order: Site, AK Report or AK Library –Alpha-numeric Inclusive Dates: 1957 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer with related AK Record Set. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
11(c)	CCP RH AK Summary, Technical Reports and Plans Hazardous waste reports, hazardous substance reports, waste characterization reports, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)/Resource Conservation and Recovery Act (RCRA) unit reports. CCP RH AK Summary Reports, Technical Reports and Plans are documentation which supports the knowledge used for waste characterization, which is based on the materials and processes used to generate a waste. AK reports include information about the physical form of the waste, the base materials composing the waste (especially hazardous and radioactive materials) and the process that generated the waste. AK reports define waste streams, assign summary categories, assign EPA hazardous waste numbers, estimate the weight fraction of CPR, and estimated isotopic ratios. May include but is not limited to the following: Documentation that demonstrates approval by designated individuals; Comments and comment resolution (attachments, Document Review Resolution (DRR), emails, letter, etc.); Document revision requests (i.e., initial markup) and DOE/CBFO submittal email within five days of project level review. **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 1.d(10)(a)	Permanent. Cutoff when waste is disposed of. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
11(d)	AK Accuracy Report Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. AK Accuracy Reports document that the AK accuracy is evaluated either on a lot or waste stream basis. The report documents the results of the evaluation for container in a waste stream. It may include but is not limited to Inter-Office Correspondence with attached CCP AK Accuracy Report and CCP Correlation of Containers Identification Numbers to BDR Numbers. **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Site, AK Report and Waste Stream Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
11(e)	CCP RH AK QA Equivalency Demonstration Report Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. CCP AK QA Equivalency Demonstration Report is a document that shows the decision process, the criteria for qualifying data through this method, and the criteria used for qualifying the data to demonstrate QA Equivalency. This report ensures RH TRU waste characterization information generated under a historic QA program complies with the applicable Data Quality Objectives (DQOs) and programmatic requirements specified in the RH TRU Waste Characterization Program Implementation Plan (WCPIP). This includes a procedures matrix providing a cross walk that identified the generator site plans and procedures that implement the applicable requirements of the QA Program Document (QAPD). May include but is not limited to the following records: Documentation that demonstrates approval by designated individuals; Comments and comment resolution (attachments, DRR, emails, letter, etc.); Document revision requests (i.e., initial markup) DOE/CBFO submittal email within five days of project level review; and Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2007 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

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6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
11(f)	CCP RH AK Characterization Reconciliation Report (CRR) Records indicating type (classification) and degree of contamination, date of disposal, method of disposal (burial, landfill, etc.), volume, and disposal location. Records may include engineering studies, reports of unusual problems encountered during removal or treatment. CCP AK CRR is a report that provides the methodology for data reconciliation with the DQOs provided in the WCPIP, following data V&V by the SPM. The reconciliation is performed at the waste stream or waste stream lot level. It includes but is not limited to the following: RH CRR Container Data Work Sheet 1, RH CRR Container Data Sheet 2, RH CRR DQOs, RH CRR QA Objectives (QAOs), RH CRR Cover Sheet, RH CRR Construction Sheet, RH CRR SPM/AKE Comment Sheet, and summary of Radiological Results by Container. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Site, AK Summary Report and Lot Number Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 6.b	Permanent. Cutoff 5 years after disposal. Transfer to NARA 25 years after cutoff.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 37 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
11(g)	<u>CCP RH Reconciliation with Data Objective Reports</u> Reconciliation with Data Objective Reports includes the Data Reconciliation and Reporting Routing Sheet, Reconciliation with Data Objective, WIPP Waste Stream Profile, and Characterization Information Summary. **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Site, AK Summary Report, Waste Stream Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
11(h)	<u>CCP RH HSG Summary Data Report</u> HSG Summary Data Report includes the Correlation of Container ID Numbers to HSG Sample ID Number Form, UCL_{90} Evaluation Form, Data Evaluation Narrative, Waste Steam Lot Tentatively Identified Compounds, and SPM Narrative. It may also include the Radiography/VE Comparison Report (with copy of trending chart). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Site, AK Summary Report, Waste Stream Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 38 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
11(i)	CCP RH AK Container Tracking Spreadsheet Any electronic or manual system that tracks and produces records of wastes, from cradle to grave, from generator, storage or transported locations, including laboratory processing. Database and record systems which track wastes from creation through transportation, processing, storage; and reporting tracking records. AK Container Tracking Spreadsheet is a spreadsheet that identifies the following minimum criterion for each container listed in the waste stream: Container ID, Waste Stream ID, generation date, vent date, change reason, new closure date, new vent date, container type. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Electronic/Hard Copy Filing Order: Site Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 1.g.(3)(a)	Delete or destroy when related records are destroyed, or 75 years from creation, whichever occurs later.	Print out after completion of waste stream shipment to WIPP. Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 39 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
12	**CCP PROCEDURES, PLANS, AND REPORTS** CCP Procedures, plans, and reports document record packages may include but is not limited to the following record: Documentation that demonstrates approval by designated individuals; Comments and comment resolution (attachments, DRR, emails, letter, etc.); Document revision requests (i.e., initial markup) and DOE/CBFO submittal email within five days of project level review. This line item is separate from AK Summary Reports and the AK QA Equivalency Demonstration Reports. **QA Record/Nonpermanent/Validated by authorized signature and date for hard copy file and login and password of authorized personnel.** Media Type: Hard Copy Filing Order: Alpha-Numeric - Procedure Numbers Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
13	**CCP RH PROCUREMENT RECORDS** Procurement records generated in the acquisition of goods and non-personnel services.			

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 40 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
13(a)	<u>CCP RH Procurement Documentation</u> CCP procurement records that were generated in the acquisition of goods and non-personnel services for RH generator sites. Includes but not limited to the following: Purchase Requisitions/Change Notices; Purchase Orders/Change Notices; Statements of Work; Specifications/Drawings: Qualified Suppliers List (QSL) and attachments; Approval/Variation Requests, and copies of the QA Grading Level Determination Checklist. This is for Quality Level 1 and 2 procurements only. **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Purchase Order Number Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA and NWP/Procurement	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 41 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
13(b)	CCP RH Receipt Inspection Verification Sheets (RIVS) RIVS and supporting documentation (certificates of analysis/conformance/compliance, calibration certificates, etc.) pertaining to quality source and receipt activities in support of the CCP RH's waste characterization mission. This was named Source Receipt Inspection Verification Sheets (SRIVS) but is now called as titled above – RIVS. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric by Purchase Order Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 42 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
14	**STANDING ORDERS for RH Sites** Documentation that is a means in which management communicates short-term direction to operators and the documented quarterly review of standing orders. Information such as special operations, data collection, plotting process parameters and other similar short-term matters may be included in standing orders. Standing orders are not used to deviate from procedures but supplement procedures until the procedure can be revised. Includes Standing Order Log. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized initial/signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in office until completion of characterization process for each site. Transmit to CCP Records to be maintained until no longer needed to support audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 43 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
15	**CCP RH OPERATOR AIDS** Documentation that is used to provide information useful to operators in performing their duties and the semi-annual reviews that operator aids are still necessary and current. Operator aids may be in many forms such as the latest revision of pages out of procedures, hand written notes, and information tags. Operator aids are viewed as a convenience to the operator, not administrative/technical requirements and/or direction. Operator aids assigned unique numbers may supplement approved procedures, but shall not be used in lieu of approved procedures. **QA Record/Nonpermanent/Validated by authorized initial/signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in office until completion of characterization process for each site. Transmit to CCP Records to be maintained until no longer needed to support audits. Transfer to the WRA within one year for storage and retention.
16	**CCP RH WASTE DATA SYSTEM (WDS) FORMERLY WIPP WASTE INFORMATION SYSTEM (WWIS) and TRANSPORTATION DOCUMENTATION** The WDS is an on-line database system used to document information pertaining to waste, including but not limited to waste container characterization and certification data, produce reports, record shipment configuration details, disposal locations and disposal dates. Transportation documentation is the transportation packages created during the preparation and transport of drums for burial at the WIPP.			

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 44 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
16(a)	CCP RH WDS Documentation The WDS is an on-line database system used to document information pertaining to the waste, including but not limited to waste container characterization and certification data, produce reports, record shipment configuration details, disposal locations and disposal dates. CCP RH WDS package is created during the process entering data into the WDS and reporting data on TRU waste. The WDS is a database system that requires input from waste generator sites for shipment of TRU waste payload containers and payload assemblies that are intended for disposal at WIPP. CCP represents all RH sites as the generator and provides input to WDS on behalf of all RH sites. The CCP RH WDS packages contain, but are not limited to spreadsheets, reports, and correspondence associated with data CCP submits to WDS electronically. **QA Record/Lifetime/Validated by authorized initial/signature and date.** Media Type: Hard Copy Filing Order: Site and WDS Batch Number Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 45 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
16(b)	Radiological Surveys Radiological Surveys are performed to document levels of radiation, contamination conditions of the containers going through the characterization process for CCP RH. These are external records generated by the generator sites. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Rad Survey Number Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
16(c)	Removable Lid Canister (RLC) Loading Forms RLC Loading Forms are completed during the process of loading RH containers into the RLC for shipment in the RH-TRU- 72-B Cask for the CCP. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric Canister Number Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 46 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
17	**TRANSPORTATION DOCUMENTATION** TRU shipment records includes records prepared by the waste generator and other related documentation. CCP RH transportation packages created during the preparation and transport of drums for burial at the WIPP. May include but not limited to: Payload Container Transportation Certification Document, Uniform Hazardous Waste Manifest, Public burden Statement, Straight Bill of Lading – Short Form, Land Disposal Restriction Exemption Notification, Dunnage Certification Statement, Container Integrity Checklist and Leak Test Report. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **EPIDEMIOLOGICAL** **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Alpha-Numeric by Shipment Number Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	ENV 2.d(4)	Destroy after 5 years.	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
18	**CONFIGURATION MANAGEMENT DOCUMENTATION for EQUIPMENT** Configuration Management documentation for equipment pertains to the control and oversight of CCP Mobile Characterization Equipment (MCE) and transportation equipment.			

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 47 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
18	Measuring and Test Equipment (M&TE) Documentation M&TE pertains to documents that ensure equipment used for inspection and testing are properly controlled, calibrated, and maintained. This includes but is not limited to the following: Notice of Deficiency; Manufacturer's Certificate of Calibrations; Calibration Interval Documentation – Calibration Interval/Tolerance Adjustments Evaluation; Exemptions/Temporary Extension Evaluations; Evaluations/Impact Studies with Out-of-Tolerance (OOT) Evaluations – as applicable; Closing/Exit Calibrations; and pertinent emails as applicable. May include Attachment 2, CCP Records Transmittal/Receiving Form(s). **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Equipment and date Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

Waste Isolation Pilot Plant RECORDS INVENTORY AND DISPOSITION SCHEDULE (RIDS)	1. ☐DOE X Contractor	2. Page 48 of 48

6. Item No.	7. Filing Series Title, Description, Any Special Categories, Media Types, Filing Order, Inclusive Dates and Location:	8. Disposition Authority	9. Authorized Disposition Instructions	10. Transfer Instructions
18(b)	EPA Tier 1 and Tier 2 Documentation Tier 1 and Tier 2 documentation pertains to the characterization change authorization of the EPA approved waste characterization processes for NDA and VE. Tier changes are documented by memorandum which is the notification of the required change to the waste characterization process. May include various supporting documents. **QA Record/Nonpermanent/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Chronological Inclusive Dates: 2006 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.
19	**CONTAINER FILTER INSTALLATION FORMS & DRUM INFORMATION SHEETS** Container Filter Installation Forms and Drum Information Sheets are generated and completed by the host site at Argonne National Laboratory – East (ANL-E). Container Filter Installation Forms provide container numbers, filter information, Equipment Serial Number and Calibration Due Date. The Drum Information Sheet provides drum numbers, radiation readings, filter information, lid information, and storage cask numbers. **QA Record/Lifetime/Validated by authorized signature and date.** Media Type: Hard Copy Filing Order: Chronological Inclusive Dates: 2007 to Present Location: CCP Records - SWB and/or WRA	Disposition Authority Pending NARA Approval	UNSCHEDULED -Do Not Destroy-	Retain in CCP Records until completion of characterization process for each site or when no longer needed in project files to support daily functions or audits. Transfer to the WRA within one year for storage and retention.

GEN7

GEN7

RH Program - SNL
List of Qualified Individuals
5/27/2014 9:26 AM

	Name	Position	CCP Next Training Due Date	Host Site Next Training Due Date
VE	Candelaria, Joe	Operator/ITR	01/2016	01/29/15
VE	Hemsing, David	Operator/ITR	01/2016	01/28/15
VE	Mojica, Tommy	Operator/ITR (Includes Gravimetric) **SME/OJT** NCR "K" Code Designee	07/2015	Escort required to perform site operations.
VE	Pattee, Spencer Troy	Operator/ITR (Includes Gravimetric) **SME/OJT** Expert NCR "K" Code Designee	06/2015	01/28/15
VE	Root, Wes	Operator/ITR (Includes Gravimetric) **SME/OJT**	08/2015	Escort required to perform site operations.

	Name	Position	CCP Next Training Due Date	Host Site Next Training Due Date
DTC	Hemsing, David	Operator/ITR	05/2016	01/28/15
DTC	Pattee, Spencer Troy	Operator/ITR **SME/OJT** NCR "K" Code Designee	01/2016	01/28/15
DTC	Shepley, Todd	Operator/ITR **SME/OJT** NCR "K" Code Designee	04/2015	Escort required to perform site operations.
DTC	Root, Wes	Operator/ITR **SME/OJT**	08/2015	Escort required to perform site operations.

RH SNLNDE Personnel Waste Streams Qualified List

5/27/2014 9:26 AM

		Technical Area V, Bldg 6591	SNL-HCF-S5400-RH
		VEE	AK-500
VE	Candelaria, Joe		X
	Hemsing, David		X
	Mojica, Tommy		X
	Pattee, Spencer	E	X
	Root, Wes		X

AK8

Attachment 6 – Waste Form, Waste Material Parameters, Prohibited Items, and Packaging – Example Form Page 1 of 2

Site(s): Sandia National Laboratories/New Mexico

Waste Stream Description: Remote Handled/Hot Cell Facility Transuranic Waste (Debris)

Container ID Numbers: See CCP-TP-005, Attachment 8 for containers in this waste stream

Waste Stream Number: SNL-HCF-S5400-RH	
Physical Waste Form (e.g., debris, solidified waste)	Debris
Summary Category Group [a]	S5000
Waste Matrix Code Group [a]	Heterogeneous debris waste
Waste Matrix Code [b]	S5400
Waste Material Parameter Weights [c]	Estimated Waste Stream Weight Percent Average (attach evaluation justifying percentages)
Iron-based metals/alloys	71.0%
Aluminum-based metals/alloys	10.1%
Other metals	4.3%
Other inorganic materials	4.7%
Cellulosics	3.4%
Rubber	0.9%
Plastics (waste materials)	5.1%
Organic matrix	0.0%
Inorganic matrix	0.5%
Soils/Gravels	0.0%
Packaging Materials	Present (Y/N)?
Steel	Y
Plastics	Y
Prohibited Wastes [d,e,f,g]	Present (Y/N)?
Observable liquid shall be no more than 1 percent by volume of the outermost container at the time of RTR or VE. Observable liquid shall be no more than 60 milliliters or 3 percent by volume, whichever is greater, in an internal container. Observable liquid shall not be present in a container with EPA HWN U134 assigned.	Y
Non-radionuclide pyrophoric materials	N
Sealed containers > 4 liters	Y
Hazardous waste not occurring as co-contaminants with TRU mixed waste (non-mixed hazardous waste)	N

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NTPC RECORDS ORIGINAL
DATE REC'D 8/6/2014
SPF

Attachment 6 – Waste Form, Waste Material Parameters, Prohibited Items, and Packaging (continued)

Waste Stream Number: SNL-HCF-S5400-RH	
Explosives	N
Compressed gases	Y
Residual hydrofluoric acid (if U134 assigned to stream)	N
Residual PCB liquids [j]	N
Ignitables (EPA Hazardous Waste Number D001)	N
Corrosives (EPA Hazardous Waste Number D002)	N
Reactives (EPA Hazardous Waste Number D003)	N
Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes [h]	N
Spent Nuclear fuel or high-level waste [i]	N
Any un-vented plastic bags > 4 liters that have been heat-sealed	N
Additional Information (if available)	N
Packaging	
Waste container type?	DOT/WIPP compliant 55-galon drum
Liner type?	may or may not contain a plastic drum liner
Is liner punctured?	Y
Is filter vent installed?	Y
Maximum number of confinement layers	1(one)

a. Source: *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (CCP-PO-001) Introduction.
b. Source: *Transuranic Waste Baseline Inventory Report* (DOE/CAO-95-1121) or DOE Waste Treatability Group Guidance (DOE/LLW-217). Note: the waste matrix code should not be assigned at the summary category group level.
c. Source: CCP-PO-001 – Table C3-1. Attach the Waste Material Parameter Evaluation Memorandum used to estimate values include in this Table (see Section 4.4.27).
d. Source: CCP-PO-001 – Section C-1c
e. Source: *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC)(DOE/WIPP-02-3122), Section 3
f. Source: *TRUPACT-II Content Codes* (TRUCON) (DOE/WIPP 89-004)
g. Source: *TRUPACT-II Authorized Methods for Payload Control (TRAMPAC), Nuclear Waste Partnership*, LLC
h. This waste has been approved for disposal at the WIPP by the Permittee as documented by Appendix C1 of the WIPP RCRA Part B Permit Application and the Permittee's approval and assignment of the applicable TRUCON Codes for this waste stream.
i. Source: *Nuclear Waste Policy Act of 1982* (42 U.S.C. 10101)
j. Source: Polychlorinated Biphenyls (PCBs) manufacturing, Processing, Distribution and Commerce, and Use Prohibitions (40 CFR 761)

Acceptable Knowledge Expert: John Kleckner, [signature] Date: 8/6/14
Print Sign

Memorandum

To: CCP Records

From: John Kleckner, AKE

Date: January 24, 2014

Re: Waste Material Parameter Evaluation for Waste Stream SNL-HCF-S5400-RH, Sandia National Laboratories/New Mexico, Remote Handled/Hot Cell Facility Transuranic Waste (Debris)

In accordance to *CCP Acceptable Knowledge Documentation*, CCP-TP-005, Revision 26, Section 4.4.26, Waste Material Parameters (WMPs) shall be estimated on a weight percent basis for the Waste stream, documenting the assumptions, justification, and limitations for deriving the estimated weight percentages.

The WMP weight percentages for this waste stream were estimated by reviewing the container paperwork. Since container paperwork did not always indicate weights for individual items placed in a parcel or drum, these weights were estimated based on the waste description. For most parcels, the net weights were taken from the SNL Radioactive Waste/Nuclear Material Disposition Department Radiological Form included in the DR documentation. A few parcels had other Disposal Request documentation that was viewed as more accurate so that was used (References C1039, M1016, and M1019). The FEW waste, because it had been previously managed as accountable material, does not have standard DRs so content descriptions are based on MC&A records and radiological characterization forms, which are less detailed from the WMP perspective. In addition, many of the FEW containers have the original experimental assemblies, which may or may not have been entirely contaminated if the fuels remained intact during irradiation in ACRR. If the fuels remained intact they could potentially be removed from the assemblies during repackaging (Reference P2002), substantially reducing the volume of waste material. For the FEW containers the following assumptions were made to determine WMP:

1) Net weight of a container was taken from the Radiological Characterization Summary Form (Reference M2021). If a Summary form was not available the net weight is based on SNL's estimate of the average experimental assembly weight of 60 lbs., regardless of the type of container it is currently stored in (Reference P2002).

2) The current outer containers (i.e. shielded casks, drums, assembly packages, and boxes) will be disposed as low-level waste and will not become part of the waste stream.

3) The net weight of each container will consist of 85% Iron-based metal (experiment assemblies, inner packaging [e.g. steel paint cans], fuel cladding), 10% aluminumbased metals (experiment assembly parts), and 5% other metals (experiment assembly parts, fuel, and cladding).

4) The weight of other inorganic materials, cellulosics, rubber, and plastic, prior to repackaging is negligible to the weight of metal.

NTPC RECORDS ORIGINAL
DATE REC'D 5-21-14

The WMP estimate for waste stream SNL-HCF-S5400-RH is presented in Table 1, Waste Material Parameter Estimates for SNL-HCF-S5400-RH. These calculations conclude that the average weight percentages for inorganic and organic waste materials for waste stream SNL-HCF-S5400-RH are 90.6 percent and 9.4 percent, respectively, with the predominant WMP being iron based metal alloys. The minimum and maximum weight percentages per drum included in Table 1 represents the lowest and highest estimated non-zero amounts of these materials prior to repackaging. The final packaging of these materials will result in drums that do not include all of these waste material parameters. The estimates in Table 1 take into account the entire waste stream, including the portion of this waste stream that has been shipped to WIPP. Appendix A to this memo is the spreadsheet containing the data collected from review of the container documentation, and was used to derive the WMP estimates.

Table 1. Waste Material Parameter Estimates for SNL-HCF-S5400-RH

Waste Material Parameter	Average Weight Percent (Wt%)	Wt% Range[1]
Iron-based Metals/Alloys	71.0%	3.0% - 95.0%
Aluminum-based Metals/Alloys	10.1%	1.0% - 100.0%
Other Metals	4.3%	1.0% - 80.0%
Other Inorganic Materials	4.7%	0.1% - 100.0%
Cellulosics	3.4%	0.5% - 50.0%
Rubber	0.9%	0.5% - 11.1%
Plastic (waste materials)	5.1%	0.5% - 50.0%
Solidified Inorganic Material	0.5%	3.3% - 10.0%
Solidified Organic Material	0.0%	0.0% - 0.0%
Soils	0.0%	0.0% - 0.0%
Total Inorganic Waste Average	**90.6%**	
Total Organic Waste Average	**9.4%**	

[1] Range includes lowest non-zero estimated values for parcels prior to repackaging.

Waste Material Paramenter Memo
SNL-HCF-S5400-RH
Appendix A

Current Container Number	Waste Parcel ID#	LANMAS Container#	Original Container Number(s)	net Weight (g)	net Weight (lbs)	Iron-based metals/alloys (IM) - 7.86 g/cc	Aluminum-based metals/alloys (AM) - 2.7 g/cc	Other metals (OM)	Other inorganic materials (OI)	Cellulosics (C) - 0.7 g/cc	Rubber (R) - 1.4 g/cc	Plastics (waste materials) (PW) - 2.2 g/cc	Inorganic matrix (IN)	Organic matrix (OR)	Soils
C980395	P9800966		HCF-RW-95-SC-1	8.81E+04	194.00	70460.8	4403.8	0.0	4403.8	4403.8	0.0	4403.8	0.0	0.0	0.0
C980394	P9800965		HCF-RW-95-SC2	8.26E+04	182.00	41314.0	4131.4	4131.4	8262.8	8262.8	0.0	8262.8	8262.8	0.0	0.0
C980403	P9801007		HCRFW5(GB-1-95-		40.00	4952.7	1650.9	3301.8	1650.9	1650.9	1650.9	3301.8	0.0	0.0	0.0
C980405	P9801005		TRU-HCF-95-01?		90.00	16344.0	20430.0	4086.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C980387	P9800958		TRU-HCF-95-02	52664.00	116.00	42131.2	2633.2	2633.2	52.7	2580.5	0.0	2633.2	0.0	0.0	0.0
C980392	P9800963		TRU-HCF-97-05	13166.00	29.00	9216.2	0.0	2633.2	0.0	658.3	0.0	658.3	0.0	0.0	0.0
C980391	P9800962		TRU-HCF-97-06	8626.00	19.00	862.6	0.0	6900.8	431.3	431.3	0.0	0.0	0.0	0.0	0.0
C980465	P9801148		HCF-RW-96-KC-01		124.00	38860.7	0.0	0.0	6480.1	810.0	810.0	9315.2	0.0	0.0	0.0
C980466	P9801149		HCF-RW-95-KC-03		189.00	76012.6	0.0	0.0	4213.4	2733.0	0.0	0.0	2846.9	0.0	0.0
C980467	P9801150		HCF-RW-95-KC-05		256.00	58112.0	21131.6	10565.8	0.0	5282.9	5282.9	15848.7	0.0	0.0	0.0
C980371	P9800935		ST-1		10.00	3632.0	454.0	454.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C980375	P9800939		HCF-RW-96-KC-04		142.00	61244.6	644.7	644.7	644.7	322.3	0.0	644.7	0.0	0.0	0.0
C980376	P9800940		HCF-RW-96-KC-03		204.00	87985.2	926.2	1852.3	0.0	463.1	463.1	926.2	0.0	0.0	0.0
C980373	P9800937		HCF-RW-96-KC-07		138.00	50121.6	6265.2	626.5	313.3	313.3	626.5	4385.6	0.0	0.0	0.0
C980374	P9800938		HCF-RW-96-KC-06		140.00	60382.0	635.6	635.6	635.6	317.8	317.8	635.6	0.0	0.0	0.0
C980377	P9800941		HCF-RW-96-KC-02		340.00	146642.0	3087.2	1543.6	771.8	771.8	771.8	771.8	0.0	0.0	0.0
C980396	P9800964		HCF-RW-KC-96-05		102.00	18866.2	3430.2	5145.3	1715.1	1715.1	5145.3	10290.7	0.0	0.0	0.0
C080210	P9800660				25.50	1286.3	4502.2	643.2	1286.3	1286.3	0.0	2572.7	0.0	0.0	0.0
	P2000938				1.50	454.0	0.0	113.5	0.0	0.0	0.0	113.5	0.0	0.0	0.0
C980378	P9800947		HCF-RW-KC-95-04		108.00	0.0	0.0	0.0	49032.0	0.0	0.0	0.0	0.0	0.0	0.0
C980379	P9800943		HCF-RW-KC-96-08		136.00	30872.0	0.0	0.0	0.0	15436.0	0.0	15436.0	0.0	0.0	0.0
C980380	P9800944		HCF-RW-KC-95-06		130.00	47216.0	2951.0	2951.0	0.0	2951.0	0.0	2951.0	0.0	0.0	0.0
C990236	P9900529		HCF-RW-KC-95-06		76.00	17252.0	0.0	0.0	1725.2	8900.8	1725.2	8900.8	0.0	0.0	0.0
C990238	P9900531		HCF-RW-KC-95-01		137.00	16963.1	0.0	5654.4	5654.4	11308.7	5654.4	16963.1	0.0	0.0	0.0
C990239	P9900532				117.00	1593.5	50462.1	1062.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C980313	P9800776		HCF-RW-1		56.00	0.0	0.0	0.0	25424.0	0.0	0.0	0.0	0.0	0.0	0.0
SNL/NM000178	P0400016				57.00	0.0	0.0	0.0	0.0	12939.0	0.0	12939.0	0.0	0.0	0.0
C080216	P2000836				1.92	436.5	0.0	0.0	0.0	0.0	0.0	436.5	0.0	0.0	0.0
	P9900533				20.95	0.0	9511.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	P9900534				20.95	0.0	9511.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C980281	P9800712		HCF-RW-KC-95-02		125.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C200357	P2000998				25.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217788				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217792				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217803				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217804				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Current Container Number	Waste Parcel ID#	LANMAS Container#	Original Container Number(s)	net Weight (g)	net Weight (lbs)	Iron-based metals/alloys (IM) - 7.86 g/cc	Aluminum-based metals/alloys (AM) - 2.7 g/cc	Other metals (OM)	Other inorganic materials (OI)	Cellulosics (C) - 0.7 g/cc	Rubber (R) - 1.4 g/cc	Plastics (waste materials) (PW) - 2.2 g/cc	Inorganic matrix (IN)	Organic matrix (OR)	Soils
		A00217805				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217806				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00186124				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00186629				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00186636				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00186919				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00187138				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00188180				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00188425				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00188432				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00190022				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00191470				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00191876				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973090		C00210003				5440.0	640.0	320.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973095		C00210009(C00				115.6	13.6	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210011				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210014				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973079		C00210015				77.1	9.1	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973077		C00210016				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210017				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973078		C00210018				2125.0	250.0	125.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973085		C00210019(C00				2125.0	250.0	125.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973086		C00210020(C00				2125.0	250.0	125.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973087		C00210021				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973088		C00210022				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210023				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973089		C00210024				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973099		C00210025(C00				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973062		C00210026				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210033				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210271				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00218134				2065.5	243.0	121.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		P00143301				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Shaded areas indicate FEW waste														
						1689107.11	239217.54	101806.52	112697.37	81538.86	22447.93	120390.92	11109.71	0.00	0.00
	Shaded areas indicate where there was not enough information to assign specific WMP, so they were left blank.				Wt %	71.0%	10.1%	4.3%	4.7%	3.4%	0.9%	5.1%	0.5%	0.0%	0.0%

Steel Packaging materials	Plastics (packaging materials)	check	net weight (g)	Iron-based metals/alloys wt%	Aluminum-based metals/alloys wt%	Other metals (OM) wt%	Other inorganic materials (OI) wt%	Cellulosics wt%	Rubber wt%	Plastics (waste materials) wt%	Inorganic matrix wt%	Organic matrix wt%	Soils wt%	Steel Packaging materials	Plastics (packaging materials)	total
0.0	0.0		88076.00	80.00%	5.00%	0.00%	5.00%	5.00%	0.00%	5.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		82628.00	50.00%	5.00%	5.00%	10.00%	10.00%	0.00%	10.00%	10.00%	0.00%	0.00%			100.00%
0.0	0.0		18160.00	27.27%	9.09%	18.18%	9.09%	9.09%	9.09%	18.18%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		40660.00	40.00%	50.00%	10.00%					0.00%	0.00%	0.00%			100.00%
0.0	0.0	52664	52664	80.00%	5.00%	5.00%	0.10%	4.90%	0.00%	5.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	13166	13166	70.00%	0.00%	20.00%	0.00%	5.00%	0.00%	5.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	8626	8626	10.00%	0.00%	80.00%	5.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		56296	69.06%	0.00%	0.00%	11.51%	1.44%	1.44%	16.55%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	85806	85806	88.59%	0.00%	0.00%	4.91%	3.18%	0.00%	0.00%	3.32%	0.00%	0.00%			100.00%
0.0	0.0		116224	50.00%	18.18%	9.09%	0.00%	4.55%	4.55%	13.64%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		4540	80.00%	10.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		64468	95.00%	1.00%	1.00%	1.00%	0.50%	0.00%	1.00%	0.00%	0.00%	0.00%			99.50%
0.0	0.0		92616	95.00%	1.00%	2.00%	0.00%	0.50%	0.50%	1.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		62652	80.00%	10.00%	1.00%	0.50%	0.50%	1.00%	7.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	63560	63560	95.00%	1.00%	1.00%	1.00%	0.50%	0.50%	1.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	154360	154360	95.00%	2.00%	1.00%	0.50%	0.50%	0.50%	0.50%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	46308	46308	40.74%	7.41%	11.11%	3.70%	3.70%	11.11%	22.22%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	11577	11577	11.11%	38.89%	5.56%	11.11%	11.11%	0.00%	22.22%		0.00%	0.00%			100.00%
0.0	0.0		681	66.67%	0.00%	16.67%	0.00%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	49032	49032	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		61744	50.00%	0.00%	0.00%	0.00%	25.00%	0.00%	25.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	59020	59020	80.00%	5.00%	5.00%	0.00%	5.00%	0.00%	5.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		34504	50.00%	0.00%	0.00%	5.00%	20.00%	5.00%	20.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		62198	27.27%	0.00%	9.09%	9.09%	18.18%	9.09%	27.27%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		53118	3.00%	95.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		25424	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	25878	25878	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		873	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		9511.3	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	9511.3	9511.3	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		56750													0.00%
0.0	0.0		11350													
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%

Steel Packaging materials	Plastics (packaging materials)	check	net weight (g)	Iron-based metals/alloys wt%	Aluminum-based metals/alloys wt%	Other metals (OM) wt%	Other inorganic materials (OI) wt%	Cellulosics wt%	Rubber wt%	Plastics (waste materials) wt%	Inorganic matrix wt%	Organic matrix wt%	Soils wt%	Steel Packaging materials	Plastics (packaging materials)	total
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		6400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		136	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		90.7	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		2500	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		2500	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		2500	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		2430	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.00	0.00	2378316.0	2446738.30	0.00%												
0.0%	0.0%	100.0%														
			Min	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
			Min none zero	3.00%	1.00%	1.00%	0.10%	0.50%	0.50%	0.50%	3.32%	0.00%	0.00%			
			Max	95.00%	100.00%	80.00%	100.00%	50.00%	11.11%	50.00%	10.00%	0.00%	0.00%	0.00%	0.00%	

GEN9

Training Records File –
Qualification Card Packages:

AK

Dickerson, Charles Allen ..... AKE
Kleckner, John ..... AKE
Lickliter, Elizabeth ..... AKE
Peters, Kevin ..... AKE
Schafer, Steve ..... AKE

SPM

Joo (Quintana), Irene ..... RH SPM QC
Nelson, Laura ..... RH SPM
Pattee, Spencer ..... RH DTC QC,
..... RH VE QC, and
..... VPM QC

COPY

Acceptable Knowledge Expert (AKE) Qualification Card

Name: Charles Allen Dickerson	**Badge Number:** [redacted]
Email Address: [redacted]	

Education / Experience	
Resume documenting education and experience on file with Central Characterization Project (CCP) Training.	Michele Billett 6/9/11 CCP Training Date

Job Specific Training	
Qualification Limit	There is no qualification time limit for this position. It is a one-time only requirement. Upon completion of this qualification card, the Trainee is qualified to perform all Acceptable Knowledge Expert duties, including the development of acceptable knowledge reports. If necessary, additional training may be required by the CCP Lead Site Project Manager (SPM) or the CCP Manager Responsible for Training. Unsatisfactory performance will result in disqualification by the CCP Manager Responsible for Training. The candidate must successfully complete the entire CCP qualification card to re-establish qualification.
Requalification Requirements	Not required. See above statement.

Indoctrination	
WAP/QAPjP Briefing and Test. 8/18/10	Michele Billett 6/9/11 CCP Training Date

Initial/Indoctrination Reading:

1. NM4890139088, *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*
2. DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
3. DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
4. DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document*
5. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
6. CCP-PO-002, *CCP Transuranic Waste Certification Plan*
7. CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
8. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
9. CCP-QP-004, *CCP Corrective Action Management*
10. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
11. CCP-QP-006, *CCP Corrective Action Reporting and Control*
12. CCP-QP-008, *CCP Records Management*
13. CCP-QP-036, *CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration*

Acceptable Knowledge Expert (AKE) Qualification Card

Name: Charles Allen Dickerson **Badge Number:** [redacted]

Email Address: [redacted]

	14. CCP-TP-001, *CCP Project Level Data Validation and Verification* 15. CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data* 16. CCP-TP-005, *CCP Acceptable Knowledge Documentation* 17. CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*
I have read the listed initial/indoctrination reading and understand my responsibilities as applicable to the procedures above.	Trainee Signature — Date: 6-9-2011

Formal Training Requirements	
RCRA Training Documentation	CCP Training — Michele Billett — Date: 6/9/11

Approvals	
I have completed formal training and received on-the-job training for this position. I fully understand my responsibilities as an AKE.	Trainee *(printed name and signature)* — C. Allen Dickerson — Date: 6-9-11
This individual has shown proficiency in the implementation of the requirements for the preparation of Acceptable Knowledge Summary Reports as required by CCP-TP-005.	AK Cognizant Manager *(printed name and signature)* — Trey Greenwood — Date: 6/10/11
I have monitored the training of this individual and believe they are ready to perform the duties of an AKE. I approve this employee to perform the duties of an AKE.	CCP Site Project Manager *(printed name and signature)* — LAURA Nelson — Date: 6/16/11

Approved for Content & Format:	**Trey Greenwood (Approval on File)** Cognizant Engineer	**06/08/2011** Date
Approved for Content:	**Richard Kantrowitz (Approval on File)** CCP Lead or Alternate SPM	**06/08/2011** Date
Approved for Use:	**A.J. Fisher (Approval on File)** CCP Manager Responsible for Training	**06/08/2011** Date

COPY

Acceptable Knowledge Expert (AKE) Qualification Card

Name: John Kleckner	**Badge Number:** [redacted]
Email Address: [redacted]	

Education / Experience	
Resume documenting education and experience on file with Central Characterization Project (CCP) Training.	Michele Billett 6/13/11 CCP Training Date

Job Specific Training	
Qualification Limit	There is no qualification time limit for this position. It is a one-time only requirement. Upon completion of this qualification card, the Trainee is qualified to perform all Acceptable Knowledge Expert duties, including the development of acceptable knowledge reports. If necessary, additional training may be required by the CCP Lead Site Project Manager (SPM) or the CCP Manager Responsible for Training. Unsatisfactory performance will result in disqualification by the CCP Manager Responsible for Training. The candidate must successfully complete the entire CCP qualification card to re-establish qualification.
Requalification Requirements	Not required. See above statement.

Indoctrination	
WAP/QAPjP Briefing and Test.	Michele Billett 6/13/11 CCP Training Date

Initial/Indoctrination Reading:

1. NM4890139088, *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*
2. DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
3. DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
4. DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document*
5. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
6. CCP-PO-002, *CCP Transuranic Waste Certification Plan*
7. CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
8. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
9. CCP-QP-004, *CCP Corrective Action Management*
10. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
11. CCP-QP-006, *CCP Corrective Action Reporting and Control*
12. CCP-QP-008, *CCP Records Management*
13. CCP-QP-036, *CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration*

Acceptable Knowledge Expert (AKE)
Qualification Card

Name: John Kleckner	**Badge Number:** [redacted]
Email Address: [redacted]	

	14. CCP-TP-001, *CCP Project Level Data Validation and Verification* 15. CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data* 16. CCP-TP-005, *CCP Acceptable Knowledge Documentation* 17. CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*
I have read the listed initial/indoctrination reading and understand my responsibilities as applicable to the procedures above.	Trainee Signature: John Kleckner — Date: 6/9/11

Formal Training Requirements	
RCRA Training Documentation	CCP Training: Michele Billett — Date: 6/13/11

Approvals	
I have completed formal training and received on-the-job training for this position. I fully understand my responsibilities as an AKE.	Trainee *(printed name and signature)*: John Kleckner John Kleckner — Date: 6/9/11
This individual has shown proficiency in the implementation of the requirements for the preparation of Acceptable Knowledge Summary Reports as required by CCP-TP-005.	AK Cognizant Manager *(printed name and signature)*: Trey Greenwood — Date: 6/16/11
I have monitored the training of this individual and believe they are ready to perform the duties of an AKE. I approve this employee to perform the duties of an AKE.	CCP Site Project Manager *(printed name and signature)*: LAUREA Nelson Laura Nelson — Date: 6-16-11

Approved for Content & Format:	**Trey Greenwood (Approval on File)** Cognizant Engineer	**06/08/2011** Date
Approved for Content:	**Richard Kantrowitz (Approval on File)** CCP Lead or Alternate SPM	**06/08/2011** Date
Approved for Use:	**A.J. Fisher (Approval on File)** CCP Manager Responsible for Training	**06/08/2011** Date

COPY

Acceptable Knowledge Expert (AKE) Qualification Card

Name: Elizabeth Lickliter	**Badge Number:** [redacted]
Email Address: [redacted]	

Education / Experience	
Resume documenting education and experience on file with Central Characterization Project (CCP) Training.	Michele Billett 6/9/11 CCP Training Date

Job Specific Training	
Qualification Limit	There is no qualification time limit for this position. It is a one-time only requirement. Upon completion of this qualification card, the Trainee is qualified to perform all Acceptable Knowledge Expert duties, including the development of acceptable knowledge reports. If necessary, additional training may be required by the CCP Lead Site Project Manager (SPM) or the CCP Manager Responsible for Training. Unsatisfactory performance will result in disqualification by the CCP Manager Responsible for Training. The candidate must successfully complete the entire CCP qualification card to re-establish qualification.
Requalification Requirements	Not required. See above statement.

Indoctrination	
WAP/QAPjP Briefing and Test. 9/14/07	Michele Billett 6/9/11 CCP Training Date
	Initial/Indoctrination Reading: 1. NM4890139088, *Waste Isolation Pilot Plant Hazardous Waste Facility Permit* 2. DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* 3. DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* 4. DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document* 5. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* 6. CCP-PO-002, *CCP Transuranic Waste Certification Plan* 7. CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)* 8. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)* 9. CCP-QP-004, *CCP Corrective Action Management* 10. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control* 11. CCP-QP-006, *CCP Corrective Action Reporting and Control* 12. CCP-QP-008, *CCP Records Management* 13. CCP-QP-036, *CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration*

Acceptable Knowledge Expert (AKE) Qualification Card

Name: Elizabeth Lickliter	**Badge Number:** [redacted]
Email Address: [redacted]	

	14. CCP-TP-001, *CCP Project Level Data Validation and Verification* 15. CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data* 16. CCP-TP-005, *CCP Acceptable Knowledge Documentation* 17. CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*
I have read the listed initial/indoctrination reading and understand my responsibilities as applicable to the procedures above.	Elizabeth Lickliter 6/9/2011 Trainee Signature — Date

Formal Training Requirements	
RCRA Training Documentation	Michele Billett 6/9/11 CCP Training — Date

Approvals	
I have completed formal training and received on-the-job training for this position. I fully understand my responsibilities as an AKE.	E. Lickliter Elizabeth Lickliter 6/9/2011 Trainee *(printed name and signature)* — Date
This individual has shown proficiency in the implementation of the requirements for the preparation of Acceptable Knowledge Summary Reports as required by CCP-TP-005.	Trey Greenwood 6/16/11 AK Cognizant Manager *(printed name and signature)* — Date
I have monitored the training of this individual and believe they are ready to perform the duties of an AKE. I approve this employee to perform the duties of an AKE.	LAURA Nelson Laura Nelson 6-16-11 CCP Site Project Manager *(printed name and signature)* — Date

Approved for Content & Format:	**Trey Greenwood (Approval on File)** Cognizant Engineer	**06/08/2011** Date
Approved for Content:	**Richard Kantrowitz (Approval on File)** CCP Lead or Alternate SPM	**06/08/2011** Date
Approved for Use:	**A.J. Fisher (Approval on File)** CCP Manager Responsible for Training	**06/08/2011** Date

COPY

Acceptable Knowledge Expert (AKE) Qualification Card

Name: Kevin Peters	**Badge Number:** [redacted]
Email Address: [redacted]	

Education / Experience	
Resume documenting education and experience on file with Central Characterization Project (CCP) Training.	Michele Billett 6/8/11 CCP Training Date

Job Specific Training	
Qualification Limit	There is no qualification time limit for this position. It is a one-time only requirement. Upon completion of this qualification card, the Trainee is qualified to perform all Acceptable Knowledge Expert duties, including the development of acceptable knowledge reports. If necessary, additional training may be required by the CCP Lead Site Project Manager (SPM) or the CCP Manager Responsible for Training. Unsatisfactory performance will result in disqualification by the CCP Manager Responsible for Training. The candidate must successfully complete the entire CCP qualification card to re-establish qualification.
Requalification Requirements	Not required. See above statement.

Indoctrination	
WAP/QAPjP Briefing and Test. 8/6/03	Michele Billett 6/8/11 CCP Training Date

Initial/Indoctrination Reading:

1. NM4890139088, *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*
2. DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
3. DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
4. DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document*
5. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
6. CCP-PO-002, *CCP Transuranic Waste Certification Plan*
7. CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
8. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
9. CCP-QP-004, *CCP Corrective Action Management*
10. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
11. CCP-QP-006, *CCP Corrective Action Reporting and Control*
12. CCP-QP-008, *CCP Records Management*
13. CCP-QP-036, *CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration*

Acceptable Knowledge Expert (AKE) Qualification Card

Name: Kevin Peters	**Badge Number:** [redacted]
Email Address: [redacted]	

	14. CCP-TP-001, *CCP Project Level Data Validation and Verification* 15. CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data* 16. CCP-TP-005, *CCP Acceptable Knowledge Documentation* 17. CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*
I have read the listed initial/indoctrination reading and understand my responsibilities as applicable to the procedures above..	Trainee Signature — Date: 6/8/2011

Formal Training Requirements	
RCRA Training Documentation	CCP Training — Date: 6/8/11

Approvals	
I have completed formal training and received on-the-job training for this position. I fully understand my responsibilities as an AKE.	Trainee *(printed name and signature)* — Date: 6/8/2011
This individual has shown proficiency in the implementation of the requirements for the preparation of Acceptable Knowledge Summary Reports as required by CCP-TP-005.	AK Cognizant Manager *(printed name and signature)* — Date: 6/16/11
I have monitored the training of this individual and believe they are ready to perform the duties of an AKE. I approve this employee to perform the duties of an AKE.	CCP Site Project Manager *(printed name and signature)* — Date: 6-16-11

Approved for Content & Format:	**Trey Greenwood (Approval on File)** Cognizant Engineer	**06/08/2011** Date
Approved for Content:	**Richard Kantrowitz (Approval on File)** CCP Lead or Alternate SPM	**06/08/2011** Date
Approved for Use:	**A.J. Fisher (Approval on File)** CCP Manager Responsible for Training	**06/08/2011** Date

COPY

Acceptable Knowledge Expert (AKE) Qualification Card

Name: Steve Schafer	**Badge Number:** [redacted]
Email Address: [redacted]	

Education / Experience		
Resume documenting education and experience on file with Central Characterization Project (CCP) Training.	Michele Billett CCP Training	6/8/11 Date

Job Specific Training	
Qualification Limit	There is no qualification time limit for this position. It is a one-time only requirement. Upon completion of this qualification card, the Trainee is qualified to perform all Acceptable Knowledge Expert duties, including the development of acceptable knowledge reports. If necessary, additional training may be required by the CCP Lead Site Project Manager (SPM) or the CCP Manager Responsible for Training. Unsatisfactory performance will result in disqualification by the CCP Manager Responsible for Training. The candidate must successfully complete the entire CCP qualification card to re-establish qualification.
Requalification Requirements	Not required. See above statement.

Indoctrination		
WAP/QAPjP Briefing and Test. 10/3/03	Michele Billett CCP Training	6/8/11 Date

Initial/Indoctrination Reading:

1. NM4890139088, *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*
2. DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
3. DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
4. DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document*
5. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
6. CCP-PO-002, *CCP Transuranic Waste Certification Plan*
7. CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
8. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
9. CCP-QP-004, *CCP Corrective Action Management*
10. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
11. CCP-QP-006, *CCP Corrective Action Reporting and Control*
12. CCP-QP-008, *CCP Records Management*
13. CCP-QP-036, *CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration*

Acceptable Knowledge Expert (AKE) Qualification Card

Name: Steve Schafer	**Badge Number:** [redacted]
Email Address: [redacted]	

	14. CCP-TP-001, *CCP Project Level Data Validation and Verification* 15. CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data* 16. CCP-TP-005, *CCP Acceptable Knowledge Documentation* 17. CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*
I have read the listed initial/indoctrination reading and understand my responsibilities as applicable to the procedures above.	Trainee Signature — Date: 6/8/2011

Formal Training Requirements

RCRA Training Documentation	CCP Training — Date: 6/8/11

Approvals

I have completed formal training and received on-the-job training for this position. I fully understand my responsibilities as an AKE.	STEVE SCHAFER — Trainee *(printed name and signature)* — Date: 6/8/2011
This individual has shown proficiency in the implementation of the requirements for the preparation of Acceptable Knowledge Summary Reports as required by CCP-TP-005	AK Cognizant Manager *(printed name and signature)* — Date: 6/16/11
I have monitored the training of this individual and believe they are ready to perform the duties of an AKE. I approve this employee to perform the duties of an AKE.	LAURA NELSON — CCP Site Project Manager *(printed name and signature)* — Date: 6-16-11

Approved for Content & Format:	**Trey Greenwood (Approval on File)** Cognizant Engineer	**06/08/2011** Date
Approved for Content:	**Richard Kantrowitz (Approval on File)** CCP Lead or Alternate SPM	**06/08/2011** Date
Approved for Use:	**A.J. Fisher (Approval on File)** CCP Manager Responsible for Training	**06/08/2011** Date

COPY

Remote Handled (RH) Site Project Manager (SPM) Qualification Card

Name:	Irene Quintana	**Badge Number:**	[redacted]
Email Address:	[redacted]		

Job Specific Training

Qualification Limit	There is no qualification limit for this position. This qualification is a one-time-only requirement. Upon completion of this core qualification card, the Trainee is qualified to perform SPM duties for Remote Handled Waste. Site specific qualification (i.e., BDR review) is valid for the site(s) with completed addenda. Unsatisfactory performance will result in disqualification. If unsatisfactory performance is determined, the qualification card and OJT process must be completed to re-establish qualification.
Requalification Requirements	Not required. See above statement.

Indoctrination

Completed SPM-01 Qualification Card 3/21/06	Michele Bitlett CCP Training	9/17/09 Date

Required Reading:

1. DOE / WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan (WCPIP)*
2. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
3. CCP-QP-036, *CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration*
4. CCP-TP-163, *CCP Standard Waste Visual Examination*
5. CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*
6. CCP-TP-504, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*
7. CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*
8. CCP-TP-508, *CCP Standard Real-Time Radiography Inspection Procedure*
9. CCP-TP-509, *CCP Remote-Handled Transuranic Container Tracking*
10. CCP-TP-510, *CCP Remote-Handled Radiography Test and Training Drum Requirements*
11. CCP-TP-511, *CCP Peer Review*
12. CCP-TP-512, *CCP Remote-Handled Waste Sampling*
13. CCP-TP-530, *CCP RH TRU Waste Certification and WWIS Data Entry*

I have read the listed required reading and understand my responsibilities as applicable to the procedures above.	Irene Quintana Trainee Signature	9/16/09 Date
CCP-PO-005 – Conduct of Operations Comprehensive Exam 9/17/09	Michele Bitlett CCP Training	9-17-09 Date

Remote Handled (RH) Site Project Manager (SPM) Qualification Card

Name: Irene Quintana

Badge Number: [redacted]

Email Address: [redacted]

Formal Training	On-the-job Training Knowledge Requirements	SME Signature / Date
DOE/WIPP 02-3214	1. Define Environmental Protection Agency's (EPA) definition of visual examination (VE) of record. Provide an example.	NA not required by initial SME 9/16/09
	2. Explain how CCP-TP-500 satisfies the EPA and NMED criteria.	
	3. State the Data Quality Objectives (DQO) and Quality Assurance Objectives (QAO) for each method (e.g., Dose-to-Curie, VE).	
	4. State the purpose of CCP-TP-506.	
CCP-PO-505	5. Discuss the differences in the transportation requirement for RH-TRU 72-B and CNS 10-160B versus the TRUPACT-II.	
CCP-TP-511	6. State the peer review requirements and which CCP procedure to use.	N/A Initial SME/OJT MRG 9-17-09
CCP-TP-512	7. Discuss the QAOs for radiochemistry and ICP-MS batch data report (BDR).	

Remote Handled (RH) Site Project Manager (SPM) Qualification Card

Name: Irene Quintana

Badge Number: [redacted]

Email Address: [redacted]

Formal Training	On-the-job Training Practical Requirements	SME Signature / Date
CCP-TP-500	1. Demonstrate proficiency in review of the RH visual examination BDRs.	
CCP-TP-504	2. Demonstrate proficiency in the review of "Dose-to-Curie" BDR.	
CCP-TP-506	3. Complete a Characterization Reconciliation Report (CRR).	
CCP-TP-508	4. Demonstrate proficiency in review of the RH Real-time Radiography (RTR) BDRs.	
	5. Demonstrate the verification of a container meeting the applicable content code limit.	
CCP-TP-512	6. Demonstrate proficiency in the review of "Radiochemistry" BDR.	
	7. Demonstrate proficiency in the review of "ICP-MS" BDR.	
	8. Demonstrate proficiency in the review of "Remote-Handled Waste Sample" BDR.	

9-17-09

N/A initial SME/DST - MB

9/17/09 ASME

has not expired for initial

Remote Handled (RH) Site Project Manager (SPM) Qualification Card

Name: Irene Quintana **Badge Number:** [redacted]

Email Address: [redacted]

Approvals	
I have completed formal training and received on-the-job training for this position. I fully understand my responsibilities as a RH Site Project Manager (SPM).	Irene Quintana Irene Quintana 9/16/09 Trainee *(printed name and signature)* Date
Validation by the SME/OJT instructor(s) involved in the training of this individual.	N/A for initial SME/OJT MB 9-17-09 NA Not required for initial SME AQ 9/16/09 SME/OJT Instructor *(printed name and signature)* Date N/A SME/OJT Instructor *(printed name and signature)* Date
I approve this employee to perform the duties of a RH Site Project Manager (SPM).	Hillari J. Neely 9-17-09 CCP Site Project Manager *(printed name and signature)* Date Mark Pearcy Mark Pearcy 9-17-09 CCP Program Manager *(printed name and signature)* Date
This qualification card has been reviewed for completeness and signature verification by CCP Training.	Michele Billett Michele Billett 9/17/09 CCP Training *(printed name and signature)* Date

Approved for Format: **Michele Billett (original signature on file)** **8-31-09**
CCP Training Date

Approved for Content: **Craig Simmons (original signature on file)** **8-31-09**
CCP Site Project Manager Date

Approved for Use: **Michael L. Sensibaugh (original signature on file)** **8-31-09**
CCP Program Manager Date

COPY

Remote Handled (RH) Site Project Manager (SPM) Qualification Card

Name: Laura Nelson	**Badge Number:** [redacted]
Email Address: [redacted]	

Education/Experience

Resume documenting education and experience on file with Central Characterization Project (CCP) Training.	Michele Bittlett 6/22/10 CCP Training Date

Job Specific Training

Qualification Limit	There is no qualification limit for this position. This qualification is a one-time-only requirement. Upon completion of this core qualification card, the Trainee is qualified to perform Site Project Manager (SPM) duties for Remote Handled Waste. Unsatisfactory performance will result in disqualification. If unsatisfactory performance is determined, the qualification card and on-the-job training (OJT) process must be completed to re-establish qualification.
Requalification Requirements	Not required. See above statement.

Indoctrination

Initial/Indoctrination Reading:

1. DOE / WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan (WCPIP)*
2. CCP-CM-001, *CCP Equipment Change Authorization and Documentation*
3. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
4. CCP-PO-002, *CCP Transuranic Waste Certification Plan*
5. CCP-PO-008, *CCP Quality Assurance Interface with the WTS Quality Assurance Program*
6. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
7. CCP-QP-002, *CCP Training and Qualification Plan*
8. CCP-QP-004, *CCP Corrective Action Management*
9. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
10. CCP-QP-006, *CCP Corrective Action Reporting and Control*
11. CCP-QP-008, *CCP Records Management*
12. CCP-QP-010, *CCP Document Preparation, Approval and Control*
13. CCP-QP-011, *CCP Laboratory Logbooks*
14. CCP-QP-015, *CCP Procurement*
15. CCP-QP-016, *CCP Control of Measuring and Testing Equipment*
16. CCP-QP-018, *CCP Management Assessment*
17. CCP-QP-022, *CCP Software Quality Assurance Plan*
18. CCP-QP-023, *CCP Handling, Storage, and Shipping*
19. CCP-QP-027, *CCP Test Control*
20. CCP-QP-028, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning*

Remote Handled (RH) Site Project Manager (SPM) Qualification Card

Name: Laura Nelson

Badge Number: [redacted]

Email Address: [redacted]

21. CCP-QP-030, *CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel*
22. CCP-QP-036, *CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration*
23. CCP-TP-001, *CCP Project Level Data Validation and Verification*
24. CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data*
25. CCP-TP-003, *CCP Data Analysis for S3000, S4000, and S5000 Characterization*
26. CCP-TP-005, *CCP Acceptable Knowledge Documentation*
27. CCP-TP-028, *CCP Radiographic Test and Training Drum Construction*
28. CCP-TP-056, *CCP HSG Performance Demonstration Plan*
29. CCP-TP-058, *CCP NDA Performance Demonstration Program*
30. CCP-TP-162, *CCP Random Selection of Containers for Solids and Headspace Gas Sampling and Analysis*
31. CCP-TP-163, *CCP Standard Waste Visual Examination*
32. CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*
33. CCP-TP-504, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*
34. CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*
35. CCP-TP-508, *CCP Standard Real-Time Radiography Inspection Procedure*
36. CCP-TP-509, *CCP Remote-Handled Transuranic Container Tracking*
37. CCP-TP-510, *CCP Remote-Handled Radiography Test and Training Drum Requirements*
38. CCP-TP-511, *CCP Peer Review*
39. CCP-TP-512, *CCP Remote-Handled Waste Sampling*
40. CCP-TP-530, *CCP RH TRU Waste Certification and WWIS Data Entry*

I have read the listed initial indoctrination reading and understand my responsibilities as applicable to the procedures above.

Laura Nelson — Trainee Signature — 6/21/10 — Date

Document	Additional Training Requirements		
CCP-PO-001	1. WAP/QAPjP Briefing and Test 4/1/10	Michele Bittett — CCP Training	6/21/10 — Date
	2. Hazardous Waste Number Assignments Briefing and Test 4/1/10	Michele Bittett — CCP Training	6/21/10 — Date
	3. Solid and Soils Sampling and Analysis for Site Project Managers (SPM) Briefing	Hilary J. Neary — CCP SPM	6-22-10 — Date

Remote Handled (RH)
Site Project Manager (SPM)
Qualification Card

Name: Laura Nelson

Badge Number: [redacted]

Email Address: [redacted]

	4.	Statistical Sampling Briefing	CCP SPM 6/22/10 Date
	5.	NCR/CAR Briefing (Provided by CCP/QA Organization)	CCP/QA Organization 6/22/10 Date
CCP-VE-101	6.	Visual Examination (VE) TRU Waste Characterization Briefing	Larry Porter CCP SPM 6/22/10 Date
CCP-RTR-101	7.	Real-Time Radiography TRU Waste Characterization Briefing.	Larry Porter CCP SPM 6/22/10 Date
	8.	Incompatibles Determination Training Module	Larry Porter CCP SPM 6/22/10 Date

Formal Training	OJT Knowledge Requirements	Subject Matter Expert (SME) Signature/Date
DOE/WIPP 02-3214	1. Define Environmental Protection Agency's (EPA) definition of Visual Examination (VE) of record. Provide an example.	Gene Quinn 6/17/10
	2. Explain how CCP-TP-500 satisfies the EPA and New Mexico Environmental Department (NMED) criteria.	Gene Quinn 6/17/10
	3. State the Data Quality Objectives (DQO) and Quality Assurance Objectives (QAO) for each characterization method (e.g., Dose-to-Curie, VE).	Gene Quinn 6/17/10
	4. State the purpose of CCP-TP-506.	Gene Quinn 6/17/10
CCP-PO-001	5. Define the term "prohibited item" and give two examples of prohibited items.	Gene Quinn 6/17/10
	6. Identify the document allowing WIPP to receive and store TRU-mixed waste.	Gene Quinn 6/17/10

Remote Handled (RH)
Site Project Manager (SPM)
Qualification Card

Name: Laura Nelson

Badge Number: [redacted]

Email Address: [redacted]

	7. Identify and describe the four major methods used by CCP to characterize TRU waste.	Laura Nelson 6/17/10
	8. State three (3) instances when a nonconformance report (NCR) is required for Real-Time Radiography (RTR).	Laura Nelson 6/17/10
	9. State when an NCR is written for VE.	Laura Nelson 6/17/10
	10. State when an NCR is written for Headspace Gas (HSG) Sampling and Analysis.	Laura Nelson 6/17/10
	11. State the difference between a "Z" qualifier and a "J" qualifier.	Laura Nelson 6/17/10
	12. State when a "B" qualifier is used.	Laura Nelson 6/17/10
	13. State when a replicate waste drum is run in RTR.	Laura Nelson 6/17/10
CCP-PO-002	14. State which sites are authorized to ship PCB waste.	Laura Nelson 6/17/10
	15. State the maximum allowed curies per liter activity level (averaged over the volume of the canister).	Laura Nelson 6/17/10
	16. State if machine-compacted waste is allowed to ship to the Waste Isolation Pilot Plant (WIPP).	Laura Nelson 6/17/10
CCP-QP-005	17. State one major purpose for the nonconformance control program.	Laura Nelson 6/17/10
	18. Identify who can initiate an NCR.	Laura Nelson 6/17/10
CCP-QP-008	19. List the responsibilities of record generators.	Laura Nelson 6/17/10

Remote Handled (RH)
Site Project Manager (SPM)
Qualification Card

Name: Laura Nelson

Badge Number: [redacted]

Email Address: [redacted]

CCP-QP-010	20. State the storage and control requirements for CCP records.	[illegible] 6/17/10
	21. Explain the process and proper method to make corrections or revisions to CCP records.	[illegible] 6/17/10
	22. State the importance of using approved documents.	[illegible] 6/17/10
	23. State when to verify a document revision.	[illegible] 6/17/10
CCP-PO-505	24. Discuss the differences in the transportation requirement for RH-TRU 72-B and CNS 10-160B versus the TRUPACT-II.	[illegible] 6/17/10
CCP-TP-511	25. State the peer review requirements.	[illegible] 6/17/10
CCP-TP-512	26. Discuss the QAOs for radiochemistry and ICP-MS batch data report (BDR).	[illegible] 6/17/10
Formal Training	**OJT Practical Requirements**	**SME Signature/Date**
CCP-TP-002	1. Demonstrate proficiency of characterization information summary reports.	[illegible] 6/17/10
CCP-TP-500	2. Demonstrate proficiency in review of the RH visual examination BDRs.	[illegible] 6/17/10
CCP-TP-504	3. Demonstrate proficiency in the review of "Dose-to-Curie" BDR.	[illegible] 6/17/10
CCP-TP-506	4. Complete a Characterization Reconciliation Report (CRR).	[illegible] 6/17/10

Remote Handled (RH)
Site Project Manager (SPM)
Qualification Card

Name: Laura Nelson		**Badge Number:** [redacted]
Email Address: [redacted]		
CCP-TP-508	5. Demonstrate proficiency in review of the RH Real-time Radiography (RTR) BDRs.	[illegible] 6/17/10
	6. Demonstrate the verification of a container meeting the applicable content code limit.	[illegible] 6/17/10
CCP-TP-512	7. Demonstrate proficiency in the review of "Remote-Handled Waste Sample" BDR.	[illegible] 6/17/10

Remote Handled (RH) Site Project Manager (SPM) Qualification Card

Name: Laura Nelson	**Badge Number:** [redacted]
Email Address: [redacted]	

Approvals	
I have completed formal training and received on-the-job training for this position. I fully understand my responsibilities as a RH SPM.	LAURA NELSON Laura Nel 6/22/10 Trainee *(printed name and signature)* Date
I have monitored the training of this individual and believe they are ready to perform the duties of a RH SPM. *(Signature validation by the SME/OJT instructor(s) involved in the training of this individual)*	Irene Quintana Irene Quintana 6/21/10 SME/OJT Instructor *(printed name and signature)* Date N/A SME/OJT Instructor *(printed name and signature)* Date
I approve this employee to perform the duties of a RH SPM.	LQ 4/20/11 * Irene Quintana Irene Quintana 6/21/10 CCP Lead or Alternate SPM *(printed name and signature)* Date

Approved for Content & Format: **Approval on file** **6/17/2010**
RH SPM SME *(printed name and signature)* Date

Approved for Content: **Approval on file** **6/17/2010**
CCP Lead or Alternate SPM *(printed name and signature)* Date

Approved for Use: **Approval on file** **6/17/2010**
CCP Manager Responsible for Training *(printed name and signature)* Date

* Briefings under the Additional Training Requirement was performed 6/22/10. The CCP Lead or alternate SPM date of 6/21/10 was recorded inadvertently. LQ 4/22/11

COPY

Dose-to-Curie (DTC) Operator/Independent Technical Reviewer (ITR) Qualification Card

Name: Spencer Troy Pattee

Education/Experience	
Resume documenting education and experience on file with National TRU Program Certification (NTPC) Training.	Cheryl Hunjo 01-27-14 NTPC Training Date

Job Specific Training

☐ Initial Qualification ☑ Requalification ☐ Full Requalification

Qualification Limit	**This qualification is valid for two (2) years.** If necessary, additional training may be required by the Site Project Manager (SPM) or the Manager Responsible for Training. Unsatisfactory performance will result in disqualification by the Manager Responsible for Training. The candidate must successfully complete the entire qualification card to reestablish qualification.
Requalification Requirements	Items required for requalification are identified by text.

Indoctrination
(Required at Initial Qualification and Full Requalification)

Initial/Indoctrination Reading:

1. DOE/WIPP 02-3214; *Remote-Handled TRU Waste Characterization Program Implementation Plan*
2. WP 15-GM1002, *Issues Management Processing of WIPP Forms*
3. CCP-HSP-014, *Health and Safety Program Implementation for CCP*
4. CCP-PO-002, *CCP Transuranic Waste Certification Plan*
5. CCP-PO-005, *CCP Conduct of Operations*
6. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
7. CCP-QP-002, *CCP Training and Qualification Plan*
8. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
9. CCP-QP-008, *CCP Records Management*
10. CCP-QP-010, *CCP Document Preparation, Approval, and Control*
11. CCP-QP-016, *CCP Control of Measuring and Testing Equipment*
12. CCP-QP-022, *CCP Software Quality Assurance Plan*
13. CCP-TP-504, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*
14. CCP-TP-509, *CCP Remote-Handled Transuranic Container Tracking*

I have read the listed Initial/Indoctrination Reading and understand my responsibilities as applicable to the documents above.	N/A Trainee Signature Date

Dose-to-Curie (DTC)
Operator/Independent Technical Reviewer (ITR)
Qualification Card

Name: Spencer Troy Pattee

Formal Training	On-the-Job Training (OJT) Knowledge Requirements *(Required at Initial Qualification and Full Requalification)*	Subject Matter Expert (SME)/OJT Signature/Date
CCP-QP-002	1. State the purpose of the List of Qualified Individuals (LOQI).	N/A
CCP-QP-005	2. State when a nonconformance report (NCR) should be prepared and who is responsible to initiate it.	N/A
	3. Describe a "significant condition adverse to quality".	N/A
	4. Describe how nonconforming items are documented.	N/A
	5. Describe how nonconforming items are controlled to prevent their use.	N/A
	6. State who has the responsibility to validate the NCR once initiated.	N/A
	7. Describe how to revise an NCR.	N/A
	8. Describe how to void an NCR.	N/A
WP 15-GM1002	9. Describe the purpose of the WIPP Form process.	N/A
	10. State the person responsible for originating a WIPP Form.	N/A
	11. Describe how WIPP Forms are documented.	N/A
	12. Describe who has responsibility for processing WIPP Forms, approving Corrective Action Plans, and approving closure of WIPP Forms.	N/A
	13. Describe actions personnel may take when conditions adverse to quality are discovered.	N/A
CCP-QP-008	14. List the responsibilities of record generators.	N/A
	15. State the storage and control requirements for records.	N/A

Dose-to-Curie (DTC) Operator/Independent Technical Reviewer (ITR) Qualification Card

Name: Spencer Troy Pattee

	16. Explain the proper method to correct errors on records.			N/A
	17. Determine the process necessary for corrections or revisions of records.			N/A
	18. Describe the process for generation, protection, and preservation of electronic records.			N/A
CCP-QP-016	19. Describe the importance of controlling Measuring and Test Equipment (M&TE).			N/A
CCP-QP-022	20. Describe the purpose of controlling software.			N/A
CCP-TP-509	21. Describe the required Operator actions if a container is not identified on the acceptable knowledge tracking spreadsheet.			N/A
Formal Training	**OJT Practical Requirements**[1] *(Always Required)*			**SME/OJT Signature/Date**
CCP-TP-504	1. Obtain the instrument check source.	P	S	Mary Carroll 1/27/14
	2. Place the source in the source jig.	P	S	Mary Carroll 1/27/14
	3. Verify the instrument is in calibration.	P	S	Mary Carroll 1/27/14
	4. Perform measurement controls and record all required information on the Measurement Control Report, (Attachment 1).	P	S	Mary Carroll 1/27/14
	5. Record the date, container number, probe position, instrument number, and probe number on the Container Data Sheet (Attachment 2).	P	S	Mary Carroll 1/27/14
	6. Measure and record the background dose rate.	P	S	Mary Carroll 1/27/14
	7. Position the container with respect to the instrument jig.	P	S	Mary Carroll 1/27/14
	8. Record dose rates 1 through 4.	P	S	Mary Carroll 1/27/14
	9. Perform Duplicate Measurement and Relative Percent Difference calculation.	P	S	Mary Carroll 1/27/14
	10. Return the container to the staging area.	P	S	Mary Carroll 1/27/14

Dose-to-Curie (DTC)
Operator/Independent Technical Reviewer (ITR)
Qualification Card

Name: Spencer Troy Pattee

	11. Obtain the Attachment 2 for the designated container.	P	S	Mary Carroll 1/27/14
	12. Obtain the visual examination or real-time radiography information (as required) and required acceptable knowledge information for the container.	P	S	Mary Carroll 1/27/14
	13. Open the "Waste Container Dose-to-Curie Conversion Record" Excel spreadsheet.	P	S	Mary Carroll 1/27/14
	14. Complete the spreadsheet and review for technical accuracy.	P	S	Mary Carroll 1/27/14
	15. Save the spreadsheet file under the appropriate file name.	P	S	Mary Carroll 1/27/14
	16. Print, sign and date the Conversion record.	P	S	Mary Carroll 1/27/14
	17. Assemble the batch data report (BDR).	P	S	Mary Carroll 1/27/14
	18. Perform independent technical review (ITR).	P	S	Mary Carroll 1/27/14
	19. Perform lead operator review.	P	S	Mary Carroll 1/27/14
	20. Perform replicate measurements using QC check source.	P	S	Mary Carroll 1/27/14
	21. Calculate reference values and acceptance ranges and document in OLB and on an Operator Aid.	P	S	Mary Carroll 1/27/14

[1] For simulated steps that involve the recording of information, the steps can be satisfied by the trainee's ability to identify the specific location in the correct record form where actual data would be entered, and explain where the information would be obtained. All required calculations will actually be performed for simulations, representative data will be used in lieu of actual data. Circle "P" if actually performed or "S" if requirement was simulated.

Dose-to-Curie (DTC) Operator/Independent Technical Reviewer (ITR) Qualification Card

Name: Spencer Troy Pattee

Approvals	
I have completed formal training and received OJT for this position. I fully understand my responsibilities as a DTC Operator/ITR.	Spencer Pattee 1-27-14 Trainee *(printed name and signature)* Date
I have monitored the training of this individual and believe they are ready to perform the duties of a DTC Operator/ITR. *(Validation by the SME/OJT instructor(s) involved in the training of this individual).*	Mary Carroll 1/27/14 SME/OJT Instructor *(printed name and signature)* Date
	N/A SME/OJT Instructor *(printed name and signature* Date
I approve this employee to perform the duties of a DTC Operator/ITR.	Richard Kantrowitz 1/27/14 SPM *(printed name and signature)* Date

Approved for Content & Format:	**Brent Dial** ***(Approval on File)***	**10/10/2013**
	SME/OJT	Date
Approved for Applicability, Content & Format:	**Neil Dickes** ***(Approval on File)***	**10/10/2013**
	Cognizant Engineer	Date
Approved for Content:	**Irene Joo** ***(Approval on File)***	**10/10/2013**
	SPM	Date
Approved for Applicability, Content, Format, & Use:	**A.J. Fisher** ***(Approval on File)***	**10/10/2013**
	Manager Responsible for Training	Date

COPY

Visual Examination (VE) Operator/Independent Technical Reviewer (ITR) for Remote-Handled (RH) Waste Qualification Card

Name: Spencer Troy Pattee

Education/Experience	
Resume documenting education and experience on file with National TRU Program Certification (NTPC) Training.	Michele Billett 6/17/13 NTPC Training Date

Job Specific Training

☐ Initial Qualification ☑ Requalification ☐ Full Requalification

Qualification Limit	**This qualification is valid for two (2) years.** If necessary, additional training may be required by the Site Project Manager (SPM) or the Manager Responsible for Training. Unsatisfactory performance will result in disqualification by the Manager Responsible for Training. The candidate must successfully complete the entire qualification card to reestablish qualification.
Requalification Requirements	Items required for requalification are identified by text.

Indoctrination
(Required at Initial Qualification and Full Requalification)

Initial/Indoctrination Reading:

1. DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
2. CCP-HSP-014, *Health and Safety Program Implementation for CCP*
3. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
4. CCP-PO-002, *CCP Transuranic Waste Certification Plan*
5. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
6. CCP-QP-002, *CCP Training and Qualification Plan*
7. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
8. CCP-QP-008, *CCP Records Management*
9. CCP-QP-010, *CCP Document Preparation, Approval, and Control*
10. CCP-QP-016, *CCP Control of Measuring and Testing Equipment*
11. CCP-QP-023, *CCP Handling, Storage, and Shipping*
12. CCP-QP-029, *CCP Corrective Action Management*
13. CCP-TP-163, *CCP Evaluation of Waste Packaging Records for Visual Examination of Records*
14. CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*
15. CCP-TP-513, *CCP Procedure for Dimensional or Gravimetric Measurements for Radiological Characterization of Remote-Handled Transuranic Waste*

I have read the listed Initial/Indoctrination Reading and understand my responsibilities as applicable to the procedures above.	N/A Trainee Date

Visual Examination (VE) Operator/Independent Technical Reviewer (ITR) for Remote-Handled (RH) Waste Qualification Card

Name: Spencer Troy Pattee

Additional Training Requirements	
1. WAP/QAPjP Briefing & Exam *(One-time Requirement)*	Michele Billett 6/17/13 NTPC Training Date
2. CCP-VE-101, *Visual Examination (VE) TRU Waste Characterization Briefing* *(Always Required)*	Michele Billett 6/17/13 NTPC Training Date
3. VE Comprehensive Exam *(Always Required)*	Michele Billett 6/17/13 NTPC Training Date

Formal Training	On-the-Job Training (OJT) Knowledge Requirements *(Required at Initial Qualification and Full Requalification)*	Visual Examination Expert (VEE) Subject Matter Expert (SME)/OJT Signature/Date
CCP-PO-001	1. List the VE Quality Assurance Objectives (QAOs) per the WAP.	N A
	2. List the VE Data Quality Objectives (DQOs) per the WAP.	
DOE/WIPP 02-3214	3. List the VE QAOs per the PIP.	
	4. List the VE DQOs per the PIP.	
CCP-QP-002	5. State the purpose of the List of Qualified Individuals (LOQI).	
CCP-QP-005	6. State when a nonconformance report (NCR) should be prepared and who is responsible to initiate it.	
	7. Describe how nonconforming items are documented.	
	8. Describe how nonconforming items are controlled to prevent their use.	
	9. State who has the responsibility to validate the NCR once initiated.	
	10. Describe how to revise a NCR.	
	11. Describe how to void a NCR.	
CCP-QP-029	12. Describe the purpose of the corrective action report (CAR) process.	

Visual Examination (VE) Operator/Independent Technical Reviewer (ITR) for Remote-Handled (RH) Waste Qualification Card

Name: Spencer Troy Pattee

	13. State the person responsible for originating a CAR.	
	14. Describe how corrective actions are documented.	
	15. State who has the responsibility to validate the CAR once initiated.	
	16. Describe actions personnel may take when conditions adverse to quality are discovered.	
CCP-QP-008	17. List the responsibilities of record generators.	
	18. State the storage and control requirements for records.	
	19. Explain the process and proper method to make corrections or revisions to records.	
CCP-QP-010	20. State the importance of using approved documents.	
	21. State when to verify a document revision.	N A
CCP-QP-016	22. List the Measuring & Testing Equipment (M&TE) items used during VE.	
CCP-TP-500/ CCP-VE-101 Briefing	23. Explain the purpose of VE and the roles and responsibilities of the VE Operator.	
	24. Identify who is responsible for overall direction and implementation of the VE of that facility.	
	25. Define the two phases of VE technique for remote-handled waste.	
	26. State the number of waste containers allowed per Batch Data Report (BDR).	
	27. Define "layers of confinement."	
	28. State the authorized methods to close a liner bag.	
	29. State the action to be taken if a condition adverse to quality arises.	
	30. State the waste material parameters (WMP).	
	31. Describe the information that should be recorded when describing waste items.	
	32. State five (5) examples of prohibited items.	

CSP 6-17-13

Visual Examination (VE) Operator/Independent Technical Reviewer (ITR) for Remote-Handled (RH) Waste Qualification Card

Name: Spencer Troy Pattee

	33. Describe how a non-transparent container is handled when liquid is suspected.	N A
	34. State the acceptable liquid limits in a characterized container.	
	35. Explain the responsibilities and functions of the Independent Technical Review (ITR).	
	36. Define layers of confinement.	
	37. Describe how to determine Volume Utilization Percentage (VUP).	
	38. State the allowable fill percent increments.	

Formal Training	OJT Practical Requirements[1] *(This section must be performed in the presence of a VEE)* *(Always Required)*			VEE SME/OJT Signature/Date
CCP-TP-500	1. Prepare the recording equipment. *(This activity is at the discretion of the SME instructor)*	P	S	S.S. Poole 6-17-13
	2. Complete CCP-TP-500 Attachment 1.	P	S	S.S. Poole 6-17-13
	3. Prepare a BDR.	P	S	S.S. Poole 6-17-13
	4. Determine the VUP.	P	S	S.S. Poole 6-17-13
	5. Complete an ITR.	P	S	S.S. Poole 6-17-13
	6. Determine Waste Material Parameter (WMP).	P	S	S.S. Poole 6-17-13
	7. Verify the physical form of the waste matches the waste stream ID.	P	S	S.S. Poole 6-17-13
CCP-TP-513	8. Perform a dimensional or gravimetric measurement and determine the measurement acceptability[2].	P	S	S.S. Poole 6-17-13

[1] For simulated steps that involve the recording of information, the steps can be satisfied by the trainee's ability to identify the specific location in the correct record form where actual data would be entered, and explain where the information would be obtained. All required calculations will actually be performed for simulations, representative data will be used in lieu of actual data. Circle "P" if actually performed or "S" if requirement was simulated

[2] Procedure CCP-TP-513 is not applicable at all sites. The OJT Practical Requirement for this procedure is only required if the procedure is invoked.

Visual Examination (VE)
Operator/Independent Technical Reviewer (ITR)
for Remote-Handled (RH) Waste
Qualification Card

Name: Spencer Troy Pattee

Approvals	
I have completed formal training and received OJT for this position. I fully understand my responsibilities as a RH VE Operator/ITR.	Spencer Pattee 6-17-13 Trainee *(printed name and signature)* Date
I have monitored the training of this individual and believe they are ready to perform the duties of a RH VE Operator/ITR. *(Validation by the RH VEE SME/OJT instructor(s) involved in the training of this individual).*	Jeffrey Poole 6-17-13 RH VEE SME/OJT Instructor *(printed name and signature)* Date
	N/A RH VEE SME/OJT Instructor *(printed name and signature)* Date
I approve this employee to perform the duties of a RH VE Operator/ITR.	Richard Rautrowitz 6/17/13 Irene Joo 6/17/13 SPM *(printed name and signature)* Date

Approved for Content & Format:	**Wes Root *(Approval on File)***	**03/13/2013**
	SME/OJT	Date
Approved for Applicability, Content & Format:	**Andrew Stallings *(Approval on File)***	**03/13/2013**
	Cognizant Engineer	Date
Approved for Content:	**Irene Joo *(Approval on File)***	**03/13/2013**
	SPM	Date
Approved for Applicability, Content, Format, & Use:	**A.J. Fisher *(Approval on File)***	**03/13/2013**
	Manager Responsible for Training	Date

COPY

Vendor Project Manager (VPM) Qualification Card

Name: Spencer Troy Pattee

Education/Experience	
Resume documenting education and experience on file with National TRU Program Certification (NTPC) Training.	Cheryl Stanger 12-03-13 NTPC Training Date

Job Specific Training	
Qualification Limit	There is no qualification limit for this position. This qualification is a one-time-only requirement. Upon completion of this qualification card, the Trainee is qualified to perform VPM duties. Unsatisfactory performance will result in disqualification. The candidate must successfully complete the entire qualification card to re-establish qualification.
Requalification Requirements	Not required. See above statement.

Indoctrination

Initial/Indoctrination Reading:

1. All Assigned Site Interface Documents *(List the interface documents at the end of this section).*
2. WP 15-GM1002, *Issues Management Processing of WIPP Forms*
3. CCP-CM-001, *CCP Equipment Change Authorization and Documentation*
4. CCP-HSP-013, *CCP Waste Assay Gamma Spectrometer (WAGS) and SWEPP Gamma Ray Spectrometer (SGRS) Nondestructive Assay Systems Health and Safety Plan* (INL only)
5. CCP-HSP-014, *Health and Safety Program Implementation for CCP*
6. CCP-HSP-500, *CCP Hazard Control Plan for RH TRU Operations at INTEC* (INTEC only)
7. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
8. CCP-PO-002, *CCP Transuranic Waste Certification Plan*
9. CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
10. CCP-PO-005, *CCP Conduct of Operations*
11. CCP-PO-026, *CCP Configuration Management*
12. CCP-PO-050, *CCP TRUPACT-III TRU Waste Authorized Methods for Payload Control (CCP TRUPACT-III TRAMPAC)*
13. CCP-PO-401, *CCP Contact-Handled Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC) for Intersite Shipments*
14. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
15. CCP-QP-002, *CCP Training and Qualification Plan*
16. CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
17. CCP-QP-008, *CCP Records Management*
18. CCP-QP-010, *CCP Document Preparation, Approval, and Control*
19. CCP-QP-016, *CCP Control of Measuring and Testing Equipment*
20. CCP-QP-018, *CCP Management Assessment*
21. CCP-QP-022, *CCP Software Quality Assurance Plan*
22. CCP-QP-023, *CCP Handling, Storage, and Shipping*
23. CCP-QP-027, *CCP Test Control*
24. CCP-QP-040, *Support Training*
25. CCP-TP-028, *CCP Radiographic Test Drum and Training Container Construction*

Vendor Project Manager (VPM) Qualification Card

Name: Spencer Troy Pattee

Site Interface Documents Read:	1. CCP-PO-024	
	2. CCP-PO-501	
	3. N/A	
I have read the listed Initial/Indoctrination Reading and understand my responsibilities as applicable to the procedures above.	Trainee Signature	11-18-13 Date
WAP/QAPjP Briefing and Exam *(One-time Requirement)*	NTPC Training	12-03-13 Date
Conduct of Operations Briefing and Exam	NTPC Training	12-03-13 Date

Formal Training	On-the-Job Training (OJT) Knowledge Requirements	Subject Matter Expert (SME)/OJT Signature/Date
WP 15-GM1002	1. Describe the purpose of the WIPP Form process.	12-2-13
	2. State the person responsible for originating a WIPP Form.	12-2-13
	3. Describe how WIPP Forms are documented.	12-2-13
	4. Describe who has responsibility for processing WIPP Forms, approving Corrective Action Plans, and approving closure of WIPP Forms.	12-2-13
	5. Describe actions personnel may take when conditions adverse to quality are discovered.	12-2-13
CP-PO-001	6. Define the term "Acceptable Knowledge" and state one use/purpose for it.	12-2-13
	7. Define the term "Prohibited Item" and what document(s) list them.	12-2-13
	8. State two (2) examples of prohibited items.	12-2-13
	9. Identify the three methods used to characterize waste and briefly describe each.	12-2-13
	10. Describe the process for batch data reporting at the generation level.	12-2-13

Vendor Project Manager (VPM) Qualification Card

Name: Spencer Troy Pattee

CCP-PO-002	11. Briefly describe the organizational structure of NTPO.	B. Ll. 12-2-13
	12. State who is your primary customer.	B. Ll. 12-2-13
CCP-PO-005	13. Define "fit for duty."	B. Ll. 12-2-13
	14. Identify who is responsible to ensure employees are "fit for duty."	B. Ll. 12-2-13
	15. State who is responsible for tagouts and lockouts.	B. Ll. 12-2-13
	16. State who is responsible for investigation of abnormal events.	B. Ll. 12-2-13
	17. Describe purpose and control of operational log books.	B. Ll. 12-2-13
	18. State how employee and labor relation issues would be resolved.	B. Ll. 12-2-13
	19. State who is responsible for tracking employee attendance.	B. Ll. 12-2-13
	20. State how technical procedures are used by operators. How are they different from other types of procedures?	B. Ll. 12-2-13
	21. Describe the purpose of the interface documents, the statements of work (SOW), and their relationship.	B. Ll. 12-2-13
CCP-QP-005	22. State when a nonconformance report (NCR) should be prepared and who is responsible to initiate it.	B. Ll. 11-18-13
	23. Describe how nonconforming items are documented.	B. Ll. 11-18-13
	24. Describe how nonconforming items are controlled to prevent their use.	B. Ll. 11-18-13
	25. State who has the responsibility to validate the NCR once initiated.	B. Ll. 11-18-13
	26. Describe how to revise an NCR.	B. Ll. 11-18-13
	27. Describe how to void an NCR.	B. Ll. 11-18-13

Vendor Project Manager (VPM)
Qualification Card

Name: Spencer Troy Pattee

CCP-QP-008	28. Describe how in-process records are controlled and how records are transmitted.	B.C. 11-18-13
CCP-QP-010	29. Describe the process for controlling procedures.	B.C. 11-18-13
CCP-QP-016	30. State who is responsible for control and calibration of measuring and test equipment.	B.C. 11-18-13
CCP-QP-018	31. Describe the purpose and process for self-assessments.	B.C. 11-18-13
CCP-TP-028	32. State who is responsible for building RTR Test Drums and Training Containers.	B.C. 11-18-13
	33. Describe the process and requirements for building a RTR Test Drum and a Training Container.	B.C. 11-18-13
Site Specific Interface Document(s)	34. Describe the work control process and who is responsible for implementing it.	B.C. 11-18-13
	35. State who is responsible for overall NTPC operations at the facility.	B.C. 11-18-13
	36. State who is responsible for coordinating radiological support.	B.C. 11-18-13
	37. Describe the implementation of the host facility's authorization basis and safety program in characterization operations.	B.C. 11-18-13

Vendor Project Manager (VPM)
Qualification Card

Name: Spencer Troy Pattee

Approvals	
I have completed formal training and received OJT for this position. I fully understand my responsibilities as a Vendor Project Manager (VPM).	Spencer T. Pattee 12-2-13 Trainee *(printed name and signature)* Date
I have monitored the training of this individual and believe they are ready to perform the duties of a VPM. *(Validation by the SME/OJT instructor(s) involved in the training of this individual).*	Bill Verlanic 12-2-13 SME/OJT Instructor *(printed name and signature)* Date
	N/A SME/OJT Instructor *(printed name and signature)* Date
I approve this employee to perform the duties of a Vendor Project Manager (VPM)	Michael L. Sensibaugh 12-4-2013 Cognizant Manager *(printed name and signature)* Date

Approved for Applicability, Content & Format:	**Bill Verlanic *(Approval on File)***	**10/15/2013**
	SME/OJT	Date
Approved for Applicability, Content & Format:	**Michael L. Sensibaugh *(Approval on File)***	**10/15/2013**
	Cognizant Manager	Date
Approved for Applicability, Content, Format, & Use:	**A.J. Fisher *(Approval on File)***	**10/15/2013**
	Manager Responsible for Training	Date

Table C6-2 Acceptable Knowledge (AK) Checklist
SNL/CCP RH Certification Audit A-14-26
August 5-7, 2014

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Acceptable Knowledge (AK) Checklist[1]

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	GENERAL REQUIREMENTS					
134	Are the primary document(s) required in Permit Attachment C4 containing acceptable knowledge information available? (Section C4-2)	CCP-TP-002, S. 4.2-4.6 CCP-TP-005, S. 4.4	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)** QMIS Approval for AK Summary for waste streams SNL-HCF-S5400-RH **(AK-3)** Waste Stream Profile Form and attachments for waste stream SNL-HCF-S5400-RH **(AK-2)**	Y	During the week of August 4, 2014, CTAC AK auditors participated in a Certification audit for Sandia National Laboratory RH debris waste stream SNL-HCF-S5400-RH.
135	Has the generator developed a methodology whereby a logical sequence of acceptable knowledge information that progresses from general facility to more detailed waste-specific information can be acquired? (Section C4-2)	CCP-TP-005, S. 4.0	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)** AK Source Document Summaries for waste stream SNL-HCF-S5400-RH **(AK-4)**	Y	
136	Does the site have adequate procedures in place to ensure that the Acceptable Knowledge process is adequately implemented? Do these procedures facilitate the mandatory traceability analysis performed for each Summary Waste Category Group examined during the audit? (Section C4-2)	CCP-TP-005, S. 4.0	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)** Waste Stream Profile	Y	During this Certification audit, the WAP required traceability exercise was conducted for two waste containers from this waste stream . The containers were, SNL001403 SNL001502

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
				Form and attachments for waste stream SNL-HCF-S5400-RH **(AK-2)** AK Source Document Summaries for waste stream SNL-HCF-S5400-RH **(AK-4)** <u>Traceability Drum BDRs</u> SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** Waste Stream Characterization Checklist Lot 3 **(AK-15)** IDC Database screenshots **(AK-10)** AK Tracking Spreadsheet **(AK-11)** AK attachment 8 container list **(AK-9)** Container input forms/historical data **(AK-19)**		
<u>137</u>	Does the generator site's TRU mixed waste management program information clearly define (or provide a methodology for defining) waste categorization schemes and terminology, provide a breakdown of the types and quantities of TRU mixed waste generated/stored at the site, and describe how waste is tracked and managed at the generator site (including historical and current operations? Do procedures ensure that waste streams are adequately identified? (Section C4-2a)	CCP-TP-005, S. 4.4, 4.2.2-4.2.5, 4.11, Att. 8 CCP-TP-001, S. 2.7 S. 4.1 S. 4.2	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)** IDC Database screenshots **(AK-10)** AK Tracking Spreadsheet **(AK-11)**	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
				AK attachment 8 container list **(AK-9)**		
138	Does site documentation procedures indicate that the site will document, justify, and consistently define waste streams and assign EPA hazardous waste numbers? (Section C4-2b)	CCP-TP-005, S. 4.4.16-4.4.21, Att. 5	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3, tables 9 and 10 **(AK-1)** AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-RH **(AK-7)** AK Source Document Summary for Waste Stream: SNL-HCF-S5400-RH **(AK-18)**	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	REQUIRED AND ADDITIONAL INFORMATION					
140	Does the generator site document that the following must be included in the acceptable knowledge record: • Map of the site with the areas and facilities involved in TRU waste generation, treatment, and storage identified • Facility mission description as related to TRU waste generation and management (e.g., nuclear weapons research may involve metallurgy, radiochemistry, and nuclear physics operations that result in specific waste streams) • Description of the operations that generate TRU waste at the site (e.g., plutonium recovery, weapons design, or weapons fabrication) • Waste identification or categorization schemes used at the facility (e.g., item description codes, content codes) • Types and quantities of TRU mixed waste generated, including historical generation through future projections • Correlation of waste streams generated from the same building and process, as appropriate (e.g., sludge, combustibles, metals, and glass) • Waste certification procedures for retrievably stored and newly generated wastes to be sent to the WIPP facility (Section C4-2a)	**Bullets 1-7:** CCP-TP-005, S. 4.2.2 S., 4.4.5 Att. 1	Y	CCP-AK-SNL-500 R6 **(AK-1)** 1. S4.1, figures 1&2 **(AK-1)** 2. S4.3 **(AK-1)** 3. S4.7 **(AK-1)** 4. S4.6.3 **(AK-1)** 5. S4.6.1 **(AK-1)** 6. S4.6.2 **(AK-1)** 7. S3.0 **(AK-1)**	Y	
141	Does the generator site document that the following shall be collected for each waste stream: A. Area(s) and/or building(s) from which the waste stream was or is generated B. Waste stream volume and time period of generation (e.g., 100 standard waste boxes of retrievable stored waste generated from June 1977 through December 1977) C. Waste generating process described for each building (e.g., batch waste stream generated during decommissioning operations of glove boxes), including processes associated with U134 waste generation, if applicable. D. Documentation demonstrating how the site has historically managed the waste, including the historical regulatory status of the waste (i.e., TRU mixed versus TRU non-mined waste) E. Process flow diagrams (e.g., a diagram illustrating glove boxes from a	**A-F:** CCP-TP-005, S. 4.2.4 S., 4.4.5 Att. 1	Y	CCP-AK-SNL-500 R6 **(AK-1)** A. S5.1 **(AK-1)** B. S5.2 **(AK-1)** C. S5.3 **(AK-1)** D. S4.6, 5.4.3 **(AK-1)** E. Figure 3 **(AK-1)**	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	specific building to a size reduction facility to a container storage area). In the case of research/development, analytical laboratory waste, or the similar processes where process flow diagrams cannot be created, a description of the waste generating processes, rather than a formal process flow diagram, may be included if this modification is justified and the justification is placed in the auditable record F. Material inputs or other information that identifies the chemical content of the waste stream and the physical waste form (e.g., glove box materials and chemical handled during glove box operations, events or processes that may have modified the chemical or physical properties of the waste stream after generation, data obtained through visual examination of newly generated waste that later undergoes radiography; information demonstrating neutralization of U134 [hydrofluoric acid] and waste compatibility. (Section C4-2b)			F. S5.4.1, 5.4.3 **(AK-1)**		
142	Do site documents/procedures require that the facility will provide a summary to the Permittees that summarizes all information collected, including basis and rationale for all waste stream designations? Is an example of this summary available for audit review? If discrepant hazardous waste data exist in required information, do sites consider applying all hazardous waste numbers, but assess and evaluate the information to determine the appropriate hazardous waste number consistent with RCRA requirements? (Section C4-2b)	CCP-TP-005, S. 4.4 S. 4.9	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)** AK Discrepancy Resolutions **(AK-12)**	Y	
143	Do site procedures indicate that if the required AK information is not available for a particular waste stream, that the waste stream will not be eligible for an AK Sufficiency Determination? (Section C4-2)	CCP-TP-005, S. 4.2 S. 4.4 S. 4.7	Y	AK Documentation Checklist, Attachment 1, for waste stream SNL-HCF-S5400-RH **(AK-5)**	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
144	Have the following procedures been prepared?: A. Procedures for identifying and assigning the physical waste form of the waste B. Procedures for delineating waste streams and assigning Waste Matrix Codes C. Procedures for resolving inconsistencies in acceptable knowledge documentation D. Procedures for visual examination and/or radiography, if applicable E. For newly generated waste, procedures describing process controls used to ensure prohibited items (specified in the WAP, Permit Attachment C) are documented and managed F. Procedures to ensure radiography and visual examination include a list of prohibited items that the operator shall verify are not present in each container (e.g. liquid exceeding TSDF-WAC limits, corrosives, ignitables, reactives, and incompatible wastes) G. Procedures to document how changes to Waste Matrix Codes, waste stream assignment, and associated Environmental Protection Agency hazardous waste numbers based on material composition are documented for any waste H. Procedures that ensure the assignment of EPA hazardous waste numbers is appropriate, consistent with RCRA requirements, and adequately considers site historical waste management I. Procedures for estimating waste material parameter weights (Section C4-2b)	**AK** A. CCP-TP-005, S. 4.4.13 S. 4.4.14 B. CCP-TP-005, S. 4.4.11 NOTE above S. 4.4.12 C. & G. CCP-TP-005, S. 4.9 E. CCP-TP-500, (All) H. CCP-TP-005, S. 4.4.16 -4.4.21 I. CCP-TP-005, S. 4.4.26 **VE** D, E, & F: CCP-TP-500, (All)	Y	CCP-AK-SNL-500 R6 **(AK-1)** A. S5.4.1 **(AK-1)** B. S5.4.1.1 **(AK-1)** C. AK Discrepancy Resolutions **(AK-12)** E. SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** G. AK Discrepancy Resolutions **(AK-12)** H. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3, tables 9 and 10 **(AK-1)** AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-RH **(AK-7)** I. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH,	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
				CCP-AK-SNL-500 R6, S5.4.1.2, table 3 **(AK-1)** Memo attached to AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)** D, F, E: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**		
145	Does the generator provide procedures or written commitment to collect additional acceptable knowledge information, as available and as necessary to augment mandatory information? (Section C4-2c)	CCP-TP-005, S. 4.2.5 Att.1	Y	AK Documentation Checklist, Attachment 1, for waste stream SNL-HCF-S5400-RH **(AK-5)**	Y	
146	Does the generator site document that all additional specific, relevant information used in the acceptable knowledge process will be identified and its use explained? Is all necessary information assembled and has it been appropriately used? (Section C4-2c)	CCP-TP-005, S. 4.2.5 Att. 1	Y	AK Documentation Checklist, Attachment 1, for waste stream SNL-HCF-S5400-RH **(AK-5)**	Y	
147	Does the generator site discrepancy analysis documentation (for acceptable knowledge additional and required documentation) indicate that if discrepancies are detected, the site may consider applying all hazardous waste numbers indicated in the required and additional information, but must assess and evaluate the information to determine the appropriate hazardous waste numbers consistent with RCRA requirements? (Section C4-2c)	CCP-TP-005, S. 4.9	Y	AK Discrepancy Resolutions **(AK-12)**	Y	
	TRAINING					
148	Does the generator site have procedures to ensure that all personnel involved with acceptable knowledge waste characterization have the following training, and is this training documented? A. WIPP WAP in Permit Attachment C and the TSDF-WAC specified in this permit B. State and Federal RCRA regulations associated with solid and hazardous	CCP-QP-002, S. 4.3.1	Y	Acceptable Knowledge Expert (AKE) and Site Project Manager (SPM) qualification records **(GEN-9)**	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	waste characterization C. Discrepancy resolution and reporting D. Site-specific procedures associated with waste characterization using acceptable knowledge (Section C4-3a)					
	PROCEDURES					
149	Has the generator site developed the following procedures, and are these procedures technically sufficient? A. Sites must prepare and implement a written procedure outlining the specific methodology used to assemble acceptable knowledge records, including the origin of the documentation, how it will be used, and any limitations associated with the information (e.g., identify the purpose and scope of a study that included limited sampling and analysis data). B. Sites must develop and implement a written procedure to compile the required acceptable knowledge record. C. Sites must develop and implement a written procedure that ensures unacceptable wastes (e.g., reactive, ignitable, corrosive) are identified and segregated from TRU mixed waste populations sent to WIPP. D. Sites must prepare and implement a written procedure to evaluate acceptable knowledge and resolve discrepancies. For example, if different sources of information indicate different hazardous wastes are present, then sites must include all sources of information in its records and may choose to either conservatively assign hazardous waste numbers, or assign only those numbers deemed appropriate and consistent with RCRA requirements. All information used to justify assignment of hazardous waste numbers must be placed in the auditable record. Further, the assignment of hazardous waste numbers shall be tracked in the auditable record to all required documentation.	**A-D:** CCP-TP-005, S. 4.2, 4.3, 4.4 & 4.9 CCP-TP-001, S. 2.7, 4.1 & 4.2 CCP-TP-500, (ALL)	Y	A. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)** AK Source Document Summaries for waste stream SNL-HCF-S5400-RH **(AK-4)** B. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)** C. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S, 5.4.4 **(AK-1)** AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
				(AK-8) SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** IDC Database with "reject" field **(AK-10)** D. AK Discrepancy Resolutions **(AK-12)**		
149a	E. Sites must prepare and implement a written procedure to identify hazardous wastes and assign the appropriate hazardous waste numbers to each waste stream. The following are minimum baseline requirements/standards that site-specific procedures must include to ensure comparable and consistent characterization of hazardous waste: 1. Compile all of the required information in an auditable record. 2. Review the compiled information and delineate waste streams. Delineation of waste streams must comply with the WAP definition in Permit Attachment C, Section C-0a, and justify combining waste historically managed separately as TRU mixed and TRU non-mixed waste streams into a single waste stream. 3. Review the compiled information to determine if the waste stream is compliant with the TSDF-WAC 4. Review the required information to determine if the waste is listed under 20.4.1.200 NMAC (incorporating 40 CFR 261), Subpart D. Assign all listed hazardous waste numbers, unless the site chooses to justify an alternative assignment and document the justification in the auditable record. 5. Review the required information to determine if the waste exhibits a hazardous characteristic or may contain hazardous constituents included in the toxicity characteristics specified in 20.4.1.200 NMAC (incorporating 40 CFR 261, Subpart C. If a toxicity characteristic contaminant is identified and is not included as a listed waste, sites may evaluate available data and assign the toxicity characteristic hazardous waste number consistent with RCRA requirements. All data examined to reach the hazardous waste number determination must be placed in the auditable record and must present a clear justification for	E1 - E6 CCP-TP-005, S. 1.1, 4.2, 4.3 & 4.4 CCP-TP-500, S. 4.0	Y	E1. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 **(AK-1)** AK Documentation Checklist, Attachment 1, for waste stream SNL-HCF-S5400-RH **(AK-5)** E2. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S2.0 **(AK-1)** E3. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3.4, 5.4.3.5, 5.4.4 **(AK-1)** AK Att. 6, Waste Form, Waste Material	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	the hazardous waste number analyses. 6. Review the compiled information to provide an estimate of the material parameter weights for each container to be stored or disposed of at WIPP. For newly generated waste, procedures shall be developed and implemented to characterize hazardous waste using acceptable knowledge prior to packaging.			Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)** SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** E4.&E5. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3, tables 9 and 10 **(AK-1)** AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-RH **(AK-7)** E6. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6 S5.4.1.2, table 3 **(AK-1)** Memo attached to AK Att. 6, Waste Form, Waste Material Parameters, Prohibited Items and Packaging for waste stream SNL-HCF-S5400-RH **(AK-8)**		
149b	F. Sites shall ensure that results of audits of the TRU mixed waste characterization programs at the site are available in the records.	F.) CCP-PO-001, S. C4-3f, C4-3b	Y	F. Internal Surveillance **(AK-17)**	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	G. Sites shall identify all process controls (implemented to ensure that the waste contains no prohibited items and to control hazardous waste content and/or physical form) that have been applied to retrievably stored waste and/or may presently be applied to newly generated waste. Process controls are applied <u>at the time</u> of waste generation/packaging to control waste content, whereas any activities performed <u>after</u> waste generation/packaging to identify prohibited items, hazardous waste content, or physical form are waste characterization activities, not process controls. The AK record must contain specific process control and supporting documentation identifying when these process controls are used to control waste content. See Permit Attachment C, Section C-2 for programmatic requirements related to process controls. (Section C4-3b)	CCP-QP-021, (All) WP 13-QA.03, (All) G.) CCP-TP-005, S. 4.2 - 4.4 & Att. 1		G. AK Source Document Summaries for waste stream SNL-HCF-S5400-RH, P1100 **(AK-4)**		
<u>150</u>	Does the site have implemented procedures which comply with the following criteria to establish acceptable knowledge records: A. Acceptable knowledge information shall be compiled in an auditable record, including a road map for all applicable information. B. The overview of the facility and TRU mixed waste management operations in the context of the facility's mission shall be correlated to specific waste stream information. C. Correlations between waste streams, with regard to time of generation, waste generating processes, and site-specific facilities shall be clearly described. For newly generated wastes, the rate and quantity of waste to be generated shall be defined. D. A reference list shall be provided that identifies documents, databases, Quality Assurance protocols, and other sources of information that support the acceptable knowledge information. E. Container inventories for TRU mixed waste in retrievable storage shall be delineated into waste streams by correlating the container identification to all of the required and additional AK information. (Section C4-3c)	A-E: CCP-TP-005, S. 1.1, 4.2, 4.3, 4.4, 4.10, 4.11 & Atts. 1, 4 & 8 CCP-TP-001, S. 2.7	Y	A. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, **(AK-1)** AK Documentation Checklist, Attachment 1, for waste stream SNL-HCF-S5400-RH **(AK-5)** B. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S4.2, 4.6, 5.4 **(AK-1)** C. AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S4.6.2, 5.2, 4.7, 5.1	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
				(AK-1) D. Acceptable Knowledge Information List **(AK-6)** E. IDC Database screenshots **(AK-10)** AK Tracking Spreadsheet **(AK-11)** AK attachment 8 container list **(AK-9)**		
151	If the generator site submitted an AK Sufficiency Determination Request for a specific waste stream, did the site provide all of the requisite information for which approval is sought? (Section C-0b)	CCP-TP-005, S. 4.7	Y	N/A	N/A	No AK Sufficiency Determination Requests were made for this waste stream
	RE-EVALUATING ACCEPTABLE KNOWLEDGE					
152	Does the generator site have written procedures for the augmentation of all acceptable knowledge information using testing. Testing consists of radiography and visual examination. Do site procedures indicate that the following testing will be conducted based upon the results of the Determination Request AKSD denied - 100% RTR or VE (Section C4-1, C-0b)	CCP-TP-005, S. 4.4, 4.5 & 4.7	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, **(AK-1)** Traceability Drum BDRs SNLRHVE14001 **(AK-13)** SNLRHVE14002 **(AK-14)** Draft Waste Stream Characterization Checklist Lot 3 **(AK-15)**	Y	
155	Does the generator site have procedures for reevaluating acceptable knowledge if the results of the waste characterization indicate that the waste to be shipped does not match the approved waste stream or if the data from radiography or visual examination for waste streams without an AK Sufficiency Determination exhibit this	CCP-TP-005, S. 4.8 S. 4.9 Att. 10	Y	N/A	N/A	There were no examples of discrepancy resolution during characterization and resultant AK reevaluations for this waste stream

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	discrepancy? Does this procedure describe how the waste is reassigned, acceptable knowledge reevaluation, and appropriate hazardous waste numbers are assigned? (Section C4-3e)					
156	Do site procedures indicate that debris wastes are assigned toxicity characteristic EPA numbers based on AK regardless of the quantity or concentration? (C4-3e)	CCP-TP-005, S. 4.4.17 Att. 5	Y	AK Summary Report for SNL/NM RH Hot Cell Facility TRU Waste (Debris), Waste Stream SNL-HCF-S5400-RH, CCP-AK-SNL-500 R6, S5.4.3.2, tables 9 and 10 **(AK-1)** AK Att. 5, Hazardous Constituents, for waste stream SNL-HCF-S5400-RH **(AK-7)**	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	CRITERIA FOR ASSEMBLING AN ACCEPTABLE KNOWLEDGE RECORD DELINEATING THE WASTE STREAM					
158	If wastes are reassigned to a different waste matrix code based on site visual examination or radiography or Permittee confirmation activities, does the generator site have written documentation to ensure that the following steps are followed: A. Review existing information based on the container identification number and document all differences in hazardous waste number assignments B. If differences exist in the hazardous waste numbers that were assigned, reassess and document all required acceptable knowledge information (Section C4-3b) associated with the new designation C. Reassess and document all testing data associated with the waste D. Verify and document that the reassigned waste matrix code was generated within the specified time period, area and buildings, waste generating process, and that the process material inputs are consistent with the waste material parameters identified during radiography or visual examination E. Record all changes to acceptable knowledge records F. If discrepancies exist in the acceptable knowledge information for the revised waste matrix code, document the segregation of the affected portion of the waste stream, and define the actions necessary to fully characterize the waste (Section C4-3e)	CCP-TP-005, S. 4.8 S. 4.9 Att. 10	Y	N/A	N/A	There were no examples of discrepancy resolution during characterization and resultant AK reevaluations for this waste stream
	DATA QUALITY REQUIREMENTS					
168	Are acceptable knowledge processes consistently applied among all generator sites, and does each generator site comply with the following data quality requirements for acceptable knowledge documentation: A. Precision - The qualitative determinations, such as compiling and assessing acceptable knowledge documentation, do not lend themselves to statistical evaluations of precision. However, the acceptable knowledge information will be addressed by the independent review of acceptable knowledge information during internal and external audits. B. Accuracy - The percentage of waste containers which require reassignment to a new waste matrix code and/or designation of different hazardous waste numbers based on testing data and discrepancies identified by the Permittees during waste confirmation will be reported as a measure of	A. CCP-PO-001, S. C4-3f CCP-QP-021, (All) WP 13-QA.03, (All) B. CCP-TP-005, S. 4.6	Y	A. Internal Surveillance **(AK-17)** B. AK Accuracy Report Lot 1 **(AK-16)**	Y	

	WAP Requirement[2] SNL/CCP Audit A-14-26 Table C6-2 Acceptable Knowledge (AK) Checklist[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	acceptable knowledge accuracy. C. Completeness - The acceptable knowledge record must contain 100 percent of the information (Permit Attachment C4-3). The usability of the acceptable knowledge information will be assessed for completeness during audits.	C. CCP-TP-005, S. 4.0, Att. 1		C. AK Documentation Checklist, Attachment 1, for waste stream SNL-HCF-S5400-RH **(AK-5)**		
168a	D. Comparability - Comparability is ensured through sites meeting the training requirements and complying with the minimum standards outlined for procedures that are used to implement the acceptable knowledge process. All sites must assign hazardous waste numbers in accordance with Permit Attachment C4-4 and provide this information regarding its waste to other sites who store or generate a similar waste stream. E. Representativeness - Representativeness is a qualitative parameter that will be satisfied by ensuring that the process of obtaining, evaluating, and documenting acceptable knowledge information is performed in accordance with the minimum standards established in Permit Attachment C4. Sites also must assess and document the limitations of the acceptable knowledge information used to assign hazardous waste numbers (e.g., purpose and scope of information, date of publication, type and extent to which waste parameters are addressed). (Section C3-3)	D. CCP-TP-005, S. 2.2 S. 4.0 CCP-QP-002, S. 4.3.1 E. CCP-TP-005, S. 2.2 S. 4.0 CCP-QP-002, S. 4.2.1	Y	D. Acceptable Knowledge Expert (AKE) and Site Project Manager (SPM) Training files **(GEN-9)** E. Acceptable Knowledge Expert (AKE) and Site Project Manager (SPM) Training files **(GEN-9)** AK Source Document Summaries for waste stream SNL-HCF-S5400-RH **(AK-4)**	Y	
169	Does the generator site address quality control by tracking its performance with regard to the use of acceptable knowledge by: 1) assessing the frequency of inconsistencies among information, and 2) documenting the results of waste discrepancies identified by the generator/storage site during waste characterization or the Permittees during waste confirmation using radiography, review of radiography audio/video recordings, or visual examination, or review of visual examination records. In addition, the acceptable knowledge process and waste stream documentation must be evaluated through internal assessments by generator/storage site quality assurance organizations. (Section C4-3e)	CCP-TP-005, S. 4.6 S. 4.9 CCP-QP-021, (All) WP 13-QA.03, (All) CCP-PO-001, S. C4-3f	Y	AK Accuracy Report Lot 1 **(AK-16)** Internal Surveillance **(AK-17)** AK Discrepancy Resolutions **(AK-12)**	Y	

1. NMED expects a traceability analysis to be performed, the results of which should be presented on this checklist under the "Examples of Implementation" column. Further, the traceability analysis process and results should be discussed in the Final Audit Report.

2. The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements are meant to determine whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

AK1

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CCP-AK-SNL-500

Central Characterization Program
Acceptable Knowledge Summary Report
For

SANDIA NATIONAL LABORATORIES/NEW MEXICO

REMOTE HANDLED
HOT CELL FACILITY TRANSURANIC WASTE (DEBRIS)

Waste Stream:

SNL-HCF-S5400-RH

Revision 6

June 13, 2014

Irene Joo
Printed Name

APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	11/23/2010	Initial issue.
1	03/04/2011	Revised to incorporate *Waste Isolation Pilot Plant Hazardous Waste Facility Permit,* Attachments C-C6, *Waste Analysis Plan* (WIPP-WAP) changes, added New Mexico Administrative Code (NMAC) references, and updated the "Vacuum pump oil" entry in Table 7, Hot Cell Facility Chemical Identification.
2	07/06/2011	Revised to address comments from inspectors during U.S. Environmental Protection Agency (EPA) Baseline Inspection EPA-SNL-CCP-RH-06.11-8 (June 6-8).
3	11/29/2011	Revised to correct the assignment of U.S. Environmental Protection Agency (EPA) hazardous waste numbers (HWNs).
4	11/30/2011	Revised to change the TRUCON codes.
5	01/22/2014	Revised to include additional containers of Hot Cell Facility (HCF) fuel examination waste previously managed as SNM; to format the report consistently with CCP-TP-005, *CCP Acceptable Knowledge Documentation*; to incorporate Nuclear Waste Partnership (NWP) transition changes; and incorporate current procedures and waste processing acceptable knowledge (AK).
6	06/13/2014	Revised to include additional source documents; to change maximum layers of confinement from zero to one; and to make minor corrections throughout the report.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACRR	Annular Core Research Reactor
AEC	U.S. Atomic Energy Commission
AHCF	Auxiliary Hot Cell Facility
AK	acceptable knowledge
ALARA	As Low As Reasonably Achievable
ANL-W	Argonne National Laboratory - West
ATWIR	*Annual Transuranic Waste Inventory Report*
BR3	Belgian Reactor 3
BWR	boiling water reactor
CCP	Central Characterization Program
CFR	Code of Federal Regulations
CH	contact-handled
cm^2	square centimeters
Ci	curie
CO_2	carbon dioxide
DF	Damaged Fuel
DFR	Damaged Fuel Relocation
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOP	Dioctylphthalate
DOT	U.S. Department of Transportation
dpm	disintegration per minute
DQO	data quality objective
DSA	Documented Safety Analysis
DR	Radioactive or Mixed Waste Disposal Request Form
EBR-II	Experimental Breeder Reactor-II
EEOS	Effective Equation of State
EPA	U.S. Environmental Protection Agency
FALCON	Fission Activated Laser Concept
FCI	Fuel-coolant Interactions
FEW	Fuel Examination Waste
FD	Fuel Disruption (also referred to as Fuel Dynamics)
FFTF	Fast Flux Test Facility
FGE	fissile gram equivalent
GBs	gloveboxes
GBL	Glovebox Laboratory
GIF	Gamma Irradiation Facility
HEPA	High-Efficiency Particulate Air
HCF	Hot Cell Facility
HWN	Hazardous Waste Number
INL	Idaho National Laboratory
lbs	pounds
LMFBR	6iquid metal fast breeder reactor

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

LANL	Los Alamos National Laboratory
LOF	loss of flow
LLNL	Lawrence Livermore National Laboratory
LWA	*The Waste Isolation Pilot Plant Land Withdrawal Act*
LWR	Light water reactor
m^3	cubic meters
MARS	Materials Accounting Records System
MC&A	Materials Control and Accountability
MELCOR	Methods for Estimation of Leakages and Consequences of Releases
MEK	Methyl Ethyl Ketone
MIBK	methyl isobutyl ketone
MSDS	material safety data sheet
MP	Melt Progression
mrem/hr	milliroentgen equivalent man per hour
NASA	National Aeronautics and Space Administration
nCi/g	nanocuries per gram
NDC	nondestructive cleaning unit
NMAC	New Mexico Administrative Code
NPR	New Production Reactor
NWPA	*Nuclear Waste Policy Act*
PCB	Polychlorinated Biphenyl
PHS	Primary Hazard Screening
PKE	Process Knowledge Evaluations
PPE	personal protective equipment
PWR	pressurized water reactor
QA	quality assurance
QAO	quality assurance objective
RCRA	Resource Conservation and Recovery Act
Rem/hr	Roentgen Equivalent Man per hour
RH	remote-handled
RH-TRUCON	Remote-Handled Transuranic Waste Content Code
RMWMF	Radioactive and Mixed Waste Management Facility
RTR	real-time radiography
RWNMDD	Regulated Waste/Nuclear Material Disposition Department
SCB	Steel Containment Box
SEMs	scanning electron microscopes
SDIO	Strategic Defense Initiative Organization
SNL/NM	Sandia National Laboratories/New Mexico
SNM	Special Nuclear Material
SPR II and III	Sandia Pulsed Reactors
SRS	Savannah River Site
ST	Source Term

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

STAR	Sandia Transient Axial Relocation
TA	Technical Area
TDU	Tool Decontamination Unit
TMI	Three Mile Island
TRU	transuranic
TSCA	Toxic Substance Control Act
VE	visual examination
WCPIP	*Waste Characterization Program Implementation Plan*
WIPP	Waste Isolation Pilot Plant
WIPP-WAC	*Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
WIPP-WAP	*Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan*
WMP	Waste Material Parameter

1.0 EXECUTIVE SUMMARY

This Acceptable Knowledge (AK) Summary Report has been prepared for the Central Characterization Program (CCP) for remote-handled (RH) transuranic (TRU) waste generated and managed by Sandia National Laboratories/New Mexico (SNL/NM) in Albuquerque, New Mexico. The waste described in this report was generated in the SNL/NM Hot Cell Facility (HCF) during the removal and packaging of experimental material and decontamination operations in Building 6580. The waste has been stored at the Manzano Bunkers located at Manzano Base within Kirtland Air Force Base and is being repackaged at the Auxiliary Hot Cell Facility (AHCF). This report was prepared in accordance with CCP-TP-005, *CCP Acceptable Knowledge Documentation* (Reference 1), to implement the AK requirements of DOE/WIPP-02-3214, *Remote Handled TRU Waste Characterization Program Implementation Plan* (WCPIP) (Reference 2); *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan* (WIPP-WAP) (Reference 3); and DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WIPP-WAC) (Reference 4).

The WIPP-WAP AK requirements are addressed in CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (Reference 5). The WIPP-WAC AK requirements are addressed in CCP-PO-002, *CCP Transuranic Waste Certification Plan* (Reference 6). Additionally, this report provides the AK information required by CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)* (Reference 7).

The CCP is tasked with certification of TRU waste for transportation to and disposal at the Waste Isolation Pilot Plant (WIPP). This report was developed in accordance with CCP-TP-005 (Reference 1) and describes how AK is collected, reviewed, and managed by the CCP. The CCP is responsible for collection, review, and management of AK documentation in accordance CCP-TP-005 and reviews and approves this AK Summary Report. CCP maintains responsibility for this AK Summary Report and all CCP-TP-005 generated forms and records as quality assurance (QA) records. In addition, CCP maintains a copy of the "historical source documents" as non-QA records.

Waste stream SNL-HCF-S5400-RH originally consisted of thirty-two (32) parcels, packaged within twenty-seven (27) 55-gallon shielded drums or casks, and two non-shielded drums. Revision 5 of this report identifies 37 additional containers, currently packaged in either assembly packages, casks, or shielded boxes, that were initially identified as accountable material. The original and newly identified waste originated from pre- and post-test processes associated with reactor fuel studies conducted in the gloveboxes, Steel Containment Boxes (SCBs), and Zone 2A of the HCF. These containers are being repacked in a remote-handling facility in the AHCF, so the final volume and number of containers may change. The corresponding contact-handled (CH) debris waste stream ID-SNL-HCF-S5400 is described in CCP-AK-INL-021, *Central Characterization Project Acceptable Knowledge Summary Report For Idaho National Laboratory, Sandia National Laboratories/New Mexico Hot*

Cell Facility Contact Handled Transuranic Waste (Debris), Waste Stream: ID-SNL-HCF-S5400 (Reference 8).

This AK Summary Report, along with the referenced supporting documentation, provides a defensible and auditable record of AK for the designated waste stream from the Sandia Hot Cell Facility. The references and AK source documents used to prepare this report are listed in Sections 8.0 and 9.0, respectively. The source documents cited throughout this report are identified by alphanumeric designations corresponding to a unique Source Document Tracking Number (i.e., C1001, DR1001, I1001, M1001, P1001, and U1001).

This AK report includes information relating to the facility's history, mission, process operations, waste identification, characterization, and waste management practices. Information contained in this report was obtained from numerous sources, including facility safety basis documentation, historical document archives, generator and storage facility waste records and documents, and interviews with cognizant personnel.

This report and supporting source documentation provide the mandatory waste program and waste stream-specific information required by the WIPP-WAP (Reference 3). This report also compiles data relevant to the applicable U.S. Environmental Protection Agency (EPA) requirements and presents the documentation necessary to satisfy each WCPIP data quality objective (DQO) and quality assurance objective (QAO) for RH TRU waste streams (Reference 2).

2.0 WASTE STREAM IDENTIFICATION SUMMARY

Site Where TRU Waste Was Generated and Stored:

Sandia National Laboratories/New Mexico
1515 Eubank S.E.
Albuquerque, New Mexico 87123
EPA ID NM5890110518

Facility Where RH TRU Waste Was Generated:

Building 6580, Hot Cell Facility

Facility Mission:

Historically, the mission of SNL/NM has been to develop technological solutions to support national security and to counter national and international threats. SNL/NM's mission is to meet national needs in the following areas:

- Nuclear weapons
- Nonproliferation and assessments
- Military technologies and applications
- Energy and infrastructure assurance
- Homeland security

The HCF in the basement of Building 6580 has been providing essential support for the reactor and other radiation facilities within Technical Area (TA)-V since the early 1960s. In 1984, a major modification was conducted to provide additional hot cell facilities and systems in Building 6580 and to increase the capabilities of the existing HCF. As described in Section 4.7, the materials in waste stream SNL-HCF-S5400-RH were generated during the removal and packaging of experimental material and decontamination activities in the HCF where pre- and post-test processes associated with reactor fuel studies were conducted. These studies primarily involved the preparation of light water reactor (LWR) and liquid metal fast breeder reactor (LMFBR) experimental assemblies to be irradiated in the SNL/NM reactors to simulate severe accident scenarios. Following irradiation, the HCF capabilities allowed for post-irradiation examination of these assemblies.

Waste Stream SNL-HCF-S5400-RH (Heterogeneous Debris)

Summary Category Group:	S5000
Waste Matrix Code Group:	Heterogeneous Debris Waste
Waste Matrix Code:	S5400

RH TRU Waste Content Code (RH-TRUCON): SN 321

Annual Transuranic Waste Inventory Report (ATWIR) Identification Number: SA-W135

Waste Stream Description:

Waste stream SNL-HCF-S5400-RH consists predominantly of organic and inorganic debris generated during the destructive and nondestructive examinations conducted in the HCF, and includes personal protective equipment (PPE) and plastic from decontamination and repackaging activities. This waste stream may contain the following materials (See Section 5.4):

- **Cellulosic items:** including paper, paper wipes, Herculite cloth, cardboard, cotton coveralls, hoods, and gloves, High-Efficiency Particulate Air (HEPA) filter media and frames, pre-filter frames, swipes, masslin cloth, and vacuum cleaner bags and parts, absorbent pads, and wood chips.

- **Plastic materials:** including PPE, bottles, jars, buckets, dishes, pipettes, tygon tubing, pipe, bags, filter cartridges, sheeting, vials, tape, synthetic mop head, and epoxy residue.

- **Rubber items:** including non-leaded glovebox gloves, nitrile and latex gloves, gloves and booties, tubing, foam rubber, wire/cord insulation, O-rings, and gaskets.

- **Other inorganic items:** including glass jars, light bulbs, mirrors, windows, vials, lens, and other lab glassware.

- **Metal items (ferrous materials):** including stainless steel hardware, steel cans, buckets, foils, plates, trays, equipment, machinery, and electronics with steel parts, filters, tubing, fittings, rods, tools, experimental assembly parts, and fuel rod pieces.

- **Non-ferrous metals:** including aluminum, brass, copper, lead, and silver. Items include foils, tools, wire, rods, tubing, fittings, gaskets, gauges, plates, machine parts, experimental assembly parts, and fuel rod pieces.

In addition to the debris materials described above, waste stream SNL-HCF-S5400-RH will also contain lesser amounts (less than 50 percent in any container) of homogeneous organic and inorganic materials. Clay and vermiculite based absorbents including Aquaset, Petroset, Quick Solid, and Kitty litter are used during the neutralization, immobilization, and solidification of liquids.

The EPA hazardous waste numbers (HWNs) assigned to this waste stream are D004, D005, D006, D007, D008, D009, D011, D019, D022, D028, F002, and F005. Refer to Section 5.4.3 for the waste stream chemical content evaluation.

Prohibited items that were originally present in this waste stream identified during repackaging of the CH waste (SNL-HCF-S5400) or potentially present based on historic documentation, include unpunctured aerosol cans, prohibited liquids, and sealed containers greater than four liters. Waste packages containing prohibited items identified during characterization activities will be segregated, then dispositioned appropriately and/or repackaged to remove the items prior to shipment. Historic container paperwork did not indicate any containers with contact dose rates greater than 1000 roentgen equivalent man per hour (Rem/hr). Refer to Section 5.4.4 for detailed waste stream prohibited items information.

RH parcels previously repackaged and sent to WIPP prior to Revision 5 of this report were stored in several types of lead lined casks, 55-gallon drums with a concrete liner, and unshielded 55-gallon or 30-gallon drums. The waste added in Revision 5 of this report is currently packaged in assembly packages, casks, or shielded boxes. RH waste is repackaged at the AHCF in accordance with operating procedures written for each RH container (Refer to Section 5.5).

Waste stream SNL-HCF-S5400-RH meets the WIPP-WAP and the WCPIP waste stream definitions. The waste was generated during the HCF research and development operations associated with the preparation and examination of pre- and post-irradiated materials. The waste is similar in material, physical form, hazardous constituents, and radiological properties (Refer to Section 4.6.2).

3.0 ACCEPTABLE KNOWLEDGE DATA AND INFORMATION

TRU waste destined for disposal at the WIPP must be characterized prior to shipment. Development of knowledge of the waste materials and processes that generate and control the waste is required to provide a clear and convincing argument about the characteristics of each waste stream. The AK characterization documented herein complies with the requirements of the WIPP-WAP (Reference 3) and the WCPIP (Reference 2) and was developed in accordance with CCP-PO-001 (Reference 5), and CCP-TP-005 (Reference 1).

The WCPIP identifies waste characterization requirements and methods to satisfy requirements in:

- 40 Code of Federal Regulations (CFR) Part 191, *Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes* (Reference 9)
- 40 CFR Part 194, *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR 191 Disposal Regulations* (Reference 10)
- *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations: Certification* Decision (Reference 11)
- Public Law 102-579, *The Waste Isolation Pilot Plant Land Withdrawal Act* (LWA) (Reference 12)

This report presents information obtained from review of hundreds of AK sources relating to the SNL/NM HCF, process operations, and waste management practices. Examples of source documents include facility safety basis documentation, historical document archives, operational logbooks, repackaging logbooks, process work sheets, procedures for waste generation activities, interviews with cognizant personnel, results of waste characterization programs, and site mission descriptions identifying defense and non-defense operations. The references and AK sources used to prepare this report are listed in Sections 8.0 and 9.0, respectively. Only those sources cited in this report are listed. The AK sources referenced within this report by alphanumeric designations (i.e., C1001, DR1001, I1001, M1001, P1001, and U1001) correspond to the Source Document Tracking Number using the following convention:

- C – Correspondence
- DR –Discrepancy Reports
- I – Internal procedures
- M – Miscellaneous (e.g., controlled databases)
- P – Published plans, documents, and procedures
- U – Unpublished documents

4.0 REQUIRED PROGRAM INFORMATION

This section presents the mandatory TRU waste program information required by the WCPIP and the WIPP-WAP for waste stream SNL-HCF-S5400-RH (References 2 and 3). This section provides a description of the facility and operations associated with the generation of the SNL/NM HCF RH waste. Included is a description of the HCF and AHCF, a brief operational history of the SNL/NM site, mission summary, defense determination, waste management program information, discussions of operations associated with the generation of waste stream SNL-HCF-S5400-RH, and description of the SNL/NM waste management as it relates to this waste stream.

4.1 Facility Location

SNL/NM is located in Bernalillo County in north-central New Mexico, immediately south of Albuquerque, within the boundaries of Kirtland Air Force Base. SNL/NM is owned by the U.S. Department of Energy (DOE) and has been operated jointly by DOE and a Management and Operating contractor for over 50 years. As shown in Figure 1, Map of the Sandia National Laboratories/New Mexico, the SNL/NM site is divided into five TAs. TRU waste generated by SNL/NM is stored at the Manzano Bunkers located at Manzano Base within Kirtland Air Force Base (Reference P1104).

As shown in Figure 2, Map of SNL/NM Technical Area V, Building 6580 containing the HCF is located in TA-V. TA-V is located on a mesa bounded on the east by the Manzano Mountains, on the west by the Rio Grande, on the north by Tijeras Arroyo and Arroyo del Coyote, and on the south by Hell's Canyon Wash. Other TA-V facilities include the Annular Core Research Reactor (ACRR), the Sandia Pulsed Reactors (SPR II and SPR III), and the Gamma Irradiation Facility (GIF). Small research laboratories, a machine shop, and plant-support facilities are also located within the TA (Reference P1104).

4.2 Facility Description

The HCF is located in the basement of Building 6580. As shown in Figure 3, HCF Basement Floor Plan, three SCBs are contained in a shielded support area (Zone 2A). They provide SNL/NM with an onsite capability of working with experiments and materials containing up to a nominal maximum of 50,000 curie (Ci) of fission products and 10,000 Ci of alpha emitters per SCB and Zone 2A. Materials, equipment, and experiment packages were moved into and out of Zone 2A through airlock doors from Room 110, and through the vertical passthrough in the roof of Zone 2A. Small items could be moved into and out of Zone 2A through the shield-wall tube. Access to SCB 1 is through a passthrough from Zone 2A. Normal access to SCBs 2 and 3 is through the passthroughs connecting the three SCBs. Small items were passed between SCB 2 and connected shielded glovebox (Blister) using a transfer tube. Items were also passed directly between Zone 2A and SCB 3 using the rear passthrough. The Zone 2A area including the SCBs and Blister are collectively referred to as the Hot Cell in the AK record (Reference P1104).

As illustrated in Figure 4, Room 112 Glovebox Laboratory, the Glovebox Laboratory (GBL) contains a train of eight gloveboxes (GBs) connected by passthroughs. GBs 1 and 2 are shielded gloveboxes connected by a passthrough and were generally operated independently of the other boxes in the train. GBs 3 through 8 are typically accessed through an entry passthrough located between GBs 5 and 6. There are adapters on the ends of GBs 4 and 8 that permit attachment of special containers to introduce odd-sized equipment and samples into the boxes (References P1015 and P1104).

Access to GB 3 is through a passthrough to GB 4. GBs 4 and 5 have no barrier between them and function as one glovebox, sometimes referred to as GB 4/5. Similarly, GBs 6 and 7 have no barrier between them and function as one glovebox, sometimes referred to as GB 6/7. GB 8 is connected to GB 7 by a passthrough. GBs 9 and 10 are stand-alone boxes that do not directly connect to any other glovebox in the HCF. Gloveboxes may have been added to or removed from the GBL from time to time to accommodate changing customer requirements. SNL identifies that the experimental waste contained in GBs 4 through 7 consist only of low-level waste destined primarily for disposal at the Nevada Test Site. Glovebox 10 was removed prior to generation of this waste stream, and glovebox 11 shown in Figure 4 was never installed (References P1015 and P1104).

The Blister is a shielded glovebox served by both gloveports and master/slave manipulators. It connects with SCB 2 by a sample transport tube and contains sample analysis and preparation equipment (e.g., optical microscope and carbon and metal evaporator/coaters) (Reference P1104).

HCF support areas included in Zone 2 are Rooms 105, 106, 107, and 110/111/112. These rooms include the "cold" side of the Hot Cell walls and the operator areas for the hot cell. Also in these rooms are optical and scanning electron microscopes (SEMs), fume hoods, leak detectors, radiation-detection equipment, and other equipment for handling radioactive and nonradioactive materials and experiments (Reference P1104).

The primary storage location for the experimental nuclear materials associated with HCF operations was Room 108. Nuclear material, largely Special Nuclear Material (SNM), was stored in Room 108 in metal cabinets, file cabinets, drums, boxes, and other closed containers. Nuclear material and SNM were also stored in other locations in and around the HCF. These locations typically included areas inside the SCBs and gloveboxes, cabinets in Rooms 105 and 112, inside Zone 2A, in drums or other containers in Rooms 110/111/112 and 106, in storage or transport containers in the monorail fenced area, and in the monorail storage hole. The 20-foot deep monorail storage tube was designed to store the larger assemblies introduced into the HCF for examination. The inventories changed frequently as materials were used for experiments and research projects (Reference P1104).

The AHCF, located in the High Bay of Building 6597 of TA-V, is the nuclear facility that has the capability to process and repackage RH TRU waste. The facility has radiological processing areas with gloveboxes for the safe handling of RH TRU waste. All of the containers currently assigned to waste stream SNL-HCF-S5400-RH will be repackaged at the AHCF to meet WIPP requirements prior to shipment. The containers have been stored at the Manzano Bunkers (References C1027, I1053, M1016, P1041, P1100, P1101, and P2001).

4.3 Facility Mission

Historically, the mission of SNL/NM has been to develop technological solutions to support national security and to counter national and international threats. SNL/NM's mission is to meet national needs in the following areas:

- Nuclear weapons
- Nonproliferation and assessments
- Military technologies and applications
- Energy and infrastructure assurance
- Homeland security

The HCF has been providing essential support for the reactor and other radiation facilities within TA-V since the early 1960s. In 1984, a major modification was conducted to provide additional hot cell facilities and systems in Building 6580 and to increase the capabilities of the existing HCF. As described in Section 4.7, the materials in waste stream SNL-HCF-S5400-RH were generated during the removal and packaging of historic experimental waste and associated decontamination of the process areas. The waste was generated during pre- and post- test processes associated with reactor fuel studies conducted in the GBL, SCBs, and Zone 2A of the HCF. These studies primarily involved the preparation of LWR and LMFBR experimental assemblies to be irradiated in the SNL/NM reactors to simulate severe accident scenarios. Following irradiation, the HCF capabilities allowed for post-irradiation examination of these assemblies (References P1102 and P1104).

4.4 Defense Waste Assessment

The WIPP requires generator sites to determine that TRU waste streams to be disposed of at WIPP meet the definition of TRU defense waste. TRU waste is eligible for disposal at WIPP if it has been generated in whole or part by one of the atomic energy defense activities listed in Section 10101(3) of 42 U.S.C 10141, *Nuclear Waste Policy Act of 1982* (NWPA) (Reference 13). Based on the review of AK there is sufficient evidence to demonstrate that TRU wastes generated by the HCF operations are contaminated with materials from atomic energy defense research activities associated primarily with projects conducted to support safety programs for reactors with defense missions (References 12 and 13).

The United States has historically operated and continues to operate reactors used for the development of nuclear energy technology. Additionally, these reactors have been utilized to produce radioisotopes for medical, industrial, and military purposes; to generate neutron environments for scientific research; and to conduct irradiation experiments in support of the government's defense, space, fusion, and advanced reactor programs. Collectively referred to as test and research reactors, these facilities have been typically operated by private contractors for the DOE. Mixed oxide, carbide, and alloy fuels for, or tests in, the DOE breeder reactor research and testing program were manufactured with plutonium obtained primarily from DOE production reactors at the Hanford site and the Savannah River Site (SRS). DOE test and research reactor facilities include the Argonne National Laboratory – West (ANL-W) Experimental Breeder Reactor-II (EBR-II) and Hanford Fast Flux Test Facility (FFTF) reactors (References C1042 and C1043).

In 1967 the U.S. Atomic Energy Commission (AEC) initiated the LMFBR Program for developing and demonstrating fast breeder reactor technology for safe, reliable, and economical energy production. Critical to this demonstration program was the design, development, and construction or modification of facilities capable of manufacturing, testing, and examining these reactor materials. The ANL-W EBR-II and Hanford FFTF reactors were the most important facilities in the LMFBR Program. The FFTF was constructed to produce higher neutron flux and testing capabilities than produced by EBR-II. Even though the primary mission of the DOE test and research reactors was focused on the development of commercial energy technology, the reactors had an underlying defense mission and ongoing defense research and development experiments were conducted in these facilities. As described in Section 4.7, the HCF supported the development of the LMFBR technology by conducting experiments to simulate core disruptive accident conditions utilizing irradiated EBR-II mixed oxide reactor fuels (References C1038, C1042, C1043, and I1002).

EBR-II supported ongoing defense experiments conducted throughout the 30-year operating life of the reactor (1964-1994). In 1968-1969, the reactor was converted to a fast-reactor irradiation test facility. Test fuels and materials were placed in the core assemblies identical to those holding the driver fuel assemblies. In addition to supporting the LMFBR Program, numerous experiments were conducted for defense applications, including support of the Bettis Atomic Power Laboratory dedicated to supporting the Naval Nuclear Propulsion Program. Other defense program experiments conducted at EBR-II included radiation of thermionic elements and tritium production test materials. During its final year, experiments included a cooperative effort between Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) to demonstrate disposition of weapons plutonium in a fast reactor (References C1042 and C1043).

The EBR-II and FFTF reactors also supported the irradiation of experimental fuel pins manufactured at the LANL as part of the SP-100 Fuel Pin Irradiation Testing program during the late 1980s and early 1990s. This program, initiated in 1983, was jointly funded by National Aeronautics and Space Administration (NASA), DOE, and the

Strategic Defense Initiative Organization (SDIO). The SDIO (better known as the "Star Wars" program) was established to pursue technology in the development of a viable and comprehensive ballistic missile defense program. The SP-100 program's objective was to verify and validate the design of a compact, fast-spectrum nuclear reactor fuel for a broad range of national defense-related space applications. As described in Section 4.7, SNL/NM was involved in the development of SDIO technology associated with the Fission Activated Laser Concept (FALCON) project conducted in Building 6580. This program involved the development of a high-power, steady state, nuclear reactor-pumped laser concept being developed for the DOE Defense Program (References C1038, C1042, C1043, and P1019).

SNL/NM involvement with the New Production Reactor (NPR) program tests described in Section 4.7 was in support of research relating to the production of tritium for weapons production. Historically tritium was produced at the K Reactor and other reactors at the SRS. As the reactors were shut down, tritium production declined and halted altogether in 1988 when the K Reactor was shut down for safety upgrades. In the same year, DOE initiated the NPR project to develop a long term source of tritium to replace the aging K Reactor (References P1030 and P1044).

As described in Section 4.7, many of the HCF experiments were irradiated in the ACRR. The ACRR is a pool type research reactor capable of pulsed operation, steady-state operation, and a tailored transient rod withdrawal operation. The reactor was designed to produce a high yield of high-energy neutrons in the central irradiation dry cavity and other experimental facilities over a very short time-range pulse. This reactor supported DOE and U.S. Department of Defense (DOD) defense experiments, including the irradiation of components for defense programs and tritium production research (References M1015, P1102, and P2001).

Based on a review of the waste management practices in the HCF, commingling of the material from the defense related projects described above would have occurred. In addition to cross contamination introduced during the storage of test materials in common storage areas in the HCF, waste materials from ongoing process operations remained in the work areas and were repackaged and moved between areas during decontamination campaigns. Additional contamination from cutting, grinding, and polishing activities would also remain in the area contaminating surfaces and equipment. This contamination would remain in the area to commingle with wastes generated during subsequent examinations. Additionally, project tooling, equipment, and instrumentation were shared between projects resulting in further cross-contamination. As a result of the waste management practices and destructive analytical nature of the operations conducted in the HCF, segregation of cross-contaminated non-defense waste from defense-related waste is not feasible. Based on a review of the AK record, there was no generator documentation indicating the intentional segregation of materials originating from defense experiments from non-defense experiments. Therefore, waste stream SNL-HCF-S5400-RH is eligible for disposal at WIPP as a commingled defense waste stream generated "in part" by the

atomic energy defense activities including defense research and development (References 12, 13, C1038, C2001, M1016, P1015, P1104, and P2001).

4.5 High-Level Waste and Spent Nuclear Fuel Assessment

The LWA (Reference 12) prohibits the disposal of spent nuclear fuel and high-level waste as defined by the NWPA (Reference 13) at WIPP. According to the NWPA, spent nuclear fuel is "fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing." DOE Order 435.1 *Radioactive Waste Management* (Reference 21) expands on this definition to clarify that "Test specimens of fissionable material irradiated for research and development only, and not production of power or plutonium, may be classified as waste, and managed in accordance with the requirements of this Order when it is technically infeasible, cost prohibitive, or would increase worker exposure to separate the remaining test specimens from other contaminated material." This RH waste stream contains debris contaminated during the pre- and post-irradiation experiments and decontamination operations conducted in the HCF. The waste stream also contains test residues, test materials, and the resultant test fragments from the fuel pin test specimens, including irradiated pin fragments and dispersed particulate (fines and dust). Intact irradiated fuel pin test specimens are not included in the waste stream. The accountable materials inventories and package contents were reviewed to verify the waste stream does not contain intact irradiated fuel (References C2001, M1016, and P1041).

High-level waste is defined by the NWPA as "the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations, and other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation." The operations conducted in the HCF did not involve separation or reprocessing of constituent elements from reactor fuel (References 12, 13, C2001, M1016, and P1041).

4.6 RH TRU Waste Management

Historically, the wastes generated in the SCBs, Zone 2A, and the gloveboxes were all managed as radioactive or mixed waste. Radioactive and mixed wastes were collected separately and different kinds of radioactive and mixed waste (flammables, corrosives, and contaminated lead) were managed separately. Wastes were packaged, moved, handled, stored, and shipped out of TA-V in accordance with guidelines and procedures from the SNL/NM Environmental Safety and Health Manual, and HCF and TA-V procedures and policies. Prior to formal waste-processing operations in these areas, authorization was obtained from the SNL/NM waste management organizations (References P1101 and P1104).

The SNL/NM waste handlers from the Regulated Waste/Nuclear Material Disposition Department (RWNMDD) were responsible for proper waste management in the HCF. The waste handler's general responsibilities included the following (Reference P1101):

- Transporting and handling waste, materials, and samples.
- Storing, labeling, sorting, treating, and segregating waste and materials.
- Preparing waste and material for shipment to off-site facilities.
- General housekeeping in the SNL/NM facilities.
- Compiling and tracking waste inventory data and documentation.

To initiate waste generation in the HCF, the waste generators requested that waste or material be picked up for management by the RWNMDD. The request was done via a Radioactive or Mixed Waste Disposal Request Form (DR). The RWNMDD DR review process was intended to ensure that the waste accepted by the RWNMDD met the criteria for managing waste at the SNL/NM. The DR process is outlined below (Reference P1101):

The waste generator submits a DR to the RWNMDD.

- The DR is reviewed by the RWNMDD Waste Characterization Team, Radiation Protection personnel, and the Non-Nuclear Operations Supervisor for waste information and compliance with the waste acceptance criteria for the facility where the waste will be managed.

- The Non-Nuclear Operations Supervisor approves the waste for pickup and identifies the delivery or storage location for the waste at the Radioactive and Mixed Waste Management Facility (RMWMF) on the DR approval form.

- The DR Custodian tracks the DR through the DR review process and places the DR in the "Ready for Pickup" file box for the Waste Handlers when the waste is approved for pickup.

- The Waste Handlers pick up the waste and deliver it to a predetermined staging area at the RMWMF.

- The Waste Handlers unload and weigh the individual waste containers/parcels. Parcels are assigned identification numbers beginning with P and containers or drums are assigned C or SNL/NM prefixes.

- Waste labels are generated and attached to the container and/or parcel and the following information is verified:

    - Information on the radioactive waste labels includes the start date, the physical form of the waste (solid or liquid), and the DR number(s).

- Information of the mixed waste labels include the start date, Resource Conservation and Recovery Act (RCRA) codes and hazardous constituents, characteristics of the waste (toxic, corrosive, etc.), the physical form of the waste, and DR number.

Following the initial management of parcels received at the RMWMF from HCF decontamination operations described in Section 4.7, the CH drums in waste stream SNL-HCF-S5400 containing the parcels from this operation were packaged during 2007 and 2008. During the CH repackaging effort, several parcels were determined to be RH. Several objectives for the repackaging effort were identified in the TRU Waste Repackaging Plan (Reference I1053), including:

- Repackage TRU waste into WIPP compliant packaging configurations.
- Repackage waste to meet weight, fissile gram equivalent (FGE), and decay heat limits for the packaging configurations.
- Document the repackaging activities.
- Remove and/or remediate prohibited items.
- Identify packages that are below the 100 nanocuries per gram (nCi/g) limits and reclassify as necessary.
- Segregate mixed waste items from non-mixed, if possible.
- Consolidate TRU waste into fewer containers.
- Prepare a Documented Safety Analysis (DSA) to move the high activity/high dose TRU waste from storage to a facility at TA-V for repackaging.

The waste generated during the HCF decontamination consists of a combination of historic experimental waste and decontamination waste. Experimental waste was defined by the generator as those items present in the areas prior to the implementation of the decontamination program and included experimental debris (i.e., paper, chemicals) and equipment items that cannot be decontaminated to be reused. These experimental waste items are heterogeneous in nature and have varying radioactivity levels. Decontamination waste was defined as the materials generated during the decontamination of experimental items and/or the containment structures. Special handling of the high activity potentially RH waste generated as a result of experiment assembly or disassembly or post experiment examination was required for these materials and was the responsibility of the experimenter. The waste was collected and the experimenter was responsible for ultimate disposal. This waste may have been stored in the facility until disposal or may have been moved to another location (References I1030, P1015, P1102, and P1104).

Waste stream SNL-HCF-S5400-RH also includes containers of fuel examination waste (FEW) waste added in Revision 5 of this report. These containers have been managed by SNL as accountable material, and the content of these containers is based on Materials Control and Accountability (MC&A) records and accountable material data recorded in the MC&A Materials Accounting Records System (MARS) database. The containers of FEW material will be repackaged in the AHCF prior to shipment to WIPP (References C2001, P2002, P2003, and P2005).

4.6.1 Types and Quantity of TRU Waste Generated

Waste stream SNL-HCF-S5400-RH is mixed heterogeneous debris originally packaged during HCF decontamination activities conducted from 1995 to 1998. Waste stream SNL-HCF-S5400-RH originally consisted of 32 parcels inside 27 shielded casks or 55-gallon drums with concrete liners, and two non-shielded drums. These parcels have been repackaged at the AHCF and shipped to WIPP. An additional 37 containers, previously managed as accountable material anticipated to be shipped to the Idaho National Laboratory (INL), have been determined to be FEW eligible for disposal at WIPP. These containers have been added to the SNL-HCF-S5400-RH waste stream (Reference C2001). These added containers will also require repackaging at the AHCF prior to shipment to WIPP. The materials in these containers consist of reactor fuel sections, fragments, samples, residues, and related hardware associated with the examination of reactor fuel specimens. An inventory of drums verified to be eligible for shipment to WIPP will be included in the AK Waste Containers List for waste stream SNL-HCF-S5400-RH, and will be updated to reflect the repackaging campaigns (References C2001, C2004, M1016, M1019, M2003, M2010, M2021, P1105, P2002, and P2005).

4.6.2 Correlation of Waste Streams Generated from the Same Building and Process

The WIPP-WAP defines a waste stream as waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity. The WCPIP definition also includes that the materials in a waste stream must have similar radiological properties. Based on a review of the AK record and SNL/NM waste management practices, TRU debris waste from HCF decontamination operations was segregated to be managed as RH and CH waste. One CH TRU debris waste stream (SNL-HCF-S5400) and one RH debris waste stream (SNL-HCF-S5400-RH) have been delineated based on the WIPP-WAP and WCPIP waste stream definitions. Additionally low-level waste was generated by this program to be disposed of at sites including the Nevada Test Site are not addressed in this report (References 2, 3, 21, DR1001, DR1003, M1016, M2002, M2004, M2010, M2021, P1015, and P2001).

The basis and rationale for delineating this waste stream is as follows:

- Waste stream SNL-HCF-S5400-RH was generated by HCF research operations associated with pre- and post-irradiation examination experiments and the associated decontamination waste from the areas performing these experiments.

- Based on the review of the container documentation, the waste materials in waste stream SNL-HCF-S5400-RH consist of predominantly of organic and inorganic debris materials with lesser amounts homogeneous solids (vermiculite, Quik Solid, and Aquaset). Though the composition (e.g., cellulosics, plastic, metal) of the individual debris waste items vary between containers the materials are similar in physical form as delineated in this report (Refer to Section 5.4.1).

- Waste stream SNL-HCF-S5400-RH consists of the RH portion of the TRU waste inventory generated during the HCF decontamination process and has been characterized and delineated consistently with CH waste stream ID-SNL-HCF-S5400.

- Nuclear material storage, historic process operations, waste management, decontamination operations and subsequent waste management and repackaging operations resulted in the RH and CH TRU waste materials to be contaminated with similar radiological and chemical constituents. These containers have been segregated from the CH stream, solely due to elevated radiological content of these materials. Based on review of the AK record, the following resulted in comingling of chemical and radiological contamination in the TRU waste materials (Reference C1038, M1016, P1015, P1102, and P1104):

  - Storage and frequent movement of the nuclear test materials in common HCF storage areas;

  - Transfer of materials, specimens, equipment, and waste between research areas;

  - Contamination from previous destructive experiments on research area surfaces and from waste from previous experiments stored in the area;

  - Historic sharing of equipment between areas;

  - Fume hood operations involving the preparation of experimental chemicals and the decontamination of equipment for HCF areas;

  - Combination of RH waste parcels originating from CH repackaging operations conducted in the RMWMF;

- The nature of the HCF decontamination program segregation of low-level, CH, and RH waste materials resulted in this RH waste stream containing predominantly post-irradiated experimental materials and contamination; and Cross contamination introduced during the final packaging of RH waste parcels in the same area in the AHCF.

Based on the rational above, waste stream SNL-HCF-S5400-RH meets the WIPP-WAP and the WCPIP waste stream definitions.

The DOE/TRU-13-3425, *Annual Transuranic Waste Inventory Report – 2013* (ATWIR) (Reference 14), identifies one RH debris waste stream from the SNL/NM Hot Cell Facility, SA-W135-A. The 2012 version of the ATWIR identified on RH debris waste stream from the SNL/NM Hot Cell Facility, SA-W135. SA-W135 is identified in the 2013 ATWIR as cross walked to SA-W135-A from the 2012 version. This stream corresponds to SNL-HCF-S5400-RH. Previous ATWIRs identified two other CH waste streams from the HCF decontamination project, SA-W134 and SA-W134M. These streams were combined into waste stream SNL-HCF-S5400 as described in CCP-PK-SNL-002, *Central Characterization Project Process Knowledge Summary Report For Sandia National Laboratories/New Mexico Hot Cell Facility Contact Handled Transuranic Waste (Debris) Waste Stream: SNL-HCF-S5400* (Reference 23), and were shipped to INL for shipment to WIPP.

4.6.3 Waste Stream Identification, Categorization, and Delineation

This SNL/NM waste stream has been characterized based on knowledge of the material, knowledge of the processes generating the waste, and historical container documentation. Section 5.4.1 provides information on the container documentation used to determine the waste matrix codes assigned to these waste streams (References M1016, M1019, M2003, M2021, and P2001).

Once the containers are repackaged to meet WIPP requirements, they will be assigned new waste container identification numbers. The drums are given an identifier beginning with the letters SNLNM or SNL, followed by a unique 6-digit number that is linked to the individual parcel identification numbers recorded on the DRs, or to the parent container number (References I1042, I1053, M1016, M2021 and P1101).

4.7 Description of Waste Generating Processes

4.7.1 Historic HCF Project Descriptions

The HCF in the basement of Building 6580 has been providing essential support for the reactor and other radiation facilities within TA-V since the early 1960s. In 1984, a major modification was conducted to provide additional hot cell facilities and systems in Building 6580 and to increase the capabilities of the existing HCF. The materials in waste stream SNL-HCF-S5400-RH were generated during historic experimental

activities and waste operations associated with the decontamination of the HCF process areas. Contamination was the result of pre- and post-test processes associated with reactor fuel studies conducted in the GBL, SCBs, and Zone 2A of the HCF during the late 1970s to mid-1990s. These studies primarily involved the preparation of LWR and LMFBR experimental assemblies to be irradiated in the SNL/NM reactors to simulate severe accident scenarios. Following irradiation, the HCF capabilities allowed for post-irradiation examination of these assemblies. The data generated from many of these experiments was used by SNL/NM in the development of the Methods for Estimation of Leakages and Consequences of Releases (MELCOR) computer software that models the complex physical phenomena that occur in a nuclear power plant accident. Work began on MELCOR in 1982, with the first widely distributed release of the software in 1989 (References P1048, P1051, P1102, and P1104).

Details of HCF operations depend on specific experiment and project requirements. All involve either radioactive materials, fissile materials, or both. Types of operations conducted in the SCBs, Zone 2A, and the gloveboxes included packaging and unpackaging materials; loading materials into experiment packages; disassembly of irradiated and unirradiated packages and experiments containing radioactive or fissile materials; cutting, sectioning, coring, potting, mounting, grinding, polishing, and coating samples and materials for microscopic and other analytical examination; photography of samples; gamma counting and other radiation-emission analytical examinations; "wet" chemical and other chemical operations; and physical properties measurements (Reference P1102). Due to the research and development nature of the projects conducted in the HCF, development of a comprehensive process flow diagram was not feasible; however, the physical, chemical, and radiological properties of waste items was assessed to ensure that these items were consistent with the activities that were determined to generate TRU waste materials. The AK record was reviewed to compile a comprehensive list of chemicals and materials used during historic operations that may be contained in the waste stream. See Section 5.4 for a summary of the physical, chemical, and radiological characterization of waste stream SNL-HCF-S5400-RH.

Review of the AK record identified the primary research programs conducted in the SCBs, Zone 2A, and GBL described below. Waste from the SCBs and Zone 2A of the HCF primarily resulted from four experiments conducted from 1986 to 1993. These four experiments were: Melt Progression (MP) experiments, the Source Term (ST) experiments, the Damaged Fuel (DF) experiment, and the NPR experiments (Reference P1102). The Fuel Disruption (FD), Effective Equation of State (EEOS), Sandia Transient Axial Relocation (STAR), and FALCON programs were primarily conducted in the GBL and adjacent supporting areas. Table 1, HCF Project Areas, identifies the primary locations in the HCF where these projects were conducted (References C1004, P1015, and P1102).

Table 1. HCF Project Areas

Area	Project
SCBs/Zone 2A	Source Term (ST) Damaged Fuel-4 (DF-4) New Production Reactor (NPR)(irradiated) Melt Progression (MP)
Glovebox 1/2	Fuel Disruption (FD) Sandia Transit Axial Relocation (STAR) Effective Equation of State (EEOS) Source Term (ST)
Glovebox 3	Source Term (ST) (Ion Chromatograph)
Glovebox 4/5	Melt Progression (MP)
Glovebox 6/7	Melt Progression (MP) New Production reactor (NPR) (non-irradiated)
Glovebox 8	Melt Progression (MP)
Glovebox 9	New Production Reactor (NPR) (non-irradiated) Fission Activated Laser Concept (FALCON) Effective Equation of State (EEOS)
Fume Hood	Melt Progression (1&2) Fission Activated Laser Concept (FALCON) Supported chemical preparation and equipment decontamination for SCBs, Zone 2A, and GBL
Blister (Zone 2A)	Supported SCB and Zone 2A sample preparation and analysis

Melt Progression

The MP program included two experiments irradiated in the ACRR. MP-I was irradiated in 1989, and MP-2 was irradiated in 1992. These experiments were designed to investigate the successive melting and solidification of core materials found in a LWR during a severe accident. The initial geometry of the test section was built to simulate a partially degraded core based on the findings of the post-accident examination of Three Mile Island (TMI), Unit II core.

The MP project included the insertion of the test section into the experiment package, which was then subjected to a neutron field in the ACRR. The experiment simulated the continuation of a severe accident beyond the end stage of the TMI accident. Fission heating in the experiment simulated the fission product decay heating of a severe accident. The experiment was allowed to proceed until preset temperature limits on the supporting structures were reached or a preset fraction of the test section material had relocated due to damage. Waste materials from the MP work include post-test preparation for metallurgical examination materials (References M1016, P1045, and P1102).

Source Term

The focus of the ST program was on the investigation of fission product release under severe accident conditions. Four short rods of non-irradiated fuel and four short rods of previously irradiated fuel were placed in a test section and neutronically heated 2,400 Kelvin to observe fission product release. The non-irradiated fuel rods were fabricated at Battelle Pacific Northwest Laboratories. The previously irradiated fuel was obtained from the Belgian Reactor 3 (BR3) in Mol, Belgium, and was reworked in the HCF shielded glovebox. Several sample tubes with filters were sequentially opened and closed during the experiment to collect samples of the released substances. There were two tests run under this program, ST-I performed on April 28, 1987, and ST-2 performed on November 19, 1987. The materials from this program are those generated from the post irradiation examination. This examination for ST used the SCBs more extensively than any other program and included both a metallurgical examination and a chemical analysis of the filters from the sample tubes core (References C1011, I1010, I1011, I1016, I1023, I1024, I1025, I1026, I1033, I1034, I1035, I1036, I1039, M1016, P1025, P1046, P1102, U1004, U1011, and U1012).

Damaged Fuel

In general, the purpose of the DF program was to investigate the initial reaction of intact fuel rods during a severe accident sequence, specifically, a station blackout sequence. There were four tests in the DF experimental program. Of the four tests, only DF-4 included work in the SCBs or Zone 2A. In addition, DF-4 differed from the previous tests done in this series because the geometry of the test section was based on the boiling water reactor (BWR) geometry rather than the pressurized water reactor (PWR) geometry. The DF assembly included non-irradiated fuel enriched to 10 percent U-235 in zircaloy clad rods. The DF-4 experiment was irradiated on November 21, 1987, subjected to a neutron flux field in the ACRR for a period of approximately two hours. Waste included in this waste stream are those generated from the post-test preparation for metallurgical examination (References C1009, C1014, C1015, C1016, C1017, I1004, I1005, I1017, I1018, I1020, I1021, I1028, I1031, I1032, M1016, P1007, P1011, P1022, P1045, P1102, U1009, and U1014).

New Production Reactor

The primary goal of the NPR program tests was to assess the behavior of the fuel under transient, fuel melting conditions. The fuel was a uranium-aluminum alloy and produced significantly less particulate when cutting or polishing than the ceramic fuels. Four tests were conducted under this program, including one without radioactive materials to calibrate the thermal response of using a flooded ACRR cavity. Of the three remaining experiments, one was conducted with non-irradiated fuel and two with high burnup fuel.

All fuel used in the NPR experiments came from the SRS and was sectioned in HCF to generate samples for performing experiments in the ACRR. The non-irradiated fuel test was irradiated in the ACRR during November 1991, and the two tests using high-burnup fuel occurred between November 1991, and April 1992. Additional fuel cutting and repackaging was performed in the first quarter of 1996. This additional work generated some contaminated equipment, lay-down material and fuel cuttings (References I1040, M1016, P1044, P1047, and P1102).

Fuel Disruption (also referred to as Fuel Dynamics)

The purpose of the FD experiments was to determine breeder reactor fuel behavior under a number of disruption models, such as cracking and breakup of solid fuel, liquid state frothing, and radial spray from molten fuel. Between 1977 and 1983, over 30 in-pile experiments were performed in the ACRR to investigate fuel disruption behavior for LMFBR loss of flow (LOF) accidents. In all experiments the timing and mode of the fuel disruption were observed with a high speed camera, enabling detailed comparisons with a fuel pin code, SANDPIN. The project involved the cutting of irradiated breeder reactor fuel. Most of the fuel was irradiated in the late 1960s and early 1970s in the EBR-II. Cutting of the fuel occurred in GB2 in an inert atmosphere, and was performed dry. Glovebox 1 was used to load the fuel pin segments into the test apparatus, prior to irradiation in the ACRR (References C1004, C1006, C1013, I1006, I1007, I1009, M1016, P1010, P1012, P1034, P1035, P1036, P1037, P1038, P1039, P1040, and P1102).

Effective Equation of State

The EEOS program consisted of a series of experiments designed to determine the effective vapor pressure from irradiated mixed-oxide reactor fuels heated in closed volume to a very high temperature, simulating LMFBR core disruptive accident conditions. A series of similar EEOS experiments involving unirradiated fuel were conducted in the GBL during 1982 and 1983. Planning of the irradiated fuel experiments began in 1986 and they were completed by 1993.

The experiments involved two separate assemblies containing a pressure cell and calorimeter. Assembly and fueling was done in HCF prior to irradiation at the ACRR. Fueling was performed in shielded glovebox GB9, with each experiment using 0.9 to 1.5 grams of fuel from an EBR-II irradiated pin. After irradiation, the assemblies were returned to HCF for disassembly and examination. Leak testing was conducted using a bell jar and mass spectrographic technique (References C1008, C1038, I1001, I1002, I1003, I1015, I1019, I1022, M1016, P1001, P1002, P1003, P1004, P1005, P1006, P1008, P1009, P1014, P1026, and P1027).

Sandia Transient Axial Relocation

The STAR program was a series of seven in-pile experiments conducted between 1983 and 1985. The objective of the STAR experiment program was to study the transient cladding and fuel relocation during the initiation phase of LMFBR hypothetical accidents. The STAR program was an extension of the FD program that investigated the time and mode of fuel disruption during hypothetical LMFBR accidents.

In these experiments unprotected loss-of-flow accident conditions were simulated, and the accident-induced clad motion and fuel dispersal were recorded using high speed photography. Both unirradiated and irradiated EBR-II fuels were used in the STAR experiments. Assembly and disassembly of the test apparatuses involving single and multiple pins were done primarily in gloveboxes GB1 and GB2 in Room 112. Irradiation was performed at the ACRR (References C1038, I1012, I1013, M1016, P1016, P1033, U1001, and U1002).

Fission Activated Laser Concept

Sandia was the lead laboratory for the FALCON reactor-driven laser program from 1986 to 1995. The FALCON experiments were an SDIO defense program examining the feasibility of high power systems pumped directly by the energy from a nuclear reactor. In this concept, the highly energetic fission fragments from neutron-induced fission were used to excite a large-volume laser medium. Disassembly and reassembly of the experiment was done in the fume hood located in Room 112. Samples from the experiment were analyzed on the mass spectrometer in GB9. Fabrication of the fission foils containing enriched uranium used in the experiment were done in Room 203 and not included in this waste stream (References C1038, C1041, M1016, P1019, P1020, and P1021).

4.7.2 HCF Decontamination

During 1994, Scientific Ecology Group, Inc., prepared a Decontamination Plan for the HCF. The Decontamination Plan was intended to meet the SNL/NM requirements for decontamination, nuclear safety, As Low As Reasonably Achievable (ALARA), and waste management activities, by establishing a project organizational structure, levels of authority, and lines of communication (Reference I1030).

This work was to be done as part of HCF routine operations and maintenance. The tentative acceptance criteria for the HCF were based on allowing future work in the area to be conducted with minimal protective clothing and reasonable stay-times. The tentative decontamination criteria were as follows (Reference I1030):

- Removable Alpha Contamination — <100 disintegration per minute (dpm)/100 square centimeters (cm^2)
- Removable Beta-Gamma Contamination — <5,000 dpm/100 cm^2
- General Area Dose Rate — <5 milliroentgen equivalent man per hour (mrem/hr)

The Scope of Work for the Decontamination Plan included remediation of the following areas: Zone 2A; Zone 2 (also referred to as Rooms 111 and 112); reactor rooms 108 and 109; and room 212A, a small room located above reactor room 109 (References I1030 and C1038). The work associated with Zone 2A included decontamination, dismantling, and removal of the SCBs followed by decontamination of the canyon surfaces. Other components in Zone 2A, including the overhead crane, crane rails, overhead components, and floor rails were scheduled to be removed, sectioned and packaged as required. Removal of the interior airlocks was also identified as part of the Zone 2A scope of work (Reference I1030).

The primary task associated with rooms 108 and 109 involved the removal of sources of radioactive waste and loose surface contamination. Special consideration was given for the removal of high activity waste to an outside storage location. Zone 2 (Rooms 111 and 112) included the removal of shielded and low activity gloveboxes. This task included the removal of all debris and equipment from within the gloveboxes (Reference I1030).

The nondestructive cleaning unit (NDC) was used sporadically during the HCF decontamination project to decontaminated equipment that was stored in the gloveboxes in Room 112, in the SCBs, and in the general HCF area. The NDC mobile decontamination facility was designed for cleaning hand tools, small parts, and larger items up to 4,000 pounds (lbs). The process could handle both metal objects and softer materials such as wood, plastics and rubber. The facility consisted of a decontamination room for cleaning larger objects, a decontamination cell (glovebox) for cleaning tools, small parts and fixtures, a count room, a liquid carbon dioxide (CO_2) storage vessel and compressor, and the ventilation/exhaust system. The decontamination room operated at a negative pressure of 1.5 inches of water vacuum to prevent airborne exhaust of radioactive materials (Reference M1016).

The unit used dry compressed air to propel CO_2 pellets (dry ice) onto the contaminated surface. The pellets shatter, flash into dry CO_2 gas and undergo roughly a ten-fold

increase in volume upon impact with the surface to be decontaminated. The cleaning action results from the rapidly expanding gas penetrating the surface of the item to be cleaned. Loose particles of contamination were flushed away by expanding gas. Dislodged microscopic particles were captured on the exhaust system air filter, and larger particles that were dislodged fell to the bottom of the containment area and were vacuumed away to dry air filters (Reference M1016).

The unit's air filtration system consisted of three sets of filters in series. Ideally, the filters were replaced when the exposure rate at the external filter housing reached 25 mrem/hr, and exposure rates were not to exceed 200 mrem/hr (Reference M1016).

5.0 REQUIRED WASTE STREAM INFORMATION

This section presents the waste stream information required by the WIPP-WAP and the WCPIP for waste stream SNL-HCF-5400-RH (References 2 and 3). The area of generation, waste stream volume, period of generation, prohibited items, waste packaging, and the physical, chemical, and radiological composition of the waste stream are described.

5.1 Area and Building of Generation

Waste stream SNL-HCF-S5400-RH originated from research and development and decontamination processes performed at SNL/NM as described in Section 4.7 (References C2001, C2004, M1016, M1019, M2003, M2004, M2010, M2021, P2001, and P2002).

5.2 Waste Stream Volume and Period of Generation

Waste stream SNL-HCF-S5400-RH is mixed heterogeneous debris originally packaged during HCF decontamination activities conducted from 1995 to 1998. Table 2, Estimated Waste Stream SNL-HCF-S5400-RH Volume, summarizes the original and current inventory of waste. The data in Table 2 will change as a result of the scheduled repackaging of the current inventory of waste that was formerly managed as accountable material (Reference C2001 and P2001). The volume was determined by estimating the inner volume of the shielded containers. The final volume after repackaging will vary depending upon the degree of contamination within the various experiment assemblies, and the degree of consolidation that may be possible based on final container shipping limits. The current inventory of drums verified to be eligible for shipment to WIPP will be included in the AK Waste Containers List for waste stream SNL-HCF-S5400-RH (References M1016, M1019, and P2001).

Table 2. Estimated Waste Stream SNL-HCF-S5400-RH Volume

Containers	Volume in cubic meters (m^3)
Original (have been shipped to WIPP) – 32 parcels inside 29 various shielded and non-shielded casks or drums	2.8
Current – 37 various sized shielded and shielded containers (casks, drums, boxes, and experiment assemble packages)	7.7*

*Assuming one 55-gallon daughter drum for each current container.

5.3 Waste Generating Activities

Waste stream SNL-HCF-S5400-RH was generated from activities primarily associated with pre- and post-test processes associated with reactor fuel studies, as described in Section 4.7. In general, these studies involved the preparation of nuclear fuel experimental assemblies in the HCF, irradiation of the assemblies in SNL reactors to simulate various reactor conditions, and post-irradiation examination of the test assemblies in the HCF.

5.4 Types of Wastes Generated

This section describes the waste materials based on process inputs and outputs, waste matrix code assignment, waste material parameter weight estimates, radionuclide contaminants, hazardous waste determinations, and prohibited items for waste stream SNL-HCF-S5400-RH.

5.4.1 Materials Related to Physical Form

Waste stream SNL-HCF-S5400-RH consists predominantly of organic and inorganic debris generated during the destructive and nondestructive examinations conducted in the HCF, and includes PPE and plastic from decontamination and repackaging activities. This waste stream may contain the following materials (See Section 5.4.1.2 for detailed information):

Cellulosic items: including paper, paper wipes, Herculite cloth, cardboard, cotton coveralls, hoods, and gloves, HEPA filter media and frames, pre-filter frames, swipes, masslin cloth, and vacuum cleaner bags and parts, absorbent pads, and wood chips.

Plastic materials: including PPE, bottles, jars, buckets, dishes, pipettes, tygon tubing, pipe, bags, filter cartridges, sheeting, vials, tape, synthetic mop head, and epoxy residue.

Rubber items: including non-leaded glovebox gloves, nitrile and latex gloves, gloves and booties, tubing, foam rubber, wire/cord insulation, O-rings, and gaskets.

Other inorganic items: including glass jars, light bulbs, mirrors, windows, vials, lens, and other lab glassware.

Metal items (ferrous materials): including stainless steel hardware, steel cans, buckets, foils, plates, trays, fuel cuttings and pieces, equipment, machinery, and electronics with steel parts, filters, tubing, fittings, rods, tools, experimental assembly parts, and fuel rod pieces.

Non-ferrous metals: including aluminum, brass, copper, lead, and silver. Items include foils, tools, wire, rods, tubing, fittings, gaskets, gauges, plates, fuel cuttings and pieces, machine parts, experimental assembly parts, and fuel rod pieces.

In addition to the debris materials described above, waste stream SNL-HCF-S5400-RH may also contain lesser amounts (less than 50 percent in any container) of homogeneous organic and inorganic materials. Clay and vermiculite based absorbents including Aquaset, Petroset, Quik Solid, and Kitty litter are used during the neutralization, immobilization, and solidification of liquids (References C1039, C2001, M1016, M1019, M2003, M2004, M2010, M2021, P2001, P2002, and P2005).

5.4.1.1 Waste Matrix Code

Based on the evaluation of the materials contained in waste stream SNL-HCF-S5400-RH, it was determined that the stream is comprised of greater than 50 percent heterogeneous inorganic and organic debris. Therefore, Waste Matrix Code S5400, Heterogeneous Debris, is assigned to the waste stream. Although the waste stream, as a whole, is comprised of more than 50 percent heterogeneous debris, any drum may include a wide percentage range of the waste material parameters listed in Section 5.4.1.2, except that no individual drum will contain greater than 50 percent homogeneous solids (References C1039, C2001, M1016, M1019, M2003, M2004, M2010, M2021, P2001, and P2002).

5.4.1.2 Waste Material Parameters

Waste Material Parameter (WMP) estimates for waste stream SNL-HCF-5400-RH were based on disposal request documentation and MC&A data for TRU waste generated during decontamination of the SNL/NM HCF in Building 6580. Decontamination of the HCF occurred from 1995 to 1998. Waste generated includes materials associated with pre- and post-test processes, primarily metallurgical examination, in support of several research programs conducted between the late 1970s and mid-1990s. This waste stream is greater than 50 percent by volume material that meets the criteria for heterogeneous debris (References C1039, C2001, M1016, M1019, M2003, M2004, M2010, M2021, P2001, and P2002).

The WMP weight percentages for this waste stream were estimated by reviewing the container paperwork. Since container paperwork did not always indicate weights for individual items placed in a parcel or drum, these weights were estimated based on the waste description. For most parcels, the net weights were taken from the SNL Radioactive Waste/Nuclear Material Disposition Department Radiological Form included in the DR documentation. A few parcels had other Disposal Request documentation that was viewed as more accurate so that was used (References C1039, M1016, and M1019). The FEW waste, because it had been previously managed as accountable material, does not have standard DRs so content descriptions are based on MC&A records and radiological characterization forms, which are less detailed from the WMP perspective. In addition, many of the FEW containers have the original experimental assemblies, which may or may not have been entirely contaminated if the fuels remained intact during irradiation in ACRR. If the fuels remained intact they could potentially be removed from the assemblies during repackaging (References P2002 and P2005), substantially reducing the volume of waste material. For the FEW containers the following assumptions were made to estimate relative WMP weights:

1) Net weight of a container was taken from the Radiological Characterization Summary Form (Reference M2021). If a Summary form was not available the net weight is based on SNL's estimate of the average experimental assembly weight of 60 lbs., regardless of the type of container it is currently stored in (Reference P2002).

2) The current outer containers (i.e. shielded casks, drums, assembly packages, and boxes) will be disposed as low-level waste and will not become part of the waste stream.

3) The net weight of each container was estimated to contain 85% iron-based metal (experimental assembly parts, inner packaging [e.g., steel paint cans], fuel cladding, hardware), 10% aluminum-based metals (experimental assembly parts), and 5% other metals (experimental assembly parts, fuel specimens, and cladding).

4) The weight of other inorganic materials, cellulosics, rubber, and plastic, prior to repackaging is negligible to the weight of metal.

The WMP estimate for waste stream SNL-HCF-S5400-RH is presented in Table 3, Waste Material Parameter Estimates for SNL-HCF-S5400-RH. These calculations conclude that the average weight percentages for inorganic and organic waste materials for waste stream SNL-HCF-S5400-RH are 90.6 percent and 9.4 percent, respectively, with the predominant WMP being iron based metal alloys. The minimum and maximum weight percentages per drum included in Table 3 represents the lowest and highest estimated non-zero amounts of these materials prior to repackaging. The final packaging of these materials will result in drums that do not include all of these waste material parameters. The estimates in

Table 3 take into account the entire waste stream, including the portion of this waste stream that has been shipped to WIPP.

Table 3. Waste Material Parameter Estimates for SNL-HCF-S5400-RH

Waste Material Parameter	Average Weight Percent (Wt%)	Wt% Range[1]
Iron-based Metals/Alloys	71.0%	3.0% - 95.0%
Aluminum-based Metals/Alloys	10.1%	1.0% - 100.0%
Other Metals	4.3%	1.0% - 80.0%
Other Inorganic Materials	4.7%	0.1% - 100.0%
Cellulosics	3.4%	0.5% - 50.0%
Rubber	0.9%	0.5% - 11.1%
Plastic (waste materials)	5.1%	0.5% - 50.0%
Inorganic Matrix	0.5%	3.3% - 10.0%
Organic Matrix	0.0%	0.0% - 0.0%
Soils/Gravel	0.0%	0.0% - 0.0%
Total Inorganic Waste Average	**90.6%**	
Total Organic Waste Average	**9.4%**	

1. Range includes lowest non-zero estimated values for parcels prior to repackaging.

5.4.2 Radiological Characterization

5.4.2.1 Radiological Characterization of the Original Inventory

As described in Section 4.0, waste stream SNL-HCF-S5400-RH consists of debris waste generated during decontamination of the HCF from 1995 to 1998. The waste is contaminated with radiological material associated with the HCF activities conducted between the late 1970s and the mid-1990s. Based on waste management practices and categorization schemes, containers in this waste stream have surface dose rates exceeding 200 mrem/hr and contain more than 100 nCi/g of alpha emitting TRU isotopes with half lives greater than 20 years. The radionuclides of principle interest that contaminate the waste include Sr-90, U-235, U-238, mixed-fission products, Cs-134, Cs-137, and small amounts of transuranic radionuclides, primarily Pu-238, Pu-239, and Am-241. The approach implemented by CCP to fully characterize this waste stream is documented in CCP-AK-SNL-501, *Central Characterization Program Remote-Handled Transuranic Radiological Characterization Technical Report For Sandia National Laboratory/New Mexico Hot Cell Facility Remote-Handled Transuranic Debris Waste, Waste Stream: SNL-HCF-S5400-RH* (References 15, M1016, and M1019).

The waste stream originally consisted of approximately 32 parcels contained in 27 shielded and two non-shielded storage containers. For the original inventory of radioactive waste, SNL/NM personnel generally characterized each parcel using quantitative gamma spectroscopy analysis, either the laboratory Q2 system or a portable system, in conjunction with activity ratios for radionuclides not detected or

undetectable by gamma spectroscopy. If gamma spectroscopy was not performed, exposure rate surveys were used in conjunction with MICROSHIELD modeling to estimate the Cs-137 activity. The activity ratios that were used to predict the activity concentration of additional fission products and Transuranic radionuclides are documented in process knowledge evaluations (PKEs). Special considerations or additional information influencing the reported radiological characterization was documented in the DR forms for each parcel (References M1016, M1019, M1020, and M1021). High dose rate RH containers were initially characterized using only the portable gamma spectroscopy system, because of Q2 system dose limits.

Radiological characterization of original population of HCF decontamination waste was established by the SNL/NM waste handlers from the RWNMDD who were responsible for proper management of waste following generation and initial packaging of the waste in the HCF (refer to Section 4.6). Because of different fuel types involved in the areas and gloveboxes and because of the different experiments conducted in these areas, there is potential that the radionuclide distributions exhibited on the waste from these different areas may differ. RWNMDD personnel developed and used the PKEs to establish radiological characterization of each parcel based on information provided on the DRs which identified the location and/or project that generated the waste. For waste parcels included in the original population of waste stream SNL-HCF-S5400-RH, the three PKEs used were:

Document Number	Waste Generation Source
PKE00044	SCBs and Zone 2A
PKE00047	Gloveboxes 1 and 2
PKE00027/54	Glovebox 3

PKE00044 and PKE00047 were initially established based on limited sampling and analytical modeling (ORIGEN analysis). During 2004, swipe samples were collected and analyzed by gamma spectroscopy and radiochemical analysis to verify and update the radionuclide activity ratios previously reported in PKE00044 and PKE00047. Although the evaluation of the swipe sample identified differences between the expected and measured ratios, the measurements indicated that the process knowledge in PKE00044 and PKE00047 was reasonably accurate and allowed for differentiation of low-level radioactive waste from transuranic waste. Table 4, PKE00044 Radionuclide Activity Ratio Comparison, and Table 5, PKE00047 Radionuclide Activity Ratio Comparison, summarize the results of the comparison (References M1016, M1020, and M1021).

Table 4. PKE00044 Radionuclide Activity Ratio Comparison

Radionuclide	Measured Activity Ratio to Cs-137	PKE00044 Activity Ratio to Cs-137	Measured Activity Ratio to Am-241	PKE00044 Activity Ratio to Am-241
Am-241	1.95E-03	6.94E-04	1.00E+00	1.00E+00
Pu-238	1.31E-02	7.17E-03	6.73E+00	1.03E+01
Pu-239/240	1.29E-03	2.00E-03	6.64E-01	2.89E+00
Sr-90	2.95E-01	9.41E-01	NA	NA
Pm-147	2.50E-02	6.42E-02	NA	NA
Pu-241	2.79E-02	1.75E-02	1.43E+01	2.52E+01
TRU alpha	1.63E-02	9.86E-03	8.39E+00	1.42E+01

NA: Not applicable since the radionuclide is not transuranic.

Table 5. PKE00047 Radionuclide Activity Ratio Comparison

Radionuclide	Measured Activity Ratio to Cs-137	PKE00047 Activity Ratio to Cs-137	Measured Activity Ratio to Am-241	PKE00047 Activity Ratio to Am-241
Am-241	4.09E-02	1.00E+00	1.00E+00	1.00E+00
Pu-238	2.56E-02	3.50E-03	6.27E-01	3.50E-02
Pu-239/240	4.01E-02	1.30E-02	9.80E-01	1.30E-01
Sr-90	6.85E-01	1.00E+00	NA	NA
Pm-147	2.13E-02	---	NA	NA
Pu-241	3.97E-01	---	9.71E+00	---
TRU alpha	1.07E-01	1.17E-01	2.61E+00	1.17E+00

NA: Not applicable since the radionuclide is not transuranic.

The activity ratios associated with HCF glovebox 3 decontamination waste were initially established in 1997, however errors were discovered in the calculations and other problems were identified with methods used to establish these ratios. Due to insufficient radionuclide activity inventory documentation, additional sampling and analysis was performed to determine representative radionuclide activity ratios. The new ratios were established and documented in the memorandum dated June 12, 2008, *Evaluation of Radionuclide Activity Ratios for Hot Cell Facility Glove Box 3 Decontamination Waste, PKE00027 and PKE000054.* Table 6, Radionuclide Activity Ratios for PKE00027/54, presents a summary of the 2008 revised ratios use for HCF waste determined to be generated from glovebox 3 (Reference M1016).

Table 6. Radionuclide Activity Ratios for PKE00027/54

Radionuclide	Measured Activity Ratio to Cs-137	Measured Activity Ratio to Am-241
Am-241	8.99E-05	1.00E+00
Am-243	3.05E-06	3.39E-02
Pu-238	1.41E-05	1.56E-01
Pu-239	4.91E-05	5.46E-01
Pu-242	1.41E-06	1.57E-02
Sr-90	3.05E-02	NA
Cs-137	1.00E+00	NA
Pm-147	5.63E-05	NA
Pu-241	2.67E-04	NA
TRU Alpha	1.58E-04	1.75E+00

To compile a summary of generator reported radionuclide data for original inventory of waste stream SNL-HCF-S5400-RH, DR forms were reviewed for 32 waste parcels originally presented to comprise the waste stream. The total gram value for each individual reported radionuclide was divided by the total mass of all radioactive constituents in the waste stream and converted to a percentage. This result is listed as "Total Radionuclide Weight%." In Table 7, Summary of Generator Reported Radionuclides for the Original Inventory of Waste Stream SNL-HCF-S5400-RH. To determine the radionuclide weight percent range for individual parcels, the radiological mass in each parcel in the waste stream was summed. The mass of each individual radionuclide in a parcel was divided by the total radiological mass for that parcel and converted to a percentage. The minimum and maximum results are listed as "Radionuclide Weight% Range for Individual Parcels." The same process was applied to determine "Total Radionuclide Curie%" and "Radionuclide Ci% Range for Individual Parcels" (References M1016, M1019, M1020, and M1021).

Table 7. Summary of Generator Reported Radionuclides for the Original Inventory of Waste Stream SNL-HCF-S5400-RH

Radio-nuclide	Number of Parcels with Report-ed Radio-nuclide	Total Radio-nuclide Weight %[1,5]	Total Radio-nuclide Curie %[2,5]	Radionuclide Wt% Range for Individual Parcels[3,5]	Radionuclide Ci% Range for Individual Parcels[4,5]	Average Ci/Parcel	Expected Present
WIPP Required Radionuclides							
Am-241	32	0.85%	1.24%	0.20 - 3.87%	Trace[5] - 4.72%	6.03E-02	Yes
Pu-238	31	0.07%	0.50%	0 - 4.57%	0 - 1.28%	2.45E-02	Yes
Pu-239	32	17.66%	0.47%	4.73 - 95.31%	Trace - 2.09%	2.27E-02	Yes
Pu-240	18	0.18%	0.02%	0 - 8.75%	0 - 0.05%	8.47E-04	Yes
Pu-242	4	0.02%	Trace	0 - 29.33%	0 - 0.04%	1.31E-06	Yes
U-233	Not Reported						No
U-234	4	0.12%	Trace	0 - 0.14%	0 - Trace	1.51E-05	Yes
U-238	4	54.25%	Trace	0 - 64.76%	0 - Trace	3.78E-07	Yes
Cs-137	32	1.59%	59.25%	0.26 - 88.85%	44.57 - 96.97%	2.87E+00	Yes
Sr-90	32	0.38%	21.94%	0.05 - 7.28%	1.36 - 47.24%	1.06E+00	Yes
Additional Radionuclides							
U-235	4	24.78%	Trace	0 - 29.57%	0 - Trace	1.11E-06	Yes
Am-243	2	Trace	Trace	0 - 1.25%	0 - 0.10%	1.92E-06	Yes
Co-60	22	0.03%	12.90%	0 - 7.67%	0 - 54.02%	6.26E-01	Yes
Th-234	2	Trace	Trace	0 - Trace	0 - Trace	3.11E-07	Yes
Cs-134	27	Trace	0.02%	0 - Trace	0 - 0.45%	8.84E-04	Yes

1. This listing indicates the total weight percent of each radionuclide over the entire waste stream.
2. This listing indicates the total activity (curie) percent of each radionuclide over the entire waste stream.
3. This listing is the weight percent range of each radionuclide on a container-by-container basis. Some containers with "0" listed as the lower range, will not contain the specified radionuclide.
4. This listing is the curie percent range of each radionuclide on a container-by-container basis.
5. "Trace" indicates <0.01 weight percent or activity percent for that radionuclide.

5.4.2.2 Radiological Characterization of FEW Waste

As described in Section 4.6.1, waste stream SNL-HCF-S5400-RH includes 37 containers previously managed as accountable material anticipated to be shipped to the INL. These containers have been determined to be FEW eligible for disposal at WIPP and have been added to waste stream SNL-HCF-S5400-RH in Revision 5 of this report. The SNL MC&A organization has maintained the accountable material record for the contents of each container of the FEW population of this waste stream (with the exception of one container of kerf, described separately below). Since the MC&A record identifies both the specific fuel and the quantity of the fuel in each container, the MC&A data has been used by SNL to establish the nuclear properties of each container on a container-by-container bases. Note that the approached described in this section is not the approached implemented by CCP. The approach implemented by CCP to fully characterize the FEW portion of this waste stream for certification and disposal at WIPP is documented in CCP-AK-SNL-501 (Reference 15). The information presented in this section is intended only to provide background information related to data that may be found on container records and repackaging campaign planning documents (References M2007, P2001, and P2003).

The document describing the SNL radiological characterization of the FEW portion of waste stream SNL-HCF-S5400-RH is the Analysis of Materials to be Processed in the AHCF (Reference P2003). The purpose of the SNL analysis was to determine and document radiological conditions that are expected during processing of container contents at AHCF, and to calculate the quantities that are compared to the facility's technical safety requirements. SNL used a combination of existing analysis of radionuclide data found in SAND99-0182, *Preliminary Characterization of Materials in Manzano Storage Bunker 37055* (Reference P2001), mass data obtained from the MC&A MARS database which provides definitive mass values for major isotopes of uranium and plutonium for accountability purposes, and additional analysis and calculations to determine the various nuclear properties of interest (References M2007, P2001, and P2003).

The MARS data for one container (C00218134) of kerf (cuttings) indicated only fresh uranium oxide fuel, and this container was not expected to be classified as TRU or RH waste. However, sampling and analysis of the kerf indicated the kerf contained BR3 fuel from the ST experiment. The activity of Cs-137 determined from the analysis was used to establish the BR3 oxide mass contamination in the kerf for container C00218134 (References M2001, M2004, M2007, and P2003).

To summarize the SNL reported radionuclides for the FEW portion of waste stream SNL-HCF-S5400-RH, the total gram value for each individual reported radionuclide was divided by the total mass of all radioactive constituents and converted to a percentage. This result is listed as "Total Radionuclide Weight%" in Table 8, Summary of Generator Reported Radionuclides for the FEW Portion of Waste Stream SNL-HCF-S5400-RH. To determine the radionuclide weight percent range for individual containers, the

radiological mass in each container in was summed. The mass of each individual radionuclide in a container was divided by the total radiological mass for that container and converted to a percentage. The minimum and maximum results are listed as "Radionuclide Weight% Range for Individual Containers." The same process was applied to determine "Total Radionuclide Curie%" and "Radionuclide Ci% Range for Individual Containers" (Reference M2007).

Table 8. Summary of Generator Reported Radionuclides for the FEW Portion of Waste Stream SNL-HCF-S5400-RH

Radio-nuclide	Containers with Reported Radio-nuclide	Total Radio-nuclide Weight %[1,5]	Total Radio-Nuclide Curie %[2,5]	Radionuclide Wt% Range for Individual Containers[3,5]	Radionuclide Ci% Range for Individual Containers[4,5]	Expected Present
WIPP Required Radionuclides						
Am-241	37	0.22%	3.91%	<0.01% - 2.58%	1.92% - 26.07%	Yes
Pu-238	37	0.02%	1.56%	<0.01% - 0.30%	0.52% - 4.15%	Yes
Pu-239	37	4.50%	1.45%	<0.01% - 76.81%	0.24% - 23.74%	Yes
Pu-240	37	1.03%	1.22%	<0.01% - 20.41%	0.20% - 11.53%	Yes
Pu-242	37	0.06%	<0.01%	<0.01% - 0.53%	<0.01% - <0.01%	Yes
U-233	37	<0.01%	<0.01%	<0.01% - <0.01%	<0.01% - <0.01%	Yes
U-234	37	0.10%	<0.01%	<0.01% - 1.01%	<0.01% - 0.04%	Yes
U-238	37	76.56%	<0.01%	<0.01% - 98.48%	<0.01% - <0.01%	Yes
Cs-137	36	0.07%	31.27%	0 - 0.85%	0 - 61.78%	Yes
Sr-90	35	0.03%	23.43%	0 - 0.27%	0 - 27.86%	Yes
Additional Radionuclides[6]						
Am-242	34	<0.01%	0.08%	0 - <0.01%	0 - 6.33%	Yes
Am-242m	34	<0.01%	0.08%	0 - 0.05%	0 - 6.36%	Yes
Am-243	36	<0.01%	<0.01%	0 - 0.04%	0 - <0.01%	Yes
Cm-242	34	<0.01%	0.07%	0 - <0.01%	0 - 5.25%	Yes
Cm-245	4	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Co-60	31	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Cs-134	35	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Eu-152	15	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Eu-154	27	<0.01%	0.06%	0 - <0.01%	0 - 0.13%	Yes
Fe-55	31	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
H-3	36	<0.01%	0.04%	0 - <0.01%	0 - 0.08%	Yes
Kr-85	36	<0.01%	0.62%	0 - <0.01%	0 - <0.01%	Yes
Nb-93m	36	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Ni-59	31	<0.01%	<0.01%	0 - 0.03%	0 - <0.01%	Yes
Np-237	37	0.07%	<0.01%	<0.01% - 0.42%	<0.01% - <0.01%	Yes
Np-238	34	<0.01%	<0.01%	0 - <0.01%	0 - 0.03%	Yes
Np-239	36	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Pa-233	37	<0.01%	<0.01%	<0.01% - <0.01%	<0.01% - <0.01%	Yes
Pm-147	35	<0.01%	0.04%	0 - <0.01%	0 - 0.21%	Yes

Table 8. Summary of Generator Reported Radionuclides for the FEW Portion of Waste Stream SNL-HCF-S5400-RH (Continued)

Radio-nuclide	Containers with Reported Radio-nuclide	Total Radio-nuclide Weight %[1,5]	Total Radio-Nuclide Curie %[2,5]	Radionuclide Wt% Range for Individual Containers[3,5]	Radionuclide Ci% Range for Individual Containers[4,5]	Expected Present
Additional Radionuclides[6]						
Pu-241	37	0.02%	11.84%	<0.01% - 0.42%	6.24% - 36.19%	Yes
Ru-106	32	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Sm-147	35	<0.01%	<0.01%	0 - 0.01%	0 - <0.01%	Yes
Sm-151	36	0.01%	0.86%	0 - 0.16%	0 - 3.07%	Yes
Sn-121	35	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Sn-121m	35	<0.01%	<0.01%	0 - <0.01%	0 - <0.01%	Yes
Tc-99	36	0.12%	0.01%	0 - 1.08%	0 - 0.02%	Yes
Th-230	37	<0.01%	<0.01%	<0.01% - <0.01%	<0.01% - <0.01%	Yes
Th-231	37	<0.01%	<0.01%	<0.01% - <0.01%	<0.01% - 0.12%	Yes
Th-234	37	<0.01%	<0.01%	<0.01% - <0.01%	<0.01% - <0.01%	Yes
U-235	37	17.07%	<0.01%	<0.01% - 99.99%	<0.01% - 0.12%	Yes
U-236	37	0.06%	<0.01%	<0.01% - 0.18%	<0.01% - <0.01%	Yes
U-237	37	<0.01%	<0.01%	<0.01% - <0.01%	<0.01% - <0.01%	Yes
Y-90	35	<0.01%	23.44%	0 - <0.01%	0 - 27.87%	Yes
Zr-93	36	0.07%	<0.01%	0 - 0.55%	0 - <0.01%	Yes

1. This listing indicates the total weight percent of each radionuclide over the entire waste stream.
2. This listing indicates the total activity (curie) percent of each radionuclide over the entire waste stream.
3. This listing is the weight percent range of each radionuclide on a container-by-container basis. Some containers with "0" listed as the lower range, will not contain the specified radionuclide.
4. This listing is the curie percent range of each radionuclide on a container-by-container basis.
5. "Trace" indicates <0.01 weight percent or activity percent for that radionuclide.
6. Radionuclides reported less than 10^{-8} total relative activity or weight percent are not shown.

5.4.3 Chemical Content Identification – Hazardous Constituents

This section describes the characterization rationale for assignment of EPA HWNs to waste stream SNL-HCF-S5400-RH. Table 9, Waste Stream SNL-HCF-S5400-RH Hazardous Waste Characterization Summary, identifies the hazardous constituents and associated HWNs assigned to this waste stream.

Table 9. Waste Stream SNL-HCF-S5400-RH Hazardous Waste Characterization Summary

EPA Hazardous Waste Number	Constituent
Toxicity Characteristic Metals	
D004	Arsenic
D005	Barium
D006	Cadmium
D007	Chromium
D008	Lead
D009	Mercury
D011	Silver
Toxicity Characteristic Solvents	
D019	Carbon tetrachloride
D022	Chloroform
D028	1,2-Dichloroethane
F-Listed Organic Solvents	
F002	Methylene chloride
F002	1,1,1-Trichloroethane
F002	Trichloroethylene
F002	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF, Freon-113)
F005	Benzene
F005	Methyl ethyl ketone
F005	Pyridine
F005	Toluene

The assignment of these EPA HWNs was based on a review of the available AK documentation assessing chemical inputs to the hot cell operations to identify hazardous material potentially contaminating waste stream SNL-HCF-S5400-RH. In addition, material safety data sheets (MSDSs) and other manufacturer information were obtained for the commercial products to determine the presence of RCRA regulated constituents. Table 10, Hot Cell Facility Chemical Identification and Use Summary, lists the specific chemicals identified and associated HWNs assigned to the waste stream (References DR1001and DR1003).

Based on a review of SNL/NM historic waste management practices and characterization performed previously, the EPA HWNs assigned to HCF TRU waste containers have been maintained. The HWNs historically assigned to HCF decontamination TRU waste containers were D005 (barium), D006 (cadmium), D007 (chromium), D008 (lead), D011 (silver), and F005 (toluene). SNL/NM has historically characterized the HCF TRU debris waste on a container basis and segregated specific waste items containing or potentially mixed with hazardous constituents for on-site waste management purposes. The TRU debris waste from the HCF does consist of containers historically segregated by the generator into separate mixed and non-mixed waste streams based on the hazardous constituent identified for specific containers. However, the TRU waste materials originated from the same process and the waste population would have originally contained these items resulting in similar chemical and radiological contaminants in the TRU waste streams. For this

reason, the assignment of EPA HWNs to waste stream SNL-HCF-S5400-RH considered the HWNs assigned to TRU waste generators to HCF TRU waste debris containers, in addition the review of the AK record described below. The HWN assignments have been applied on a waste stream basis; individual containers may not contain all of the hazardous materials listed for the waste stream as a whole (References 2, 3, 8, DR1001, DR1003, M1016, M2003, M2004, M2010, M2021, and P2001).

Table 10. Hot Cell Facility Chemical Identification and Use Summary

Chemical/Material	Use/Description	AK Source	EPA HWNs
1,2-dichloroethane	Found in sample analysis of filters from Glovebox 6/7.	C1021, M1010	D028
1,1,1-Trichloroethane	Found in sample analysis of filters and materials from Gloveboxes 4/5 and 6/7. Assumed solvent use. Used in the HCF.	M1010, P1104	F002
1,1,2-Trichloro-1,2, 2-trifluoroethane (Freon-113, Freon TF)	Found during sampling of the Tool Decontamination Unit (TDU) micro filter and TDU charcoal filter for Glovebox 9. Used as a solvent in the TDU. Used as a cutting lubricant in Gloveboxes 4-7 and 9. Found during the cleanup of Glovebox 4/5 and 6/7. Used as a coolant during drilling of test section from ST-1 and ST-2. Used as a lubricant for sample polishing for the Damaged Fuel Program and NPR Program.	C1021, M1010, P1015, P1102	F002
4-methyl-2-pentanone (Methyl isobutyl ketone, MIBK, Hexone)	Found during sampling of filters and materials in Gloveboxes 4/5 and 6/7.	M1010	NA
Acetone	Used in the unshielded gloveboxes. Found in sample analysis of filters and materials from Gloveboxes 4/5 and 6/7.	C1021, M1010, P1104	NA
Acetic acid	Used in the HCF.	P1104	NA
Acetic anhydride	Used in the HCF.	P1104	NA
Aluminum	Used in EEOS and Fuel-coolant Interactions (FCI) experiments.	I1003, M1011, P1047	NA
Aluminum oxide	Used in the Damaged Fuel Relocation (DFR) experiments. Component of mica used in the EEOS experiments.	I1020, I1028, P1001, P1102	NA
Ammonium hydroxide	Used in the HCF.	P1104	NA
Aquaset	Clay based absorbent material composed of silica, palygorskite, clay, and Portland cement used to solidify small quantities of liquids in Glovebox 3. Used to absorb aqueous waste produced from analyses of materials from the Source Term Program. Used to solidify small quantities of liquid during repackaging.	I1053, P1015, P1102, M1016	NA
Arsenic	Found in sample analysis of materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood.	C1021	D004
Barium	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Fission product present in analysis of the ST-1 and ST-2 experiments.	C1021, M1010, P1018, P1025, P1046	D005*
Bartlett Stripcoat	Strippable coating used in decontamination of the HCF.	I1030	NA
Benzene	Found in sample analysis of materials from Glovebox 4/5. Used in the HCF.	C1021, M1010, P1104	F005

Table 10. Hot Cell Facility Chemical Identification and Use Summary (Continued)

Chemical/Material	Use/Description	AK Source	EPA HWNs
Beryllium oxide	Used as an insulator in some thermocouples for the DFR experiments.	P1022	NA
Boron carbide	Used in shield plugs (with lead shot) for the DFR experiments. Used in the control blade for the DF-4 experiment (performed in the SCBs). Used in uranium alloy experiments. Used in filters for the STAR experiments.	C1010, I1005, I1021, I1028, P1007, P1011, P1022, P1102, U1001, U1012	NA
Brass	Items found during the cleanup of Gloveboxes 1, 2, and 4/5. Found during the cleanup of SCB 3. Materials present in 005940 TRU-HCF-97-06 C980391 and 005940 TRU-HCF-97-05 C980392.	M1010, M1013, P1015, P1102	D008
Buehler MetaDi I, II, III Diamond Compound	Composed of diamond paste, fatty acid, potassium soap, polyethylene glycol, polyalkylene glycol, used for polishing samples. Found during cleanup of Glovebox 4/5.	M1010, P1015, P1102	NA
Buehler MetaDi Aerosol Spray	Composed of hexylene glycol, isopropyl alcohol, dichlorodifluoromethane and fluorotrichloromethane as propellants, used for polishing samples.	P1015, P1102	NA
Buehler Micropolish Alumina®	Aluminum oxide used as a polishing compound for samples. Found in cleanup of Glovebox 4/5.	P1015, P1102	NA
Butanol (n-Butyl alcohol)	Used in the HCF to remove sodium and sodium-potassium from components and parts.	P1104	NA
Cadmium	Cadmium filters and ring used in the pressure cell and the calorimeter for the EEOS experiments. Used in the HCF, possibly in the metal evaporator/coater. Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7, and 9, and the fume hood. Component of the control rod for the DF-3 experiment. Used in uranium alloy experiments. Present as tramp material in the aluminum alloys used in the New Production Reactor Program. Found above regulated levels in kerf (cuttings)	C1010, C1012, C1021, I1001, I1002, I1003, I1004, I1005, M1010, M1011, M2001, M2004 P1004, P1005, P1006, P1007, P1008, P1011, P1022, P1102, P1104	D006*
Calcium carbonate (marble chips)	Used to neutralize dissolution and leaching solutions.	P1102	NA
Calcium hypochlorite	Used in the HCF.	P1104	NA
Carbon tetrachloride	Found in sample analysis of filters from Glovebox 6/7. Used in the unshielded gloveboxes.	C1021, M1010, P1104	D019
Chloroform (trichloromethane)	Used in the HCF.	P1104	D022
Chromel/Aluminel (nickel-chromium/nickel-magnesium-aluminum)	Wires used in thermocouples for EEOS, DFR, and ST-2 experiment.	I1004, I1019, I1028, U1012	D007
Chromium	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Present as tramp material in the aluminum alloys used in the New Production Reactor Program. Present in the MP-2 prefabricated construction.	C1021, M1010, P1102	D007*
Chromium oxide	Used in the EEOS experiments.	P1001	D007

Table 10. Hot Cell Facility Chemical Identification and Use Summary (Continued)

Chemical/Material	Use/Description	AK Source	EPA HWNs
Copper	Found in sample analysis of materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Present in components and parts processed through the HCF. Copper parts found during the cleanup of Gloveboxes 1 & 2.	C1010, C1021, I1028, M1010, P1004, P1015	NA
Copper oxide	Used in the ST-1, ST-2, and DFR experiments with components examined in the HCF.	I1004, I1020, I1021, I1028, P1011, P1022, U1004	NA
Cyanide (not specific)	Identified as a class of hazardous materials that may have been used in the HCF.	P1104	NA
D.E.R. 332 Epoxy Resin	Composed of reaction products of epichlorohydrin and Bisphenol A used for potting specimens.	P1102	NA
Dioctylphthalate (DOP)	Used to test HEPA filters for the HCF.	P1104	NA
EPON 815 resin	Found during the cleanout of Glovebox 9 and the fume hood. Modified Bisphenol-A – epichlorohydrin based epoxy resin, n-butyl glycidyl ether used to pot specimens from the NPR C3 and C6.	C1021, M1007, P1015, P1102	NA
EpoThin epoxy	Found during the cleanup of Glovebox 6/7. Bisphenol-A epoxy resin, n-butyl glycidyl ether, acrylic ester, diglycidyl ether.	M1007, P1015	NA
Epoxy	Generic name used to describe the use of epoxy for stabilizing the test section for the ST-1 and ST-2 experiments when complete. Based on AK would have been either D.E.R. 332Epoxy Resin, EPON 815 resin, EpoThin Epoxy, and/or Jeffamine T-403.	P1022, P1102, P1104, U1012	NA
Epoxy paint	Used to seal surfaces throughout the HCF.	P1104	NA
Ethanol	Found during the cleanout of Glovebox 9 and the fume hood. Used to clean (ultrasonically and by hand) EEOS components. Used in the fume hood. Used in the HCF.	C1021, M1011, P1001, P1004, P1008, P1015, P1104	NA
Freon-11 (trichlorofluoromethane, carbon tetrachloride, chloroform)	Contains small amounts of carbon tetrachloride and chloroform, used in the HCF as a fuel stimulant (non- solvent use). Present in the HCF.	C1004, P1104	D019, D022
Gold	Used as a substrate on components for the EEOS experiments. Used in the EEOS pressure cell. Used to sputter coat samples in preparation for SEM.	P1001, P1004, P1102	NA
Grafoil	Used to pack Conax glands for the thermocouples in the ST-1 and ST-2 experiments.	C1010, P1018, U1012	NA
Graphite	Used in crucibles and liners as part of the EEOS experiments.	P1004	NA
Hexane	Used in the HCF.	P1104	NA
Hydrochloric acid	Used in the HCF.	P1104	NA
Hydrofluoric acid	Used in the HCF.	P1104	NA
Hyprez lubricant	Composed of solvent naptha, 1,4-dioxane, and 1,1,1-trichloroethane, used as a cutting lubricant.	M1007, M1015	NA
Indium	Component of the control rod in the DF-3 experiment.	I1004, I1005, P1007, P1011, P1022	NA

Table 10. Hot Cell Facility Chemical Identification and Use Summary (Continued)

Chemical/Material	Use/Description	AK Source	EPA HWNs
Isopropyl alcohol (propanol)	Used in the HCF.	P1104	NA
Jeffamine T-403	Consists of Poly(oxy(methyl-1,2-ethanediyl), alpha-hydro-omega-(2-aminomethy-lethoxy)-, ether with 2- ethyl-2-(hydroxymethyl) -1,3-propanediol, used as the hardener for D.E.R. 332 epoxy for potting samples.	P1102	NA
Kitty litter (not specific, assume similar to Oil Dri)	Quartz (crystalline silica), Fullers earth, used to absorb liquids during waste packaging.	M1007, M1016	NA
Klean-Strip	Strippable coating used in decontamination of the HCF	I1030	NA
Kodak Decahydronaphthalene	Found during the cleanup of the fume hood.	P1015	NA
Lead	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Used for shielding in the HCF and in various experiments processed through the HCF. In the form of bricks, blankets, sheets, shot, pellets, wool, pigs, etc. Used as counter weights on manipulator arms. Found in analysis of filter material (HEPAs and prefilters). Used as shielding in the containment and filter structure for the EEOS experiments. Screens and filters used when performing gamma-ray tomography. Possibly present in solder pieces and in electrical components present in waste parcels. Found above regulated levels in kerf (cuttings)	C1021, I1001, I1002, I1021, I1028, I1039, I1046, I1048, I1053, M1001, M1003, M1004, M1006, M1010, M1011, M1013, M1014, M1016, M2001, M2004 P1005, P1006, P1008, P1015, P1022, P1104, U1012	D008*
Lithium	Present in batteries used in the HCF.	P1104	NA
Leybold-Heraeus HE-175 lubricating fluid	Used in pumps in the HCF.	M1007, P1104	NA
Magic markers	Found during the cleanup of Gloveboxes 6/7 and 8. Expected to be dry.	P1015	NA
Mastermet ink solution	Contains no hazardous chemicals. Found during the cleanup of Glovebox 4/5.	M1010, P1015	NA
Methanol	Found during the cleanout of Glovebox 9 and the fume hood. Used in the HCF. Label found on an empty beaker in Zone 2A.	C1021, P1015, P1104, P1102	NA
Methylene chloride	Found in sample analysis of filters and materials from Gloveboxes 4/5 and 6/7. Used in the HCF.	C1021, M1010, P1104	F002
Methyl ethyl ketone (MEK)	Found in sample analysis of materials from Gloveboxes 4/5 and 6/7. Used in the HCF.	C1021, M1010, P1104	F005
Mercury	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Mercury vapor lamps used in UV-ozone box in the HCF.	C1021, M1010, P1001	D009
Mineral oil	Used as a cutting lubricant. Found during the cleanup of Gloveboxes 6/7.	P1015	NA
Nichrome oxide	Component of mica used in the EEOS experiments.	P1001	D007
Nickel oxide	Component of mica used in the EEOS experiments.	P1001	NA
Nitric acid	Bottle found in the cleanup of Glovebox 3. Used for dissolution and leaching of samples and specimens. Used in the calibration solution for an ion-selective electrode.	P1015, P1025, P1102, P1104, U1012	NA

Table 10. Hot Cell Facility Chemical Identification and Use Summary (Continued)

Chemical/Material	Use/Description	AK Source	EPA HWNs
Palladium	Used to sputter coat samples in preparation for SEM.	P1102	NA
PCBs	Possibly present in waste parcels containing capacitors and a transformer.	M1016	NA
Petroset	Clay based absorbent material composed of silica used to solidify small quantities of liquids during repackaging.	M1016	NA
Platinum	Wires and coupons used in the ST-1 and ST-2 experiments (transferred out of the SCBs). Wires found during the cleanup of Glovebox 3. Wires and coupons present in 204114-P2000938 C200339.	I1039, M1013, P1015, P1025, P1102, U1012	NA
Platinum/rhodium	Wires and wire filters used in the ST-1 and ST-2 experiments. Wires used in DFR experiments.	I1004, I1028, P1102, U1009, U1012	NA
Polyvinyl butyral	Resin with unknown use.	M1007	NA
Projector light bulb	Found during the cleanup of Gloveboxes 1 & 2.	P1015	UNK
Pyridine	Used in the HCF.	P1104	F005
Quik Solid	Lightly crosslinked sodium polyacrylate, used to solidify liquids found during repackaging operations.	M1007, M1016	NA
Radiacwash	Consists of citric acid, octyl phenol condensed with 8-10 mols of Ethylene oxide (Triton X100), tetrasodium ethylenediamine triacetate, benzyldimethyl (2-(2-(p-(1,1,3, 3-tetramethylbutyl) phenoxy)ethoxy)ethyl ammonium chloride (Hyamine 1622), mineral water, label on an empty beaker in Zone 2A	P1102	NA
Sharpie™ marker	Found during the cleanup of Gloveboxes 3 and 9 (assumed dry). MSDS: n-propanol, n-butanol, diacetone alcohol, dye. Found during the cleanup of SCB 3.	M1007, P1015, P1102	NA
Silver	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Wire and coupons used in the ST-1 and ST-2 experiments. Parts used in construction of the ST-1 and ST-2 experiments. Component of the control rod for the DF-3 experiment. Present in the solder used in electronic parts in the HCF and in thermocouples for the EEOS experiments. Present in the Melt Progression Program test section. Possibly present in solder pieces and in electrical components present in waste parcels. Wire used for silver plating present in waste parcels.	C1021, I1004, I1005, I1023, I1039, I1053, M1010, M1013, M1016, P1004, P1007, P1011, P1015, P1022, P1025, P1102, P1104	D011*
Silver chloride	Used in the calibration solution for an ion-selective electrode.	P1102	D011
Silver nitrate	Used in the HCF.	P1104	D011
Sodium hydroxide	Bottle found in the cleanup of Glovebox 3. Used in the HCF. Bottles found in the cleanup of SCB 3.	P1015, P1102, P1104	NA
Sodium metal	Present in fuel, components, and parts. Included in the EEOS, ST-1, ST-2, STAR, and FD (HRR) experiments.	C1004, C1005, C1010, C1012, M1011, P1008, P1012, P1018, P1104, U1001, U1002	NA
Sodium-potassium metal	Present in the HCF in LMFBR components and parts.	C1004, C1005, P1104	NA

Table 10. Hot Cell Facility Chemical Identification and Use Summary (Continued)

Chemical/Material	Use/Description	AK Source	EPA HWNs
Strippable coating	Used during the decontamination of the HCF.	C1001	NA
Sulfuric acid	Used in the HCF.	P1104	NA
Tellurium	Fibers used in the ST-1 and ST-2 experiments.	U1004	NA
Thioacetamide	Used in the HCF.	P1104	NA
Thorium oxide	Used in the DFR, ST-1, and ST-2 experiments. Present in fuel specimens.	C1004, C1014, I1004, I1020, I1021, I1028, U1004	NA
Titanium potassium perchlorate	Used in an explosive cartridge in ten valves in the ST-2 experiment.	C1011, I1025, U1012	NA
Toluene	Used in the unshielded gloveboxes. Found in sample analysis of filters for Gloveboxes 6/7 and 9.	C1021, M1010, P1104	F005*
Torr-Seal resin	Found during the cleanup of Gloveboxes 6/7.	P1015	NA
Trichloroethylene (trichloroethene)	Found in sample analysis of filters from Glovebox 6/7. Used to ultrasonically clean EEOS components. Used in the unshielded gloveboxes.	C1021, M1010, M1011, P1001, P1004, P1008, P1104	F002
Tungsten/rhenium	Wires used in thermocouples for the FD, DFR, MPP, ST-1, and ST-2 experiments.	I1004, I1009, I1028, P1102, U1012	NA
Vacuum pump oil	Non-PCB oil (HE-175) used in HCF.	M1007, P1104	NA
Xylene	Found in sample analysis of materials from Glovebox 4/5. Used in the HCF.	C1021, M1010, P1104	NA
Zinc	Found in sample analysis of materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood.	C1021, M1010	NA
Zirconium oxide	Used in the DFR experiments. Used in the ST-1 and ST-2 experiments.	C1012, C1013, C1014, C1015, I1004, I1020, I1021, I1028, U1004, U1009, U1012	NA

*EPA HWN also assigned by the generator to containers in this waste stream.

5.4.3.1 F-Listed Constituents

Based on review of AK relative to inputs to waste stream SNL-HCF-S5400-RH may contain or be mixed with F-listed hazardous wastes from nonspecific sources listed in Title 20 of New Mexico Administrative Code (NMAC) 4.1.200 which incorporates by reference 40 CFR 261.31 (References 16 and 17). As shown in Table 10, F002 and F005 listed solvents were used in operations conducted in the HCF. F003 constituents, including acetone, butyl alcohol, ethanol, methanol, methyl isobutyl ketone, and xylene are listed solely because these solvents are ignitable in liquid form. The waste stream does not exhibit the characteristic of ignitability because it is not liquid; therefore, F003 is not assigned. Waste stream SNL-HCF-S5400-RH is assigned F-listed EPA HWN F002 for methylene chloride, 1,1,1-trichloroethane, trichloroethylene, and 1,1,2-trichloro-1,2, 2-trifluoroethane. Waste stream SNL-HCF-S5400-RH is also assigned F-listed HWN F005 for benzene, methyl ethyl ketone, pyridine, and toluene. Trichlorofluoromethane (Freon-11) was used as a fuel stimulant, not as a solvent, and

therefore HWN F002 was not assigned for this chemical (References DR1001, C1004, C1021, M1010, M1011, P1001, P1004, P1008, P1015, P1102, and P1104).

5.4.3.2 Toxicity Characteristic Constituents

Based on review of AK relative to inputs to the hot cell and glovebox operations conducted in the HCF, waste stream SNL-HCF-S5400-RH is contaminated with toxicity characteristic compounds as defined in 20 NMAC 4.1.200 which incorporates by reference 40 CFR 261.24 (References 16 and 17). Where a constituent has been identified and there is no or limited quantitative data available to demonstrate that the concentration of a constituent is below regulatory threshold levels, the applicable EPA HWN is applied to the waste stream in accordance with CCP-TP-005 (Reference 1).

Heterogeneous debris waste from the HCF contains or is contaminated with toxicity characteristic metals. Based on the references identified in Table 10, EPA HWNs D004, D005, D006, D007, D008, D009, and D011 are assigned to waste stream SNL-HCF-S5400-RH (References DR1001 and DR1003).

The AK sources identified the use of organic toxicity characteristic compounds, including benzene (D018), carbon tetrachloride (D019), chloroform (D022), 1,2-dichloroethane (D028) methyl ethyl ketone (D035), pyridine (D038), and trichloroethylene (D040). Trichloroethylene is identified as an F-listed solvent and is assigned EPA HWN F002. Specific uses were not found in the AK for benzene, methyl ethyl ketone, and pyridine, therefore EPA HWN F005 was assigned for these compounds. Because the more specific F-listed EPA HWN has been assigned for these compounds, assignment of the corresponding toxicity characteristic HWNs (D018, D035, D038, and D040) is not necessary. HWNs D019, D022, and D028 are assigned to waste stream SNL-HCF-S5400-RH (References C1021, DR1001, DR1003, M1010, M1011, P1001, P1004, P1008, P1015, P1102, and P1104).

5.4.3.3 P-, U-, and K-Listed Wastes

Based on review of AK relative to inputs to the HCF process, decontamination, and waste repackaging operations, waste stream SNL-HCF-S5400-RH does not contain and is not mixed with a discarded commercial chemical product, an off-specification commercial chemical product, or a container residue or spill residue thereof as defined in 20 NMAC 4.1.200 which incorporate by reference 40 CFR 261.33. No listed chemicals were identified in the container-specific documentation. Waste stream SNL-HCF-S5400-RH is therefore not assigned a U-listed HWN (References DR1001, DR1003, I1042, I1053, M1016, and P1101).

As indicated in Table 10, beryllium was in the HCF as an oxide. The identified sources of beryllium in the AK record do not indicate that significant quantities of beryllium were utilized. Based on the identified presence and use of beryllium, the waste stream does not meet the definition of P015 (unused beryllium powder) waste and beryllium is not

expected to exceed one percent in any payload container. Although hydrofluoric acid was identified as a process chemical, no source of discarded commercial chemical product or off-specification commercial chemical product was identified, therefore U134 is not assigned to the waste stream. Waste stream SNL-HCF-S5400-RH is therefore not assigned any P-listed or U-listed HWNs (References DR1001, DR1003, I1042, I1053, M1016, and P1101).

The material in this waste stream is not a hazardous waste from any of the sources specified in 20 NMAC 4.1.200 which incorporates by reference 40 CFR 261.32 (References 16 and 17).

5.4.3.4 Ignitables, Corrosives, and Reactives

Potentially ignitable, corrosive, and reactive chemicals are prohibited from disposal in RH TRU waste. The materials in this waste stream do not meet the definition of ignitability as defined in 20 NMAC 4.1.200 which incorporates by reference 40 CFR 261.21 (References 16 and 17). The materials are not liquid and liquids were not added to containers during packaging. This material will not cause fire through friction, absorption of moisture, or spontaneous chemical changes, and procedures did not allow packaging of pyrophoric materials. This material is not a compressed gas or an oxidizer. Liquids are immobilized with absorbent (i.e., Aquaset, Petroset, Kitty litter, and Quik Solid). The materials in this waste stream are therefore not ignitable wastes (HWN D001) (References M1016, P1015, and P1102).

The materials in this waste stream do not meet the definition of corrosivity as defined in 20 NMAC 4.1.200 which incorporates by reference 40 CFR 261.22 (References 16 and 17). The materials are not liquid and liquids were not added to containers during packaging. In addition, absorbents (i.e., Aquaset, Petroset, Kitty litter, and Quik Solid) were added to liquids when generated. The materials in this waste stream are therefore not corrosive wastes (HWN D002) (References P1015, M1016, and P1102).

The materials in this waste stream do not meet the definition of reactivity as defined in 20 NMAC 4.1.200 which incorporates by reference 40 CFR 261.23 (References 16 and 17). The materials are stable and will not undergo violent chemical change. The materials will not react violently with water, form potentially explosive mixtures with water, or generate toxic gases, vapors, or fumes when mixed with water. Although sodium and sodium-potassium bonded fuel capsules were disassembled and examined, the sodium and sodium-potassium were removed and neutralized with alcohol (n-butyl alcohol) during capsule disassembly or examination. In addition, as noted in Table 10, cyanide was identified as a class of hazardous material that may have been used in the HCF, however no other source documents identified cyanides used in the HCF, and no source documents indicate cyanide is present in this waste stream. The materials do not contain cyanides or sulfides, and are not capable of detonation or explosive reaction. The materials are not liquid and liquids were not added to

containers during packaging. The materials in this waste stream are therefore not reactive wastes (HWN D003) (Reference P1104).

Based on SNL/NM waste management practices, the materials contained in waste stream SNL-HCF-S5400-RH do not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003) as defined in 20 NMAC 4.1.200 which incorporates by reference 40 CFR 261.21, 261.22, and 261.23, respectively (References 16 and 17). Real-time radiography (RTR) and/or visual examination (VE) will also be used to verify the absence of prohibited materials.

5.4.3.5 Polychlorinated Biphenyls (PCBs)

Although polychlorinated biphenyls (PCBs) were identified in the CH waste stream, SNL-HCF-S5400 (Reference M1016), no sources of PCBs were identified as inputs into waste stream SNL-HCF-S5400-RH. Potential sources of PCBs including light ballasts, oil-filled electrical equipment, and hydraulic oils are not identified in the RH TRU debris waste. Therefore, waste stream SNL-HCF-S5400-RH is not regulated as a *Toxic Substance Control Act* (TSCA) waste under 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions* (References 18, M2003, M2004, M2010, M2021, and P2001). If PCB containing material is identified during RTR and/or VE, it will be managed in accordance with PCB disposal requirements of the WIPP-WAC (Reference 4).

5.4.4 Prohibited Items

Based on a review of AK, waste stream SNL-HCF-S5400-RH potentially could contain the following prohibited items (Reference M1016):

- Unpunctured aerosol cans
- Prohibited liquids
- Sealed containers exceeding 4 liters (buckets, bottles, and cans)

VE will be performed prior to shipment to WIPP. Waste drums with prohibited items will be treated and/or repackaged to remove the items prior to shipment. Therefore, the waste stream will not include the prohibited items identified above, unblocked or unbraced heavy/sharp objects, or U.S. Department of Transportation (DOT) Class 1 explosives, oxidizers, and forbidden materials identified in 18 NMAC 23.17 which incorporates by reference 49 CFR 173.21 (References 19, 20, I1042, I1053, P1101, P2002, and P2005).

5.5 Waste Packaging

Waste stream SNL-HCF-S5400-RH will be repackaged to meet WIPP transportation and disposal requirements. Waste material will be repackaged inside a 30-gallon metal drum with a WIPP compliant filter. The 30-gallon drum may contain two 7-gallon drums each containing a lead-lined shield pot (Reference M2024). Any plastic inner bags will

be breeched, and the 7-gallon drums are not sealed, so there is no layer of confinement within the 30-gallon drum. The 30-gallon drum will be placed inside a WIPP compliant 55-gallon metal drum. The final package configuration will have one layer of confinement if the inner 30-gallon drum is closed and fitted with a WIPP compliant filter (References C1047, P1105, P2002, and P2005).

6.0 CONFIRMATORY TEST PLAN AND QUALIFICATION OF AK INFORMATION

Document CCP-AK-SNL-502, *Central Characterization Program RH TRU Waste Certification Plan for 40 CFR Part 194 Compliance for Sandia National Laboratory/New Mexico Remote-Handled Hot Cell Facility Transuranic Debris Waste, Waste Stream: SNL-HCF-S5400-RH* (Reference 22), describes how each DQO and QAO will be met along with the rationale for selection of the AK qualification methods used. The description of characterization approaches selected for the waste stream is presented in CCP-AK-SNL-502 (Reference 22).

Table 11, Waste Stream SNL-HCF-S5400-RH DQO Determination Summary, lists the DQOs to be addressed using AK associated with waste stream SNL-HCF-S5400-RH relating to the defense waste, radiological, and physical waste stream determinations.

Table 11. Waste Stream SNL-HCF-S5400-RH Determination Summary

DQO Determinations	Summary of Characterization/Qualification Method	AK Sources
Defense Waste, High Level Waste, and Spent Nuclear Fuel	As described in the defense waste justification in Section 4.3, there is sufficient evidence to demonstrate that TRU wastes generated by HCF operations are contaminated with materials from atomic energy defense research activities associated primarily with projects conducted to support safety programs for reactors with defense missions. As described in Section 4.5, this waste stream does not contain spent nuclear fuel or high-level waste.	C1038, C1042, C1043, C2001, I1002, M1016, P1019, P1030, P1041, P1044, and P2001
TRU Waste	Evaluation of generator radionuclides demonstrates that this is a TRU waste stream. Based on generator reported radiological data, the estimated average TRU alpha concentration exceeds 100 nCi/g. **Characterization/Qualification Method**: Method described in CCP-AK-SNL-502.	M1016, M1019, M1020, M1021, and CCP-AK-SNL-501
RH Waste	Generator reported dose rates for the waste stream cans indicate the surface dose rates >200 mrem/hr. **Characterization/Qualification Method**: Method described in CCP-AK-SNL-502.	M1016, M1019, and CCP-AK-SNL-501
Activity	This DQO is specific to payload containers and will not be assessed until the final payload configuration has been established.	Not Assessed
WIPP 10 Required Radionuclides	The relative activity of the WIPP 10 required radionuclides for this waste stream is documented in CCP-AK-SNL-501. **Characterization/Qualification Method**: Method described in CCP-AK-SNL-502.	M1016, M1019, M1020, and M1021, and CCP-AK-SNL-501
Physical Form	As described in Section 5.3, Waste Stream SNL-HCF-S5400-RH consists primarily of heterogeneous debris meeting the WCPIP definition for Summary Category Group S5000. Section 5.4.1.2 identifies the WMPs, including the estimated amount of each in the waste stream. **Characterization/Qualification Method**: 100 percent VE or RTR as described in CCP-AK-SNL-502.	C1039, M1016, and M1019
Liquids	As described in Sections 5.4.3.4 and 5.4.4, liquids are prohibited during the packaging of Waste Stream ID-HFEF-S5400-RH. **Characterization/Qualification Method**: 100 percent VE or RTR as described in CCP-AK-SNL-502.	I1042, I1053, and P1101

The methods used to qualify the AK information associated with waste stream SNL-HCF-S5400-RH are documented in CCP-AK-SNL-501 and CCP-AK-SNL-502 (References 15 and 22).

7.0 CONTAINER SPECIFIC INFORMATION

In accordance with procedure CCP-TP-005 (Reference 1), a CCP Waste Containers List (Attachment 8 of the procedure and also) is completed and maintained as a quality record for waste tracking purposes. The Container Tracking Spreadsheet identifies the drum number, internal waste container identification number, summary category group, vent date, and closure date for each drum, based on AK and the most current information from AK characterization activities, as applicable.

8.0 REFERENCES

1. CCP-TP-005, *CCP Acceptable Knowledge Documentation*, Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

2. DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*, Carlsbad, New Mexico, U.S. DOE Carlsbad

3. *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan*, New Mexico Environment Department, Santa Fe, New Mexico

4. DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria For the Waste Isolation Pilot Plant,* Carlsbad, New Mexico, U.S. DOE Carlsbad Field Office

5. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*, Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

6. CCP-PO-002, *CCP Transuranic Waste Certification Plan*, Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

7. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*, Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

8. CCP-AK-INL-021, *Central Characterization Project Acceptable Knowledge Summary Report For Idaho National Laboratory, Sandia National Laboratories/New Mexico Hot Cell Facility Contact Handled Transuranic Waste (Debris), Waste Stream: ID-SNL-HCF-S5400,* Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

9. 40 CFR Part 191, *Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes*, Washington, D.C., U.S. EPA, December 20, 1993

10. 40 CFR Part 194, *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations*, Washington, D.C., U.S. EPA, February 9, 1996

11. *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations: Certification Decision*, Washington, D.C., U.S. EPA, May 18, 1998

12. Public Law 102-579, *The Waste Isolation Pilot Plant Land Withdrawal Act*, October 30, 1992, as amended by Public Law 104-201, September 23, 1996

13. 42 U.S.C. 10101, *Nuclear Waste Policy Act of 1982*, U.S. Congress

14. DOE/TRU-13-3425, *Annual Transuranic Waste Inventory Report – 2013*, Carlsbad, New Mexico, U.S. DOE Carlsbad

15. CCP-AK-SNL-501, *Central Characterization Program Remote-Handled Transuranic Radiological Characterization Technical Report For Sandia National Laboratory/New Mexico Hot Cell Facility Remote-Handled Transuranic Debris Waste, Waste Stream: SNL-HCF-S5400-RH* Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

16. Title 20 NMAC 4.1.200, *Adoption of 40 CFR Part 261*

17. 40 CFR Part 261, *Identification and Listing of Hazardous Waste*, U.S. EPA

18. 40 CFR, Part 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and use Prohibitions*, U.S. EPA

19. Title 18 NMAC 2.3.17, *Adoption of Federal Hazardous Materials Transportation Regulations, 49 CFR Parts 107, 171, 172, 173, 177, 178, and 180*

20. 49 CFR, Part 173.21, *Forbidden Materials and Packages*, U.S. DOT

21. DOE Order 435.1, *Radioactive Waste Management*, U.S. DOE, Environmental Management

22. CCP-AK-SNL-502, *Central Characterization Program RH TRU Waste Certification Plan for 40 CFR Part 194 Compliance for Sandia National Laboratory/New Mexico Remote-Handled Hot Cell Facility Transuranic Debris Waste, Waste Stream: SNL-HCF-S5400-RH*, Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

23. CCP-PK-SNL-002, *Central Characterization Project Process Knowledge Summary Report For Sandia National Laboratories/New Mexico Hot Cell Facility Contact Handled Transuranic Waste (Debris) Waste Stream: SNL-HCF-S5400*

9.0 AK SOURCE DOCUMENTS

Tracking Number	Title or Description
C1001	Memo from Gwendolyn J. Pirtle to Charles G. Thomas, David S. Barber, and Carlos S. Medrano re: Hot Cell Facility Decontamination
C1004	Reactor Accident Experiments and Funding
C1005	(UCNI) Memo from Cathy A. Ottinger re: Candidate Auxiliary Hot Cell Facility Containers
C1006	Memo from F. Gonzalez and D. Fenstermacher to S. Wright re: Loading of Experiment FD4.4 and FD4.5
C1008	Memo from D.M. Haaland to R.L. Coats re: High Temperature Equation-of-State Studies of Fast Breeder Reactor Fuels: Evaluations Summary
C1009	Memo from K.T. Stacicer to Picard re: Radiometric Temperature Measurement
C1010	Memos, re: SRSC, ACRR, ACPR, RCSC, & ACPR Meeting Minutes; TRAN-GAP Fuel Loading Procedure and Approval; Fuel Loading Procedures for Exp in Bldg. 6597; Removal and Encapsulation of ST-1 Fuel Assembly; ST-1 Cutting Procedure; Handling Procedures for WLM Ex
C1011	Memo: Explosive Valves in the ST-2 Experiment
C1012	Memos: draft Section 5 and 6 of the ARSR quarterly reports
C1013	Memo: Suggested Instrumentation for the Fuel Disruption Tests.
C1014	Memos: Working Document for Preliminary DFR Test Section Design Concepts; DFR Visual Diagnostics; Preliminary Calculations for the DFR Steam System.
C1015	Memo: Hydrogen Flow in DFR-PWR Experiments
C1016	Memo: Fission Product Release Rates for Proposed DFR Pre-Irradiated Fuel Experiments
C1017	Memo: Preliminary Evaluation of Pre-Irradiated Fuel Experiments for the DFR Program
C1021	Memo from Susan Longley to File re: Characterization of waste from Glove Box 9
C1027	Memo Concerning Management Readiness Review of Pu Repackaging Project at the RMWMF
C1038	Ken Reil Interview; John Kleckner
C1039	Waste Material Parameter Memorandum for Waste Stream SNL-HCF-S5400-RH
C1041	Memos re: Modification of Hot Cell Bell Jar/Mass Spec (with supporting materials)
C1042	Memorandum to Ines Triay: Determination and Findings, Defense Origin of Nuclear Waste, Kerr-McGee Waste
C1043	Memorandum to CCP Central Records, Evaluation of Kerr-McGee Fuel Production and FFTF History
C1047	Record of Communication between John Kleckner and Tommy Mojica Re: Final Packaging Configuration
C2001	Letter from S. Schafer to B. Humphrey regarding TRU Waste Currently Stored at SNL (SJS-121001), and correspondence from CBFO to NNSA concurring with the letter.
C2004	Waste Stream Container Evaluation Memorandums
DR1001	Discrepancy resolution for the assignment of EPA Hazardous Waste Numbers
DR1002	Discrepancy Resolution for Container #P1110154 (Parent Container C980313)
DR1003	AK Discrepancy Resolution DR1003 re: Assignment of EPA Hazardous Waste Numbers
I1001	EEOS Mass of Cadmium, Lead, and Remaining Package
I1002	Experiment Plan for Effective Equation of State (EEOS) Experiments with Irradiated Fuel
I1003	Design of EEOS Pressure Cell and In-Pile Calorimeter
I1004	Damaged Fuel Relocation Experiment DF-2: Results and Analyses
I1005	Damaged Fuel Experiment DF-4: Test Result Report
I1006	Summary of Heating Conditions and Disruption for Each Fuel Disruption Experiment
I1007	Fuel Disruption Notes: FD1, FD2, HRR, FF and IF FF

Tracking Number	Title or Description
I1009	Fuel Disruption Experiment Plan for the FD2/4 Series
I1010	ACRR Source Term Tests, Project Overview
I1011	ST-2 Operation Checklist
I1012	Star-5 Quick Look Report
I1013	STAR-6 Very Short Quick Look Report
I1015	Effective Equation of State Experiments
I1016	ACRR Source Term Experiments, Program Overview
I1017	Annular Core Research Reactor Experiment Plan
I1018	Project/ Experiment Quality Plan for Damaged Fuel Relocation (DFR)
I1019	Annual Core Pulse Reactor Experiment Plan for EEOS with Report (EEOS Experiments)
I1020	Analysis of the DF-1 Experiments using SCDAP
I1021	Damaged Fuel Relocation (DFR) Experiments Damage Fuel (DF) Series ACRR Experiment Plan
I1022	Handwritten Notes of a proposal for an Experimental Program
I1023	Catalog pages of Hardware for the Source Term Experiments
I1024	Detailed ST-2 Procedures and Gas Manifold Operations; Detailed ST-1 Procedures for Gas Manifold Operation
I1025	Project/Experiment Quality Plan for ACRR Source Term Experiments
I1026	Severe Accident Source Term Information Needs and Capabilities
I1028	Damaged Fuel Relocation (DFR) Experiments: Damaged Fuel (DF) Series DF-2 ACRR Experiment Plan
I1030	Hot Cell Facility (HCF) Decontamination Plan
I1031	DF-2 Experiment Quick Look Report
I1032	Notes describing the differences between DF-1 and DF-2 Experiments
I1033	Procedures for Gas Manifold Operation, Leak Rate Measurement (Room 107 and Hot Cell) and Back Fill Operations for ST-1.
I1034	ST-1 Procedures in Hot Cell
I1035	Hot Cell Requirements for the Source Term Experiments
I1036	Safe Operating Procedures for Source Term Outside Cask Handling Operations
I1039	ST-1 Filter Wire Analysis Procedures
I1040	HCF Procedures for the Recovery of the Fuel/Target and gas sample bottles from the NPR C Series
I1042	Work Instructions for Repackaging TRU Waste at Sandia National Laboratories/New Mexico DRAFT
I1046	Characterization of Excess Lead
I1048	Lead Characterization and Repackaging
I1053	Transuranic Waste Repackaging Plan
M1001	Sandia National Laboratories Primary Hazard Screening (PHS)
M1003	Hazards Analysis (HA): Hot Cell Facility
M1004	Radiological Survey Form for Post Job and Lead Brick Release and associated supporting data
M1006	Completed Equipment Decontamination Requests; Radiological Work Permits; Decontamination Operations Checklists, etc. for NDC Trailer
M1007	Collection of MSDSs.
M1010	Disposal Request #005934
M1011	Att 3 - Laboratory Data for Glove Box 9 Paper Towels

Tracking Number	Title or Description
M1013	Review of TRU Disposal Requests: 001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080
M1014	Readiness Assessment Plan for the Non-Destructive Cleaning Mobile Decontamination Unit
M1015	Miscellaneous Articles and Public Extracts
M1016	Disposal Requests from the 2007/2008 Repackaged Containers
M1019	Collection of Spreadsheets Pertaining to TRU Waste Generated at the AHCF and Other Locations on TA-V
M1020	Process Knowledge Evaluations (PKE) for radiological ratios (e.g., PKE00044 and PKE00047)
M1021	Memo to Record, re: Evaluation of Radionuclide Activity Ratios for Hot Cell Facility Wastes (PKE00044 and PKE00047); Memo to Record, re: PKE000047 Radionuclide Activity Ratios
M2001	e-mail from R. Salyer to B. Humphery regarding MP1 Kerf information in container C00218134 including analytical data and MP-1 experiment results attachments
M2002	Ref. 16 in Analysis of Materials to be Processed in the AHCF - rad analysis of container C00188425 by R. Salyers
M2003	Miscellaneous container C00188425 documentation
M2004	MP-1 Kerf Summary and attachments
M2007	Fuel Analysis By Container
M2010	Data file from the MC&A MARS Database listing Containers and Pieces
M2021	Disposal Requests for RH waste containing spent fuel pieces
M2024	Shield Pot Design documents
P1001	Contamination Control in Sandia Equation of State Experiments
P1002	In-Pile Calorimetry in the Joint Sandia/KfK Equation of State Experiments on Nuclear Fuel
P1003	A Model for Effective Equation of State of Irradiated Fast Reactor Fuel
P1004	Joint In-Pile Equations of State Series on Nuclear Fuels at Sandia National Laboratories
P1005	Vapor Pressure Measurements on Liquid Uranium Oxide and (U,Pu) Mixed Oxide
P1006	Measurements of the Total Pressure from Irradiated (U,Pu) Mixed Oxide
P1007	Proceedings of the International ANS/ENS Topical Meeting on Thermal Reactor Safety, Results of the ACRR-DFR Experiments
P1008	In-Pile Vapor Pressure Measurements on (U)O2 and (U,Pu)O2
P1009	Analysis of Mixed Oxide Fuel Irradiated in EBR-II Measured vs Predicted Burn-Up
P1010	In-Pile Determination of Fuel Disruption Mechanisms under LMFBR Loss of Flow Accident Conditions
P1011	The DF-4 Fuel Damage Experiment in ACRR with a BWR Control Blade and Channel Box
P1012	Fuel-Disruption Experiments Under High-Ramp-Rate Heating Conditions
P1014	Fission Rates, Burnup, and Neutron Flux-Fluence-Spectra Characterization for Mixed Oxide Fuel Experiments in the EBR-II
P1015	Sampling and Analysis Plan for Characterization of Waste Arising From Hot Cell Facility Glovebox Decontamination
P1016	In-Pile Observation of Fuel and Clad Relocation During LMFBR Core-Disruptive Accidents
P1018	Fission Product Release and Fuel Behavior of Irradiated Light Water Reactor Fuel Under Severe Accident Conditions, The ST-1 Experiment
P1019	DOE Reactor-Pumped Laser Program
P1020	FALCON Reactor-Driven Laser Experiments Show Potential
P1021	Fission Activated Laser as Primary Power for CW Laser
P1022	Damaged Fuel Experiment DF-1
P1025	ACRR Fission Product Release Tests: ST-1 and ST-2

Tracking Number	Title or Description
P1026	LMFBR Mixed Oxide Fuels Development Semi-Annual Report, July-December 1975
P1027	Fabrication, Irradiation, and Post-Irradiation Examination of Mixed Oxide Fuel Pins, PNL-3-23, 27, and 33
P1030	Plutonium, The First 50 Years
P1033	Guernsey Fast Reactor Safety Topical In-Pile Observations of Fuel and Clad Relocation During LMFBR Initiation Phase Accident Experiments, The STAR Experiments
P1034	Visual Observations of Fuel Disruption in In-Pile LMFBR Accident Experiments
P1035	Analysis of In-Pile Fuel Disruption Experiments
P1036	Visual In-Pile Fuel Disruption Experiments
P1037	First Visual In-Pile Fuel Disruption Experiments
P1038	Visual Investigation of Reactor Fuels Response to Simulated LOF Heating Conditions, First Series
P1039	Fuel Disruption Mechanisms Determined In-Pile in the ACRR
P1040	In-Core Fuel Disruption Experiments Simulating LOF Accidents for Homogeneous and Heterogeneous Core LMFBRs: FD2/4 Series
P1041	Sandia National Laboratories/New Mexico Environmental Information Document, Volume II
P1044	The Department of Energy's Tritium Production Program
P1045	LWR Severe Core Damage Phenomenology Program Plan - Volume I: Melt-Progression Phenomenology and Damaged Fuel Relocation Programs
P1046	Summary Report: Special Committee on Source Terms
P1047	NPR/FCI EXO-FITS Experiments Series Report
P1048	MELCOR 1.8.0: A Computer Code for Nuclear Reactor Severe Accident Source Term and Risk Assessment Analysis
P1051	The Global Nuclear Future, The Next Era of Nuclear Power
P1100	Programmatic Waste Acceptance Criteria
P1101	SNL/NM Waste Handling
P1102	Building 6580 Hot Cell Facility, Steel Containment Boxes and Zone 2A Process Knowledge Documentation: Isotope Production Program, Hot Cell Facility Decontamination Project
P1104	Hot Cell Facility (HCF) Safety Analysis Report, Main Report and Appendices
P1105	Series of procedures titled AHCF Campaign Operating Procedure for TRU Waste
P2001	Preliminary Characterization of Materials in Manzano Storage Bunker 37055
P2002	Auxiliary Hot Cell Facility Campaign Plans 11, 12, and 14
P2003	Analysis of Materials to be Processed in the Auxiliary Hot Cell Facility (AHCF)
P2005	Campaign Operating Procedures for Campaigns 11, 12, and 14
U1001	Star 1 Quick Look Report
U1002	Star -7 Data Report
U1004	Plan for ACRR Source Term Experiments
U1009	DFR TLM Demonstration Test
U1011	Reassessment of the Technical Bases for Estimating Source Terms (Draft Report for Comment)
U1012	ST-2 Experiment Plan, Corrections, and Appendix of Instrumentation, also includes QAP and SOP
U1014	The USNRC Severe Fuel Damage Research Program

Figure 1. Map of Sandia National Laboratories/New Mexico

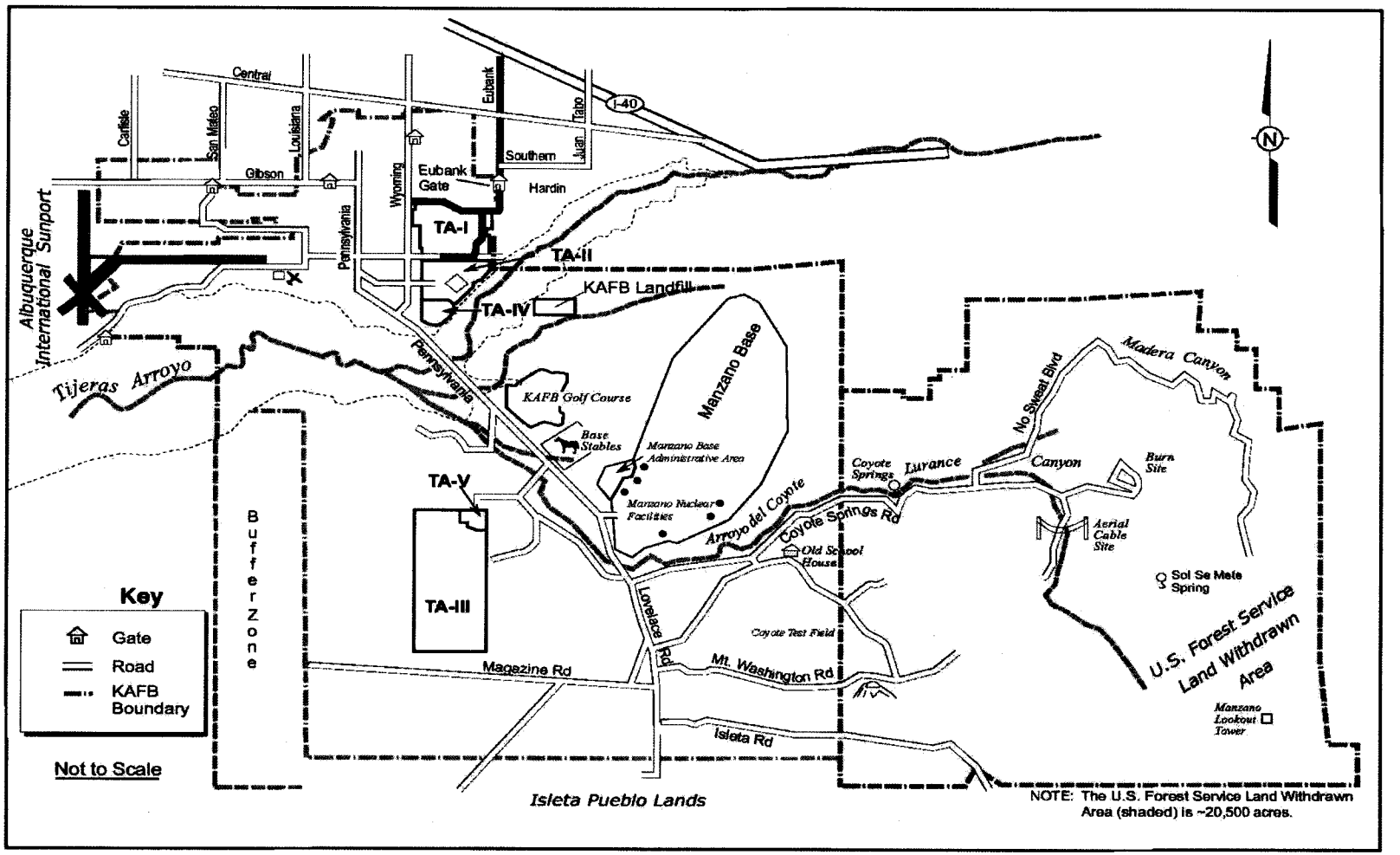


Figure 2. Map of SNL/NM Technical Area V

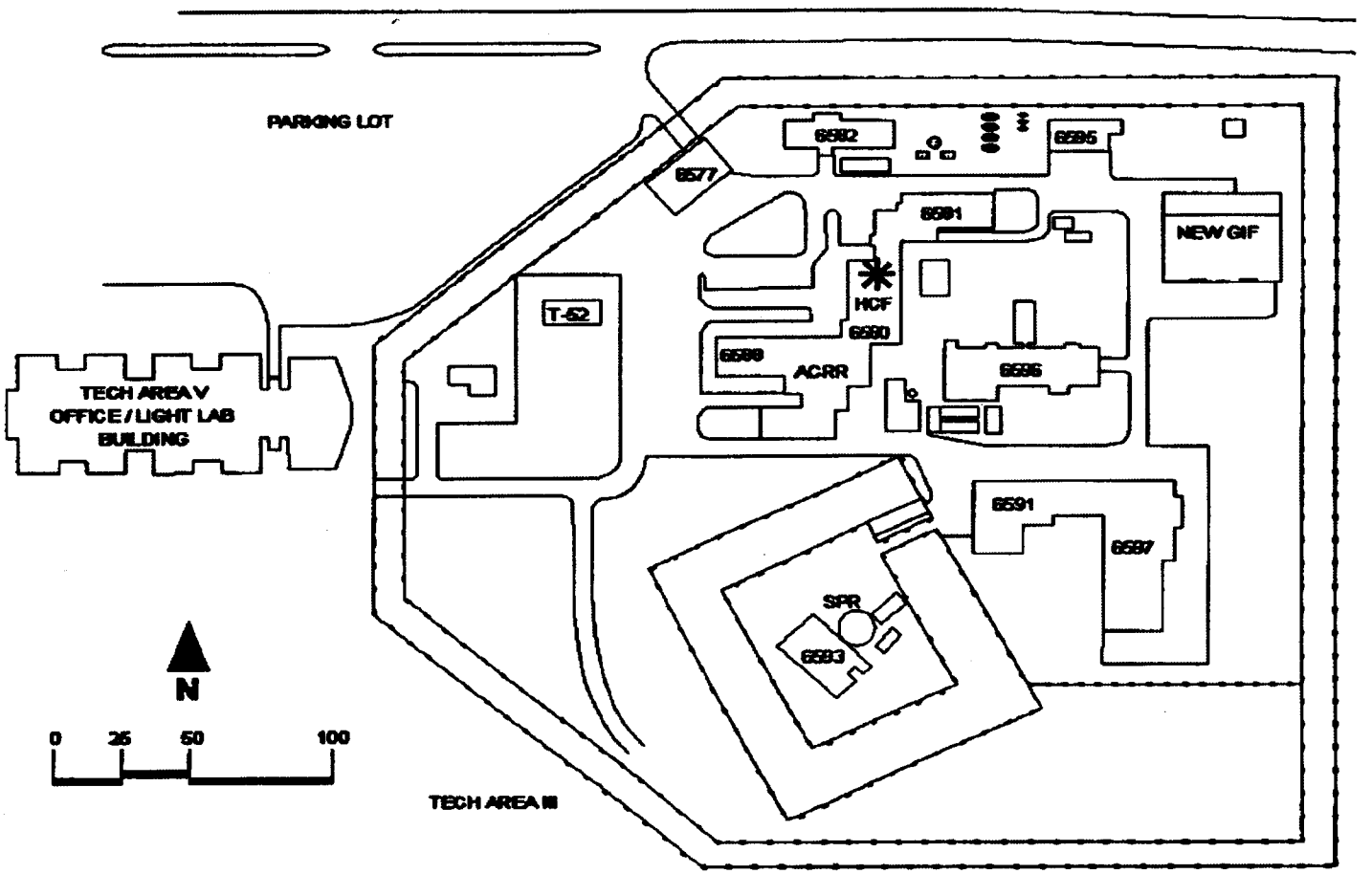


Figure 3. HCF Basement Floor Plan

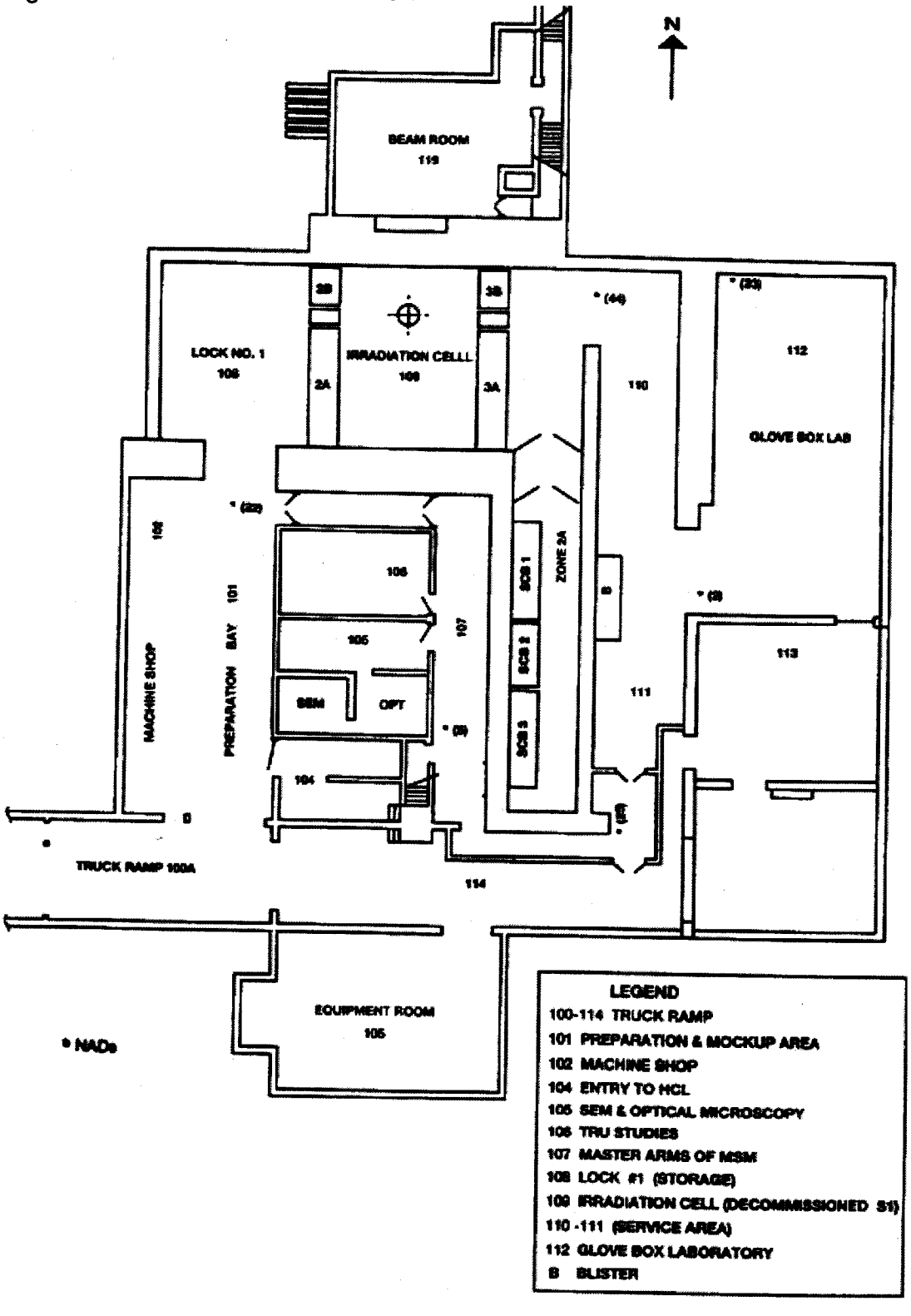
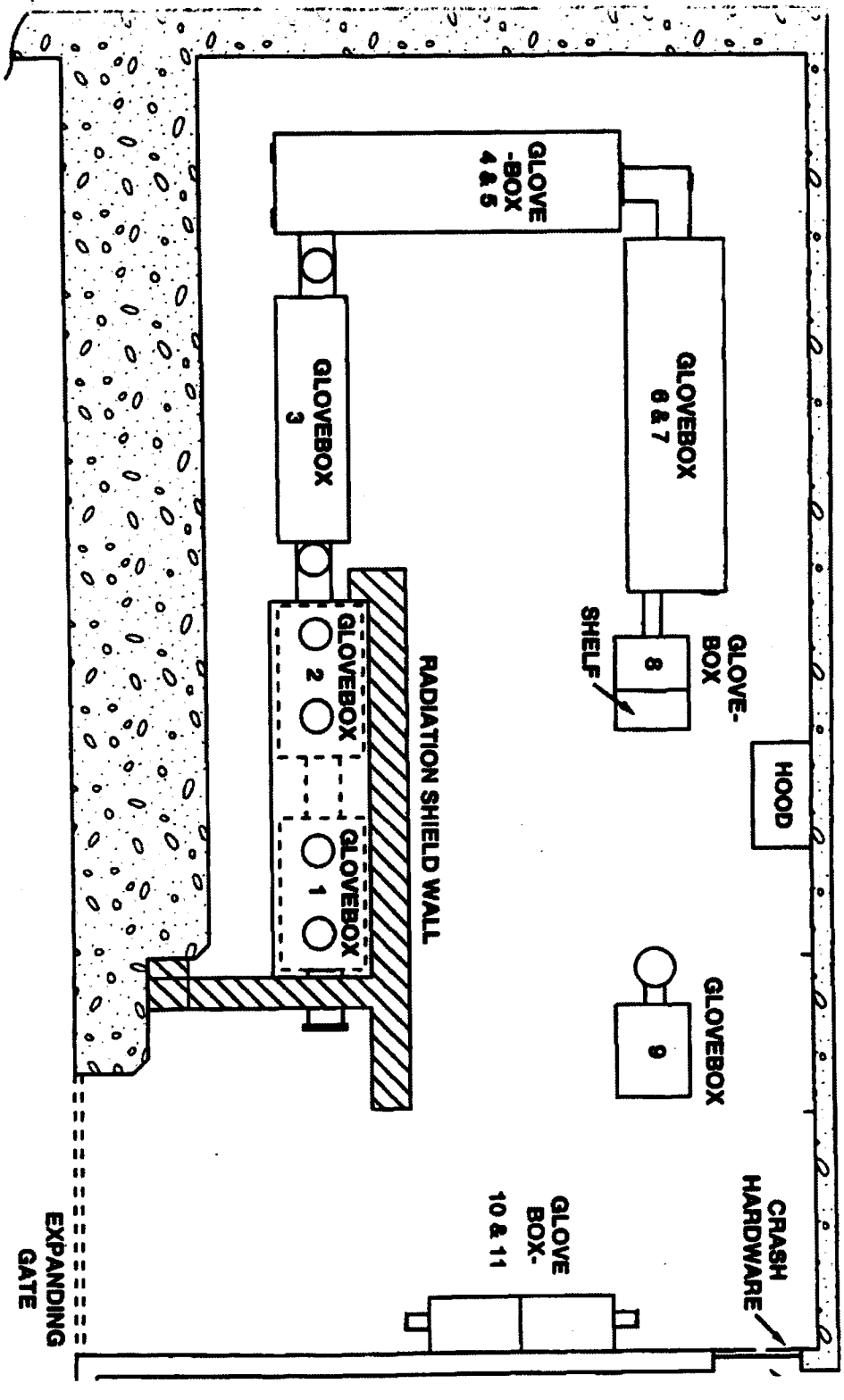


Figure 4. Room 112 Glovebox Laboratory



AK2

AK2

URS

Washington TRU Solutions LLC

CP:12:01265
UFC:5900.00

INTER-OFFICE CORRESPONDENCE

DATE: May 30, 2012

FROM: I. S. Quintana LOCATION: CCP Project Management - Remote-Handled

TO: CCP Records Custodian GSA-212 LOCATION: Retrieval, Characterization and Transportation

SUBJECT: TRANSMITTAL OF WASTE STREAM PROFILE FORM FOR WASTE STREAM SNL-HCF-S5400-RH, SANDIA NATIONAL LABORATORY

Please accept the attached Waste Stream Profile Form for SNL-HCF-S5400-RH, managed at the Sandia National Laboratory, to be placed in records.

ISQ:yhs

Attachment

cc: (without attachment)
L. M. Nelson ED

COPY.

CCP RECORDS ORIGINAL
DATE REC'D 5-31-12

Attachment 2 –CCP Waste Stream Profile Form

(1) Waste Stream Profile Number: SNL-HCF-S5400-RH					
(2) Generator site name: Sandia National Laboratory/New Mexico			(4)Technical contact: Irene Quintana		
(3) Generator site EPA ID: NM5890110518			(6) Technical contact phone number: 575-499-4579		
(5) Date of audit report approval by New Mexico Environment Department (NMED): 11/10/2011					
(7) Title, version number, and date of documents used for WAP Certification: CCP-PO-001, CCP Transuranic Waste Characterization Quality Assurance Project Plan, Revision 20, June 16, 2011 CCP-PO-002, CCP Transuranic Waste Certification Plan, Revision 26, July 14, 2011 CCP-PO-510, CCP/SNL Interface Document, Revision 0, November 18, 2010 CCP-AK-SNL-500,Central Characterization Project Acceptable Knowledge Summary Report for Sandia National Laboratories/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris) Waste Stream: SNL-HCF-S5400-RH Rev. 4, November 30, 2011					
(8) Did your facility generate this waste?	YES	X	NO		
(9) If no, provide the name and EPA ID of the original generator: NA					
Waste Stream Information[1]					
(10) WIPP ID: SA-W135			(11) Summary Category Group: S5000		
(12) Waste Matrix Code Group: Heterogeneous Debris Waste			(13) Waste Stream Name: Sandia National Laboratory/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris)		
(14) Description from the TWBIR: Heterogeneous RH debris from SNL/NM Hot Cell Facility D&D Project and other miscellaneous waste generators.					
(15) Defense TRU Waste:	YES	X	NO		
(16) Check One:	CH		RH	X	
(17) Number of SWBs: NA	(18) Number of Drums: NA		(19) Number of Canisters: 10^3		
(20) Batch Data report numbers supporting this waste stream characterization: See Characterization Information Summary (CIS) Correlation of Container Identification Numbers to Batch Data Report Numbers					
(21) List applicable EPA Hazardous Waste Numbers:[2] D004, D005, D006, D007, D008, D009, D011, D019, D022, D028, F002 and F005					
(22) Applicable TRUCON Content Numbers: SN 321					
(23)**Acceptable Knowledge Information**[1]					
[For the following, enter the supporting documentation used (i.e., references and dates)]					
Required Program Information					
(23A) Map of site: CCP-AK-SNL-500, Revision 4, November 30, 2011 Figures 1 & 2					
(23B) Facility mission description: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 4.2					
(23C) Description of operations that generate waste: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 4.4					
(23D) Waste identification/categorization schemes: CCP-AK-SNL-500, Revision 4, November 30, 2011 Sections 4.5.2 and 5.3					
(23E) Types and quantities of waste generated: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 4.5.1					
(23F) Correlation of waste streams generated from the same building and process, as applicable: CCP-AK-SNL-500 Rev. 4, November 30, 2011 Section 4.5.3					

(24) Waste certification procedures: CCP-TP-53, CCP RH TRU Waste Certification and WWIS/WDS Data Entry, Revision 10, April 25, 2011			
(25)Required Waste Stream Information			
(25A) Area(s) and building(s) from which the waste stream was generated: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 5.1			
(25B) Waste stream volume and time period of generation: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 5.2			
(25C) Waste generating process description for each building: CCP-AK-SNL-500, Revision 4, November 30, 2011 Section 4.4			
(25D) Waste Process flow diagrams: NA			
(25E) Material inputs or other information identifying chemical/radionuclide content and physical waste form: CCP-AK-SNL-500, Revision 4, November 30, 2011 Sections 5.3			
(25F) Waste Material Parameter Weight Estimates per unit of waste: See table entitled "Waste Stream SNL-HCF-S5400-RH Waste Material Parameters" of the Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH			
(26) Which Defense Activity generated the waste: (check one)			
	Weapons activities including defense inertial confinement fusion		Naval Reactors development
	Verification and control technology	X	Defense research and development
	Defense nuclear waste and material by products management		Defense nuclear material production
	Defense nuclear waste and materials security and safeguards and security investigations		
(27)Supplemental Documentation			
(27A) Process design documents: See C1013, C1014, C1016, C1017, I1002, P1003, P1004, P1044, U1004 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27B) Standard operating procedures: See C1041, I1002, I1024, I1028, I1031, I1033, I1034, I1035, I1036, I1039, I1040, I1046, I1048, M1014, M1020, P1101, U1009, U1012, in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27C) Safety Analysis Reports: See I1013, I1038, I1039, M1014, P1104, U1012 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27D) Waste packaging logs: See M1013, M1016, M1019, M1020, P1105 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27E) Test plans/research project reports: See C1012, I1002, I1004, I1005, I1006, I1007, I1009, I1010, I1012, I1020, I1021, I1022, I1028, I1031, I1032, M1014, P1001, P1002, P1004, P1005, P1006, P1007, P1008, P1009, P1010, P1011, P1012, P1014, P1016, P1018, P1019, P1020, P1021, P1022, P1025, P1026, P1027, P1033, P1034, P1035, P1036, P1037, P1038, P1039, P1040, P1045, P1046, P1047, P1048, P1051, U1001, U1002, U1009, U1011, U1012, U1014, U1022 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27F) Site databases: See C1005 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27G) Information from site personnel: See C1026 and C1037 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27H) Standard industry documents: See I1023, I1030, M1014, P1025, U1012 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27I) Previous analytical data: See C1021, C1027, DR1001, I1001, I1025, M1010, M1011, M1013, M1016, M1020, M1021, in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27J) Material safety data sheets: See I1030, M1007, P1102 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents			
(27K) Sampling and analysis data from comparable/surrogate Waste: N/A			

(27L) Laboratory notebooks: See I1007, I1022 in Summation of Aspects of AK Summary Report: Waste Stream SNL-HCF-S5400-RH AK Source Documents	
Confirmation Information[2]	
For the following, when applicable, enter procedure title(s), number(s) and date(s)	
(28)	Radiography: NA
(29)	Visual Examination: CCP-TP-500, Rev. 11, April 21, 2011

(30)Comments:
For a list of the waste characterization procedures used and date of the respective procedures see the list of procedures on the attached CIS.

Reviewed by AK Expert: YES [X] **Date: 11/30/11**

Reviewed by STR (if necessary): YES [X] NA [ ] **Date: 11/30/11**

Waste Stream Profile Form Certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

(31) Signature of Site Project Manager	(32) Irene Quintana Printed Name	(33) 12/06/2011 Date

NOTE: (1) Use back of sheet or continuation sheets, if required.
(2) If, radiography, visual examination were used to confirm EPA Hazardous Waste Numbers, attach signed Characterization Information Summary documenting this determination.
(3) This waste stream consists of 28 55-gallon drums that will be loaded into 10 RH canisters.

CHARACTERIZATION INFORMATION SUMMARY

WSPF # SNL-HCF-S5400-RH

Lot 1

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CCP Headspace Gas UCL_{90} Evaluation Form..... 004

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Reconciliation with Data Quality Objectives..... 008

CbS-001

CCP Characterization Information Summary Cover Page

Waste Stream #	SNL-HCF-S5400-RH	Lot #:	1
AK Expert Review:	Steve Schafer	Date:	11/28/2011
SPM Review:	Laura Nelson	Date:	11/30/2011

SPM signature certifies that through Acceptable Knowledge testing and/or analysis that the waste identified in this summary is not corrosive, ignitable, reactive, or incompatible with the TSDF.

A summary of the Acceptable Knowledge regarding this waste stream containing specific information about the corrosivity, reactivity, and ignitability of the waste stream is included as an attachment to the Waste Stream Profile Form. By reference, that information is included in this lot.

List of procedures used:

Headspace Gas Sampling and Analysis (HSG):

CCP-TP-093	Rev. 15	3/10/2011	CCP Sampling of TRU Waste Containers
CCP-TP-093	Rev. 16	9/7/2011	CCP Sampling of TRU Waste Containers
CCP-TP-106	Rev. 7	12/29/10	CCP Headspace Gas Sampling Batch Data Report Preparation
CCP-TP-173	Rev. 1	09/30/09	CCP Analysis of Gas Samples for VOCs by GC/FID
CCP-TP-175	Rev. 2	12/29/10	CCP Analysis of Gas Samples for VOCs by GC/MS
CCP-TP-175	Rev. 3	08/02/11	CCP Analysis of Gas Samples for VOCs by GC/MS

Visual Examination (VE):

CCP-TP-500	Rev. 10	12/29/10	CCP Remote-Handled Waste Visual Examination
CCP-TP-500	Rev. 11	04/21/11	CCP Remote-Handled Waste Visual Examination

Project Level Data Validation / DQO Reconciliation:

CCP-TP-001	Rev. 19	12/29/10	CCP Project Level Data Validation and Verification
CCP-TP-002	Rev. 23	12/29/10	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-003	Rev. 18	12/29/10	CCP Data Analysis for S3000, S4000, and S5000 Characterization
CCP-TP-005	Rev. 22	04/21/11	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 23	06/30/11	CCP Acceptable Knowledge Documentation
CCP-TP-530	Rev. 10	04/25/11	CCP RH TRU Waste Certification and WWIS/WDS Data Entry

WAP Certification:

CCP-PO-001	Rev. 20	06/16/11	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-510	Rev. 0	11/18/10	CCP/SNL Interface Document

WAC Certification:

CCP-PO-002	Rev. 26	7/14/2011	CCP Transuranic Waste Certification Plan

CIS-002

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream: # SNL-HCF-S5400-RH

Lot # 1

Container ID Number	Historical Container ID	NDA BDR or Radiological Characterization BDR	RTR BDR	VE BDR	Solids Sampling BDR	Solids Analytical BDR	Load Management/ Overpack Yes	Permit Required Headspace Gas BDR			Transportation BDR
								Sample	Analysis		
SNLNM005339	NA	SNLRHDTC11001	N/A	RHSNLVE100001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007007	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007008	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007009	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007010	NA	SNLRHDTC11001	N/A	RHSNLVE110002	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007011	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007020*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007021*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007023*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007024*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G	NA
SNLNM007119	NA	SNLRHDTC11002	N/A	SNLRHVE11010	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007118	NA	SNLRHDTC11002	N/A	SNLRHVE11010	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007116	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007117	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007115	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007113	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007112	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007019	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA	NA
SNLNM007026	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA	NA

* Containers are not eligible for certification as the radiological scaling factor has not been developed. These containers are included for the characterization WWIS/WDS module for the HSG data only.

Laura Nelson
Signature of Site Project Manager

Laura Nelson
Printed Name

11/30/2011
Date

CAS 3
CAS-003

CCP Headspace Gas UCL_{90} Evaluation Form

WSPF #: SNL-HCF-S5400-RH **Waste Stream Lot Number** 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (ppmv)	Mean (ppmv)	SD (ppmv)	UCL_{90} (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA Code
Benzene	Log	4	10	-0.06	-2.64	1.36	-2.05	10	2.30		
Bromoform	Log	0	10	-2.25	-4.24	1.08	-3.76	10	2.30		
Carbon tetrachloride	Log	0	10	-1.26	-3.26	1.09	-2.78	10	2.30		
Chlorobenzene	Log	0	10	-1.44	-3.43	1.09	-2.96	10	2.30		
Chloroform	Log	1	10	-1.04	-2.94	1.19	-2.41	10	2.30		
Cyclohexane [a]	Log	0	10	-0.88	-2.86	1.09	-2.39	10	2.30		
1,1-Dichloroethane	Log	0	10	-0.29	-2.30	1.09	-1.82	10	2.30		
1,2-Dichloroethane	Log	0	10	-0.89	-2.89	1.09	-2.41	10	2.30		
1,1-Dichloroethylene	Log	0	10	-1.34	-3.35	1.09	-2.87	10	2.30		
trans-1,2-Dichloroethylene	Log	0	10	-1.11	-3.10	1.09	-2.62	10	2.30		
Ethyl benzene	Log	6	10	1.59	-1.76	2.03	-0.88	10	2.30		
Ethyl ether	Log	0	10	-0.36	-2.38	1.09	-1.90	10	2.30		
Methylene chloride	Log	1	10	-0.89	-3.02	1.27	-2.46	10	2.30		
1,1,2,2-Tetrachloroethane	Log	0	10	-1.63	-3.62	1.08	-3.15	10	2.30		
Tetrachloroethylene	Log	0	10	-1.56	-3.55	1.09	-3.07	10	2.30		
Toluene	Log	8	10	1.76	-0.93	1.26	-0.38	10	2.30		
1,1,1-Trichloroethane	Log	0	10	-1.27	-3.26	1.09	-2.79	10	2.30		
Trichloroethylene	Log	0	10	-1.17	-3.17	1.09	-2.70	10	2.30		
1,1,2-Trichloro-1,2,2-trifluoroethane	Log	0	10	-1.80	-3.79	1.09	-3.31	10	2.30		
1,2,4-Trimethylbenzene[a]	Log	0	10	-1.37	-3.37	1.09	-2.89	10	2.30		
1,3,5-Trimethylbenzene[a]	Log	0	10	-1.27	-3.26	1.09	-2.79	10	2.30		
m/p-Xylene[b]	Log	7	10	2.71	-0.94	2.54	0.17	10	2.30		
o-Xylene	Log	7	10	1.39	-1.67	2.01	-0.79	10	2.30		
Acetone	Log	10	10	4.94	1.63	2.35	2.66	100	4.61		
Butanol	Log	4	10	1.85	-1.74	2.17	-0.79	100	4.61		
Methanol	Log	0	10	2.74	2.69	0.02	2.70	100	4.61		
Methyl ethyl ketone	Log	9	10	3.71	0.26	2.09	1.18	100	4.61		
Methyl isobutyl ketone	Log	5	10	2.64	-1.06	2.51	0.04	100	4.61		
Chloromethane[c]	Log	2	10	0.53	-2.14	1.48	-1.49	10	2.30		
Carbon Disulfide[a]	Log	3	10	-1.31	-2.80	1.04	-2.34	10	2.30		

CCP Headspace Gas UCL_{90} Evaluation Form

WSPF #: SNL-HCF-S5400-RH **Waste Stream Lot Number** 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (ppmv)	Mean (ppmv)	SD (ppmv)	UCL_{90} (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA Code
1,2-Dichloropropane[a]	Log	0	10	-1.01	-3.00	1.09	-2.53	10	2.30		
Trichlorofluoromethane[c]	Log	0	10	-1.17	-3.16	1.08	-2.69	10	2.30		

[a] These compounds are from the TRAMPAC and or CH TRUCON Appendix B and are flammable VOCs that do not appear in the QAPjP or the WIPP WAP. These are not part of the target analyte list, but samples may be analyzed for these compounds.

[b] These xylene isomers cannot be resolved by the analytical methods employed in the program. m-Xylene and p-Xylene will be reported as "Total m-p-Xylene."

[c] Noted analytes are not required but are reported by the Environmental Chemistry Laboratory at Idaho and are included on the UCL90 for completeness.

Comments:

(1) For analytes where there were no samples measured above the MDL value, 1/2 of the MDL value was used. (Per section C4 of the WAP, 1/2 of the MDL value is used in calculating the mean concentration.)

Laura Nelson
Signature of Site Project Manager

Laura Nelson
Printed Name

12/7/2011
Date

CCP Headspace Gas Summary Data

Waste Stream Number SNL-HCF-S5400-RH Lot Number (s) 1

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	% Detected
None	None	None	None

Data Supports EPA Hazardous Waste Numbers Assigned by AK? Yes ☑ No ☐

If no, describe the basis for assigning the EPA Hazardous Waste Codes:

SPM Signature Laura Nelson Date 12/7/2011

CCP RTR/VE Summary of Prohibited Items and AK Confirmation

Waste Stream Number: SNL-HCF-S5400-RH

Lot #: 1

Container Number	RTR Prohibited Items [a]	Visual Examination Prohibited Items [a]
See correlation of container ID numbers for list of remaining drum numbers in this Lot.	RTR was not used to certify any containers in this lot.	None of the containers in this Lot had prohibited items identified during Visual Examination technique.

a. See Batch Data Reports

Justification for the selection of RTR and/or VE: VE was selected as the characterization method for this lot because the containers were newly generated and met all the Data Quality Objectives for VE for waste stream SNL-HCF-S5400-RH

Laura Nelson

Site Project Manager Signature

Laura Nelson
Printed Name

12/7/2011
Date

CCP Reconcilliation with Data Quality Objectives

WSF# SNL-HCF-S5400-RH

Lot # 1

Sampling Completeness

VE
Number of Valid Samples: 15
Percent Complete: 100 (QAO is 100%)
Number of Total Samples Analyzed: 15

RTR
Number of Valid Samples: NA
Percent Complete: NA (QAO is 100%)
Number of Total Samples Analyzed: NA

NDA
Number of valid samples: 15
Percent Complete: 100 (QAO is 100%)
Number of Total Samples Analyzed: 15

HSG
Number of Valid Samples: 10
Percent Complete: 100 (QAO is ≥90%)
Number of Total Samples collected: 10

Total VOC
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples collected: NA
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples analyzed: NA

Total SVOC
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples collected: NA
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples analyzed: NA

Total Metals
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples collected: NA
Number of Valid Samples: NA
Percent Complete: NA (QAO is ≥90%)
Number of Total Samples analyzed: NA

CCP Reconcilliation with Data Quality Objectives

WSF# SNL-HCF-S5400-RH Lot # 1

	Y/N/NA	Reconcilliation Parameter
1	Y	Waste Matrix Code.
2	Y	Waste Material Parameter Weights.
3	Y	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	Y	The TRU activity reported in the BDRs for each container demonstrates with a 95% probability that the container of waste contains TRU radioactive waste.
5	N	AK Sufficiency. Is there an approved AK sufficiency Determination for this waste stream?
6	Y	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for each VOC in the HSG of each container were calculated and compared with the program required quantitation limits, as reported in CCP TP 003, Attachment 3, and additional Environmental Protection Agency (EPA) Hazardous Waste Numbers were assigned as required. Samples were randomly collected (when appropriate).
7a	NA	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for solids VOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003-Attachment 4, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.
7b	NA	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for solids SVOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP TP 003 Attachment 5, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.
7c	NA	Mean concentrations, (UCL90) values for the mean concentration, standard deviations, and the number of samples collected for total metals were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP TP 003 Attachment 6, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.

CCP Reconcilliation with Data Quality Objectives

WSF# SNL-HCF-S5400-RH Lot # 1

8	Y	The data demonstrates whether the waste stream exhibits a toxicity characteristic under Title 40 Code of Federal Regulations (CFR), Part 261, Identification and Listing of Hazardous Waste, Subpart C, Characteristics of Hazardous Waste.
9	Y	Does the waste stream contain listed waste found in 20.4.1.200 NMAC incorporating 40 CFR Part 261, Subpart D, Lists of Hazardous Wastes.
10	Y	Waste stream can be classified as hazardous or nonhazardous at the 90-percent confidence level.
11	Y	Appropriate packaging configuration and Drum Age Criteria (DAC) is applied and documented in the headspace gas sampling documentation, and the drum age met prior to sampling.
12	Y	TICs were appropriately identified and reported in accordance with the requirements of Section C3-1 of the QAPjP.
13	Y	The PRQLs for headspace gas VOCs were met for all analyses as evidenced by the analytical batch data reports.
14		The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in CCP-PO-001 Sections C3-2 through C3-9 prior to submittal of a waste stream profile form for a waste steam or waste stream lot.

	Completeness	Comparability	Representativeness
Radiography	NA	NA	NA
VE	Y	Y	Y
Headspace Gas Analysis	Y	Y	Y
Solids Sampling	NA	NA	NA
Solids VOCs	NA	NA	NA
Solids SVOCs	NA	NA	NA
Solids Metals	NA	NA	NA

Comments: N/A

Laura Nelson
Signature of Site Project Manager

Laura Nelson
Printed Name

12/7/2011
Date

SUMMATION OF ASPECTS OF AK SUMMARY REPORT:
WASTE STREAM SNL-HCF-S5400-RH

Overview:

Waste stream SNL-HCF-S5400-RH is Remote Handled (RH) mixed heterogeneous debris originally packaged during Sandia National Laboratories/New Mexico (SNL/NM) Hot Cell Facility (HCF) decontamination activities conducted from 1995 to 1997. The waste has been stored at the Manzano Bunkers located at Manzano Base within Kirtland Air Force Base and is being repackaged at the Auxiliary Hot Cell Facility (AHCF). This waste stream consists of organic and inorganic debris generated during the destructive and nondestructive examinations conducted in the HCF, and includes personal protective equipment (PPE) and plastic from decontamination and repackaging activities. The waste will be characterized by the Central Characterization Project (CCP) prior to shipment to the Waste Isolation Pilot Plant (WIPP).

WIPP requires generator sites to determine that Transuranic (TRU) waste streams to be disposed of at WIPP meet the definition of TRU defense waste. TRU waste is eligible for disposal at WIPP if it has been generated in whole or part by one of the atomic energy defense activities listed in Section 10101(3) of 42 U.S.C 10101, *Nuclear Waste Policy Act of 1982* (NWPA). Based on the review of Acceptable Knowledge (AK) there is sufficient evidence to demonstrate that TRU wastes generated by the HCF operations are contaminated with materials from atomic energy defense research activities associated primarily with projects conducted to support safety programs for reactors with defense missions.

The United States has historically operated and continues to operate reactors used for the development of nuclear energy technology. Additionally, these reactors have been utilized to produce radioisotopes for medical, industrial, and military purposes; to generate neutron environments for scientific research; and to conduct irradiation experiments in support of the government's defense, space, fusion, and advanced reactor programs. Collectively referred to as test and research reactors, these facilities have been typically operated by private contractors for the Department Of Energy (DOE). Mixed oxide, carbide, and alloy fuels for, or tests in, the DOE breeder reactor research and testing program were manufactured with plutonium obtained primarily from DOE production reactors at the Hanford and Savannah River Site (SRS) sites. DOE test and research reactor facilities include the Argonne National Laboratory – West (ANL-W) Experimental Breeder Reactor-II (EBR-II) and Hanford Fast Flux Test Facility (FFTF) reactors.

In 1967 the U.S. Atomic Energy Commission (AEC) initiated the Liquid Metal Fast Breeder Reactor (LMFBR) Program for developing and demonstrating fast breeder reactor technology for safe, reliable, and economical energy production. Critical to this demonstration program was the design, development, and construction or modification of facilities capable of manufacturing, testing, and examining these reactor materials. The ANL-W EBR-II and Hanford FFTF reactors were the most important facilities in the LMFBR Program. The FFTF was

constructed to produce higher neutron flux and testing capabilities than produced by EBR-II. Even though the primary mission of the DOE test and research reactors was focused on the development of commercial energy technology, the reactors had an underlying defense mission and ongoing defense research and development experiments were conducted in these facilities. The HCF supported the development of the LMFBR technology by conducting experiments to simulate core disruptive accident conditions utilizing irradiated EBR-II mixed oxide reactor.

EBR-II supported ongoing defense experiments conducted throughout the 30-year operating life of the reactor (1964-1994). In 1968-1969, the reactor was converted to a fast-reactor irradiation test facility. Test fuels and materials were placed in the core assemblies identical to those holding the driver fuel assemblies. In addition to supporting the LMFBR Program, numerous experiments were conducted for defense applications, including support of the Bettis Atomic Power Laboratory dedicated to supporting the Naval Nuclear Propulsion Program. Other defense program experiments conducted at EBR-II included radiation of thermionic elements and tritium production test materials. During its final year, experiments included a cooperative effort between Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) to demonstrate disposition of weapons plutonium in a fast reactor.

The EBR-II and FFTF reactors also supported the irradiation of experimental fuel pins manufactured at the LANL as part of the SP-100 Fuel Pin Irradiation Testing program during the late 1980s and early 1990s. This program, initiated in 1983, was jointly funded by National Aeronautics and Space Administration (NASA), DOE, and the Strategic Defense Initiative Organization (SDIO). The SDIO (better known as the "Star Wars" program) was established to pursue technology in the development of a viable and comprehensive ballistic missile defense program. The SP-100 program's objective was to verify and validate the design of a compact, fast-spectrum nuclear reactor fuel for a broad range of national defense-related space applications. SNL/NM was involved in the development of SDIO technology associated with the Fission Activated Laser Concept (FALCON) project conducted in Building 6580. This program involved the development of a high-power, steady state, nuclear reactor-pumped laser concept being developed for the DOE Defense Program.

SNL/NM involvement with the New Production Reactor (NPR) program tests were in support of research relating to the production of tritium for weapons production. Historically tritium was produced at the K Reactor and other reactors at the Savannah River Site (SRS). As the reactors were shut down, tritium production declined and halted altogether in 1988 when the K Reactor was shut down for safety upgrades. In the same year, DOE initiated the NPR project to develop a long term source of tritium to replace the aging K Reactor.

Many of the HCF experiments were irradiated in the Annular Core Research Reactor (ACRR). The ACRR is a pool type research reactor capable of pulsed operation, steady-state operation, and a tailored transient rod withdrawal operation. The reactor was designed to produce a high yield of high-energy neutrons in the central irradiation dry cavity and other experimental facilities over a very short time-range pulse. This reactor supported DOE and U.S. Department

of Defense (DOD) defense experiments, including the irradiation of components for defense programs and tritium production research.

Based on a review of the waste management practices in the HCF, commingling of the material from the defense related projects described above would have occurred. In addition to cross contamination introduced during the storage of test materials in common storage areas in the HCF, waste materials from ongoing process operations remained in the work areas and were repackaged and moved between areas during decontamination campaigns. Waste materials from the programs were combined during repackaging, contamination from cutting, grinding, and polishing activities and would also remain in the area contaminating surfaces and equipment. This contamination would remain in the area to commingle with wastes generated during subsequent examinations. Additionally, project tooling, equipment, and instruments were shared between projects resulting in further cross-contamination. As a result of the waste management practices and destructive analytical nature of the operations conducted in the HCF, segregation of cross-contaminated non-defense waste from defense-related waste is not feasible. Based on a review of the AK record, there was no generator documentation indicating the intentional segregation of materials originating from defense experiments from nondefense experiments. Therefore, waste stream SNL-HCF-S5400-RH is eligible for disposal at WIPP as a commingled defense waste stream generated "in part" by the atomic energy defense activities described in this section.

This Summation of Aspects supports Waste Stream Profile Form (WSPF) number SNL-HCF-S5400-RH and is based on *CCP-AK-SNL-500, Central Characterization Project Acceptable Knowledge Summary Report for Sandia National Laboratories/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris), Waste Stream: SNLHCF-S5400-RH, Revision 4.*

Waste Stream Identification Summary:

Waste Stream Name:	Sandia National Laboratories/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris)
Waste Stream Number:	SNL-HCF-S5400-RH
Waste Stream Volume, Current:	10 canisters [1]
Waste Stream Volume, Projected:	No future generation is expected
Generation Dates (Original HCF decontamination packaging)	1995 - 1998

[1] Waste has been repackaged into 10 canisters, containing 28 55-gallon drums with 30-gallon inner drums,

Summary Category Group:	S5000
Waste Matrix Code Group:	Heterogeneous Debris Waste
Waste Matrix Code:	S5400
TRUPACT-II Content Code (TRUCON):	SN 321
Annual Transuranic Waste Inventory Report Identification Number:	SA-W135

Waste Stream Description and Physical Form:

The Waste Isolation Pilot Plant Hazardous Waste Facility Permit - Waste Acceptance Plan (WIPP-WAP) defines a waste stream as waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity. Based on a review of the AK record and SNL/NM waste management practices, TRU debris waste from HCF decontamination operations was segregated to be managed as RH and CH waste streams. One CH TRU debris waste stream and one RH debris waste stream have been delineated based on the WIPP-WAP waste stream definition.

The basis and rationale for delineating this waste stream is as follows:

- Waste stream SNL-HCF-S5400-RH was generated by HCF research operations associated with pre- and post-irradiation examination experiments and the associated decontamination waste from the areas performing these experiments.

- Based on the review of the container documentation, the waste materials in waste stream SNL-HCF-S5400-RH consist predominantly of organic and inorganic debris materials with lesser amounts of homogeneous solids (e.g., vermiculite, Quik Solid, and Aquaset). Though the composition (e.g., cellulosics, plastic, metal) of the individual debris waste items vary between containers the materials are similar in physical form.

- Waste stream SNL-HCF-S5400-RH consists of the RH portion of the TRU waste inventory generated during the HCF decontamination process and has been characterized and delineated consistently with CH waste stream ID-SNL-HCF-S5400.

- Nuclear material storage, historic process operations, waste management, decontamination operations and subsequent waste management and repackaging operations resulted in the RH and CH TRU waste materials to be contaminated with similar radiological and chemical constituents. These containers have been segregated from the CH stream, solely due to elevated radiological content of these materials. Based

on review of the AK record the following resulted in comingling of chemical and radiological contamination in the TRU waste materials:

- Storage and frequent movement of the nuclear test materials in common HCF storage areas;
- Transfer of materials, specimens, equipment, and waste between research areas;
- Contamination from previous destructive experiments on research area surfaces and from waste from previous experiments stored in the area;
- Historic sharing of equipment between areas;
- Fume hood operations involving the preparation of experimental chemicals and the decontamination of equipment for HCF areas;
- Combination of RH waste parcels originating from CH repackaging operations conducted in the Radioactive and Mixed Waste Management Facility (RMWMF);
- The nature of the HCF decontamination program segregation of low-level, CH, and RH waste materials resulted in this RH waste stream containing predominantly post-irradiated experimental materials and contamination; and
  Cross contamination introduced during the final packaging of RH waste parcels in the same area in the AHCF.

Based on the rational above, waste stream SNL-HCF-S5400-RH meets the WIPP-WAP waste stream definition.

Waste stream SNL-HCF-S5400-RH consists of organic and inorganic debris generated during the destructive and nondestructive examinations conducted in the HCF, and includes PPE and plastic from decontamination and repackaging activities. The following are examples of materials in this waste stream:

Cellulosic: items including paper, paper wipes, cardboard, cotton coveralls, hoods, and gloves, HEPA filter media and frames, pre-filter frames, swipes, masslin cloth, vacuum cleaner bags and parts, absorbent pads, and wood chips.

Plastic: materials including PPE, Herculite cloth, bottles, jars, buckets, dishes, pipettes, tygon tubing, pipe, bags, filter cartridges, sheeting, vials, tape, synthetic mop head, and epoxy residue.

Rubber: items including non-leaded glovebox gloves, nitrile and latex gloves, gloves and booties, tubing, foam rubber, wire/cord insulation, O-rings, and gaskets

Other inorganic items: including glass jars, vials, lens, and other miscellaneous lab glassware; Absorbents including Aquaset, Quik-solid, and kitty litter types.

Metal items (ferrous materials): including stainless steel hardware; steel cans, buckets, foils, plates, trays, equipment, machinery, and electronics with steel parts, filters, tubing, fittings, rods, and tools.

Non-ferrous metals: including aluminum, brass, copper, lead, and silver. Items include foils, tools, wire, rods, tubing, fittings, gaskets, gauges, and plates.

In addition to the debris materials described above, waste stream SNL-HCF-S5400-RH may also contain lesser amounts (less than 50 percent in any container) of homogeneous organic and inorganic materials. (Note – homogeneous organic material was not specifically identified during compilation of the Waste Material Parameter (WMP) estimates, however AK indicates that it could be in the waste) Clay and vermiculite based absorbents are used during the neutralization and solidification of liquids. Solidification agents such as Quik Solid and Aquaset were also used to immobilize small amounts of unspecified acidic solutions. Although specific liquids are not Identified in container information, based on AK, solidified solutions may have included acidic and basic solutions such as nitric acid and sodium hydroxide, and solvents such as acetone,methanol, and methylene chloride.

Point of Generation: SNL/NM Building 6580, Decontamination of the HCF

Area and/or Building of Generation: Glovebox Laboratory (GBL), Steel Containment Boxes (SCBs), and Zone 2A of HCF

Generating Processes:

Description of Waste Generating Processes

The HCF in the basement of Building 6580 has been providing essential support for the reactor and other radiation facilities within TA-V since the early 1960s. In 1984, a major modification was conducted to provide additional hot cell facilities and systems in Building 6580 and to increase the capabilities of the existing HCF. The materials in waste stream SNL-HCF-S5400-RH were generated during historic experimental waste and associated decontamination of the HCF process areas. Contamination was the result of pre- and post-test processes associated with reactor fuel studies conducted in the GBL, SCBs, and Zone 2A of the HCF during the late 1970s to mid-1990s. These studies primarily involved the preparation of (Light Water Reactor) LWR and Liquid Metal Fast Breeder Reactor (LMFBR) experimental assemblies to be irradiated in the SNL/NM reactors to simulate severe accident scenarios. Following irradiation, the HCF capabilities allowed for post-irradiation examination of these assemblies. The data generated from many of these experiments was used by SNL/NM in the development of the Methods for Estimation of Leakages and Consequences of Releases (MELCOR) computer software that

models the complex physical phenomena that occur in a nuclear power plant accident. Work began on MELCOR in 1982, with the first widely distributed release of the software in 1989.

Details of HCF operations depend on specific experiment and project requirements. All involve either radioactive materials, fissile materials, or both. Types of operations conducted in the SCBs, Zone 2A, and the gloveboxes included packaging and unpackaging materials; loading materials into experiment packages; disassembly of irradiated and unirradiated packages and experiments containing radioactive or fissile materials; cutting, sectioning, coring, potting, mounting, grinding, polishing, and coating samples and materials for microscopic and other analytical examination; photography of samples; gamma counting and other radiation-emission analytical examinations; and physical properties measurements. Due to the research and development nature of the projects conducted in the HCF, development of a comprehensive process flow diagram was not feasible; however, the physical, chemical, and radiological properties of waste items was assessed to ensure that these items were consistent with the activities that were determined to generate TRU waste materials. The AK record was reviewed to compile a comprehensive list of chemicals and materials used during historic operations that may be contained in the waste stream.

Review of the AK record identified the primary research programs conducted in the SCBs, Zone 2A, and GBL described below. Waste from the SCBs and Zone 2A of the HCF primarily resulted from four experiments conducted from 1986 to 1993. These four experiments were: Melt Progression (MP) experiments, the Source Term (ST) experiments, the Damaged Fuel (DF) experiment, and the NPR experiments. The Fuel Disruption (FD), Effective Equation of State (EEOS), Sandia Transient Axial Relocation (STAR), and FALCON programs were primarily conducted in the GBL and adjacent supporting areas.

Melt Progression

The MP program included two experiments irradiated in the ACRR. MP-I was irradiated in 1989, and MP-2 was irradiated in 1992. These experiments were designed to investigate the successive melting and solidification of core materials found in a LWR during a severe accident. The initial geometry of the test section was built to simulate a partially degraded core based on the findings of the post-accident examination of Three Mile Island (TMI), Unit II core.

The MP project included the insertion of the test section into the experiment package, which was then subjected to a neutron field in the ACRR. The experiment simulated the continuation of a severe accident beyond the end stage of the TMI accident. Fission heating in the experiment simulated the fission product decay heating of a severe accident. The experiment was allowed to proceed until preset temperature limits on the supporting structures were reached or a preset fraction of the test section material had relocated due to damage. Waste

materials from the MP work include post-test preparation for metallurgical examination materials.

Source Term

The focus of the ST program was on the investigation of fission product release under severe accident conditions. Four short rods of non-irradiated fuel and four short rods of previously irradiated fuel were placed in a test section and neutronically heated 2,400 Kelvin to observe fission product release. The non-irradiated fuel rods were fabricated at Battelle Pacific Northwest Laboratories. The previously irradiated fuel was obtained from the Belgian Reactor 3 Reactor in Mol, Belgium, and was reworked in the HCF shielded glovebox. Several sample tubes with filters were sequentially opened and closed during the experiment to collect samples of the released substances. There were two tests run under this program, ST-I performed on April 28, 1987, and ST-2 performed on November 19, 1987. The materials from this program are those generated from the post irradiation examination. This examination for ST used the SCBs more extensively than any other program and included both a metallurgical examination and a chemical analysis of the filters from the sample tubes core.

Damaged Fuel

In general, the purpose of the DF program was to investigate the initial reaction of intact fuel rods during a severe accident sequence, specifically, a station blackout sequence. There were four tests in the DF experimental program. Of the four tests, only DF-4 included work in the SCBs or Zone 2A. In addition, DF-4 differed from the previous tests done in this series because the geometry of the test section was based on the boiling water reactor (BWR) geometry rather than the pressurized water reactor (PWR) geometry. The DF assembly included non-irradiated fuel enriched to 10% U-235 in zircaloy clad rods. The DF-4 experiment was irradiated on November 21, 1987, subjected to a neutron flux field in the ACRR for a period of approximately two hours. Waste included in this waste stream are those generated from the post-test preparation for metallurgical examination.

New Production Reactor

The primary goal of the NPR program tests was to assess the behavior of the fuel under transient, fuel melting conditions. The fuel was a uranium-aluminum alloy and produced significantly less particulate when cutting or polishing than the ceramic fuels. Four tests were conducted under this program, including one without radioactive materials to calibrate the thermal response of using a flooded ACRR cavity. Of the three remaining experiments, one was conducted with non-irradiated fuel and two with high burnup fuel.

All fuel used in the NPR experiments came from the SRS and was sectioned in HCF to generate samples for performing experiments in the ACRR. The non-irradiated fuel test was irradiated in the ACRR during November 1991, and the two tests using high-burnup fuel occurred between November 1991, and April 1992. Additional fuel cutting and repackaging was performed in the first quarter of 1996 so that the larger fuel section could be returned to the SRS as part of the HCF decontamination program. This additional work generated some contaminated equipment, lay-down material and fuel cuttings.

Fuel Disruption (also referred to as Fuel Dynamics)

The purpose of the FD experiments was to determine breeder reactor fuel behavior under a number of disruption models, such as cracking and breakup of solid fuel, liquid state frothing, and radial spray from molten fuel. Between 1977 and 1983, over 30 in-pile experiments were performed in the ACRR to investigate fuel disruption behavior for LMFBR loss of flow (LOF) accidents. In all experiments the timing and mode of the fuel disruption were observed with a high speed camera, enabling detailed comparisons with a fuel pin code, SANDPIN. The project involved the cutting of irradiated breeder reactor fuel. Most of the fuel was irradiated in the late 1960s and early 1970s in the EBR-II. Cutting of the fuel occurred in GB2 in an inert atmosphere, and was performed dry. Glovebox 1 was used to load the fuel pin segments into the test apparatus, prior to irradiation in the ACRR.

Effective Equation of State

The EEOS program consisted of a series of experiments designed to determine the effective vapor pressure from irradiated mixed-oxide reactor fuels heated in closed volume to a very high temperature, simulating LMFBR core disruptive accident conditions. A series of similar EEOS experiments involving unirradiated fuel were conducted in the GBL during 1982 and 1983. Planning of the irradiated fuel experiments began in 1986 and they were completed by 1993.

The experiments involved two separate assemblies containing a pressure cell and calorimeter. Assembly and fueling was done in HCF prior to irradiation at the ACRR. Fueling was performed in shielded glovebox GB9, with each experiment using 0.9 to 1.5 grams of fuel from an EBR-II irradiated pin. After irradiation, the assemblies were returned to HCF for disassembly and examination. Leak testing was conducted using a bell jar and mass spectrographic technique.

Sandia Transient Axial Relocation

The STAR program was a series of seven in-pile experiments conducted between 1983 and 1985. The objective of the STAR experiment program was to study the transient cladding and fuel relocation during the initiation phase of LMFBR hypothetical accidents. The STAR program

was an extension of the FD program that investigated the time and mode of fuel disruption during hypothetical LMFBR accidents.

In these experiments unprotected loss-of-flow accident conditions were simulated, and the accident-induced clad motion and fuel dispersal were recorded using high speed photography. Both unirradiated and irradiated EBR-II fuels were used in the STAR experiments. Assembly and disassembly of the test apparatuses involving single and multiple pins were done primarily in gloveboxes GB1 and GB2 in Room 112. Irradiation was performed at the ACRR.

Fission Activated Laser Concept

Sandia was the lead laboratory for the FALCON reactor-driven laser program from 1986 to 1995. The FALCON experiments were an SDIO defense program examining the feasibility of high power systems pumped directly by the energy from a nuclear reactor. In this concept, the highly energetic fission fragments from neutron-induced fission were used to excite a large-volume laser medium. Disassembly and reassembly of the experiment was done in the fume hood located in Room 112. Samples from the experiment were analyzed on the mass spectrometer in GB9. Fabrication of the fission foils containing enriched uranium used in the experiment were done in Room 203 and not included in this waste stream.

HCF Decontamination

During 1994, Scientific Ecology Group, Inc., prepared a Decontamination Plan for the HCF. The Decontamination Plan was intended to meet the SNL/NM requirements for decontamination, nuclear safety, As Low As Reasonably Achievable (ALARA), and waste management activities, by establishing a project organizational structure, levels of authority, and lines of communication.

This work was to be done as part of HCF routine operations and maintenance. The tentative acceptance criteria for the HCF were based on allowing future work in the area to be conducted with minimal protective clothing and reasonable stay-times. The tentative decontamination criteria were as follows:

- Removable Alpha Contamination — <100 disintegration per minute (dpm)/100 square centimeters (cm^2)
- Removable Beta-Gamma Contamination — <5,000 dpm/100 cm^2
- General Area Dose Rate — <5 milliroentgen equivalent man per hour (mrem/hr)

The Scope of Work for the Decontamination Plan included remediation of the following areas: Zone 2A; Zone 2 (also referred to as Rooms 111 and 112); reactor rooms 108 and 109; and room 212A, a small room located above reactor room 109. The work associated with Zone 2A included decontamination, dismantling, and removal of the SCBs followed by decontamination of the canyon surfaces. Other components in Zone 2A, including the overhead crane, crane rails, overhead components, and floor rails were scheduled to be removed, sectioned and packaged as required. Removal of the interior airlocks was also identified as part of the Zone 2A scope of work.

The primary task associated with rooms 108 and 109 involved the removal of sources of radioactive waste and loose surface contamination. Special consideration was given for the removal of high activity waste to an outside storage location. Zone 2 (Rooms 111 and 112) included the removal of shielded and low activity gloveboxes. This task included the removal of all debris and equipment from within the gloveboxes.

The nondestructive cleaning unit (NDC) was used sporadically during the HCF decontamination project to decontaminated equipment that was stored in the gloveboxes in Room 112, in the SCBs, and in the general HCF area. The NDC mobile decontamination facility was designed for cleaning hand tools, small parts, and larger items up to 4,000 lbs. The process could handle both metal objects and softer materials such as wood, plastics and rubber. The facility consisted of a decontamination room for cleaning larger objects, a decontamination cell (glovebox) for cleaning tools, small parts and fixtures, a count room, a liquid carbon dioxide (CO_2) storage vessel and compressor, and the ventilation/exhaust system. The decontamination room operated at a negative pressure of 1.5 inches of water vacuum to prevent airborne exhaust of radioactive materials.

The unit used dry compressed air to propel CO_2 pellets (dry ice) onto the contaminated surface. The pellets shatter, flash into dry CO_2 gas and undergo roughly a ten-fold increase in volume upon impact with the surface to be decontaminated. The cleaning action results from the rapidly expanding gas penetrating the surface of the item to be cleaned. Loose particles of contamination were flushed away by expanding gas. Dislodged microscopic particles were captured on the exhaust system air filter, and larger particles that were dislodged fell to the bottom of the containment area and were vacuumed away to dry air filters.

The unit's air filtration system consisted of three sets of filters in series. Ideally, the filters were replaced when the exposure rate at the external filter housing reached 25 mrem/hr, and exposure rates were not to exceed 200 mrem/hr.

RCRA Determinations – Hazardous Waste Determinations

Historical Waste Management

The assignment of these EPA HWNs was based on a review of the available AK documentation assessing chemical inputs to the hot cell operations to identify hazardous material potentially contaminating waste stream SNL-HCF-S5400-RH. In addition, material safety data sheets (MSDSs) and other manufacturer information were obtained for the commercial products to determine the presence of RCRA regulated constituents. The table below, titled Hot Cell Facility Chemical Identification and Use Summary, lists the specific chemicals identified and associated HWNs assigned to the waste stream.

Based on a review of SNL/NM historic waste management practices and characterization performed previously, the EPA HWNs assigned to HCF TRU waste containers have been maintained. The HWNs historically assigned to HCF decontamination TRU waste containers were D005 (barium), D006 (cadmium), D007 (chromium), D008 (lead), D011 (silver), and F005 (toluene). SNL/NM has historically characterized the HCF TRU debris waste on a container basis and segregated specific waste items containing or potentially mixed with hazardous constituents for on-site waste management purposes. The TRU debris waste from the HCF does consist of containers historically segregated by the generator into separate mixed and non-mixed waste streams based on the hazardous constituent identified for specific containers. However, the TRU waste materials originated from the same process and the waste population would have originally contained these items resulting in similar chemical and radiological contaminants in the TRU waste streams. For this reason, the assignment of EPA HWNs to waste stream SNL-HCF-S5400-RH considered the HWNs assigned by TRU waste generators to HCF TRU waste debris containers, in addition to the review of the AK record described below.

Hot Cell Facility Chemical Identification and Use Summary

Chemical/Material	Use/Description	AK Source	EPA HWNs
1,2-dichloroethane	Found in sample analysis of filters from Glovebox 6/7.	C1021, M1010	D028
1,1,1-Trichloroethane	Found in sample analysis of filters and materials from Gloveboxes 4/5 and 6/7. Used in the HCF.	M1010, P1104	F002
1,1,2-Trichloro-1,2, 2-trifluoroethane (Freon-113, Freon TF)	Found during sampling of the Tool Decontamination Unit (TDU) micro filter and TDU charcoal filter for Glovebox 9. Used as a solvent in the TDU. Used as a cutting lubricant in Gloveboxes 4-7 and 9. Found during the cleanup of Glovebox 4/5 and 6/7. Used as a coolant during drilling of test section from ST-1 and ST-2. Used as a lubricant for sample polishing for the Damaged Fuel Program and NPR Program.	C1021, M1010, P1015, P1102	F002
Arsenic	Found in sample analysis of materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood.	C1021	D004
Barium	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Fission product present in analysis of the ST-1 and ST-2 experiments.	C1021, M1010, P1018, P1025, P1046	D005*
Benzene	Found in sample analysis of materials from Glovebox 4/5. Used in the HCF.	C1021, M1010, P1104	F005
Brass	Items found during the cleanup of Gloveboxes 1, 2, and 4/5. Found during the cleanup of SCB 3. Materials present in 005940 TRU-HCF-97-06 C980391 and 005940 TRU-HCF-97-05 C980392.	M1010, M1013, P1015, P1102	D008
Cadmium	Cadmium filters and ring used in the pressure cell and the calorimeter for the EEOS experiments. Used in the HCF, possibly in the metal evaporator/coater. Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7, and 9, and the fume hood. Component of the control rod for the DF-3 experiment. Used in uranium alloy experiments. Present as tramp material in the aluminum alloys used in the New Production Reactor Program.	C1010, C1012, C1021, I1001, I1002, I1003, I1004, I1005, M1010, M1011, P1004, P1005, P1006, P1007, P1008, P1011, P1022, P1102, P1104	D006*
Carbon tetrachloride	Found in sample analysis of filters from Glovebox 6/7. Used in the unshielded gloveboxes.	C1021, M1010, P1104	D019
Chloroform (trichloromethane)	Used in the HCF.	P1104	D022
Chromel/Aluminel (nickel-chromium/nickel-magnesium-aluminum)	Wires used in thermocouples for EEOS, DFR, and ST-2 experiment.	I1004, I1019, I1028, U1012	D007

Chemical/Material	Use/Description	AK Source	EPA HWNs
Chromium	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Present as tramp material in the aluminum alloys used in the New Production Reactor Program. Present in the MP-2 prefabricated construction.	C1021, M1010, P1102	D007*
Chromium oxide	Used in the EEOS experiments.	P1001	D007
Lead	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Used for shielding in the HCF and in various experiments processed through the HCF. In the form of bricks, blankets, sheets, shot, pellets, wool, pigs, etc. Used as counter weights on manipulator arms. Found in analysis of filter material (HEPAs and prefilters). Used as shielding in the containment and filter structure for the EEOS experiments. Screens and filters used when performing gamma-ray tomography. Possibly present in solder pieces and in electrical components present in waste parcels.	C1021, I1001, I1002, , I1021, I1028, I1039, I1046, I1048, I1053, M1001, M1003, M1004, M1006, M1010, M1011, M1013, M1014, M1016, P1005, P1006, P1008, P1015, P1022, P1104, U1012	D008*
Methylene chloride	Found in sample analysis of filters and materials from Gloveboxes 4/5 and 6/7. Used in the HCF.	C1021, M1010, P1104	F002
Methyl ethyl ketone (MEK)	Found in sample analysis of materials from Gloveboxes 4/5 and 6/7. Used in the HCF.	C1021, M1010, P1104	F005
Mercury	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Mercury vapor lamps used in UV-ozone box in the HCF.	C1021, M1010, P1001	D009
Nichrome oxide	Component of mica used in the EEOS experiments.	P1001	D007
Pyridine	Used in the HCF.	P1104	F005
Silver	Found in sample analysis of filters and materials from Gloveboxes 4/5, 6/7 and 9, and the fume hood. Wire and coupons used in the ST-1 and ST-2 experiments. Parts used in construction of the ST-1 and ST-2 experiments. Component of the control rod for the DF-3 experiment. Present in the solder used in electronic parts in the HCF and in thermocouples for the EEOS experiments. Present in the Melt Progression Program test section. Possibly present in solder pieces and in electrical components present in waste parcels. Wire used for silver plating present in waste parcels.	C1021, I1004, I1005, I1023, I1039, I1053, M1010, M1013, M1016, P1004, P1007, P1011, P1015, P1022, P1025, P1102, P1104	D011*
Silver chloride	Used in the calibration solution for an ion-selective electrode.	P1102	D011
Silver nitrate	Used in the HCF.	P1104	D011

Chemical/Material	Use/Description	AK Source	EPA HWNs
Toluene	Used in the unshielded gloveboxes. Found in sample analysis of filters for Gloveboxes 6/7 and 9.	C1021, M1010, P1104	F005*
Trichloroethylene (trichloroethene)	Found in sample analysis of filters from Glovebox 6/7. Used to ultrasonically clean EEOS components. Used in the unshielded gloveboxes.	C1021, M1010, M1011, P1001, P1004, P1008, P1104	F002

*EPA HWN also assigned by the generator to containers in this waste stream.

Ignitability, Corrosivity, and Reactivity

The materials in this waste stream do not meet the definition of ignitability (D001) as defined in 40 CFR 261.21. The materials are not liquid and liquids were not added to containers during packaging. This material will not cause fire through friction, absorption of moisture, or spontaneous chemical changes, and procedures did not allow packaging of pyrophoric materials. This material is not a compressed gas or an oxidizer. Liquids are solidified with absorbent (i.e., Aquaset, Petroset). The materials in this waste stream are therefore not ignitable wastes (References P1015, M1016, and P1102).

The materials in this waste stream do not meet the definition of corrosivity (D002) as defined in 40 CFR 261.22. The materials are not liquid and liquids were not added to containers during packaging. In addition, absorbents (e.g., Aquaset, Petroset) were added to liquids when generated. . AK indicated that the HCF used absorbent to solidify nitric acid leachates and ion chromatography solutions. The materials in this waste stream are therefore not corrosive wastes (References P1015, M1016, and P1102).

The materials in this waste stream do not meet the definition of reactivity as defined in 40 CFR 261.23. The materials are stable and will not undergo violent chemical change. The materials will not react violently with water, form potentially explosive mixtures with water, or generate toxic gases, vapors, or fumes when mixed with water. Although sodium and sodium-potassium bonded fuel capsules were disassembled and examined, the sodium and sodium-potassium were removed and neutralized with alcohol (e.g., n-butyl alcohol) during capsule disassembly or examination. The materials do not contain cyanides or sulfides, and are not capable of detonation or explosive reaction. The materials are not liquid and liquids were not added to containers during packaging. The materials in this waste stream are therefore not reactive wastes (Reference P1104).

Based on SNL/NM waste management practices, the materials contained in waste stream SNL-HCF-S5400-RH do not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003) as defined in 40 CFR 261.21, 261.22, and 261.23, respectively. The containers

in this waste stream will be evaluated in accordance with the WIPP-WAP using visual examination prior to shipment to ensure the waste is not ignitable, reactive, or corrosive.

Toxicity Characteristic Constituents

Based on review of AK relative to inputs to the hot cell and glovebox operations conducted in the HCF, waste stream SNL-HCF-S5400-RH is contaminated with toxicity characteristic compounds as defined in 40 CFR 261.24. Where a constituent has been identified and there is no or limited quantitative data available to demonstrate that the concentration of a constituent is below regulatory threshold levels, the applicable EPA HWN is applied to the waste stream.

Heterogeneous debris waste from the HCF contains or is contaminated with toxicity characteristic metals. Based on the references identified in the preceding Hot Cell Facility Chemical Identification and Use Summary table, EPA HWNs D004, D005, D006, D007, D008, D009, and D011 are assigned to waste stream SNL-HCF-S5400-RH (References DR1001 and DR1003).

The AK sources identified the use of organic toxicity characteristic compounds, including benzene (D018), carbon tetrachloride (D019), chloroform (D022), 1,2-dichloroethane (D028), methyl ethyl ketone (D035), pyridine (D038), and trichloroethylene (D040). Trichloroethylene is identified as an F-listed solvent and is assigned EPA HWN F002. Specific uses were not found in the AK for benzene, methyl ethyl ketone, and pyridine, therefore EPA HWN F005 was assigned for these compounds. Because the more specific F-listed EPA HWN has been assigned for these compounds, assignment of the corresponding toxicity characteristic HWNs (D018, D035, D038, and D040) is not necessary. HWNs D019, D022 and D028 are assigned to waste stream SNL-HCF-S5400-RH (References DR1001, DR1003, C1021, M1010, M1011, P1001, P1004, P1008, P1015, P1102, and P1104).

F-Listed Constituents

Based on review of AK relative to inputs to waste stream SNL-HCF-S5400-RH, this waste stream may contain or be mixed with F-listed hazardous wastes from nonspecific sources listed in 40 CFR 261.31. As shown in the preceding Hot Cell Facility Chemical Identification and Use Summary table , F002 and F005 listed solvents were used in operations conducted in the HCF. F001 constituents, including methylene chloride, 1,1,1-trichloroethane, trichloroethylene, 1,1,2-trichloro-1,2, 2-trifluoroethane, and carbon tetrachloride were used in HCF operations. However, EPA has provided a regulatory clarification that the F001-listing is only appropriate when listed solvents are used in a large-scale degreasing operation, such as cold cleaning or vapor degreasing on an industrial scale. This waste was not generated from large-scale

degreasing operations, and therefore, EPA HWN F001 will not be assigned to the waste stream. F003 constituents, including acetone, butyl alcohol, ethanol, methanol, methyl isobutyl ketone, and xylene are listed solely because these solvents are ignitable in liquid form. The waste stream does not exhibit the characteristic of ignitability because it is not liquid; therefore, F003 is not assigned. Waste stream SNL-HCF-S5400-RH is assigned F-listed EPA HWN F002 for methylene chloride, 1,1,1-trichloroethane, trichloroethylene, and 1,1,2-trichloro-1,2, 2-trifluoroethane. Waste stream SNL-HCF-S5400-RH is also assigned F-listed HWN F005 for benzene, methyl ethyl ketone, pyridine, and toluene. Trichlorofluoromethane (Freon-11) was used as a fuel simulant, not as a solvent, and therefore HWN F002 was not assigned for this chemical (References DR1001, C1004, C1021, M1010, M1011, P1001, P1004, P1008, P1015, P1102, and P1104).

No specific solvent use was identified for some F-listed constituents. If documentation is not available to demonstrate a non-solvent use for an F-listed constituent, the F-listed EPA HWN is assigned to the waste stream. For this reason, the appropriate F-listed EPA HWN has been assigned for chemicals identified in facility inventories for chemicals that are commonly used for their solvent properties.

P-, U-, and K-Listed Wastes

Based on review of AK relative to inputs to the HCF process, decontamination, and waste repackaging operations, waste stream SNL-HCF-S5400-RH does not contain and is not mixed with a discarded commercial chemical product, an off-specification commercial chemical product, or a container residue or spill residue thereof as defined in 40 CFR 261.33 (References DR1001, DR1003, I1042, I1053, M1016, and P1101).

Beryllium was in the HCF in the form of an oxide. The identified source of beryllium in the AK record indicates that solid beryllium oxide was used as a thermocouple insulator in DFR experiments. Since beryllium powder, was not utilized the waste stream does not meet the definition of P015 as defined in 40 CFR 261.33 (References DR1001, DR1003, I1042, I1053, M1016, and P1101).

The review of the AK source documentation did not identify the disposal of unused hydrofluoric acid (U134) or disposal of materials contaminated with spills of this acid; therefore the EPA HWN U134 is not assigned to waste stream SNL-HCF-S5400-RH.

Waste stream SNL-HCF-S5400-RH does not include any of the manufacturing process wastes from the specific industries or sources listed in 40 CFR 261.32. Waste Stream SNL-HCF-S5400-RH is not assigned any U-, K-, or P-Listed EPA HWNs.

Other Waste Streams generated From the Same Buildings and Processes

There is an identically generated contact-handled waste stream ID-SNL-HCF-S5400.

Polychlorinated Biphenyls

No sources of polychlorinated biphenyls (PCBs) were identified as inputs into waste stream SNL-HCF-S5400-RH. PCB items, such as light ballasts, are not identified in the RH TRU debris waste (Reference M1016).

Prohibited Items

Based on a review of AK, waste stream SNL-HCF-S5400-RH potentially could contain the following prohibited items:

- Unpunctured aerosol cans (e.g., spray paint cans)
- Prohibited liquids
- Sealed containers exceeding 4 liters (e.g., buckets, bottles, cans)

The containers in this waste stream will be evaluated in accordance with the WIPP-WAP using visual examination prior to shipment to ensure the waste does not contain prohibited items. Waste drums with prohibited items will be treated and/or repackaged to remove the items prior to shipment

Method for Determining Waste Material Parameter Weights Per Unit of Waste

The WMP weight percentages for this waste stream were estimated by reviewing the container paperwork. Since container paperwork did not always indicate weights for individual items placed in a parcel or drum, these weights were estimated based on the waste description. For most parcels, the net weights were taken from the SNL Radioactive Waste/Nuclear Material Disposition Department Radiological Form included in the DR documentation. A few parcels had other Disposal Request documentation that was viewed as more accurate so that was used. The WMP data are presented in the following table.

Waste Stream SNL-HCF-S5400-RH Waste Material Parameters

Waste Material Parameter	Average Weight Percent (Wt%)	Wt% Range[1]
Iron-based Metals/Alloys	62.1%	3.0% - 95.0%
Aluminum-based Metals/Alloys	10.1%	1.0% - 100.0%
Other Metals	3.8%	1.0% - 80.0%
Other Inorganic Materials	7.7%	0.1% - 100.0%
Cellulosics	5.6%	0.5% - 50.0%
Rubber	1.6%	0.5% - 11.1%
Plastic (waste materials)	8.3%	0.5% - 50.0%
Inorganic Matrix	0.8%	3.3% - 10.0%
Organic Matrix	0.0%	0.0% - 0.0%
Soils/Gravel	0.0%	0.0% - 0.0%
Total Inorganic Waste Average	**84.5%**	
Total Organic Waste Average	**15.5%**	

[1.] Range includes lowest non-zero estimated values for parcels prior to repackaging

List of AK Sufficiency Determinations

There are no AK sufficiency determination requests for this waste stream.

Transportation

This waste stream meets the requirements for TRUCON code SN 321.

Beryllium

Beryllium oxide was in the HCF as an insulator in some thermocouples. The identified sources of beryllium in the AK record do not indicate that significant quantities of beryllium were utilized. Based on the identified presence and use of beryllium, beryllium is not expected to exceed one percent in any payload container.

Radionuclide Information

To compile a summary of generator reported radionuclide data for waste stream SNL-HCF-S5400-RH, DR forms were reviewed for historical NDA data for the 32 waste parcels originally presented to comprise the waste stream. (Note – After initial development of the Reported Radionuclides Table, several parcels were determined not to be RH, but the Table was not updated because the changes would not have been significant.) The table, Waste Stream SNL-HCF-S5400-RH Reported Radionuclides, below indicates the waste is contaminated mainly with cesium (Cs-137), strontium (Sr-90), and cobalt (Co-60), and lesser quantities of americium (Am-241 and Am-243), plutonium (Pu-238, Pu-239, Pu-240, and Pu-242), uranium (U-234, U-235, and U-238), cesium (Cs-134), and thorium (Th-234).

Payload management will not be utilized for this waste stream.

Waste Stream SNL-HCF-S5400-RH Reported Radionuclides

Radio-nuclide	Number of Parcels with Report-ed Radio-nuclide	Total Radio-nuclide Weight %[1,5]	Total Radio-nuclide Curie %[2,5]	Radionuclide Wt% Range for Individual Parcels[3,5]	Radionuclide Ci% Range for Individual Parcels[4,5]	Average Ci/Parcel	Expected Present
WIPP Required Radionuclides							
Am-241	32	0.85%	1.24%	0.2 - 3.87%	Trace[5] - 4.72%	6.03E-02	Yes
Pu-238	31	0.07%	0.50%	0 - 4.57%	0 - 1.28%	2.45E-02	Yes
Pu-239	32	17.66%	0.47%	4.7 - 95.31%	Trace - 2.09%	2.27E-02	Yes
Pu-240	18	0.18%	0.02%	0 - 8.75%	0 - 0.05%	8.47E-04	Yes
Pu-242	4	0.02%	Trace	0 - 29.33%	0 - 0.04%	1.31E-06	Yes
U-233	Not Reported						No
U-234	4	0.12%	Trace	0 - 0.14%	0 - Trace	1.51E-05	Yes
U-238	4	54.25%	Trace	0 - 64.76%	0 - Trace	3.78E-07	Yes
Cs-137	32	1.59%	59.25%	0.2 - 88.85%	44.57 - 96.97	2.87E+00	Yes
Sr-90	32	0.38%	21.94%	0.0 - 7.28%	1.36 - 47.24	1.06E+00	Yes
Additional Radionuclides							
U-235	4	24.78%	Trace	0 - 29.57%	0 - Trace	1.11E-06	Yes
Am-243	2	Trace	Trace	0 - 1.25%	0 - 0.10%	1.92E-06	Yes
Co-60	22	0.03%	12.90%	0 - 7.67%	0 - 54.02	6.26E-01	Yes
Th-234	2	Trace	Trace	0 - Trace	0 - Trace	3.11E-07	Yes
Cs-134	27	Trace	0.02%	0 - Trace	0 - 0.45%	8.84E-04	Yes

1. This listing indicates the total weight percent of each radionuclide over the entire waste stream.
2. This listing indicates the total activity (curie) percent of each radionuclide over the entire waste stream.
3. This listing is the weight percent range of each radionuclide on a container-by-container basis. Some containers with "0" listed as the lower range, will not contain the specified radionuclide.
4. This listing is the curie percent range of each radionuclide on a container-by-container basis.
5. "Trace" indicates <0.01 weight percent or activity percent for that radionuclide.

AK SOURCE DOCUMENTS

Tracking Number	Title	Document Number	Date
C1001	Memo from Gwendolyn J. Pirtle to Charles G. Thomas, David S. Barber, and Carlos S. Medrano re: Hot Cell Facility Decontamination	NA	05/04/1995
C1002	Letter from Ted R. Schmidt, Manager of Reactor Development and Applications Department, to A.R. Chernoff re: Sandia Hot Cell Facility Operational Safety Requirements Addendum	NA	12/12/1990
C1003	Memos relating to the Nondestructive Cleaning Rental and H&S Information	NA	1995
C1004	Reactor Accident Experiments and Funding	NA	Summer 1978
C1005	Memo from Cathy A. Ottinger re: Candidate Auxiliary Hot Cell Facility Containers	NA	02/09/1999
C1006	Memo from F. Gonzalez and D. Fenstermcher to S. Wright re: Loading of Experiment FD4.4 and FD4.5	NA	11/17/1982
C1008	Memo from D.M. Haaland to R.L. Coats re: High Temperature Equation-of-State Studies of Fast Breeder Reactor Fuels: Evaluations Summary	NA	08/14/1975
C1009	Memo from K.T. Stacicer to Picard re: Radiometric Temperature Measurement	NA	02/12/1983
C1010	Memos, re: SRSC, ACRR, ACPR, RCSC, & ACPR Meeting Minutes; TRAN-GAP Fuel Loading Procedure and Approval; Fuel Loading Procedures for Exp in Bldg. 6597; Removal and Encapsulation of ST-1 Fuel Assembly; ST-1 Cutting Procedure; Handling Procedures for WLM Ex	C010	04/75 to 1989
C1011	Memo: Explosive Valves in the ST-2 Experiment	C011	November 2, 1987
C1012	Memos: draft Section 5 and 6 of the ARSR quarterly reports	C012	February 1983

Tracking Number	Title	Document Number	Date
C1013	Memo: Suggested Instrumentation for the Fuel Disruption Tests.	NA	January 13, 1982
C1014	Memos: Working Document for Preliminary DFR Test Section Design Concepts; DFR Visual Diagnostics; Preliminary Calculations for the DFR Steam System.	C014	September 28, 1981
C1015	Memo: Hydrogen Flow in DFR-PWR Experiments	C015	February 10, 1984
C1016	Memo: Fission Product Release Rates for Proposed DFR Pre-Irradiated Fuel Experiments	C016	December 22, 1982
C1017	Memo: Preliminary Evaluation of Pre-Irradiated Fuel Experiments for the DFR Program	C017	February 7, 1983
C1018	Sandia Hot Cell Facility Operational Safety Requirements Addendum and associated memos	SAND88-1723 Addendum	12/12/1990
C1019	Memo from J. A. Reuscher re: Handling and Accountability of Special Nuclear Materials in TA-V	NA	02/15/1979
C1020	Memo from Susan Bourcier, SNL to Manny Trujillo and Tanio Hake re: ST 1/2 SNM Accountability Closeout	NA	06/20/1995
C1021	Memo from Susawn Longley to File re: Characterization of waste from Glove Box 9	NA	02/05/1997
C1022	Memo from Michael Enghauser to Susan Longley re: Characterization of HCFRW1, HCFRW5, and KC95-02	NA	09/11/1996
C1023	Memo from Susan Longley to Sherron Hirdman re: Transuranic activity levels in waste from glove boxes 1/2 and 9	NA	02/12/1997
C1024	Memo from Michael Enghauser to Susan Longley re: Characterization of GB1CAN1, GB1CAN2, GB1CAN3	NA	09/12/1996
C1025	Memos Concerning a 2 kg. Pu-239 puck to be transferred from SNL to LANL.	NA	03/01/1995
C1026	Memo Concerning Revision to SNLA Application for Acceptance of LLW at NTS	NA	09/09/1994

Tracking Number	Title	Document Number	Date
C1027	Memo Concerning Management Readiness Review of Pu Repackaging Project at the RMWMF	NA	11/02/2000
C1028	Memo Concerning Independent Surveillance Report	NA	06/28/1995
C1029	Memo Concerning Area V Hot Cell Glove Box Waste Characterization	NA	07/18/1995
C1030	Memo Concerning the Characterization of Samples LSAs #1573 (19000902), #1560 (19000903), #1559 (19000904), #1572 (19000905), #1564 (19000906), and #1575 (19000910)	NA	01/28/2002
C1031	In-Pile Vapor Pressure Measurements on UO_2 and $(U, Pu)O_2$	KfK3939	08/1985
C1032	Preparation of Gas Sampling Cylinders for Waste Packaging at the TA-V Hot Cell Facility (HCF)	005963	07/31/1997
C1033	Characterization of Sample LSA Box 1561	NA	08/01/2001
C1034	Characterization of Samples SAF-T-drums #503047 (19000907) and #503048 (19000908)	NA	01/29/2002
C1035	Characterization of Sample Metal Shield and Bracket/Cavity (19000909)	NA	01/30/2002
C1036	Status of Sandia's Disposition Program	NA	07/15/1996
C1037	Ken Reil Interview; Betty Humphrey	NA	2/19/2008
C1038	Ken Reil Interview; John Kleckner	NA	2/3/2010
C1039	Waste Material Parameter Memorandum for Waste Stream SNL-HCF-S5400-RH	NA	2/1/2010
C1040	Memo re: Changes to SRS-NPR Irradiated Fuel Sample Cutting Instructions; Letter from SRS to Argonne, re: Information on the MK22/K-13 Fuel Assemblies; SNL Memo, re: Closeout of Modification/Expenditure Form No. 2691 (XR2 recovered depleted fuel pellets)	NA	1991; 09/12/1989
C1041	Memos re: Falcon Experiment procedure; Summary of Action Items from August 2, 1984 Meeting; Modification of Hot Cell Bell Jar/Mass Spec	NA	08/03/1984; 1986

Tracking Number	Title	Document Number	Date
C1042	Memorandum to Ines Triay: Determination and Findings, Defense Origin of Nuclear Waste, Kerr-McGee Waste	NA	4/15/2005
C1043	Memorandum to CCP Central Records, Evaluation of Kerr-McGee Fuel Production and FFTF History	NA	6/28/2004
C1047	Record of Communication between J. Kleckner and T. Mojica regarding RH final packaging configuration	NA	2/21/2011
DR1001	Discrepancy resolution for the assignment of EPA Hazardous Waste Numbers	NA	02/15/2011
DR1002	Discrepancy Resolution for Container #P1110154 (Parent Container C980313)	NA	04/21/2011
DR1003	Discrepancy Resolution: Assignment of EPA Hazardous Waste Numbers	Revision 1	8/12/2011
I1001	EEOS Mass of Cadmium, Lead, and Remaining Package	NA	NA
I1002	Experiment Plan for Effective Equation of State (EEOS) Experiments with Irradiated Fuel	I002	January 1986
I1003	Design of EEOS Pressure Cell and In-Pile Calorimeter	NA	NA
I1004	Damaged Fuel Relocation (DFR) Experiment DF-2: Results and Analyses	SAND86-1441	December 1989
I1005	Damaged Fuel Experiment DF-4: Test Result Report	NA	NA
I1006	Summary of Heating Conditions and Disruption for Each Fuel Disruption Experiment	NA	October 1981
I1007	Fuel Disruption Notes: FD1, FD2, HRR, FF and IF FF	NA	NA
I1009	Fuel Disruption Experiment Plan for the FD2/4 Series	NA	July 1981
I1010	ACRR Source Term Tests, Project Overview	NA	NA
I1011	ST-2 Operation Checklist	Number 19 through 21	11/19/1987
I1012	Star-5 Quick Look Report	NA	06/27/1985

Tracking Number	Title	Document Number	Date
I1013	STAR-6 Very Short Quick Look Report	NA	NA
I1014	Non Destructive Cleaning, Mobile Decontamination Unit, Narrative Log	NA	08-01-1995
I1015	Effective Equation of State Experiments	5222	NA
I1016	ACRR Source Term Experiments, Program Overview	NA	NA
I1017	Annular Core Research Reactor Experiment Plan	NA	08/26/1983
I1018	Project/ Experiment Quality Plan for Damaged Fuel Relocation (DFR)	Form RREP-II-5-1	06/01/1983
I1019	Annual Core Pulse Reactor Experiment Plan for EEOS with Report (EEOS Experiments)	NA	03/31/1975
I1020	Analysis of the DF-1 Experiments using SCDAP	I020	August 1985
I1021	Damaged Fuel Relocation (DFR) Experiments Damage Fuel (DF) Series ACRR Experiment Plan	I021	July 1983
I1022	Handwritten Notes of a proposal for an Experimental Program	NA	NA
I1023	Catalog pages of Hardware for the Source Term Experiments	NA	NA
I1024	Detailed ST-2 Procedures and Gas Manifold Operations; ST-1 Procedures for Gas Manifold Operation; Procedure for Gas Manifold Operation for ST-2	NA	November 1987
I1025	Project/Experiment Quality Plan for ACRR Source Term Experiments	RREP-II-5-1	March 1986
I1026	Severe Accident Source Term Information Needs and Capabilities	NA	April 9-11, 1984
I1027	Notes of Ken Reil regarding severe accident experiments.	NA	August 27, 1982
I1028	Damaged Fuel Relocation (DFR) Experiments: Damaged Fuel (DF) Series DF-2 ACRR Experiment Plan	NA	August 1984
I1030	Hot Cell Facility (HCF) Decontamination Plan	NA	December 13, 1994

Tracking Number	Title	Document Number	Date
I1031	DF-2 Experiment Quick Look Report	NA	NA
I1032	Notes describing the differences between DF-1 and DF-2 Experiments	NA	NA
I1033	Procedures for Gas Manifold Operation, Leak Rate Measurement (Room 107 and Hot Cell) and Back Fill Operations for ST-1.	NA	NA
I1034	ST-1 Procedures in Hot Cell	NA	NA
I1035	Hot Cell Requirements for the Source Term Experiments	NA	NA
I1036	Safe Operating Procedures for Source Term Outside Cask Handling Operations	NA	NA
I1037	Operational Safety Requirements for the Hot Cell Facility	NA	September 24, 1986
I1038	Safe Operating Procedures for the Hot Cell Facility in the Basement of Building 6580	NA	December 1986
I1039	ST-1 Filter Wire Analysis Procedures	NA	NA
I1040	HCF Procedures for the Recovery of the Fuel/Target and gas sample bottles from the NPR C Series	NA	April 6, 1992
I1041	AHCF Campaign Planning Procedure	AP/AHCF-CT/04-001	NA
I1042	Work Instructions for Repackaging TRU Waste at Sandia National Laboratories/New Mexico DRAFT	SNL-WP-001, R0	NA
I1043	New Production Reactor Program QA Manual	NA	08/28/1992
I1044	Quality Assurance Program Experiment Requirements Annular Core Research Reactor Facility	NA	NA
I1045	Core Operating Documents: Administrative Procedures, Instructions, Guidelines, and Directives	AHCF/AP/01	12/01/04
I1046	Characterization of Excess Lead	6432 OP-03-002	August 6, 2003
I1047	Radioactive Material Handling and Storage	6782 AP/04-001	05/27/2005

Tracking Number	Title	Document Number	Date
I1048	Lead Characterization and Repackaging	CHAR/AHCF COP/2004-01	NA
I1049	Radioactive Material Inventory Control Procedure	NDC-OP-2	July 24, 1995
I1050	Decontamination Operation Procedure	NDC-OP-1	08/01/1995
I1051	Equipment Decontamination Request Instruction	NDC-INST-1	07/28/95
I1052	NDC Instruction Facility Maintenance Request Instruction	NDC-INST-2	07/20/1995
I1053	Transuranic Waste Repackaging Plan	NA	04/30/2008
I1054	Radioactive Material Handling and Storage in the RML	RML-AP-001	NA
M1001	Sandia National Laboratories Primary Hazard Screening (PHS)	SNL9A00349-007	07/08/2003
M1002	Sandia National Laboratories Primary Hazard Screening (PHS)	PHS Number: SNL9A00349-006	05/19/2003
M1003	Hazards Analysis (HA): Hot Cell Facility	SNL9A00349-006	May 27, 2003
M1004	Radiological Survey Form for Post Job and Lead Brick Release and associated supporting data	NA	03/22/1996
M1005	NDC Operations Logs, Decontamination Operations Checklists, Equipment Decontamination Requests	NA	1995 through 1996
M1006	Completed Equipment Decontamination Requests; Radiological Work Permits; Decontamination Operations Checklists, etc. for NDC Trailer	NA	1995
M1007	Collection of MSDSs	NA	Various
M1010	Disposal Request #005934	NA	March 31, 1998
M1011	Disposal Request #005934	NA	March 31, 1998
M1012	AHCF Instrument and Detection Slides	NA	NA
M1013	Review of TRU Disposal Requests: 001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080	NA	NA

Tracking Number	Title	Document Number	Date
M1014	Readiness Assessment Plan for the Non-Destructive Cleaning Mobile Decontamination Unit	NA	July 20, 1995
M1015	Miscellaneous Articles and Public Extracts	NA	1976 to 2008, not inclusive
M1016	TRU waste Disposal Requests	NA	Various
M1019	Collection of Spreadsheets listing initial HCF CH and RH TRU waste Invetories and Miscellaneous Data	NA	Various
M1020	Process Knowledge Evaluations (PKE) for radiological ratios (e.g., PKE00044 and PKE00047)	NA	Various
M1021	Memo to Record, re: Evaluation of Radionuclide Activity Ratios for Hot Cell Facility Wastes (PKE00044 and PKE00047); Memo to Record, re: PKE000047 Radionuclide Activity Ratios	NA	06/24/2004; 06/24/2004
P1001	Contamination Control in Sandia Equation of State Experiments	SAND80-1277	October 1980
P1002	In-Pile Calorimetry in the Joint Sandia/KfK Equation of State Experiments on Nuclear Fuel	SAND80-2575	February 1981
P1003	A Model for Effective Equation of State of Irradiated Fast Reactor Fuel	NA	July 9, 1991
P1004	Joint In-Pile Equations of State Series on Nuclear Fuels at Sandia National Laboratories	SAND80-1794	November 1980
P1005	Vapor Pressure Measurements on Liquid Uranium Oxide and (U,Pu) Mixed Oxide	NA	January 1989
P1006	Measurements of the Total Pressure from Irradiated (U,Pu) Mixed Oxide	NA	August 1990
P1007	Proceedings of the International ANS/ENS Topical Meeting on Thermal Reactor Safety, Results of the ACRR-DFR Experiments	ISBN Number 0-89448-121-5 Volume 3	February 2-6, 1986
P1008	In-Pile Vapor Pressure Measurements on $(U)O_2$ and $(U,Pu)O_2$	Kfk 3939	August 1985
P1009	Analysis of Mixed Oxide Fuel Irradiated in EBR-II Measured as Predicted Burn-Up	HEDL-TME 77-60, UC-79b	May 1978

Tracking Number	Title	Document Number	Date
P1010	In-Pile Determination of Fuel Disruption Mechanisms under LMFBR Loss of Flow Accident Conditions		October 1985
P1011	The DF-4 Fuel Damage Experiment in ACRR with a BWR Control Blade and Channel Box	NUREG/CR-4671, SAND86-1443	November 1989
P1012	Fuel-Disruption Experiments Under High-Ramp-Rate Heating Conditions	NUREG/CR-3662, SAND81-0413	October 1983
P1013	Technical Safety Requirements for the Auxiliary Hot Cell Facility	SAND2003-4491	February 2004
P1014	Fission Rates, Burnup, and Neutron Flux-Fluence-Spectra Characterization for Mixed Oxide Fuel Experiments in the EBR-II	HEDL-TME 75-74, UC-79b,d	January 1976
P1015	Sampling and Analysis Plan for Characterization of Waste Arising From Hot Cell Facility Glovebox Decontamination	PLA 95-28	October 12, 1995
P1016	In-Pile Observation of Fuel and Clad Relocation During LMFBR Core-Disruptive Accidents	SAND 86-1416	April 1989
P1018	Fission Product Release and Fuel Behavior of Irradiated Light Water Reactor Fuel Under Severe Accident Conditions, The ST-1 Experiment	NA	November 1990
P1019	DOE Reactor-Pumped Laser Program	SAND93-27196	NA
P1020	FALCON Reactor-Driven Laser Experiments Show Potential	NA	October 1991
P1021	Fission Activated Laser as Primary Power for CW Laser	SAND93-1524C	December 1993
P1022	Damaged Fuel Experiment DF-1	SAND86-1030	January 1990
P1023	Design and Performance Characteristics of the Annular Core Research Reactor	SAND79-0129C	1978
P1024	Utilization of the Sandia ACRR as a Fast Reactor Safety Test Facility	SAND79-0109A	1978
P1025	ACRR Fission Product Release Tests: ST-1 and ST-2	SAND88-0597C	August 1988
P1026	LMFBR Mixed Oxide Fuels Development Semi-Annual Report, July-December 1975	HEDL-TME 76-24	February 1976

Tracking Number	Title	Document Number	Date
P1027	Fabrication, Irradiation, and Post-Irradiation Examination of Mixed Oxide Fuel Pins, PNL-3-23, 27, and 33	HEDL-TME 76-6	January 1976
P1028	Leak Path Factor Evaluation: A MELCOR Application for Nonreactor Nuclear Facilities	WSRC-MS-2004-00296	NA
P1029	Highly Enriched Uranium Working Group Report on Environmental Safety and Health Vulnerabilities Associated with the Departments Storage of Highly Enriched Uranium	DOE/EH-0525	December 1996
P1030	Plutonium, The First 50 Years	NA	NA
P1031	Modifications to MELCOR for the Analysis of Heavy-Water Moderated, U-Al Fuel Reactors	WSRC-MS 90-9	May 11, 1990
P1032	Uncertainty Analyses Using the MELCOR Severe Accident Analysis Code	NA	NA
P1033	Guernsey Fast Reactor Safety Topical In-Pile Observations of Fuel and Clad Relocation During LMFBR Initiation Phase Accident Experiments, The STAR Experiments	SAND 85-1279C	NA
P1034	Visual Observations of Fuel Disruption in In-Pile LMFBR Accident Experiments	SAND 81-2246C	NA
P1035	Analysis of In-Pile Fuel Disruption Experiments	SAND78-0363C	February 1978
P1036	Visual In-Pile Fuel Disruption Experiments	SAND 78-0515C	NA
P1037	First Visual In-Pile Fuel Disruption Experiments	SAN 78-0266C or SAND 78-0622	NA
P1038	Visual Investigation of Reactor Fuels Response to Simulated LOF Heating Conditions, First Series	SAND79-0940	October 1979
P1039	Fuel Disruption Mechanisms Determined In-Pile in the ACRR	SAND83-1750	September 1984
P1040	In-Core Fuel Disruption Experiments Simulating LOF Accidents for Homogeneous and Heterogeneous Core LMFBRs: FD2/4 Series	SAND82-0136C	NA
P1041	Sandia National Laboratories/New Mexico Environmental Information Document, Volume II	SAND99-2022/2	September 1999

Tracking Number	Title	Document Number	Date
P1042	Sandia National Laboratories/New Mexico, Environmental Information Document, Volume I	SAND99-2022/2	September 1999
P1043	Summary of MELCOR 1.8.2 Calculations for Three LOCA Sequences (AG, S2D, and S3D) at the Slurry Plant	SAND93-2042	March 1994
P1044	The Department of Energy's Tritium Production Program	RL30425	November 2, 2001
P1045	LWR Severe Core Damage Phenomenology Program Plan – Volume I: Melt-Progression Phenomenology and Damaged Fuel Relocation Programs	NUREG/CR-2725 and SAND82-1115	November 1982
P1046	Summary Report: Special Committee on Source Terms	NA	September 1984
P1047	NPR/FCI EXO-FITS Experiments Series Report	SAND91-1544	January 1993
P1048	MELCOR 1.8.0: A Computer Code for Nuclear Reactor Severe Accident Source Term and Risk Assessment Analysis	SAND90-0364	January 1991
P1049	MELCOR 1.8.1 Assessment: ACRR Source Term Experiments ST-1/ST-2	SAND91-2833	April 1992
P1050	Project Plan: Fabrication of ACRR Fuel Rods	TD1699	January 14, 1983
P1051	The Global Nuclear Future, The Next Era of Nuclear Power		Spring 2002
P1100	Programmatic Waste Acceptance Criteria	POL-95-01	October 7, 1997
P1101	Waste Handling	FOP 00-02	June 26, 2006
P1102	Building 6580 Hot Cell Facility, Steel Containment Boxes and Zone 2A Process Knowledge Documentation: Isotope Production Program, Hot Cell Facility Decontamination Project	NA	June 26, 1996
P1104	Hot Cell Facility (HCF) Safety Analysis Report, Main Report and Appendices	SAND94-2650	10/21/1994
P1105	Series of Plans/Procedures beginning with *Appendix A-AHCF Campaign Plan: Characterization and Repackaging of TRU Waste Containers – C980373, C980379, C980380, C980396*	AHCF-AP-003.02	8/30/2010
U1001	Star 1 Quick Look Report	U001	November 29, 1983

Tracking Number	Title	Document Number	Date
U1002	Star -7 Data Report	U002	July 1987
U1004	Plan for ACRR Source Term Experiments	U004	NA
U1009	DFR TLM Demonstration Test	NA	September 4, 1983
U1010	Radionuclide Release from Severely Damaged Light Water Reactor Fuel, Annular Core Research Reactor Inpile Test Program Plan	SAND84-1582	July 1984
U1011	Reassessment of the Technical Bases for Estimating Source Terms (Draft Report for Comment)	NUREG-0956	July 1985
U1012	ST-2 Experiment Plan, Corrections, and Appendix of Instrumentation, also includes QAP and SOP	NA	October 19, 1987
U1014	The USNRC Severe Fuel Damage Research Program	NA	NA
U1015	Task Quality Plan for the Transient Fuel and Target Performance Cask	TWP No. 2840.131	04/30/1991
U1021	Collection of Modifications/Expenditures of Nuclear Materials Forms Pertaining to C0, C3, C6, NPR/ACRR, and SRS/NPR and Nuclear Radioactive Material Transfer Forms	NA	07/09/1991 thru 06/10/1992, not inclusive
U1022	Procedure for STAR Experiments; STAR Handling Procedures	NA	not dated; 1984
U1025	Instructions: NPRP Instruction for SRS Fuel Element Cutting; SRS-NPR Irradiated Fuel Sampling Cutting Instructions; SRS-NPR Unirradiated Fuel Sampling Cutting Instructions	NA	1990; 07/03/1991; 1991
U1026	Procedure for fabricating uranium oxide fission foils by electrodeposition	NA	1986
U1027	Procedures: Glovebox Clean-up Procedure; Bldg 6580/rm 203 procedure for coating Aluminium Oxided Tubes with Uranium	NA	NA
U1028	Procedure for DF experiment	NA	NA
U1029	CCP Calc Package: SNLRH-01, Sample Data Input Check Calc-PKE00044	SNL-RH-01	05/06/2011

Tracking Number	Title	Document Number	Date
U1030	CCP Calc Package: SNL-RH-02, Scaling Factor Development-PKE00044	SNL-RH-02	05/06/2011
U1031	CCP Calc Package: SNL-RH-03, Determination of Reportable Radionuclides – PKE00044	SNL-RH-03	05/06/2011
U1032	CCP Calc Package: SNL-RH-04, Drum Dose-to-Curie Derivation for Cs-137	SNL-RH-04	05/27/2011
U1033	CCP Calc Package: SNL-RH-05, Uncertainty Analysis for Drums – PKE00044	SNL-RH-05	05/27/2011
U1034	CCP Calc Package: SNL-RH-06, DTC and Related Calculations for Drums – PKE00044	SNL-RH-06	06/01/2011

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1	JOOI	0000000000	☐	☑
1	LEDFORW	0000000000	☐	☑
1	PETERSK	00671	☐	☑
1	TURNERC	01170	☐	☑
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1	BIEDSCJ	00900	☑	☐
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1	JOOI	0000000000	☐	☑
1	LEDFORW	0000000000	☐	☑
1	PETERSK	00671	☐	☑
1	TURNERC	01170	☐	☑
1	ZBRYKK	00900	☑	☐
2	HUMPHR	00671	☐	☑

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1	LEDFORW	0000000000	☐	☑
1	PETERSK	00671	☐	☑
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1	LEDFORW	0000000000	☐	☑
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1	JOOI	0000000000	☐	☑
1	LEDFORW	0000000000	☐	☑
1	PETERSK	00671	☐	☑
1	TURNERC	01170	☐	☑
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AK4

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	**Source Document Tracking Number:** C2004
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	**Category:** ☑ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a]: Waste Stream Conatiner Evaluation Memorandums	
Source Document Reference Information (author(s), document and revision number, date, publisher): J. Kleckner, NA, NA, 6/9/2014, CCP	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR6, WS1, WS2, WS3, WS6, WS8, WS9, WS10, S4, S16	Throughout	e-file(s): C2004 add containers memo to SNL-HCF-S5400-RH 6-9-2014.pdf Per CCP-TP-005, Memo to SPM documenting the evaluation of containers to be aded to waste stream SNL-HCF-S5400-RH.

Source Document Data Limitations (if any):

1. None

Acceptable Knowlege Expert:

Elizabeth Lickliter, Elizabeth Lickliter Date: 6/10/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

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WASTE STREAM CONTAINER EVALUATION MEMORAMDUM

To: Irene Joo, CCP SPM

From: John Kleckner, CCP AKE

Date: June 9, 2014

RE: Addition of containers to Waste Stream SNL-HCF-S5400-RH from repackaging Campaign 11

The purpose of this memorandum is to satisfy the requirements of CCP AK Documentation procedure (CCP-TP-005, Rev. 26, Section 4.10) for updating AK for the addition of waste stream containers.

After the initial identification, characterization, and subsequent shipment to WIPP of containers in waste stream SNL-HCF-S5400-RH (documented in AK Summary Report CCP-AK-SNL-500 Rev.4), additional potential RH waste was identified. This material is described as fuel examination waste (FEW) generated from the Hot Cell Facility that SNL managed as accountable material. An extensive initial container evaluation was performed by Steve Schafer dated 10/30/2013 (C2001). The AK Summary report was subsequently revised (Rev. 5) in January 2014 to include the FEW waste.

Repackaging of the FEW waste to meet WIPP disposal and transportation requirements is ongoing at the AHCF under packaging Campaigns 11, 12, and 14. After each packaging campaign, source document C2004 will be appended with an additional memorandum evaluating the new containers for addition to waste stream SNL-HCF-S5400-RH.

The parent containers repackaged during Campaign 11 consisted of nineteen containers with Mixed Oxide (MOX) material and contained experiment assemblies associated with Sandia's Fuel Disruption (FD) experiment series. Eighteen of the experiment assemblies were contained in shielded casks, known as Fuel Disruption (FD) casks, which were over-packed in 55-gallon drums and weighed approximately 1500 lbs. One experiment package was contained in a 30 gallon drum. The experiment assemblies weigh approximately 60 lbs. The casks, 55-gallon and 30-gallon drums from the parent containers were not contaminated, so they were not added to the waste stream. Since the SNL Material Control and Accountability (MC&A) kept records of the specific fuel and quantities in each of the FEW containers, radiological characterization was developed independently of the original containers in waste stream SNL-HCF-S5400-RH and is described in CCP-AK-SNL-501. Table 1 lists the drums generated during packaging Campaign 11 and the associated parent containers, as well as a description of the contents of each daughter container. These containers will be added

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to the AK Tracking Spreadsheet. Table 2 summarizes key information of the parent containers.

Based on review of the container documentation (M2021), campaign plans (P2002), VE BDRs generated during packaging of these drums, and radiological characterization developed from MC&A data, the containers are bounded by the current revision of the AK Summary Report for the following:

- Waste generation location and process
- Time period of generation
- Physical form compared to the assigned Waste Material Parameters and waste matrix code
- Chemical content
- Prohibited items
- Radionuclides

Table 1. FEW Containers Added to SNL-HCF-S5400-RH

Drum ID	Campaign #	Package Date	Vent Date	Parent Container(s)	VE Waste Description
SNL001401 (30-gallon drum)	11	3/5/14	3/5/14	C00210018, C00210014, C00186636, C00187138, C00186629, and C00210023	DRUM BAG, PRESSURE TRANSDUCERS, HARDWARE, O-RINGS, MIRROR MOUNTING BRACKETS, MIRRORS, LIGHT BULBS, LAMP ASSEMBLIES, FUEL PELLETS AND PIECES, FUEL MOUNTING FIXTURES, QUARTZ WINDOWS, LIGHT BULB MOUNTING BASE, WIRE, PRESSURE SOLENOID VALVES, CONTAINER LABELS, EYE BOLTS, ASSEMBLY HOUSINGS, BREACHED AND EMPTY BAGS, TAPE, WIPES
SNL001402 (30-gallon drum)	11	3/13/14	3/13/14	C00210015, C00210033, C00210021, C00210024, C00210026, and C00210022	PRESSURE TRANSDUCERS, VALVE ASSEMBLIES, HARDWARE, QUARTZ WINDOWS, LAMP ASSEMBLIES, MIRROR MOUNTING BRACKETS, MIRRORS, LIGHT BULB MOUNTING BASES, LIGHT BULBS, ASSEMBLY HOUSINGS, O-RINGS, FUEL PELLETS AND PIECES, FUEL MOUNTING FIXTURES, WIRE, BREACHED AND EMPTY BAGS, PRESSURE VALVES, CONTAINER LABELS
SNL001403 (30-gallon drum)	11	3/26/14	3/26/14	C00210011, C00210016, C00210017, C00186124, C00191876, C00191470, and C00186919	DRUM BAG, HARDWARE, PRESSURE TRANSDUCERS, VALVE ASSEMBLIES, QUARTZ WINDOWS, LAMP ASSEMBLIES, MIRROR MOUNTING BRACKETS, MIRRORS, LIGHT BULB MOUNTING BASES, PRESSURE VALVES, OPEN AND EMPTY PIPE, ASSEMBLY HOUSINGS,. FUEL PELLETS AND PIECES, O-RINGS, FUEL MOUNTING FIXTURES, LIGHT BULBS, WIRE, CONTAINER LABELS, ELECTRIC MOTORS, EYE BOLTS, BREACHED AND EMPTY BAGS, OPEN AND EMPTY CONTAINMENT

Table 2. FEW Parent Containers

Parent Container	Campaign #	Fuel Source (SFNID/Fuel Name)	Fuel Descriptions(s) or Designators(s)	Experiments	Disposal Request (DR)#	Container Type
C00186124	11	415/PNL MOX Fuel	Rod segments - PNL MOX Fuel	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55 gallon drum
C00186629	11	415/PNL MOX Fuel	Rod segments - PNL MOX Fuel	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55 gallon drum
C00186636	11	415/PNL MOX Fuel	Rod segments - PNL MOX, PNL 09-44	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55 gallon drum
C00186919	11	415/PNL MOX Fuel	Fuel pin parts and pellets from PNL MOX fuel - PNL 10-74	Fuel Disruption (FD)	none*	30-gallon drum
C00187138	11	415/PNL MOX Fuel	Rod segments - PNL MOX Fuel	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55 gallon drum
C00191470	11	415/PNL MOX Fuel	Rod segments - PNL MOX, PNL 09-44	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55-gallon drum
C00191876	11	415/PNL MOX Fuel	Rod segments - PNL MOX Fuel	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55-gallon drum
C00210011	11	416/PNL MOX Fuel	Fuel pin sections/pellets from SLA (LANL) fuel & PNL 09-44	Fuel Disruption (FD) (HRR-5)	none*	FD shielded cask overpacked in 55-gallon drum

Parent Container	Campaign #	Fuel Source (SFNID/Fuel Name)	Fuel Descriptions(s) or Designators(s)	Experiments	Disposal Request (DR)#	Container Type
C00210014	11	416/PNL MOX Fuel	Fuel pin sections/pellets from SLA (LANL) fuel & PNL 11-18	Fuel Disruption (FD) (HRR-2)	none*	FD shielded cask overpacked in 55-gallon drum
C00210015	11	416/PNL MOX Fuel	MOX fuel "debris", PNL 10-12; includes experimental hardware	Fuel Disruption (FD), FD-2.6	004969	FD shielded cask overpacked in 55-gallon drum
C00210016	11	416/PNL MOX Fuel	MOX Fuel, PNL 09-65; includes experimental hardware	Fuel Disruption (FD), FD-2.8	005087	FD shielded cask overpacked in 55-gallon drum
C00210017	11	416/PNL MOX Fuel	Pellets and fuel pin parts from Fresh fuel & PNL 10-12	Fuel Disruption (FD) 2.4	none*	FD shielded cask overpacked in 55-gallon drum
C00210018	11	416/MOX Fuel (KFK)	MOX fuel pellets, KfK; includes experimental hardware	Fuel Disruption (FD), FD-4.5	007154	FD shielded cask overpacked in 55-gallon drum
C00210021	11	416/PNL MOX Fuel	MOX fuel pin sections, PNL 11-18; includes experimental hardware.	Fuel Disruption (FD), FD-4.1	004967	FD shielded cask overpacked in 55-gallon drum
C00210022	11	416/PNL MOX Fuel	MOX fuel, PNL 10-74; includes experimental hardware.	Fuel Disruption (FD), FD-4.3	004966	FD shielded cask overpacked in 55-gallon drum
C00210023	11	416/PNL MOX Fuel	Pellets and fuel pin sections from SLA (LANL) fuel & PNL 11-18	Fuel Disruption (FD) (HRR-3)	none*	FD shielded cask overpacked in 55-gallon drum
C00210024	11	416/PNL MOX Fuel	MOX fuel, PNL 10-74; includes experimental hardware	Fuel Disruption (FD), FD-4.2	004965	FD shielded cask overpacked in 55-gallon drum

Parent Container	Campaign #	Fuel Source (SFNID/Fuel Name)	Fuel Descriptions(s) or Designators(s)	Experiments	Disposal Request (DR)#	Container Type
C00210026	11	416/PNL MOX Fuel, FD-2.7	MOX Fuel, PNL 09-65; includes experimental hardware	Fuel Disruption (FD), FD-2.7	004968	FD shielded cask overpacked in 55-gallon drum
C00210033	11	416/PNL MOX Fuel	Fuel pin sections/pellets, SLA (LANL) & PNL 09-44 fuels	Fuel Disruption(F) (HRR-4)	none*	FD shielded cask overpacked in 55-gallon drum

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Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	**Source Document Tracking Number:** P1100
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	**Category:** ☐ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☑ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a]: Programmatic Waste Acceptance Criteria	
Source Document Reference Information (author(s), document and revision number, date, publisher): J. Jones, POL-95-01, Rev. 1, October 7, 1997, Sandia National Laboratories	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR5, PR8, WS6, WS12, S16	Throughout	The purpose of this document is to provide Waste Management personnel with information necessary to ensure that wastes generated at SNL/NM can be managed in a safe and environmentally compliant manner. This document accomplishes this purpose by compiling existing WAC that currently apply to specific waste types generated at SNL/NM. This document lists acceptance criteria for the following waste types managed at SNL/NM: • Hazardous waste, including: Hazardous waste as defined by state and federal regulations, Biohazardous and etiological (infectious) waste, Polychlorinated biphenyls (PCB) waste, Asbestos waste, Explosive waste, Chemical waste; • Radioactive waste, including low-level waste, transuranic waste, naturally-occurring, and accelerator produced radioactive material; • Mixed waste, having both a hazardous component and a radioactive component; • Commercial waste and construction/demolition debris, including wastes that can be disposed of in commercial or municipal sanitary landfills. The WAC are presented in five sections: • Waste Characterization Requirements • On-Site Chemical Waste Management • On-Site Radioactive and Mixed Waste Storage • Receipt of Hazardous, Radioactive and Mixed Waste From Off-Site Facilities • Commercial Waste and Construction/Demolition Debris

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Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: P1100

Waste Stream Number(s): SNL-HCF-S5400-RH

Source Document Data Limitations (if any):

1. Appears to have been approved after this waste stream was originally generated.

Acceptable Knowlege Expert:

Kevin J. Peters, Kevin J. Peters

Print /Sign

Date: 1/12/14

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

File Services

Title: (0001) Programmatic Waste Acceptance Criteria
Summary: 10-7-97
Description: Insures waste generated at SNL is managed safely.
Keywords: Waste, Safety, Hazardous Materials, Waste Acceptance Criteria (WAC), Radiation
Handle: File-304
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ENVIRONMENTAL SAFETY AND HEALTH CENTER

PROGRAMMATIC WASTE ACCEPTANCE CRITERIA

Author:

Arthur Shanks for J.J. — 10/8/97
Joe Jones, Waste Management — Date

Recommended Approval:

Jeffery F Jary — 10-8-97
Jeff Jary, Waste Management — Date

Francine Vigil — 10-8-97
Francine Vigil, Waste Management — Date

10/8/97
Gabriel King, Waste Management — Date

Arthur Shanks — 10/8/97
Arthur Shanks, Waste Management — Date

Boyd Hamilton — 10/8/97
Boyd Hamilton, Compliance and Metrics — Date

Approved:

10/9/97
Barbara Botsford, Manager, Waste Management — Date

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ACRONYMS

AFB	Air Force Base
ASTM	American Society for Testing and Materials
BTU	British Thermal Unit
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
CWDR	Chemical/Material Waste Disposal Request
DOE	U. S. Department of Energy
DOE/AL	DOE Albuquerque Office
DOT	U.S. Department of Transportation
EPA	U. S. Environmental Protection Agency
ES&H	Environment, Safety and Health
EWDR	Explosive Waste Disposal Request
HazCat	Hazard Categorization
HBWSF	High Bay Waste Storage Facility in Building 6596
HEPA	High Efficiency Particulate Air
HOC	Halogenated organic compounds
HSWA	Hazardous and Solid Waste Amendments of 1984
HWMF	Hazardous Waste Management Facility
ISS	Interim Storage Site
KOP	Knowledge of process
LDR	Land Disposal Restrictions
LLW	Low-level radioactive waste
LSA	Low specific activity
MBA	Material Balance Area
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NRC	Nuclear Regulatory Commission
OD	Open Detonation
ORM	Other Regulated Material
PCB	Polychlorinated biphenyl
ppm	parts per million
PVC	Polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RMMA	Radioactive Material Management Area
RMWMF	Radioactive and Mixed Waste Management Facility

ACRONYMS (Continued)

S&A	Sampling and analysis
SASN	Silver acetylide/silver nitrate
SMO	Sample Management Office
SNL/CA	Sandia National Laboratories/California
SNL/NM	Sandia National Laboratories/New Mexico
SNM	Special Nuclear Material
SOP	Standard Operating Procedure
SWTF	Solid Waste Transfer Facility
TBD	To be determined
TC	Toxicity Characteristic
TCLP	Toxicity Characteristic Leaching Procedure
TG	Treatability Group
TNT	Trinitrotoluene
TOX	Total organic halogen
TRU	Transuranic
TSCA	Toxic Substances Control Act
TTF	Thermal Treatment Facility
WAC	Waste acceptance criteria

Commonly Used Units of Measurement

mrem/hr	millirem/hour (dose rate) rem (rad equivalent man)
Ci	curie (activity)
mR/hr	milliRad/hour (exposure rate)

1. INTRODUCTION

1.1 Purpose

The purpose of this Sandia National Laboratories/New Mexico (SNL/NM) Programmatic Waste Acceptance Criteria (WAC) document is to provide Waste Management personnel with information necessary to ensure that wastes generated at SNL/NM can be managed in a safe and environmentally compliant manner. This document accomplishes this purpose by compiling existing WAC that currently apply to specific waste types generated at SNL/NM.

The Waste Management policy at SNL/NM addresses the requirements of the following:

- The U. S. Department of Energy (DOE),
- Hazardous waste regulations, and
- Solid Waste Management regulations

The WAC, has been established through review and incorporation of requirements from the following documents:

- Environmental permits and permit applications
- Environmental assessments
- Environment, Safety and Health (ES&H) documents
- Other specific published policy statements.

1.2 Audience

The principal audience for this document is SNL/NM Waste Management personnel and personnel concerned with the storage, treatment, or disposal of particular waste types generated or managed at SNL/NM.

1.3 Scope

The Programmatic WAC document lists acceptance criteria for the following waste types managed at SNL/NM:

- Hazardous waste, including:
  - Hazardous waste as defined by state and federal regulations
  - Biohazardous and etiological (infectious) waste
  - Polychlorinated biphenyls (PCB) waste
  - Asbestos waste
  - Explosive waste
  - Chemical waste
- Radioactive waste, including low-level waste, transuranic waste, naturally-occurring, and accelerator produced radioactive material;
- Mixed waste, having both a hazardous component and a radioactive component;

- Commercial waste and construction/demolition debris, including wastes that can be disposed of in commercial or municipal sanitary landfills.

The generators' administrative requirements are more completely described, for the benefit of the generators, in the SNL/NM ES&H Manual, Chapter 19.

1.4 Organization of the Programmatic WAC Document

This document lists the WAC for SNL/NM. The WAC are presented in five sections:

- Waste Characterization Requirements
- On-Site Chemical Waste Management
- On-Site Radioactive and Mixed Waste Storage
- Receipt of Hazardous, Radioactive and Mixed Waste From Off-Site Facilities
- Commercial Waste and Construction/Demolition Debris

A glossary in the last section provides definitions of many of the terms used in this document.

1.5 Data Sources

The data presented in this document have been compiled from numerous sources. Restrictions and requirements stated in the permit applications, relevant documentation, and operating procedures for the following on-site Waste Management facilities have been reviewed and included:

1. Hazardous Waste Management Facility (HWMF)
2. Toxic Substances Control Act (TSCA) Waste Management units
3. Thermal Treatment Facility (TTF)
4. Technical Area (TA)-III Interim Storage Site (ISS)
5. Radioactive and Mixed Waste Management Facility (RMWMF) Complex
6. High Bay Waste Storage Facility, Building 6596 (HBWSF)
7. Manzano Storage Facilities Bunkers:

   — 37034
   — 37045
   — 37055
   — 37057
   — 37063
   — 37078
   — 37118

8. Solid Waste Transfer Facility

1.6 Modification of the WAC Listed in this Document

SNL/NM may make exceptions to this WAC for its on-site Waste Management units on a case-by-case basis. Exceptions to WAC must be in the form of a memo to the Waste Management (WM) Department Manager with a signature line for approval. The memo must describe the waste, state the reason for the exception, state the length of time for the exception, and provide assurance that all remaining facility requirements are adhered to. The memo must then be approved by the WM Department Manager and maintained in the facility file.

2. WASTE CHARACTERIZATION REQUIREMENTS FOR HAZARDOUS, RADIOACTIVE AND MIXED WASTE

2.1 General Guidelines

Hazardous, radioactive, and mixed waste generators are required to provide waste characterization data on a disposal request as a requirement for transferring the waste to SNL/NM Waste Management. For hazardous and other chemical wastes, the Chemical Waste Disposal Request (CWDR) form or the Explosive Waste Disposal Request (EWDR) form is used. For radioactive and mixed wastes, the Disposal Request for Radioactive or Mixed Waste form or the Traveler is used. Each generator of radioactive and mixed waste may document the accumulation of waste at his location using the SNL/NM Accumulation Traveler and Disposal Request Form (Traveler) [SF 2042-TRA (1094)]. The use of the traveler is mandatory for low-level radioactive waste destined for disposal at the Nevada Test Site.

Knowledge of Process (KOP) or Sampling and Analysis (S&A) are acceptable methods of waste characterization for hazardous waste, explosive waste, and radioactive waste. KOP, Acceptable Knowledge, and S&A are means for characterization of the hazardous component in mixed waste, depending on the waste stream. The Line Support Departments work with the generators to ensure adequate documentation is in place to substantiate KOP or Acceptable Knowledge. In instances where KOP or Acceptable Knowledge is inadequate or if an unknown waste is found, Hazard Categorization and/or S&A is required.

Key References for Waste Characterization requirements for Hazardous, Radioactive, and Mixed Waste:

RCRA Part A & B Permit Applications, Hazardous Waste Management Units, Sandia National Laboratories/New Mexico, 3rd Amendment, PER 94-06, November 1996, Mixed Waste Analysis Plan.

Operating Permit for the Hazardous Waste Management Facility (RCRA Part B), Sandia National Laboratories/ New Mexico, July 1992, Waste Analysis Plan.

Hazardous Waste Treatment Facility Permit (Part B), SNL/NM Thermal Treatment Facility, Sandia National Laboratories/New Mexico, November 1994, Waste Analysis Plan.

DOE Waste Treatability Group Guidance, final draft, November 1994.

Sandia National Laboratories, Environmental Operations Center, Sample Management Office User's Guide, AOP 92-22, Rev. 00, February 1994.

2.2 Hazardous Waste

Hazardous waste characterization will require documentation of the generator's knowledge of process or sampling and analysis.

The following parameters must be addressed in characterizing hazardous waste:

1. Regulated Contaminant

   RCRA-regulated waste is identified using the EPA hazardous waste codes (40 CFR 261).

   TSCA-regulated waste (i.e. PCBs or asbestos) must be specifically identified.

2. Matrix

The composite physical/chemical waste form must be identified. The following are examples of various waste matrices:

- Aqueous liquids
- Resins
- Organic liquids
- Metals
- Soils
- Debris
- Combustibles
- Mixtures of waste matrix types.

KOP is documented by the generator on the CWDR, waste profile form, electronic profile, or EWDR. For laboratory chemical waste and explosive waste, where the KOP is usually sufficient to characterize the waste, additional analysis is not generally performed.

A large volume of the hazardous waste generated at SNL/NM is process chemical wastes. Typical waste streams, analytical parameters, and the rationale for selection of specific analysis are listed in Table 3-1, "Hazardous Waste Testing Parameters from Process Wastes."

Table 3-1. Hazardous Waste Testing Parameters from Process Wastes

Process Waste Stream	Analytical Parameter(s)	Rationale
Circuit Wastes	Organics, metals, pH, ignitability	Wastes include rinse and cleaning solvents, such as degreasing solvents, and wastes containing metal contaminants from solders. Concentrated and dilute acids or caustics containing dissolved or precipitated metals are also produced.
PCB Waste	PCBs	Oils from transformers are analyzed for PCBs because of the widespread use of PCBs before 1978.
Photo Developing Wastes	Silver, pH, ignitability	Photo developing chemicals, such as fixers, developers, and replenishers are usually acidic or basic, and may be contaminated with silver.
Plating Wastes	pH, metals	Plating wastes typically produced are concentrated and dilute acids or caustics containing dissolved or precipitated metals.

Process Waste Stream	Analytical Parameter(s)	Rationale
Semiconductor Wastes	Organics, pH, ignitability	Acids and solvents are used for cleaning and during fabrication processes.
Vehicle Maintenance Wastes	Organics, metals, ignitability	Wastes are predominantly oils, coolants, and degreasing solvents, possibly contaminated with lead or other metals, resulting from routine vehicle maintenance.

Table reference: Operating Permit for the Hazardous Waste Management Facility at SNL/NM (Part B), July 1992, Waste Analysis Plan.

Waste Management Organization personnel generally conduct a fingerprint check on each container > 30 gallons, to verify the information on the CWDR and the general profile for that waste stream. The fingerprint check is a confirmatory analysis of the waste. The parameters that may be tested are as follows:

- Physical state (solid, liquid, gas, sludge)
- pH and oxidation potential (for inorganic liquids)
- Color
- Specific gravity.

Test methods for the "fingerprint check" are given in Table 3-2, "Hazardous Waste Analysis Parameters and Test Methods". This check is designed to confirm the presence or absence of hazardous waste or hazardous waste constituents already described by the generator.

Four levels of analysis are used to characterize waste, depending on the nature of the waste, as follows:

- KOP and published information (supplied by generator)
- Fingerprint checks (performed by Waste Management Organization personnel upon receipt of waste at a storage facility)
- Hazard Categorization (HazCat) procedures (performed by Waste Management HazCat Team on unknown or insufficiently characterized waste)
- Detailed chemical analysis.

2.2.1 Hazardous (Reactive) Waste Characterization for Kirtland OD

Kirtland AFB has specified waste characterization requirements to be met by waste generators whose waste is transferred to the Kirtland OD Treatment Unit for treatment. These requirements are listed in Table 3-3. Each generator must supply these data based on past analytical results for the waste or a similar waste stream, published data, and/or process knowledge.

Table 3-2. Hazardous Waste Analysis Parameters and Test Methods

Parameter	Test Method	Reference[1]
Analytical Testing		
Arsenic	Inductively coupled plasma atomic emission spectroscopy (ICPAES)* Graphite furnace atomic absorption	6010 7060, 7061
Barium	ICPAES	6010
Beryllium	ICPAES	6010
Cadmium	ICPAES	6010
Chromium	ICPAES	6010
Chromium+6	Coprecipitation Colorimetry Chelation/Extraction Differential pulse polarography	7195 9196 7197 7198
Corrosivity	Corrosivity towards steel pH paper pH electrometry	1110 9041 9040[2], 9045[3]
Cyanide	Colorimetry	9010, 9012
Halogenated Volatile Organics	Gas Chromatography (GC)	8010, 8021
Ignitability	Pensky-Martin closed-cup Setaflash closed-cup	1010 1020
Lead	ICPAES	6010
Mercury	Cold-vapor technique atomic absorption	7470[2], 7471[3]
Nonhalogenated Volatile Organics	GC	8015
PCB	GC	8080
Physical State	Paint Filter Liquids Test Liquid Release Test	9095 9096
Reactivity	Numerous tests, mil hydrogen Cyanide and hydrogen sulfide	Sec. 7.3
Selenium	ICPAES* Graphite furnace atomic absorption	6010 7740, 7741
Semivolatile Organics	GC/Mass Spectrometry (MS)	8250, 8270
Silver	ICPAES	6010
Total Organic Halides (TOX)	Carbon Absorption Neutron Activation	9020 9022
Toxicity	Extraction procedure Toxicity Characteristic Leaching Procedure (TCLP)	1310 1311
Volatile Organics	GC/MS	8240, 8260
Fingerprint Checks		
Color	Visual	-
Oxidizer	Oxidizer Paper	-
pH	pH paper	9041
Physical State	Visual	-
Specific Gravity	Hydrometer	-
HazCat Tests		
Chlorine	Hot Wire (flame test)	HAZCAT[4]
Ignitability	Ignition Test	HAZCAT[4]
Oxidizer	Oxidizer Paper	HAZCAT[4]

Parameter	Test Method	Reference(1)
Peroxide	Peroxide Paper	HAZCAT(4)
pH	pH Paper	HAZCAT(4)
Presence of Metals	Various Methods	HAZCAT(4)

Table reference: Operating Permit for the Hazardous Waste Management Facility at SNL/NM (Part B), July 1992, Waste Analysis Plan.

* indicates Trace ICPAES

(1) Test Methods for Evaluating Solid Waste, Physical\Chemical Methods, SW-846, 3rd Edition, Rev. 1, EPA, November 1990.
(2) For liquid samples only.
(3) For solid samples only.
(4) These procedures are identified in HAZCAT(TM) IDENTIFICATION SYSTEM by R. Turkington, HAZTECH SYSTEMS, INC., Mountain View, CA, January 1988.

Table 3-3. Hazardous Waste Characterization for Kirtland OD Treatment Unit

Parameter	Method	Rationale
Physical description	Not applicable	Determine general characteristics of the waste; used comparatively to determine whether changes have occurred in the waste stream; facilitate comparisons with subsequent samples of the waste
Flash point	1010[1]	Determine ignitability characteristic Note: Method specified is appropriate for liquid waste which is not accepted for treatment
pH	9040[1]	Determine corrosivity characteristic Note: Method specified is appropriate for liquid waste which is not accepted for treatment
Generating process	Not applicable	Determine if waste is a RCRA listed waste
Specific gravity	ASTM D891-86[2]	Used comparatively to determine whether changes have occurred in waste characteristics or composition Note: Method specified is designed for liquid industrial chemicals which are not accepted for treatment

Table reference: Hazardous Waste Facility Permit, Kirtland Air Force Base Open Detonation Treatment Unit, December 1994, Attachment A, Waste Analysis Plan.

1 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, Rev. 1, U.S. Environmental Protection Agency, November 1990.
2 American Society for Testing and Materials

2.3 Radioactive and Mixed Waste

Radioactive waste characterization may require documentation of the generator's knowledge of process and sampling and analysis.

The following parameters must be addressed in characterizing radioactive waste:

1. Radiological Characteristics

   Classification - Low-level or transuranic (TRU) radioactive waste.

   Radionuclide - Identification of the radionuclide(s) present in the waste.

   Activity - Total activity of each radionuclide.

2. Matrix

The composite physical/chemical waste form must be identified. The following are examples of various waste matrices:

- Aqueous liquids
- Resins
- Organic liquids
- Metals
- Soils
- Debris
- Combustibles
- Mixtures of waste matrix types.

The following items must be specifically identified if they are present in the waste:

- Free liquids
- Dusts, fine powders, or particulates
- Materials where the internal heat can be built up by microbial or other degradation activity, such as wet cellulosic material
- Films, fibers, and fabrics of low-ignition-point materials
- Gas-generating waste.

Mixed waste characterization may require documenting the generator's KOP, providing Acceptable Knowledge, and sampling and analysis. The following parameters must be addressed in characterizing mixed waste:

1. Regulated Contaminant

   RCRA-regulated waste is identified using the EPA hazardous waste codes (40 CFR 261).

   TSCA-regulated waste (i.e. PCBs or asbestos) must be specifically identified.

2. Radiological Characteristics

   Classification - Low-level or transuranic (TRU) radioactive waste.
   Radionuclide - Identification of the radionuclide(s) present in the waste.
   Activity - Total activity of each radionuclide.

3. Matrix

The composite physical/chemical waste form must be identified. The following are examples of various waste matrices:

- Aqueous liquids
- Resins
- Organic liquids
- Metals
- Soils
- Debris
- Combustibles
- Mixtures of waste matrix types.

The following items must be specifically identified if they are present in the waste:

- Free liquids
- Dusts, fine powders, or particulates
- Pyrophoric materials such as phosphorous or uranium turnings
- Materials where the internal heat can be built up by microbial or other degradation activity, such as wet cellulosic material
- Films, fibers, and fabrics of low-ignition-point materials
- Gas-generating waste
- Explosives

2.4 Characterization

Radioactive waste requires radiological characterization to quantify the radiological components and hazards characterization to ensure no hazardous components are present. Mixed waste requires hazardous and radiological characterization. Hazardous waste requires hazardous characterization and KOP that no radiological component is present otherwise, the RMMA requirement must be applied.

2.4.1 Radiological Characterization

Radiological Characterization is determined on a case-by-case basis by the Waste Characterization team members. The team identifies the best methods for characterization given the amount of process knowledge available.

The characterization team members identify the most practical methods available to determine the radionuclides present and their concentration. This is done using a combination of process knowledge and sampling and analysis as necessary to achieve the goals.

All DR's or Travelers must be reviewed and approved by members of the characterization team before waste picked by the RMWMF.

The SMO can provide support services to analyze waste samples for radioactivity as required. In addition to the radiological analysis provided by SMO, limited radioanalytical support is available at SNL/NM through the Radiation Protection Sample Diagnostics Lab. The counting methods available include gamma spectroscopy to determine which gamma-emitting radionuclides are present and the activity of each in the waste, and liquid scintillation counting for gross alpha, gross beta, and tritium determinations.

2.4.2 Hazardous Characterization

Acceptable Knowledge is a means to characterize a waste depending on the specific waste stream.

S&A will be required for certain waste streams and for waste where Acceptable Knowledge is insufficient or inadequately documented. Both radioactive and mixed waste must be characterized for their hazard constituents (or lack of). A member of the waste characterization team will evaluate each waste DR to determine adequate process knowledge or sampling and analysis information to adequately identify the hazardous constituents in the waste. This evaluation is done on a case-by-case basis due to the divergent nature of the waste types. The requirements the waste characterization team member applies are intended to meet the ultimate disposal site requirements whenever possible to minimize the need for resampling and reanalysis. The team member is an expert in the field of hazardous waste identification and is familiar with the disposal site requirements. As a minimum the team member requires that any hazardous constituents are identified and documented in order to allow WM personnel to manage characterized waste.

3. ON-SITE CHEMICAL WASTE MANAGEMENT

Chemical waste includes materials defined by state or federal law as hazardous waste. Chemical waste may also include waste generated in a laboratory process, commercial products and manufactured items.

All chemical waste generated at SNL/NM can be managed by SNL/NM Waste Management. Chemical Waste Management may include waste pick-up, transportation, and storage at the Hazardous Waste Management Facility (HWMF), or the TSCA waste area adjacent to the HWMF; treatment at the Thermal Treatment Facility (TTF) or off-site treatment facilities (e.g., Kirtland Air Force Base (AFB) Open Detonation (OD) Treatment Unit and others); and disposal off-site. This section addresses waste acceptance criteria for on-site chemical waste storage, the SNL/NM TTF, and the Kirtland AFB OD Treatment Unit.

All of the chemical waste types listed below must be non-radioactive (originate outside an Radioactive Materials Management Area (RMMA) or meet the DOE release criteria for materials inside an RMMA [DOE Order 5400.5; 10 CFR 834 (proposed)].

Key References for Chemical Waste Acceptance Criteria

Hazardous Waste Management Facility, RCRA Part A Permit, Sandia National Laboratories/New Mexico, July 1992.

Operating Permit for the Hazardous Waste Management Facility (RCRA Part B), Sandia National Laboratories/New Mexico, July 1992.

Hazardous Waste Treatment Facility Permit (Part B), Sandia National Laboratories/New Mexico, Thermal Treatment Facility, November 1994.

Sandia National Laboratories/New Mexico, Chemical Waste Management, Sandia National Laboratories/New Mexico, Environment, Safety, and Health (ES&H) Manual, Chapter 19, Section A, Issue B, November 23, 1994.

Hazardous Waste Facility Permit (Part B), Kirtland AFB, Open Detonation Treatment Facility, December 1994.

Chemical Material and Waste Acceptance Criteria

Chemical Waste Type	Waste Accepted	Comment	Criteria References[1]
Acids	• Metal contamination • Organic contamination • Ignitable	Managed at HWMF	CWM HPB: Table 2-2
Aerosol cans, used, unused or partially used, all processes	• Pressurized cans accepted • Product and/or propellant accepted • Empty cans (depressurized with no propellant or product) accepted	Managed at HWMF; see "Aerosol Cans," Section 11.0, "Commercial Waste and Construction/ Demolition Debris" for empty aerosol cans	CWM
Aqueous liquids	• Metal contamination • Ignitable • Organic contamination	Managed at HWMF	HPB: Table 2-2 CWM
Asbestos, facilities	All asbestos accepted	• Packaged by Facilities Asbestos Abatement contractor with Facilities Asbestos Management team oversight • Transportation and disposal managed by Waste Management Organization	DRM: pers. Comm. Waste Management Organization
Asbestos, non-facilities	Friable asbestos accepted	Managed at and disposed of through the TSCA area adjacent to HWMF	CWM Waste Management Organization
Asbestos, non-facilities	Non-friable asbestos items or items in good condition containing integral non-friable asbestos parts	• Generator may keep the item, or • Managed through Reapplication	CWM
Bases	• Metal contamination • Organic contamination • Ignitable	Managed at HWMF	CWM HPB: Table 2-2
Batteries I	• All types • Excluding carbon/zinc, alkaline, and lithium batteries	Collected at SWTF and managed at HWMF	CWM
Batteries II	Carbon/zinc and alkaline batteries (AAA through D sizes and 9 volt)	Managed as solid waste; see "Batteries," Section 11.0, "Commercial Waste and Construction/ Demolition Debris"	CWM
Batteries III	Lithium batteries	Stored in permitted, modular storage buildings at HWMF	HPB: 3-4
Biohazardous/ infectious waste I	All, except rodent carcasses and droppings	Managed through Medical Clinic and disposed by Waste Management	Solid Waste Management Regulations

Chemical Waste Type	Waste Accepted	Comment	Criteria References[1]
Biohazardous/ infectious waste II	• Rodent carcasses and droppings accepted • Personal protective equipment contaminated by rodents carcasses and droppings accepted	Managed at and disposed by HWMF	Solid Waste Management Regulations
Classified waste I	• Non-RCRA, non-hazardous • No treatment required	Managed at classified landfill	CWM Solid Waste Management Regulations
Classified waste II	• RCRA or other hazard present • Treatment required • Hazardous and classified components must be separated	Hazardous component managed at HWMF; classified component managed at classified landfill	CWM
Commercial products	All	Managed at HWMF	CWM
Commercial products, laboratory process	All	Managed at HWMF	CWM
Contaminated Building Debris	All	Managed at generator site by generator	
Contaminated Purge Water	All	Managed at generator site by generator	
Contaminated soil	All	Managed at generator site by generator	
Contaminated wipes, swabs, rags, etc.	All	Managed at HWMF	CWM
Empty containers I, laboratory processes	• Unpressurized • Less than or equal to 5-gal capacity • Did not contain acute hazardous waste • The remaining material is <3 weight percent of the total capacity • Only normal methods (appropriate for the containers) are needed to empty a container	Managed through SWTF as solid waste	CWM

Chemical Waste Type	Waste Accepted	Comment	Criteria References[1]
Empty containers II	• Contained acute hazardous waste • Pressurized or unpressurized • Any capacity • The remaining material is >3 weight percent of the total capacity • Only normal methods (appropriate for the containers) are needed to empty a container	Managed at HWMF	CWM
Explosives	• All commercially available materials accepted • Explosives mixed with RCRA hazardous waste accepted on case-by-case basis • Approved inner and outer containers required	• Accumulation (<90 days) at designated facility or (<55 gallons) at generator's location • Treatment at TTF, Kirtland EOD Range, or at commercial treatment facility • Contact the Line Support Department if explosives are being combined with other hazardous materials • Approved containers in DOE Explosives Safety Manual Section 17.5 and Sandia Explosives Safety Manual Section 17.5	CWM Waste Management Organization
Fluorescent light bulbs	All types	Managed at HWMF	CWM
Gas cylinders	• Non-returnable cylinders accepted • Pressurized & unpressurized cylinders accepted • Cylinders with unknown contents are not accepted	• Managed at HWMF • Cylinders with unknown contents are managed on a case-by-case basis	CWM Waste Management Organization
Ignitable	All	Managed at HWMF	CWM HPB: 3-3, 3-4
Inorganic solids and suspensions	• Cooling tower mud • Insulation • Ceramic slurry	• Managed at HWMF • NOTE: check what types of insulation (glass, fiberglass, asbestos; electrical /thermal)	
Lead solder	All	Managed at SWTF and/or HWMF	CWM
Mercury	Elemental, liquid accepted	Managed at HWMF	HPB: Table 3-1

Chemical Waste Type	Waste Accepted	Comment	Criteria References[1]
Metals	• Parts, pieces accepted • RCRA hazardous metals accepted: arsenic, barium, cadmium, chromium, selenium, silver, etc.	Managed at HWMF	CWM
Organic liquid I	• Metal contamination • Organic contamination • Ignitable	• Managed at HWMF • May be bulked at HWMF	HPB: Table 2-2, 3-3
Organic liquid II	• Recyclable (incineration) as fuel • "Relatively clean" solvents	• Managed at HWMF • May be bulked at HWMF	HPB: 3-3
Oxidizers	Solid or liquid (solution)	Managed at HWMF	CWM
Paint	All	Managed at HWMF	CWM
PCBs	All PCB contaminated material accepted	Managed at TSCA area adjacent to HWMF	Waste Management Organization
Personal protective equipment with chemical contamination	• Gloves • Filter cartridges • Tyvek • Masks • No PCBs or asbestos contamination	Managed at the HWMF	Line Support Department
Personal protective equipment with facilities asbestos contamination	• Gloves • Filter cartridges • Tyvek • Masks	Managed as facilities asbestos	Line Support Department
Personal protective equipment with non-facilities asbestos contamination	• Gloves • Filter cartridges • Tyvek • Masks	Managed at the TSCA area adjacent to HWMF	Line Support Department
Personal protective equipment with PCB contamination	• Gloves • Filter cartridges • Tyvek • Masks	Managed at the TSCA area adjacent to HWMF	Line Support Department
Polaroid photo items	All parts accepted, except processed prints, print backing, dry liquid coater tubes, and empty cartridges containing batteries	• Managed at HWMF • Processed prints, print backing, dry liquid coater tubes, and empty cartridges with or without batteries managed as solid waste; see Section 11.0, "Commercial Waste and Construction/ Demolition Debris"	CWM

Chemical Waste Type	Waste Accepted	Comment	Criteria References[1]
RCRA characteristic hazardous laboratory chemicals	• Non-recyclable waste • Restrictions for lab packs: exclude D009 (mercury)	• Managed and may be lab packed at HWMF • **Segregate reactive wastes** • **Segregate corrosive wastes** • Segregate heavy metal wastes • **Segregate cyanide and sulfide wastes** NOTE: this is the 9/19/94 labpack requirement, not the criterion shown in the Part B	HPB: 3-4, 3-5 Line Support Department
RCRA hazardous characteristic waste	All (D001-D043) accepted	• Part A entries • Most are managed at HWMF	HPA
RCRA-listed hazardous laboratory chemicals	• Non-recyclable waste • Restrictions for lab packs: exclude F019, K003, K004, K005, K006, K062, K071, K100, K106, P010, P011, P012, P076, P078, U134, U151	• Managed and may be lab packed at HWMF • Segregate solvent wastes • Segregate toxic wastes • Segregate hazardous solid waste • F019 and all K-listed wastes are not accepted at HWMF • NOTE: this is the 9/19/94 labpack requirement under RCRA, not the criterion shown in the Part B	HPB: 3-4, 3-5 Line Support Department HPA
RCRA listed hazardous wastes	• F012-F026, F028-F037 not accepted • All K-listed waste not accepted • P019, P025, P032, P035, P052, P053, P055, P061, P079, P080, P083, P086, P090, P091, P100, P107, and P117 not accepted • U013, U040, U054, U065, U100, U104, U139, U175, U195, U198, U199, U212, U224, U229-U233, U241, U242, and U245 not accepted	Part A entries	HPA
Reactive, CN^- and S^{-2} producing	All	Managed at HWMF	CWM HPB: 3-3, 3-4 Waste Management Organization
Solids	Metal contamination from "Metals," listed above	Managed at HWMF	CWM

Chemical Waste Type	Waste Accepted	Comment	Criteria References[1]
Solids that form acids in aqueous solutions	All accepted	Managed at HWMF	HPB: Table 3-1
Solids that form bases in aqueous solutions	All accepted	Managed at HWMF	HPB: Table 3-1
Toner cartridges	Cartridges containing toner accepted	Managed at HWMF also see section 6.0	CWM
Unknowns	Accepted following characterization	• Characterized by Waste Management (HazCat) or sampling and analysis • Managed according to waste determination	CWM HPB: 2-5, 2-6
Used oil	• All types accepted • Hazardous contaminants accepted • Non-hazardous contaminants accepted • No PCBs accepted	Managed at oil storage unit at HWMF	CWM HPB: 2-3
Used personal protective equipment - uncontaminated	• Gloves • Tyvek • Masks • No contamination with hazardous constituents (RCRA, PCBs, asbestos)	Managed at SWTF as solid waste	
Water reactive	Solid accepted	Stored in permitted, modular storage buildings at HWMF	CWM HPB: 3-3, 3-4

[1] HPA: SNL/NM Hazardous Waste Management Facility RCRA Part A Permit
HPB: SNL/NM Hazardous Waste Management Facility RCRA Part B Permit
CWM: SNL/NM ES&H Manual, Chapter 19, Section A, Chemical Waste Management

The Operating Permit for the Hazardous Waste Management Facility (RCRA Part B) lists the following materials accepted at the facility. Several of the Department of Transportation (DOT) material types specified have been superseded by the current classes/divisions in DOT regulations

Dot Material Types Listed In Part B Accepted At HWMF

Dot Material Type (Specified In Operating Permit)	Current Dot Hazard Class/Division
Acid liquid	8, Corrosive material
Acid solid	8, Corrosive material
Basic liquid	8, Corrosive material
Basic solid	8, Corrosive material
Combustible liquid	3, Combustible liquid
Nonflammable gas	2.2, Non-flammable, non-poisonous compressed gas
Flammable liquid	3, Flammable liquid
Flammable gas	2.1, Flammable gas
Flammable solid	4.1, Flammable solid
Nonregulated liquid	N/A
Nonregulated solid	N/A
Organic peroxide liquid	5.2, Organic peroxide
ORM-A liquid	9, Miscellaneous hazardous material; or 6.1, Poisonous material
ORM-A solid	9, Miscellaneous hazardous material; or 6.1, Poisonous material
ORM-B liquid	8, Corrosive material
ORM-B solid	8, Corrosive material
ORM-C solid	9, Miscellaneous hazardous material
ORM-E liquid	9, Miscellaneous hazardous material
ORM-E solid	9, Miscellaneous hazardous material
Oxidizer liquid	5.1, Oxidizer
Oxidizer solid	5.1, Oxidizer
Poison A gas	2.3, Gas poisonous by inhalation
Poison B liquid	6.1, Poisonous materials
Poison B solid	6.1, Poisonous materials
Water reactive solid	4.3, Dangerous when wet material

Table reference: Operating Permit for the Hazardous Waste Management Facility (RCRA Part B), Sandia National Laboratories/New Mexico, July 1992, Table 3-1.
Federal Register, v. 55, no. 246, pg. 52402, December 21, 1990.
Federal Register, v. 56, no. 245, pg. 66124, December 20, 1991.
Federal Register, v. 58, no. 184, pg. 50224, September 24, 1993.

Thermal Treatment Facility Waste Acceptance Criteria

Criteria	Waste Accepted	Comment	Criteria References[2]
Contaminants accepted	F005: methyl ethyl ketone, toluene F003: acetone D001: isopropyl alcohol D011: silver	Contaminants accepted in explosive waste	TFP: 1-3, 1-5
Detonators	Not accepted		SOP
Documentation	• Completed Explosive Waste Disposal Request form [SA 2006-EWD (2-94)] • Completed Explosive Waste worksheet [SF 6477-EEW (7-94)] • Waste Shipping Documents		TFP: 1-9
Explosive packaging	• Explosives and DOT hazard class 1.1 explosive sub-stances must be packaged in quantities equal to or less than 1 ounce (28.4 grams) net explosive weight per container, inside Velostat® bags • Propellants and pyrotechnics (not DOT hazard class 1.1. propellants and pyrotechnics) must be packaged in quantities equal to or less than 2 ounces (56.8 grams) net explosive weight per container inside Velostat® bags • Contaminated items must be packaged in quantities equal to or less than twenty pounds (9 kilograms) inside Velostat® bags, so long as the maximum net explosive weight does not exceed the two criteria above • Contaminated liquids must be in closed containers, 1 gallon or less • Waste with the potential to produce fragments during treatment is not accepted • Confined, pressed, or compacted explosives not accepted • Explosive waste packaged with objects that may become projectiles not accepted • Shock sensitivity from normal handling not accepted • Sensitivity to elctrostatic discharge under normal handling (inside Velostat® bags) not accepted	Confinement does not include the outer package (i.e., Velostat® bag)	TFP: 1-7 SOP
Explosive substances	Known, commercial manufactured explosives accepted: • Hexanitroazobenzene (HNAB) • Pentaerythritol tetranitrate (PETN) • Hexahydrotrinitrotriazine (RDX) • Trinitrotoluene (TNT) • Nitroglycerine		TFP: 1-4

Criteria	Waste Accepted	Comment	Criteria References[2]
	• Octohydrotetranitrotetraozcine (HMX) • Hexanitrostilbene (HNS) • Triaminotrinitrobenzene (TATB) • Plastic Bonded Explosives which contain explosive constituents listed above • Silver acetylide/silver nitrate (SASN) • Others may be accepted		
Primary explosives	SASN only accepted		TFP: 1-7
Propellants	Known, commercially manufactured propellants accepted: • Single base propellants (nitrocellulose) • Double base propellants (nitrocellulose + nitroglycerine) • Triple base propellants (nitrocellulose + nitroglycerine + nitroguanidine) • Composite propellants containing: ammonium nitrate, sodium nitrate, potassium nitrate, ammonium perchlorate, potassium perchlorate • Black powder (potassium nitrate + sulfur + charcoal) • Others may be accepted		
Pyrotechnics	Known, commercially manufactured pyrotechnics accepted: • Titanium hydride/potassium perchlorate accepted • Others may be accepted		TFP: 1-4
Size/weight limits	• Explosive substances, propellants, and pyrotechnics accepted in form of powders, pellets, or granules < 0.5 inch diameter • Each burn event is limited to 1 ounce (28.4 gram) (net) of explosive and DOT hazard class 1.1 explosives • Each burn event is limited to 1 pound (0.45 kilogram) (net) of propellant and pyrotechnics (not DOT hazard class 1.1 explosives) • Each burn event is limited to treating 2 gallons of explosive-contaminated liquids • Each burn event is limited to treating 20 pounds (9 kilograms) of		TFP: 1-6, 1-7 SOP

Criteria	Waste Accepted	Comment	Criteria References[2]
	total waste (explosive + solid + liquid)		
Waste characterization	• Unknown, experimental, or uncharacterized explosives not accepted. See Chapter 3.0, Waste Characterization Requirements • Characterization requirements: – type and name of explosives in the waste – net weight of each explosive in the waste – gross quantity of waste – United Nations Organization (UNO) hazard classification and compatibility group of the waste – list of hazardous metals and/or chemicals present and approximate quantities – type of waste container – generator's certification – technical information, such as Material Safety Data Sheets, on the waste or explosive	Waste character-ization data are provided by the generator and are based on the generators' knowledge of the waste	TFP: 1-7
Waste codes accepted	D003: explosive	All waste must be explosive	TFP: 1-3, 1-5
Waste forms (matrices)	• Solid waste accepted (paper towels, rags, wipes, tissues, swabs, cloth, or paper filters, filter elements, etc.) • Liquid waste (water, alcohols, and solvents) accepted if net explosive weights (see "Explosive packaging ") are met • Vermiculite saturated with liquid waste	These may need to be saturated with water prior to treatment	TFP: 1-4 SOP
Waste transportation container	• DOT-authorized containers • SNL/NM-modified, reinforced ammunition containers • DOE (Mound) aluminum suitcases • Strong fiberboard boxes • Strong, cleated wooden boxes • Inner container may include plastic or Velostat® antistatic bags		TFP: 1-3

2 SOP: Operating the Thermal Treatment Facility, Sandia National Laboratories/New Mexico, ES&H Standard Operating Procedure, SP472875, Revision No. 2, December 1996.
TFP: Hazardous Waste Treatment Facility Permit, (Part B), Sandia National Laboratories/New Mexico, Thermal Treatment Facility, November 4, 1994, Waste Analysis Plan.

4. ON-SITE RADIOACTIVE AND MIXED WASTE MANAGEMENT

4.1 SNL/NM On-Site Storage Units

There are ten radioactive and mixed waste storage facilities at SNL/NM as follows:

- Radioactive and Mixed Waste Management Facility (RMWMF) Compound, which includes Building 6920, 6921, 6925, skid-mounted storage buildings and transportainers in TA-3.
- High Bay Waste Storage Facility (HBWSF) in Building 6596 in TA-V.
- Seven bunkers (i.e., Manzano Storage Facilities) in the Manzano Base (37034, 37045, 37055, 37057, 37063, 37078, 37118).
- Interim Storage Site (ISS) in TA-III.

All of these facilities are mixed waste storage units under RCRA interim status and are included in the SNL/NM Part B permit application for storage and treatment of mixed waste. All the above facilities accept both radioactive and mixed waste which are stored in separate areas in these units.

Key References for Radioactive and Mixed Waste On-Site Storage Units Waste Acceptance Criteria

Environmental Assessment for the Radioactive and Mixed Waste Management Facility, Sandia National Laboratories/New Mexico, June 1993.

Manzano Safeguards and Security Plan, Sandia National Laboratories/New Mexico.

RCRA Part A and Part B Permit Applications, Mixed Waste Management Facilities, Sandia National Laboratories/New Mexico, 3rd Amendment, PER 94-06, November 1996.

RMWMF Compound WAC

Parameter	Criteria	Comment	Criteria References[1]
Activity limits	The total inventory of radionuclides must be below the Category 3 roll-up (Table 4-1)		
Classified Waste	Waste classified Confidential and SRD accepted	Waste with security classification above SRD is not accepted	SP473412 Security OP for Org. CM00184
Combustible or Flammable Liquid Waste	Accepted for storage only in the outside skid-mounted Ignitable Waste Storage Building within the RMWMF Compound	Only one drum of combustible or flammable liquids may be within Building 6920 or 6921 at any given time Unprocessed waste should be returned to the Flammable Waste Storage Building at the end of each work day	
Combustible Solid Waste	Accepted	Most combustible solid waste consists of contaminated paper products and personal protective equipment	
EPA Waste Codes	F013-F026, F028-F037 not accepted All K-listed waste not accepted P019, P025, P032, P035, P052, P053, P055, P061, P079, P080, P083, P086, P090, P091, P100, P107, and P117 not accepted U013, U040, U054, U065, U100, U104, U139, U175, U195, U198, U199, U212, U224, U229-U233, U241, U242, and U245 not accepted		Mixed Waste Part A Permit Application, January 1995
Etiologic Agents	Etiologic agents are not accepted		
Explosive Waste	Explosives are not accepted		
Exposure rate	Containers must have exposure rates less than 200 mR/hr at the container surface		

Parameter	Criteria	Comment	Criteria References[1]
Fissile materials	Accepted	The inventory of all radionuclides at the RMWMF Compound must be below the Category 3 roll-up for each segment (Table 4-1 and 4-2)	
Flammable Solids	Accepted for storage in the outside skid-mounted Ignitable Waste Storage Building within the RMWMF Compound	Only one drum of flammable solids or one drum of combustible liquids may be within Building 6920 at any given time	
Gases	Compressed gases maybe accepted	Empty gas cylinders are accepted if the valves are removed	
High level Waste	Not accepted		
Ignitable Waste	Accepted for storage in the outside skid-mounted Ignitable Waste Storage Building within the RMWMF Compound		
Liquids	Accepted Liquid waste is accepted in containers of 55-gallons or less	All liquid waste must be stored in the liquid storage room, in 6925, or on spill pallets.	
Packaging	Incoming waste should be contained inside two 4-mil-thick plastic bags Exception: Large, solid objects without removable contamination		
Particulates	Accepted Fine powders or materials with particulate contamination should be contained in a minimum 6 mil plastic liner		
Reactive Waste	Accepted for storage in the outside, skid-mounted Reactive Waste Storage Building		
Special Nuclear Material	Only categories III and IV are accepted	Categories I and II are not accepted	
Transuranic (TRU) Waste	Accepted	Total inventory for the RMWMF Compound not to exceed Category 3 roll-up for each segment (Table 4-1)	

1 RMWMF SA: Safety Assessment - Radioactive and Mixed Waste Management Facility, Sandia National Laboratories/New Mexico, July 22, 1994
RMWMF EA: Environmental Assessment for the Radioactive and Mixed Waste Management Facility, Sandia National Laboratories/New Mexico, June 1993

High Bay Waste Storage Facility (Building 6596) WAC

Parameter	Criteria	Comment	Criteria References[2]
Activity limits	The total inventory of radionuclides must be below the Category 3 roll-up (Table 4-1)		
Classified Waste	Unclassified Waste Only		
Combustible or Flammable Liquid Waste	Accepted	Must be stored on spill pallets	
Combustible Solid Waste	Accepted	Most combustible solid waste consists of contaminated paper products and personal protective equipment	
EPA Waste Codes	F013-F026, F028-F037 not accepted All K-listed waste not accepted P019, P025, P032, P035, P052, P053, P055, P061, P079, P080, P083, P086, P090, P091, P100, P107, and P117 not accepted U013, U040, U054, U065, U100, U104, U139, U175, U195, U198, U199, U212, U224, U229-U233, U241, U242, and U245 not accepted		Mixed Waste Part A Permit Application, November, 1996
Etiologic Agents	Not accepted		
Explosive Waste	Explosives are not accepted		
Exposure rate	Exposure rates must be less than 200 mR/hr at the container surface		
Fissile materials	Accepted	The inventory of all radionuclides must be below the Category 3 roll-up (Table 4-1 and 4-2)	ES&H Manual Supplement: Nuclear Criticality Safety, GN470072, Issue B: 5, 6
Flammable Solids	Certain flammable solids are not accepted	Not accepted: Dusts or fine powders (metals or organic substances such as cellulose) Solids that ignite spontaneously at low temperatures, such as phosphorus Solids in which internal heat is	

Parameter	Criteria	Comment	Criteria References[2]
		built up by microbial or other degradation activity, such as wet cellulosic material Films, fibers, and fabrics of low-ignition-point materials	
Gases	Compressed gases are not accepted, with the exception of paint and aerosol cans Waste constituents capable of generating gases are not accepted	Empty gas cylinders are accepted if the valves are removed	
High level Waste	Not accepted		
Ignitable Waste	Accepted	Ignitable mixed waste will be segregated and stored in designated locations	
Liquids	Accepted Liquid waste is accepted in containers of 55-gallons or less		
Packaging	Incoming waste should be contained inside two 4-mil-thick plastic bags The bags must then be contained in packaging that meets the DOT specification for strong-tight containers. Exception: Large, solid objects without removable contamination		
Particulates	Accepted Fine powders or materials with particulate contamination should be contained in a minimum 6 mil plastic liner		
Pyrophoric metals	Not accepted		
Reactive Waste	Not accepted		
Special Nuclear Material	Criteria TBD		
Transuranic (TRU) Waste	Accepted	Total inventory for HBWSF not to exceed Category 3 roll-up (Table 4-1)	

2 HBWSF SA: Safety Assessment - High Bay Waste Storage Facility (Building 6596), November 17, 1994

Manzano Storage Facilities WAC

Parameter	Criteria	Comment	Criteria References[3]
Accountable	Accepted in all mixed waste bunkers except 37034	Bunker 37034 is not a material balance area (MBA)	Pending
Activity Limits	Activity limits in bunkers 7055, 7063 and 7078 must be below the category 2 roll-up and all other bunkers must be below category 3 roll-up (Table 4-1)		
Classified Waste	Waste with security classification up to Secret Restricted Data is accepted in 37034 Unclassified 37045	Waste classified above Confidential Restricted Data is not accepted at Bunker 37034	MSSP
Combustible Solid Waste	Accepted		
EPA Waste Codes	F013-F026, F028-F037 not accepted All K-listed waste not accepted P019, P025, P032, P035, P052, P053, P055, P061, P079, P080, P083, P086, P090, P091, P100, P107, and P117 not accepted U013, U040, U054, U065, U100, U104, U139, U175, U195, U198, U199, U212, U224, U229-U233, U241, U242, and U245 not accepted		Mixed Waste Part A Permit Application, January, 1995
Etiologic Agents	Not accepted		
Explosive Waste	Accepted in bunkers 37034, 37045, and 37118 Not accepted in bunkers 37055, 37057, 37063, or 37078	Must meet packaging and segregation requirements of the Sandia Explosives Safety Manual (MN471011)	
Exposure rate	Exposure rates must be less than 200 mR/hr at the container surface	Containers with higher surface exposure rates must be repackaged or overpacked by the generator	
Fissile materials	Accepted	The inventory of all radionuclides must be below the Category 3 roll-up (Table 4-1 and 4-2)	MSSP
Flammable Solids	Not accepted		
Gas-generating Waste	Not accepted		

Parameter	Criteria	Comment	Criteria References[3]
Gases	Compressed gases are not accepted	Empty gas cylinders are accepted if the valves are removed	
High level Waste	Not accepted		
Ignitable Waste	Not accepted		
Liquids	Accepted	Spill Pallets Required	
Packaging	Incoming waste should be contained inside two 4-mil thick plastic bags The bags must then be contained in packaging that meets the DOT specification for strong-tight containers. Exception: large, solid objects without removable contamination		
Particulates	Accepted Fine powders or materials with particulate contamination should be contained in a minimum 6 mil plastic liner		
Reactive Waste	Accepted		
Special Nuclear Material	Only categories III and IV are accepted in bunkers 37055, 37057, 37063, and 37078		MSSP
Transuranic (TRU) Waste	Accepted		MSSP

[3] MSSP: Manzano Safeguards and Security Plan, Sandia National Laboratories/New Mexico, December 12, 1993

The Manzano Storage Facilities are also used for materials storage. The following table lists the Department of Transportation (DOT) hazard classes/descriptions and acceptance criteria for management in the Manzano Storage Facilities.

DOT Hazard Classes and Criteria for Management at Manzano Storage Facilities

DOT Hazard Class/Description	Criteria
1. Explosives	Accepted in bunkers 37034, 37045, and 37118. Not accepted in bunkers 37055, 37057, 37063, or 37078.
2. Gases	Not accepted
3. Flammable Liquids	Not accepted without prior approval from Waste Management Organization
4. Flammable Solids	Not Accepted
5. Oxidizers	Solids: Accepted Liquids: Not accepted without prior approval from Waste Management Organization
6. Poison	Not accepted without prior approval from Waste Management Organization
7. Radioactive	Accountable: Accepted (except in 37034) Exposure Rate: <200mR/hr at container surface Fissile Materials: Accepted within inventory limit High Level: Not accepted Special Nuclear Material: Accept Categories III/IV TRU: Accepted
8. Corrosives	Not accepted without prior approval from Waste Management Organization
9. Miscellaneous Hazardous Materials	Not accepted without prior approval from Waste Management Organization
ORM - Domestic	Not accepted without prior approval from Waste Management Organization
Combustible Solids or Liquids	Not accepted without prior approval from Waste Management Organization
Special Nuclear Material Waste (non-asbestos)	Not accepted without prior approval from Waste Management Organization
Asbestos	Not accepted without prior approval from Waste Management Organization
PCBs	Not accepted without prior approval from Waste Management Organization

Interim Storage Site WAC

Parameter	Criteria	Comment	Criteria References[4]
Accountable	Not accepted		
Activity Limits	The total inventory of radionuclides must be below the Category 3 roll-up (Table 4-1)		
Classified Waste	Not accepted		
Combustible Solid Waste	Accepted		
EPA Waste Codes	F013-F026, F028-F037 not accepted All K-listed waste not accepted P019, P025, P032, P035, P052, P053, P055, P061, P079, P080, P083, P086, P090, P091, P100, P107, and P117 not accepted U013, U040, U054, U065, U100, U104, U139, U175, U195, U198, U199, U212, U224, U229-U233, U241, U242, and U245 not accepted		Mixed Waste Part A Permit Application, November, 1996
Etiologic Agents	Not accepted		
Explosive Waste	Not accepted		PTAB: 1-4
Exposure rate	Exposure rates must be less than 200 mR/hr at the container surface		
Fissile materials	• Accepted • The inventory of Fissile materials must be less than the limits given in Table 4-2, "Fissile Material Limit"	The inventory of all radionuclides at the ISS must be below the Category 3 roll-up (Table 4-1)	
Flammable Solids	Accepted		
Gas-generating Waste	Accepted		
Gases	Compressed gases are not accepted	Empty gas cylinder is accepted if certified empty or valve is removed	
High level Waste	Not accepted		
Ignitable Waste	Accepted	May be segregated for storage in transportainer designated "Oxidizer"	

Parameter	Criteria	Comment	Criteria References[4]
Liquids and Free Liquids	Not accepted	The design is not conducive to liquid waste storage	PTAB: 1-1
Packaging	Wastes stored in containers	Containers must be intact, undamaged, or waste will be repackaged Waste must be compatible with containers	PTAB: 3-1
Particulates	Accepted		
Reactive Waste	Accepted		
Special Nuclear Material	Not accepted		
Transuranic (TRU) Waste	Not accepted		
Waste type	Waste must be low-level radioactive or mixed waste		

4 PTAB: RCRA Part A and Part B Permit Applications, Mixed Waste Management Facilities, Sandia National Laboratories/New Mexico, 3rd Amendment, PER 94-06, November 1995.

Table 4-1. Radioactive & Mixed Waste Storage Units Activity Limit

Nuclide	Category 3 Curie Limit from DOE Standard 1027-92[5]
^{3}H	1.0E+03
^{14}C	4.2E+02
^{22}Na	2.4E+02
^{32}P	12E+01
^{33}P	9.4E+01
^{35}S	7.8E+01
^{36}Cl	3.4E+-2
^{40}K	1.7E+02
^{45}Ca	1.1E+03
^{47}Ca	7.0E+02
^{46}Sc	3.6E+02
^{44}Ti	6.2E+01
^{48}V	6.4E+01
^{51}Cr	2.2E+04
^{52}Mn	3.4E+02
^{55}Fe	5.4E+03
^{59}Fe	6.0E+02
^{60}Co	2.8E+02
^{63}Ni	5.4E+03

Nuclide	Category 3 Curie Limit from DOE Standard 1027-92[5]
^{65}Zn	2.4E+02
^{68}Ge	1.0E+03
^{75}Se	3.2E+02
^{85}Kr	2.0E+04
^{89}Sr	3.4E+02
^{90}Sr	1.6E+01
^{91}Y	3.6E+02
^{93}Zr	6.2E+01
^{95}Zr	7.0E+02
^{94}Nb	2.0E+02
^{99}Mo	3.4E+03
^{99}Tc	1.7E+03
^{106}Ru	1.0E+02
^{110m}Ag	2.6E+02
^{109}Cd	1.8E+02
^{113}Cd	1.1E+01
^{114}Min	2.2E+02
^{113}Sn	1.3E+03
^{123}Sn	3.2E+02
^{126}Sn	1.7E+02
^{124}Sb	3.6E+02
^{126}Sb	2.8E+02
^{127m}Te	4.0E+02
^{129m}Te	4.0E+02
^{125}I	5.6E-01
^{131}I	9.2E-01
^{133}Xe	2.0E+04
^{134}Cs	4.2E+01
^{137}Cs	6.0E+01
^{133}Ba	1.1E+03
^{140}Ba	6.0E+02
^{141}Ce	1.0E+03
^{144}Ce	1.0E+02
^{145}Pm	2.0E+03

Nuclide	Category 3 Curie Limit from DOE Standard 1027-92[5]
^{147}Pm	1.0E+03
^{151}Sm	1.0E+03
^{152}Eu	2.0E+02
^{154}Eu	2.0E+02
^{155}Eu	9.4E+02
^{153}Gd	1.0E+03
^{160}Tb	5.6+02
^{166m}Ho	7.2E+01
^{170}Tm	5.2E+02
^{181}Hf	7.6E+02
^{192}Ir	9.4E+02
^{198}Au	2.0E+03
^{203}Hg	3.6E+02
^{210}Pb	3.6E-01
^{207}Bi	5.0E+02
^{210}Bi	3.2E+02
^{210}Po	1.9E+00
^{222}Rn	1.0E+01
^{223}Ra	6.2E+01
^{224}Ra	2.0E-02
^{225}Ra	7.2E+01
^{225}Ac	3.2E+01
^{227}Ac	4.2E-02
^{228}Th	1.0E+00
^{230}Th	6.2E-01
^{232}Th	1.0E-01
^{233}U	4.2E+00
^{234}U	4.2E+00
^{235}U	4.2E+00
^{238}U	4.2E+00
^{237}Np	4.2E-01
^{238}Np	1.3E+03
^{238}Pu	6.2E-01

Nuclide	Category 3 Curie Limit from DOE Standard 1027-92[5]
^{239}Pu	5.2E-01
^{241}Pu	3.2E+01
^{241}Am	5.2E-01
^{242m}Am	5.2E-01
^{243}Am	5.2E-01
^{242}Cm	3.2E+01
^{245}Cm	5.2E-01
^{252}Cf	3.2E+00

Table reference:
Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports, DOE Standard,DOE-STD-1027-92, U.S. Department of Energy, December 1992, pg. A-11 to
A-13 (Attachment 1).

[5]When multiple nuclides are present, the Category 3 curie limit is not exceeded if the sum of the ratios of each nuclide to the Category 3 threshold for that nuclide is less than 1.

Table 4-2. Fissile Material Limit

Any form other than aqueous solutions	
Fissile material	Quantity limit per storage unit
U-233	520 grams
U-235	700 grams
U-239	450 grams
U-241	450 grams
Any combination of U-233, Pu-239, or Pu-241 in any form other than aqueous solutions	450 grams
Aqueous solutions	
U-233	260 grams
U-235	350 grams
U-239	225 grams
U-241	225 grams
Any combination of U-233, Pu-239, or Pu-241 in aqueous solutions	225 grams

Table reference:
Nuclear Criticality Safety, Sandia National Laboratories/New Mexico, Environment, Safety and Health (ES&H) Manual Supplement, GN470072, Issue B, June 1, 1993, pg. 5-6.

5. RECEIPT OF HAZARDOUS, RADIOACTIVE AND MIXED WASTE FROM OFF-SITE FEDERAL FACILITIES

5.1 Off-Site Chemical Waste Generators

SNL/NM receives small quantities of hazardous waste from off-site SNL/NM and SNL/NM contractor generators. The off-site generator is responsible for completing a Chemical Waste Disposal Request (CWDR) which includes waste characterization data. The off-site generator may be assisted in completing the CWDR by a member of their Line Support Department to ensure the form is technically complete for receipt of the waste by SNL/NM Waste Management.

5.2 Off-Site Radioactive and Mixed Waste Generators

SNL/NM anticipates that it will receive radioactive waste and mixed waste from generators at other federal facilities, including but not limited to the following sites:

- Tonopah Test Range, Nevada
- Yuma Proving Ground, Arizona
- Kauai Test Facility, Hawaii
- White Sands Missile Range, New Mexico
- Sandia National Laboratories, Livermore, California
- Kirtland Air Force Base, New Mexico
- Inhalation Toxicology Research Institute (ITRI), New Mexico.

There are no prohibitions or restrictions on receipt of radioactive waste from off-site facilities, and the State of New Mexico does not have regulatory authority over radioactive waste receipt, storage, treatment, or disposal at SNL/NM; nor does the State of New Mexico have regulatory authority over out-of-state disposal of radioactive or mixed waste (such as at Envirocare of Utah, Inc., and at the Department of Energy's Nevada Test Site).

The existing guidance for accepting mixed waste from off-site facilities is that contained in the Waste Analysis Plan included in the SNL/NM Part A and B Permit Applications, Mixed Waste Management Units, 3rd Amendment PER 94-06, November 1996. There are no SNL/NM acceptance criteria for the receipt of off-site radioactive waste other than what is given in this Programmatic WAC document.

6. COMMERCIAL SOLID WASTE AND CONSTRUCTION/DEMOLITION DEBRIS

Commercial solid waste is waste that is generated by stores, offices, restaurants, warehouses, and other non-manufacturing activities and includes only the SNL/NM wastes that can be accepted at an approved commercial waste landfill. Presently, SNL/NM is using the Waste Management of New Mexico Facility (Rio Rancho, New Mexico) (an industrial and commercial waste permitted facility) for commercial waste disposal. Commercial solid waste is typically managed in trash cans, trash barrels, and dumpsters.

The WAC for commercial solid waste require that it be free of hazardous materials and wastes (as defined by regulations such as the Resource Conservation and Recovery Act), asbestos, PCBs, infectious waste, untreated biomedical waste, sewage and sewage sludge, waste containing free liquids and special waste. Special wastes are solid wastes that have unique handling, transportation or disposal requirements (asbestos, sludge, petroleum contaminated soils, etc.) Commercial solid waste must not be labeled as hazardous waste or contain bags or other containers labeled as hazardous waste or as other waste.

Construction/demolition debris is generated by construction or destruction activities. This debris is considered to be not water soluble, non-hazardous, and may include steel, glass, brick, concrete, asphalt roofing materials, pipe, gypsum wallboard, lumber, rock, soil, trees, and vegetation from land clearing. If this debris is mixed with any other type of solid waste, it loses its classification as construction/demolition debris. These wastes currently are disposed at the Kirtland Air Force Base landfill. Recyclables are removed from this waste prior to disposal. Transportation of the waste is provided by SNL/NM personnel or the contractor performing the project generating the waste.

Key References to Commercial Waste Acceptance Criteria

Sanitary Waste Generator Guide, Sandia National Laboratories/New Mexico.

Sandia National Laboratories/New Mexico, Management of Solid Wastes, February 1, 1995.

Managing Non-Hazardous Waste, proposed draft section for Sandia National Laboratories/New Mexico, Environment, Safety, Health (ES&H) Manual.

Sandia National Laboratories/New Mexico, Chemical Waste Management, Sandia National Laboratories/New Mexico, Environment, Safety, and Health (ES&H) Manual, Chapter 19, Section A, Issue B, November 23, 1994.

Sandia National Laboratories/New Mexico, "Sandia/New Mexico solid-waste interim policy changes", Sandia Labs Weekly Bulletin, v. 20, no. 13, pg. 7, April 3, 1995.

Commercial Waste And Construction/Demolition Debris

Waste Type	Waste Acceptance Criteria	Comment	Criteria References[1]
Paper - White Xerox, white computer, white pages in SNL/NM telephone books	• Accepted for recycle • Containerize in approved cardboard boxes • Limit container weight to 60 pounds	Recyclable paper may also be disposed as trash (see next entry 'Paper - all')	SWG: 2 Sandia Labs Weekly Bulletin, v. 20, no. 1: 1 MNW: 2
Paper - all, including green stripe computer paper	• Dispose in office and restroom receptacles • Limit container weight to 60 pounds • Larger quantities accepted in special containers after contacting Custodial Services	Disposed as trash	SWG: 2 MNW: 1
Consumable liquids	Disposed through washroom, and kitchen basins, only	Excludes all liquid chemicals or liquid chemical wastes	SWG: 2
Cardboard	• Accepted by Sandia Cardboard Recycling • Enclosed packing materials excluded • Stored outdoors in designated locations (TA-I and TA-IV)	Remove enclosed packing material prior to recycling	SWG: 2 Sandia Bulletin, v.46, no. 5 MNW: 2
Packing material and boxes - non-cardboard	• Laboratory instrument wrappers accepted • Contain in sealed plastic trash bag or box • Place containers in dumpsters	• Disposed as trash • Includes preformed foam, "peanuts," etc.	SWG: 2 Sandia Bulletin, v.46, no. 5 MNW: 2
Toner cartridges - Kodak and Canon copier toner refill tubes and color toner cartridges from Hewlett Packard Laserjet color printers	• Empty only • Tubes are approximately 18" long, 3" diameter	Disposed as trash	Sandia Labs Weekly Bulletin, v. 20, no. 10: 12
Toner cartridges - all other	• Empty only • Fax, copier, and printer toner cartridges • Accepted for recycle through Property Reapplication	Prepare a "Deliver to Reapplication Form" and contact Property Reapplication to schedule a pickup	SWG: 2 MNW: 2 Sandia Labs Weekly Bulletin, v. 20, no. 5: 7
Batteries	Carbon/zinc and alkaline batteries (AAA through D sizes and 9 volt)	Disposed as trash	Sandia Bulletin, v.46, no. 5

Waste Type	Waste Acceptance Criteria	Comment	Criteria References[1]
Empty containers, office, cafeteria, or warehouses	• Less than or equal to 5-gal capacity required • Did not contain acute hazardous waste • The remaining material is <3 weight percent of the total capacity is accepted and residue remaining after normal methods have been used to remove the contents is acceptable	Disposed as trash	Line Support Department
Polaroid photo items	• Processed prints • Print backing • Dry liquid coater tubes • Empty cartridges with or without batteries • Dispose in office trash receptacles • Limit container weight to 60 pounds	• Disposed as trash • Other Polaroid parts and materials are managed as chemical waste	Sandia Bulletin, v.46, no. 5
Glass	• Broken glass, and other sharp objects accepted • Containerize glass and sharp objects in designated cardboard containers • Seal containers when full	Disposed as trash	SWG: 2 MNW: 1
Aerosol cans, non-hazardous	• Only depressurized with no propellant or product accepted • Dispose in office and restroom receptacles • Limit container weight to 60 pounds	Disposed as trash See "Aerosol Cans," Section 4.0, "On-site Chemical Waste Management" for management of all other aerosol cans	SWG: 2
Commercial products	• Windex-contaminated wipes accepted • Dispose in office and restroom receptacles • Limit container weight to 60 pounds	Disposed as trash	CWM
Food debris	Dispose in designated waste receptacles	Disposed as trash	MNW: 1
Scrap metal	Non-hazardous	• Recycle or reapply • Negligible quantities or very small objects may be disposed as trash	MNW: 3 Line Support Department Waste Management Organization

Waste Type	Waste Acceptance Criteria	Comment	Criteria References[1]
Construction/ Demolition debris	• Non-hazardous debris and non-chemically or radiologically contaminated debris accepted • Liquids not accepted • Asbestos not accepted	• Contaminated debris is managed as chemical or radioactive/mixed waste • Waste containment depends on the generating project requirements • Disposed at Kirtland Air Force Base landfill. Prior permission must be granted	MSW: 2

1 SWG: Sanitary Waste Generator Guide, Sandia National Laboratories/New Mexico
MNW: Managing Non-Hazardous Waste, proposed draft section for Sandia National Laboratories/New Mexico (ES&H) Manual
MSW: Sandia National Laboratories/New Mexico, Management of Solid Wastes, February 1, 1995
CWM: Chemical Waste Management, Sandia National Laboratories/New Mexico, (ES&H) Manual, Chapter 19, Section A, Issue B, November 23, 1994

7. GLOSSARY

Acceptable knowledge As defined by the EPA in "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual," OSWER 9938.4-03 (April, 1994), pp. 1-11 through 1-12, acceptable knowledge includes:

- **Process knowledge** whereby detailed characterization information is obtained from existing published or documented waste analysis data or studies conducted on hazardous wastes generated by processes similar to that which generated the waste. With many listed wastes, the application of acceptable knowledge is appropriate because the physical/chemical makeup of the waste is generally well known and consistent from facility to facility.

- **Waste analysis data** obtained from facilities which send wastes off site for treatment, storage, or disposal (e.g., generators).

- **Facility's records of analysis** Performed Before the Effective Date of RCRA Regulations. The facility must ensure that this information is current and accurate.

See also **Knowledge of process/Process knowledge**. For purposes of hazardous waste characterization, "Process Knowledge" acquires the new meaning shown above in the

definition of **Acceptable knowledge**. **Knowledge of Process** retains the meaning shown in the definition below.

Acid A substance that gives up hydrogen ions, The pH of an acidic solution is <7.0.

Aqueous liquid A liquid of, like, or containing water. [Adapted from The Random House Dictionary of the English Language].

Base Any substance that takes up hydrogen ions. A base yields hydroxide ions in water. The pH of a basic solution is >7.0.

Biohazardous See Etiologic agent.

Case-by-case (In reference to SNL/NM approval to generate mixed waste) According to the Resource Conservation and Recovery Act implementing regulations for the Land Disposal Restrictions (40 CFR 268.5), any person who generates, treats, stores, or disposes of a hazardous waste may submit an application to the Administrator for an extension to the effective date of any restriction on the land disposal of a waste, on a case-by-case basis. The application must demonstrate certain conditions exist that prevent treating the waste and efforts have been made by the petitioner to obtain treatment.

Classified A designation given to a document or material to indicate that it requires protection against unauthorized disclosure for reasons of national security. [Adapted from Identification of Classified Information, DOE Order 5650.2B, Change 1, 3/27/92].

Combustible Capable of catching fire and burning; inflammable; flammable. [The Random House Dictionary of the English Language].

Combustible liquid As used in the Safety Assessment for the Radioactive and Mixed Waste Management Facility (July 22, 1994), a combustible liquid is a liquid with a flash point from 100° to 200° F. This definition closely resembles the definition for the purposes of Occupational Safety and Health Administration regulations in 29 CFR Part 1910, Subpart H, which defines a combustible liquid as a liquid with a flashpoint at or above 100° F. [Adapted from 29 CFR 1910.106(a)(18)]. [Alternatively, for the purposes of Department of Transportation regulations in 49 CFR Chapter I, Subchapter C, any liquid that does not meet the definition of any other hazard class specified in this subchapter except Class 9 and has a flash point above 141° F and below 200° F, or a flammable liquid with a flash point at or above 100° F that does not meet the definition of any other hazard class except Class 9 may be reclassed as a combustible liquid. [Adapted from 49 CFR 173.120(b)]].

Corrosive material Liquids or solids that cause visible destruction or irreversible alterations in human skin tissue at the site of contact, or in the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel or aluminum, as measured according to Department of Transportation procedures. [49 CFR 173.136 (a) and DOE ES&H Thesaurus/Dictionary, DOE/EH-0185]. Causing the degradation of metals or alloys due to chemical reactions with their environment, accelerated by the presence of acids or bases. [Adapted from Academic Press Dictionary of Science and Technology]. See also **Characteristic of Corrosivity.**

Debris As defined by the Resource Conservation and Recovery Act implementing regulations, a solid material exceeding a 60 mm particle size that is intended for disposal and that is a manufactured object; or plant or animal matter; or natural geologic material. Specific materials that are not debris are: lead acid batteries, cadmium batteries, radioactive lead solids, process residuals such as smelter slag and residues from the

treatment of waste, waste water sludges, or air emission residues; and intact containers of hazardous waste that are not ruptured and that retain at least 75% of their original volume. [Adapted from 40 CFR 268.2(g)] In the context of Envirocare of Utah, Inc., any radioactive or mixed waste for disposal that is not soil. [Envirocare of Utah, Inc., Radioactive Material License, p. 13]

Empty container A container that meets the requirements of 40 CFR 261.7(b)(1), (2), and (3), such that (1) all wastes have been removed that can be removed using the practices commonly employed for the removal of materials from that type of container, and no more than 2.5 centimeters of residue remain on the bottom of the container; or no more 3% by weight of the total capacity of the container remains in the container if the container is less than 110 gallons in size or no more that 0.3% by weight remains if the container is greater than 110 gallons in size; (2) a container holding a compressed gas hazardous waste has an internal pressure approaching atmospheric; and (3) if the container held acute hazardous waste, the container is triple rinsed with an appropriate solvent, cleaned according to established scientific procedures, or an inner liner that effectively prevented the waste from contacting the container is removed.

Etiologic agent For the purposes of the Department of Transportation, a viable microorganism, or its toxin, which causes or may cause disease in humans or animals, including agents listed in 42 CFR 72.3 (Department of Health & Human Services) or any other agent that causes or may cause severe, disabling or fatal disease. The terms infectious substance and etiologic agent are synonymous. [Adapted from 49 CFR 173.134(a)(1)].

Explosive Any chemical compound or mechanical mixture which, when subjected to heat, impact, friction, shock, or other suitable initiation stimulus, undergoes a very rapid chemical change with the evolution of large volumes of highly heated gases that exert pressures in the surrounding medium. The term applies to all materials that either detonate or deflagrate. [Adapted from DOE Explosives Safety Manual, DOE/EV/06194, August 1994].

Fissile material Any material fissionable by thermal (slow) neutrons. Fission entails splitting of an atoms nucleus into at least two other nuclei and the release of a relatively large amount of energy. Two or three neutrons are usually released during fission. The three primary fissile materials are uranium-233, uranium-235, and plutonium-239. [The Health Physics and Radiological Health Handbook].

Flammable Flammable materials are defined in 29 CFR 1910.106.

Flammable gas For the purposes of the Department of Transportation, any material which is a gas at 68° F or less and 14.7 pounds per square inch (psi) of pressure (a material which has a boiling point of 68° F or less at 14.7 psi) which (1) is ignitable at 14.7 psi when in a mixture of 13 percent or less by volume with air; or (2) has a flammable range at 14.7 psi with air of at least 12 percent regardless of the lower limit. [Adapted from 49 CFR 173.115(a)].

Flammable liquid As used in the Safety Assessment for the Radioactive and Mixed Waste Management Facility (July 22, 1994), a flammable liquid is a liquid with a flash point below 100° F. By this definition, all flammable liquids have the characteristic of ignitability under the definition in the Resource Conservation and Recovery Act implementing regulations [40 CFR 261.21(a)(1)], except aqueous liquids containing less than 24% alcohol. This definition resembles the definition for the purposes of Occupational Safety and Health Administration regulations in 29 CFR Part 1910, Subpart H, which defines a flammable liquid as a liquid with a flashpoint below 100° F, except any mixture having

components with flashpoints of 100° F or higher, the total of which make up 99 percent or more of the total volume of the mixture. [Adapted from 29 CFR 1910.106(a)(190]. [Alternatively, for the purposes of Department of Transportation regulations in 49 CFR Chapter I, Subchapter C, a flammable liquid is a liquid having a flash point of not more than 141° F, or any material in a liquid phase with a flash point at or above 100° F that is intentionally heated and offered for transportation or transported at or above its flash point in a bulk packaging, with some exceptions listed in 49 CFR 173.120(a)(1). [Adapted from 49 CFR 173.120(a)(1)]].

Flammable solid As used in the Safety Assessment for the Radioactive and Mixed Waste Management Facility (July 22, 1994), a flammable solid is a solid that will ignite easily and burn rapidly, including dusts or fine powders; those that ignite spontaneously at low temperatures, such as phosphorus; those in which internal heat is built up by microbial or other degradation activity, such as wet cellulosic material; and films, fibers, and fabrics of low-ignition-point materials. [Alternatively, for the purposes of Department of Transportation regulations, a flammable solid may be any of the following three types of materials: (1) Class 1 explosives wetted with water, alcohol, plasticizer, etc., to suppress explosive properties, or are specifically authorized in this hazard class; (2) self-reactive materials liable to undergo, at normal or elevated temperatures, a strongly exothermic decomposition caused by excessively high transport temperatures or by contamination; and (3) readily combustible solids that may cause a fire through friction, have a fast burn rate (see 49 CFR 173.124(a)(3)(ii), or are metal powders (see 49 CFR 173.124(a)(3)(iii)). [Adapted from 49 CFR 173.124(a)]].

Free liquid Liquid which readily separates from the solid portion of a waste under ambient temperature and pressure. [Adapted from 40 CFR 260.10].

Friable asbestos Any material containing more than 1 percent asbestos by weight which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure. [Adapted from 40 CFR 763.121].

Halogenated Combined with a halogen: any of the non-metallic elements fluorine, chlorine, iodine, bromine, and astatine. [Adapted from The Random House Dictionary of the English Language].

Hazard Categorization (HazCat) A means to characterize an unknown or inadequately known chemical to identify the material and/or its hazard class. Initially the investigation examines radioactivity, physical state, color, age, storage, and container conditions, phase separation, quantity, labeling information, and operations in nearby areas; and contacts personnel associated with the storage area where the chemical was found. If further investigation is warranted, testing may be performed according to the process and tests described in the "HazCat Chemical Identification System (R. Turkington, HAZTECH SYSTEMS Inc., Mountain View, California, January 1988) HazCat tests include: peroxide, oxidizer, pH, chlorine, presence of metals, and ignitability.

Hazardous waste Waste identified or listed in 40 CFR 261, or that otherwise meets the RCRA definition of hazardous, or waste identified by applicable state-of-generation hazardous waste regulations. [Adapted from Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, NVO-325 (Rev.1), June 1992].

Ignitable Able to cause or begin combustion in a substance. [Adapted from Academic Press Dictionary of Science and Technology]. See also **Characteristic of ignitability**.

Infectious waste As defined by the New Mexico Solid Waste Management Regulations (SWMR-4) Section 105, infectious waste means a limited class of substances that carry a probable risk of transmitting disease to humans, including but not limited to: microbiological laboratory wastes, including cultures and stocks of infectious agents from clinical research and industrial laboratories, and disposable culture dishes and devices used to transfer, inoculate and mix cultures; pathological wastes, including human or animal tissues, organs and body parts, removed during surgery, autopsy or biopsy; disposable equipment, instruments, utensils, and other disposable materials which require special precautions because of contamination by highly contagious diseases; human blood and blood products, including waste blood, blood serum, and plasma; used sharp objects including used hypodermic needles, syringes, scalpel blades, Pasteur pipettes and broken glass; and contaminated animal carcasses, body parts and bedding, especially those intentionally exposed to pathogens in research, in the production of biological or the "in vivo" testing of pharmaceuticals.

Inorganic Not an organic substance; not a hydrocarbon or a derivative of hydrocarbon. [Academic Press Dictionary of Science and Technology].

Knowledge of process/Process knowledge A documented, detailed description of a unit (facility, process, or work area) indicating flow of material into a unit, what takes place within the unit, and what is produced (products, emissions, discharges, and waste). [SNL/NM ES&H Glossary, SAND 92-0192, February 21, 1992]. "Process knowledge" has been assigned the new meaning shown under **Acceptable knowledge**, above, by the EPA in recent guidance.

Low-level radioactive waste All radioactive waste not categorized as high-level radioactive waste, spent nuclear fuel, transuranic waste, uranium mill tailings, 11e(2) by-project material, or, (for the purposes of this document) hazardous radioactive waste (mixed waste). Waste with transuranic nuclides in concentrations that are less than 100 nanocuries per gram (nCi/g) will be considered low-level radioactive waste in accordance with DOE Order 5820.A, Chapter III, Management of Low-Level Radioactive Waste. [Adapted from Nevada Test Site Defense Waste Acceptance Criteria Certification, and Transfer Requirements, NVO-325 (Rev. 1), June 1992]

Mixed waste Waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act, respectively. [Adapted from Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, NVO-325 (Rev.1), June 1992].

Organic Of or relating to any covalently bonded compound containing carbon atoms. [Academic Press Dictionary of Science and Technology]

ORM-A Material that has an anesthetic, irritating, noxious, toxic or other similar property and can cause extreme annoyance or discomfort to passengers and crews in the event of leakage during transportation. The designation has been superseded by a new category in more recent (10/1/93) Department of Transportation regulations as Division 6.1, Poisonous Material, or Class 9, Miscellaneous Hazardous Material, 49 CFR 173.132 and 173.140. [DOE ES&H Thesaurus/Dictionary, DOE/EH-0186; Federal Register, v. 55, no. 246, pg. 52402, December 21, 1990]

ORM-B Material that is capable of causing significant damage to a transport vehicle or vessel from leakage during transportation (includes a solid when wet with water). Includes liquids that have a corrosion rate exceeding 0.250 inch per year on aluminum at a test temperature of 130° F. The designation has been superseded by a new category in more

recent (10/1/93) Department of Transportation regulations as Class 8, Corrosive Material, 49 CFR 173.136. [DOE ES&H Thesaurus/Dictionary, DOE/EH-0186; Federal Register, v. 55, no. 246, pg. 52402, December 21, 1990].

ORM-C Material that has inherent characteristics not included within the ORM-A or ORM-B classes, but which render the material unsuitable for shipment unless properly identified and prepared for transportation. One material considered as an ORM-C is a magnetized material. A substance is considered to be a magnetized material if, when packaged for transport by air, it has a magnetic field strength of 0.002 gauss or more at a distance of seven feet from any point of the surface of the package, or is of such a mass that it could affect the aircraft instruments, particularly the compasses. The designation has been superseded by a new category in more recent (10/1/93) Department of Transportation regulations as Class 9, Miscellaneous Hazardous Material, 49 CFR 173.140. [DOE ES&H Thesaurus/Dictionary, DOE/EH-0186; Federal Register, v. 55, no. 246, pg. 52402, December 21, 1990].

ORM-E Materials that are not included in any other hazard class but that are hazardous wastes or hazardous substances and so designated by the Environmental Protection Agency's regulations (40 CFR 261). The designation has been superseded by a new category in more recent (10/1/93) Department of Transportation regulations as Class 9, Miscellaneous Hazardous Material, 49 CFR 173.140. [DOE ES& H Thesaurus/Dictionary, DOE/EH-0186; Federal Register, v. 55, no. 246, pg. 52402, December 21, 1990].

Other Regulated Material (ORM) Any material that does not meet the definition of a hazardous material, other than a combustible liquid in packaging having a capacity of 110 gallons or less, and is specifically listed in the Department of Transportation Table of Hazardous Materials as an ORM. Department of Transportation ORM designations, except ORM-D, have been superseded by Division 6.1, Poisonous Material, or Class 8, Corrosive Material, or Class 9, Miscellaneous Hazardous Material, 49 CFR 173.132, 173.136, or 173.140. [DOE ES&H Thesaurus/Dictionary, DOE/EH-0186; Federal Register, v. 55, no. 246, pg. 52402, December 21, 1990].

Oxidizer A solid or liquid material that yields oxygen and may cause or enhance the combustion of materials. [40 CFR 261.21(a)(4) and 49 CFR 173.127].

Particulates A material composed of separate and distinct particles.

Poison A Extremely dangerous poisons that are liquids or gases of such a nature that a very small amount of the gas, or vapor of the liquid, mixed with air would be dangerous to life. [DOE ES&H Thesaurus/Dictionary, DOE/EH-0186]. This term is obsolete for purposes of the Department of Transportation which includes former Poison A in Divisions 2.3 (Poisonous gas by inhalation) and 6.1 (Poisonous material).

Poison B Poisons considered less dangerous than Poison A poisons, includes liquids or solids (including pastes and semi-solids) other than Poison A or Irritating Material which are known to be so toxic to man as to provide a hazard to health during transportation, or which in the absence of adequate data on human toxicity, are presumed to be toxic to man based on results with test animals. [DOE ES&H Thesaurus/Dictionary, DOE/EH-0186]. This term is obsolete for purposes of the Department of Transportation which includes former Poison B in Division 6.1 (Poisonous Materials).

Pyrophoric Capable of igniting spontaneously in air [The Random House Dictionary of the English Language]; a material which under normal conditions is liable to cause fires through friction, retained (residual) heat from processing, or which can be ignited readily

and when ignited burns so vigorously and persistently as to create serious transportation, handling, or disposal hazards [Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, NVO-325 (Rev.1), June 1992]; for purposes of the Department of Transportation a spontaneously combustible material that is a liquid or solid that, even in small quantities and without an external ignition source, can ignite within five minutes after coming in contact with air, as determined by a test procedure described in Department of Transportation regulations. [49 CFR 173.124 (b) (1)]

Radioactive Exhibiting radioactivity or pertaining to radioactivity. [The Health Physics and Radiological health Handbook].

Radioactive Materials Management Area (RMMA) An area where the reasonable potential exists for radiological contamination due to the presence of unencapsulated or unconfined radioactive material or an area that is exposed to beams or other sources of particles (neutrons, protons, etc.) capable of causing activation. [SNL/NM ES&H Manual Chapter 19, Section D, Radioactive Material Management Area (RMMA) at SNL/NM].

Radioactivity The spontaneous emission of radiation, generally alpha or beta particles, often accompanied by gamma rays, from the nucleus of an unstable isotope. [The Health Physics and Radiological Health Handbook].

RCRA listed waste A solid waste meeting the descriptions listed in 40 CFR Part 261, Subpart D. [Adapted from 40 CFR Subpart D].

Reactive Tending to react; volatile or unstable. [Academic Press Dictionary of Science and Technology]. See also **Characteristic of reactivity**.

Oxidation potential The difference in the amount of energy contained in an atom or an ion and the amount of energy remaining once an electron joins/leaves the orbit. [Adapted from Academic Press Dictionary of Science and Technology].

Resource Conservation and Recovery Act (RCRA) Pub.L. 94-580, 1976; Solid Waste Disposal Act Amendments of 1980, Pub. L. 96-482; and the Hazardous and Solid Waste Amendments of 1984, Pub. L. 98-616.

Special Nuclear Material (SNM) All isotopes of plutonium, uranium-233, uranium enriched in the isotope 233, uranium enriched in the isotope 235, and any other material which pursuant to the provisions of Section 51 of the Atomic Energy Act of 1954, as amended, has been determined to be special nuclear material, but does not include source material; it also includes any material artificially enriched by any of the foregoing, not including source material. A category I, II, III, or IV designation of a quantity of SNM or of an SNM location is assigned based on the attractiveness level of the material and the amount of material present. Category I quantities of SNM are more attractive than Category IV quantities of SNM. [Adapted from Control and Accountability of Nuclear Materials, DOE Order 5633.3A, February 12, 1993, and DOE ES&H Thesaurus/Dictionary, DOE/EH-0186].

Suspension System in which very small particles of solid, semisolid, or liquid material are more or less evenly dispersed in a liquid or gas phase. [Academic Press Dictionary of Science and Technology.

Toxic Substances Control Act (TSCA) Pub. L. 94-469, 1976.

Toxicity characteristic (TC) As defined in 40 CFR 261.24, one of the characteristics that identify a waste as hazardous. A waste exhibits the characteristic of toxicity if the leachate

prepared from the waste according to the Toxicity Characteristic Leaching Procedure (TCLP) exceeds regulatory levels for any of eight metals, six chlorinated pesticides, or 26 organic chemicals specified in 40 CFR 261.24. The TCLP is method 1311 in "Test Methods for Evaluating Solid Waste Physical/Chemical Methods" EPA Publication SW-846. A waste may be toxic for any (or any combination of) TC metals (see Toxicity Characteristic [TC] metals) TC organics (identified in 40 CFR 261.24 as EPA codes D018 through D043), or TC halogenated pesticides (identified in 40 CFR 261.24 as EPA codes D012 through D017). May also be referred to as the Characteristic of Toxicity. [Adapted from 40 CFR 261.24].

Transuranic (TRU) Material containing alpha-emitting radionuclides having an atomic number greater than 92, and half-lives greater than 20 years, in concentrations greater than 100 nCi/g. [Adapted from Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, NVO-325 (Rev.1), June 1992].

Volatile Of a substance readily vaporizable at a relatively low temperature. [Academic Press Dictionary of Science and Technology].

Water reactive solid As defined in the Resource Conservation and Recovery Act implementing regulations (40 CFR 261.23 (a)), water reactives react violently with water; form potentially explosive mixtures with water; or when mixed with water, generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment. [Adapted from 40 CFR 261.23]

DIVIDER

PAGE

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: P1104
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☑ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : Hot Cell Facility (HCF) Safety Analysis Report, Main Report and Appendices	
Source Document Reference Information (author(s), document and revision number, date, publisher): Louis F. Restrepo, SAND94-2650, NA, 10/14/1994	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR1, PR2, PR3, WS2, WS5, WS8, WS9, WS11, WS12, S3	Throughout	This SAR provides a description of the HCF and its operations, along with a detailed evaluation of a wide spectrum of operational, natural phenomena, and external events. Because of the hazard and accident analysis chapter was written prior to the development of the DOE-STD-3009, it contains detailed evaluations of the frequency, consequences, and risk to the public, workers, and the facility for all the accident scenarios and events postulated, beyond what is required by DOE-STD-3009. The consequences for all postulated accidents were found to be well below Sandia Evaluation Guidelines. The information contained in the chapter on Derivation of Technical Safety Requirements (TSRs), provides the bases for the development of the TSRs for the facility. pdf Pgs. 98-102 Chapter 2, section 2.3, Facility Description pdf Pgs. 107-137 Chapter 2, section 2.5, Process Description. The HCF is a research and development facility, not a processing facility. Because of this, the types of operations conducted in the facility are varied and small in scale. This section treats the generic types of operations identified primarily by the locations where they are conducted. Some operations are limited to specific locations in the facility. When this is the case, the operations and the specific locations are identified. Details of HCF operations depend on specific experiment and project requirements. All involve either radioactive materials, fissile materials, or both. Types of operations conducted in the SCBs, Zone 2A, and the gloveboxes include packaging and unpackaging materials; loading materials into experiment packages; disassembly of irradiated and unirradiated packages and experiments containing radioactive or fissile materials; cutting, sectioning, coring, potting, mounting, grinding, polishing, and coating samples and materials for microscopic and other analytical examination; photography of samples; gamma counting and other radiation-emission analytical examinations; "wet" chemical and other chemical operations; and physical properties measurements. Physical processes include handling, mounting (e.g., in epoxy), moving, cutting, grinding, polishing, measuring, weighing, and similar operations. Materials may also be heated, cooled, subjected to reduced pressure (partial vacuum) or elevated pressure, and other types of deviations from the ambient environment. Typical chemical operations include dissolution, evaporation, chemical etching, precipitation, solvent extraction, ion exchange, distillation,

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DATE REC'D 05/20/2014
EPF

Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: P1104

Waste Stream Number(s): SNL-HCF-S5400-RH

AK # [b]	Source Doc. Page # [c]	AK Information Summary
		electroplating, neutralization, titration, and other standard chemical manipulations. In addition, chemical and analytical equipment such as gas chromatographs, ion chromatographs, electrochemical apparatus, spectrometers, microscopes, radiation detectors and spectrometers, shaker baths and stirrers, laboratory centrifuges, hot plates, filtration equipment, and similar items are placed in the SCBs and used as needed for specific projects. Chemicals, hazardous or otherwise, may be used as well. Because new projects are continually being brought to the HCF, it is not possible to predict and list all hazardous chemicals that might be used in the SCBs. However, the types and classes of hazardous materials that might be used include flammables (e.g., ketones and alcohols), corrosives (e.g., acids such as HCl, HNO,, H2S04, and HF); caustics (e.g., NaOH and NH40H), reactive materials (e.g., Na metal and Cl,), toxics (e.g., heavy metals, H2S, SO2, CN-, and organics), and suspected carcinogens (e.g., benzene and thioacetimide). There are no chemicals which are explicitly excluded from use in the SCBs, Zone 2A, the gloveboxes, or the hoods. Wastes generated in the SCBs, Zone 2A, and the gloveboxes are all considered to be radioactive or mixed waste. Radioactive and mixed wastes are collected separately and different kinds of radioactive and mixed waste (e.g., flammables, corrosives, and contaminated lead) are collected separately. Wastes from operations in the hoods are usually radioactive or mixed waste. On some occasions hazardous or TRU waste may result. Wastes are packaged by type and disposed of according to the pertinent Sandia waste-handling policies for each type of waste. pdf Pg. 359 - Potential Explosive Hazards Within the HCF. Includes a chemical list with maximum inventory. pdf Pg. 406 - Rank Odering of Toxic Hazards (Solvents) Used Within the HCF by VHR and VHI. Includes a list of solvents used in the HCF. pdf Pgs. 635-641 Chapter 9, section 9.4, Radioactive and Hazardous Waste Streams or Sources. Very small amounts of liquids are used in HCF operations and these are primarily metal cutting fluids, aqueous cleaning agents, and various solvents used for degreasing parts and components prior to use. There are no plumbed systems in the HCF other than the solvent dispensing system for SCB-2/SCB-3. The dispensing system is used to pass limited amounts of fluids (-50 ml) into the SCB when materials are being cut or polished or when parts are being cleaned (either by ultrasonic cleaning or "dipping") as a part of the experiment process. The following pages provide descriptions of solid, liquid, and gaseous wastes produced in the HCF. Wastes include: alkaline and lithium batteries used in portable electrical instruments, materials (e.g., rags and paper towels) used with cleaning solvents to clean equipment and components, waste solvents, paint, lubricating oils, and chemicals used in the preparation of experiment components and packages (including methanol, propanol, freon, acetone, and limited quantities of mineral acids and bases), lead shielding materials (from experiments), cadmium parts, batteries, metal components that have a hazardous component, electronic parts (specifically those containing solder), electronic instruments (e.g., balances and meters), electrical instruments (e.g., hot plates, motors, industrial tools, and saws), contaminated solvents and chemical agents used in the assembly, disassembly, or PIE of experiment packages. pdf Pgs. 763-1354 Appendices Chemicals discussed in document: Pg. 108 - ketones, alcohols, HCl, HNO3, H2SO4, HF, NaOH, NH4OH, Na metal, chlorides, heavy metals, H2S, SO2, CN, organics, benzene, thioacetamide, lead (used as shielding in the gloveboxes and the Blister).

Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: P1104

Waste Stream Number(s): SNL-HCF-S5400-RH

AK # [b]	Source Doc. Page # [c]	AK Information Summary
		Pg. 115 - mineral acids and bases: HCl, HNO3, H2SO4, HF, NH4OH, NaOH; organic solvents: acetone, alcohols; epoxies, heavy metals, chlorinated sovents: trichloroethane, freons; reactives: Na metal Pg. 128 - mineral acids and bases: HCl, HNO3, H2SO4, HF, NH4OH, NaOH; organics solvents: acetone, alcohols; epoxies, heavy metals; chlorinated solvents: trichloroethane, freons; Na metal Pg. 130 - epoxy paint (used to seal various items in the HCF), lead (used as shielding) Pg. 359 - acetone, benzene, ethanol, methanol, acetic anhydride, methyl ethyl ketone, nitric acid, pyridine, acetic acid, toluene, xylene, chloroform, calcium hypochlorite, silver nitrate Pg. 366 - carbon tetrachloride Pg. 380 - butanol (butyl alcohol - used to remove sodium and NaK from components and parts). Pg. 406 - carbon tetrachloride, benzene, methylene chloride, acetone, hexane, chloroform, trichloroethylene, Freon-11, methanol, methyl ethyl ketone Pg. 553 - dioctylphthalate (DOP) - used to test HEPA filters Pg. 636 - Ultrasonic cleaning, dipping, cutting fluids, solvent dispensing system for SCB-2 and SCB-3; vacuum pump oil Pg. 637 - lithium batteries, waste solvents, paint, lubricating oils, methanol, prpanol, freon, acetone, acids, bases Pg. 638 - lead shielding, cadmium parts, batteries, electornic parts containing solder Pg. 639 - absorbent materials Pg. 653 - Leybold-Heraeus HE-175 lubricating fluid

Source Document Data Limitations (If any):

1. None

Acceptable Knowlege Expert:

Kevin J. Peters, Date: 1/12/14

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

DIVIDER

PAGE

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: M1013
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☑ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : Review of TRU Disposal Requests: 001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080	
Source Document Reference Information (author(s), document and revision number, date, publisher): NA, NA, NA, NA, Sandia National Laboratories	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR6, PR7, WS2, WS3, WS8, WS9, WS10, WS11, S4, S9, S15, S16	Throughout	This is a miscellaneous list of inventory for the indicated drums. The lists indicate the presence of U-238, U-235, U-234, Pu-241, Cm-243, Cm-244, Eu-155, Pu-239, Cs-137, Cs-134, Sr-90, Am-241, Pu-240, Eu-154, and Co-60. Document provides a detailed list of contents of each drum, with item identifiers and control numbers. The container numbers match up with the containers in document C1026, that, per Betty Humphries, was shipped as special nuclear material, not waste. Chemicals: brass, lead, platinum, silver

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DATE REC'D 5-20-14

Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: M1013

Waste Stream Number(s): SNL-HCF-S5400-RH

Source Document Data Limitations (if any):

1. None.

Acceptable Knowlege Expert:

STEVE SCHAFER, [signature] Date: 1/12/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

M013

Review Of TRU Disposal Requests
001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080

PKE54 Notes

- The available documentation is difficult to interpret for Pu-239, Pu-240, Am-241 and is incomplete for Pu-238. However, Pu-238 is documented in SAND89-0308 as the dominant transuranic by activity based on 1989 ORIGEN runs but ORIGIN results can not be located.
- Request additional sampling (swipes) with subsequent radiochemical analysis for isotopic plutonium, isotopic americium, Cs-137, Sr-90, and Pu-241 to characterize these containers.

001179 - P9900530 - drum 98150

- Per Susan Longley, contains Butvar from the Zone 2A paint can pit. The pit was used for the storage of metal (paint) cans containing ion chromatography residue from the ST project, which was solidified using Aquaset. The applicable PKE for this material is PKE 000054.
- Analyzed by portable gamma spectroscopy (August 4, 1998).
- Modeled as one 12"D x 14"H RCC with 0.43 g/cc CH2 inside 55-gallon metal drum.
- Cs-137 and Cs-134 were detected by quantitative portable gamma spectroscopy (89001901).
- Sr-90, Am-241, Pu-239, and Pu-240 scaled using PKE54 activity ratios.
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.1) = 0.193 Ci
- Need to review basis for TRU assignment - PKE54.
- TRU concentration assigned at 412 nCi/g.

005934 - P9801002 - TRU-HCF-95-03
005934 - P9801003 - LSA314
005934 - P9801004 - GB9
005934 - P9801005 - TRU-HCF-95-01
005934 - P9801006 - LSA316
005934 - P9801007 - HCFRW5
005934 - P9801008 - GB1-CAN2
005934 - P9801009 - GB1-CAN1

- Analyzed by portable gamma spectroscopy (August 4, 1998).
- Need to review basis for TRU assignment.

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005934 - P9801003 - LSA314

- Has been reworked to reduce U-235 and Pu-239

Current RadTrack information

Review Of TRU Disposal Requests
001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080

P_NUM	P_OLD	C_NUM	Lbs	C	Ft3	RPSD Material	SG (Actual)	RPSD SG	AF	RPSD Mean Cs-137 (Ci)	RT Cs-137 (Ci)	RT U-235 (g)	RT TRU (nCi/g)
P9801002	TRU-HCF-95-03	C980408	202	55	7.2	CH2	1.42	1.42	5	6.14E-06	3.51E-05	< 0.5	391
P9801003	LSA314	SNL0314	1576	744	92	SS	0.13	7.9	4	2.50E-07	1.49E-06	0.8	602
P9801004	GB9	C980406	37	30	4.1						3.95E-08	16.8	3930
P9801005	TRU-HCF-95-01	C980405	1540	Paco	7.2	SS	0.81	8.28	20	8.70E+00	9.90E+00	12.7	2.83E+04
P9801006	LSA316	SNL0316	2500	744	92	1.67"SS, Rest Paper	0.28	8.28,0.50	20	1.50E+00	3.42E+01	44.6	4960
P9801007	HCFRW5	C980403	40	QUEEN	7.2	Steel	5.38	5.38	5	2.89E+01	1.63E+02	213	1.03E+06
P9801008	GB1-CAN2	SNL2376	48	55	4	Steel	0.8	8.28	10	9.86E-02	1.12E+00	1.4	5900
P9801009	GB1-CAN1	SNL2365	130	55	4	Steel	2.37	8.28	10	5.35E-01	6.05E+00	9.1	1.2E+04

005939 - P9800960 - Metal piece GB#1
005939 - P9800961 - Waste drum #223

- Analyzed by portable gamma spectroscopy (February 19, 1997).

- <u>P9800961 - Waste drum #223</u>
  - Contains metal and machine parts form GB#3 (a shielded box formerly located in room 112 used for the ion chromatogaphic examination of effluent form the Source Term experiments).
  - The applicable PKE for this material is PKE 000027 (pertains to GB#3).
  - Cs-137, Cs-134, and Eu-154 were detected by quantitative portable gamma spectroscopy (59100074).
  - Modeled as 80% full 55-gallon metal drum with 0.144 g/cc steel.
  - Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2) = 0.041 Ci
  - Need to review basis for TRU assignment – PKE27.

- TRU concentration assigned at 901 nCi/g.

- P9800960 - Metal piece GB#1 C980389
  - Long piece of metal removed from GB#1during HCF decon effort
  - Modeled as one 2" x 4" x 5" rectangular volume with 7.86 g/cc iron item.
  - Cs-137, Co-60, Cs-134, Eu-154, and Am-241 were detected by quantitative portable gamma spectroscopy (59100067).
  - Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 6) = 0.184 Ci
  - February 6, 1997 Susan Longley memo for TRU and uranium characterization is not present.
  - Would be TRU alone just using average Am-241quantitative portable gamma spectroscopy estimate (228 nCi/g).
  - Need to review basis for TRU assignment - February 6, 1997 Susan Longley memo.
  - TRU concentration assigned at 1900 nCi/g.

005940 - P9800962 - TRU-HCF-97-06
005940 - P9800963 - TRU-HCF-97-05

- Analyzed by portable gamma spectroscopy (March 6, 1997).
- Waste from glove boxes 1 and 2.
- February 6, 1997 Susan Longley memo for TRU and uranium characterization is not present.
- 5-gallon AN can placed inside PVC container with concrete fill and plug inside 55-gallon metal drum.
- Mean portable gamma spectroscopy results should be reasonably accurate.
- Need to review basis for TRU assignment - February 6, 1997 Susan Longley memo.

005940 - P9800962 - TRU-HCF-97-06 C980391
- Brass tubes present.
- Cs-137, Cs-134, Co-60, and Eu-154 were detected by quantitative portable gamma spectroscopy (79100003).
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.5) = 1.71 Ci
- Net mass = 19 lbs
- TRU concentration assigned at 23,100 nCi/g.

005940 - P9800963 - TRU-HCF-97-05 C980392
- Brass soldering stand present.
- Cs-137, Cs-134, Co-60, and Eu-154 were detected by quantitative portable gamma spectroscopy (79100002).
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.2) = 0.526 Ci
- Net mass = 29 lbs
- TRU concentration assigned at 4,650 nCi/g.

007242 - P9900532 C990239

- Contains effective equation of state (EEOS) experiment vessel.
- Effective equation of state (EEOS) experiments discussed in SAND-77-1094C.
- Per Susan Longley, this vessel consists of an aluminum container surrounded by approximately 2 inches of lead. The vessel "contains" experimental material, such as thermocouples, wiring and aluminum supports, used in the effective equation of state (EEOS) project performed in glove boxes 1 and 2. The applicable PKE is number 000047.
- Need to review basis for TRU assignment – PKE47.
- Cs-137, Eu-154, and Co-60 were detected by quantitative portable gamma spectroscopy (89002701).
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 4.7) = 0.46 Ci
- Modeled as 100% full 10"D x 28"H vessel containing 1.47 g/cc steel. 10"D x 28"H vessel modeled as being surrounded by 2" lead cask inside 55-gallon metal drum.
- Is this a aluminum container surrounded by approximately 2 inches of lead or an aluminum container surrounded by a 2" lead cask?
- I assume the thermocouples are part of the aluminum container. If so, then not RCRA per Carla's evaluation.
- Radiological characterization does not use the updated PKE47 RMWMF sampling activity ratios.
- TRU concentration assigned at 1010 nCi/g.
- It would be best to model the EEOS experiment vessel by itself. Exposure rates unknown.

- The safety analysis of Liquid Metal Fast Breeder Reactor (LMFBR) systems requires knowledge of the vapor pressure of reactor fuels up to 6000 K. A new technique was developed to obtain experimental vapor pressure data for reactor fuel materials at high temperatures and pressures. Fuel samples are pulse fission heated in the Annular Core Pulse Reactor (ACPR) at heating rates comparable to those anticipated during a severe LMFBR transient. Since the vapor of reactor fuels may contain several dissociated fuel species, volatile fission products, and/or fission gas, and the evolution of that pressure may be time or rate dependent, the terminology ``effective equation-of-state (EEOS) measurement`` was used to differentiate these results from the vapor pressure of pure materials. This technique can be easily applied to plutonium bearing and previously irradiated fuels. The EEOS technique was used to determine the vapor pressure of high purity uranium dioxide with an oxygen-to-metal ratio of 2.08. Energy depositions of up to 2720 J/g relative to room temperature were obtained, resulting in measured pressures in excess of 38 mpa.

994027 - P9900534 - EEOS-1 C990249
994027 - P9900533 - EEOS-2 C990248

- Contains effective equation of state (EEOS) experiment vessel.
- Per Susan Longley, contains two packages with 2 aluminum welding rod each (2.5"D x 25"H RCC) removed from room 108. These two packages are known as EEOS #1 and EEOS #2 because the welding rods were used in glove box 1 for the EEOS project. Each package consists of a 30-gallon drum containing cardboard packing material surrounding two aluminum welding rods. Because these rods were used in glove box 1, the applicable PKE is number 000047.
- Need to review basis for TRU assignment – PKE47.
- Analyzed by portable gamma spectroscopy (June 25, 1998).
- Cs-137, Co-60, and Eu-154 were detected by quantitative portable gamma spectroscopy (89002001 and 89002002).
- All other nuclides scaled using PKE47activity ratios.

- Radiological characterization does not use the updated PKE47 RMWMF sampling activity ratios.
- Modeled as one 5"D x 25"H RCC with 1.35 g/cc aluminum w 0.7 g/cc cellulose packing material inside 30-gallon metal drum.
- Should be modeled as one RCC with an effective volume equal to 4020 cc (3.535"D x 25"H) then Al is ~2.7 g/cc.
- P9900534 - EEOS-1
  - Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.6) = 0.556 Ci
  - 0.556 Ci corresponds to 2570 nCi/g using updated PKE47 RMWMF sampling activity ratios.
  - Assigned Cs-137 activity probably ~2-3 times too high.
  - TRU concentration assigned at ~5950 nCi/g.
- P9900533 - EEOS-2
  - Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.6) = 0.260 Ci
  - 0.260 Ci corresponds to 1200 nCi/g using updated PKE47 RMWMF sampling activity ratios.
  - Assigned Cs-137 activity probably ~2-3 times too high.
  - TRU concentration assigned at ~2780 nCi/g.

994506 - P2000703 C200260

- Based on the DR paperwork, the 30-gallon metal drum contains one 2.6 lb parcel.
- The parcel is assigned in RADTRACK at roughly 400 grams of enriched uranium.
- The parcel consists of irradiated U and Np fission foils.
- The irradiation time and location of irradiation is not provided in the DR.
- The gamma spec results from 1999 used for nuclide and activity assignment are qualitative.
- TRU concentration assigned at 5,240 nCi/g.
- Pull the parcel from the 30-gallon metal drum and perform quantitative portable gamma spec on the bag of waste.
- READY

994655 - P2000704 C200259

- Contains mixed oxide powders removed from room 108 (assumed origin is glove box 9) of the Hot Cell Facility.
- Contains "< 1 gram UPuO2 w/<25%PuO2" and "< 1/2 gram UPuO2 w/<25%PuO2" in a 1-gallon paint can.
- Mixed oxide, or MOX fuel, is a blend of oxides of plutonium and natural uranium, reprocessed uranium, or depleted uranium.
- Analyzed by on-site laboratory gamma spectroscopy in non-standard counting geometry.
- Cs-137, Am-241, Pu-239, and Co-60 detected by on-site laboratory gamma spectroscopy (gamma spec result + 2-sigma error).
- Sr-90 assigned at 1:1 to Cs-137.
- U-238 and U-235 assigned using on-site laboratory gamma spectroscopy results.
- Pu-238 and U-234 scaled to Cs-137 using off-site analysis results for glove box 9 materials (PKE54).
- Pu-240 and Pu-241 scaled to Am-241 using MT-52 and 10 year decay period.
- TRU concentration assigned at 12,900 nCi/g.
- Based on PK, assign Pu using mass = 0.375*(239/(239+32)) = 0.331 grams and assume reactor grade Pu with decay period of 30 years.

- Based on PK, assign U using mass equal to (0.75+.375)*(238/(238+32)) = 0.992 grams and assume DU.
- Cs-137, Sr-90, and Co-60 negligible.
- Definitely TRU waste.
- Pyrophoric powders?
- READY

204041 - P2000836 C200321

- Contains 1-gallon paint can with plastic pipettes, plastic sheeting, and 2 dime size filters (expected to be from the ion chromography lab).
- Analyzed by on-site laboratory gamma spectroscopy in non-standard counting geometry.
- Two filters collected with analysis by on-site laboratory gamma spectroscopy in standard counting geometry and on-site laboratory alpha spectroscopy.
  - Am-241 = 90 dpm, Pu-239/240 = 20 dpm, Cm-243 = 1.0 dpm, Cm-244 = 1.7 dpm
- Cs-137, Am-241, Eu-154, Eu-155, and Cs-134 detected by on-site laboratory gamma spectroscopy (gamma spec result + 2-sigma error).
- Sr-90, Pu-239, and Pu-240 scaled to Cs-137 using PKE54.
- Need to review basis for TRU assignment – PKE54.
- Cm-243 and Cm-244 scaled to Am-241 using on-site laboratory alpha spectroscopy results.
- Pu-241 scaled at 30:1 activity ratio to Am-241.
- TRU concentration assigned at 1130 nCi/g.

204073 - P2000702 C200259

- Contains piece of uranium < ~40-mL from LANL obtained for use with the FALCON project in TA-V (aka Bodette Tin Can).
- Original container from LANL labeled as "possible Pu contamination".
- Analyzed by on-site gamma spectroscopy in an unknown geometry and a swipe was collected from the surface of the item and subsequently analyzed by on-site alpha spectroscopy.
- On-site gamma spectroscopy detected U-235 and Am-241and no fission products (unirradiated).
- Since the on-site gamma spectroscopy geometry used is unknown, results likely to be highly inaccurate. Attenuation correction associated with a lump of uranium is also likely needed.
- On-site alpha spectroscopy detected U-234, U-235, Pu-239, and Am-241.
- On-site alpha spectroscopy activities for U-234 and U-235 inconsistent with our standard DU, U-nat, or EU ratios (U-234 = 3.3 x U-235)
- Collect swipe, gamma spec swipe, and perform liquid scintillation analysis on swipe.
- Perform quantitative portable gamma spectroscopy and use lump correction (estimate size of uranium piece and provide a good weight).
- TRU concentration assigned at 170 nCi/g.
- READY

204114 - P2000938 C200339

- Contains 1-gallon metal can labeled as "ST samples" and a 1-pint can placed in a 55-gallon drum.

- The 1-gallon metal can contains empty plastic bottles and at least one plastic bag. Additional info is as follows - contains degraded poly bottle labeled 'conc HNO3'. This bottle was no longer intact and was broken in half. There were also two empty 50-ml poly bottles and a plastic bag. The inside of the can was very corroded, but there was no visible liquid. The exposure rate associated with this can is on the order of 11 mR/hr closed window on contact and 80 mR/hr open window.
  - Cs-137, Cs-134, and Eu-154 were detected by quantitative portable gamma spectroscopy (99002403).
  - Modeled as 100% full ~ 1-gallon aluminum can with 0.02 g/cc polyethylene.
  - Sample mass = 67 grams per RPSD quantitative portable gamma spectroscopy report.
- The 1-pint can contains small sections of platinum and iron wires and what appear to be platinum coupons or discs. This can is labeled "ST samples" and originally contained some silver wires also, which were removed and are being managed separately. The exposure rate associated with this can was approximately 5 R/hr (closed window) on contact with the bottom of the can. The open window, on contact measurement pegged the detector at > 50 R/hr.
  - Cs-137, Cs-134, and Eu-154 were detected by quantitative portable gamma spectroscopy (99002402).
  - Modeled as 40% full 1.9-pint aluminum can with 0.1 g/cc platinum.
  - Sample mass = 36 grams per RPSD quantitative portable gamma spectroscopy report.
- The purpose of the Source Term (ST) project was to identify the radionuclides released during a loss of coolant and fuel melting accident, similar to what occurred at Three Mile Island.
- The Cs-137 results should be reasonably accurate based on review of portable gamma spectroscopy results (modeled geometry and associated matrix attenuation).
- The 123 keV peak of Eu-154 was detected in both portable gamma spectroscopy results. Could be used for differential attenuation analysis but not really necessary.
- Radiological characterization does not use the updated PKE44 RMWMF sampling activity ratios.
- SortingTeam will repackage and update with new PKE44 ratios.
- TRU concentration assigned at 1830 nCi/g using a net weight of 1.5 lbs.
- Waste volume << 7.2 ft3 listed on DR. WCT to change waste volume in RadTrack once Sorting Team visually examines.
- Perform quantitative portable gamma spectroscopy and update with new PKE44 ratios.
- READY

204256 - P2001751 C200826

- One 55-gallon metal drum (C1224) containing a radioactive contaminated metal disk and approximately six cobalt-60 pellets. The metal disk is approx 8" in diameter. The pellets are approx. 0.25 inches in diameter and 0.25 to 0.5 inches in length. These items were recovered from work-off activities at TA-2, Radioactive Waste Landfill (RWL). The items were placed into a 5-gallon poly bucket and overpacked in a 55-gallon metal drum.
- Analyzed by on-site Q2 gamma spectroscopy & a swipe was collected for liquid scintillation analysis.
- Am-241 and Pu-239 were detected by Q2 gamma spectroscopy.
- Pu-240 and Pu-241 scaled to Pu-239 using MT-52 and 20 year decay period.
- Liquid scintillation analysis results used for H-3 assignment assuming 10% of the SA was swiped. Result likely a false positive due to all the gross alpha and gross beta or Pu-241.
- TRU concentration assigned at 1,010 nCi/g.

- Perform quantitative portable gamma spectroscopy on the 5-gallon poly bucket only.
- READY

041213 - P9800777 & P9800776

- Waste from TA-5 Hot Cell Facility glove box 3 of room 112
- Associated with Source Term (ST-1) experiments
- The purpose of the ST project was to identify the radionuclides released during a loss of coolant and fuel melting accident, similar to what occurred at Three Mile Island.
- The applicable PKE for this material is PKE 000044.

P9800776 - HCF-RW-1 - Queen Cask

- Contains four 1-gallon aluminum canisters with solidified slurry placed on top of one another inside a paco cask.
- Analyzed by portable gamma spectroscopy (September 11, 1996).
- Cs-137, Cs-134, and Eu-154 were detected by quantitative portable gamma spectroscopy (59100043).
- Modeled as four 100% full 1-gallon canisters containing 7.54 g/cc sand and being surrounded by 2" lead.
- Actual density of slurry is ~1.6 g/cc.
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 5) = 84.9 Ci
- Assigned Cs-137 activity probably ~200 times too high.
- TRU concentration assigned at ~78,000 nCi/g.

P9800777 - Drum 1151 - 55-gallon drum C980312

- Analyzed by portable gamma spectroscopy (September 12, 1996).
- Cs-137, Cs-134, and Eu-154, and Co-60 were detected by quantitative portable gamma spectroscopy (59100054).
- Modeled as 85% full 55-gallon metal drum containing 8.28 g/cc steel.
- Effective density material is 0.35 g/cc.
- Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 10) = 13.2 Ci
- Assigned Cs-137 activity orders of magnitude too high (> 1000 times too high or more).
- TRU concentration assigned at ~20,000 nCi/g.
- Perform quantitative portable gamma spectroscopy and update with new PKE44 ratios.

061080 - P0600041 C060119

- Contains soil removed from SGTs excavated from the SNL radioactive waste landfill in ~ 50% full 2.5-gallon poly
- Analyzed by on-site Q2 gamma spectroscopy, off-site analysis for Pu and Am, & off-site gross alpha, beta, tritium.
- Cs-137 was detected by Q2 gamma spectroscopy.
- Am-241 and Pu-239 not detected by Q2 gamma spectroscopy (MDAs were 11.2 nCi/g and 1590 nCi/g, respectively).
- Assigned Am-241 and Pu-239 at 43 nCi/g and 236 nCi/g, respectively, based on off-site analysis for Pu and Am.
- Off-site gross alpha, beta sample results were very low. Aliquot apparently didn't contain much radioactivity.

- Could attempt quantitative portable gamma spectroscopy but Am-241 and Pu-239 detection limits would likely be too high to be useful.
- No additional characterization information required.
- TRU concentration assigned at 284 nCi/g.
- READY

FD

FD materia In Spent Fuel Database

Container No	Control Number	Material Name	Description	Item Identifier	Unit	Element Wt	Isotopic Wt	Iso Wt %
186124	47357	Enriched uranium	PREIRRADIATED MIXED OXIDE	SLA-8	g U	1	1	65
186629	47340	Enriched uranium	PREIRRADIATED MIXED OXIDE	SLA-6	g U	1	1	65
186636	47302	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDL 9-44 PEL#13	g U	1	0	30
186919	127097	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-8-1A	g U	1	1	65
187138	47326	Enriched uranium	PREIRRADIATED MIXED OXIDE	SLA-4	g U	1	0	30
190022	96485	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118B6-A	g U	1	1	65
190022	104531	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-4A	g U	1	0	65
190022	104555	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-6A	g U	1	0	65
190022	106122	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B4-A	g U	1	0	30
190022	106146	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B6-A	g U	1	0	30
191470	47319	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDL 9-44 PEL#32	g U	1	0	30
191876	47333	Enriched uranium	PREIRRADIATED MIXED OXIDE	SLA-5	g U	1	1	65
210011	53785	Enriched uranium	PELLETS/HRR-5	00589-3	g U	1	0	40.85
210011	53792	Enriched uranium	PELLETS/HRR-5	00589-4	g U	1	0	40.85
210011	85502	Enriched uranium	SCRAP PARTS/HRR-5	PNL944C5A	g U	2	1	30
210011	85564	Plutonium-239	SCRAP PARTS/HRR-5	PNL944C5B	g Pu	1	0	12
210014	54331	Enriched uranium	PELLETS-HRR-2	00591-3	g U	1	1	68
210014	54348	Enriched uranium	PELLETS-HRR-2	00591-4	g U	1	1	68
210014	85397	Enriched uranium	SCRAP/HRR-2	PNL1118C6A	g U	2	1	65
210014	85472	Plutonium-239	SCRAP/HRR-2	PNL1118C6B	g Pu	1	0	12
210015	97017	Plutonium-239	PREIRRAD. MIXED OXIDE (SCRAP)	PNL1012D3-B	g Pu	1	1	12
210015	97055	Enriched uranium	PREIRRAD. MIXED OXIDE (SCRAP)	PNL1012D3-A	g U	3	2	65
210016	106139	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B5-A	g U	4	1	30
210016	106207	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65B5-B	g Pu	1	1	12
210017	54133	Enriched uranium	PELLETS-FD2.4	00591-1	g U	1	1	68
210017	54249	Enriched uranium	PELLETS-FD2.4	00591-2	g U	1	1	68
210017	81887	Enriched uranium	SCRAP PART/FD2.4	PNL10-12BCA	g U	2	1	65
210017	81894	Plutonium-239	SCRAP PARTS/FD2.4	PNL10-12BCB	g Pu	1	0	12
210018	108126	Enriched uranium	MIXED OXIDE PELLET	KFK1-A	g U	5	5	93
210018	108133	Plutonium-239	MIXED OXIDE PELLET	KFK1-B	g Pu	2	2	20
210019	106085	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65A-A	g U	13	4	30
210019	106160	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B8-A	g U	3	1	30
210019	106177	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65C-A	g U	15	4	30
210019	106184	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65A-B	g Pu	4	4	12
210019	106214	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65B8-B	g Pu	1	1	12

210019	106221	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65C-B	g Pu	5	4	12
210019	131117	Enriched uranium	PREIRRADIATED MIXED OXIDE	L-END	g U	1	1	65
210019	131124	Enriched uranium	PREIRRADIATED MIXED OXIDE	R-END	g U	1	1	65
210019	143288	Plutonium-239	P15-2A- PREIRRAD. MIXED OXIDE	EXPT. NO. 1	g Pu	1	1	88
210019	143295	Plutonium-239	P15-2A- PREIRRAD. MIXED OXIDE	EXPT. NO. 2	g Pu	1	1	88
210019	143318	Plutonium-239	P15-2A- PREIRRAD. MIXED OXIDE	EXPT. RESIDUE	g Pu	10	9	88
210020	43069	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL1118C1-A	g U	1	0	65
210020	43076	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL1118C2-A	g U	1	1	65
210020	43083	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL1118D-A	g U	21	14	65
210020	43090	Plutonium-239	PREIRRADIATED MIXED OXIDE	HEDLPNL1118D-B	g Pu	7	6	12
210020	43106	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL1118D2-A	g U	1	1	65
210020	43151	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL944B-A	g U	4	1	30
210020	43168	Plutonium-239	PREIRRADIATED MIXED OXIDE	HEDLPNL944B-B	g Pu	1	1	12
210020	43175	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL944B1-A	g U	1	0	30
210020	43205	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL944C1-A	g U	1	0	30
210020	43236	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL944D-A	g U	24	7	30
210020	43243	Plutonium-239	PREIRRADIATED MIXED OXIDE	HEDLPNL944D-B	g Pu	8	7	12
210020	43250	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL9441-A	g U	1	0	30
210020	43267	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL94413-A	g U	1	0	30
210020	43274	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL94432-A	g U	1	0	30
210020	85359	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118C2A	g U	1	1	65
210020	85533	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL944C8A	g U	2	1	30
210020	96447	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118B2-A	g U	1	0	65
210020	96454	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118B3-A	g U	1	0	65
210020	96461	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118B4-A	g U	1	0	65
210020	97024	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1012D7-B	g Pu	5	4	12
210020	97031	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D1-A	g U	1	0	65
210020	97048	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D2-A	g U	1	0	65
210020	97062	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D4-A	g U	1	0	65
210020	97079	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D5-A	g U	1	0	65
210020	97086	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D6-A	g U	1	0	65
210020	97093	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D7-A	g U	15	10	65
210020	104487	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074A-A	g U	14	9	65
210020	104494	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074C-A	g U	14	9	65
210020	104500	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-1A	g U	1	0	65
210020	104524	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-3A	g U	1	0	65
210020	104562	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-7A	g U	1	0	65

210020	104586	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074-A-B	g Pu	5	4	12
210020	104593	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074-C-B	g Pu	5	4	12
210020	106092	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B1-A	g U	1	0	30
210020	106115	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B3-A	g U	1	0	30
210020	106153	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B7-A	g U	1	0	30
210020	108140	Enriched uranium	PREIRRADIATED MIXED OXIDE	KFK2-A	g U	1	1	93
210020	127103	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-8-2A	g U	2	1	65
210020	127110	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074B-8-2B	g Pu	1	1	12
210020	127127	Enriched uranium	PREIRRADIATED MIXED OXIDE	KFK3A	g U	1	1	93
210021	96478	Enriched uranium	PREIRRAD. MIXED OXIDE (SCRAP)	PNL1118B5-A	g U	4	2	65
210021	96522	Plutonium-239	PREIRRAD. MIXED OXIDE (SCRAP)	PNL1118B5-B	g Pu	1	1	12
210022	104548	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-5A	g U	3	2	65
210022	104616	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074B-5B	g Pu	1	1	12
210023	*54355*	*Enriched uranium*	*PELLETS-HRR-3*	*00591-5*	*g U*	*1*	*1*	*68*
210023	*54362*	*Enriched uranium*	*PELLETS-HRR-3*	*00591-6*	*g U*	*1*	*1*	*68*
210023	*85403*	*Enriched uranium*	*SCRAP PARTS/HRR-3*	*PNL1118C7A*	*g U*	*2*	*1*	*65*
210023	*85489*	*Plutonium-239*	*SCRAP PARTS/HRR-3*	*PNL1118C7B*	*g Pu*	*1*	*0*	*12*
210024	104517	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-2A	g U	3	2	65
210024	104609	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074B-2B	g Pu	1	1	12
210025	43212	Enriched uranium	SCRAP	HEDLPNL944C2-A	g U	2	1	30
210025	43212	Enriched uranium	SCRAP	HEDLPNL944C2-A	g U	2	1	30
210025	43229	Plutonium-239	SCRAP	HEDLPNL944C2-B	g Pu	1	1	12
210025	43229	Plutonium-239	SCRAP	HEDLPNL944C2-B	g Pu	1	1	12
210025	85380	Enriched uranium	SCRAP	PNL1118C5A	g U	2	1	65
210025	85380	Enriched uranium	SCRAP	PNL1118C5A	g U	2	1	65
210025	85465	Plutonium-239	SCRAP	PNL1118C5B	g Pu	1	0	12
210025	85465	Plutonium-239	SCRAP	PNL1118C5B	g Pu	1	0	12
210026	106108	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B2-A	g U	3	1	30
210026	106191	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65B2-B	g Pu	1	1	12
210033	53730	Enriched uranium	PELLETS-HRR-4	00589-1	g U	1	0	40.85
210033	53778	Enriched uranium	PELLETS-HRR-4	00589-2	g U	1	0	40.85
210033	*85526*	*Enriched uranium*	*SCRAP/HRR-4*	*PNL944C7A*	*g U*	*2*	*1*	*30*
210033	*85588*	*Plutonium-239*	*SCRAP*	*PNL944C7B*	*g Pu*	*1*	*0*	*12*
DB Cask1	43113	Enriched uranium	PIN-WCC DEBRIS BED CASK 1	HEDLPNL1157-A	g U	43	28	65
DB Cask1	43120	Plutonium-239	PIN-WCC DEBRIS BED CASK 1	HEDLPNL1157-B	g Pu	14	12	12
DB Cask1	43137	Enriched uranium	PIN-WCC DEBRIS BED CASK 1	HEDLPNL1161-A	g U	42	28	65
DB Cask1	43144	Plutonium-239	PIN-WCC DEBRIS BED CASK 1	HEDLPNL1161-B	g Pu	14	12	12
DB Cask1	43281	Enriched uranium	PIN-WCC DEBRIS BED CASK 1	HEDLPNL950-A	g U	42	13	30

DB Cask1	43298	Plutonium-239	PIN-WCC DEBRIS BED CASK 1	HEDLPNL950-B	g Pu	14	12	12

Waste Parcel Report

Package ID #: P0700239

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Form Number: 061240

Placed in Storage?: ☑

Mixed: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐

Void?: ☐

Waste Type:

- ☐ Over 50% Debris?
- ☐ Over 50% Soil?
- ☐ Fine Particulates Present?
- ☐ Batteries Present?
- ☐ Sources over 100 uCi?
- ☐ Contains Wastewater
- ☐ Etiologic Agents Present?
- ☐ Chelating or Complexing Agent Present?
- Chelating or Complexing Agent %: 0
- ☐ Potentially Pyrophoric?

Estimated Parcel Gross Weight (From Attachment 2 if available)

14.50 gram 3.20E-02 Lbs

Estimated Parcel Volume (From Attachment 2 if available)

0.00 Cu. Ft. 2.10E-03 Cu. Ft.

Additional Waste Description (From Attachment 2)

Waste Description

4 SEALED RADIOACTIVE SOURCES PURCHASED BETWEEN 1984 AND 1985. THE 4 SOURCES ARE TRU WASTE. SOURCES ARE NO LONGER REQUIRED FOR PROJECT RELATED WORK. THE SOURCES ARE CONSERVATIVELY BEING SUBMITED AS MIXED WASTE SINCE BACKING MATERIALS FOR MANY AM-241 SOURCES ARE CONSTRUCTED WITH THE RCRA REGULATED METAL SILVER. IN "RCRA" PGS (3) (4), THE CONTAINS INORGANIC CONSTITUENTS ABOVE REGULATORY THRESHOLDS SPECIFIED IN 40 CFR 268.48, TABLE UTS QUESTION HAS CONSERVATIVELY BEEN MARKED AS YES SINCE SOURCE BACKING MATERIALS MAY POTENTIALLY CONTAIN SILVER. SOURCE INFORMATION IS AS FOLLOWS: RS905, MSN-123751, MEASURED SOURCE WEIGHT 5.98 G, TRU CONC 1.81E+03 NCI/G RS906, MSN-123752, MEASURED SOURCE WEIGHT 2.25; TRU CONC 4.67E+04
NCI/G
RS907, MSN-1237520,
MEASURED SOURCE WEIGHT 4.74; TRU CONC 2.17E+03 NCI/G RS911, MSN-7Q395, MEASURED SOURCE WEIGHT 1.53 G, TRU CONC 7.45E+02 NCI/G SEE ATTACHED COPIES OF MANUFACTURER SOURCE CERTIFICATES FOR ADDITIONAL INFORMATION

Change Request Comments

Waste Parcel Keyword List

Radiological Information

Nuclide Activity Date: 12/4 /2006

Maximum Contact Exposure Rate:

16 mR/hr

☐ Contact Dose Rate N/A H-3 Only

Nuclides

Waste Parcel Report

Package ID #: P0700239

Form Number: 061240

Mixed: ☑

Void?: ☐

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Placed in Storage?: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐

Nuclide	*Activity*	*Units*	*Activity (Ci)*
Am-241	1.27E-04	Ci	1.27E-04

☐ Approval To Exceed 2 KG U-235 ER

☑ TRU

Safeguards

○ CATIII

○ CATIV

Basic for Radiological Determination:

Process Knowledge

Additional Radiological Comments:

See attached copies of manufacturer source certificates for additional information! In addition, see ACTIVITY OR ACTIVITY CONCENTRATION TO ACTIVITY CALCULATION WORKSHEET

RMWMF Treatment Information

☐ Waste Treated? Treatment Date m

☐ Treatment Occurred Before One Year?

☐ Waste Treated to meet LDR Standards??

☐ Were all LDR Treatment Standards Met?

☐ Solidification

☐ Neutralization

☐ Macroencapsulation

☐ Deactivation

☐ Stabilization

☐ Mechanical Processing

Chemical Characterization

☐ Liquid Flashpoint < 140 F

☐ Oxidizer

☐ Aqueous Liquid with pH <= 2 or >= 12.5

pH:

☐ Ignitable Compressed Gas

☐ Solid Capable of Fire Through Friction

☐ Liquid Corrodes Steel

☐ Normally Unstable

☐ Reacts Violently with Water

☐ Explosive when Mixed with Water

☐ Forms Toxic Gas with Water

☐ Contains Cyanide or Sulfde

☐ Capable of Explosion with Initiator

☐ Capable of Explosion at Std Temp and Pressure

☐ Contains Explosive

☑ Contains TCLP Metals

☐ Organics over Regulatory Limits

☐ Contains UHC Inorganic

☐ Contains UHC Organic

☐ Contains Soils with Inorganics over 10 x Limit

☐ Contains Soils with Organics over 10 x Limit

☐ Contains Spent Solvents

☐ Contains a Commericial Chemical Product

☐ Contains Other Hazardous Waste

☐ Does Waste Contain PCBs?

Concentration in PPM:

Waste Parcel Report

Package ID #: P0700239

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Form Number: 061240

Placed in Storage?: ☑

Mixed: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐

Void?: ☐

☐ Does Waste Contain Asbestos?

☐ Has Waste been Wetted?

○ Friable ○ Non-Friable

Friable Concentration 0 %

RMWMF Determination:

Is Waste TSCA Regulated? ☐

TSCA Determination Basis Process Knowledge

Treatability Group 21 SEALED SOURCES WITH TCLP METALS

Permit Process SUPPORT ACTIVITIES (RP & WM)

Permit Description DEBRIS

H and T Codes: S01 Awaiting NMED Approval?: ☐

Date Permission Received to Generate Mixed Waste: 7/10/2006

RCRA Data

Code	Chemical	Quantity	Units	Waste Item Description	Justification
D011	SILVER	>5	mg/l	TCLP	

Basis for RCRA Determination:

Process Knowledge

Additional RCRA/TSCA Related Comments

Chargeback

ER Waste ☐

Amnesty Waste ☐

Exempt Waste ☐

Facility Code: NMRW

Exempt Comment:

Uploaded to Financial System on: Wednesday, February 07, 2007

Biennial Data

California Code of Regulations (CCR) Information

Waste Parcel Report

Package ID #: P0700239

Form Number: 061240

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Placed in Storage?: ☑

Mixed: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐

Void?: ☐

☐ Is waste a non-RCRA hazardous waste per California Code of Regulations (CCR), Title 22, Division 4.5?

Basis for Non-RCRA Hazardous Waste Determination:

Not Applicable

Date Permission Received to Generate CCR Waste?

Process Safety Management (PSM) Chemical Information

Disposal Request Report

Void: ☐
Void Date:
Data Check?: ☑

Form Number: 061240
DR Number: 061240
Log Date: 8/24/2006
DR Date: 8/1/2006

Waste Generator/Custodian Information

Generator

Last Name: KIRK-SCHWEITZ
Telephone #: (505) 845-0456
First Name: ANN
Department: 5991

Pickup Contact

Mills, James J.
Phone: (505)845-0584
Parcel Types: 1 x Other

Custodian

Last Name:
Telephone #:
First Name:
Department:

Generation Location

TA: 3
Building: 6642
Room: TR55
Additional Location Information: INSIDE TRANSPORTCONTAINER

Chargeback Data

Project #: 3327
Task #: 2.03.01.06

Generation Frequency: ◉ One-Time ○ Intermittent ○ Continuous

NTS Waste Stream Information

NTS Waste Stream ID
SNL/NM PKE #
Waste Stream Name

Data Entry Comments:

This Disposal Request contains 1 Parcel (s)

Parcel	Pickup Date	Shipped	Container	Facility	Location
P0700239	2/5/2007	No	C070128	F6925	LR06B

Flag
GREATER THAN CLASS C
TRANSURANIC > 100 nCi per gram

Waste Parcel Report

Package ID #: P0700239

Form Number: 061240

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Mixed: ☑

Placed in Storage?: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐ Void?: ☐

PARCEL INFORMATION

Is Waste RCRA-Regulated? ☑

Does Waste Contain PCBs? ☐

Does Waste Contain Asbestos? ☐

Does Waste Contain Beryllium? ☐ Percent Beryllium by Weight: 0

Has Waste Been Treated Prior to Submitting DR? ☐

If Yes, Was the Waste Treated to Meet an LDR Treatment Standard? ☐

Is Accountable Nuclear Material Present? ☐

Fissile: ☐

- (●) Non-Accountable
- ( ) Accountable Nuclear Material
- ( ) Accountable Special Nuclear Material

Waste Security Classification

- (●) Unclassified ( ) CRD ( ) SRD
- ( ) CFRD ( ) SFRD ( ) Other

Visual Observation Protection Needed? ☐

CWS #: Not Applicable

Package Type

Package Description: OTHER

Type B Container ☐

Other Size and Composition: 2 Gal AN Can

Other Tare Wt (lbs):

Scale Serial #:

Containers Inspected? ☑

RWNMDD Container ID: Not Applicable

SNL Barcode Present? ☐

Survey #: S95961

Waste Accumulation Start Date: 2/15/2006 Date Waste Last Added: 2/15/2006

All Physical Forms Present

- ☑ Solids Present
- ☐ Liquids Present
- ☐ Gases Present

Primary Physical Form

- (●) Solid Only
- ( ) Liquids Present
- ( ) Gases Present

☐ Free Liquids?

☐ Compressed Gases?

If Liquids Present

Liquids Only

- ( ) Aqueous
- ( ) Organic
- ( ) Sludge

or

Liquids & Solids

- ( ) Aqueous
- ( ) Organic
- ( ) Sludge

Summary

No.	Container ID		Cat 2 Frac
1	C00210016	FD exp (PNL9)	0.0038
2	C00210018	EEOS exp (KFK1)	0.0149
3	C00210015	FD exp (PNL10)	0.0029
4	C00210026	FD (PNL9)	0.0029
5		W79-JTA Debris	
6		W79-JTA Debris	
7		W79-JTA Debris	
8		DF,TRAN,STAR,Pin red,gold,green,FALCON,Melt Prog,ST	
9	C00210019	EEOS exp (PNL15), FD (PNL9)	0.0314
10	C00210020	FD (PNL9,PNL10,PNL11), EEOS (KFK2)	0.0985
11	C00210021	FD (PNL11)	0.0038
12	C00210022	FD (PNL10)	0.0029
13	C00210024	FD (PNL10)	0.0029
14	C00210003	ST (BR3 Belgium)	0.4108
15		W79-JTA Debris	
16		W79-JTA Debris	
17		W79-JTA Debris	
18		W79-JTA Debris	
19	C00210009	Pellets (FE070, FE094), EEOS residue (GB9, Lot-2A)	0.1118
20		ZPR Plates (Type B)	
21		ZPR Plates (Type B)	
22		33 Ci, Jeff Jarry (?), 284-3080, 3220 lb, Co60? & Fe55	
23	C00210025	FD (PNL9,PNL11)	0.0038
24	200060-PNL3	Never used in exp (PNL3)	0.1247
25		Np237	
26	200218-DB1	FD (PNL9,PNL11,P14A), STAR (P14A,P42R)	0.9316
27	200217-DB2	(BR3 Belgium)	0.8579
28	200216-GG	(BR3 Belgium)	0.4979
29		B-61 DU Parts	
	Total:		3.1022

DIVIDER

PAGE

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: M1007

Waste Stream Number(s): SNL-HCF-S5400-RH

Acceptable Knowledge Documentation Type: ☐ TRU Waste Management Program Information ☐ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☑ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents

Title or Description of Source Document [a] : Collection of MSDSs.

Source Document Reference Information (author(s), document and revision number, date, publisher): NA, NA, NA, 1987 through 2011, PTCL

AK # [b]	Source Doc. Page # [c]	AK Information Summary
S10	Throughout	Includes MSDS for: Bartlett Stripcoat; Beuhler Micropolish alumina; Decahydronaphthalene; DER 332 expoxy resin; Engis Hyprez OS Lubricant; EPON 815 epoxy resin; EpoThin Resin; grafoil; HE-175 Lubricating Fluid; Jeffamine T-403; Klean-Strip paint remover; Mastermet ink; MetaDi aerosol; MetaDI I, II, III; Polyvinyl Butyral; Quik Solid; Sharpie Fine; Simple Green.

Source Document Data Limitations (If any):

1. None.

Acceptable Knowlege Expert:

STEVE SCHAFER, [signature] Date: 1/12/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

NTPC RECORDS ORIGINAL
DATE REC'D 5-20-14

RECEIVED APR - 8 1993 PO# T23248 MARSHA WILSON CVRF / HP

:rial Safety Data Sheet
:e used to comply with
Hazard Communication Standard,
10.1200. Standard must be
:or specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

:TTY (As Used on Label and List) BARTLETT STRIPCOAT TLC

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

:on I Lot # 3446

:acturer's Name SANCHEM, INC.	Emergency Telephone Number (312) 733-6100
:s (Number, Street, City, State, and ZIP Code) 1600 S. CANAL STREET	Telephone Number for Information (312) 733-6100
Chicago, IL 60616	Date Prepared 1/17/91
	Signature of Preparer (optional) Walter W. Kilbner

:on II — Hazardous Ingredients/Identity Information

:ous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
			CAS #	
AMMONIA		25ppm	7664-41-7	0.9%

:on III — Physical/Chemical Characteristics

Point	212°F	Specific Gravity (H_2O = 1)	0.9±
Pressure (mm Hg.) Same as water		Melting Point	32°F
Density (AIR = 1) Same as water		Evaporation Rate (Butyl Acetate = 1) Same as water	

:ity in Water Forms Dispersion in water

:ance and Odor Milky liquid - slight ammonia odor

:on IV — Fire and Explosion Hazard Data

:oint (Method Used) N/A	Flammable Limits	N/A	LEL N/A	UEL N/A

:ushing Media will not burn

: Fire Fighting Procedures N/A

: and Explosion Hazards N/A

Section V — Reactivity Data

Stability			Conditions to Avoid
	Unstable		
	Stable	X	

Incompatibility (Materials to Avoid): Strong Acids

Hazardous Decomposition or Byproducts: None Known

Hazardous Polymerization			Conditions to Avoid
	May Occur		
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Skin? X Ingestion? X

Health Hazards (Acute and Chronic): None Known

Carcinogenicity: NTP? NO IARC Monographs? NO OSHA Regulated? NO

Signs and Symptoms of Exposure: MAY CAUSE MINOR SKIN IRRITATION

Medical Conditions Generally Aggravated by Exposure: NONE KNOWN

Emergency and First Aid Procedures: WASH WITH SOAP AND WATER

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled: ABSORB WITH STRONG ABSORBING MATERIAL AND SCOOP UP. STORE IN SEALED DRUMS.

Waste Disposal Method: SANITARY LAND FILL

Precautions to Be Taken in Handling and Storing: DO NOT FREEZE

Other Precautions: NONE

Section VIII — Control Measures

Respiratory Protection (Specify Type): IN CONFINED AREAS, USE GAS MASK FOR AMMONIA

Ventilation			
	Local Exhaust	REQUIRED	Special: N/A
	Mechanical (General)	REQUIRED	Other: N/A

Protective Gloves: VINYL OR RUBBER

Eye Protection: GOGGLES

Other Protective Clothing or Equipment: OPTIONAL

Work/Hygienic Practices: WASH HANDS BEFORE EATING

* U.S.G.P.O.: 1986—491-329/41773

** TOTAL PAGE.001 **

BARTLETT SERVICES INC.

Certificate of Conformance
Bartlett Services, Inc.
Decontamination Services
60 Industrial Park Road
Plymouth, MA 02360

Customer:	Customer P.O. No.: T23248 Bartlett Services No.: Project:
Scientific Ecology Group Bldg #6 140 Gallaher Road Kingston, TN 37763	

Item No.	Quanity	Part/Lot No.	Description
16692	1 x 5 Gal	Lot 3446	Bartlett STripcoat TLC

The items listed herein have been procured and shipped in compliance with the Bartlett Services, Inc. Quality Assurance Program and applicable OSHA standards. The items in this shipment are in strict compliance with the requirements of your purchase order listed above. Lot numbers, material safety, data sheets and any necessary analytical documentation is enclosed with this shipment.

Decontamination Services
Rev. 1

Paul C. Lovendale
V.P., Quality Assurance

1993

BARTLETT STRIPCOAT TLC

Lot # 3446

SULFUR: 25.2 ppm

TOTAL CHLORINE: <1.0 ppm

TOTAL FLUORIDE: <0.1 ppm

TOTAL HEAVY METALS:

THE HEAVY METALS BY METAL WERE:

LEAD: 0.60 ppm

MERCURY: <0.001 ppm

ZINC: 32.8 ppm

TIN: <1.0 ppm

CADMIUM: <0.1 ppm

COPPER: 0.6 ppm

John W. Bibber

John W. Bibber, Ph.D.
Research Director

WHMIS REGULATIONS-CANADIAN WORKPLACE

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

Buehler

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)
40-6305-008/016/080 MICROPOLISH® ALUMINA A

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name: BUEHLER LTD.	Emergency Telephone Number: 312-295-6500
Address (Number, Street, City, State, and ZIP Code): 41 Waukegan Road, Lake Bluff, IL 60044	Telephone Number for Information: 312-295-6500
WHMIS CLASSIFICATION: CLASS D2B	Date Prepared: July 20, 1989
CHEMICAL FAMILY: ALUMINUM OXIDE	Signature of Preparer (optional): Thomas R. Deram

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	CAS	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
ALUMINUM OXIDE	1344-28-1	15 mg/m^3	10 mg/m^3	NONE.	100%

Section III — Physical/Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H_2O = 1)	3.99
Vapor Pressure (mm Hg.)	N/A	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water: Negligible		pH	N/A

Appearance and Odor: White dusty powder with no appreciable odor.

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used): NON-FLAMMABLE	Flammable Limits	LEL N/A	UEL N/A

Extinguishing Media: N/A

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards

NONE KNOWN

Section V — Reactivity Data

Stability			Conditions to Avoid
	Unstable		NONE KNOWN
	Stable	X	

Incompatibility (Materials to Avoid)
Ethylene oxide, chlorine trifluoride

Hazardous Decomposition or Byproducts
None Known

Hazardous Polymerization			Conditions to Avoid
	May Occur		NONE KNOWN
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	X	X	X

Health Hazards (Acute and Chronic)
INHALATION: May cause irritation of the nose and throat accompanied by cough and chest pain. EYE CONTACT: May cause irritation seen as redness and possibly swelling of the conjunctiva.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Signs and Symptoms of Exposure
No evidence of adverse effects from available information.

Medical Conditions Generally Aggravated by Exposure
OVEREXPOSURE: Breathing of dust may aggravate asthma and inflammatory or fibrotic pulmonary disease.

Emergency and First Aid Procedures
EYES: Flush thoroughly with water. SKIN: Wash with soap & water. INHALATION: Remove to fresh air - Give oxygen if needed. INGESTION: Rinse mouth with water.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
Wear protective equipment to protect against hazards and dispose of per waste disposal method.

Waste Disposal Method
Dispose of waste per local, state, and federal regulations.

Precautions to Be Taken in Handling and Storing
Avoid agitation and open containers to avoid dusting of powder. Use with adequate ventilation. Keep container closed when not in use.

Other Precautions
NONE KNOWN

Section VIII — Control Measures

Respiratory Protection (Specify Type)
If there is excessive dusciness, wear respirator per OSHA 29 CFR 1910.134

Ventilation	Local Exhaust	Special
	Local dust pickup recommended	NONE
	Mechanical (General)	Other
	N/A	NONE

Protective Gloves	Eye Protection
Not required but recommended.	Goggles per OSHA 29 CFR 1910.133

Other Protective Clothing or Equipment
NONE REQUIRED

Work/Hygienic Practices
Good personal hygiene to be followed at all times.

he data and information as stated was furnished by the manufacturer and supplier of this roduct. BUEHLER, LTD. cannot warrant the accuracy of this information, and shall esponsible or liable for any damage that may result, should

MSDS Number: **D0064** * * * * * *Effective Date:* ***09/14/09*** * * * * * *Supercedes:* ***07/03/07***

MSDS **Material Safety Data Sheet**

From: **Mallinckrodt Baker, Inc.**
222 Red School Lane
Phillipsburg, NJ 08865

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

DECAHYDRONAPHTHALENE

1. Product Identification

Synonyms: Naphthalene, decahydro; cis and trans-decahydronaphthalene practical; decahydronaphthalene anhydrous; DEC; DECALIN;DE-KALIN
CAS No.: 91-17-8
Molecular Weight: 138.25
Chemical Formula: C10H18
Product Codes: G128, G132

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Decahydronaphthalene	91-17-8	97 - 100%	Yes
Naphthalene, 1,2,3,4-tetrahydro-	119-64-2	0 - 3%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. ASPIRATION MAY CAUSE LUNG DAMAGE. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM. FLAMMABLE LIQUID AND VAPOR.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate
Flammability Rating: 2 - Moderate
Reactivity Rating: 2 - Moderate
Contact Rating: 3 - Severe
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:
Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Exposure to high concentrations may cause numbness, nausea, headache, CNS depression and vomiting.
Ingestion:
Harmful if swallowed. Direct aspiration into the lungs may cause chemical pneumonitis and may cause lung damage. Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.
Skin Contact:
Causes irritation to skin. Symptoms include redness, itching, and pain. May cause dermatitis.
Eye Contact:
Causes irritation, redness, and pain. Contact may cause eye damage.
Chronic Exposure:
Prolonged or repeated skin contact may produce a skin infection.
Aggravation of Pre-existing Conditions:
The use of alcohol beverages may enhance the toxic effects of this substance.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:
Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately.
Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Flash point: 58C (136F) CC
Autoignition temperature: 250C (482F)
Flammable limits in air % by volume:
lel: 0.7; uel: 4.9
Flammable Liquid and Vapor!
Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Sealed containers may rupture when heated. Contact with strong oxidizers may cause fire. Sensitive to static discharge.
Fire Extinguishing Media:
Dry chemical, alcohol foam or carbon dioxide. Do not use a solid stream of water, since the stream will scatter and spread the fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Vapors can flow along surfaces to distant ignition source and flash back.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Keep packed under nitrogen.

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
None established.
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
For conditions of use where exposure to the substance is apparent and engineering controls are not feasble, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear, colorless liquid.
Odor:
Slight odor resembling methanol.
Solubility:
Insoluble in water.

Specific Gravity:
0.896
pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
Trans: 187C (369F) cis: 196C (384F)
Melting Point:
Trans: -31C (-23F) cis: -43C (135F)
Vapor Density (Air=1):
4.76
Vapor Pressure (mm Hg):
Cis: 2.3
Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Hygroscopic. Reacts violently with strong oxidizers. Potentially explosive peroxides can form on long-time storage in contact with air. Light and heat accelerate peroxide formation.
Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong oxidizers.
Conditions to Avoid:
Heat, flame, ignition sources, incompatibles, light, and air.

11. Toxicological Information

Oral rat LD50: 4170 mg/Kg Skin rabbit LD50: 5900 mg/Kg Inhalation rat LC50: 710 ppm/4H Investigated as a tumorigen.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Decahydronaphthalene (91-17-8)	No	No	None
Naphthalene, 1,2,3,4-tetrahydro- (119-64-2)	No	No	None

12. Ecological Information

Environmental Fate:
When released into the soil, this material may biodegrade to a moderate extent. When released to water, this material is expected to quickly evaporate. This material may bioaccumulate to some extent. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: DECAHYDRONAPHTHALENES
Hazard Class: 3
UN/NA: UN1147
Packing Group: III
Information reported for product/size: 4L

International (Water, I.M.O.)

Proper Shipping Name: DECAHYDRONAPHTHALENES
Hazard Class: 3

UN/NA: UN1147
Packing Group: III
Information reported for product/size: 4L

International (Air, I.C.A.O.)

Proper Shipping Name: DECAHYDRONAPHTHALENES
Hazard Class: 3
UN/NA: UN1147
Packing Group: III
Information reported for product/size: 4L

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
Decahydronaphthalene (91-17-8)	Yes	Yes	Yes	Yes
Naphthalene, 1,2,3,4-tetrahydro- (119-64-2)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Decahydronaphthalene (91-17-8)	Yes	Yes	No	Yes
Naphthalene, 1,2,3,4-tetrahydro- (119-64-2)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Decahydronaphthalene (91-17-8)	No	No	No	No
Naphthalene, 1,2,3,4-tetrahydro- (119-64-2)	No	No	No	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Decahydronaphthalene (91-17-8)	No	No	No
Naphthalene, 1,2,3,4-tetrahydro- (119-64-2)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Mixture / Liquid)

Australian Hazchem Code: 3[Z]
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **2** Flammability: **2** Reactivity: **0**
Label Hazard Warning:
WARNING! HARMFUL IF SWALLOWED OR INHALED. ASPIRATION MAY CAUSE LUNG DAMAGE. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM. FLAMMABLE LIQUID AND VAPOR.
Label Precautions:
Avoid breathing vapor or mist.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Keep away from heat, sparks and flame.
Label First Aid:
Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.
Product Use:
Laboratory Reagent.
Revision Information:
No Changes.
Disclaimer:
****
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****

Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 19251

PRODUCT NAME: D.E.R. (R) 332 EPOXY RESIN

Effective Date: 12/09/85 Date Printed: 05/13/87 MSD: 002199

1. INGREDIENTS:

Reaction products of epichlorohydrin & Bisphenol A	CAS# 001675-54-3	100%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: Not applicable
VAP. PRESS: Not applicable
VAP. DENSITY: Not applicable
SOL. IN WATER: None
SP. GRAVITY: 1.16
APPEARANCE: Water-white to yellow liquid to semi-solid.
ODOR: Not available.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 485F, 252C
METHOD USED: PMCC

FILED UNDER
D E R THREE HUNDRED THIRTY TWO EPOXY RESIN

FLAMMABLE LIMITS
LFL: Not determined
UFL: Not determined

EXTINGUISHING MEDIA: Foam, CO_2, dry chemical.

FIRE & EXPLOSION HAZARDS: None.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Excess heating over long periods of time degrades the resin.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Base.

HAZARDOUS DECOMPOSITION PRODUCTS: None under normal conditions.

(Continued on Page 2)

4. REACTIVITY DATA: (CONTINUED)

HAZARDOUS POLYMERIZATION: Will not occur by itself, but masses of more than 1 pound of product plus an aliphatic amine will cause irreversible polymerization with considerable heat buildup.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Soak up in absorbent material such as sand and collect in suitable containers. Residual resin may be removed using steam or hot soapy water. Use of methylene chloride or other solvents in cleanup poses a distinct hazard and therefore should be avoided. Keep spark producing equipment away. For large spills, evacuate upwind of spills and contain with dike.

DISPOSAL METHOD: Burn in adequate incinerator or bury in an approved landfill in accordance with local, state and federal regulations.

6. HEALTH HAZARD DATA:

EYE: May cause slight transient (temporary) eye irritation. Corneal injury is unlikely.

SKIN CONTACT: May cause allergic skin reaction in susceptible individuals. Prolonged exposure not likely to cause significant skin irritation. Repeated exposure may cause skin irritation.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD50 for skin absorption in rabbits is 20,000 mg/kg.

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is 4000 mg/kg. No hazards anticipated from ingestion incidental to industrial exposure.

INHALATION: Vapors are unlikely due to physical properties.

SYSTEMIC & OTHER EFFECTS: Except for skin sensitization, repeated exposures to low molecular weight epoxy resins of this type are not anticipated to cause any significant adverse effects. A poorly characterized sample of low molecular weight epoxy resin of this type (diglycidyl ether of Bisphenol A) has been reported to produce skin cancer in a highly sensitive strain of mice.

(Continued on Page 3)

(R) Indicates a trademark of The

6. HEALTH HAZARD DATA: (CONTINUED)

However, high levels of impurities (including a known animal skin carcinogen) compromise the validity of the findings. Epoxy resin that is representative of current manufacturing processes is not believed to be a cancer hazard to humans. Results of mutagenicity tests in animals have been negative. Has been shown to be negative in some in vitro ("test tube") mutagenicity tests and positive in others.

7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): None established.

VENTILATION: Good general ventilation should be sufficient for most conditions.

RESPIRATORY PROTECTION: No respiratory protection should be needed.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use chemical goggles.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: See Dow bulletin entitled, "Storage, Handling and Toxicity of Dow Epoxy

(Continued on Page 4)

9. ADDITIONAL INFORMATION: (CONTINUED)

Resins." Practice good caution and personal cleanliness to avoid skin and eye contact. Avoid breathing vapors of heated material.

MSDS STATUS: New MSDS.

Dow, Inc. 1-800-258-2436
Dow Texas (409) 238-3011 QA - John Hubney

decomposition temp of DER + amine epoxy system : ~ 200°C

Used in HCL ins.
2:2 DER 332 epoxy resin : 1 Jeffamine hardener (by wt.)

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

ENGIS CORP -- HYPREZ OS LUBRICANT, 3426 -- 9150-00N000301

========== Product Identification ==========

Product ID: HYPREZ OS LUBRICANT, 3426
MSDS Date: 12/21/1988
FSC: 9150
NIIN: 00N000301
MSDS Number: BCFCP
=== Responsible Party ===
Company Name: ENGIS CORP
Address: 105 W HINTZ RD
City: WHEELING
State: IL
ZIP: 60090
Country: US
Info Phone Num: 708-808-9400
Emergency Phone Num: 708-966-5600
CAGE: 20566
=== Contractor Identification ===
Company Name: ENGIS CORP
Address: 105 W HINTZ RD
Box: City: WHEELING
State: IL
ZIP: 60090
Country: US
CAGE: 20566

========== Composition/Information on Ingredients ==========

Ingred Name: ALIPHATIC PETROLEUM DISTILLATE; (SOLVENT NAPHTHA(PETROLEUM))
CAS: 64742-96-7
Fraction by Wt: 60-100%
Other REC Limits: 500 PPM (MFR)

Ingred Name: P-DIOXANE; (1,4-DIOXANE) (SARA III)
CAS: 123-91-1
RTECS #:JG8225000
Fraction by Wt: 0-1%
OSHA PEL: S, 100 PPM
ACGIH TLV: S, 25 PPM; 9293
EPA Rpt Qty: 100 LBS
DOT Rpt Qty: 100 LBS

Ingred Name: ETHANE, 1,1,1-TRICHLORO-; (METHYL CHLOROFORM)
CAS: 71-55-6
RTECS #:KJ2975000
Fraction by Wt: 10-30%
OSHA PEL: 350 PPM; 450 PPM STEL
ACGIH TLV: 350 PPM; 450 PPM STEL
EPA Rpt Qty: 1000 LBS
DOT Rpt Qty: 1000 LBS
Ozone Depleting Chemical: 1

========== Hazards Identification ==========

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES
Reports of Carcinogenicity:NTP: YES IARC:YES OSHA:NO
Health Hazards Acute and Chronic: CHLOROCARBON MATLS HAVE PRDCED SENSIT OF MYOCARDIUM TO EPINEPHRINE IN LAB ANIMALS & COULD HAVE A SIMILAR EFT IN HUMANS. ADRENOMIMETICS (E.G. EPINEPHRINE) MAY BE CONTRAINDICATED EXCEPT FOR LIFE-SUSTAIN ING USES IN HUMANS ACUTELY/CHRONICALLY EXPOSED TO CHLOROCARBONS. INHAL: DROW, DIZZ, NASAL & RESP (EFTS OF OVEREXP)
Explanation of Carcinogenicity: DIOXANE: GRP 2B IARC, VOL 7, P.201, 1987; ANTICIPATED TO BE CARCINOGEN, NTP 6TH ANNUAL RPT ON CARCINOGENS,1991. .
Effects of Overexposure: HLTH HAZ: IRRITATION. SKIN: MILD IRRITATION, DEFATTING W/PROLONGED CONTACT. EYES: MILD IRRITATION. INGEST: NAUSEA, VOMITING, DIARRHEA AND PULMONARY EDEMA IF ASPIRATED INTO LUNGS.
Medical Cond Aggravated by Exposure: NONE SPECIFIED BY MANUFACTURER.

First Aid Measures

First Aid:INHAL: REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. GET PROPER MEDICAL ATTENTION. SKIN: WASH THOROUGHLY W/SOAP & WATER. EYES: FLUSH THOROUGHLY W/WATER FOR AT LEAST 15 MIN S, LIFTING UPPER & LOWER LIDS OCCASIONALLY. INGEST: DO NOT INDUCE VOMITING. KEEP PERSON WARM, QUIET & GET IMMEDIATE MEDICAL ATTENTION.

Fire Fighting Measures

Flash Point Method: TCC
Flash Point: >86F,>30C
Lower Limits: 0.7%
Upper Limits: 5%
Extinguishing Media: FOAM, DRY CHEMICAL & CARBON DIOXIDE.
Fire Fighting Procedures: WEAR NIOSH/MSHA APPROVED PRESSURE DEMAND SCBA & FULL PROTECTIVE EQUIPMENT. WATER JETS UNSUITABLE.
Unusual Fire/Explosion Hazard: THERMAL DECOMP PRODS MAY INCL HCL & PHOSGENE. A MILD "POPPING" DUE TO 1,4-DIOXANE IS OBSERVED IN TEST RANGE OF 86F-97F; OTHERWISE NO FL PT UP TO 200F.

Accidental Release Measures

Spill Release Procedures: TAKE UP LIQUID ON ABSORB MATL & TRANSFER TO EXHST HOOD, ALLOWING VOLATILE PORTION TO ESCAPE. ELIMINATE ALL IGNIT SOURCES (SMOKING, FLAMES, PILOT LIGHTS, ELEC SPARKS) UNTIL CLEANUP IS COMPLETED. SHOVEL ABSORB MATL & RESIDUE INTO CLOSED CONTAINERS.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Handling and Storage

Handling and Storage Precautions: SINCE EMPTY CONTRS RETAIN RESIDUES (VAP/LIQ), ALL HAZ PRECS IN THIS MSDS MUST BE OBSERVED FOR STOR/DISP OF CONTRS. DOT CLASS: COMBUSTIBLE.
Other Precautions: NO SMOKING IN AREA OF USE. DO NOT USE IN GEN VICINITY OF ARC WELDING, OPEN FLAMES OR HOT SURF. HEAT &/OR UV RADIA MAY CAUSE THE FORMATION OF HCL &/OR PHOSGENE.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection: NIOSH/MSHA APPROVED SCBA IF TLV OF THE PRODUCT IS EXCEEDED. OSHA REGULATIONS PERMIT VARIOUS NIOSH/MSHA APPROVED RESPIRATORS.
Ventilation: TO MAINTAIN EXPOS BELOW PEL LOCAL EXHST REQD FOR SPRAYING OPERATION PRDCING MISTS. MECH (GEN) RECOM FOR LIQ (SUP DAT)
Protective Gloves: POLYETHYLENE OR POLYVINYL ALCOHOL GLOVES
Eye Protection: CHEMICAL WORKERS GOGGLES .
Other Protective Equipment: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT.
Work Hygienic Practices:] ONE SPECIFIED BY MANUFACTURER.
Supplemental Safety and Health
HAZ DECOMP PROD: DECOMPOSITION TEMPERATURE IN OPEN FLAMES.
VENT:(NON-SPRAY) APPLICATIONS.

========== Physical/Chemical Properties ==========

HCC: F4
Boiling Pt: B.P. Text:>165F,>74C
Vapor Pres: <144 @ 68F
Vapor Density: HVR/AIR
Spec Gravity: 0.84 (H*2O=1)
Evaporation Rate & Reference: SLOWER THAN WATER
Solubility in Water: INSOLUBLE
Appearance and Odor: CLEAR, THIN, PURPLE FLUID, PLEASANTLY SCENTED
Percent Volatiles by Volume: 90

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid: YES
RUBBER, SOME PLASTICS & STRONG OXIDIZING AGENTS (NITRIC ACID, PERMANGANATES).
Stability Condition to Avoid: NONE
Hazardous Decomposition Products: CARBON MONOXIDE, CARBON DIOXIDE, HYDROGEN CHLORIDE & VERY SMALL AMTS OF PHOSGENE & CHLORINE ONLY AT THERMAL (SUPP DATA)

========== Disposal Considerations ==========

Waste Disposal Methods: DISPOSE OF RESIDUE IN CLOSED CONTAINER. DO NOT POUR LIQUID MATERIAL DOWN DRAINS OR SEWERS. MATERIAL MAY BE DISPOSED OF IN NORMAL FASHION IN ACCORDANCE W/LOCAL, STATE & FEDERAL REGULATIONS.

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MATERIAL SAFETY DATA SHEET

Shell

MSDS NUMBER ▶ 1-8 PAGE 1

97367 (4-85)

24 HOUR EMERGENCY ASSISTANCE	GENERAL MSDS ASSISTANCE
SHELL: 713-473-9461 CHEMTREC: 800-424-9300	SHELL: 713-241-4819

ACUTE HEALTH *	FIRE	REACTIVITY	HAZARD RATING ▶
3	2	0	LEAST - 0 SLIGHT - 1 MODERATE - 2 HIGH - 3 EXTREME - 4

*For acute and chronic health effects refer to the discussion in Section III

BE SAFE
READ OUR PRODUCT SAFETY INFORMATION ... AND PASS IT ON
PRODUCT HEALTH LAW REQUIRES IT!

SECTION I	NAME
PRODUCT ▶	EPON(R) RESIN 815
CHEMICAL NAME ▶	MODIFIED BISPHENOL A - EPICHLORDHYDRIN BASED EPOXY RESIN
CHEMICAL FAMILY ▶	EPOXY RESINS
SHELL CODE ▶	43220

SECTION II-A PRODUCT/INGREDIENT

NO.	COMPOSITION	CAS NUMBER	PERCENT
P	EPON RESIN 815	MIXTURE	100
1	BISPHENOL A/EPICHLORDHYDRIN RESIN	25068-38-6	86.5
2	N-BUTYL GLYCIDYL ETHER	2426-08-6	13.5

COMPONENT 1 IS AN EPOXY RESIN PRODUCED BY THE CONDENSATION REACTION OF EPICHLORDHYDRIN AND BISPHENOL-A. THESE RAW MATERIALS ARE CONSUMED IN THE PROCESS. RESIDUAL LEVELS OF EPICHLORDHYDRIN ARE TYPICALLY 2-3 PPM IN THE PRODUCT. RESIDUAL LEVELS OF BISPHENOL-A ARE TYPICALLY <100 PPM.

SECTION II-B ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
P	9.0 G/KG (RAT)		
1	11.4 G/KG (RAT)	>20 ML/KG (RABBIT)	NO DEATHS, SAT. AIR, 8H
1	15.6 G/KG (MOUSE)		
2	1.53 G/KG (MOUSE)	2.26 G/KG (RABBIT)	5.510 MG/M3 8H (RAT)

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT
BASED ON PRODUCT TESTING PRODUCT IS SEVERELY IRRITATING TO THE EYES.

IN CONTACT
BASED ON PRODUCT TESTING, PRODUCT IS MILDLY IRRITATING TO THE SKIN. PROLONGED OR REPEATED LIQUID CONTACT CAN RESULT IN DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS. BASED ON PRODUCT TESTING PRODUCT MAY CAUSE SKIN SENSITIZATION.

INHALATION
BASED ON PRESENCE OF COMPONENT 2, PRODUCT IS PRESUMED TO CAUSE IRRITATION TO THE NOSE, THROAT AND RESPIRATORY TRACT; MAY PRODUCE CNS DEPRESSION.

INGESTION
BASED ON PRODUCT TESTING, PRODUCT IS SLIGHTLY TOXIC. BASED ON PRESENCE OF COMPONENT 2, PRODUCT MAY PRODUCE CNS DEPRESSION.

SIGNS AND SYMPTOMS
IRRITATION AS NOTED ABOVE. SKIN SENSITIZATION (ALLERGY) MAY BE EVIDENCED BY RASHES, ESPECIALLY HIVES. EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY DIZZINESS, HEADACHE, DIZZINESS AND NAUSEA; IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH MAY OCCUR.

AGGRAVATED MEDICAL CONDITIONS
PREEXISTING EYE, SKIN, AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. PREEXISTING SKIN OR RESPIRATORY ALLERGIES MAY INCREASE THE CHANCE OF DEVELOPING INCREASED ALLERGY SYMPTOMS FROM EXPOSURE TO THIS PRODUCT..

SECTION IV — OCCUPATIONAL EXPOSURE LIMITS

NO.	OSHA PEL/TWA	OSHA PEL/CEILING	ACGIH TLV/TWA	ACGIH TLV/STEL	OTHER
P	NONE ESTABLISHED				
1	NONE ESTABLISHED				
2	50 PPM		25 PPM		

SECTION V — EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT
IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT
REMOVE CONTAMINATED CLOTHING/SHOES AND WIPE EXCESS FROM SKIN. FLUSH SKIN WITH WATER. FOLLOW BY WASHING WITH SOAP AND WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION. DO NOT REUSE CLOTHING UNTIL CLEANED. CONTAMINATED LEATHER ARTICLES, INCLUDING SHOES, CANNOT BE DECONTAMINATED AND SHOULD BE DESTROYED.

INHALATION
REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION
DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION.

NOTE TO PHYSICIAN
IF MORE THAN 2.0 ML PER KG HAS BEEN INGESTED AND VOMITING HAS NOT OCCURRED, EMESIS SHOULD BE INDUCED WITH SUPERVISION. KEEP VICTIM'S HEAD BELOW HIPS TO PREVENT ASPIRATION. IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS, GASTRIC LAVAGE USING A CUFFED ENDOTRACHEAL TUBE SHOULD BE CONSIDERED.

SECTION VI — SUPPLEMENTAL HEALTH INFORMATION

COMPONENT 1: A. MUTAGENICITY: BOTH COMPONENT 1 AND THE DIGLYCIDYL ETHER OF BISPHENOL-A (DGEBPA), ITS MAJOR CONSTITUENT, HAVE PROVED TO BE INACTIVE IN SEVERAL IN VIVO ASSAYS. THEY HAVE BOTH SHOWN MUTAGENIC ACTIVITY IN MICROBIAL SCREENING TESTS AND HAVE PRODUCED CHROMOSOMAL ABERRATIONS IN CULTURED RAT LIVER CELLS. THE SIGNIFICANCE OF THIS INFORMATION TO MAN IS UNKNOWN, PARTICULARLY IN VIEW OF THE NEGATIVE CARCINOGENICITY DATA.

COMPONENT 1: B. CARCINOGENICITY: ALTHOUGH OF LIMITED DESIGN AND/OR DURATION, ALL EARLY STUDIES WITH COMPONENT 1 AND/OR DGEBPA BY RELEVANT ROUTES OF EXPOSURE HAVE BEEN NEGATIVE. A NUMBER OF MORE RECENT 2-YEAR SKIN PAINTING STUDIES (MICE) WITH BOTH COMPONENT 1 AND DGEBPA HAVE YIELDED NO EVIDENCE OF LOCAL OR SYSTEMIC CARCINOGENICITY.

COMPONENT 2: COMPONENT 2 HAS BEEN REPORTED TO BE MUTAGENIC IN IN-VITRO TESTS. TESTS IN MICE GAVE MIXED RESULTS (DOMINANT LETHAL TESTS).

NOTE: THIS PRODUCT CONTAINS TRACE (2-3 PPM, TYPICAL) RESIDUAL QUANTITIES OF EPICHLORDHYDRIN (ECH), CAS NO. 106-89-8. IT IS VERY UNLIKELY THAT NORMAL WORK PRACTICES WITH THIS PRODUCT COULD RESULT IN ATMOSPHERIC ECH CONCENTRATIONS APPROACHING THE OSHA LIMIT. NEVERTHELESS, YOU SHOULD BE AWARE THAT ECH HAS BEEN REPORTED TO PRODUCE CANCER IN LABORATORY ANIMALS AND TO PRODUCE MUTAGENIC CHANGES IN BACTERIA AND CULTURED HUMAN CELLS. THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) STATES THAT THE EVIDENCE THAT ECH CAUSES CANCER IN HUMANS IS INADEQUATE.

SECTION VII PHYSICAL DATA

BOILING POINT: NOT AVAILABLE (DEG F)

SPECIFIC GRAVITY: 1.13 (H2O=1)

VAPOR PRESSURE: 1 (MM HG)

MELTING POINT: NOT AVAILABLE (DEG F)

SOLUBILITY: (IN WATER) NEGLIGIBLE

VAPOR DENSITY: 4.5 (AIR=1)

EVAPORATION RATE (N-BUTYL ACETATE = 1): NOT AVAILABLE

APPEARANCE AND ODOR: LIGHT YELLOW LIQUID.

SECTION VIII FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD:
164 DEG F (SETAFLASH)

FLAMMABLE LIMITS /% VOLUME IN AIR
LOWER: N/AV UPPER: N/AV

EXTINGUISHING MEDIA
USE WATER FOG, "ALCOHOL" FOAM, DRY CHEMICAL OR CO2.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS
CAUTION. COMBUSTIBLE. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS
CONTAINERS EXPOSED TO INTENSE HEAT FROM FIRES SHOULD BE COOLED WITH WATER TO PREVENT VAPOR PRESSURE BUILDUP WHICH COULD RESULT IN CONTAINER RUPTURE. CONTAINER AREAS EXPOSED TO DIRECT FLAME CONTACT SHOULD BE COOLED WITH LARGE QUANTITIES OF WATER AS NEEDED TO PREVENT WEAKENING OF CONTAINER STRUCTURE.

SECTION IX REACTIVITY

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID:
AVOID HEAT, FLAME AND CONTACT WITH STRONG OXIDIZING AGENTS. CAN REACT VIGOROUSLY WITH STRONG LEWIS OR MINERAL ACIDS AND STRONG MINERAL AND ORGANIC BASES/ESPECIALLY PRIMARY AND SECONDARY ALIPHATIC AMINES.

HAZARDOUS DECOMPOSITION PRODUCTS
CARBON MONOXIDE, ALDEHYDES AND ACIDS MAY BE FORMED DURING COMBUSTION. REACTION WITH SOME CURING AGENTS MAY PRODUCE CONSIDERABLE HEAT.

SECTION X EMPLOYEE PROTECTION

RESPIRATORY PROTECTION
AVOID PROLONGED OR REPEATED BREATHING OF VAPOR OR MISTS. IF EXPOSURE MAY OR DOES EXCEED OCCUPATIONAL EXPOSURE LIMITS (SEC. IV) USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134 USE EITHER A FULL FACE, ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS.

PROTECTIVE CLOTHING
AVOID CONTACT WITH EYES. WEAR CHEMICAL GOGGLES IF THERE IS LIKELIHOOD OF CONTACT WITH EYES. AVOID CONTACT WITH SKIN AND CLOTHING. WEAR CHEMICAL-RESISTANT GLOVES AND PROTECTIVE CLOTHING.

ADDITIONAL PROTECTIVE MEASURES
USE EXPLOSION-PROOF VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS. EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE FOR EMERGENCY USE.

SECTION XI ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES
CAUTION. COMBUSTIBLE. *** LARGE SPILLS *** ELIMINATE POTENTIAL SOURCES OF IGNITION. WEAR APPROPRIATE RESPIRATOR AND OTHER PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND, OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS AND SEAL TIGHTLY FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTION AS ABOVE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL.

WASTE DISPOSAL
UNDER EPA - RCRA (40 CFR 261.21), IF THIS PRODUCT BECOMES A WASTE MATERIAL, IT WOULD BE AN IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

ENVIRONMENTAL HAZARDS
EPA - COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT. UNDER EPA-CERCLA ("SUPERFUND") RELEASES TO AIR, LAND OR WATER MAY BE REPORTABLE TO THE NATIONAL RESPONSE CENTER, 800-424-8802 (CIRCUMSTANCES SURROUNDING THE RELEASE AND CLEANUP DETERMINE REPORTABILITY). KEEP OUT OF SURFACE WATERS, SEWERS, AND WATERWAYS ENTERING OR LEADING TO SURFACE WATERS. NOTIFY AUTHORITIES IF ANY EXPOSURE TO THE GENERAL PUBLIC OR ENVIRONMENT OCCURS OR IS LIKELY TO OCCUR.

SECTION XII SPECIAL PRECAUTIONS

WARNING! COMBUSTIBLE LIQUID. KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS AND FLAME. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE EVEN LIQUID PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER SOURCES OF IGNITION PRIOR TO USE AND UNTIL ALL VAPORS ARE GONE. VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM THE HANDLING SITE; FLASH-FIRE CAN RESULT. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE WITH ADEQUATE VENTILATION. CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS. STATIC ELECTRICITY MAY ACCUMULATE AND CREATE A FIRE HAZARD. GROUND FIXED EQUIPMENT. BOND AND GROUND TRANSFER CONTAINERS AND EQUIPMENT.

WARNING! SENSITIZER. CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, CAN CONTAIN HAZARDOUS PRODUCT RESIDUES. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING, APPLYING COSMETICS OR USING TOILET FACILITIES. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE. CONTAMINATED LEATHER ARTICLES, INCLUDING SHOES, CANNOT BE DECONTAMINATED AND SHOULD BE DESTROYED.

SECTION XIII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION: COMBUSTIBLE LIQUID
D.O.T. PROPER SHIPPING NAME: COMBUSTIBLE LIQUID, N.O.S.*

OTHER REQUIREMENTS:
*(N-BUTYL GLYCIDYL ETHER)

SECTION XIV OTHER REGULATORY CONTROLS

THE COMPONENTS OF THIS PRODUCT ARE LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

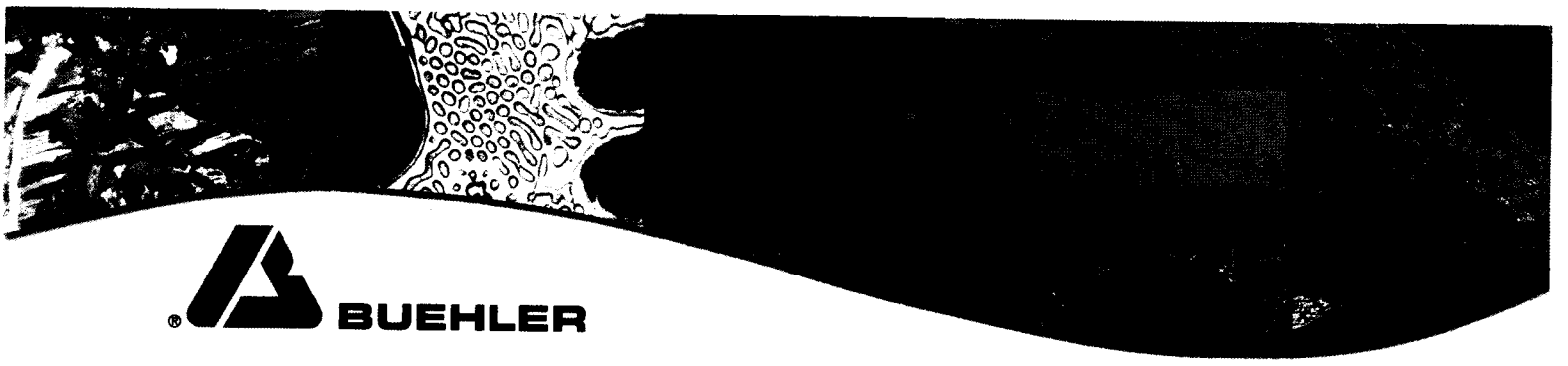
DATE PREPARED: APRIL 21, 1988

JOHN P. SEPESI

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
P. O. BOX 4320
HOUSTON, TX 77210

BE SAFE

READ OUR PRODUCT
SAFETY INFORMATION ...AND PASS IT ON
(PRODUCT LIABILITY LAW
REQUIRES IT)



BUEHLER

MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BUEHLER EPOTHIN RESIN
IDENTIFICATION NUMBER: 20-8140-032, 20-8140-128
PRODUCT USE/CLASS: Epoxy resin

SUPPLIER:
BUEHLER, LTD
41 WAUKEGAN ROAD
LAKE BLUFF, IL 60044

EMERGENCY: 800-424-9300
INFORMATION: 847-295-6500
PREPARER: Technical Department, 847-295-6500
PREPARE DATE: 03/23/09, 23 March 2009

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

ITEM	CHEMICAL NAME	CAS NUMBER	WT/WT%
01	Bisphenol-A Epoxy resin	25068-38-6	60.0-100.0
02	N-Butyl Glycidyl Ether	2426-08-6	10.0-30.0
03	Acrylic ester	TRADE SECRET	1.0-5.0
04	Diglycidyl ether	TRADE SECRET	1.0-5.0

ITEM	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL – CEILING	COMPANY TLV-TWA	SKIN
01	N.E.	N.E.	N.E.	N.E.	N.E.	NO
02	25 ppm	N.E.	50 ppm	N.E.	5ppm-C NIOSH	NO
03	N.E.	N.E.	N.E.	N.E.	N.E.	NO
04	N.E.	N.E.	N.E.	N.E.	N.E.	NO

(SEE SECTION 15 FOR [illegible])

MSDS NUMBER: 9106795

SECTION 3 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Combustible. Harmful if swallowed. Causes skin irritation. May cause allergic skin reaction. Contact may cause eye injury.

ACUTE EFFECTS – EYE CONTACT: Severely irritating to the eyes.

ACUTE EFFECTS - SKIN CONTACT: Repeated or prolonged contact may cause sensitization. Irritating to skin. Contact may cause redness and dermatitis.

ACUTE EFFECTS – INHALATION: Vapors and/or aerosols formed at elevated temperatures can be irritating.

ACUTE EFFECTS - INGESTION: Irritating to mouth, throat and stomach, with nausea.

CHRONIC OVEREXPOSURE EFFECTS: *Preexisting pulmonary and dermatological disorders may be aggravated by exposure to hazardous components. *Butyl glycidyl ether is mutagenic "in-vitro." Mutagenicity tests in mice gave mixed results.

OTHER INFORMATION: No information.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT, EYE CONTACT, INHALATION

SECTION 4 – FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT: Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

INHALATION: If symptoms occur, remove to fresh air. Medical personnel may administer oxygen if breathing is difficult. Seek medical attention if symptoms persist.

INGESTION: Swallowing less than an ounce will not cause significant harm. For larger amounts, do not induce vomiting, but give one or two glasses of water to drink and get medical attention.

NOTES TO PHYSICIAN: Treat symptomatically.

SECTION 5 – FIRE FIGHTING MEASURES

FLASH POINT: 165 F (PENSKY-MARTENS C.C.)

LOWER EXPLOSIVE LIMIT: N.A.

UPPER EXPLOSIVE LIMIT: N.A.

AUTOIGNITION TEMPERATURE: No data

EXTINGUISHING MEDIA: CO_2, FOAM, DRY CHEMICAL, WATER FOG

UNUSUAL FIRE AND EXPLOSION HAZARDS: Closed containers may rupture or explode (due to pressure build-up) when exposed to extreme heat. Irritating and/or toxic gases or fumes may be generated by thermal decomposition or combustion.

SPECIAL FIREFIGHTING PROCEDURES: Use NIOSH-approved self-contained breathing apparatus and full protective clothing. Use water to cool exposed containers. Water stream directed into fire may cause frothing with subsequent spread of flame.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Reclaim clean material. Wear appropriate protective equipment during cleanup. Absorb with inert material, such as clay. Sweep or shovel into loosely-covered waste container and remove to appropriate waste area. Dispose of in accordance with federal, state, and local regulations.

[illegible] HANDLING AND STORAGE

HANDLING: Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid contact with eyes, skin, and clothing. FOR INDUSTRIAL USE ONLY.

STORAGE: Store full and empty containers in a cool dry place away from heat, flames and sparks. Keep container closed when not in use.

[illegible] PROTECTION

ENGINEERING CONTROLS: Local exhaust as needed to control vapor or dust levels to below lowest component TLV.

RESPIRATORY PROTECTION: If TLV/PEL is exceeded, if use is performed in a poorly-ventilated space, or if inhalation effects occur, use NIOSH-approved vapor cartridge respirator in accordance with applicable health and safety regulations and manufacturer's recommendations.

SKIN PROTECTION: Butyl rubber gloves. Nitrile gloves. Supported PVA gloves.

EYE PROTECTION: Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT: Accessible eye wash and safety shower.

HYGIENIC PRACTICES: Follow good general industrial safety practices during use. Do not smoke or eat during use. DO NOT reuse empty containers without commercial clean or recondition

[illegible] PROPERTIES

BOILING RANGE:	327 - 500 F	VAPOR DENSITY:	Is heavier than air
ODOR:	Sweet	ODOR THRESHOLD:	No data
APPEARANCE:	Clear thin yellow	EVAPORATION RATE:	Is slower than Butyl Acetate
SOLUBILITY IN H_2O:	Negligible		
FREEZE POINT:	No data	SPECIFIC GRAVITY:	1.1299
VAPOR PRESSURE:	<0.1 mm@20 degC	pH @ 0.0%:	N.A.
PHYSICAL STATE:	Liquid	VISCOSITY:	Low
COEFFICIENT OF WATER/OIL DISTRIBUTION:		No data	

(SEE SECTION 15 [illegible])

[illegible]

CONDITIONS TO AVOID: Prolonged exposure to heat.

INCOMPATIBILITY: Strong Lewis or mineral acids. Strong bases or oxidants. Reaction with amines and mercaptans in large amounts or under uncontrolled conditions releases considerable heat and may release acrid fumes. Inert gases. Free radical initiators. Oxygen scavengers.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon. Aldehydes and acids from incomplete combustion. Phenolic compounds.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

SECTION 11 – TOXICOLOGICAL PROPERTIES

COMPONENT TOXICOLOGICAL INFORMATION:

---------- CHEMICAL NAME ----------	------ LD50 ------	------ LC50 ------
Bisphenol-A Epoxy resin	Oral-rat=>11 g/kg	No deaths/satd air
N-Butyl Glycidyl Ether	Oral-rat=1660mg/kg	Inh-rat=1030ppm/8H
Acrylate ester	No information	No information
Diglycidyl ether	No information	No information

SECTION 12 – ECOLOGICAL INFORMATION

ECOLOGICAL TEST DATA: No information.

SECTION 13 – DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Review all current federal, state, and local regulations regarding health and disposal for appropriate disposal procedures. FOR SMALL AMOUNTS: If both resin and hardener are available, mix and cure in accordance with product directions. When cured, product is non-hazardous, and may be placed in industrial or municipal landfill if local regulations permit. Product disposed of in "as sold" condition is not considered a hazardous waste under Federal RCRA regulations. Landfill of free liquid NOT recommended. Fuels blending or incineration preferred for free liquid if regulations permit.

SECTION 14 – TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: Not regulated in containers < 110 gal	
DOT TECHNICAL NAME: N.A.	
DOT HAZARD CLASS: N.A.	HAZARD SUBCLASS: N.A.
DOT UN/NA CLASS: N.A.	PACKAGING GROUP: N.A.
	RESP. GUIDE PAGE:
INTERNATIONAL SHIPPING NAME: Not regulated as a dangerous good for transport	
INTERNATIONAL ID NUMBER: N.A.	
IMDG CLASS (1°, 2°): N.A.	IMDG PAGE NUMBER: N.A.
IMDG EMS: N.A.	IATA CLASS (1°, 2°): N.A

[illegible] REGULATORY INFORMATION

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

CERCLA – SARA HAZARD CATEGORY: THIS PRODUCT HAS BEEN REVIEWED, AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES: IMMEDIATE HEALTH HAZARD CHRONIC HEALTH HAZARD

SARA SECTION 313: THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 AND 40 CFR PART 372:

---------- CHEMICAL NAME ---------- CAS NUMBER WT/WT % IS LESS THAN

No SARA Section 313 components exist in this product.

TOXIC SUBSTANCE CONTROL ACT: THE CHEMICAL SUBSTANCES IN THIS PRODUCT ARE ON THE TSCA SECTION 8 INVENTORY. THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF TSCA 12(B) IF EXPORTED FROM THE UNITED STATES: none

NEW JERSEY RIGHT-TO-KNOW: THE FOLLOWING MATERIALS ARE NON-HAZARDOUS, BUT ARE AMONG THE TOP 5 COMPONENTS IN THIS PRODUCT:

---------- CHEMICAL NAME ---------- CAS NUMBER

No non-hazardous materials are among the top five ingredients.

PENNSYLVANIA RIGHT-TO-KNOW: THE FOLLOWING NON-HAZARDOUS INGREDIENTS ARE PRESENT IN THE PRODUCT AT GREATER THAN 3%:

---------- CHEMICAL NAME ---------- CAS NUMBER

No non-hazardous ingredients are present at greater than 3%.

CALIFORNIA PROPOSTION 65: No Proposition 65 chemicals known to exist in this product.

CANADIAN WHMIS: THIS MSDS HAS BEEN PREPARED IN COMPLIANCE WITH CONTROLLED PRODUCT REGULATIONS EXCEPT FOR USE OF THE 16 HEADINGS.

CANADIAN WHMIS CLASS: D2B, B3

COMPONENT RCRA CLASSIFICATIONS: NONE

COMPONENT RCRA CODES: N.A.

CERCLA RQ VALUE (MINIMUM): N.A.

[illegible] OTHER INFORMATION

HMIS RATINGS

HEALTH: 2 FLAMMABILITY: 2 REACTIVITY: 0

PREVIOUS MSDS REVISION DATE: 1/24/08; 24 Jan 08

REASON FOR REVISION: Administrative change for new format.

VOLATILE ORGANIC COMPOUNDS: 0 grams/ltr

LEGEND:

N.A. – NO INFORMATION N.E. – NOT ESTABLISHED N.D. – NOT DETERMINED

ABBREVIATIONS: ACGIH = AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS; OSHA = OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION; TLV-TWA = THRESHOLD LIMIT VALUE – TIME WEIGHTED AVERAGE (8 HOURS); STEL = SHORT-TERM EXPOSURE LIMIT (15 MINUTES); C = CEILING VALUE; PEL = PERMISSIBLE EXPOSURE LIMIT

DISCLAIMER: TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION CONTAINED IN THIS MSDS IS ACCURATE OR IS OBTAINED FROM SOURCES BELIEVED TO BE ACCURATE. HOWEVER, NO LIABILITY, EXPRESSED OR IMPLIED, IS ASSUMED FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. BUYER ASSUMES LIABILITY IN ITS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

GRAFTech International

GrafTech International Holdings Inc.
11709 Madison Avenue
Lakewood, OH 44107

MSDS No.: **0016**
Issue Date: November, 1985
Revision Date: December, 2007

Trade Name: **GRAFOIL®** - See Section 16 for Grades

GRAFTECH INTERNATIONAL HOLDINGS INC. REQUESTS THE USERS OF THIS PRODUCT TO STUDY THIS MATERIAL SAFETY DATA SHEET (MSDS) AND BECOME AWARE OF PRODUCT HAZARDS AND SAFETY INFORMATION. TO PROMOTE SAFE USE OF THIS PRODUCT, USERS SHOULD NOTIFY THEIR EMPLOYEES, AGENTS AND CONTRACTORS OF THE INFORMATION ON THIS MSDS AND ANY PRODUCT HAZARDS AND SAFETY INFORMATION.

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: GRAFOIL®

Chemical Name: Flexible Graphite Laminates, Gaskets and Packing

Synonyms: Graphite

Manufacturer:
GrafTech International Holdings Inc.
11709 Madison Avenue
Lakewood, OH 44107

Emergency Telephone Numbers:
1-800-424-9300 or
1-703-527-3887
24 Hours

2. COMPOSITION / INFORMATION ON INGREDIENTS

Material	CAS Registry No.	Weight Percent	ACGIH (TLV)	OHSA (PEL)
1. Graphite	7782-42-5	>99.7	2.0 mg/m^3 Respirable	2.5 mg/m^3 Respirable
2. Crystalline Silica (See Section 16, Item 3.)	14808-60-7	<0.3	0.025 mg/m^3 Respirable	10 mg/m^3 / % SiO_2 + 2 Respirable

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PRODUCT DOES NOT RELEASE HAZARDOUS MATERIALS IN NORMAL USE. FABRICATION MAY RELEASE GRAPHITE AND SILICA DUSTS, WHICH MAY BE HARMFUL IF INHALED OR IF CONTACT IS MADE WITH SKIN OR EYES. SEE BELOW AND SECTION 16, ITEM 3.

Primary Route of Exposure: Inhalation of dusts generated during processing and handling, and dermal and ocular contact.

Effects of Overexposure:

Acute: High concentration of graphite dusts may be irritating to the eyes, skin, mucous membranes and respiratory tract.

Chronic: Inhalation of high concentrations of graphite dusts over prolonged periods of time may cause pneumoconiosis. Symptoms can include cough, shortness of breath and decrease in pulmonary function.

Pre-existing pulmonary disorders, such as emphysema, may possibly be aggravated by prolonged exposure to high concentrations of graphite dusts.

Inhalation of high concentrations of crystalline silica dusts over prolonged periods of time may cause silicosis, a progressively debilitating lung disease. The symptoms are similar to those cited above for pneumoconiosis. (See Section 16, Item 3.) Inhalation of high concentrations of crystalline silica over prolonged periods of time has also been linked to an increased incidence of lung cancer. (See Section 11.)

Physical Hazards:

Graphite dusts are electrically conductive. Accumulations of dusts may cause shorting of electrical circuits. Care should be taken to seal electrical circuits and switches that may be affected. Dusts should not be emitted to the atmosphere where they may settle on and cause shorting of electrical equipment.

4. FIRST AID MEASURES

Inhalation: For overexposure to fumes, vapors or particulate matter, remove the exposed person to fresh air. If breathing is difficult, oxygen may be administered. Seek medical attention. If breathing has stopped, artificial respiration should be started immediately. Seek medical attention.

Eye Contact: If material enters the eye, flush with water for at least 15 minutes. Seek medical attention if irritation develops or persists.

Skin Contact: If material gets on the skin, wash thoroughly with mild soap and water. Seek medical attention if irritation develops or persists. Dermatitis should be treated symptomatically by a physician.

Ingestion: Ingestion is not expected to be an important route into the body.

5. FIRE FIGHTING MEASURES

Flashpoint and Method: Not Applicable

Flammable Limits: LEL: Not Applicable UEL: Not Applicable

Autoignition Temperature: Not Applicable

Extinguishing Media: Bulk material is non-combustible, but subject to thermal decomposition at high temperatures. Use water, carbon dioxide, dry chemical or foam as extinguishing media.

Special Firefighting Procedures: Material in or near fires should be cooled with a water spray or fog.

Unusual Fire and Explosion Hazards: Thermal decomposition may produce smoke, oxides of carbon and low molecular weight organic compounds whose composition has not been characterized.

6. ACCIDENTAL RELEASE MEASURES

Spilled or released material should be picked up with a suitable implement and returned to the original container if reusable. If not reusable, the material should be placed in DOT-approved containers for disposal. Personnel involved in the cleanup should be wearing appropriate personal protective equipment. See Section 8. Unauthorized personnel should be kept clear of the area of spills or releases. Do not allow material to enter storm or sanitary sewers, groundwater or soil. Releases may be reportable to local, state or federal authorities. Consult federal, state or local regulatory requirements for more information.

7. HANDLING AND STORAGE

Store in labeled, closed containers away from heat, spark, open flames and other sources of ignition. Do not store with or near incompatible chemicals cited in Section 10. Do not let dust from material accumulate in the workplace. Promptly clean up any spills that may occur. Any dusts generated during handling or processing should be cleaned up by wet mopping or vacuuming. Dry sweeping can resuspend particulate matter in the atmosphere.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Ventilation

If dusts are generated during processing or use, local exhaust ventilation should be provided to maintain exposures below the limits cited in Section 2.

Personal Protection:

Respiratory:	If exposures exceed the limits cited in Section 2 by less than a factor of 10, use a NIOSH-approved N95 respirator.
Eye Protection:	Protective glasses with sideshields should be worn to prevent eye contact with particulate matter.
Protective Gloves:	Protective gloves are recommended to prevent cuts, abrasions and irritation during handling and processing.
Other:	Where normal work clothes may become soiled by dusts, coveralls are recommended. Wash soiled clothing before reuse.

All chemicals should be handled so as to prevent eye contact and excessive or repeated skin contact. Appropriate eye and skin protection should be employed. Inhalation of dusts and vapors should be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Black Solid Shapes	Bulk Density:	Not Applicable
Odor:	Slight Hydrocarbon	Boiling Point:	Not Applicable
Melt Point:	>5000°F	Vapor Density:	Not Applicable
Specific Gravity:	0.8-1.8	% Solubility (H_2O):	Negligible
Vapor Density (Air=1):	Not Applicable	Evaporation Rate (BUOAC=1):	Not Applicable
% Volatile by Volume:	Non-Volatile	Other:	Not Applicable

10. STABILITY AND REACTIVITY

Conditions Causing Instability:	None that are known. Material is stable. Hazardous polymerization will not occur.
Incompatibility (Materials to Avoid):	Avoid contact with strong oxidizing agents.
Hazardous Decomposition Products:	See Section 5 for possible combustion and/or thermal decomposition products. These would be expected only during emergency conditions.
Special Sensitivity:	None that are known.

11. TOXICOLOGICAL INFORMATION

Graphite	Oral LD_{50} Rat	>5 g/kg

The crystalline silica component of this formulation is listed as an animal carcinogen and a known human carcinogen by the International Agency for Research on Cancer (IARC).

12. ECOLOGICAL INFORMATION

Bioaccumulation is not expected, as product is insoluble in water.

13. DISPOSAL CONSIDERATIONS

Material should be disposed of in accordance with all applicable federal, state and local regulations. Contact your local or state environmental agency for specific requirements.

14. TRANSPORT INFORMATION

D.O.T. Shipping Name:	Not Regulated
Technical Shipping Name:	Not Applicable
D.O.T. Hazard Class:	Not Applicable
U.N./N.A. Number:	Not Applicable
Product RQ. (lbs.):	Not Applicable
D.O.T. Label:	Not Applicable
D.O.T. Placard:	Not Applicable
Freight Class Bulk:	Not Applicable
Freight Class Package:	Not Applicable
Product Label:	Not Applicable

15. REGULATORY INFORMATION

All components are listed on:

U.S.: TSCA

EC: EINECS

Canada: DSL

CERCLA REPORTABLE QUANTITY:

Not Applicable

RCRA STATUS:

Not Regulated

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES:

Not Applicable

SECTION 311/312 HAZARD CATEGORIES:

Not Applicable

SECTION 313 TOXIC CHEMICALS:

Not Applicable

STATE REGULATORY INFORMATION:

1. WARNING: The crystalline silica component of this formulation has been identified as a "chemical known to cause cancer" by the State of California.

COMPONENT NAME	CAS REGISTRY NO.	CONCENTRATION
Crystalline Silica	14808-60-7	<0.3%

16. OTHER INFORMATION

NOTICE FROM GRAFTECH INTERNATIONAL HOLDINGS INC. – The data in this Material Safety Data Sheet relate only to the specific material designated herein and do not relate to use in combination with any other material or in any process. The information contained herein is based on available scientific literature obtained by GrafTech International Holdings Inc. and is current as of the date of issue of this Material Data Safety Sheet. GrafTech International Holdings Inc. makes no representation as to the accuracy of the scientific literature on which it has relied in the preparation of this Material Data Safety Sheet. Since the use of this information and these opinions and the conditions of use of the product are not within the control of GrafTech International Holdings Inc., it is the user's obligation to determine the conditions of safe use of this product.

1.

Products	Grades
Laminates	GHC, GHL, GHL-A, GHL-K, GHL-J, GHB, GHB-K, GHA, GHA-J, GHM

* And various other new sales grades or trial grades not specifically listed, but manufactured with the materials noted in this MSDS.

2. This product is WHMIS Controlled D2A.

3. Personnel samples taken during cut-part fabrication showed non-detectable levels of crystalline silica.

Prepared By: M. H. Burns/J. D. Banzer

L:\HSEP\MSDS\0016 Grafoil Laminates Gaskets ANSI.doc

vpcinc.ca

HE-175

Material Safety Data Sheet
Revision Date January 2007
For Chemical Emergency Call Chemtrex 800-424-9300

1. Substance/Company Identification

PRODUCT NAME: **HE-175**
CAS NUMBER: 64742-65-0
MANUFACTURER: Vacuum Products Canada Inc.
Mississauga, ON, L5S 1V7
(905) 672-7704

2. Composition/ Ingredients

GENERIC NAME: 100% Solvent refined Neutral paraffinic oil
CHEMICAL FORMULA: (CH2)n 20 =< n =< 40
HAZARDOUS INGREDIENTS: None

3. Hazards Identification

POSSIBLE ENTRY ROUTES: Ingestion, inhalation of oil mists
This product is not classified as hazardous.
ACUTE EFFECTS: Exposure to oils mists may cause nausea and eye irritation. Detailed studies have not been made, but material is not expected to be dermatitic or a sensitizer.
CHRONIC EFFECTS: Unknown.

4. First Aid Measures

SKIN: Wash with soap and water.
EYES: Flush with water. Contact a physician!
INGESTION: If swallowed, do not induce vomiting.
Contact a physician. Small amounts in mouth may be washed out.

5. Fire Fighting Measures

FLASH POINT: >213 C
METHOD USED: Cleveland Open Cup
EXPLOSIVE LIMITS LOWER: Unknown UPPER: Unknown
EXTINGUISHING MEDIA: Water fog, chemical foam or carbon dioxide. NFPA Class III B Material.
SPECIAL FIREFIGHTING PROCEDURES: Wear breathing gear when fighting fires in enclosed spaces; incomplete combustion of this material produces carbon monoxide!
UNUSUAL FIRE AND/OR EXPLOSION HAZARDS: None

6. Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN EVENT OF RELEASE: Small spills may be wiped up with a rag. Large spills should be picked up immediately with an absorbent.

7. Handling and Storage

HANDLING: None known
STORAGE: None known

8. Exposure Controls/Personal Protection

ENGINEERING CONTROL MEASURES: None required
RESPIRATORY PROTECTION: See notes on ventilation below.
PROTECTIVE GLOVES: Yes - made of oil-impermeable rubber
SAFETY GLASSES/GOGGLES: Yes - glasses should have side shields
OTHER PROTECTIVE EQUIPMENT: None should be required under normal use.

9. Physical & Chemical Properties

PHYSICAL STATE: Liquid
VAPOR PRESSURE: < .0001 Torr @ 25C
BOILING POINT: >200 C
EVAPORATION RATE (ether = 1): Nil
VAPOR DENSITY: approximately 14
WT % VOLATILES: Nil
SPECIFIC GRAVITY: 0.87
VISCOSITY: 52 cst @ 40 C
SOLUBILITY IN WATER: Nil
APPEARANCE: Pale yellow viscous liquid with a faint petroleum odor.

10. Stability & Reactivity

STABILITY: Material is stable
CONDITIONS TO AVOID: Continuous exposure to temperatures > 200 C
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion may produce carbon monoxide.

11. Toxicological Information

ACUTE ORAL LD50(MG/KG): None known
ACUTE DERMAL LD50: None
ACUTE INHALATION: US Gov't 8 hr TWA limit for exposure to oil mists is 5 mg per cubic meter

12. Ecological Information

ENVIRONMENTAL: When used and/or disposed of as indicated, no adverse environmental effects are foreseen.
MOBILITY: Non-volatile and insoluble in water.
DEGRADABILITY: Slowly biodegradable in aerobic conditions.

13. Disposal Considerations

Product and packaging must be disposed of in accordance with Federal, State and local regulations.

14. Transport Classification

Not classified as hazardous for transport by air, sea or road.

15. Regulatory Information

TSCA: This material is in compliance with the TOXIC SUBSTANCE CONTROL ACT (15 USC 2601-2629) and is listed in the TSCA Inventory.

HAZARD CATEGORIES FOR SARA 311/312 REPORTING

HEALTH	Immediate (Acute)	No
HEALTH	Delayed (Chronic)	No
PHYSICAL	Fire	No
PHYSICAL	Sudden rlease of pressure	No
PHYSICAL	Reactive	No
PHYSICAL	Nuisance Mist/ Dust Only	No

01=SARA 313	11=NJRTK	21=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	22=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	23=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIM TWA	24=TSCA Sect 8(a)
05=CAProp65-ReprotTox	15=ACGIH STEL	25=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	26=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	27=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	28=OSHA CEILING
09=SARA 302/304	20=EPA Carcinogen	
10=PA RTK		

The following components of this material are found on the regulatory lists indicated.

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
Is found on lists: 14,15,17

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et.seq., the product is to be identified as follows:
PETROLEUM OIL

16. Other Information

NFPA RATING

FLAMMABILITY	1
HEALTH HAZARD	0
REACTIVITY	0
SPECIAL HAZARD	NONE

TEXACO INC.
INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL
SAFETY DATA SHEET

NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 7 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

Trade Name and Synonyms
75852 JEFFAMINE T-403

Manufacturer's Name: Texaco Chemical Company
Emergency Telephone No.: (409) 722-8381

Address: 4800 Fournace Place P.O. Box 430 Bellaire, TX 77401

Chemical Name and/or Family or Description: Alkyl ether amine

THIS PRODUCT IS CLASSIFIED AS:
X HAZARDOUS BY DEFINITION NO.(S) 3,4,5
___ NOT HAZARDOUS:
___ ON ATTACHED EXPLANATION SHEETS

WARNING STATEMENT:
DANGER! CAUSES SEVERE EYE & SKIN BURNS & MAY CAUSE BLINDNESS
SERIOUS INJURY MAY RESULT IF SWALLOWED
SERIOUS INJURY MAY RESULT IF ABSORBED THROUGH SKIN

OCCUPATIONAL CONTROL PROCEDURES

Protective Equipment (Type)

Eyes: Chemical type goggles with face shield must be worn. Do not wear contact lenses.

Skin: When handling large quantities subject to splashes and spills, impervious suits, gloves and rubber boots must be worn.

Inhalation: Supplied air respiratory protection for cleaning large spills or upon entry into tanks, vessels, or other confined spaces.

Ventilation: Local exhaust ventilation recommended

Permissible Concentrations:

Air: None established

EMERGENCY AND FIRST AID PROCEDURES

First Aid

Eyes: Flush thoroughly with water for at least fifteen minutes.Get immediate medical attention.

Skin: If drenched, remove contaminated clothing under safety shower and flood exposed areas with water. Get immediate medical attention. Wash clothing before reuse.

Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.

Inhalation: Should symptoms noted under physiological effects occur, remove to fresh air. If not breathing, apply artificial respiration.

Other Instructions: None.

PHYSIOLOGICAL EFFECTS

Effects of Exposure

Acute:

Eyes: Believed to be extremely irritating with possible permanent eye injury.

Skin: Corrosive; expected to cause severe skin damage with burns and blistering. Toxic effects expected from absorption through the skin.

Respiratory System: May cause irritation of upper respiratory tract.

Chronic: N.D.

Other: 30-day feeding study available. Ames testing = negative

Sensitization Properties:

Skin: Yes ___ No X Unknown ___ Respiratory: Yes ___ No ___ Unknown X

Median Lethal Dose (LD_{50} LC_{50} %Species)

Oral: .220 g/kg (rat); toxic

Inhalation: 0/6 deaths (rat); 8 hr. saturated atmosphere

Dermal: .400 g/kg (rabbit); toxic

Other: N. D.

Irritation Index, Estimation of Irritation (Species)

Skin: 8.0/8.0 (rabbit); extremely irritating

Eyes: Believed to be 80-110/110 (rabbit); extremely irritating

Symptoms of Exposure: See above

FIRE PROTECTION INFORMATION

Ignition Temp. °F. N.D. Flash Point °F. (Method) 340 F (PMCC)

Flammable Limits (%) Lower N.D. Upper N.D.

Products Evolved When Subjected to Heat or Combustion:

Ammonia, carbon monoxide, and carbon dioxide may be formed on burning in limited air supply.

Recommended Fire Extinguishing Agents And Special Procedures:

According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide.
Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.

Unusual or Explosive Hazards:

None.

ENVIRONMENTAL PROTECTION

Code No. 73852

Waste Disposal Method:
Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc. may render the resulting material hazardous. (See Remarks for Waste Classification.)

Procedures in Case of Breakage or Leakage: (Transportation Spills Call CHEMTREC (800) 424-9300)
Avoid all personal contact. Contain spill if possible. Wipe up or absorb on suitable material and shovel up.

Remarks:
Waste Classification: Product has been evaluated for RCRA characteristics and does not meet criteria of a hazardous waste if discarded in its purchased form.

PRECAUTIONS

DANGER! CAUSES SEVERE EYE & SKIN BURNS & MAY CAUSE BLINDNESS
SERIOUS INJURY MAY RESULT IF SWALLOWED
SERIOUS INJURY MAY RESULT IF ABSORBED THROUGH SKIN

Do not get in eyes, on skin or clothing.
Avoid breathing vapor or mist.
Keep container closed.
Use only in well-ventilated locations.
Wash thoroughly after handling.

Requirements for Transportation, Handling and Storage:
Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided. If stored above 100 F, a nitrogen atmosphere is recommended.

DOT Proper Shipping Name: Alkaline corrosive liq., n.o.s
DOT Hazard Class (if applicable): Corrosive material NA 1719

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (°F) high Vapor Pressure 1@100C (mmHg)

Specific Gravity .9812 (H_2O=1) Vapor Density N.A. (Air=1)

Appearance and Odor colorless liquid, ammoniacal odor

pH of undiluted product 12.3 Solubility sol.

Percent Volatile by Volume nil Evaporation 1 ( )=1

Viscosity 76.5 cS @ 25 C Other -

Hazardous Polymerizations ____ Occur X Do not occur

The Material Reacts Violently With: (If others is checked below, see additional comments on page 6 for futher details)

COMPOSITION

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
Poly(oxy(methyl-1,2-ethanediyl), alpha-hydro-omega-(2-aminomethylethoxy)-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)	39423513	None Established	100.0

Evaluation of this product indicates that it is hazardous according to OSHA Appendix A criteria and/or Texaco's hazard criteria.

PRODUCT SHIPPING LABEL

75852 JEFFAMINE T-403

DANGER! CAUSES SEVERE EYE & SKIN BURNS & MAY CAUSE BLINDNESS
SERIOUS INJURY MAY RESULT IF SWALLOWED
SERIOUS INJURY MAY RESULT IF ABSORBED THROUGH SKIN

Do not get in eyes, on skin or clothing.
Avoid breathing vapor or mist.
Keep container closed.
Use only in well-ventilated locations.
Wash thoroughly after handling.

In case of contact, immediately flush eyes and skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Call a doctor.
Wash clothing before reuse.
Destroy contaminated shoes.
If swallowed, DO NOT induce vomiting.
Call a doctor.
NEVER give anything by mouth to an unconscious person.

Chemical/Common Name	CAS No.	Range in %
Poly(oxy(methyl-1,2-ethanediyl), alpha-hydro-omega-(2-aminomethylethoxy)-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)	39423513	100.00

Evaluation of this product indicates that it is hazardous according to OSHA Appendix A criteria and/or Texaco's hazard criteria.

HMIS

Health	: 3	Reactivity	: 0
Flammability	: 1	Special	: -

DOT Proper Shipping Name: Alkaline corrosive liq., n.o.s
DOT Hazardous Class : Corrosive material NA 1719

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204)

Texaco Inc.
2000 Westchester Avenue
White Plains, New York 10650

For Additional Information Concerning:

Fuels/Lubricants/Antifreezes
call (914) 831-3400 (EXT.204)
Chemicals
call (512) 459-6543
Transportation Call

ADDITIONAL COMMENTS

TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL ACT
STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1987)
No critical materials present.

This material reacts violently with acids.

To determine applicability or effect of any law or regulation with respect to the product, users should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters

By F. E. Bentley

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

EXPLANATION OF THE INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address

Self explanatory.

Chemical Name and/or Family or Description

Refer to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following characteristics: (1) has a flash-point below 200 degrees Fahrenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value as established by the American Conference of Governmental Industrial Hygenists and/or the Occupational Safety and Health Administration (with exception to petroleum oil mist). (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumoconiosis; (9) in the course of normal operations may produce dusts, gases, fumes, vapor, mist, or smoke which have one or more of the above characteristics; (10) contains a component which may be carcinogenic according to NTP (National Toxicology Program), IARC (International Agency for Research on Cancer), OSHA (Occupational Safety and Health Administration), EPA (Environmental Protection Agency) and/or NCI (National Cancer Institute.); (11) has a median LC50 (RATS) in air of 200 ppm or less by volume of gas or vapor or 2.0 mg/l or less of mist, fume or dust when administered by continuous inhalation for one hour; (12) is a hazard as identified in the Product Shipping Label on page 5.

OCCUPATIONAL CONTROL PROCEDURES

(Consult your Industrial Hygienist or Occupational Health Specialist.)

Protective Equipment

Type of protective equipment that is necessary for the safe handling and use of this product.

Ventilation

Permissible Concentrations

Indicates worker exposure limits, such as the Threshold Limit Value (TLV) as established by the American Conference of Governmental Industrial Hygienists or standards, promulgated by the Occupational Safety and Health Administration (e.g., PEL).

TLV-Time Weighted Average (TWA) is the concentration in air averaged over an 8 hour daily exposure.

TLV-Ceiling (C) is the ceiling limit on concentration that should not be exceeded during any part of the working day.

"Skin" Notation (ACGIH) indicates that dermal absorption can contribute to overall exposure following direct contact or exposure to airborne m[illegible]

Permissible Exposure Level (PEL) is the time weighted concentration in air averaged over an 8 hour daily exposure.

EMERGENCY AND FIRST AID PROCEDURES

Administer first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation when tested by the meth-

FIRE PROTECTION INFORMATION

Ignition Temperature

Refers to the temperature in degrees Fahrenheit, at which a liquid will give off enough flammable vapor to ignite and burn continuously for 5 seconds.

Flash Point (Method used)

Refers to the temperature in degrees Fahrenheit, at which a liquid will give off enough flammable vapor to ignite.

Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion

The products evolved when this material is subjected to heat or combustion. Includes temperature at which oxidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unusual Fire or Explosive Hazards

Specifies hazards to personnel in case of fire, explosive danger.

ENVIRONMENTAL PROTECTION

Specifies how this product may be disposed.

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire, explosion, etc.

PRECAUTIONS

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC, DOT, or other regulations related to safety and health for transportation.

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (or Range)

In degrees Fahrenheit or Celsius Boiling Point at 760 mmHg.

Vapor Pressure

Pressure exerted when a solid or liquid is in equilibrium with its own vapor.

Specific Gravity

The ratio of the density of the product to the density of water.

Vapor Density

The ratio of the density of the vapor at saturation concentration (20 degrees Celsius or 68 degrees Fahrenheit) to the density of air at 760 mmHg.

Appearance and Odor

Refers to the general characterization of the material, e.g. powder, colorless liquid, aromatic odor, etc.

pH

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - STRONGLY ACIDIC
pH5-7 - WEAKLY ACIDIC
pH7-9 - WEAKLY BASIC
pH9-14 - STRONGLY BASIC

Solubility

Refers to the solubility of a material by weight in water at room temperature. The term negligible, less than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

Percent Volatile By Volume

Refers to the amount volatilized at 20 degrees Celsius or 68 degrees Fahrenheit when allowed to evaporate.

Evaporation

Gives the rate of evaporation compared to a standard

Viscosity

Measure of flow characteristics in Kinematic viscosity in Centistokes.

Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

Composition

Components of the product as required by OSHA (1910.1200) and one or more

HP

MATERIAL SAFETY DATA SHEET

MANUFACTURER: KLEAN-STRIP, DIVISION OF
W.M. BARR & COMPANY
2105 CHANNEL AVENUE
P.O. BOX 1879
MEMPHIS, TENNESSEE

DATE PREPARED: 6/30/87

TELEPHONE NUMBER: (901) 775-010(

SCIENTIFIC ECOLOGY GROUP
ATTN: MARK MCKINNEY
1560 BEAR CREEK ROAD
OAK RIDGE, TN 37380

SECTION I - PRODUCT IDENTIFICATION

FORMULA NUMBER: 3105
PRODUCT NUMBER: KS-20
PRODUCT NAME : LIQUID SPRAY REMOVER 5/GL
PRODUCT CLASS : SPRAYABLE PAINT REMOVER

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	CAS#	PERC WT	OCCUPATIONAL EXPOSURE LIMITS TLV	PEL	VAPOR PRESSURE MM	@(
METHYLENE CHLORIDE	75-09-2	< 80	100 ppm	500 ppm	350	2(
HER LIMITS: OSHA-CEILIN6:1000ppm, EAK: 2000ppm; ACGIH-STEL:500ppm						
ISOPROPYL ALCOHOL	67-63-0	< 15	400 ppm	400 ppm	33	2(
SOLVENT BLEND *	NONE	< 05	NE	NE	40	2(
* Above Ingredient Consists of:						
ETHANOL	64-17-5	(86)	1000ppm	1000ppm	NF	2(
PROPRIETARY	NONE	(10)	NE	NE	NF	2(
AC61H STEL for methanol is 250 ppm.						
METHANOL	67-56-1	< 05	200 ppm SKIN	200 ppm	138	2:

SECTION III - PHYSICAL DATA

BOILING RANGE: 104 THRU 180 F
EVAPORATION RATE: Slower Than Ether.
VAPOR DENSITY: Heavier Than Air.
% VOLATILE: 98.0 LBS/Gal : 9.56

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

AMMABILITY CLASS: OSHA-Not Applicable. DOT-Not Applicable.
FLASH POINT: No flash to boil pt
LEL: 2%

EXTINGUISHING MEDIA: Use Carbon Dioxide, Dry Powder or Foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Contact with flames may generate toxic

and/or corrosive fumes or vapors which are corrosive to metal.

SPECIAL FIREFIGHTING PROCEDURES: Self-contained respiratory protection shoulc provided for firefighters fighting fires in buildings or confined areas. Sto containers exposed to fire should be kept cool with water spray to prevent pressure build-up.

SECTION V - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY: Inhalation _X_ Ingestion _X_ Dermal _X_

EFFECTS OF OVEREXPOSURE - SHORT TERM EFFECTS:
INHALATION - May cause irritation of respiratory tract, headache, dizziness, nausea and vomiting. May cause increase in carboxyhemoglobin levels. Severe overexposure may cause paresthesias of extremities, unconsciousness and deatt
INGESTION - May cause gastrointestinal irritation, nausea and vomiting. May cause increase in carboxyhemoglobin levels. May cause depression of the centr nervous system.
SKIN CONTACT - May cause irritation and burns.
EYE CONTACT - May cause irritation. May cause conjunctivitis of eyes.

EFFECTS OF OVEREXPOSURE - LONG TERM EFFECTS:
May cause skin irritation on prolonged or repeated contact. Prolonged or repeated contact may cause dermatitis.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY OVEREXPOSURE: Diseases of the cardiovascular system.

EMERGENCY AND FIRST AID PROCEDURES:
INHALATION - If user experiences breathing difficulty, move to air free of apors. Administer oxygen or artificial respiration until medical assistance be rendered.
INGESTION - DO NOT induce vomiting. Call your poison control center, hospital emergency room or physician immediately.
SKIN CONTACT - Wash with soap and large quantities of water and seek medical attention if irritation from contact persists.
EYE CONTACT - Flush with large quantities of water for at least 15 minutes. I irritation from contact persists, get medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
HAZARDOUS POLYMERIZATION: Will not occur.
HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce hydrogen chloride, hydrogen fluoride, and small amounts of phosgene.
INCOMPATIBILITY (MATERIAL TO AVOID): Alkali. Alkali metal.

SECTION VII - SPILL AND LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Flush large spills material into suitable retaining area or containers with large quantities of water. Small spills can be absorbed by appropriate inert absorbent.

WASTE DISPOSAL: Dispose in accordance with applicable local, state and federa regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: For OSHA controlled work place, use only with adequat

ventilation under engineered air control systems designed to provide maximum appropriate TLV. For occasional use where engineered air control is not feasible, use NIOSH approved respirators. For occasional consumer use, use only ith adequate ventilation.

VENTILATION: Adequate ventilation must be provided. See respiratory protection above.

PROTECTIVE GLOVES: Use impermeable gloves to prevent skin irritation.

EYE PROTECTION: Safety glasses, chemical goggles and/or face shields are recommended to safeguard against potential eye contact, irritation or injury.

OTHER PROTECTIVE EQUIPMENT: Varying application methods can dictate use of additional protective safety equipment, such as impermeable aprons, etc.

HYGIENIC PRACTICES: Wash hands thoroughly after use. Before reuse, thoroughly clean any clothing or protective equipment which has been contaminated by prior use.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Do not store near flames or at elevated temperatures.
OTHER PRECAUTIONS: Read carefully all cautions and directions on product label before use. Since empty container retains residue, follow all label warnings even after container is empty. Dispose of empty container according to local regulations.

OTE: THE INFORMATION CONTAINED HEREIN IS FURNISHED WITHOUT WARRANTY OF ANY IND. EMPLOYERS SHOULD USE THIS INFORMATION ONLY AS A SUPPLEMENT TO OTHER INFORMATION GATHERED BY THEM AND MUST MAKE INDEPENDENT DETERMINATION OF SUITABILITY AND COMPLETENESS OF INFORMATION FROM ALL SOURCES TO ASSURE PROPER USE OF THESE MATERIALS AND THE SAFETY AND HEALTH OF EMPLOYEES. ANY USE OF THIS DATA AND INFORMATION MUST BE DETERMINED BY THE USER TO BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

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MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BUEHLER MASTERMET 2
IDENTIFICATION NUMBER: 40-6380-006, 40-6380-064
PRODUCT USE/CLASS: Polishing compound

SUPPLIER:
BUEHLER, LTD
41 WAUKEGAN ROAD
LAKE BLUFF, IL 60044

EMERGENCY: 800-424-9300
INFORMATION: 847-295-6500
PREPARER: Technical Department, 847-295-6500
PREPARE DATE: 03/23/09, 23 March 2009

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

ITEM	CHEMICAL NAME	CAS NUMBER	WT/WT%
No Hazardous Materials per 29 CFR 1910.1200			

ITEM	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL – CEILING	COMPANY TLV-TWA	SKIN
No Hazardous Materials per 29 CFR 1910.1200						

(SEE SECTION 16 FOR ABBREVIATION LEGEND)

MSDS NUMBER: 9109295

EMERGENCY OVERVIEW: Not expected to present a hazard in normal industrial use.
ACUTE EFFECTS – EYE CONTACT: Not expected to present a hazard in normal industrial use.
ACUTE EFFECTS - SKIN CONTACT: Substance may cause slight skin irritation.
ACUTE EFFECTS – INHALATION: Not expected to present a hazard in normal industrial use (room temperature processing).
ACUTE EFFECTS - INGESTION: May cause nausea and vomiting.
CHRONIC OVEREXPOSURE EFFECTS: None known.
OTHER INFORMATION: No information.
PRIMARY ROUTE(S) OF ENTRY: None known

EYE CONTACT: Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.
SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persists.
INHALATION: Not a likely route of exposure. If symptoms occur, remove to fresh air. Seek medical attention if symptoms persist.
INGESTION: Swallowing less than an ounce will not cause significant harm. For larger amounts, do not induce vomiting, but give one or two glasses of water to drink and get medical attention.

NOTES TO PHYSICIAN: No information.

FLASH POINT: N.A.
LOWER EXPLOSIVE LIMIT: N.A.
UPPER EXPLOSIVE LIMIT: N.A.
AUTOIGNITION TEMPERATURE: No data
EXTINGUISHING MEDIA: N.A.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Does not burn
SPECIAL FIREFIGHTING PROCEDURES: Does not burn

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Reclaim clean material. Absorb residue with clay, towels, or other absorbent material. Sweep up or pick up residue. Flush spill area with water.

HANDLING: Follow all MSDS/label precautions even after container is emptied because it may retain product residues.
STORAGE: Keep from freezing.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General ventilation usually adequate.
RESPIRATORY PROTECTION: None normally required under general ventilation.
SKIN PROTECTION: Cloth or synthetic gloves.
EYE PROTECTION: Safety glasses.
OTHER PROTECTIVE EQUIPMENT: Accessible eye wash.
HYGIENIC PRACTICES: Follow good general industrial safety practices during use. Do not smoke or eat during use.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE:	212 – Unk deg F	VAPOR DENSITY:	Unknown
ODOR:	No appreciable	ODOR THRESHOLD:	No data
APPEARANCE:	Opaque	EVAPORATION RATE:	Unknown
SOLUBILITY IN H_2O:	Moderate		
FREEZE POINT:	< 32 deg F	SPECIFIC GRAVITY:	1.0153
VAPOR PRESSURE:	No data	pH @ 0.0%:	No data
PHYSICAL STATE:	Liquid	VISCOSITY:	Low
COEFFICIENT OF WATER/OIL DISTRIBUTION:		No data	

(SEE SECTION 16 FOR ABBREVIATION LEGEND)

SECTION 10 – STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Keep from freezing
INCOMPATIBILITY: None known.
HAZARDOUS DECOMPOSITION PRODUCTS: None known.
HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.
STABILITY: This product is stable under normal storage conditions.

SECTION 11 – TOXICOLOGICAL PROPERTIES

COMPONENT TOXICOLOGICAL INFORMATION: none known

SECTION 12 – ECOLOGICAL INFORMATION

ECOLOGICAL TEST DATA: No information.

SECTION 13 – DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Product disposed of "as sold" is not considered a hazardous waste under Federal RCRA regulations. If product becomes contaminated, follow disposal instructions for contaminant. Dispose of in accordance with State and local regulations.

SECTION 14 - TRANSPORTATION INFORMATION	
DOT PROPER SHIPPING NAME: Not regulated	
DOT TECHNICAL NAME: N.A.	
DOT HAZARD CLASS: N.A.	HAZARD SUBCLASS: N.A.
DOT UN/NA CLASS: N.A.	PACKAGING GROUP: N.A.
	RESP. GUIDE PAGE:
INTERNATIONAL SHIPPING NAME: Not regulated	
INTERNATIONAL ID NUMBER: N.A.	
IMDG CLASS (1°, 2°): N.A.	IMDG PAGE NUMBER: N.A.
IMDG EMS: N.A.	IATA CLASS (1°, 2°): N.A.

SECTION 15 - REGULATORY INFORMATION

OSHA: Non-hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

CERCLA – SARA HAZARD CATEGORY: THIS PRODUCT HAS BEEN REVIEWED, AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES: NONE

SARA SECTION 313: THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 AND 40 CFR PART 372:

---------- CHEMICAL NAME ---------- CAS NUMBER WT/WT % IS LESS THAN

No SARA Section 313 components exist in this product.

TOXIC SUBSTANCE CONTROL ACT: THE CHEMICAL SUBSTANCES IN THIS PRODUCT ARE ON THE TSCA SECTION 8 INVENTORY. THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF TSCA 12(B) IF EXPORTED FROM THE UNITED STATES:

---------- CHEMICAL NAME ---------- CAS NUMBER

No components found.

NEW JERSEY RIGHT-TO-KNOW: THE FOLLOWING MATERIALS ARE NON-HAZARDOUS, BUT ARE AMONG THE TOP 5 COMPONENTS IN THIS PRODUCT:

---------- CHEMICAL NAME ----------	CAS NUMBER
Water	7732-18-5
Amorphous silicon dioxide	7631-86-9

PENNSYLVANIA RIGHT-TO-KNOW: THE FOLLOWING NON-HAZARDOUS INGREDIENTS ARE PRESENT IN THE PRODUCT AT GREATER THAN 3%:

---------- CHEMICAL NAME ----------	CAS NUMBER
Water	7732-18-5
Amorphous silicon dioxide	7631-86-9

CALIFORNIA PROPOSTION 65: No Proposition 65 chemicals known to exist in this product.

CANADIAN WHMIS: THIS MSDS HAS BEEN PREPARED IN COMPLIANCE WITH CONTROLLED PRODUCT REGULATIONS EXCEPT FOR USE OF THE 16 HEADINGS.

CANADIAN WHMIS CLASS: NONE

COMPONENT RCRA CLASSIFICATIONS: No information.

COMPONENT RCRA CODES: No information.

CERCLA RQ VALUE (MINIMUM): No information.

SECTION 16 – OTHER INFORMATION

HMIS RATINGS

HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0

PREVIOUS MSDS REVISION DATE: 05/22/06, 22 May 2006

REASON FOR REVISION: Administrative change for new format.

VOLATILE ORGANIC COMPOUNDS: 0 grams/ltr

LEGEND:

N.A. – NO INFORMATION N.E. – NOT ESTABLISHED N.D. – NOT DETERMINED

ABBREVIATIONS: ACGIH = AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS; OSHA = OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION; TLV-TWA = THRESHOLD LIMIT VALUE – TIME WEIGHTED AVERAGE (8 HOURS); STEL = SHORT-TERM EXPOSURE LIMIT (15 MINUTES); C = CEILING VALUE; PEL = PERMISSIBLE EXPOSURE LIMIT

DISCLAIMER: TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION CONTAINED IN THIS MSDS IS ACCURATE OR IS OBTAINED FROM SOURCES BELIEVED TO BE ACCURATE. HOWEVER, NO LIABILITY, EXPRESSED OR IMPLIED, IS ASSUMED FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. BUYER ASSUMES LIABILITY IN ITS USE OF THE MATERIAL.

CK. [illegible]

WHMIS REGULATIONS-CANADIAN WORKPLACE

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List) Buehler
40-6260 Thru 40-6288 METADI® AEROSOL SPRAY

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Reseller: BUEHLER LTD	Emergency Telephone Number: 312-295-6500
Address (Number, Street, City, State, and ZIP Code): 41 Waukegan Road, Lake Bluff, IL 60044	Telephone Number for Information: 312-295-6500
WHMIS CLASSIFICATION: CLASS A, CLASS D2B	Date Prepared: October 30, 1989
	Signature of Preparer (optional): Thomas R. Deram

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	CAS	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
HEXYLENE GLYCOL	107-41-5	Not Est.	25ppm	N/A	<10
ISOPROPYL ALCOHOL	67-63-0	Not Est.	400ppm	N/A	10-30
FLUORO CHLORO CARBON PROPELLANT (P-11, P-12 - 50/50)	1175-69-4 & 75-71-8	Not Est.	1000ppm		>60
DIAMOND ABRASIVE VARIOUS GRADES					5

Section III — Physical/Chemical Characteristics

Boiling Point	-6°F	Specific Gravity (H_2O = 1)	greater than 1
Vapor Pressure (mm Hg.)	1900 @ 70° F	Percent volatile by volume.	90%
Vapor Density (AIR = 1)	3	Evaporation Rate (Butyl Acetate = 1)	greater than 1

Solubility in Water: PARTIALLY SOLUBLE

Appearance and Odor: PLEASANT ODOR, VARIOUS COLORS ACCORDING TO DIAMOND GRADE

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used): NOT ESTABLISHED	Flammable Limits: NOT ESTABLISHED	LEL	UEL

Extinguishing Media: WATER, CARBON DIOXIDE, FOAM

Special Fire Fighting Procedures: NONE NEEDED

D.O.T. CLASSIFICATION - COMBUSTIBLE.

Unusual Fire and Explosion Hazards: CONTAINER CONTAINS LIQUEFIED COMPRESSED GAS UNDER PRESSURE, PLUS MINOR AMOUNT OF FLAMMABLE SOLVENT.

(Reproduce locally)

Stability	Unstable		Conditions to Avoid AVOID OPEN FLAMES OR HIGH TEMPERATURES ABOVE 125° F IN
	Stable	X	STORAGE CANS.

Incompatibility (*Materials to Avoid*) AVOID CONTACT WITH STRONG MINERAL ACIDS STRONG OXIDIZING AGENTS, RUBBER AND SOME PLASTICS.

Hazardous Decomposition or Byproducts HIGH TEMPERATURE (FLAME) DECOMPOSITION OF PROPELLANT ONLY MA FORM HYDROCLORIC AND HYDROFLUORIC ACIDS, POSSIBLY PHOSGENE.

Hazardous Polymerization	May Occur		Conditions to Avoid NONE KNOWN
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	X	X	X

* Health Hazards (*Acute and Chronic*) DEFATTING WITH PROLONGED CONTACT

SEE SIGNS AND SYMPTOMS OF EXPOSURE

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Signs and Symptoms of Exposure EYES- MILD IRRITATION
INHALATION - DROWSINESS, DIZZINESS, NASAL AND RESPIRATORY IRRITATION. SKIN - MILD IRRI
SWALLOWING - NAUSEA, VOMITING, DIARRHEA, ABDOMINAL IRRITATION.

* Medical Conditions Generally Aggravated by Exposure OVER EXPOSURE MAY AGGRAVATE ASTHMATIC CONDITIONS.

Emergency and First Aid Procedures SKIN-WASH THOROUGHLY WITH SOAP AND WATER. INHALATION- MOVE INDIVIDUAL TO FRESH AIR. EYES- FLUSH THOROUGHLY WITH WATER.

SWALLOWING- DILUTE WITH WATER, INDUCE VOMITING.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
VENTILATE AREA - ABSORB LIQUID ON SUITABLE INERT ABSORBING MATERIAL AND DISPOSE

IN SUITABLE WASTE CONTAINER.

Waste Disposal Method FLUSH WASTE MATERIAL WITHOUT PROPELLANT DOWN DRAIN.

Precautions to Be Taken in Handling and Storing PRODUCT CONTAINS LIQUEFIED GAS UNDER PRESSURE.
AVOID TEMPERATURES ABOVE 125°F

DO NOT PUNCTURE CAN OR INCINERATE.

Other Precautions NONE

Section VIII — Control Measures

Respiratory Protection (*Specify Type*)
USE AIR MASK IN PRESENCE OF HIGH VAPOR CONCENTRATION.

Ventilation	Local Exhaust TO MAINTAIN EXPOSURE BELOW TLV IN SECTION II	Special N/A
	Mechanical (*General*) N/A	Other N/A

Protective Gloves NONE NEEDED	Eye Protection DO NOT SPRAY NEAR EYES

Other Protective Clothing or Equipment NONE

Work/Hygienic Practices
Good personal hygiene to be followed at all times.

The data and information as stated was furnished by the manufacturer and supplier of this product. BUEHLER, LTD. cannot warrant the accuracy of this information and shall not be responsible or liable for any damage that may result, should any of the informatio be erroneous.

• USGPO: 1986-491-529/4577

CR: METADI DIAMOND COMPOUND

WHMIS REGULATIONS-CANADIAN WORKPLACE

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List) Buehler
40-6080 THRU 40-6259 METADI® I, II & III

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Diamond Compound

Reseller: BUEHLER LTD	Emergency Telephone Number 312-295-6500
Address (Number, Street, City, State, and ZIP Code) 41 Waukegan Road, Lake Bluff, IL 60044	Telephone Number for Information 312-295-6500
WHMIS CLASSIFICATION: UNREGULATED	Date Prepared November 9, 1989
CHEMICAL FAMILY: FATTY ACID/POLYALKYLENE GLYCOL	Signature of Preparer (optional) T. DERAM

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	CAS NO.	OSHA PEL	ACGIH TLV	Other Limits Recommended	W % (optional)
DIAMOND POWDER (VARIABLE ACCORDING TO GRADE)	7782-40-3	N/A	N/A	NONE	1-30
FATTY ACID	57-11-4	N/A	N/A	NONE	1-30
POTASSIUM SOAP	143-18-0	N/A	N/A	NONE	[illegible]
POLYETHYLENE GLYCOL	25322-68-3	N/A	N/A	NONE	<10
POLYALKYLENE GLYCOL	25322-69-4	N/A	N/A	NONE	40-60

NFPA - FLAMMABILITY 0
HEALTH 0
REACTIVITY 0 NO SPECIFIC HAZARD

Section III — Physical/Chemical Characteristics

Boiling Point GREATER THAN	400°F	Specific Gravity (H_2O = 1) GREATER THAN	1
Vapor Pressure (mm Hg.) LESS THAN	0.01	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A

Solubility in Water
90% DISPERSIBLE

Appearance and Odor
SMOOTH PASTE-MILD ODOR

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) (CLEVELAND OPEN CUP) GREATER THAN 250°F	Flammable Limits	LEL N/A	UEL N/A

Extinguishing Media
WATER, FOAM, DRY CHEMICAL, CARBON DIOXIDE

Special Fire Fighting Procedures
NONE

Unusual Fire and Explosion Hazards
NONE

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid NONE
	Stable	X	

Incompatibility (*Materials to Avoid*) NONE

Hazardous Decomposition or Byproducts NONE

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	NONE

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? N/A Skin? X Ingestion? X

Health Hazards (*Acute and Chronic*) NONE KNOWN

Carcinogenicity: NTP? NO IARC Monographs? NO OSHA Regulated? NO

Signs and Symptoms of Exposure
EYES - ABRASIVE PARTICLES MAY IRRITATE IF RUBBED IN EYES. SKIN - MILD DEFATTING.
SWALLOW - MILD IRRITAION, NAUSEA

Medical Conditions
Generally Aggravated by Exposure NONE KNOWN

Emergency and First Aid Procedures
SKIN- WASH THOROUGHLY WITH SOAP & WATER. EYES - FLUSH THOROUGHLY WITH WATER, LIFTING EYE LIDS OCCASIONALLY.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
CLEAN UP RESIDUE WITH SOAP & WATER.

Waste Disposal Method
DISCARD WITH CONVENTIONAL WASTE.

Precautions to Be Taken in Handling and Storing
NONE

Other Precautions
NONE

Section VIII — Control Measures

Respiratory Protection (*Specify Type*) NONE REQUIRED

Ventilation	Local Exhaust	NONE	Special	NONE
	Mechanical (General)	NONE	Other	NONE

Protective Gloves	NONE	Eye Protection	NONE

Other Protective Clothing or Equipment NONE

Work/Hygienic Practices
Good personal hygiene to be followed at all times.

The data and information as stated was furnished by the manufacturer and supplier of this product. BUEHLER, LTD. cannot warrant the accuracy of this information and shall not be responsible or liable for any damage that may result, should any of the information be erroneous.

• U.S.G.P.O. 1984-491-529/45775

AFFIDAVIT OF PRODUCT SAFETY

METADI® DIAMOND PASTE COMPOUND

All ingredients of METADI® DIAMOND PASTE COMPOUND are common materials used in topically-applied cosmetics, personal care products, household products and even pharmaceuticals. Each ingredient has a history of safe use in consumer products as well as industrial formulations.

ALL METADI® ingredients are properly listed in the REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (1977). All of the ingredients are known to be practically non-toxic in human exposure via inhalation, ingestion, skin, or eye contact.

Furthermore, each of the ingredients of METADI® DIAMOND COMPOUND has:

1) No OSHA established TLV to limit inhalation

2) No flashpoint below 200 degrees c and not subject to spontaneous heating or decomposition

3) No ability to cause skin burns

4) No strong oxidizing agent

5) No possibility of hazardous polymerization

Finally, none of the ingredients in METADI® DIAMOND COMPOUND are known to be poison, carcinogen or a skin irritant or sensitizer.

BUEHLER, LTD.

Thomas R. Deram
Manager
Quality Control

TRD/dar
11/9/89

WHMIS REGULATIONS - CANADIAN WORKPLACE

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List) METADI® Diamond Suspension
40-6528 thru 40-6536

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Reseller: BUEHLER LTD	Emergency Telephone Number: 312-295-6500
Address (Number, Street, City, State, and ZIP Code): 41 Waukegan Road, Lake Bluff, IL 60044	Telephone Number for Information: 312-295-6500
CHEMICAL FAMILY: Glycol	Date Prepared: November 8, 1989
WHMIS CLASSIFICATION: Class D2B	Signature of Preparer (optional): TOM DERAM

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
CAS				

No hazardous chemicals are present as listed by OSHA or ACGIH.

No chemicals are present which are listed as carcinogenic by NTP or IARC.

NFPA RATING: FLAMMABILITY = 0 REACTIVITY = 0
HEALTH = 0 SPECIFIC HAZARD = Ingestion

Section III — Physical/Chemical Characteristics

Boiling Point	212°F	Specific Gravity (H_2O = 1)	Greater than 1
Vapor Pressure (mm Hg.)	17mm at 20°C	Melting Point	NOT APPLICABLE
Vapor Density (AIR = 1)	Greater than 1	Evaporation Rate (Water = 1)	1
Solubility in Water	Soluble	Percent Volatile by Volume	Greater than 90%

Appearance and Odor: Moderately thick, opaque slurry - odorless.

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used): Greater than 211°F (TCC)	Flammable Limits	LEL 2.6%	UEL 12.5%

Extinguishing Media: Water, Carbon Dioxide, Dry Chemical

Special Fire Fighting Procedures: NONE

DOT CLASSIFICATION NONE.

Unusual Fire and Explosion Hazards: NONE

(Reproduce locally)

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid NONE
	Stable	X	

Incompatibility (*Materials to Avoid*)
Strong oxidizing agents.

Hazardous Decomposition or Byproducts
Carbon Monoxide and Dioxide.

Hazardous Polymerization	May Occur		Conditions to Avoid NONE
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? X Skin? X Ingestion? X

Health Hazards (*Acute and Chronic*)
Swallowing - stomach irritation, nausea, vomiting, diarrhea.

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Signs and Symptoms of Exposure
EYES: Mild irritation. SKIN: Slight irritation. INHALATION: Nasal & respiratory irritation

Medical Conditions
Generally Aggravated by Exposure In humans, overexposure can cause liver abnormalities, kidney damage and central nervous system damage.

Emergency and First Aid Procedures INHALATION: Remove individual to fresh air. EYES: Flush thorough with clear water. SKIN: Wash thoroughly. SWALLOWING: Drink 2 glasses of water, induce vomiting (IPECAC syrup or finger at the back of throat), GET MEDICAL ATTENTION IMMEDIATELY!

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
CLEAN UP SPILL WITH PLAIN WATER.

Waste Disposal Method
DISPOSE OF WASTE MATERIAL IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

Precautions to Be Taken in Handling and Storing
NONE

Other Precautions
PREVENT INGESTION OF ANY MATERIAL.

Section VIII — Control Measures

Respiratory Protection (*Specify Type*)
Exhaust ventilation to minimize exposure to spray mist of diamond slurry.

Ventilation	Local Exhaust Required for spraying operations producing mists.	Special NONE
	Mechanical (General) NONE	Other NONE

Protective Gloves NOT REQUIRED	Eye Protection SAFETY GLASSES

Other Protective Clothing or Equipment
NOT REQUIRED

Work/Hygienic Practices
Good personal hygiene to be followed at all times.

he data and information as stated was furnished by the manufacturer and upplier of this product. BUEHLER, LTD. cannot warrant the accuracy of this inform... hall not be responsible or liable for any damage that ... e erroneous.

• USGPO: 1984-491-529/45775

Safety (MSDS) data for polyvinyl butyral

General

Synonyms: PVB, vinyl acetal polymer, butyral, butvar B-79
Molecular formula:
CAS No: 63148-65-2
EC No:

Physical data

Appearance: white solid
Melting point:
Boiling point:
Vapour density:
Vapour pressure:
Density (g cm^{-3}):
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility:

Stability

Stable. Combustible. Dust may form explosive mixture with air. Incompatible with strong oxidizing agents.

Toxicology

May act as an irritant. Typical TLV/TWA 10 mg/m3.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
ORL-RAT LD50 10000 mg kg^{-1}
SKN-RBT LD50 7940 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)

R36 R37 R38.

Transport information

Non-hazardous for air, sea and road freight.

Personal protection

Avoid exposure to dust.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

This information was last updated on September 6, 2003. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

CETCO- WASTEWATER GROUP -- QUIK-SOLID -- -

========== Product Identification ==========

Product ID:QUIK-SOLID
MSDS Date:03/02/1999
FSC:NIIN:Submitter:N EN
Status Code:A
MSDS Number: CKYGV
=== Responsible Party ===
Company Name:CETCO- WASTEWATER GROUP
Address:1500 WEST SHURE DRIVE
City:ARLINGTON HEIGHTS
State:IL
ZIP:60004
Country:US
Info Phone Num:847-392-5800
Emergency Phone Num:800-424-9300
Chemtrec Ind/Phone:(800)424-9300
CAGE:02XG7
=== Contractor Identification ===
Company Name:CETCO- WASTEWATER GROUP
Address:1350 WEST SHURE DRIVE
Box:City:ARLINGTON HEIGHTS
State:IL
ZIP:60004-1440
Country:US
Phone:847-392-5800
CAGE:02XG7

========== Composition/Information on Ingredients ==========

Ingred Name:SODIUM POLYACRYLATE, LIGHTLY CROSSLINKED
CAS:76774-25-9
Other REC Limits:0.05 MG/M3 RESP PART

Ingred Name:WATER
CAS:7732-18-5
RTECS #:ZC0110000

Ingred Name:ACRYLIC ACID
CAS:79-10-7
RTECS #:AS4375000
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

========== Hazards Identification ==========

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:CONTACT WITH EYES, SKIN OR CLOTHING MAY CAUSE IRRITATION. CARE MUST BE TAKEN TO MINIMIZE EXPOSURE AND PREVENT WORKPLACE INHALATION OF RESPIRABLE DUST. RESPIRATORY PROTECTION IS REQUIRED FOR EXPOSURES ABOVE THE RECOMMENDED LEVEL OF RESPIRABLE DUST. SIGNS AND SYMPTOMS OF EXPOSURE: SLIGHT IRRITANT EFFECTS. A SIMILAR PRODUCT, GROUND VERY FINELY, PRODUCED AN INFLAMMATORY TISSUE RESPONSE IN THE LUNGS I N A LIFETIME EXPOSURE INHALATION EXPERIMENT WITH ANIMALS. ACCORDING TO THE EPA "HAZARD CATEGORIES" UNDER SECTION 311 AND 312 OF SARA TITLE III, THIS PRODUCT IS CONSIDERED TO MEET THE APPLICABLE DEFIN ITION OF: A DELAYED HEALTH HAZARD.
Medical Cond Aggravated by Exposure:NONE KNOWN.

========== First Aid Measures ==========

First Aid:EYES: FLUSH WITH LARGE QUANTITY OF WATER, CONSULT PHYSICIAN. SKIN: WASH WITH SOAP AND WATER. INHALATION: REMOVE TO FRESH AIR, CONSULT PHYSICIAN. INGESTION: CONTACT A PHYSICIAN IMMEDIATELY .

Fire Fighting Measures

Flash Point:NOT AVAILABLE
Lower Limits:NA
Upper Limits:NA
Extinguishing Media:MEDIA SUITABLE FOR SURROUNDING FIRE . FLAMMABLE LIMITS: NOT AVAILABLE.
Fire Fighting Procedures:AS WITH ANY FIRE, WEAR (NIOSH APPROVED -) POSITIVE PRESSURE, SELF-CONTAINED BREATHING APPARATUS IN ANY CLOSED SPACE WHEN FIGHTING FIRE. SPEICAL FIRE FIGHTING PROCEDURES: NOT APPLICABLE.
Unusual Fire/Explosion Hazard:BECOMES SLIPPERY WHEN WET. UNDER CERTAIN CONFINED CONDITIONS A FINE DUST OF THIS MATERIAL IN AIR MAY CAUSE A DUST EXPLOSION IF IGNITED.

Accidental Release Measures

Spill Release Procedures:VACUUM (USING HEPA FILTER EQUIPPED SYSTEM) IF POSSIBLE TO AVOID GENERATING AIRBORNE DUST. AVOID BREATHING DUST. WEAR AN APPROVED RESPIRATOR. AVOID ADDING WATER, PRODUCT WILL BECOME SLIPPERY WHEN WET.

Handling and Storage

Handling and Storage Precautions:STORE IN A COOL, DRY PLACE. AVOID BREATHING POWDER. AVOID SKIN AND EYE CONTACT.
Other Precautions:SLIPPERY WHEN WET.

Exposure Controls/Personal Protection

Respiratory Protection:USE NIOSH APPROVED OR EQUIVALENT WITH HIGH EFFICIENCY FILTER FOR PARTICULATE LEVELS ABOVE 0.05 MG/M3.
Ventilation:LOCAL EXHAUST - AS APPROPRIATE. SPECIAL - NONE. MECHANICAL (GENERAL) - AS APPROPRIATE. OTHER: NONE.
Protective Gloves:IMPERVIOUS / RUBBER.
Eye Protection:(ANSI APPROVED -) SAFETY GOGGLES RECOMMENDED.
Other Protective Equipment:IF NEEDED TO AVOID IRRITATION. EYEWASH AND DELUGE SHOWER MEETING ANSI DESIGN CRITERIA .
Work Hygienic Practices:USE GOOD HOUSEKEEPING PRACTICES.
Supplemental Safety and Health
MANUFACTURER'S RECOMMENDED EXPOSURE GUIDELINE FOR RESPIRABLE PARTICULATE: 0.05 MG/M3.

Physical/Chemical Properties

Vapor Density:NOT APPLIC
Evaporation Rate & Reference:NOT APPLICABLE.
Appearance and Odor:OFF WHITE COLOR, ODORLESS.

Stability and Reactivity Data

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZERS.
Stability Condition to Avoid:NONE KNOWN.
Hazardous Decomposition Products:THERMAL DECOMPOSITION: CO, CO2, AND HYDROCARBONS.

Toxicological Information

Toxicological Information:A SIMILAR PRODUCT, GROUND VERY FINELY,

PRODUCED AN INFLAMMATORY TISSUE RESPONSE IN THE LUNGS IN A LIFETIME EXPOSURE INHALATION EXPERIMENT WITH ANIMALS.

========== Disposal Considerations ==========

Waste Disposal Methods:DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

========== MSDS Transport Information ==========

Transport Information:DOT CLASS: NOT REGULATED (49 CFR, IMDG, ICAO/IATA).

========== Regulatory Information ==========

SARA Title III Information:ACCORDING TO THE EPA "HAZARD CATEGORIES" UNDER SECTIONS 311 AND 312 OF SARA TITLE III, THIS PRODUCT IS CONSIDERED TO MEET THE APPLICABLE DEFINITIONS OF: A DELAYED HEALTH HAZARD.

========== Other Information ==========

Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

SANFORD BRANDS

A Newell Rubbermaid Company

MATERIAL SAFETY DATA SHEET

MSDS # 30000

Section One: Identification

Sanford, L.P.
2707 Butterfield Road
Oak Brook, IL 60523 USA
800-323-0749 or 630-481-2000

EMERGENCY MEDICAL NUMBER:

888-786-0972

Product Name: Sharpie Fine Point Permanent Markers

Colors: All Colors

Sanford is a member of The Art and Creative Materials Institute, Inc. This product is certified by the Institute to be labeled in accordance with the voluntary chronic hazard labeling standard ASTM D-4236 and is labeled with the AP Non Toxic Seal. Products bearing the AP Approved Product Seal of The Art and Creative Materials Institute, Inc. are certified in a program of toxicological evaluation by a medical expert, subject to review by the Institute Toxicology Advisory Board, to contain no materials in sufficient quantities to be toxic or injurious to humans, or to cause acute toxicity or chronic health problems.

Section Two: Hazard Identification

This product is considered safe under normal use conditions.

Section Three: Composition

Dyes, n-propanol (71-23-8), n-butanol (71-36-3), diacetone alcohol (123-42-2)

Section Four: First Aid Measures

Inhalation: This product is considered safe under normal use conditions.

Skin Contact: This product is considered safe under normal use conditions.

Eye Contact: This product is considered safe under normal use conditions.

Ingestion: This product is considered safe under normal use conditions.

Section Five: Fire Fighting Measures

Flash Point: 84F Tag Open Cup (ASTM D-1310)

Flammability Limits (% by volume): Lower: 2.2% in air by volume Upper: 14.0% in air by volume

Extinguishing Media: As appropriate for surrounding area.

Special Fire Fighting Measures: None

Unusual Fire and Explosion Hazards: None

Section Six: Accidental Release Measures

In Case of Spill or Accidental Release: Wipe up with absorbent material.

Section Seven: Handling and Storage

Handling: Do not shake marker.

Storage: Keep cap on marker when not in use.

Section Eight: Exposure Controls and Personal Protection

Eye Protection: None under normal use conditions.

Clothing: None under normal use conditions.

Respirator: None under normal use conditions.

Ventilation: None under normal use conditions.

Section Nine: Physical and Chemical Properties

For ink unless otherwise specified:

Boiling Point:	207F (n-propanol)
Specific Gravity:	0.80 (n-propanol)
Vapor Pressure:	13 mm Hg at 20C (n-propanol)
Solubility in Water:	Soluble
Evaporation Rate:	1.3 (n-propanol)
Appearance/Odor:	Colored liquid; alcoholic odor

Section Ten: Stability and Reactivity

Stability:	Stable
Conditions to Avoid:	Not available
Chemical Incompatibility:	Not available
Hazardous Decomposition:	Not available
Hazardous Polymerization:	Will not occur.

Section Eleven: Toxicological Information

See Section Two: Hazard Identification for any hazards

Section Twelve: Ecological Information

Not available

Section Thirteen: Disposal Considerations

Dispose in accordance with Federal, State, and Local Regulations.

Section Fourteen: Transport Information

DOT:	Not regulated
IATA:	Not regulated
IMO:	Not regulated

Section Fifteen: Regulatory Information

TSCA: The product listed on this Material Safety Data Sheet is not listed on the Toxic Substances Control Act Inventory. All ingredients used to manufacture this product are listed on the TSCA Inventory

Section Sixteen: Other Information

HMIS Code	
Health	N/A
Flammability	N/A
Reactivity	N/A
Personal Protection	N/A

0=Minimal / 4 = Severe

Sanford has been advised by Counsel that the OSHA Hazard Communication Standard and the Health Canada Workplace Hazardous Materials Information Standard do not apply to the Sanford Product described in this Material Safety Data Sheet. The reasons for the exemptions are contained in 29 CFR 1910.1200(b)(6)(ix) as amended Sept 14, 2009 per the Code of Federal Regulations and also Canadian Hazardous Products Act part 12 section (f) as amended June 1, 2009. The information contained in this MSDS is forwarded to you for your information, but is not meant to imply that the product is covered by nor is this MSDS meant to comply with all requirements of the hazard communication standards.

Material Safety Data Sheet: **Simple Green® All-Purpose Cleaner**
Simple Green® Scrubbing Pad

Version No. 1300510B Date of Issue: February 2010 *ANSI-Z400.1-2003 Format*

Section 1: PRODUCT & COMPANY IDENTIFICATION

Product Name: Simple Green® All-Purpose Cleaner
Simple Green® Scrubbing Pad
Additional Name: Simple Green® Concentrated Cleaner/Degreaser/Deodorizer

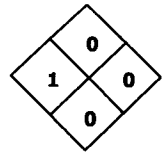
Manufacturer's Product Code Numbers: **Please refer to page 4*

Company: Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Harbour, CA 92649 USA
Telephone: 800-228-0709 • 562-795-6000 Fax: 562-592-3830
Emergency Phone: Chem-Tel 24-Hour Emergency Service: 800-255-3924

Use of Product: An all purpose cleaner and degreaser used diluted in water for direct, spray and dip tank procedures. Scrubbing pad is used with water for manual scrubbing applications. Both are for cleaning water-safe surfaces.

Section 2: HAZARDS IDENTIFICATION

Emergency Overview: CAUTION. Mild eye irritant.
Simple Green® is a dark green liquid with a sassafras odor. Scrubbing Pad is a green fibrous rectangle.



HMIS Rating:
Health = 1 = slight
Fire = 0
Reactivity, and Special = 0 = minimal

Eye Contact: Mild Eye Irritant.

Skin Contact: No adverse effects expected under typical use conditions. Prolonged exposure may cause dryness. Under this condition, use of gloves or skin moisturizer after washing may be indicated.

Ingestion: May cause stomach or intestinal upset if swallowed (due to detersive properties.)

Inhalation: No adverse effects expected under typical use conditions. Adequate ventilation should be present when using Simple Green® over a prolonged period of time. Open windows or ventilate via fan or other air-moving equipment if necessary.

Carcinogens: No ingredients are listed by OSHA, IARC, or NTP as known or suspected carcinogens.

Medical Conditions: No medical conditions are known to be aggravated by exposure to Simple Green®. Dermal-sensitive users may experience mild but reversible reactions.

UN Number: Not Required **Dangerous Goods Class:** Non-hazardous

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

The only ingredient of Simple Green® with established exposure limits is undiluted 2-butoxyethanol (<4%) (Butyl Cellosolve; CAS No. 111-76-2) [*1% for Scrubbing Pad*]: the ACGIH TLV-TWA is 20 ppm (97 mg/m^3). Based upon chemical analysis, Simple Green® contains no known EPA priority pollutants, heavy metals or chemicals listed under RCRA, CERCLA, or CWA. Analysis by TCLP (Toxicity Characteristic Leaching Procedure) according to RCRA revealed no toxic organic or inorganic constituents.

All components of Simple Green® are listed on the TSCA Chemical Substance Inventory.
This product does not contain any ingredients covered by the provisions of 29 CFR 1910.1200.

Section 4: FIRST AID MEASURES

Eye Contact: Reddening may develop. Immediately rinse the eye with large quantities of cool water; continue 10-15 minutes or until the material has been removed; be sure to remove contact lenses, if present, and to lift upper and lower lids during rinsing. Get medical attention if irritation persists.

Skin Contact: Minimal effects, if any; rinse skin with water, rinse shoes and launder clothing before reuse. Reversible reddening may occur in some dermal-sensitive users; thoroughly rinse area and get medical attention if reaction persists.

Swallowing; Essentially non-toxic. Give several glasses of water to dilute; do not induce vomiting. If stomach upset occurs, consult physician.

Inhalation: Non-toxic. Exposure to concentrate may cause mild irritation of nasal passages or throat; remove to fresh air. Get medical attention if irritation persists.

Section 5: FIRE FIGHTING MEASURES

Simple Green® is stable, not flammable, and will not burn. No special procedures required.

Flash Point/Auto-Ignition: Not flammable.
Flammability Limits: Not flammable.
Extinguishing Media: Not flammable/non-explosive.
Special Fire Fighting Procedures: None required.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Avoid contact with eyes. Do not rub eyes with hands during cleanup. No special precautions for dermal contact are needed. Wash hands thoroughly after cleaning up spill or leak.

Method for cleaning up: Recover usable material by convenient method, residual may be removed by wipe or wet mop. If necessary, unrecoverable material may be washed to drain with large quantities of water.

Section 7: HANDLING AND STORAGE

No Special precautions are required. **This product is non-hazardous for storage and transport according to the U.S. Department of Transportation Regulations.** Simple Green® requires no special labeling or placarding to meet U.S. Department of Transportation requirements.

UN Number: Not Required **Dangerous Goods Class:** Non-hazardous

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits: The Simple Green® formulation presents no health hazards to the user when used according to label directions for its intended purposes. Mild skin and eye irritation is possible (please see Eye contact and Skin contact in section IV.) No special precautionary measures required under normal use conditions.

Ventilation: No special ventilation, precautions or respiratory protection is required during normal use. Large-scale use indoors should provide an increased rate of air exchange.

Human Health Effects or Risks From Exposure: Adverse effects on human health are not expected from Simple Green®, based on 20 years of use of Simple Green® without reported adverse health incidence in diverse population groups, including extensive use by inmates of U.S. Federal prisons in cleaning operations.

Eye protection: Simple Green® is a mild eye irritant; mucous membranes may become irritated by concentrate. Eye protection not generally required. Wash hands after using wipes.

Skin protection: Simple Green® is not likely to irritate the skin in the majority of users. Repeated daily application to the skin without rinsing, or continuous contact on the skin may lead to temporary, but reversible, irritation. Rinse completely from skin after contact.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION – continued –

General hygiene conditions: There are no known hazards associated with this material when used as recommended. The following general hygiene considerations are recognized as common good industrial hygiene practices:

- Avoid breathing vapor or mist.
- Avoid contact with eyes.
- Wash thoroughly after handling and before eating, drinking, or smoking.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Cleaner is a dark green liquid, pad is a fibrous green matrix; both exhibit a sassafras odor.			
Specific Gravity:	1.010 ± 0.010	**Vapor Pressure:**	18 mm Hg @ 20°C; 23.5 mmHg @ 26°C
Evaporation:	>1 (butyl acetate = 1)	**Vapor Density:**	1.3 (air = 1)
Water Solubility:	100%	**Density:**	8.5 lbs/gallon
Boiling Point:	100.6°C (212°F)	**pH:**	9.5 ± 0.3
Ash Content:	At 600°F: 1.86% by weight	**Nutrient Content:** Phosphorus: 0.3% by formula; Nitrogen <1.0% by weight (fusion and qualitative test for ammonia); Sulfur: 0.6% by weight (barium chloride precipitation method)	
Freezing Point: Approx -9 °C (16 °F) *If product freezes, it will reconstitute without loss of efficacy when brought back to room temperature and agitated.*			
VOC Composite Partial Pressure: 0.006 mmHg @ 20°C			
Volatile Organic Compounds (VOCs): CARB Method 310 3.8%; SCAQMD Method 313 2.8%		Cleaner meets CARB & BAAQMD regulations. Cleaner must be diluted 1:1 with water to Meet SCAQMD Rule 1171 & Rule 1122 VOC requirements for solvent cleaning operations. [*Scrubber VOCs = 3.3% prior to dilution w/water*]	

Section 10: STABILITY AND REACTIVITY

Stability:	Stable
Materials to Avoid:	None known
Hazardous Decomposition Products:	None expected

Section 11: TOXICOLOGICAL INFORMATION

Toxicology information is based on chemical profile of ingredients and extrapolation of data from similar formulas.

Acute Toxicity: Oral LD_{50} (rat) >5 g/kg body weight*
Dermal LD_{50} (rabbit) >2 g/kg body weight

**Calculation from OECD series on testing and assessment number 33, Chapter 3.2*

Eye Irritation: Moderate/Mild reversible eye irritation may occur based on relevant laboratory studies. This potential is reduced by immediate rinsing of eyes in case of eye contact.

Dermal Irritation: Mild, reversible skin irritation may occur based on relevant laboratory studies. A 6-hour exposure to human skin under a patch did not produce irritation

Repeat Exposure Via Skin Contact: Based on relevant laboratory studies, no toxic effects are expected to be associated with daily skin exposures (with up to 2 g/kg/day tested for 13 weeks on rabbits). Skin irritation may, however, occur with repeated or prolonged exposures.

Reproductive Effects Assessment: Based on relevant laboratory studies (CD-1 mouse 18-week fertility assessment continuous breeding), no adverse effects on reproduction, fertility, or health of offspring are expected.

Section 12: ECOLOGICAL INFORMATION

Hazard to wild animals & aquatic organisms: Low, based on toxicological profile.
Biodegradability: Readily biodegradable based on biodegradation profile,
PRO/FT CBT-AC 014-7 "Ready Biodegradability: Closed Bottle Test" OECD, and OECD 302B laboratory tests
Environmental Toxicity Information: It is important not to allow the runoff from cleaning into closed systems such as decorative ponds. Always protect closed systems with tarps or dikes if necessary.

Section 13: DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable local, state and federal laws. Dispose of used or unused product, and empty containers in accordance with the local, State, Provincial, and Federal regulations for your location. Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Section 14: TRANSPORT INFORMATION

This product is non-hazardous for transport according to the U.S. Department of Transportation Services
UN Number: Not required Dangerous Goods Class: Non-hazardous

Section 15: REGULATORY INFORMATION

*Reportable components:

All components are listed on: EINECS and TSCA Inventory

No components listed under: Clean Air Act Section 112

TSCA /TRI SARA Title III Reporting: This product contains 2-butoxyethanol (111-76-2, <4%) which is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 as Category N230 – Certain Glycol Ethers.

RCRA Status: Not a hazardous waste. **CERCLA Status:** No components listed

CA PROP. 65 Status: No components listed

Section 16: OTHER INFORMATION

PREPARER:
Questions about the information found on this MSDS should be directed to:
SUNSHINE MAKERS, INC. – TECHNICAL DEPARTMENT
15922 Pacific Coast Hwy. Huntington Harbour, CA 92649

Phone: 800/228-0709 [8am-5pm Pacific time, Mon-Fri] *Fax:* 562/592-3830 *Email:* infoweb@simplegreen.com

CAGE CODE 1Z575
GSA/FSS - CONTRACT NO. GS-07F-0065J
Scrubbing Pad GSA/BPA - CONTRACT NO. GS-07F-BSIMP
National Stock Numbers & Industrial Part Numbers:

	Part Number	NSN	Size
Simple Green	13012	7930-01-342-5315	24 oz spray (12/case)
	13005	7930-01-306-8369	1 Gallon (6/case)
	13006	7930-01-342-5316	5 Gallon
	13016	7930-01-342-5317	15 Gallon
	13008	7930-01-342-4145	55 Gallon
	13275	N/A	275 Gallon tote
Scrubbing Pad	10224	7930-01-346-9148	Each (24/case)

Retail Numbers:

Part Number	Size
13002	16 oz Trigger (12/case)
13005	1 Gallon (6/case)
13013	24 oz Trigger (12/case)
13014	67 oz / 2 L (6/case)
13033	32 oz Trigger (12/case)

part number is for both industrial and retail

****International Part Numbers May Differ.**

DISCLAIMER: The information provided with this MSDS is furnished in good faith and without warranty of any kind. Personnel handling this material must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of this material and the safety and health of employees and customers. Sunshine Makers, Inc. assumes no additional liability or responsibility resulting from the use of, or reliance on this information.

DIVIDER

PAGE

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	**Source Document Tracking Number: C1001**
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☐ Additional Information	**Category:** ☑ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : Memo from Gwendolyn J. Pirtle to Charles G. Thomas, David S. Barber, and Carlos S. Medrano re: Hot Cell Facility Decontamination	
Source Document Reference Information (author(s), document and revision number, date, publisher): G.J. Pirtle, NA, NA, 05/04/1995, NA	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR1, PR7, WS2, WS4, WS8, WS9, WS12	Throughout	This memo documents the status of the decontamination project and the fact that the TA-V personnel are not thrilled to have Facilities Advisory D&D Oversight Committee involvement. It discusses that SEG is the subcontractor performing the work. There are several memos and hand written items included in this package. Discusses desire to use CO2 unit to decon HCF. Includes table for HCF Decontamination Project Status. Among items listed in table are Asbestos Removal, Asbestos Disposal, and Chemical Decontamination (potentially mixed waste). Map of Hot Cell Facility Figure 1. TAV and Hot Cell Facility are a hazard category 2 nuclear facility. Includes Decontamination Plan Content Requirements.

NTPC RECORDS ORIGINAL
DATE REC'D 08/19/2014
EPT

Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: C1001

Waste Stream Number(s): SNL-HCF-S5400-RH

Source Document Data Limitations (if any):

1. Best available copy.

Acceptable Knowlege Expert:

Kevin J. Peters / [signature] Date: 1/12/14

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

Author: Gwendolyn J Pirtle at OBERON
Date: 5/4/95 4:13 PM
Priority: Normal
Receipt Requested
TO: Charles G Thomas
TO: David S Barber
CC: Gwendolyn J Pirtle
TO: Carlos S Medrano
Subject: Hot Cell Facility Decontamination

---------- Message Contents ----------

I talked to John Campisi, 7713, about the status of the hot cell facility (HCF) decontamination project. John had been chartered with 7700 safety and health oversight for the HCF decon project by Joe Stiegler when the HCF decon project was started, but is unclear about that charter now, particularly with Joe on special assignment.

John told me that the HCF decon project is having weekly status meetings again. John attended one of those meetings this morning. At that meeting, Ken Boldt mentioned that he was going to brief FADDOC on May 11 on the HCF project.

John and I discussed the following issues:

John told me that the attitude of the 6500 personnel has not changed from what it was last fall in that they just want to do their own thing without any oversight. Frankly, if that is the case, I do not know what it is that FADDOC can do to help with the project or what it is that 6500 wants from FADDOC. All that we can do is to define FADDOC's charter to them very carefully and ask them what they want from FADDOC, and what FADDOC's role is relative to the ALARA and Radiation Protection Committees. We will then have to assess whether we think that role is appropriate, or if FADDOC has a role.

6500 is interested in obtaining more information on HASP requirements since they are proposing to use a CO2 unit to decon the HCF.

6500 wants to break the project into weekly project plans instead of having a comprehensive project plan from the outset. This approach has the potential problems of: 1) Reviewers of the weekly plans not having a good feeling for the scope of the entire project and, therefore, may not make safety and health control recommendations that may be appropriate for a long-term project but which would be less likely to be implemented for a short-term project and 2) The logistics may be difficult for reviewers to comment on weekly project plans and have the comments resolved and incorporated before the plan is implemented.

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SEG will not be performing the decon. Rather, SNL personnel will be performing the decon.

The 6500 members of the ALARA Committee have endorsed the weekly project plans. Of course, what else would we expect 6500 management to do for a 6500 project? Perhaps it would be better for the ALARA Committee to go ahead and make recommendations and for FADDOC not to make recommendations. Or perhaps, for FADDOC to be represented on the ALARA Committee. Also, we do not want to have duplicative processes.

John sensed that the SNL ES&H organizations and FADDOC do not have the support of upper management and DOE to enforce regulatory, DOE and contractual requirements and that FADDOC could be left in the lurch if any FADDOC recommendations are perceived as impeding the project.

John told me that, in light of the lack of upper management support, the ES&H organizations have been reduced to CYA. Therefore, FADDOC should proceed with caution, make all recommendations in writing,

document all interactions with 6500, and let 6500 do what they wish concerning the project. After all, it is 6500's project. We just need to make sure that we give them sound advice.

Gwen

HCF DECONTAMINATION PROJECT STATUS

ACTIVITY	OWNER or RESPONSIBILITY	STATUS
I. APPROVAL PHASE		
A. Project Initiation	M. Vernon, 6514 D. Bragg, 6521	• HCF Decontamination Project originally started November 1994 • Revised March 1995 with reduced scope
B. ER Coordination	No ER Coordination	• This is NE-44/46 Project
C. Project Plan	M. Vernon, 6514	• Project Plan attached • Project Plan scaled down from original plan (December 1994)
D. Project Funding	AMCO funded	• Project cost estimated to be $1.5 - 2.0M with contingency
E. DOE Notification	N/A	• N/A
F. KAFB Notification	N/A	• N/A
G. NEPA Documentation		• ECLs submitted for HCF Decontamination Task • ECL submitted for NDC Decontamination Unit
H. NHPA Approval	N/A	• N/A
I. Safety Determination (SDD)	M. McDonald, 6500 K. Boldt, 6513	• HCF SAR approved 11/88 • HCF SAR in DOE Review 08/94 • Preparing SDD for Decontamination Unit (HASP?)
J. DOE Facilities Approval	N/A	• N/A
K. Permits Initiation	M. McDonald, 6500	• HCF - same source term, no change to NESHAPS • NDC Decontamination Unit is below threshold level
II. FACILITY SHUTDOWN PHASE		
A. Personnel Relocation	N/A	• N/A
B. Equipment Relocation	D. Bragg, 6521	• Glovebox laboratory relocated to 113/113A • Storage of contaminated equipment
C. Hazardous Material Removal	S. Bourcier, 6613 S. Longley, 6626	• SNM material being handled by S. Bourcier • Radioactive/contaminated material handled by S. Longley.
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B. Site Inspection & Report	7714	• Radiation and contamination level surveys and maps performed
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F. Sample Analysis	R. Seylar, 7573	• Awaiting approved plan from 2500.
G. Contamination Assessment Rpt	N/A	• N/A
IV. READINESS PHASE		
A. Safety Assessment & Approval	6500	• HCF SAR exists.
B. Decontamination Plan	6500/NDC	• Routine maintenance operation of HCF • NDC Decontamination Unit Operating Manual
C Decon Safety/Health Plan	6500	• TBD
D. Waste Mgt/Min Plan	7500	• Waste ownership (non-SNM) is 7500 • Waste Management Plan reviewed and awaiting fin signoff.
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ER Environmental Restoration
NE NEPA Coordinator
RA Risk Assessment Coordinator
IH Industrial Hygiene
HP Health Physics
SE Safety Engineering/Fire Protection
CW Chemical Waste
RW Radioactive/Mixed Waste
AP Asbestos Program

Author: Gwendolyn J Pirtle at OBERON
Date: 5/12/95 10:14 AM
Priority: Normal
Receipt Requested
TO: David S Barber
CC: Charles G Thomas
CC: Gwendolyn J Pirtle
Subject: HCF Decontamination Project

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I also wanted to make sure that our protocol is clear concerning working with and communicating with 6500 on the Hot Cell Facility Decontamination project. Since 6500 has asked for FADDOC's help with the project, I think that you should be the point of contact for communicating with Milt Vernon and Ken Boldt. Charlie and I will do anything that we can to support you in working with 6500, but I think that 6500 should contact you so that there is no confusion.

Ken had told me that he would like to discuss HASP requirements further. When he contacts me, I will refer him to you and let him know that you will be the point of contact for the project. Do you agree?

Then, perhaps as issues arise, such as with HASPs, you can organize a meeting with appropriate FADDOC representation to discuss those issues.

Let me know what you think.

Gwen

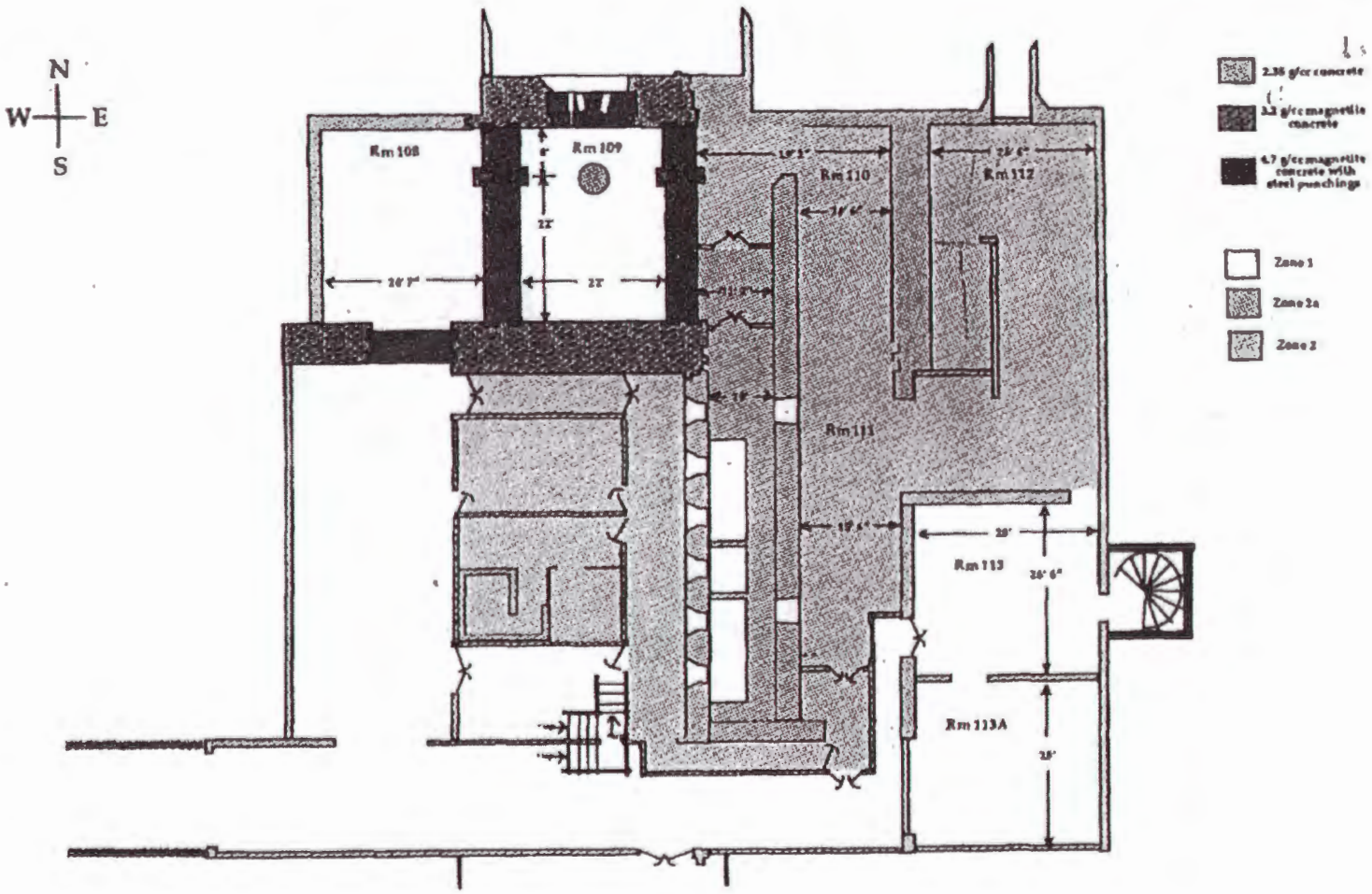

Figure 1
Hot Cell Facility

Nov 21, 1994

- I sent Martha Charles
A copy of our (D+O) process and
the ANS paper which
discusses the paper and
case study.

[illegible]

November 21, 1994

Dave/Charlie:

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I should start by saying that the 6500 personnel are less than thrilled to have the FADDOC's oversight involvement. They think that they will be "safety committee'd to death." They are also concerned about schedule, so the FADDOC needs to be able to give them very fast turn-around on document review. and other support functions.

The contacts for 6513 on this project are:

Don Bragg, Facility Safety Manager
Milton Vernon, Project Manager
Martha Charles, Document and requirements contact 845-7989

The ~~subtrac~~ sub-contractor that will actually be performing the decon work is SEG; SEG is very experienced at performing radiation decontamination — the company is currently

doing the decon on Ft. St. Vrain nuclear power plant.

I told them that FADDOC would have oversight for the project. Martha Charles suggested attending the December FADDOC meeting and giving a presentation on the Hot Cell Facility Decontamination project and go over the decon plan. I think this would be a good idea.

I told Martha that they needed to prepare the following documents for the decon project and submit them to the FADDOC for review and approval:

- Site Inspection Report
- Decontamination Plan
- Sampling and Analysis Plan
- Health and Safety Plan (Plan)
  (What I failed to tell [redacted] 6513 is that they needed to prepare 3 HASPs - one each for site inspection, sampling and analysis, and decontamination
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- [redacted] Radiation Work Permit
- Waste Minimization Plan

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Dave, 6513 and SEG need to know the format and content requirements for the documents listed above that will be required for the hot cell facility decon project.

Another meeting is scheduled for early this week (exact date to be determined) with 6513 and SEG to discuss more specific document requirements. Will you please call Martha Charles and inquire about and attend that meeting? and Provide additional guidance documents.

You might give them a more complete overview of the FADDOC process at that meeting as well. Thanks.
→ Or perhaps at the December FADDOC meeting

Another point. Some 6513 personnel think that the HASP and decon plan/safety evaluation are the same document. This is <u>not</u> the case. The decon plan/safety evaluation should determine the controls that are required to perform the work safely, and these controls should be incorporated into the decon HASP. Obviously, 6513 does not understand DOE ~~EM SD~~ 550?

Please find attached Martha Charles' decon plan requirements. If you have further info or input, let her know.

Have a nice Thanksgiving. Thanks. Gwen Pirtle

I am on travel Monday and Tuesday; will return Wednesday.

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS

M. Charles
11/16/94

Decontamination Plan Requirements

Decontamination Plans Content Requirements:

The decontamination plan is for the purpose of documenting the turn-key operations for decontaminating the HCF. This plan is to include technical, programmatic, logistical, and health and safety requirements. Existing documentation should be used and referenced, for example:

-Hot Cell Facility (HCF) Safety Analysis Report (10/14/94)

The following sections and/or topics shall be included as part of the decontamination plan.

1. Executive Summary

- purpose
- overview of work process to be conducted
- objectives
- unique conditions
- interfaces for work activity

2. Roles and Responsibilities: of organizations and personnel; include assignment of tasks to be completed during the decontamination phase, identify decision-making responsibilities, identify required approvals.

3. Define Scope of Work - comprehensive discussion and flowchart of decontamination activities to be conducted; define boundary conditions of work.
- clean-up (decon) criteria standard to be used (what are the decon objectives)
~~Reclassification levels, define PPE requirements~~

4. Facility description and equipment/materials
Discuss the status of the facility during the decontamination work activity. List and describe all equipment and materials to be used during the activity and describe the purpose. Identify auxillary requirements i.e.: ventilation. How will HCF systems be affected by the decontamination activity i.e.: electrical, filtration, ventilation.
Reclassification levels lower PPE requirements.
Baseline description of facility & Contamination levels

5. Hazard Analyses - hazard identification and evaluation. Hazard identification and evaluation provided or thorough, predominantly qualitative evaluation of the spectrum of risks to the public, workers, and the environment due to accidents involving any of the hazards identified. The evaluation identifies preventive and mitigative features. Identify hazards associated by equipment and the processes of the decontamination activity.

6. Criticality Safety - state issues and requirements.

Brief site description

7

M. Charles
11/16/94

7. Radiation Protection/ALARA, Hazardous Material Protection, Operational Safety, Procedures and Training
-per SNL, DOE and Area V requirements.
Can be described in the Health and Safety Plan (HASP) and summarized in the Decontamination Plan

8. Human Factors - Identification of Human-Machine Interfaces

9. Quality Assurance
Description of program that ensures work is performed to meet specifications

10. Emergency Preparedness
Emergency Response Requirements

11. Waste Management: Hazardous, Radioactive and Mixed issues, as applicable
- characterization
- treatment
- waste handling/packaging
- transportation
- storage
- disposal

12. Health and Safety Plan (HASP) Guidelines

-Attached-

13. Safeguards and Security: coordination, material accountability

14. Reference Section

15. Dry/Cold Run - pre-startup check

16. Provide a schedule and milestone for detailed Decontamination Plan implementation

April 25, 2000

PAGE DELIBERATELY

NOT SCANNED

Must be viewed at the

Integrated Safety & Security (IS&S)
Records Center

For Assistance Call

844-4688

Author: Gwendolyn J Pirtle at OBERON
Date: 5/4/95 4:13 PM
Priority: Normal
Receipt Requested
TO: Charles G Thomas
TO: David S Barber
CC: Gwendolyn J Pirtle
TO: Carlos S Medrano
Subject: Hot Cell Facility Decontamination

---------- Message Contents ----------

I talked to John Campisi, 7713, about the status of the hot cell facility (HCF) decontamination project. John had been chartered with 7700 safety and health oversight for the HCF decon project by Joe Stiegler when the HCF decon project was started, but is unclear about that charter now, particularly with Joe on special assignment.

John told me that the HCF decon project is having weekly status meetings again. John attended one of those meetings this morning. At that meeting, Ken Boldt mentioned that he was going to brief FADDOC on May 11 on the HCF project.

John and I discussed the following issues:

John told me that the attitude of the 6500 personnel has not changed from what it was last fall in that they just want to do their own thing without any oversight. Frankly, if that is the case, I do not know what it is that FADDOC can do to help with the project or what it is that 6500 wants from FADDOC. All that we can do is to define FADDOC's charter to them very carefully and ask them what they want from FADDOC, and what FADDOC's role is relative to the ALARA and Radiation Protection Committees. We will then have to assess whether we think that role is appropriate, or if FADDOC has a role.

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Author: Gwendolyn J Pirtle at OBERON
Date: 5/12/95 10:14 AM
Priority: Normal
Receipt Requested
TO: David S Barber
CC: Charles G Thomas
CC: Gwendolyn J Pirtle
Subject: HCF Decontamination Project

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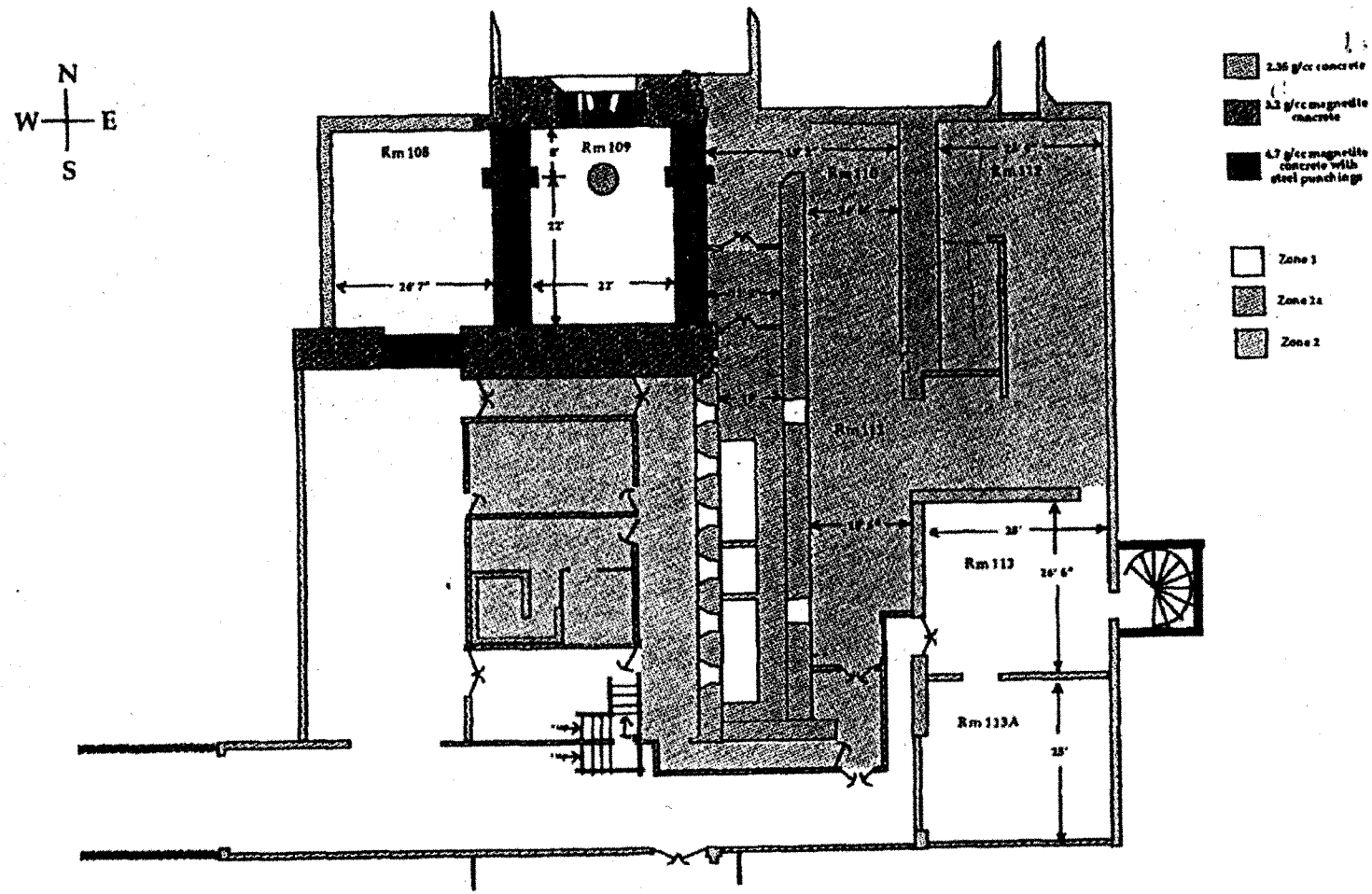

Figure 1
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Nov 21, 1994

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22-141 50 SHEETS
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6

M. Charles
11/16/94

Decontamination Plan Requirements

Decontamination Plans Content Requirements:

The decontamination plan is for the purpose of documenting the turn-key operations for decontaminating the HCF. This plan is to include technical, programmatic, logistical, and health and safety requirements. Existing documentation should be used and referenced, for example:

-Hot Cell Facility (HCF) Safety Analysis Report (10/14/94)

The following sections and/or topics shall be included as part of the decontamination plan.

1. Executive Summary

- purpose
- overview of work process to be conducted
- objectives
- unique conditions
- interfaces for work activity

2. Roles and Responsibilities: of organizations and personnel; include assignment of tasks to be completed during the decontamination phase, identify decision-making responsibilities, identify required approvals.

3. Define Scope of Work - comprehensive discussion and flowchart of decontamination activities to be conducted; define boundary conditions of work.
- clean-up (decon) criteria standard to be used (what are the decon objectives)
~~Reclassification levels, lower PPE requirements~~

4. Facility description and equipment/materials
Discuss the status of the facility during the decontamination work activity. List and describe all equipment and materials to be used during the activity and describe the purpose. Identify auxiliary requirements i.e.: ventilation. How will HCF systems be affected by the decontamination activity i.e.: electrical, filtration, ventilation.
Reclassification levels lower PPE requirements.
Baseline description of facility, contamination levels

5. Hazard Analyses - hazard identification and evaluation. Hazard identification and evaluation provided or thorough, predominantly qualitative evaluation of the spectrum of risks to the public, workers, and the environment due to accidents involving any of the hazards identified. The evaluation identifies preventive and mitigative features. Identify hazards associated by equipment and the processes of the decontamination activity.

6. Criticality Safety - state issues and requirements.

Brief site description

7

M. Charles
11/16/94

7. Radiation Protection/ALARA, Hazardous Material Protection, Operational Safety, Procedures and Training
-per SNL, DOE and Area V requirements.
Can be described in the Health and Safety Plan (HASP) and summarized in the Decontamination Plan

8. Human Factors - Identification of Human-Machine Interfaces

9. Quality Assurance
Description of program that ensures work is performed to meet specifications

10. Emergency Preparedness
Emergency Response Requirements

11. Waste Management: Hazardous, Radioactive and Mixed issues, as applicable
- characterization
- treatment
- waste handling/packaging
- transportation
- storage
- disposal

12. Health and Safety Plan (HASP) Guidelines

-Attached-

13. Safeguards and Security: coordination, material accountability

14. Reference Section

15. Dry/Cold Run - pre-startup check

16. Provide a schedule and milestone for detailed Decontamination Plan implementation

April 25, 2000

PAGE DELIBERATELY

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844-4688

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PAGE

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	**Source Document Tracking Number: C1021**
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	**Category:** ☑ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : Memo from Susan Longley to File re: Characterization of waste from Glove Box 9	
Source Document Reference Information (author(s), document and revision number, date, publisher): Susan Longley, NA, NA, 02/05/1997	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR5, PR6, PR7, WS2, WS4, WS8, WS9, WS10, WS11, WS12, S9	Throughout	The purpose of this memo is to document the method that will be used to determine if waste items generated from glove box 9 as part of the Hot Cell Facility Decontamination Project should be categorized as low level or TRU waste. In addition, this method can be used to calculate the activity concentrations of the Pu and U isotopes in waste glove box 9. Individual waste items from glove box 9 that must be categorized as mixed waste are also identified. Glove box 9 was used in room 112 of HCF mainly for work with mixed oxide and urania fuels. Includes sample data for gloveboxes 4/5, 6/7, and the fume hood in Room 112. Includes an inventory of HCF Waste. Chemicals included: Barium, Cadmium, Toluene, Acetone, Freon-113, Arsenic, Chromium, Copper, Lead, Mercury, Selenium, Silver, Zinc, Benzene, Carbon Tetrachloride, 1,2-dichloroethane, trichloroethene (trichloroethylene), ethanol, methanol, methylene chloride, methyl ethyl ketone, xylene Product included: EPON 815 resin Sig quantities of the following: Pu-238, Pu-239, Pu-240, Am-241, U-233, U-234, U-235, U-238

NTPC RECORDS ORIGINAL
DATE REC'D 05/19/2014
EPF

Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: C1021
Waste Stream Number(s): SNL-HCF-S5400-RH	
Source Document Data Limitations (if any): 1. Best Available Copy.	
Acceptable Knowlege Expert: Kevin J. Petas , [signature] Date: 1/12/14 Print /Sign	

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

Sandia National Laboratories

Albuquerque, New Mexico 87185-1141

date: February 5, 1997

to: Memorandum To File

from: Susan Longley, MS-1141 (9361)

subject: Characterization of waste from Glove Box 9

Purpose of Memo

The purpose of this memo is to document the method that will be used to determine if waste items generated from glove box 9 as part of the Hot Cell Facility Decontamination Project should be categorized as low level or transuranic (TRU) waste. In addition, this method can be used to calculate the activity concentrations of the plutonium and uranium isotopes in waste from glove box 9. Individual waste items from glove box 9 that must be categorized as mixed waste are also identified.

Introduction to Glove Box 9

Glove box 9 was used in room 112 of the Hot Cell Facility mainly for work with mixed oxide (Pu/U) and urania fuels ($U0_2$). (The complete history of this box is given in a separate Memorandum To File, subject "Process Knowledge Documentation for Glove Box 9" dated February 28, 1996.)

On May 31, 1995 samples were taken of the glove box filter and used paper towels inside Glove Box 9 of Room 112 in the Building 6580 Hot Cell Facility. This sampling and subsequent analyses are described in PLA 95-28, *Sandia National Laboratories New Mexico, Sampling and Analysis Plan for Characterization of Waste Arising from Hot Cell Facility Glovebox Decontamination.* The original Sampling and Analysis Plan required analysis of the samples from both the filter and the paper towels analyzed for gross alpha and beta activity, gamma spectrometry, total RCRA metals and volatile organic compounds. The Chain-of-Custody for these samples was numbered 03209. Upon receipt of the original analyses results and further examination of the glove box history, the laboratory was requested to perform additional analyses for isotopic plutonium and uranium. No material was left at the laboratory from the glove box 9 filter sample, so this additional analysis was limited to the glove box 9 paper towels.

Mixed Waste Issues For The Glove Box 9 Waste

The laboratory results obtained from analysis of the glove box 9 samples are summarized in the tables provided in Attachment 1 of this memo. Of the RCRA metals, both barium and cadmium were detected in significant quantities (14,000 and 98 mg/kg, respectively) in the glove box 9 filter. Cadmium was detected in the paper towels, at 2,000 mg/kg. Because it can be reasonably assumed that the cadmium and barium would be leachable from these samples, the filter and the paper towels must be categorized as mixed waste due to the presence of both metals on the filter and cadmium on the paper towels. Assuming that these metals are leachable, the concentrations exceed the levels specified in 40 CFR 261.24. The RCRA codes for these metals are D005 for barium and D006 for cadmium.

Acetone and toluene were also detected in the glove box 9 filter at 0.24 and 0.83 mg/L, respectively. Although the process knowledge documentation for glove box 9 does not indicate any solvent usage, these materials were frequently used as solvents in other parts of the HCF. Therefore, it is assumed that the glove box 9 filter should also be categorized as mixed waste due to the presence of these solvents, RCRA codes F003 (acetone) and F006 (toluene).

Other waste items removed from glove box 9 include the items listed in Attachment 2 of this memo. (The inventory table is from page 69 of the Sampling and Analysis Plan.) Of these items, it can be reasonably assumed that the Millipore particulate filter and the two circulating air filters attached to the glove box should also be categorized as mixed waste due to the presence of cadmium (D006) and barium (D005) above the concentrations specified in 40 CFR 261.24 and for the presence of acetone and toluene as spent solvents (F003 and F006).

The other waste items removed from glove box 9 (Attachment 2) are either empty containers, or items that are not expected to be significantly contaminated with barium or cadmium. Therefore, these other items are categorized as radioactive, not mixed waste.

Transuranic Waste Issue - Plutonium Levels In The Glove Box 9 Waste

The glove box 9 paper towels contained significant quantities of plutonium-238 and -239-240 and americium-241. These results are summarized below:

- Pu-238 = 428,000 pCi/g ± 34,000 pCi/g, or a maximum of 462,000 pCi/g;
- Pu-239/240 = 1,730,000 pCi/g ± 100,000 pCi/g, or a maximum of 1,830,000 pCi/g;
- Am-241 = 446,000 ± 45,000, or a maximum of 491,000 pCi/g.

Total for TRU nuclides measured = maximum of 2.78×10^6 pCi/g or 2,783 nCi/g.
The glove box 9 paper towels also contained 7.35 ± 0.2 pCi/g of Cs-137, or a maximum of 7.55 pCi/g (Attachment 3).

As expected from the history of the glove box, which included work with mixed oxide fuels, the glove box 9 paper towels must be categorized as TRU waste. To determine if other material from glove box 9 is also TRU waste without performing additional offsite isotopic analyses, concentrations for individual TRU nuclides in the glove box 9 waste can be calculated using the following method.

Multiply the Cs-137 activity by:

- 6.6×10^4 to get the Pu-238 activity (in the same units as the Cs-137 activity);
- 2.42×10^5 to get the Pu-239/240 activity; and
- 6.5×10^4 to get the Am-241 activity. (Calculate the Am-241 if it does not show up on gamma spec. If it is detected using gamma spec, use that number instead of calculating the concentration.)

Note: This method for calculating radionuclide concentrations for nuclides that would normally only be detected using radiochemistry does not take into account any error factors. For example, gamma spectrometry measurements made in the HCF using a portable system usually have an error associated with the measurements because the geometry is non-standard. To obtain this error, the memo prepared by the analyst/modeler describing the gamma spectrometry measurements must be reviewed. This error factor should then be incorporated into the calculations. (I.e., If the error is a factor of 5, then the Cs-137 concentration must be multiplied by 5.) This same caution applies to the uranium calculations discussed below.

Uranium Levels In The Glove Box 9 Waste

Laboratory analysis of the glove box 9 paper towels included uranium-233/234, -235, and -238 (Attachment 3). The levels of these radioisotopes in the glove box 9 waste can also be calculated using the uranium:Cs-137 ratio. The uranium concentrations detected were:

- U-233/234 = 19,100 pCi/g ± 5,200 pCi/g, or a maximum of 24,300 pCi/g;
- U-235 = 4,100 pCi/g ± 2,500 pCi/g, or a maximum of 6,600 pCi/g; and
- U-238 = 15,700 pCi/g ± 4,600 pCi/g, or a maximum of 20,300 pCi/g.

To calculate the uranium concentrations in the glove box 9 waste, multiply the Cs-137 activity by:

- 3.5×10^3 to get the U-233/234 activity (in the same units as the Cs-137 activity);
- 943 to get the U-235 activity; and
- 2.9×10^3 to get the U-238 activity.

(Calculate the U-235 and U-238 concentrations if they are not detected using gamma spectrometry. If one or both of these isotopes are detected, use those concentrations instead of calculating the concentrations.)

Attachment 1: Summary of sample results, including glove box 9
2: Inventory of glove box 9 items
3: Laboratory data for glove box 9 paper towels

Distribution:
MS-1144 Marion McDonald, 9361
MS-1142 Zane Lawson, 9362
MS-1142 Sherron Hirdman, 9362
MS-1142 Don Berry, 9362
MS-1303 Ron Seylar, 7577
MS-1144 Geraldine Lopez (ISO/HCF/DCN/WST)

Attachment 1

Summary of Sample Results (Includes Glove Box 9)

Sandia National Laboratories

Albuquerque, New Mexico 87185-1331

date: February 13, 1996

to: Susan Longley, MS-1144 (6626)

H. Seeley

from: Howard Seeley, MS-1331 (7513)

subject: Summary of Data Results for the HCF Glovebox and TDU Sampling Events

As requested, attached are spreadsheets presenting the analytical results, and both the data packages and validation reports, for the HCF glovebox sampling event and the TDU filter sampling event. I've attempted to summarize the analytical results below.

1) TDU Sampling Event

The TDU filter sampling project was associated with COC 04361 and the analyses were performed by CORE Laboratories in Denver, CO (chemical) and Casper, WY (radiological). The initial data report contained some errors in reporting units and in the raw data sheets. The SMO requested corrections and CORE has re-submitted a final data package.

None of the filter samples submitted for analysis by the Toxicity Characteristic Leaching Procedure (TCLP), the TDU microfilter, HEPA filter, or charcoal filter, contained Toxicity Characteristic (TC) compounds above the TCLP limits. The requested analyses listed on the COC did not include Freon-113. The Sample Management Office (SMO) requested that the laboratory review the analysis records and identify and quantitate any suspected Freon-113. The laboratory included the review in their re-submittal. Freon-113 was indicated in the TC leachates of the TDU microfilter (0.3 mg/L) and the TDU charcoal filter (13 mg/L). Data validation qualifiers were applied to the volatile analyses of these filter samples. Samples intended for the analysis of TC volatile organic compounds (VOCs) should be preserved at 4° C; these samples were submitted at ambient temperature. The resulting data was qualified as estimated, indicating there could have been a possible loss of VOCs during shipping and prior to analysis. However, all TC VOC results were non-detect and it seems unlikely that sufficient volatilization could have occurred to reduce the VOC concentrations from above the TCLP limits to non-detect.

The sample from the paint can seam did not contain any detectable lead using the TCLP methods.

The results for the radiological analysis of the TDU microfilter (iso-Pu) and the ST swipe (gross alpha/beta, iso-Pu, and iso-U) are included on the spreadsheet for your review.

2) Glovebox Sampling Event

The Glovebox sampling project was associated with COCs 03210, 03211, and 03710 and both chemical and radiological analyses were performed by Lockheed Laboratories in Las Vegas, NV.

Samples of both solid and liquid materials were collected and analyzed for total metals and VOCs and for radiological parameters. The TCLP was not performed for the metals and VOC analyses, however the target compounds were limited to RCRA TC compounds (plus copper and zinc). In interpreting the results, we multiply the TCLP limit by a factor of 20 and then compare the total metal and VOC results of solid materials to that value. This accounts for the twenty-fold dilution that would occur had the TCLP been used. Results of metals and VOCs for liquid samples are compare directly to the TCLP limits, as there is no dilution required for this matrix.

Metals

The following table summarizes the sample results for metals that exceed the TCLP limits. Copper and zinc are not RCRA TC metals, but were included to satisfy potential disposal options. Shaded areas indicates those analytes that may exceed TCLP limits. The analytical procedure used to determine total metals is much more rigorous than the TCLP; it is possible that a total sample result slightly greater than the TCLP limit might not fail if the TCLP were used. However, for these samples the values are much greater than the TCLP limits.

METALS	GB 4/5 Filter 024011-01 mg/kg	GB 6/7 Paper Towels 024010-03 mg/kg	GB 6/7 Filter 024012-01 mg/kg	GB 9 Filter 024013-01 mg/kg	GB 9 Paper Towels 024014-03 mg/kg	Fume Hood Brown paste 023278-03 mg/kg	20x TCLP limits for solids comparison mg/kg
Arsenic	<2	<2	4.5	<2	<2	<2	100
Barium	12,000	110	9100	14,000	<4	<40	2000
Cadmium	14	21	34	98	2000	<1	20
Chromium	480	93	100,000	<2	7.4	76	100
Copper	4400	160	10,000	110	19	230	NA
Lead	67	410	600	36	8.5	53	100
Mercury	0.29	0.95	25	0.24	<0.10	<0.1	4
Selenium	<1	<1	<1	<1	<1	<1	20
Silver	19	110	140	17	<2	210	100
Zinc	8700	64	4400	9900	41	56	NA

Other positive results for metals in both solid and liquid samples are noted on the attached spreadsheets, however all results are below the TCLP limits.

Volatile Organic Compounds

Only the GB 4/5 water sample exhibited a TC VOC above the TCLP limits. Benzene was detected at 79 mg/L; the TCLP limit is 0.5 mg/L. The SMO has, and is continuing to, query the laboratory

regarding this result. It seems suspect because benzene was not detected in any other sample, no other likely benzene contaminants were detected, and this detection was only noted after the third dilution of the sample (due to high acetone levels). Until a resolution is reached, it is suggested to accept this value as an estimated value.

Relatively high levels of acetone, ranging from 140 mg/L to 490 mg/L were reported in samples of the GB 4/5 Metadi solution, the GB 4/5 water, and the GB 6/7 water. Other than acetone is not a RCRA TC VOC, no conclusions are drawn.

The GB 6/7 filter sample results were positive for three TC VOCs, however all results were below the 20x TCLP levels. Compounds reported included carbon tetrachloride, 1,2-dichloroethane, and trichloroethene.

During data validation, it was apparent that the laboratory may have had some problems running the VOC analyses for some of the samples associated with COC 03710. This includes the GB filters and paper towel samples. All VOC samples were extracted outside of holding times (due to sample shipment problems), surrogate recoveries were frequently outside of criteria, and the internal standards criteria were often not met, requiring re-analyses. I would consider the VOC results associated with these COCs as estimated values. If these VOC results become critical to decision processes, then a higher level validation procedure (DV-3) may be necessary.

Radiological Parameters

Initially, only gamma spectroscopy was performed on the samples. Based on high concentrations of transuranic radionuclides detected by gamma spectroscopy, additional isotopic analyses for uranium and plutonium were requested on the GB 9 paper towels and GB 9 filter. The laboratory consumed the GB 9 filter during previous analyses and were only able to perform the requested isotopic analyses on the GB 9 paper towel sample. The attached results indicate high concentrations of isotopic plutonium and uranium. Further interpretation of the radiological data is best left to HCF personnel.

I hope this review will be helpful in interpreting the data. Given the Freon detections and the use of acetone, TCE, and carbon tetrachloride for solvent properties, and the different matrices associated with the results, interpretation of the status of the material (e.g., listed or mixed) should be best left to the Radioactive and Mixed Waste Management (7577) personnel. If you have any questions or need further validation of the data, please call me at 848-0846 or Nick Durand at 848-0974.

Distribution:

M.J. McDonald w/ encl (MS 1143)
G. Lopez w/ encl (MS-1144) (ISO/HCF/DCN/WST)
N.A. Durand w/ encl (MS 1331)
D.E. Perry w/ encl (MS 1331)

TDU Sampling Event

VOCs	TDU Microfilter 026251-01 COC-04361 mg/L	TDU HEPA filter 026252-01 COC-04361 mg/L	TDU Charcoal 026253-01 COC-04361 mg/L	TCLP Regulatory Limits mg/L
Benzene	<0.02	<0.01	<0.01	0.5
Carbon Tet	<0.1	<0.05	<0.05	0.5
Cl-benzene	<0.1	<0.05	<0.05	100
Chloroform	<0.1	<0.05	<0.05	6
1,2-DCA	<0.1	<0.05	<0.05	0.5
1,1-DCE	<0.1	<0.05	<0.05	0.7
2-Butanone	<2.0	<1.0	<1.0	200
PCE	<0.1	<0.05	<0.05	0.7
TCE	<0.1	<0.05	<0.05	0.5
VC	<0.2	<0.1	<0.1	0.2
Freon-113	0.3 –	<0.1	13 –	NA
SVOCs				
1,4-DCB	<0.1	<0.1	<0.1	7.5
2,4-DNT	<0.1	<0.1	<0.1	0.13
Hexachlorobenzene	<0.1	<0.1	<0.1	0.13
Hexachlorobutadiene	<0.1	<0.1	<0.1	0.5
Hexachloroethane	<0.1	<0.1	<0.1	3
Nitrobenzene	<0.1	<0.1	<0.1	2
Pyridine	<0.1	<0.1	<0.1	5
o-cresol	<0.1	<0.1	<0.1	200
m+p cresol	<0.1	<0.1	<0.1	200
Pentachlorophenol	<0.5	<0.5	<0.5	100
2,4,5-TCP	<0.1	<0.1	<0.1	400
2,4,6-TCP	<0.1	<0.1	<0.1	2

METALS	TDU Microfilter 026251-01 COC-04361 mg/L	TDU HEPA filter 026252-01 COC-04361 mg/L	TDU Charcoal 026253-01 COC-04361 mg/L	Paint Can Seam 026255-01 COC-04361 mg/L	TCLP Regulatory Limits mg/L
Arsenic	<0.05	<0.05	<0.05		5
Barium	<0.5	0.6	<0.5		100
Cadmium	0.2	<0.01	<0.01		1
Chromium	3.12	0.01	0.01		5
Lead	1.16	0.09	<0.05	<0.2	5
Mercury	<0.02	<0.02	<0.02		0.2
Selenium	<0.1	<0.1	<0.1		1
Silver	<0.01	<0.01	<0.01		5

RAD	TDU Microfilter 026251-01 COC-04361 pCi/g (LLD)	ST Swipe 026254-01 COC-04361 pCi/swipe (LLD)
Pu-238	11,700 (41)	43,100 (261)
Pu-239/240	2370 (37)	13,400 (81)
Gross Alpha	NR	167,000 (14100)
Gross beta	NR	5,470,000 (33300)
U-234	NR	3850 (144)
U-235	NR	117 (36)
U-238	NR	90 (99)

HCF Glovebox Sampling Event

METALS	GB 4/5 Grinding Papers 024008-03 COC-03710 mg/kg	GB 4/5 Paper Towels 024009-03 COC-03710 mg/kg	GB 4/5 Filter 024011-01 COC-03710 mg/kg	GB 4/5 Metadi sol'n 023269-03 COC-03210 mg/L	GB 4/5 Mastermet Slurry 023270-03 COC-03210 mg/kg	GB 4/5 Alumina 023271-03 COC-03210 mg/kg	GB 4/5 water 023279-04 COC-03211 mg/L	GB 4/5 H2O/ Diamond paste 023281-05 COC-03211 mg/L	GB 6/7 Paper Towels 024010-03 COC-03710 mg/kg	TCLP Regulatory Limits mg/L	20x TCLP limits for solids comparison mg/kg
Arsenic	<2	<2	<2	<0.01	<2	<2	<0.01	<0.05	<2	5	100
Barium	<40	<40	12,000	<10	<40	<40	<0.2	3.1	110	100	2000
Cadmium	<1	3.7	14	<0.25	<1	<1	<0.005	0.019	21	1	20
Chromium	18	30	480	<0.50	<2	<2	0.013	1.8	93	5	100
Copper	29	120	4400	<1.3	<5	<5	0.24	0.48	160	NA	NA
Lead	17	42	67	<0.003	<0.60	3.3	0.052	0.022	410	5	100
Mercury	0.29	0.71	0.29	<0.0002	<0.1	<0.1	<0.002	0.0037	0.95	0.2	4
Selenium	<1	<1	<1	<0.005	<1	<1	<0.025	<0.025	<1	1	20
Silver	<2	18	19	<0.50	<2	<2	<0.01	0.061	110	5	100
Zinc	29	570	8700	<1	<4	<4	0.15	0.17	64	NA	NA

METALS	GB 6/7 Filter 024012-01 COC-03710 mg/kg	GB 6/7 water 023280-03 COC-03211 mg/L	GB 9 Filter 024013-01 COC-03710 mg/kg	GB 9 Paper Towels 024014-03 COC-03710 mg/kg	Fume Hood Methanol 023272-02 COC-03210 mg/L	Fume Hood Ethanol 023273-02 COC-03210 mg/L	Fume Hood Methanol 023274-02 COC-03210 mg/L	Fume Hood Brown paste 023278-03 COC-03211 mg/kg	TCLP Regulatory Limits mg/L	20x TCLP limits for solids comparison mg/kg
Arsenic	4.5	<0.01	<2	<2	<0.01	<0.01	<0.01	<2	5	100
Barium	9100	<0.2	14,000	<4	<10	<10	<10	<40	100	2000
Cadmium	34	<0.005	98	2000	<0.25	<0.25	<0.25	<1	1	20
Chromium	100,000	<0.01	<2	7.4	<0.50	<0.50	<0.50	76	5	100
Copper	10,000	0.078	110	19	<1.3	<1.3	<1.3	230	NA	NA
Lead	600	0.015	36	8.5	<0.003	<0.003	<0.003	53	5	100
Mercury	25	<0.002	0.24	<0.10	0.00068	<0.0002	<0.0002	<0.1	0.2	4
Selenium	<1	<0.005	<1	<1	<0.005	<0.005	<0.005	<1	1	20
Silver	140	<0.01	17	<2	<0.50	<0.50	<0.50	210	5	100
Zinc	4400	0.15	9900	41	<1	<1	<1	56	NA	NA

HCF Glovebox Sampling Event

VOCs	GB 4/5 Grinding Papers 024008-03 COC-03710 mg/kg	GB 4/5 Paper Towels 024009-03 COC-03710 mg/kg	GB 4/5 Filter 024011-01 COC-03710 mg/kg	GB 4/5 Metadi sol'n 023269-02 COC-03210 mg/L	GB 4/5 Mastermet Slurry 023270-02 COC-03210 mg/L	GB 4/5 Alumina 023271-02 COC-03210 mg/kg	3210 Trip Blank 024250-01 COC-03210 mg/L	GB 4/5 water 023279-02 COC-03211 mg/L	TCLP Regulatory Limits mg/L	20x TCLP limits for solids comparison mg/kg
Benzene	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	79 (dil)	0.5	10
Carbon Tet	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	0.5	10
Cl-benzene	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	100	2000
Chloroform	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	6	120
1,4-DCB	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	7.5	150
1,2-DCA	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	0.5	10
1,1-DCE	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	0.7	14
2-Butanone	<0.049	<0.100	<0.098	0.11	<0.100	<0.100	<0.010	<1	200	4000
PCE	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	0.7	14
TCE	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	0.5	10
VC	<0.024	<0.050	<0.049	<0.050	<0.050	<0.050	<0.005	<0.5	0.2	4
Additional compounds reported: *										
Acetone	0.16			300	1.5	13		490 (Dil)		
111-TCA	0.16			0.24		0.12				
4-meth-2-pe	0.66			0.18						
Methylene chloride				0.048		0.016				
m,p-xylene						0.017				

* These compounds are not RCRA TC analytes but were indicated by the labortory as present and are inlcuded for information.

HCF Glovebox Sampling Event

VOCs	GB 4/5 H2O/ Diamond paste 023281-02 COC-03211 mg/L	3211 Trip blank 024251-01 COC-03211 mg/L	GB 6/7 Paper Towels 024010-03 COC-03710 mg/kg	GB 6/7 Filter 024012-01 COC-03710 mg/kg	GB 6/7 water 023280-02 COC-03211 mg/L	GB 9 Filter 024013-01 COC-03710 mg/kg	GB 9 Paper Towels 024014-03 COC-03710 mg/kg	Fume Hood Brown paste 023278-02 COC-03211 mg/kg	TCLP Regulatory Limits mg/L	20x TCLP limits for solids comparison mg/kg
Benzene	<0.5	<0.005	<0.051	<1.2	<0.005	<0.048	<0.051	<0.024	0.5	10
Carbon Tet	<0.5	<0.005	<0.051	5.1	<0.005	<0.048	<0.051	<0.024	0.5	10
Cl-benzene	<0.5	<0.005	<0.051	<1.2	<0.005	<0.048	<0.051	<0.024	100	2000
Chloroform	<0.5	<0.005	<0.051	<1.2	<0.005	<0.048	<0.051	<0.024	6	120
1,4-DCB	<0.5	<0.005	<0.051	<1.2	<0.005	<0.048	<0.051	<0.024	7.5	150
1,2-DCA	<0.5	<0.005	<0.051	2.8	0.0025	<0.048	<0.051	<0.024	0.5	10
1,1-DCE	<0.5	<0.005	<0.051	<1.2	<0.005	<0.048	<0.051	<0.024	0.7	14
2-Butanone	<1	<0.01	<0.100	<2.5	0.015	<0.097	<0.100	<0.049	200	4000
PCE	<0.5	<0.005	<0.051	<1.2	<0.005	<0.048	<0.051	<0.024	0.7	14
TCE	<0.5	<0.005	<0.051	8	<0.005	<0.048	<0.051	<0.024	0.5	10
VC	<0.5	<0.005	<0.051	<1.2	<0.005	<0.048	<0.051	<0.024	0.2	4
Freon-113	NR	NR	NR	NR	NR	NR	NR	NR	NA	NA
Additional compounds reported: *										
Acetone	Not reported				140	0.24				
111-TCA				35	0.0056					
4-meth-2-pe	1			8.2						
Methylene chloride		0.002		5.3	30					
Toluene				28		0.83				

* These compounds are not RCRA TC analytes but were indicated by the labortory as present and are inlcuded for information.

HCF Glovebox Sampling Event

Gamma Spec	GB 4/5 Grinding Papers 024008-03 COC-03710 pCi/g	GB 4/5 Paper Towels 024009-03 COC-03710 pCi/g	GB 4/5 Filter 024011-01 COC-03710 pCi/g	GB 4/5 Metadi sol'n 023269-03 COC-03210 pCi/L	GB 4/5 Mastermet Slurry 023270-03 COC-03210 pCi/g	GB 4/5 Alumina 023271-03 COC-03210 pCi/g	GB 4/5 water 023279-04 COC-03211 pCi/L	GB 4/5 H2O/ Diamond paste 023281-06 COC-03211 pCi/L	GB 6/7 Paper Towels 024010-03 COC-03710 pCi/g
Ac-228			4.8 (2.1)						
Ag-110m								1310 (140)	
Am-241	96 (2.1)	1440 (5.2)	899 (6.5)						93 (4.8)
Bi-212									
Ce-144	131 (5.1)	840 (13)	161 (6.4)					52300 (940)	1960 (11)
Co-57								270 (130)	
Co-60	1.71 (0.34)	11 (0.94)	71 (0.36)					124 (59)	6.9 (0.82)
Cs-134	20.6 (0.84)	14.8 (3.0)	11.4 (0.55)					2390 (120)	560 (2.2)
Cs-137	2470 (0.84)	13400 (9.4)	954 (0.6)		0.033 (0.012)	0.73 (0.041)	3290 (50)	166000 (140)	10900 (2.0)
K-40			7.0 (2.6)						
Mn-54								231 (92)	
Na-22								22000 (99)	
Pb-212			13 (1.2)					350 (270)	12.3 (3.7)
Pb-214						0.17 (0.054)			
Ra-226	65 (19)								510 (41)
Ru-103									
Ru-106		66 (22)	17.0 (5.5)					12300 (1200)	175 (20)
Th-234	74 (15)	207 (38)	1400 (41)					11000 (2100)	363 (36)
Tl-208	1.4 (0.92)		3.8 (0.63)					165 (130)	4.3 (2.2)
U-235	53.7 (5.0)	825 (13)	1470 (6.5)					39200 (910)	1530 (11)
Zr-95		17.4 (4.1)							31.4 (3.3)

Results listed are > MDA and > error; (MDA)

Gamma Spec	GB 6/7 Filter 024012-01 COC-03710 pCi/g	GB 6/7 water 023280-03 COC-03211 pCi/L	GB 9 Filter 024013-01 COC-03710 pCi/g	GB 9 Paper Towels 024014-03 COC-03710 pCi/g	Fume Hood Methanol 023272-02 COC-03210 pCi/L	Fume Hood Ethanol 023273-02 COC-03210 pCi/L	Fume Hood Methanol 023274-02 COC-03210 pCi/L	Fume Hood Decahydronaphthalene 023275-02 COC-03210 pCi/L	Fume Hood Brown paste 023278-03 COC-03211 pCi/g
Ac-228			2.1 (1.2)						8.8 (8.1)
Ag-110m									
Am-241	125 (4.0)		223000 (52)	446000 (71)					87 (4)
Bi-212	81 (8.6)								
Ce-144	280 (9.9)			16 (9.3)					10900 (16)
Co-57									
Co-60	2110 (0.67)			0.45 (0.09)					81.2 (1.6)
Cs-134	16.4 (1.2)								291 (2.3)
Cs-137	11100 (1.4)	296 (24)	14 (0.39)	7.35 (0.2)	74 (29)		80 (12)		17400 (2.7)
K-40									54 (14)
Mn-54									
Na-22									
Pb-212	208 (2.3)		5.1 (1.0)						73.2 (4.4)
Pb-214									
Ra-226	13100 (1300)								
Ru-103						36 (23)			
Ru-106	327 (12)								1160 (23)
Th-234	3580 (31)		800 (160)						959 (33)
Tl-208	71.4 (1.3)		0.93 (0.44)						28.6 (2.5)
U-235	10970 (9.8)		2240 (8.3)	12.1 (7.7)					7920 (15)
Zr-95	55.7 (3.0)		2.3 (0.9)	0.58 (0.27)					713 (5)
Alpha Spec									
Pu-238				428000 (1600)					
Pu-239/240				1730000 (2200)					
U-233/234				19100 (3100)					
U-235				4100 (1600)					
U-238				15700 (2200)					

Attachment 2

Inventory of Glove Box 9 Items

HCF Waste Inventory - Total

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
Glove box #8			
2 each - markers	WO - MW	RPSD gamma spec of all items bagged	MSDS
Plastic tray containing:	NTS - LLW	RPSD gamma spec of all items bagged	
Tape lint remover (roller)	NTS - LLW	RPSD gamma spec of all items bagged	
Rubber bands	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic vial	NTS - LLW	RPSD gamma spec of all items bagged	
Tygon tubing	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic box - 4"x1"	NTS - LLW	RPSD gamma spec of all items bagged	
Plastic box, clear, 8"x4"x4"	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic bag	NTS - LLW	RPSD gamma spec of all items bagged	
Bubble level - small	NTS - LLW	RPSD gamma spec of all items bagged	
Small aluminum parts	NTS - LLW	RPSD gamma spec of all items bagged	
Glovebox #9			
Paint can GB9-95-0002:	NTS - LLW	rad charac by GB-9 filter	
Two gloves, rubber, from glove box	NTS - LLW	rad charac by GB-9 filter	
PPE, glove	NTS - LLW	rad charac by GB-9 filter	
Sharpie	WO - MW	rad charac by GB-9 filter	
Paint can GB9-95-0002:	NTS - LLW	rad charac by GB-9 filter	
2 plastic boxes, 3"x3"x1/2", empty	NTS - LLW	rad charac by GB-9 filter	
1 plastic bag w/ metal weighing dish	NTS - LLW	rad charac by GB-9 filter	
13 ea. small plastic and cellophane bags, empty	NTS - LLW	rad charac by GB-9 filter	
1 ea. threaded rod, 10", 1 screw	NTS - LLW	rad charac by GB-9 filter	
1 particulate filter, Millipore, not in use	NTS - LLW	rad charac by GB-9 filter	
1 plastic bag w/ rags, masking tape - used	NTS - LLW	RPSD gamma, LAS - iso-alpha, gamma	LAS - total metals, VOCs
3 ea. glass jars, 2 oz., empty	NTS - LLW	rad charac by GB-9 filter	
2 ea. circulating air filters attached to GB	NTS - LLW	rad charac by GB-9 filter	
Tygon hose, 4"x1/2"	NTS - LLW	rad charac by GB-9 filter	
30 ea. glass vials, 1/2", used and unused	NTS - LLW	rad charac by GB-9 filter	
Weighing boat, 10 cc	NTS - LLW	rad charac by GB-9 filter	
GB-9 filter system	NTS - LLW	RPSD gamma, gross alpha/beta LAS - iso-alpha, gamma	LAS - total metals, VOCs
Fume Hood			
1 plastic tub w/ contaminated material - soil	NTS - LLW	RPSD - gamma, LAS - iso-alpha, gamma	LAS - total metals, VOCs of scrapings
1 bottle ethyl alcohol - 500 ml	WO - MW	RPSD - gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals
1 bottle methanol - 200 ml - contaminated	WO - MW	RPSD - gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals
1 bottle Shell EPON 815 resin - about 100 ml	WO - MW	RPSD gamma spec	MSDS
3 ea. - capacitors - foil type	NTS - LLW	RPSD gamma spec	
1 ea. - transformer - wire-wound, step down	NTS - LLW	RPSD gamma spec	
1 piece Al - 10"x20"	NTS - LLW	RPSD gamma spec	
2 rolls yellow tape	NTS - LLW	RPSD gamma spec	

INFORMATION COPY

RADIOLOGICAL SURVEY FORM

Survey Number: 5970349 C1021

Location TA-V/BLDG. 6596/CHAPEL	Requester/Org. D. BERRY/9365	Date 2-20-97	Time 1330	Duration N/A
Purpose TRU WASTE ASSESSMENT	Request # N/A	RWP # ~~NA~~ R5970026	HPAR # N/A	

Instrument and Probe Type and Serial Number	Surveyor(s) Printed Name	Surveyor(s) Signature
BICRON RSO-50E # B180R	GORDON COULTER	Gordon Coulter
SEE ATTACHED	NA	NA
NA	NA	NA

#	Item Description/Location	ALPHA ACTIVITY Counting Data Attached ☒Yes ☐No % Eff. NA / Isotope NA cpm	Bkg. cpm	dpm 100/cm2	T/R/F(2)	BETA-GAMMA ACTIVITY Counting Data Attached ☒Yes ☐No % Eff. NA / Isotope UNKNOWN cpm	Bkg. cpm	dpm 100/cm2	T/R/F(2)	RADIATION SURVEY Bkg. <0.1 mrem/hr(1)	Distance
1	Fume Hood Pans	NA	NA	NA	R	NA	NA	NA	R	cw / <0.1	Contact
										~~ow / 0.4~~	~~contact~~
				N/A						~~cw / <0.1~~	~~@ 1Ft.~~
										ow / <0.1	@ 1Ft.
2	GB # 9 Soft Trash									cw / 0.6	contact
										ow / 2.1	contact
										cw / o.2	@ 1Ft.
										ow / < 0.1	@ 1Ft.
										cw / <0.1	@ 3 Ft.
3	GB # 9 Tools									cw / o.2	contact
										ow / 1.0	contact
										cw / <o.1	@ 1 Ft.
										ow / <0.1	@ 1 Ft.
4	GB # 9 Metal									cw / <0.1	contact

Part 3 of 8

DR 005134

(1) If area other than 100 cm², record as dpm/probe, or dpm/LAW. (2) Total/Removable/Fixed. (3) Indicate type, if other than gamma (i.e. n or β).

Remarks: ~~SEE ATTACHED SURVEY #~~ 2-20-97

OW-CW IS NOT CALCULATED ON THIS SURVEY FOR TRUE BETA

Reviewed by:

RPOP-008.b
ver 960325

INFORMATION COPY

RADIOLOGICAL SURVEY FORM CONTINUATION

Survey Number: 5970349 C1021

#	Item Description//Location	ALPHA ACTIVITY cpm	ALPHA ACTIVITY Bkg. cpm	ALPHA ACTIVITY dpm/100 cm² (1)	ALPHA ACTIVITY T/R/F(2)	BETA-GAMMA ACTIVITY cpm	BETA-GAMMA ACTIVITY Bkg. cpm	BETA-GAMMA ACTIVITY dpm/100 cm² (1)	BETA-GAMMA ACTIVITY T/R/F(2)	RADIATION SURVEY mrem/hr (3)	RADIATION SURVEY Distance
4	GB # 9 Metal	NA	NA	NA	R	NA	NA	NA	R	ow/<0.1	contact
5	GB # 9 Glass									cw/<0.1	contact
										ow/0.4	contact
										cw/<0.1	@ 1Ft.
										ow/<0.1	@ 1 Ft.
~~6~~	GB # 1 Metal									cw/250	contact
										ow/1.7R	contact
		N/A								cw/30	@ 1Ft.
										ow/200	@ 1 Ft.
										cw/7	@ 3Ft.
										ow/50	@ 3 Ft.
~~7-8~~	NDC HEPA Filter # 3									cw/6	contact
										ow/60	contact
										cw/2	@ 1Ft.
			N/A							ow/10	@ 1Ft.
										cw/0.4	@ 3Ft.
										ow/3	@ 3 Ft.
9-10	NDC HEPA Filter # 2									cw/8	contact
										ow/60	contact
										cw/2	@ 1Ft.
										ow/21	@ 1Ft.
										cw/0.6	@ 3 Ft.
										ow/3.2	@ 3Ft.

RPOP-009.b
ver 960325

INFORMATION COPY

RADIOLOGICAL SURVEY FORM CONTINUATION

Survey Number: 5970349 C1021

#	Item Description//Location	ALPHA ACTIVITY cpm	ALPHA ACTIVITY Bkg. cpm	ALPHA ACTIVITY dpm/100 cm² (1)	ALPHA ACTIVITY T/R/F(2)	BETA-GAMMA ACTIVITY cpm	BETA-GAMMA ACTIVITY Bkg. cpm	BETA-GAMMA ACTIVITY dpm/100 cm² (1)	BETA-GAMMA ACTIVITY T/R/F(2)	RADIATION SURVEY mrem/hr (3)	RADIATION SURVEY Distance
11-12	NDC HEPA Filter # 4	NA	NA	NA	R	NA	NA	NA	R	cw/4.5	contact
										~~ow/40~~	contact
										cw/1.1	@ 1 Ft.
										ow/7	@ 1 Ft.
				N/A						cw/0.5	@ 3 Ft.
										ow/1.3	@ 3 Ft.
13-14	NDC HEPA Filter # 1									cw/8	contact
										ow/190	contact
										cw/1.5	@ 1Ft.
										~~ow/10~~	@ 1 Ft.
										cw/0.5	~~@ 3 Ft.~~
										ow/4.5	@ 3 Ft.
15-19	HCF CASK RW-5									100	contact
										30	@ 1 Ft.
										6	@ 3 Ft.
20-23	HCF Drum # 223			N/A						~~100~~	~~contact~~
										28	@ 1Ft.
										6	~~@ 3 Ft.~~
24-25	Drum # RW-HCF-95-08 (30 GALLON) (GB1 Can 2)									39	contact
										6	@ 1 Ft.
										2	@ 3 Ft.
26-27	Drum # RW-HCF-95-06 (30 GALLON) (GB1 Can 1)									70	contact
										19	@ 1Ft.

INFORMATION COPY

Survey No. 579034

Radiation Protection Sample Diagnostics (7578) 6580 Rm 205
Smear Analysis

Date: 2/21/97
Counting Unit id: 2 (SNL# S718019)
Data file name: C:\LBXL\UNIT2\75010602.XLD
Batch Ended: 2/21/97 8:55
Crosstalk Correction: Applied
ANALYZED BY STARR
REVIEWED BY: MDJ 2/21/97
Batch ID: TRU WASTE 2/20/97, COULTER

Alpha activity action level (DPM): 20.00
Beta activity action level (DPM): 1000.00
Certainty level for MDA and flags: 95.00%
High Voltage Setting: 1380
Application Revision: 3
Application Version: Standard

Alpha efficiency log file: pu238ab
Alpha Efficiency: 42.68%
Alpha to Beta Crosstalk: 10.71%
Alpha Background (CPM): 0.15
Alpha Correction Factor: 1.000

Beta efficiency log file: cl36ab
Beta Efficiency: 54.82%
Beta into Alpha Crosstalk: 1.45%
Beta Background (CPM): 3.25
Beta Correction Factor: 1.000

	Alpha Activity				Beta Activity							
ID	DPM	σ	flags	MDA	DPM	σ	flags	MDA	count Time	Alpha CPM	Beta CPM	Time Complt
22	-0.35	1.80	<MDA	7.14	-2.28	2.27	<MDA	12.58	1.50	-0.15	-1.25	8:47
23	-0.32	1.79	<MDA	6.98	-3.52	1.90	<MDA	12.58	1.50	-0.15	-1.92	8:48
24	-0.40	1.82	<MDA	7.43	0.19	2.86	<MDA	12.58	1.50	-0.15	0.08	8:50
25	1.38	1.81	<MDA	7.27	-1.20	2.58	<MDA	12.69	1.50	0.52	-0.58	8:52
26	-0.45	1.84	<MDA	7.69	2.66	3.36	<MDA	12.58	1.50	-0.15	1.42	8:53
27	-0.40	1.82	<MDA	7.43	0.19	2.86	<MDA	12.58	1.50	-0.15	0.08	8:55

This one

DIVIDER

PAGE

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: M1019
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☐ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: C - Correspondence DR - Discrepancy Resolution I - Internal procedures ☑ M - Miscellaneous P - Published plans, documents, and procedures U - Unpublished Documents
Title or Description of Source Document [a] : Collection of Spreadsheets Pertaining to TRU Waste Generated at the AHCF and Other Locations on TA-V	
Source Document Reference Information (author(s), document and revision number, date, publisher): Author: NA, NA, NA, NA, Various Dates	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
WS3, WS9, WS10, S4, S16	Throughout	Pages 1 and 2, CH HCF Inventory spreadsheet with the following data: Packaging Date; Input Container Number; Input Parcel Number; Output Container Video Clip #s; Output Container DR Number; Bag Slashing Date; and Bag Slashing Video Clip #. Pages 3 through 11, RH HCF Inventory spreadsheet with the following data: Container #; Parcel #; Form #; Gross Weight (lbs); Container Type; Container Volume (m3); Waste Volume (m3); Description; Dose Rate (mrem/hr); Nuclide; and Activity.

Source Document Data Limitations (if any):

1. None.

Acceptable Knowlege Expert:

STEVE SCHAFER / [signature] Date: 1/12/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

NTPC RECORDS ORIGINAL
DATE REC'D 5-20-14

CH HCF Inventory

Repackaging Date	Input Container Number	Input Parcel Number	Output Container Number	Output Container Video Clip #s	Output Container DR Number	Output Parcel Number	Bag Slashing Date	Bag Slashing Video Clip #
9/18/2007	SNL/NM003199	P0201396/P0700108	SNL/NM006029	7 thru 21	051340/004347	P0700108	9/20/2007	43,44
	C030484	P0301516/P0700108			051340	P0700108		
	C973998	P9600465			051340/004266V	P9600465		
9/18/2007	SNL/NM00231	P0201395	SNL/NM006037	21 thru 27	051340/004347	P0201395	9/20/2007	43,44
9/19/2007	C010752	P0101632	SNL/NM006035	28 thru 42	041216/14146V	P0101632	9/20/2007	43,44
9/19/2007	SNL/NM003858	P0300438	SNL/NM006047	28 thru 42	051340/RMW940386	P0300438	9/20/2007	43,44
	C200340	P2000939			204115	P2000939		
2/21/2008	C060119	P0600041	SNL/NM006034	54 thru 72	061080	P0600041	2/27/2008	73 thru 78
	C200259	P2000702			204073	P2000702		
		P2000704			994655	P2000704		
	C200260	P2000703			994506	P2000703		
	C200826	P2001751			204256	P2001751		
	C020472	P2001927			204317	P2001927		
8/7/2008	C980389	P9800960	SNL/NM006426	79 thru 83	081289/005939	P9800960	8/13/2008	93 thru 95
8/11/2008	C200339	P2000938	C080210	84 thru 88	204114	P2000938	8/13/2008	93 thru 95
	SNL/NM000509	P9800660			007202	P9800660		
8/12/2008	C980390	P9800961	SNL/NM006413	89 thru 92	081287/005939	P9800961	8/13/2008	93 thru 95
9/2/2008	C973408	P9704803	SNL/NM006415	96 thru 100	005490	P9704803	10/8/2008	121
	C973409	P9704804	SNL/NM006416	96 thru 100	005490	P9704804	10/8/2008	121
9/3/2008	SNL/NM006032	P0700007	SNL/NM006418	101 thru 104	071132/041206	P0700007	10/8/2008	121
		P0700149			071132/041206	P0700149		
	C060196	P0800067	C060196	101 thru 104	071087	P0800067	Packaged in a 55 later	NA
9/4/2008	C010486	P9705437	SNL/NM006417	105 thru 108	005944	P9705437	10/8/2008	121
	C200183	P2000327			994467	P2000327		
	C200338	P2000937			204113	P2000937		
	C974030	P9705446			005937	P9705446		
	C980468	P9801151			005961	P9801151		
10/15/2008	C980406	P9801004	SNL/NM006401	122 thru 126	091006/005934	P9801004	10/23/2008	134
	C980372	P9800936			081238/005962	P9800936		
	C060119	P0800199			081238			

HCF packaging matrix - WMP est - Rad calcs Rev 4 006399R added

Repackaging Date	Input Container Number	Input Parcel Number	Output Container Number	Output Container Video Clip #s	Output Container DR Number	Output Parcel Number	Bag Slashing Date	Bag Slashing Video Clip #
10/16/2008	SNL/NM002376	P9801008	SNL/NM006404	127 thru 128	091044/005934	P9801008	10/23/2008	134
10/22/2008	C200321/C090033	P2000836	C080216	129 thru 133	091045/204041V	P2000836	10/23/2008	134
	C990248	P9900533			091047/994027	P9900533		
	C990249	P9900534			091047/994027	P9900534		
12/22/2009	C980409	P9801009	SNL/NM006399R		005934	P9801009	12/22/2009	

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RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
C080210	P9800660	007202	69.5	DM30GAL	1.13E-01	6.26E-02	ALUMINUM PARTS AND STEEL PARTS WITH LAYDOWN 52 LBS.	900	Am-241	2.92E-04
	P2000938	204114				4.42E-03	PT. WIRES, PLASTIC & PAPER.	180	Co-60	2.69E-06
									Cs-134	2.46E-04
									Cs-137	1.50E-01
									Eu-152	5.39E-05
									Eu-154	2.13E-03
									Pm-147	3.75E-03
									Pu-238	1.97E-03
									Pu-239	1.12E-04
									Pu-240	8.18E-05
									Pu-241	4.19E-03
									Sr-90	4.43E-02
C080216	P2000836	091045	78.5	DM30GAL	1.13E-01	3.79E-03	P2000836 IS TRU WASTE FORMERLY DESCRIBED ON DR 204041. THE WASTE WAS REPACKAGED INTO A 30-GALLON RH DRUM (C080216) ON 10/22/08 AS PART OF SORTING CAMPAIGN 08-08B. THE DRUM IS CURRENTLY STORED IN AN LL-110 LEAD CASK FOR SHIELDING. TWO ADDITIONAL PARCELS ARE IN THE DRUM (P9900533 AND P9900534) BUT ARE DESCRIBED ON DR 091047.	470	Am-241	3.17E-03
	P9900533	091047				4.02E-03	P9900533 AND P9900534 ARE TRU WASTE PARCELS ORIGINALLY DESCRIBED ON DR 994027. THE PARCELS ORIGINALLY CONSISTED OF ALUMINUM ASSEMBLIES WRAPPED IN PLASTIC AND CUSHIONED WITH VERMICULITE. THE ALUMINUM ASSEMBLIES WERE TRANSFERRED TO A 30 GALLON, INNER LEVER LOCKING, RH DRUM (C080216) ON 10/22/08 AS PART OF SORTING CAMPAIGN 08-08B. P2000836 IS ALSO PRESENT IN THE DRUM. THE VERMICULITE PACKING MATERIAL WAS TRANSFERRED TO ANOTHER DRUM AS PARCEL P0900081 AND WILL BE MANAGED AS LLW.		Am-243	9.19E-06
	P9900534	091047				4.02E-03	P9900533 AND P9900534 ARE TRU WASTE PARCELS ORIGINALLY DESCRIBED ON DR 994027. THE PARCELS ORIGINALLY CONSISTED OF ALUMINUM ASSEMBLIES WRAPPED IN PLASTIC AND CUSHIONED WITH VERMICULITE. THE ALUMINUM ASSEMBLIES WERE TRANSFERRED TO A 30 GALLON, INNER LEVER LOCKING, RH DRUM (C080216) ON 10/22/08 AS PART OF SORTING CAMPAIGN 08-08B.		Cs-137	7.88E-02
									Eu-154	2.59E-04
									Pm-147	1.51E-03
									Pu-238	1.86E-03
									Pu-239	2.99E-03
									Pu-241	2.89E-02
									Pu-242	4.25E-06
									Sr-90	4.88E-02
C200357	P2000998	204139	3125	QUEENCASK	2.12E-01	4.08E-03	SCB 3 SWEEPING TRU WASTE. ONE GALLON IN PNT CASK.	8	Am-241	1.54E-03
									Am-243	5.21E-05
									Co-60	2.00E+01
									Cs-134	3.21E-03
									Cs-137	1.65E+01
									Eu-154	7.37E-03
									Pm-147	6.56E-04
									Pu-238	2.38E-04
									Pu-239	8.38E-04

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RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
									Pu-241	4.25E-03
									Pu-242	2.41E-05
									Sr-90	5.03E-01
C980281	P9800712	100137	0	KINGCASK	2.12E-01	3.26E-02	PLEASE NOTE: P9800713 WAS VOIDED FROM THIS DR BECAUSE THE WASTE WAS SORTED IN CAMPAIGN 04-01 AND NOW ARE DESCRIBED ON DR NO. 041226.	0	Am-241	3.13E-03
									Cs-134	3.98E-04
									Cs-137	1.30E+00
									Eu-154	1.88E-02
									Pm-147	9.30E-03
									Pu-238	1.84E-02
									Pu-239	1.09E-03
									Pu-240	7.98E-04
									Pu-241	3.18E-02
									Sr-90	3.81E-01
C980313	P9800776	041213	1666	QUEENCASK	2.12E-01	1.63E-02	WASTE WAS GENERATED DURING THE DECONTAMINATION AND REMOVAL OF GLOVE BOX 3. TA5, BLDG. 6580, RM 112. EXPERIMENTS CONSISTED OF ION CHROMOTOGRAPHY STUDIES OF FISSION PRODUCTS FROM THE SOURCE TEAM TESTS (SEE PKE00054 FOR ADDITIONAL DETAILS).	160	Am-241	4.32E-04
									Am-243	1.46E-05
									Cs-134	5.60E-04
									Cs-137	4.63E+00
									Eu-154	1.13E-03
									Pm-147	1.88E-04
									Pu-238	6.67E-05
									Pu-239	2.35E-04
									Pu-241	1.20E-03
									Pu-242	6.74E-06
									Sr-90	1.41E-01
C980373	P9800937	005965	2488	KINGCASK	2.12E-01	1.10E-01	TRU WASTE 1. HCF-RW-96-KC-07 TARE 2350 FULL 2488 LBS.	110	Am-241	7.26E-04
									Cs-134	1.54E-04
									Cs-137	3.02E-01
									Eu-154	2.60E-03
									Pm-147	2.18E-03
									Pu-238	4.27E-03
									Pu-239	2.53E-04
									Pu-240	1.85E-04
									Pu-241	7.40E-03
									Sr-90	8.84E-02
C980374	P9800938	005965	2514	KINGCASK	2.12E-01	1.10E-01	TRU WASTE 1. HCF-RW-96-KC-06 TARE 2374 FULL 2514 LBS.	110	Am-241	2.39E-03
									Co-60	1.54E-05
									Cs-134	3.53E-04

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RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
									Cs-137	9.92E-01
									Eu-152	6.55E-05
									Eu-154	4.20E-03
									Pm-147	7.17E-03
									Pu-238	1.41E-02
									Pu-239	8.34E-04
									Pu-240	6.09E-04
									Pu-241	2.43E-02
									Sr-90	2.91E-01
C980375	P9800939	005965	2526	KINGCASK	2.12E-01	1.03E-01	TRU WASTE 1. HCF-RW-96-KC-04 TARE 2384 FULL 2526 LBS.	110	Am-241	7.89E-04
									Co-60	1.10E-05
									Cs-134	3.77E-04
									Cs-137	3.25E-01
									Eu-154	1.65E-03
									Pm-147	2.21E-03
									Pu-238	4.62E-03
									Pu-239	2.74E-04
									Pu-240	2.00E-04
									Pu-241	7.92E-03
									Sr-90	9.52E-02
C980376	P9800940	005965	2584	KINGCASK	2.12E-01	1.10E-01	TRU WASTE 1. HCF-RW-96-KC-03 TARE 2380 FULL 2584 LBS.	110	Am-241	2.14E-03
									Co-60	3.59E-05
									Cs-134	8.36E-04
									Cs-137	8.83E-01
									Eu-154	5.84E-03
									Pm-147	6.02E-03
									Pu-238	1.26E-02
									Pu-239	7.46E-04
									Pu-240	5.45E-04
									Pu-241	2.15E-02
									Sr-90	2.59E-01
C980377	P9800941	005965	2284	KINGCASK	2.12E-01	1.10E-01	TRU WASTE 1. HCF-RW-96-KC-02 TARE 2284 FULL 2624 LBS.	110	Am-241	2.17E-02
									Co-60	7.33E-04
									Cs-134	2.07E-03
									Cs-137	9.02E+00
									Eu-154	2.77E-02
									Pm-147	6.50E-02
									Pu-238	1.28E-01
									Pu-239	7.58E-03
									Pu-240	5.54E-03
									Pu-241	2.21E-01

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RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
									Sr-90	2.64E+00
C980378	P9800942	007203	2258	KINGCASK	2.12E-01	1.16E-01	HCF-RW-95-KC-04 FULL 2358 TARE 2250 STUFF 108 LBS	0	Am-241	6.35E-04
									Cs-134	2.91E-05
									Cs-137	2.64E-01
									Eu-152	4.15E-05
									Eu-154	4.33E-03
									Pm-147	1.92E-03
									Pu-238	3.74E-03
									Pu-239	2.22E-04
									Pu-240	1.62E-04
									Pu-241	6.48E-03
									Sr-90	7.74E-02
C980379	P9800943	007203	2505	KINGCASK	2.12E-01	1.10E-01	HCF-RW-KC-96-08 FULL 2502 TARE 2366 STUFF 136 LBS	0	Am-241	3.13E-03
									Co-60	7.35E-06
									Cs-134	2.45E-04
									Cs-137	1.30E+00
									Eu-154	1.77E-03
									Pm-147	9.30E-03
									Pu-238	1.84E-02
									Pu-239	1.09E-03
									Pu-240	7.97E-04
									Pu-241	3.18E-02
									Sr-90	3.80E-01
C980380	P9800944	007203	2312	KINGCASK	2.12E-01	1.16E-01	HCF-RW-95-KC-06 FULL 2312 TARE 2182 STUFF 130 LBS	0	Am-241	3.50E-03
									Co-60	6.12E-05
									Cs-134	2.01E-03
									Cs-137	1.45E+00
									Eu-154	9.72E-03
									Pm-147	1.05E-02
									Pu-238	2.06E-02
									Pu-239	1.22E-03
									Pu-240	8.91E-04
									Pu-241	3.57E-02
									Sr-90	4.26E-01
C980387	P9800958	005935	1566	PACOCASK	2.12E-01	3.94E-02	TRU WASTE. FROM GB 1 & 2. HCF TRU-HCF-95-02 (DATA ATTACHED)	0.3	Am-241	4.69E-03
									Co-60	2.73E-04
									Cs-137	9.57E-02
									Eu-154	7.06E-05
									Pm-147	5.86E-04
									Pu-238	2.65E-03
									Pu-239	4.33E-03

RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
									Pu-241	3.34E-02
									Sr-90	6.52E-02
C980396	P9800964	005967	2464	KINGCASK	2.12E-01	1.10E-01	(TRU WASTE) HCF-RW-KC-96-05, TARE 2362 LBS., FULL 2464 LBS.	23	Am-241	3.91E-03
									Co-60	4.68E-05
									Cs-134	5.28E-04
									Cs-137	1.62E+00
									Eu-154	7.98E-03
									Pm-147	1.17E-02
									Pu-238	2.30E-02
									Pu-239	1.36E-03
									Pu-240	9.97E-04
									Pu-241	3.98E-02
									Sr-90	4.76E-01
C980403	P9801007	005934	1666	QUEENCASK	2.12E-01	1.63E-02	TRU WASTE FROM HCF. SEE ATTACHED LIST AND DATA. PLEASE NOTE PARCEL VOID - P9801004 WAS VOIDED FROM THIS DR AND IS NOW DESCRIBED UNDER DR NO. 091006. J.LONGLEY 10/27/08 PLEASE NOTE PARCEL VOID - P9801008 WAS VOIDED FROM THIS DR AND IS NOW DESCRIBED UNDER DR NO. 091044. J.LONGLEY 10/27/08 PLEASE NOTE PARCEL VOID - P9801002 WAS VOIDED FROM THIS DR AND IS NOW DESCRIBED IN DR NO. 091002. J.LONGLEY 10/20/08 PLEASE NOTE PARCEL VOID - PARCEL P9801003 WAS VOIDED FROM THIS DR AND IS NOW DESCRIBED UNDER WASTE FORM NO. 081236. J.LONGLEY 08/06/08 HCF	0	Am-241	5.18E-01
									Co-60	1.22E-03
									Cs-134	1.09E-03
									Cs-137	1.06E+01
									Eu-154	7.06E-02
									Pm-147	6.48E-02
									Pu-238	2.93E-01
									Pu-239	4.78E-01
									Pu-241	3.69E+00
									Sr-90	7.20E+00
C980405	P9801005	005934	1540	PACOCASK	2.12E-01	2.04E-01	TRU WASTE FROM HCF. SEE ATTACHED LIST AND DATA. ** SELECTED RADIONUCLIDES UPDATED ON 01/03/02 PER MEMO FROM MW ENGHAUSER DATED 11/06/01 ** PLEASE NOTE PARCEL VOID - P9801004 WAS VOIDED FROM THIS DR AND IS NOW DESCRIBED UNDER DR NO. 091006. J.LONGLEY 10/27/08 PLEASE NOTE PARCEL VOID - P9801008 WAS VOIDED FROM THIS DR AND IS NOW DESCRIBED UNDER DR NO. 091044. J.LONGLEY 10/27/08 PLEASE NOTE PARCEL VOID - P9801002 WAS VOIDED FROM THIS DR AND IS NOW DESCRIBED IN DR NO. 091002. J.LONGLEY 10/20/08 PLEASE NOTE PARCEL VOID - PARCEL P9801003 WAS VOIDED FROM THIS DR AND IS NOW DESCRIBED UNDER WASTE FORM NO. 081236. J.LONGLEY 08/06/08 HCF	0	Am-241	9.90E-01
									Cs-137	9.90E+00
									Pu-238	3.50E-02
									Pu-239	1.30E-01
									Sr-90	9.90E+00

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RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
									Th-234	9.50E-06
									U-234	3.80E-04
									U-235	2.80E-05
									U-238	9.50E-06
C980465	P9801148	005959	0	KINGCASK	2.12E-01	1.10E-01	TRU WASTE 30 GAL. LEAD LINED HCF-RW-96-KC-01 TARE 2344 FULL - 2484 LBS	39	Am-241	6.69E-04
									Co-60	9.40E-04
									Cs-134	2.33E-04
									Cs-137	2.78E-01
									Eu-154	6.67E-04
									Pm-147	2.01E-03
									Pu-238	3.94E-03
									Pu-239	2.34E-04
									Pu-240	1.71E-04
									Pu-241	6.82E-03
									Sr-90	8.15E-02
C980466	P9801149	005959	2484	KINGCASK	2.12E-01	2.86E-02	TRU WASTE 3 KINGCASKS WITH CONTAINER AND 30 GAL. LEAD LINED HCF-RW-95-KC-03 TARE 2295 FULL - 2484 LBS.	39	Am-241	1.72E-02
									Co-60	3.68E-04
									Cs-134	1.23E-03
									Cs-137	7.17E+00
									Eu-154	7.92E-03
									Pm-147	5.18E-02
									Pu-238	1.02E-01
									Pu-239	6.02E-03
									Pu-240	4.40E-03
									Pu-241	1.76E-01
									Sr-90	2.10E+00
C980467	P9801150	005959	2438	KINGCASK	2.12E-01	3.26E-02	TRU WASTE 3 KINGCASKS WITH CONTAINER AND 30 GAL. LEAD LINED HCF-RW-95-KC-05 TARE 2182 FULL - 2438 LBS.	39	Am-241	7.45E-03
									Co-60	1.39E-03
									Cs-134	1.60E-03
									Cs-137	3.10E+00
									Eu-154	6.15E-03
									Pm-147	2.24E-02
									Pu-238	4.38E-02
									Pu-239	2.60E-03
									Pu-240	1.90E-03
									Pu-241	7.59E-02
									Sr-90	9.07E-01
C990236	P9900529	007204	2280	KINGCASK	2.12E-01	3.68E-02	TRU-RW-95-KC-06 FULL 2294 LBS. TARE 2218 LBS. NET 76 LBS.	6	Am-241	2.27E-02
									Co-60	1.25E-04

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RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
									Cs-134	3.13E-05
									Cs-137	4.62E-01
									Eu-154	2.30E-03
									Pm-147	2.75E-03
									Pu-238	1.28E-02
									Pu-239	2.09E-02
									Pu-241	1.61E-01
									Sr-90	3.14E-01
C990238	P9900531	007205	2484	KINGCASK	2.12E-01	4.90E-02	HCF-RW-95-KC-01, SCB TRASH 137 LBS. 2484 FULI 2346 TARE	50	Am-241	3.90E-02
									Co-60	8.97E-05
									Cs-134	1.82E-03
									Cs-137	1.62E+01
									Eu-154	1.52E-02
									Pm-147	1.15E-01
									Pu-238	2.29E-01
									Pu-239	1.36E-02
									Pu-240	9.94E-03
									Pu-241	3.96E-01
									Sr-90	4.74E+00
C980371	P9800935	005962	760	DM55GAL	2.12E-01	2.04E-01	1). ST-1 FROM GLOVE BOX 3, 55 GALLON WITH CONCRETE LINING 760 FULL CONTAINER 50 LBS NET 710 LBS. 2). RW-HCF-95-07 160 LBS CONTAINER 30 LBS. 30 GALLON NET 130 LBS FROM GB 1 4 CU. FT.	90	Am-241	9.03E-03
									Cs-134	7.48E-03
									Cs-137	1.48E+00
									Eu-154	5.28E-02
									Pu-239	1.81E-02
									Pu-241	7.22E-03
									Sr-90	8.88E-02
C980391	P9800962	005940	0	DM55GAL	2.12E-01	2.04E-01	GLOVE BOX 1 & 2 MEMO.	120	Am-241	1.71E-01
									Co-60	7.38E-04
									Cs-134	9.50E-04
									Cs-137	1.71E+00
									Eu-154	3.20E-03
									Pu-238	5.99E-03
									Pu-239	2.22E-02
									Sr-90	1.71E+00
									Th-234	1.64E-06
									U-234	6.50E-05
									U-235	4.79E-06
									U-238	1.64E-06

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RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
C980392	P9800963	005940	0	DM55GAL	2.12E-01	2.04E-01	GLOVE BOX 1 & 2 MEMO. ** SELECTED RADIONUCLIDES UPDATED ON 01/03/02 PER MEMO FROM MW ENGHAUSER DATED 11/06/01 ** HCF	43	Am-241	5.26E-02
									Co-60	1.71E-02
									Cs-134	9.24E-04
									Cs-137	5.26E-01
									Eu-154	1.54E-03
									Pu-238	1.84E-03
									Pu-239	6.84E-03
									Sr-90	5.26E-01
									Th-234	5.05E-07
									U-234	2.00E-05
									U-235	1.47E-06
									U-238	5.05E-07
C980394	P9800965	005911	682	DM55GAL	2.12E-01	2.08E-01	HCF-RW-95-SC2 - 182 NET 682 LBS. CONTAINER TOTAL	0	Am-241	1.19E-03
									Cs-134	1.50E-04
									Cs-137	4.95E-01
									Eu-154	4.89E-03
									Pm-147	3.59E-03
									Pu-238	7.01E-03
									Pu-239	4.16E-04
									Pu-240	3.03E-04
									Pu-241	1.21E-02
									Sr-90	1.45E-01
C980395	P9800966	005911	694	DM55GAL	2.12E-01	2.08E-01	HCF-RW-95-SC1 - 194 LBS. NET 694 LBS CONTAINER TOTAL	0	Am-241	1.09E-03
									Co-60	2.33E-04
									Cs-134	1.56E-04
									Cs-137	4.52E-01
									Eu-154	6.39E-03
									Pm-147	3.31E-03
									Pu-238	6.39E-03
									Pu-239	3.79E-04
									Pu-240	2.77E-04
									Pu-241	1.11E-02
									Sr-90	1.32E-01
										6.13E-01
C990239	P9900532	007242	0	DM55GAL	2.12E-01	1.13E-01	TRU WASTE, EEOS VESSELS	0	Am-241	4.60E-02
									Co-60	7.90E-05
									Cs-134	1.50E-03
									Cs-137	4.60E-01
									Eu-154	5.00E-04
									Pu-238	1.60E-03
									Pu-239	6.00E-03

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RH HCF Inventory

Container #	Parcel #	Form #	Gross Weight (lbs)	Container Type	Container Volume (m3)	Waste Volume (m3)	Description	Dose Rate (mrem/hr)	Nuclide	Activity (Ci)
									Sr-90	4.60E-01
									Th-234	4.40E-07
									U-234	1.70E-05
									U-235	1.30E-06
									U-238	4.40E-07
SNL/NM000178	P0400016	081139	0	DM55GAL	2.12E-01	6.26E-02	THIS PARCEL CONSISTS OF DECON DEBRIS FROM ZONE 2A OF THE HOT CELL. IT WAS ORIGINALLY ITEM 12 ON THE WASTE ADDITION LOG FOR DR 005465. THE REMAINDER OF THE WASTE IN DR 005465 WAS SORTED IN CAMPAIGN 04-01 AND RECHARACTERIZED INTO NEW PARCELS.	1600	Am-241	3.88E-04
									Co-60	5.56E-06
									Cs-134	1.06E-04
									Cs-137	1.97E-01
									Eu-154	4.35E-04
									Pm-147	4.46E-03
									Pu-238	2.60E-03
									Pu-239	1.48E-04
									Pu-240	1.08E-04
									Pu-241	5.44E-03
									Sr-90	5.81E-02

DIVIDER

PAGE

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	**Source Document Tracking Number: P1015**
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	**Category:** ☐ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☑ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a]: Sampling and Analysis Plan for Characterization of Waste Arising From Hot Cell Facility Glovebox Decontamination	
Source Document Reference Information (author(s), document and revision number, date, publisher): NA, PLA 95-28, Rev. 1, October 12, 1995, Sandia National Laboratories	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR3, PR4, PR5, PR6, PR7, WS2, WS3, WS6, WS8, WS9, WS11, S6	Throughout	The Sandia National Laboratories/New Mexico (SNL/NM) Hot Cell Facility (HCF) Glovebox decontamination project involves the removal and decontamination of equipment within the gloveboxes, the decontamination of the glovebox structures, and the removal and characterization of waste and debris arising from this project. The decontaminated equipment and the glovebox structures will be re-used and are not considered within the scope of this Sampling and Analysis Plan (SAP). The waste material will consist of experimental debris not subject to decontamination and waste generated during the decontamination of equipment and gloveboxes. The waste will be very heterogeneous and may contain transuranic (TRU) radionuclides, RCRA hazardous waste constituents, and/or low level radioactivity. This waste must be sufficiently characterized to allow transfer to the SNL/NM Waste Operations Department for either shipment to the Nevada Test Site (NTS) for disposal or proper treatment, storage, and disposal. HEPA filters will be used to collect air emissions and changed out when activity levels reach 150 mR/hr, and will be included as decontamination waste. Sampling equipment, such as pipettes, will also be included as decontamination waste. The primary objective of this SAP is to ensure that the waste complies with NVO-325 waste acceptance criteria for disposal at NTS or sufficiently characterizes the waste for transfer to the Waste Operations department for appropriate treatment, storage, and disposal. A target list of radionuclides is presented in Section 6.0 (pp. 28). Section 4.0 (pp. 18 thru 27) is a list of materials and processes for each glovebox in the HCF. Appendix A (pp. 34 thru 36) contains tables of HCF Waste Inventory listed by glovebox. Appendix B (pp. 38 & 39) contains a list of potential NTS Waste Item Inventory. Appendix C (pp. 41 thru 43) contains a list of Potential Mixed Waste Item Inventory. Chemicals: Freon 113, brass, copper, ethanol, lead, methanol, mineral oil, nitric acid, platinum, silver, sodium hydroxide Products: Aquaset, Buehler MetaDi Diamond Compound, Beuhler MetaDi Aerosol Spray,

NTPC RECORDS ORIGINAL
DATE REC'D 06/20/2014
TPF

Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: P1015

Waste Stream Number(s): SNL-HCF-S5400-RH

AK # [b]	Source Doc. Page # [c]	AK Information Summary
		Buehler Micropolish Alumina, EPON 815 Resin, EpoThin Epoxy, Kodak Decahydronaphthalene, magic markers, Mastermet Ink solution, projector light bulb (unknown type), Sharpie marker, Torr-seal resin

Source Document Data Limitations (if any):

1. Applies only to SNL HCF decontamination project.
2. Best available copy for page 72 of 81, which is a list of items potentially destined for NTS.

Acceptable Knowlege Expert:

Kevin J. Peters, Kevin J. Peters Date: 1/12/14

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

SANDIA NATIONAL LABORATORIES, NEW MEXICO (SNL/NM)

SAMPLING AND ANALYSIS PLAN FOR CHARACTERIZATION OF WASTE ARISING FROM HOT CELL FACILITY GLOVEBOX DECONTAMINATION

SNL
7500 Environmental Operations
Records Center
CONTROLLED DOCUMENT
(If Numbered In Red Ink)
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Author:

H. W. Seeley, Project Scientist — Date: 10/12/95

Approval recommended by:

K. A. McMahon, Waste Certification Official
Compliance and Quality Assurance — Date: 10/17/95

M. D. Lucas, Waste Management and Regulatory Projects, Quality Assurance/Disposal Project Leader — Date: 10/16/95

N. A. Durand, Sample Management Office of Project Control Systems, Manager — Date: 10/12/95

J. Jary, Radiological Waste Engineer, Waste Operations — Date: 10-20-95

D. Berry, Hot Cell Facility Supervisor — Date: 10/16/95

S. Longley, Isotope Production Program, — Date: 10/13/95

Approved by:

B. A. Botsford, Waste Operations, Department Manager — Date: 10/24/95

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1.0 PROJECT DESCRIPTION

The Sandia National Laboratories/New Mexico (SNL/NM) Hot Cell Facility (HCF) Glovebox decontamination project involves the removal and decontamination of equipment within the gloveboxes (GBs), the decontamination of the GB structures, and the removal and characterization of waste and debris arising from this project. The decontaminated equipment and the glovebox structures will be re-used and are not considered within the scope of this Sampling and Analysis Plan (SAP). The waste material will consist of experimental debris not subject to decontamination and waste generated during the decontamination of equipment and GBs. The waste will be very heterogeneous and may contain transuranic (TRU) radionuclides, RCRA hazardous waste constituents, and/or low level radioactivity. This waste must be sufficiently characterized to allow transfer to the SNL/NM Waste Operations Department (7577) for either shipment to the Nevada Test Site (NTS) for disposal or proper treatment, storage, and disposal. This site-specific Sampling and Analysis Plan (SAP) provides for such waste characterization and is intended to meet the requirements of the Nevada Test Site, NVO-325 (Rev.1, June 1992), the SNL/NM Mixed Waste Analysis Plan (Appendix B, SNL/NM 1995a) and the HCF Waste Management Plan, PLA 95-19 (SNL/NM 1995b).

Description of Site

Sandia National Laboratories/New Mexico (SNL/NM), managed and operated for the U.S. Department of Energy (DOE) by Sandia Corporation, a Lockheed Martin company, is a multi-disciplinary research and development organization which focuses on national security and energy projects. During its research, SNL/New Mexico generates radioactive, mixed, and hazardous waste which is managed by line organizations in compliance with applicable regulations.

The HCF Glovebox (GB) laboratory is located in room 112 in the basement of Building 6580 in Technical Area V at SNL/NM. The GB laboratory consists of one independent glovebox (GB-9) and a series of eight additional gloveboxes connected by transfer chambers (GB-1 through GB-8). Three of the gloveboxes (GB-1, GB-2, and GB-3) are shielded units. One fume hood is also located in the GB laboratory. GBs 1-9 and the fume hood were installed in 1979. The floorplan of the HCF glovebox laboratory is presented in Figure 1.1. GB-10 was removed from the HCF approximately four years ago and is not within the scope of this SAP; GB-11 was never installed.

Continued on next page

1.0 PROJECT DESCRIPTION, Continued

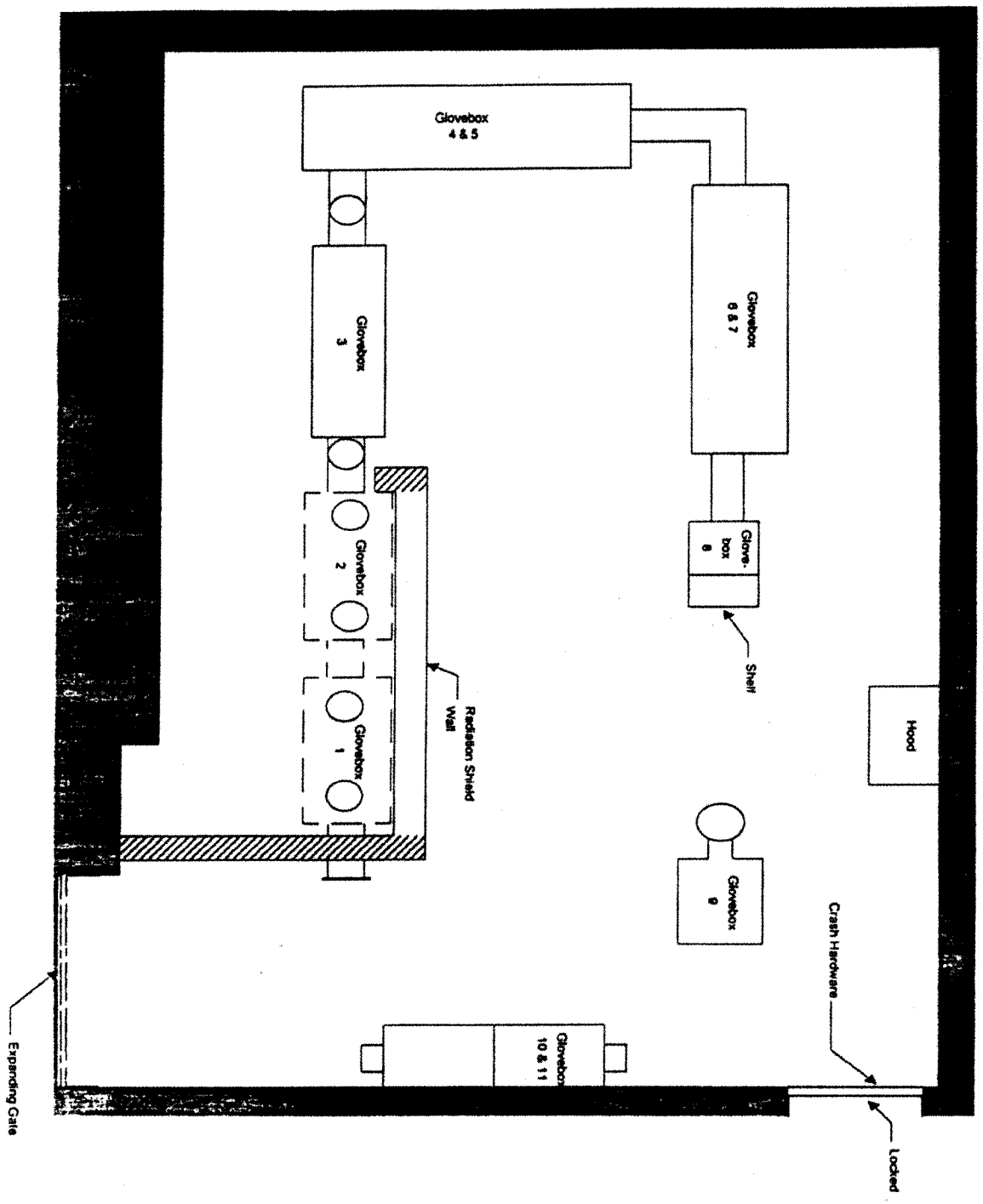

Figure 1.1 SNL/NM HCF Floorplan

Continued on next page

1.0 PROJECT DESCRIPTION, Continued

Types of Waste to be Evaluated (Continued)

During CO_2 decontamination, the HEPA filters used to collect air emissions will be changed out whenever activity levels reach 150 mR/hr. Professional judgment of filter changeout will ensure that the filters contain less than 100 nCi/g of TRU radionuclides. These HEPA filters will be included as decontamination waste. Sampling equipment, such as pipettes, will also be included as decontamination waste. The anticipated volume of waste to be generated is presented in the HCF Waste Management Plan, PLA 95-19 (SNL/NM 1995b).

The experimental and decontamination waste items will fall into one of two broad groups:

- Non-hazardous low-level radioactive waste that meets the Waste Acceptance Criteria for Nevada Test Site (NVO-325, Rev. 1, June 1992); or
- Mixed low-level or TRU radioactive waste to be retained by SNL/NM Waste Operations (7577) for treatment, storage and/or disposal, as appropriate.

Using process knowledge, as presented in section 1.4, the experimental waste items listed in Appendix A were segregated into the above groups. The items within each group are presented in Appendix B, for 'NTS items' and Appendix C, for 'non-NTS items'. The items within each group must be sufficiently characterized to satisfy the waste acceptance criteria of each disposal option. When sampling and analyses of selected items is complete, the results will be used to complement the process knowledge. If sample results indicate that certain items belong in a different group, such changes will be made by the Waste Operations department. The characterization of each group is discussed in section 4.0.

Objective of the Sampling and Analysis Plan

The primary objective of this SAP is to ensure that the waste complies with NVO-325 waste acceptance criteria for disposal at NTS or sufficiently characterizes the waste for transfer to the Waste Operations department for appropriate treatment, storage, and/or disposal. Specific objectives of this SAP are as follows:

- Verify that the process knowledge is correct through field and laboratory measurements and determine when sampling is feasible and necessary;

Continued on next page

1.0 PROJECT DESCRIPTION, Continued

Waste Not Amenable to Sampling

The heterogeneity of much of the decontamination project waste, combined with the high levels of radioactivity, requires that process knowledge be used for characterization whenever possible. Process knowledge is developed from reliable sources that may include documented procedures, logbooks, interviews with HCF personnel, and/or Material Safety Data Sheets (MSDSs). The experiments conducted in the HCF glovebox laboratory were tightly controlled and accurate process knowledge of the experiments is documented through logbooks, correspondence, publications, and procedures. MSDSs are available for the commercial items included as project waste.

According to NVO-325 (DOE/NV 1992a), the use of process knowledge alone may be appropriate for waste characterization "when one or more of the following conditions are present:

- Waste stream is difficult to sample because of physical form. This primarily applies to solid matrix waste such as metal, glass, or wood, rather than as a residue that could be removed for testing or in a decontamination process.
- Sampling and analysis of waste stream would result in unacceptable risks of radiation exposure (i.e., violate the ALARA precept of DOE).
- Waste is too heterogeneous in composition (e.g., compactible trash containing clothing, booties, plastic, and paper, experiment-driven, and decontamination and decommissioning waste)."

The EPA guidance manual for Waste Analysis Plans (EPA 1994a) concurs, stating "There are situations where it may be appropriate to apply acceptable knowledge, including:

- Hazardous constituents in wastes from specific processes are well documented, such as with F-listed wastes.
- Waste are discarded unused commercial chemical products, reagents, or chemicals of known physical, and chemical constituents. Several of these fall into the P-listed and U-listed categories.
- Health and safety to personnel would not justify sampling and analysis (e.g., radioactive mixed waste).
- Physical nature of the waste does not lend itself to taking a laboratory sample."

Continued on next page

1.0 PROJECT DESCRIPTION, Continued

Segregation Into Similar Waste Streams (Continued)

Hazardous Waste Characteristics

- Toxicity Characteristic - No RCRA hazardous semivolatiles, pesticides, or herbicides were ever introduced into, or used in the vicinity of, the GBs. No volatile compounds considered as RCRA hazardous constituents were ever used in the GBs. The ethanol, located in the fume hood, may have contained trace amounts of benzene as a denaturant, however ethanol was never used in the GBs or in the experiments performed in the GBs. Aside from one piece of possible silver solder material, no TCLP metals were ever introduced into the gloveboxes. The silver solder, located in GB-1, may have been used to repair items that will be decontaminated; no items considered by this SAP were affected.

- Material subject to LDR - Freon TF was used as a cutting lubricant in GBs 4-7. Freon TF is 1,1,2-trichloro-12,2-trifluoroethane or Freon 113. This Freon compound is not a RCRA hazardous waste. It is not an F001 waste (it was not used as a degreaser), not an F002 waste (the liquid is unused, not spent), not a P-listed waste (there are no Freon compounds listed), not a U-listed waste (only Freon U-listed is U121 for trichorofluoromethane), and does not exhibit any characteristics of a RCRA hazardous waste. However, because the State of Nevada prohibits NTS from accepting any Freon or Freon-contacted item, no such items will be submitted to NTS. The only items ever in contact with Freon TF were the grinding and cutting units and associated accessories such as saw blades and grinding wheels. These items have been segregated for Waste Operations and will not be submitted to NTS. Bulk items such as filters and paper/cloth products will be sampled and analyzed for volatile compounds including Freon, however it is not expected that sufficient Freon would remain above method detection limits. One bottle, containing approximately 200 ml of Freon, remains in GB-6,7. This is unused Freon liquid will be submitted to Waste Operations for treatment and disposal.

Development of Analyte List

The process knowledge presented above forms the basis for developing an analyte list of target radionuclides and compounds.

The radiological process knowledge suggests that only gamma and alpha-emitting radionuclides were contained in the gloveboxes. To identify and quantify these radionuclides, gamma spectroscopy, gross alpha/beta measurements, and isotopic alpha radiochemistry may be performed. A target list of these radionuclides is presented in Section 6.0. Analyses for individual beta-emitting radionuclides is probably not necessary and is not planned at this time.

Continued on next page

1.0 PROJECT DESCRIPTION, Continued

Use of Results

Two organizations, Isotope Production Program (6500) and Waste Operations (7577), will be primary users of process knowledge combined with field and laboratory analytical results. Figure 1.2 presents a flow diagram of how analytical results will used by both organizations.

Isotope Production Program (IPP) (Dept. 6500)

IPP/6500 personnel will use the waste characterization information to

- support waste identification and verify the accuracy of process knowledge, and
- segregate and package waste according to the HCF Waste Management Plan (1995 b)

Sample results obtained from either on-site laboratory gamma spectroscopy and gross alpha/beta measurements or off-site laboratory radiological and chemical analyses will be copied to IPP/6500. Prior to data transfer, the SMO will perform level 2 (DV-2) verification of the data package, in accordance with TOP 94-03, Verification and Validation of Chemical and Radiochemical (SNL/NM 1994b). IPP/6500 will review the data results to confirm that process knowledge is supported and correct. Any discrepancies between the data results and process knowledge will be investigated first by the SMO to determine if laboratory error is the cause. If laboratory errors are not found, then the IPP representative, along with personnel from Waste Operations (7577) and the SMO, will evaluate the need for further sampling and analysis.

Sample results and process knowledge will be the basis for waste segregation according to the HCF Waste Management Plan (SNL/NM 1995b). Prior to transfer of the segregated waste to Waste Operations (7577), the HCF decontamination project leader must complete the SNL/NM Waste Accumulation Traveler and Disposal Request Form (SF 2042-TRA or 'Traveler'). The Traveler form provides the means of waste transfer from the HCF to the Waste Operations department. The form contains information on the characteristics and/or hazards associated with the waste material. The Traveler form, and instructions, are presented in SP473194, SNL/NM Collection and Transport of Radioactive and Mixed Waste (SNL/NM 1995e).

Continued on next page

1.0 PROJECT DESCRIPTION, Continued

Waste Operations (7577)

Waste Operations (7577) personnel will use the waste characterization information to

- support waste identification and verify process knowledge,
- segregate waste according to the HCF Waste Management Plan (1995 b),
- determine waste handling and storage requirements, and
- determine waste treatment and disposal options.

Sample results obtained from either on-site laboratory radiological measurements or off-site laboratory radiological and chemical analyses will be attached to the SNL/NM Waste Accumulation Traveler and Disposal Request Form (SF 2042-TRA or 'Traveler'). Waste Operations personnel will verify that the Traveler form and the waste characterization data are in agreement. Any discrepancies between the waste characterization and Traveler form will be resolved by Waste Operations and IPP personnel.

The waste characterization information attached to the Traveler form will be used to verify that the waste has been correctly segregated into the waste streams required by the HCF Waste Management Plan (SNL/NM 1995b). Any discrepancies between the waste segregation performed by the IPP and Traveler form will be resolved by Waste Operations and IPP personnel. Waste Operations will correct the segregation if needed.

Laboratory analysis results, along with process knowledge, will be used to determine waste handling and storage requirements. The Waste Operations department is responsible for proper handling and storage of waste once it meets the Waste Management and Regulatory Projects Waste Acceptance Criteria (SNL/NM 1995d) and is accepted by Waste Operations.

Waste characterization information on the Traveler form will be used to determine appropriate waste treatment and disposal. Low-level radioactive waste that is determined to exhibit no RCRA hazardous characteristics, contain less than 100 nCi/g of TRU radionuclides, and meets NVO-325 waste acceptance criteria, may be segregated for shipment to the NTS for disposal. Any waste that exhibits RCRA hazardous waste characteristics, contains greater than 100 nCi/g TRU radionuclides, or does not meet NVO-325 waste acceptance criteria, will not be transported to NTS.

Continued on next page

2.0 SAMPLING AND ANALYSIS ORGANIZATION AND RESPONSIBILITIES, Continued

Sandia National Laboratories/ New Mexico

Several SNL/NM departments will be in involved in the decontamination of the Hot Cell Facility. The roles and responsibilities of each department, as related to sampling and analysis activities, are presented in the following sections.

Isotope Production Program (IPP)/Department 6500

IPP/6500 has the following responsibilities:

- Design, develop, and implement a planned approach for decontamination of the HCF ;
- Review, approve, and implement this Sampling and Analysis Plan;
- Ensure that personnel are trained and qualified to perform their assigned function in accordance with regulatory guidance (DOE Order 5820.2A, *Radioactive Waste Management*).
- Initiate necessary Radiation Worker Permits;
- Obtain and provide all necessary funding for decontamination of the HCF;
- Coordinate, implement and perform the HCF decontamination in accordance with all applicable SNL/NM procedures;
- Review sample analysis results to ensure correctness of process knowledge;
- Maintain the waste inventory;
- Ensure the waste is properly characterized and segregated for transfer to Waste Operations; and
- Proper storage of any waste items not meeting the Waste Management and Regulatory Projects Waste Acceptance Criteria (SNL/NM 1995c).

Continued on next page

2.0 SAMPLING AND ANALYSIS ORGANIZATION AND RESPONSIBILITIES, Continued

Waste Management & Regulatory Projects (Department 7573)

The Waste Management & Regulatory Projects department is responsible for:

- Reviewing and approving the Sampling and Analysis Plan;
- Providing an interface with NVO for review and approval of the SAP; and
- Serving as primary contact between the IPP and departments within 7500;

Generator Interface (Department 7572)

The Generator Interface Department is responsible for:

- Reviewing the Sampling and Analysis Plan; and
- Making waste determination decisions.

Waste Certification Official and Alternates

The Certification Official will be responsible for assuring that all waste packages and shipments of wastes and samples comply with all applicable U.S. Environmental Protection Agency (EPA) and U.S. Department of Transportation (DOT) Regulations for Transportation and Disposal (49 CFR 172.204, Shippers Certification; the generator's certification statement on the Uniform Hazardous Waste Manifest; and for restricted waste, 40 CFR 268.7, Waste Analysis).

This individual (or alternates) ensures that all waste being sent to the NTS for disposal or storage meets the requirements for waste acceptance per guidance given in NVO-325; and:

- Reviews all waste stream input data, including both process knowledge and analytical data;
- Reviews all treatment records to ensure that the treated waste (or residues) meets the NTS WAC;
- Signs certification statement for each container to be included with the shipping papers for each waste shipment, indicating that the shipment meets DOT, EPA, and NTS requirements.

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3.0 DATA QUALITY OBJECTIVES

Characterization of the waste generated during the decontamination project is required to meet the following data needs:

- Determine if the waste is:
  - Radioactive (Low Level Waste (LLW))
  - Mixed (LLW-MW)
  - Hazardous
  - Transuranic (TRU/TRU MW), or
  - Nonhazardous/Nonradioactive
- Satisfy waste characterization requirements of:
  - Nevada Test Site (NTS) Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, NVO-325 (Rev. 1), June 1992
  - Appendix B, SNL/NM Mixed Waste Analysis Plan (SNL/NM 1995a)
  - Resource Conservation and Recovery Act (RCRA)
  - Generic Environment, Safety, and Health Plan (ES&H) Standard Operating Procedures for Waste Management (SNL/NM 1995d), and
  - the Waste Management and Regulatory Projects Programmatic Waste Acceptance Criteria, Draft (March 1995c).
- Protect the health and safety of personnel and the environment, and;
- Assist in the determination of treatment ,storage, and disposal strategies.

These objectives will be met through knowledge of process and sampling and analysis. These two characterization methods must be of sufficient quality to assure compliance with both NTS and Waste Operation waste acceptance criteria. Sampling and analysis will be performed to verify the process knowledge and provide additional characterization information. Specific data quality objectives are:

Continued on next page

3.0 DATA QUALITY OBJECTIVES, Continued

90 Percent Confidence Limit

Because process knowledge will be the predominant method of characterization, statistical strategies are difficult to employ. Samples have been selected for analysis based on the feasibility of collecting a sample, the representativeness of the sample, and the usability of the analytical results. Of the waste items that meet these criteria, greater than 10% will be sampled and analyzed.

Representa-tiveness

Representativeness is the collection of samples that are unbiased and exhibit average properties of the waste sampled. The primary objective of representativeness is to ensure sampling accuracy and sampling precision.

The analysis of glovebox filters should provide a history of glovebox use. Any radionuclides or chemicals capable of airborne contamination of other items, would have passed through these filters. These filters have not been changed out the since the experiments in the GBL were initiated. These filters may represent a worst case scenario because of concentration of components on the filter material. Analytical results from the filters should provide a bias that would prevent shipment of material that does not meet waste acceptance criteria.

The cloth or paper towel samples would have been in contact with the floor of the glovebox during cleanup of any experimental procedures or spills. Samples will be collected of visually stained areas of these items to provide a worst case scenario of contamination. Liquids will be collected and analyzed on an individual basis because chemical and radiological contamination of these items are not reflected in other sample types.

Sampling Accuracy

Sampling accuracy refers to the closeness of the resulting data to the true values. Random sampling, often used to achieve sampling accuracy, is not applicable the waste items generated during this decontamination project. Each glovebox contains limited amounts of waste and the waste is very heterogeneous. Sampling accuracy will be obtained by choosing those items that should exhibit average characteristics of the population. Accuracy of laboratory analyses will be assured through the use of analytical methods based on accepted standards and quality control checks required by the methods.

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3.0 DATA QUALITY OBJECTIVES, Concluded

Comparability Comparability is defined as the degree to which data sets can be considered similar and comparable. Comparability will be achieved by using methods based on approved standardized test methods (i.e., EPA, HASL, DOE). Gamma spectroscopy data will be generated by both an on-site and off-site laboratory. Both facilities use similar methodologies and the results are considered comparable. If results of samples submitted to both laboratories are determined to be significantly different, then the methodologies and sampling protocols will be evaluated by the SMO. The gamma spectroscopy results obtained by the portable gamma spec system should be comparable to those provided by the on-site laboratory. The same quality control procedures are enforced on both gamma spec systems. Only the off-site laboratory will be used for chemical analysis ensuring consistent application of the methods. Any modifications to the standard laboratory operating procedures, by either the on-site or off-site laboratory, must be fully documented.

4.0 SITE SELECTION AND SAMPLING PROCEDURES

As discussed in section 1.4.2, the experimental waste items were initially segregated based on process knowledge into two groups: those items that should meet NVO-325 waste acceptance criteria (Appendix B) and those items that may be considered either mixed waste or that do not meet NVO-325 requirements (Appendix C). The following sections will present the waste characterization procedures for each of these two broad waste streams. Section 4.1 describes the general radiological and chemical characterization methods to be used. Section 4.2 discusses the characterization of all items listed in Appendix B (NTS) and section 4.3 discusses all items listed in appendix C (non-NTS). Section 4.4 discusses decontamination waste.

Continued on next page

4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

Radiological Characterization *(Continued)*

- Bulk sampling for radiological analysis of solid and liquid waste items will be performed where feasible and as necessary. Bulk sampling must take into account the radiological hazards, the amount of sample available, and the representativeness of the sample. If the risks to personnel performing sampling or analysis are determined to outweigh the benefit of sample results, these samples will not be collected. Bulk liquid and solid samples will be analyzed by the off-site laboratory, if possible, or by the on-site laboratory if necessary due to radioactivity levels. Off-site laboratory radiological analyses may include gamma spectroscopy, and/or nuclide-specific alpha or beta characterization. If sample amounts are not adequate to conduct all requested tests, the IPP representative, along with the SMO and Waste Operations, will determine the priority of testing, based on process knowledge. On-site laboratory analysis may include gross alpha/beta and gamma spectroscopy, as discussed above.

Swipe samples will be collected and analyzed by the Radiation Protection Operations department (RPOD) to ensure the health and safety of sampling and laboratory personnel and to authorize the removal of items from the HCF. All samples submitted to the laboratories will be screened for radioactivity prior to authorization for shipment. Procedures employed by RPOD personnel are documented in the SNL/NM Radiation Protection Procedures Manual (SNL/NM 1994a). Analysis results from these swipe samples may be used for confirmation or further characterization of waste items, at the discretion of the IPP representative.

Chemical Characterization

Chemical characterization for RCRA hazardous constituents will be accomplished using one or more of the following methods.

- Sufficient and acceptable process knowledge exists to adequately characterize many of the waste items. This process knowledge is based on Material Safety Data Sheets (MSDSs), experimental records, logbooks, publications, correspondence with the experimenter, and interviews with HCF employees. Where process knowledge is insufficient or verification is necessary, physical means of chemical characterization will be performed.

Continued on next page

4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

Waste Items Meeting NTS WAC (Continued)

Details of the experiments conducted in each glovebox and the fume hood were presented in section 1.1. As a brief summary, GB-1 and GB-2 contained irradiated fuels, TRU radionuclides, uranium, and mixed fission products; GB-3 was used for analysis of experimental extracts generated in GB-1&2; GBs 4,5 and 6,7 contained non-irradiated uranium-235; GB-9 contained non-irradiated fuel and TRU, and the fume hood contained only non-irradiated uranium-235. Freon was used as a cutting lubricant only in GBs 4-7 and 9. Items within each glovebox that potentially meet NTS disposal requirements are discussed below.

GB-1,2

Gloveboxes 1 and 2 are shielded gloveboxes used to contain irradiated fuels with high burnup. Therefore, the fuels contain mixed fission products and TRU radionuclides. The radioactivity levels of some items within these gloveboxes are known to be very high. Until analysis determines otherwise, all items in GB-1,2 will be considered to be TRU waste and not to be shipped to NTS. The sampling and analysis approach to these gloveboxes is discussed in section 4.3.2.1.

GB-3

Glovebox 3 was used to perform ion chromatographic (IC) analyses of irradiated uranium. Although TRU radionuclides may have been contained in the extracts analyzed in GB-3, the activity levels are thought to be well below 100 nCi/g. No experimental items were ever cut in GB-3. Freon was not used in GB-3. All items in GB-3 are related to the IC analyses and each item that may meet NTS WAC is discussed in the following sections.

Radiological characterization

Radiological characterization of items intended for disposal at NTS will be based on on-site gamma spectroscopy measurements of all items, namely the 14 paint cans and one plastic bottle of Aquaset material, composite of Pt wires, the spill pillows, plastic tray, cardboard box with vial holders, empty 3-gallon Nalgene bottle, plastic syringe barrels, plastic scoop, and box of unused Kimwipes. With the possible exception of the Pt wires, all items will be analyzed using the portable gamma spec system. The item will be placed alone in front the GB-3 porthole, the cover removed, and the gamma spec measurements acquired. No additional tests are planned.

It is anticipated that the seven platinum wires will be removed from the tubes within the GB and folded around one another to create a composite sample. The composite sample will be analyzed by the RPSD laboratory using gamma spectroscopy.

Continued on next page

4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

GB-4/5

The experiments conducted in GB-4,5 consisted of only non-irradiated fuels. No TRU radionuclides were used in this glovebox. This will be verified through analysis of the glovebox air filter from GB-4/5. The filter system is made up of primary and secondary filters; only the primary filter will be analyzed as it should contain the highest concentration of radionuclides and chemicals. The filter material is a thick paper/gauze fluted filter encased in an aluminum shell. The filter will be removed as described in section 4.8. The following analyses are planned for the primary filter:

- Approximately one gram of the filter material will be removed, using uncontaminated scissors, from the center of the filter. The material will be placed in a liquid scintillation vial and submitted to the RPSD laboratory for gross alpha/beta measurements.

- The remaining filter material will then be placed into a four ounce glass jar and submitted to the RPSD laboratory for gamma spectroscopy analysis. After gamma spec analysis, the material will be submitted to the off-site laboratory.

- At the off-site laboratory, requested analyses will include gamma spectroscopy (to confirm on-site measurements), total metals, and VOCs. Following gamma spectroscopy, the laboratory may cut the filter material into three pieces - one for VOCs, one for total metals, and one to hold for possible isotopic analyses.

- If the gross alpha/beta results and gamma spectroscopy results indicate alpha radionuclides, additional isotope-specific analyses may be required. The determination for additional analyses will be made by the SMO, IPP, and Waste Operations.

GB-4,5 and GB-6,7 contained plastic bags of paper towels, rags, and cloth material, some of which were used to wipe the glovebox floor. The waste material within these bags was combined and then segregated according to matrix (cloth, paper, etc.) and as to whether the item was clean or visually stained. Within each segregated bag of stained paper or cloth, items will be visually examined for staining, a sufficient portion of the stained areas will be cut out with uncontaminated scissors, and analyzed as follows:

- A portion of material sufficient to fill a standard geometry Marinelli beaker will be submitted to the RPSD laboratory for gamma spectroscopy; the material will then be transferred to a polyethylene container and submitted to the off-site laboratory for confirmatory gamma spec analysis. If the gamma spectroscopy results indicate alpha radionuclides, additional isotope-specific analyses may be required. The determination for additional analyses will be made by the SMO, IPP, and Waste Operations group.

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4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

GB-6/7 (Continued)

GB-6/7 contained plastic bags of paper towels, rags, and filter papers. These items have been combined and segregated with those in GB-4,5. The sampling and analysis of these materials is discussed in section 4.2.3.

GB-8

Glovebox 8 contains the microscope used for the MP1, MP2, and NPR experiments. No Freon or other chemicals were ever introduced into GB-8. No TRU radionuclide activities approaching 100 nCi/g were ever known to be in GB-8. The individual waste items in GB-8 are not amenable to sampling and chemical characterization is not necessary. Radiological characterization will be accomplished by placing all items within GB-8 into a plastic bag and submitting it to the RPSD laboratory for measurement of the container by gamma spectroscopy. By process knowledge, none of these items exhibit any hazardous waste characteristics.

GB-9

Glovebox 9 was used to cut non-irradiated fuel for the EEOS and NPR experiments. While the fuels for both of these experiments contain TRU radionuclides, it is believed that the activity levels were well below 100 nCi/g. This will be verified through sampling and analysis equivalent to that used in GB-4,5 and GB-6,7. The filter system is made up of primary and secondary filters; only the primary filter will be analyzed as it should contain the highest concentration of radionuclides and chemicals. The filter material is a thick paper/gauze fluted filter encased in an aluminum shell. The filter will be removed as described in section 4.8. The following analyses are planned for the primary filter:

- Approximately one gram of the filter material will be removed, using uncontaminated scissors, from the center of the filter. The material will be placed in a liquid scintillation vial and submitted to the RPSD laboratory for gross alpha/beta measurements.

- The remaining filter material will then be placed into a four ounce glass jar and submitted to the RPSD laboratory for gamma spectroscopy analysis. After gamma spec analysis, the material will be submitted to the off-site laboratory.

- At the off-site laboratory, requested analyses will include gamma spectroscopy (to confirm on-site measurements), total metals, and VOCs. Following gamma spectroscopy, the laboratory may cut the filter material into three pieces - one for VOCs, one for total metals, and one to hold for possible isotopic analyses.

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4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

Fume Hood (Continued)

- The capacitors, transformer, aluminum sheet, and rolls of yellow masking tape will be submitted to the RPSD laboratory for gamma spec characterization. All of these items, except possibly the rolls of tape, exhibit non-standard geometries. The analytical results will be evaluated for characterization information.

- Approximately 125 cc of taffy-like material was removed form the plastic tub, using an uncontaminated spatula, and placed in a Nalgene container. If possible, the material will be transferred to at least one 40 ml VOC vial and at least one four-ounce glass jar. The glass jar will be submitted to the RPSD laboratory for gamma spec analysis and then sent to the off-site laboratory for gamma spec and total metals. Depending on the sample volume collected, isotopic uranium may be requested for analysis.

- The 40 ml VOC vial will be submitted to the off-site laboratory for total VOC analysis.

The radiological and chemical results obtained from this material will be used to characterize the plastic tub.

Non-NTS Waste Inventory Items

Non-NTS waste items are presented in Appendix C and are items considered to be potential mixed waste, either exhibiting RCRA hazardous characteristics, failing to meet NVO-325 waste acceptance criteria (DOE/NV 1992a), or containing TRU radionuclides in excess of 100 nCi/g. Items which may have been in direct contact with Freon are also included as non-NTS waste items. All liquids are considered non-NTS items. This segregation is based on process knowledge, visual examination for evidence of use, and MSDSs; confirmation analysis will be performed as necessary. All non-NTS waste items will be transferred to Waste Operations for treatment, storage, and/or disposal. If, after treatment, specific items can meet NVO-325 WAC, such items may then be considered for shipment to NTS for disposal. Solid and liquid non-NTS items are considered separately. A discussion of each inventoried item within these categories is presented in the following sections.

Continued on next page

4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

Non-NTS Waste - Liquids (Continued)

- One-gallon Nalgene, full, aqueous diamond paste solution, GB-4,5: Diamond paste solution is used for polishing potted samples in phenolic rings. The MSDS indicates no RCRA hazardous characteristics.

  On-site laboratory: Gross alpha/beta, gamma spectroscopy
  Off-site laboratory: Gamma spectroscopy, metals, VOCs, isotopic alpha spectrometry (based on process knowledge and laboratory results). Because sufficient volume is available, samples will also be collected as field duplicates and matrix spikes.

- One-gallon Nalgene, 200 ml, aqueous diamond paste solution, GB-4,5: Diamond paste solution is used for polishing. This is the same material as above. The MSDS indicates no RCRA hazardous characteristics.

  On-site laboratory: Gross alpha/beta, gamma spectroscopy
  Off-site laboratory: Gamma spectroscopy, metals, VOCs, isotopic alpha spectrometry (based on process knowledge and laboratory results).

- The 0.5 liter bottle with 200 ml water from GB-6,7:

  On-site laboratory: Gross alpha/beta, gamma spectroscopy
  Off-site laboratory: Gamma spectroscopy, metals, VOCs, isotopic alpha spectrometry (based on process knowledge and laboratory results).

- One bottle methanol, 200 ml, contaminated, from Fume Hood: Even though methanol is known to exhibit the characteristic of ignitability, due to the possible contamination of the methanol, a sample will be collected. Analysis for TCLP volatile organic compounds is not planned.

  On-site laboratory: Gross alpha/beta, gamma spectroscopy
  Off-site laboratory: Gamma spectroscopy, metals, isotopic alpha spectrometry (based on process knowledge and laboratory results).

- One bottle ethanol, 500 ml, contaminated, from Fume Hood: Even though ethanol is known to exhibit the characteristic of ignitability, due to the possible contamination of the ethanol, a sample will be collected. Analysis for TCLP volatile organic compounds is not anticipated.

Continued on next page

4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

Non-NTS Waste - Liquids (Concluded)

- Syringes of diamond paste, 11 sizes, METADI I, II, III, GB-4,5: The diamond paste was used for polishing. The material is very thick and not amenable to sampling. Since the material is contained within a hard plastic syringe, chemical contamination is very unlikely. The MSDS indicates no RCRA hazardous characteristics. No sample will be submitted to the laboratory.

- Mineral oil lubricant, 200 ml, GB-6,7: The mineral oil was used as a cutting lubricant. The portion remaining is clear and clean with no evidence of use or contamination. The material will be characterized by process knowledge and gamma spectroscopy analysis by the RPSD facility.

- Torr-Seal resin, half ounce, GB-6,7: Per the MSDS, this grease-like material no RCRA hazardous characteristics. Since it is within a closed tube, chemical contamination did not occur. The material will be characterized by process knowledge alone and no sample will be collected.

Non-NTS Waste - Solids

By process knowledge, many waste items have been initially segregated for transfer to Waste Operations for disposal at facilities other than NTS. These items are known mixed waste, contain suspected TRU radionuclides above 100 nCi/g, may have been in direct with Freon, or do not meet other NTS waste acceptance requirements. These waste items are presented in Appendix C for review and discussed below categorized by gloveboxes. Results of on-site and off-site laboratory measurements will be used to verify the process knowledge and segregation of the waste. If items are determined to meet NTS waste acceptance criteria, Waste Operations personnel will re-categorize the waste material as appropriate.

GB-1 (includes items originally in GB-2)

Gloveboxes GB-1 and GB-2 were each used to perform experiments involving TRU radionuclides and irradiated fuels. GB-1 and GB-2 are shielded gloveboxes and the radiation levels are extremely high (i.e., 100 R/hr dose rate of vacuum filters). Most items originally in GB-1 and GB-2 were inventoried, removed and placed into paint cans, and the paint cans were subsequently placed inside a cask. This removal operation was done to reduce exposure risk to personnel removing equipment for decontamination. GB-2 is now empty. All items are either in the cask or in paint cans within GB-1. Due to these high radiation levels, no physical samples will be collected. The health and safety of sampling personnel does not justify such risk when process knowledge and field measurements will sufficiently characterize the waste items.

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4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

GB-1 (includes items originally in GB-2) (Concluded)	No other RCRA hazardous constituents were ever used or placed in these gloveboxes. No chemical analyses will be attempted due to high radiation levels and all items will be considered as radiological waste only. If results of the gamma spec analyses determine that TRU levels are below 100 nCi/g, those items may be considered for shipment to NTS. Final disposal decisions will be made by the Waste Operations department.
GB-3	It is likely that all volatile compounds used in the marker have evaporated and are no longer present, however since a usable sample cannot be obtained, this item will remain characterized as a mixed waste. Radiological characterization will be based on gamma spectroscopy measurements of the marker by the RPSD laboratory. Since the marker is a non-standard geometry, some error may be associated with the results. The Aquset powder may not meet particulate requirements of NTS. This material will be characterized radiologically by portable gamma spectroscopy measurements. Per the MSDS, this material does not exhibit any RCRA hazardous waste characteristics. The material will be transferred to Waste Operations for treatment and disposal or use in solidification of liquid materials.
GB-4,5	Only one item within GB-4,5 is not considered to meet the requirements of the NTS waste acceptance criteria, that being the empty plastic bottle marked Freon TF. This item may have been in contact with Freon and will be transferred to Waste Operations for treatment and disposal. The radiological characterization will be based on filter measurements, as described in section 4.2.3.

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4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

Number of Samples

The determination of samples for collection was based on representativeness, feasibility of collection, and usefulness of results. As many samples as practical have been selected for sampling. Due to the high radioactivity levels and the heterogeneity of the waste items, statistical based methods for determining samples numbers are not applicable.

Sample Volume

The standard test methods to be utilized for the analysis of these items suggest a minimum sample amount. However, the sample volumes or weights collected for this project are dictated by three factors. First, the amount of solid or liquid available may not equal the amount normally used in the test method. If reporting limits below the regulatory limits or action levels can be achieved using the smaller aliquot, the laboratory may be instructed to perform the analysis. The SMO, together with representatives from the IPP and Waste Operations, will determine the analytical priority in cases of limited sample volume. The second factor will be the radioactivity of the sample. The radiological levels will place limitations on the amount of sample that can be safely shipped to, and received by, the laboratory. The SMO will be responsible for ensuring compliance with all shipping requirements. The third factor is the amount required for QC requirements (MS, MSD, field duplicates, etc.). Where possible, sufficient material will be collected to support all QC requirements (MS, MSD, field duplicates, etc.). If insufficient volume is available to support QC samples, the laboratory may be asked to submit batch QC to verify analytical quality. Typical sample volumes/weights requested by the laboratories to meet reporting limits specified in section 6.0 are presented in Table 4.1 for each anticipated test method. The amount requested is usually greater than the sample amount required. The "Administrative Operating Procedure For Sample Management And Custody," AOP 95-16, (SNL/NM 1994) discusses the appropriate sample containers for the requested analyses.

Table 4.1 Minimum Requested Sample Volumes/Weights

Parameter	Laboratory	Solid	Liquid
Gross A/B	RPSD	1 g	1 ml
Gamma Spec	Portable	N/A	N/A
	RPSD	450 g	500 ml
	LAS	200 g	1 liter
Isotopic Alpha	LAS	1 g	200 ml
Total VOCs	LAS	4 oz.	3 x 40 ml
Total Metals	LAS	4 oz.	1 liter

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4.0 SITE SELECTION AND SAMPLING PROCEDURES, Continued

Liquids (Continued)

For metals analysis: The liquid should be agitated to mix any sediment with the liquid. Using a clean glass pipette, glass thieving rod, or by decanting, transfer a sufficient amount of liquid into a 1 liter polyethylene bottle with screw cap. Bottle size may be adjusted for smaller sample aliquots. The amount of sample collected and submitted for analysis should be recorded in the field logbook and COC. Sample preservation is discussed in section 4.7.1.

For gross alpha/beta: The liquid should be agitated to mix any sediment with the liquid. Using a clean graduated glass pipette, transferred 1 ml of the liquid into a liquid scintillation vial. The amount of sample collected and submitted for analysis should be recorded in the field logbook and COC. Submit vial to RPSD laboratory for sample preparation and analysis.

For gamma spectroscopy: The liquid should be agitated to mix any sediment with the liquid. Using a clean glass pipette, glass thieving rod, or by decanting, transfer a sufficient amount of liquid into a standard geometry Marinelli beaker. The standard Marinelli beaker usually holds approximately 500 ml. Submit container to RPSD laboratory for sample analysis. If the sample will also be submitted to the off-site laboratory, transfer the liquid to a clean 1 liter polyethylene bottle for shipment. The amount of sample collected and submitted for all analyses should be recorded in the field logbook and COC.

For alpha isotopic analysis: The liquid should be agitated to mix any sediment with the liquid. Using a clean glass pipette, glass thieving rod, or by decanting, transfer 200 ml of liquid into a 250 ml polyethylene bottle with screw cap. The amount of sample collected and submitted for analysis should be recorded in the field logbook and COC. Sample preservation is discussed in section 4.7.1.

Solids

Three types of solid materials may be collected for sample analysis. Specific procedures are presented below. Deviations to these procedures may be necessary during actual sampling and will be documented in the field logbook.

Glovebox filters: The filters are made up of a thick paper/gauze material encased in an aluminum shell. This material is slightly friable and care must be taken to avoid airborne contamination. To remove the filter from the shell, use a clean pair of needle-nose pliers to twist and pry open the top of the shell. Once the top has been removed, use the pliers to twist down the side lip of the shell. Then the aluminum cage can be removed exposing the filter material. The center of the filter paper will be cut with a clean pair of scissors, placed in a scintillation vial, and submitted to the RPSD laboratory for analysis.

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4.0 SITE SELECTION AND SAMPLING PROCEDURES, Concluded

Holding Times

Maximum holding times are presented below in Table 4.3.

Table 4.3 Maximum Sample Holding Times

Parameter	Aqueous	Solid
VOCs	14 days	14 days
Metals	6 months (Hg - 28 days)	6 months (Hg - 28 days)
Isotopic Alpha	6 months	6 months
Gamma Spectroscopy	6 months	6 months
Gross Alpha/beta	6 months	6 months

Shipping

Samples will be shipped to the laboratory, under full chain-of-custody, as soon as possible after sample collection. All samples must be screened for radioactivity prior to shipment. Shipping procedures to be followed by SMO personnel are presented in "Administrative Operating Procedure For Sample Management And Custody," AOP 95-16, (SNL/NM 1994) and "Handling, Packaging, and Shipping of Environmental Samples," LOP 94-03, (SNL/NM 1994).

Field Quality Control

Field quality control samples and procedures are described in section 11 of "Quality Assurance Plan for the Sample Management Office," (SNL/NM 1995f). During the sampling activities associated with the HCF Decontamination Project, the following field QC samples may be collected:

Trip Blank - the purpose of a trip blank is to monitor volatile compound contamination of the samples that may be attributable to shipping and handling of the sample containers. One trip blank will be included in every cooler containing a sample for volatile organic compound analyses.

Equipment blanks - the purpose of equipment blanks is to monitor contamination of the samples introduced by the sampling equipment. Such blanks will not be collected during this sampling program. Any samples, whether solid or liquid, will be obtained using dedicated sample equipment.

Field duplicates - a field duplicate is used to evaluate the overall precision of the sampling analysis system. One field duplicate will be collected from the 1 gallon Nalgene container of tap water and diamond paste in GB-4,5. This liquid sample may be the only one with enough sample volume to support a duplicate for all analyses. Other liquid field duplicates will be collected if sufficient sample volume is available. The solid waste items to be sampled and analyzed are too heterogeneous to use field duplicates as a measure of precision and will not be collected.

5.0 DOCUMENTATION AND SAMPLE CUSTODY, Continued

Logbooks (Continued)

The information in each logbook entry must include, but is not limited to, the following: location and description of place of sampling, purpose of sampling, name and address of field contact, producer of waste and address (if different location), type of process producing waste (if known), type of waste, suspected waste composition (including concentrations), sampling methodology, number and volume of samples taken, sample identification, sample destination and how transported, field measurements (e.g., pH, flammability, explosivity), and field observations and any other information concerning the sampling site (e.g., maps, photographs).

Chain-of-Custody (COC) Records

Complete chain-of-custody will be maintained for each sample from the time of sample collection through laboratory analysis, as required in "Administrative Operating Procedure For Sample Management And Custody," AOP 95-16, (SNL/NM 1994).

Analysis Request Sheets

An Analysis Request/Chain of Custody (ARCOC) form is completed for each batch of samples collected and submitted to the laboratory. An example of the ARCOC and instructions for its use are provided in "Administrative Operating Procedure For Sample Management And Custody," AOP 95-16, (SNL/NM 1994).

6.0 ANALYSIS OF WASTE SAMPLES

Two laboratories will be perform analyses of samples collected during the decontamination of the HCF gloveboxes. The RPSD laboratory will provide on-site radiological analyses, including gross alpha/beta measurements and gamma spectroscopy. Lockheed Analytical Services (LAS) Laboratory in Las Vegas, NV will provide radiological analyses (gamma spec and isotopic) and chemical analyses (total metals and volatiles). LAS is under contract to SNL/NM SMO, having been successfully audited in early 1995. LAS is also Utah-certified and has been audited by NTS. The RPSD laboratory operates under a complete and rigorous quality control program. Data reporting requirements are specified in the Quality Assurance Plan for the SNL/NM SMO (SNL/NM 1995f).

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6.0 ANALYSIS OF WASTE SAMPLES, Continued

Radiological Parameters and Methods (Continued)

The critical levels and the target analyte list are presented in Table 6.1 for both the on-site (RPSD) and off-site laboratory gamma spectroscopy analysis. Additional gamma radionuclides may be reported, depending on the instrument library. The actual minimum detectable activity or critical level may vary due to the sample matrix, interferences from other radionuclides present at high activities, and the sample volume available for analysis. All gamma radionuclide results are based on the critical level or MDA of Cs-137. The critical levels presented in Table 6.1 for Cs-137 are based on standard geometry and sample size. It is expected that the critical levels of the portable gamma spectroscopy system may be 10 to 50 times higher than the RPSD system. This is due to 1) obtaining an open count, without shielding, 2) the potential for low efficiency due to very non-standard geometries, and 3) the high background within the gloveboxes.

Table 6.2 provides the critical levels for on-site gross alpha/beta analyses and isotopic analysis by LAS.

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6.0 ANALYSIS OF WASTE SAMPLES, Continued

Table 6.2 Target Analyte List and Critical Levels for Isotopic Analyses

Radionuclide	RPSD	LAS
Gross Alpha	350 pCi/L - liquid 1.5 pCi/g - solid	N/A
Gross Beta	800 pCi/L - liquid 3.0 pCi/g - solid	N/A
Am-241 Np-237	N/A	0.05 pCi/L - liquid 0.03 pCi/L - solid
Isotopic Uranium	N/A	0.2 pCi/L - liquid 0.09 pCi/g - solid
Isotopic Thorium	N/A	0.08 pCi/L - liquid 0.04 pCi/g - solid
Isotopic Plutonium	N/A	0.06 pCi/L - liquid 0.03 pCi/g - solid

RCRA Hazardous Constituents

Per RCRA regulations, a waste is hazardous if it exhibits one of the following four characteristics:

- Reactivity;
- Ignitability;
- Corrosivity; or
- Toxicity.

To meet NVO-325 Waste Acceptance Criteria, the presence of a RCRA hazardous waste characteristic must be determined through either process knowledge or sampling and analysis. For this decontamination project, these characteristics will be addressed by process knowledge, with limited sampling and analysis for the toxicity characteristic.
For the toxicity characteristic, only volatile organic compounds and total metals may be determined.

Freon, as 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113), will be included with the RCRA TCLP volatiles to be determined. Copper and zinc will be added to the RCRA TCLP metals o be determined. Table 6.3 presents the RCRA TCLP target analytes, with the additional compounds, the test method, the laboratory reporting limit, and the TCLP regulatory limit, as applicable.

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6.0 ANALYSIS OF WASTE SAMPLES, Concluded

Other NVO-325 Waste Acceptance Requirements

Additional NVO-325 waste acceptance requirements, including PCBs and free liquids, will be addressed by process knowledge.

7.0 ANALYTICAL QUALITY CONTROL

Quality control procedures are used to document the accuracy and precision of the laboratory data. The quality control samples required for this sampling and analysis program are described in the following sections. The SNL/NM SMO Quality Assurance Plan (SNL/NM 1995f) provides additional QC guidance.

Method Blank/Reagent Blank

Method or reagent blanks are used to detect possible contamination resulting from the preparation or processing of a sample. A reagent blank is an organic or aqueous solution that is free of the target analytes but contains all the reagents in the same volume as used in the processing of samples. A method blank is usually an organic or aqueous solution that is carried through the entire analytical procedure. At least one method blank must be prepared and analyzed with every batch of samples prepared and analyzed. If contaminants are detected, the laboratory shall evaluate the data and make corrections if necessary.

Matrix Spikes

A matrix spike is an aliquot of sample spiked with a known concentration of target analytes. The spiking occurs prior to sample preparation and analysis. A matrix spike gives an indication of the accuracy and applicability of the method for analyzing the given sample matrix. Acceptable matrix spike recoveries are as follows:

- Metals: 75-125% recovery
- VOCs: the acceptance limits specified in method 8260
- Radiological: within 3 standard deviations of the mean historical value for MS analyses

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8.0 REFERENCES

DOE/NV 1992a	Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, NVO-325, Rev.1, June 1992.
EPA 1994a	Waste Analysis at Facilities that Generate, treat, Store, and Dispose of Hazardous Wastes - A Guidance Manual. OSWER 9938.4-03. April 1994.
SNL/NM 1994a	ES&H Manual Supplement, Radiological Procedures Manual, MN471016, Issue A, December 1994.
SNL/NM 1994b	SNL/NM, Verification and Validation of Chemical and Radiochemical Data, TOP 94-03, Revision 0, July 1994.
SNL/NM 1995a	SNL/NM, RCRA Part A and B Permit Applications, Mixed Waste Management Facilities, Second Amendment, January, 1995.
SNL/NM 1995b	SNL/NM, Waste Management Plan, PLA 95-19, SNL/NM Hot Cell Facility Decontamination, April 1995.
SNL/NM 1995c	SNL/NM, Waste Management and Regulatory Projects Programmatic Waste Acceptance Criteria, POL 95-01, Mary, 1995.
SNL/NM 1995d	SNL/NM, ES&H Manual, MN471001, Chapter 19, *Waste Management*, Issued January 1995.
SNL/NM 1995e	SNL/NM Application for Acceptance of Low-Level Radioactive Waste at the Nevada Test Site, January 1995.
SNL/NM 1995f	Quality Assurance Plan for the SNL/NM Sample Management Office, QUA 95-0, January 1995.

APPENDIX A

HCF Waste Inventory - Total

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
Glovebox #1 and #2			
Paint cans in GB-1:	WO - TRU	portable gamma spec	
Silver solder - 5" ribbon	WO - TRU/MW	paint can result	
Paper towels	WO - TRU	paint can result	
Plastic Hose, 3/8" x ~15', looks like reinforced Tygon	WO - TRU	paint can result	
Lint Remover (Masking Tape)	WO - TRU	paint can result	
Plastic bags	WO - TRU	paint can result	
The following items currently in HCF cask:			
Paint Can GB-1-95-01	WO - TRU	portable gamma spec	
5 small vacuum filters - TRU	WO - TRU	paint can result	
Plastic debris and scrap	WO - TRU	paint can result	
Metal lathe collets, machine steel	WO - TRU	paint can result	
Aluminum can cap	WO - TRU	paint can result	
2' Tygon tubing	WO - TRU	paint can result	
Scotch Brite pad	WO - TRU	paint can result	
Loose 6" filter paper	WO - TRU	paint can result	
Paint Can GB-1-95-02	WO - TRU	portable gamma spec	
2 Brass hose fittings	WO - TRU	paint can result	
1 Broken 9"x12" plastic tray	WO - TRU	paint can result	
2 each 6" brass tubes, 3/4" diameter	WO - TRU	paint can result	
1 filter with 2 brass hose barbs, TRU, from vacuum	WO - TRU	paint can result	
2' Tygon tubing	WO - TRU	paint can result	
Dust and debris	WO - TRU	paint can result	
Paint Can GB-1-95-03	WO - TRU	portable gamma spec	
1 filter, filter housing, and hose bib,TRU, from vacuum	WO - TRU	paint can result	
1 projector bulb	WO - TRU	paint can result	
1 pair glovebox gloves	WO - TRU	paint can result	
Paint Can GB-1-95-04	WO - TRU	portable gamma spec	
Filter papers, 6" - approx. 100	WO - TRU	paint can result	
Brass adapter with 1/2" copper tube	WO - TRU	paint can result	
1 can opener	WO - TRU	paint can result	
1 brass holder, 1.5" dia. x 2" long	WO - TRU	paint can result	
1 projector bulb socket with power cord	WO - TRU	paint can result	
2 each - 6" metallographic blades	WO - TRU/FC	paint can result	
Glovebox #3			
Sharpie marker - noted on 3/29 inventory	WO - MW	RPSD gamma spec	MSDS

HCF Waste Inventory - Total

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
Clear Plastic Tray 5-3 in GB-4,5 - bagged	NTS - LLW	rad charac by GB-4,5 filter	
One package of 6" cotton tip swabs/wooden handle	NTS - LLW	rad charac by GB-4,5 filter	
Large aluminum ring, 4" dia. x 1/4" thick	NTS - LLW	rad charac by GB-4,5 filter	
Bundle of red wire ties (100 ea.)	NTS - LLW	rad charac by GB-4,5 filter	
Clear Plastic Tray 5-4 in GB-4,5 - bagged	NTS - LLW	rad charac by GB-4,5 filter	
1 liter plastic bottle w/ 150 cc Bueler METADI - cutting fluid - #6032	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
500 cc plastic squeeze bottle w/ 100 ml blue fluid (Mastermet ink sol'n)	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
250 cc squirt bottle w/ aqueous polishing fluid (white alumina 0.5 polish)	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
1 gallon Nalgene, full, tap water and diamond paste	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
20 cc syringes w/ 10 cc of Bueler paste - 11 sizes, Metadi I, II, III	WO - LIQUID	rad charac by GB-4,5 filter	MSDS
1 gallon Nalgene w/ 200 cc water and diamond paste	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
Glovebox #6 and #7			
20 each - 3"-5" dia., diamond cutting disks	WO - FC	rad charac by GB-6,7 filter	
Paint Can GB6-7-95-0004	NTS - LLW	rad charac by GB-6,7 filter	
Epoxy pieces, Epothin	NTS - LLW	rad charac by GB-6,7 filter	
1 lab glove	NTS - LLW	rad charac by GB-6,7 filter	
Paint Can GB6-7-95-0003	NTS - LLW	rad charac by GB-6,7 filter	
Epoxy cup w/ stick epoxy, Epothin	NTS - LLW	rad charac by GB-6,7 filter	
1 glovebox glove	NTS - LLW	rad charac by GB-6,7 filter	
2 each - broken abrasive cutting wheel	WO - FC	rad charac by GB-6,7 filter	
2 each - Magic markers - dry	WO - MW	rad charac by GB-6,7 filter	
Abrasive disks	NTS - LLW	rad charac by GB-6,7 filter	
Paper towels, rags	NTS - LLW	RPSD gamma, LAS - iso-alpha, gamma	LAS - total metals, VOCs
MSA filter	NTS - LLW	rad charac by GB-6,7 filter	
Plastic Tray (A)	NTS - LLW	rad charac by GB-6,7 filter	
Sanding wheel	WO - FC	rad charac by GB-6,7 filter	
Plastic Tray #4 (8"x6"x2")	NTS - LLW	rad charac by GB-6,7 filter	
Filter papers - bagged	NTS - LLW	RPSD gamma, LAS - iso-alpha, gamma	LAS - total metals, VOCs
200 ml Freon TF	WO - MW	rad charac by GB-6,7 filter	
0.5 liter bottle - 200 ml water	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
1 can Buehler mold release #20-3046 ,silicone spray	WO - MW	rad charac by GB-6,7 filter	
GB filter system - 2 filter cartridges	NTS - LLW	RPSD gamma, gross alpha/beta LAS - iso-alpha, gamma	LAS - total metals, VOCs
Electric cord - gray - bagged	NTS - LLW	rad charac by GB-6,7 filter	
8" sharpening stone for cutting saw	NTS - LLW	rad charac by GB-6,7 filter	
~3 small 1"x3" sharpening stones	NTS - LLW	rad charac by GB-6,7 filter	
Paint Can GB6-7-95-0004	NTS - LLW	rad charac by GB-6,7 filter	
2 each - Petri dishes, glass - bagged	NTS - LLW	rad charac by GB-6,7 filter	
4 each - Al weighing dishes - bagged	NTS - LLW	rad charac by GB-6,7 filter	
Plastic pieces - bagged	NTS - LLW	rad charac by GB-6,7 filter	
Small aluminum blocks, 1"x5" w/ phenolic points - deconning Al	NTS - LLW	rad charac by GB-6,7 filter	
Small metal pieces	NTS - LLW	rad charac by GB-6,7 filter	

HCF Waste Inventory - Total

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
Glove box #8			
2 each - markers	WO - MW	RPSD gamma spec of all items bagged	MSDS
Plastic tray containing:	NTS - LLW	RPSD gamma spec of all items bagged	
Tape lint remover (roller)	NTS - LLW	RPSD gamma spec of all items bagged	
Rubber bands	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic vial	NTS - LLW	RPSD gamma spec of all items bagged	
Tygon tubing	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic box - 4"x1"	NTS - LLW	RPSD gamma spec of all items bagged	
Plastic box, clear, 8"x4"x4"	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic bag	NTS - LLW	RPSD gamma spec of all items bagged	
Bubble level - small	NTS - LLW	RPSD gamma spec of all items bagged	
Small aluminum parts	NTS - LLW	RPSD gamma spec of all items bagged	
Glovebox #9			
Paint can GB9-95-0002:	NTS - LLW	rad charac by GB-9 filter	
Two gloves, rubber, from glove box	NTS - LLW	rad charac by GB-9 filter	
PPE, glove	NTS - LLW	rad charac by GB-9 filter	
Sharpie	WO - MW	rad charac by GB-9 filter	
Paint can GB9-95-0002:	NTS - LLW	rad charac by GB-9 filter	
2 plastic boxes, 3"x3"x1/2", empty	NTS - LLW	rad charac by GB-9 filter	
1 plastic bag w/ metal weighing dish	NTS - LLW	rad charac by GB-9 filter	
13 ea. small plastic and cellophane bags, empty	NTS - LLW	rad charac by GB-9 filter	
1 ea. threaded rod, 10", 1 screw	NTS - LLW	rad charac by GB-9 filter	
1 particulate filter, Millipore, not in use	NTS - LLW	rad charac by GB-9 filter	
1 plastic bag w/ rags, masking tape - used	NTS - LLW	RPSD gamma, LAS - iso-alpha, gamma	LAS - total metals, VOCs
3 ea. glass jars, 2 oz., empty	NTS - LLW	rad charac by GB-9 filter	
2 ea. circulating air filters attached to GB	NTS - LLW	rad charac by GB-9 filter	
Tygon hose, 4'x1/2"	NTS - LLW	rad charac by GB-9 filter	
30 ea. glass vials, 1/2", used and unused	NTS - LLW	rad charac by GB-9 filter	
Weighing boat, 10 cc	NTS - LLW	rad charac by GB-9 filter	
GB-9 filter system	NTS - LLW	RPSD gamma, gross alpha/beta LAS - iso-alpha, gamma	LAS - total metals, VOCs
Fume Hood			
1 plastic tub w/ contaminated material - soil	NTS - LLW	RPSD - gamma, LAS - iso-alpha, gamma	LAS - total metals, VOCs of scrapings
1 bottle ethyl alcohol - 500 ml	WO - MW	RPSD - gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals
1 bottle methanol - 200 ml - contaminated	WO - MW	RPSD - gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals
1 bottle Shell EPON 815 resin - about 100 ml	WO - MW	RPSD gamma spec	MSDS
3 ea. - capacitors - foil type	NTS - LLW	RPSD gamma spec	
1 ea. - transformer - wire-wound, step down	NTS - LLW	RPSD gamma spec	
1 piece Al - 10"x20"	NTS - LLW	RPSD gamma spec	
2 rolls yellow tape	NTS - LLW	RPSD gamma spec	

APPENDIX B

Potential NTS Waste Item Inventory

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
Glovebox #3			
2 each spill pillows, silicate absorbent powder	NTS - LLW	portable gamma spec	MSDS
Plastic tray w/ bag of black plastic sample vial holders (~12-15 ea.)	NTS - LLW	portable gamma spec	
2 each cardboard box containing vial holder	NTS - LLW	portable gamma spec	
Nalgene 3 gallon bottle - looks empty	NTS - LLW	portable gamma spec	
Plastic bag w/ plastic syringe barrels, 3"x1/2", ~40 each	NTS - LLW	portable gamma spec	
1 liter bottle, ST-2, in Aquaset	NTS - LLW	portable gamma spec	PK
Paint cans #17-30 - IC waste in Aquaset	NTS - LLW	portable gamma spec	PK
Plastic scoop	NTS - LLW	portable gamma spec	
Box of Kimwipes, unused	NTS - LLW	portable gamma spec	
Plastic bag w/ 7 plastic tubes w/ Pt wire, tubes 12"x1"	NTS - LLW	RPSD gamma	
Glovebox #4 and #5			
Polishing papers, cloths, various grits, approx. 1 cu. ft. - 8" pads	NTS - LLW	RPSD gamma, LAS - iso-alpha, gamma	LAS - total metals, VOCs
Paint Can in GB-4,5	NTS - LLW	rad charac by GB-4,5 filter	
Paper towels, several, some used - can sample	NTS - LLW	RPSD gamma, LAS - iso-alpha, gamma	LAS - total metals, VOCs
1 liter Nalgene squeeze bottle w/ 100 ml water - Empty	NTS - LLW	rad charac by GB-4,5 filter	
500 cc squirt bottle w/ 100 ml water - Empty	NTS - LLW	rad charac by GB-4,5 filter	
1 liter water bottle w/ 50 cc water - Empty	NTS - LLW	rad charac by GB-4,5 filter	
Large waste beaker with soapy water - empty	NTS - LLW	rad charac by GB-4,5 filter	
Small plastic box w/ white polishing pumice, added into liquid, box empty	NTS - LLW	rad charac by GB-4,5 filter	
2 each 250 cc squeeze bottle - empty	NTS - LLW	rad charac by GB-4,5 filter	
2 each 1 liter Nalgene beaker - empty	NTS - LLW	rad charac by GB-4,5 filter	
Clear plastic bin, 8"x6" w/ lid	NTS - LLW	rad charac by GB-4,5 filter	
Clear plastic bin, 8"x12"x7" w/ lid	NTS - LLW	rad charac by GB-4,5 filter	
Brass weight, 2"x1.5" dia.	NTS - LLW	rad charac by GB-4,5 filter	
GB filter system - 2 filter cartridge, tubing, brass manifold	NTS - LLW	RPSD gamma, gross alpha/beta LAS - iso-alpha, gamma	LAS - total metals, VOCs
Paint Can in GB-4,5	NTS - LLW	rad charac by GB-4,5 filter	
2 each, 10 ml plastic beaker	NTS - LLW	rad charac by GB-4,5 filter	
Small aluminum weighing dish	NTS - LLW	rad charac by GB-4,5 filter	
Small clear plastic funnel	NTS - LLW	rad charac by GB-4,5 filter	
Plastic bags	NTS - LLW	rad charac by GB-4,5 filter	
Plastic cup, 100 ml	NTS - LLW	rad charac by GB-4,5 filter	
2 each - Clear plastic boxes, 3"x1" w/ small Al pieces	NTS - LLW	rad charac by GB-4,5 filter	
Phenolic ring	NTS - LLW	rad charac by GB-4,5 filter	
Bundle of red wire ties (8 ea.)	NTS - LLW	rad charac by GB-4,5 filter	
6 each - clear plastic cups, 160 cc	NTS - LLW	rad charac by GB-4,5 filter	
Roll of cellophane tape	NTS - LLW	rad charac by GB-4,5 filter	
Clear Plastic Tray 5-3 in GB-4,5 - bagged	NTS - LLW	rad charac by GB-4,5 filter	
One package of 6" cotton tip swabs/wooden handle	NTS - LLW	rad charac by GB-4,5 filter	
Large aluminum ring, 4" dia. x 1/4" thick	NTS - LLW	rad charac by GB-4,5 filter	

Potential NTS Waste Item Inventory

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
Empty Nalgene bottle	NTS - LLW	rad charac by GB-6,7 filter	
SEM mounting posts	NTS - LLW	rad charac by GB-6,7 filter	
Plastic bag w/ metal crimp connectors	NTS - LLW	rad charac by GB-6,7 filter	
Paper labels	NTS - LLW	rad charac by GB-6,7 filter	
12 each - plastic bags	NTS - LLW	rad charac by GB-6,7 filter	
Carburundum post, 1 ea , 12"x2" base, SS rod/brass base	NTS - LLW	rad charac by GB-6,7 filter	
Plastic piece for saw	NTS - LLW	rad charac by GB-6,7 filter	
Plastic, brass, copper pieces	NTS - LLW	rad charac by GB-6,7 filter	
2 each - Tygon hose	NTS - LLW	rad charac by GB-6,7 filter	
Plastic Tray (A)	NTS - LLW	rad charac by GB-6,7 filter	
Artist paint brush	NTS - LLW	rad charac by GB-6,7 filter	
Red Plastic Parts Bin	NTS - LLW	rad charac by GB-6,7 filter	
Plastic Tray #1 (24"x6"x3")	NTS - LLW	rad charac by GB-6,7 filter	
Plastic Tray #2 (24"x6"x3")	NTS - LLW	rad charac by GB-6,7 filter	
Plastic Tray #3 (24"x6"x3")	NTS - LLW	rad charac by GB-6,7 filter	
6 each - Paint brushes- various sizes - bagged	NTS - LLW	rad charac by GB-6,7 filter	
DREMAL engraving tool, black w/ electrical cord - bagged	NTS - LLW	rad charac by GB-6,7 filter	
Steel tubing - 6" - bagged	NTS - LLW	rad charac by GB-6,7 filter	
Plastic Tray #4 (8"x6"x2")	NTS - LLW	rad charac by GB-6,7 filter	
Cotton tip swabs - 6" long	NTS - LLW	rad charac by GB-6,7 filter	
6 each - Petri dishes - glass w/ glass lids - bagged	NTS - LLW	rad charac by GB-6,7 filter	
Plastic Tray #5 (8"x6"x2")	NTS - LLW	rad charac by GB-6,7 filter	
Plastic Tray (A)	NTS - LLW	rad charac by GB-6,7 filter	
Glove box #8			
Plastic tray containing:	NTS - LLW	RPSD gamma spec of all items bagged	
Tape lint remover (roller)	NTS - LLW	RPSD gamma spec of all items bagged	
Rubber bands	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic vial	NTS - LLW	RPSD gamma spec of all items bagged	
Tygon tubing	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic box - 4"x1"	NTS - LLW	RPSD gamma spec of all items bagged	
Plastic box, clear, 8"x4"x4"	NTS - LLW	RPSD gamma spec of all items bagged	
Small plastic bag	NTS - LLW	RPSD gamma spec of all items bagged	
Bubble level - small	NTS - LLW	RPSD gamma spec of all items bagged	
Small aluminum parts	NTS - LLW	RPSD gamma spec of all items bagged	
Glovebox #9			
Paint can GB9-95-0002:	NTS - LLW	rad charac by GB-9 filter	
Two gloves, rubber, from glove box	NTS - LLW	rad charac by GB-9 filter	
PPE, glove	NTS - LLW	rad charac by GB-9 filter	
Paint can GB9-95-0002:	NTS - LLW	rad charac by GB-9 filter	
2 plastic boxes, 3"x3"x1/2", empty	NTS - LLW	rad charac by GB-9 filter	

APPENDIX C

Potential Mixed Waste Item Inventory

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
Glovebox #1 and #2			
Paint cans in GB-1:	WO - TRU	portable gamma spec	
Silver solder - 5" ribbon	WO - TRU/MW	paint can result	
Paper towels	WO - TRU	paint can result	
Plastic Hose, 3/8" x ~15', looks like reinforced Tygon	WO - TRU	paint can result	
Lint Remover (Masking Tape)	WO - TRU	paint can result	
Plastic bags	WO - TRU	paint can result	
The following items currently in HCF cask:			
Paint Can GB-1-95-01	WO - TRU	portable gamma spec	
5 small vacuum filters - TRU	WO - TRU	paint can result	
Plastic debris and scrap	WO - TRU	paint can result	
Metal lathe collets, machine steel	WO - TRU	paint can result	
Aluminum can cap	WO - TRU	paint can result	
2' Tygon tubing	WO - TRU	paint can result	
Scotch Brite pad	WO - TRU	paint can result	
Loose 6" filter paper	WO - TRU	paint can result	
Paint Can GB-1-95-02	WO - TRU	portable gamma spec	
2 Brass hose fittings	WO - TRU	paint can result	
1 Broken 9"x12" plastic tray	WO - TRU	paint can result	
2 each 6" brass tubes, 3/4" diameter	WO - TRU	paint can result	
1 filter with 2 brass hose barbs, TRU, from vacuum	WO - TRU	paint can result	
2' Tygon tubing	WO - TRU	paint can result	
Dust and debris	WO - TRU	paint can result	
Paint Can GB-1-95-03	WO - TRU	portable gamma spec	
1 filter, filter housing, and hose bib,TRU, from vacuum	WO - TRU	paint can result	
1 projector bulb	WO - TRU	paint can result	
1 pair glovebox gloves	WO - TRU	paint can result	
Paint Can GB-1-95-04	WO - TRU	portable gamma spec	
Filter papers, 6" - approx. 100	WO - TRU	paint can result	
Brass adapter with 1/2" copper tube	WO - TRU	paint can result	
1 can opener	WO - TRU	paint can result	
1 brass holder, 1.5" dia. x 2" long	WO - TRU	paint can result	
1 projector bulb socket with power cord	WO - TRU	paint can result	
2 each - 6" metallographic blades	WO - TRU/FC	paint can result	
Glovebox #3			

Potential Mixed Waste Item Inventory

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
Sharpie marker - noted on 3/29 inventory	WO - MW	RPSD gamma spec	MSDS
250 cc bottle w/ 100 cc NaOH	WO - MW	LAS - gamma	LAS - neutralize, total metals
250 cc bottle w/ 20 cc 4N HNO3	WO - MW	LAS - gamma	LAS - neutralize, total metals
Plastic tray w/ 1.5 bags unused Aquaset powder, ~2 liter	WO - MW	portable gamma spec	MSDS
Glovebox #4 and #5			
500 cc plastic bottle - empty - marked Freon TF	WO - FC	rad charac by GB-4,5 filter	
Sharpie permanent marker	WO - MW	rad charac by GB-4,5 filter	
2 liter Nalgene w/ 1 liter water - added from other bottles	WO - LIQUID	RPSD gross alpha/beta, LAS - gamma, iso-alpha	LAS - total metals, VOCs
1 liter plastic bottle w/ 150 cc Bueler METADI - cutting fluid - #6032	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
500 cc plastic squeeze bottle w/ 100 ml blue fluid (Mastermet ink sol'n)	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
250 cc squirt bottle w/ aqueous polishing fluid (white alumina 0.5 polish)	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
1 gallon Nalgene, full, tap water and diamond paste	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
20 cc syringes w/ 10 cc of Bueler paste - 11 sizes, Metadi I, II, III	WO - LIQUID	rad charac by GB-4,5 filter	MSDS
1 gallon Nalgene w/ 200 cc water and diamond paste	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
Glovebox #6 and #7			
20 each - 3"-5" dia., diamond cutting disks	WO - FC	rad charac by GB-6,7 filter	
2 each - broken abrasive cutting wheel	WO - FC	rad charac by GB-6,7 filter	
2 each - Magic markers - dry	WO - MW	rad charac by GB-6,7 filter	
Sanding wheel	WO - FC	rad charac by GB-6,7 filter	
200 ml Freon TF	WO - MW	rad charac by GB-6,7 filter	
0.5 liter bottle - 200 ml water	WO - LIQUID	RPSD gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals, VOCs
1 can Buehler mold release #20-3046 ,silicone spray	WO - MW	rad charac by GB-6,7 filter	
Mineral oil intestinal lubricant, 200 ml	WO - LIQUID	rad charac by GB-6,7 filter	MSDS
Torr Seal - low VP resin - looks like tube of grease	WO - LIQUID	rad charac by GB-6,7 filter	MSDS
Glove box #8			
2 each - markers	WO - MW	RPSD gamma spec of all items bagged	MSDS
Glovebox #9			
Sharpie	WO - MW	rad charac by GB-9 filter	
Fume Hood			
1 bottle ethyl alcohol - 500 ml	WO - MW	RPSD - gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals
1 bottle methanol - 200 ml - contaminated	WO - MW	RPSD - gross alpha/beta, LAS - iso-alpha, gamma	LAS - total metals
1 bottle Shell EPON 815 resin - about 100 ml	WO - MW	RPSD gamma spec	MSDS
1 bottle Kodak Decahydronaphthalene - <100 ml	WO - LIQUID	RPSD - gross alpha/beta, LAS - iso-alpha, gamma	
LEGEND			
RPSD - Radiation Protection Safety Diagnostics Laboratory			

Potential Mixed Waste Item Inventory

Waste Item and Location	Potential Category	Rad characterization by :	Chem characterization by :
LAS - Lockheed Analytical Services Laboratory			
WO - SNL/NM Waste Operations			
FC - Freon contact			
MW - Mixed Waste			
TRU - Transuranic			
LLW - Low-level Radioactive Waste			

DIVIDER

PAGE

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: I1030
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☐ DR - Discrepancy Resolution ☑ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a]: Hot Cell Facility (HCF) Decontamination Plan	
Source Document Reference Information (author(s), document and revision number, date, publisher): NA, NA, NA, December 13, 1994, Scientific Ecology Group, Inc.	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR1, PR3, PR7, WS2, WS3, WS5, WS7, WS8, WS11, S8, S10, S14	Throughout	This document was produced by SEG for the decontamination project at the HCF. It includes the organizational structure, levels of authority, and lines of communication for the project. It states that it met SNL decontamination, nuclear safety, ALARA, and waste management requirements. The document has sections on work training, project engineering, facility decontamination, radioactive waste management, health and safety, and quality assurance. The scope includes the HCF in the basement of Building 6580, Zone 2A, Zone 2 (Rooms 111 & 112), the reactor rooms (rooms 108 and 109), and Room 212A. Four tasks were described. A HASP is included in the document as well as MSDS's for chemicals, and also a procedure list.

Source Document Data Limitations (if any):

1. None.

Acceptable Knowlege Expert:

STEVE SCHAFER

Print /Sign

Date: ~~1/12/2013~~ 1/12/2014 1/12/2014

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

NTPC RECORDS ORIGINAL
DATE REC'D 5/20/2014
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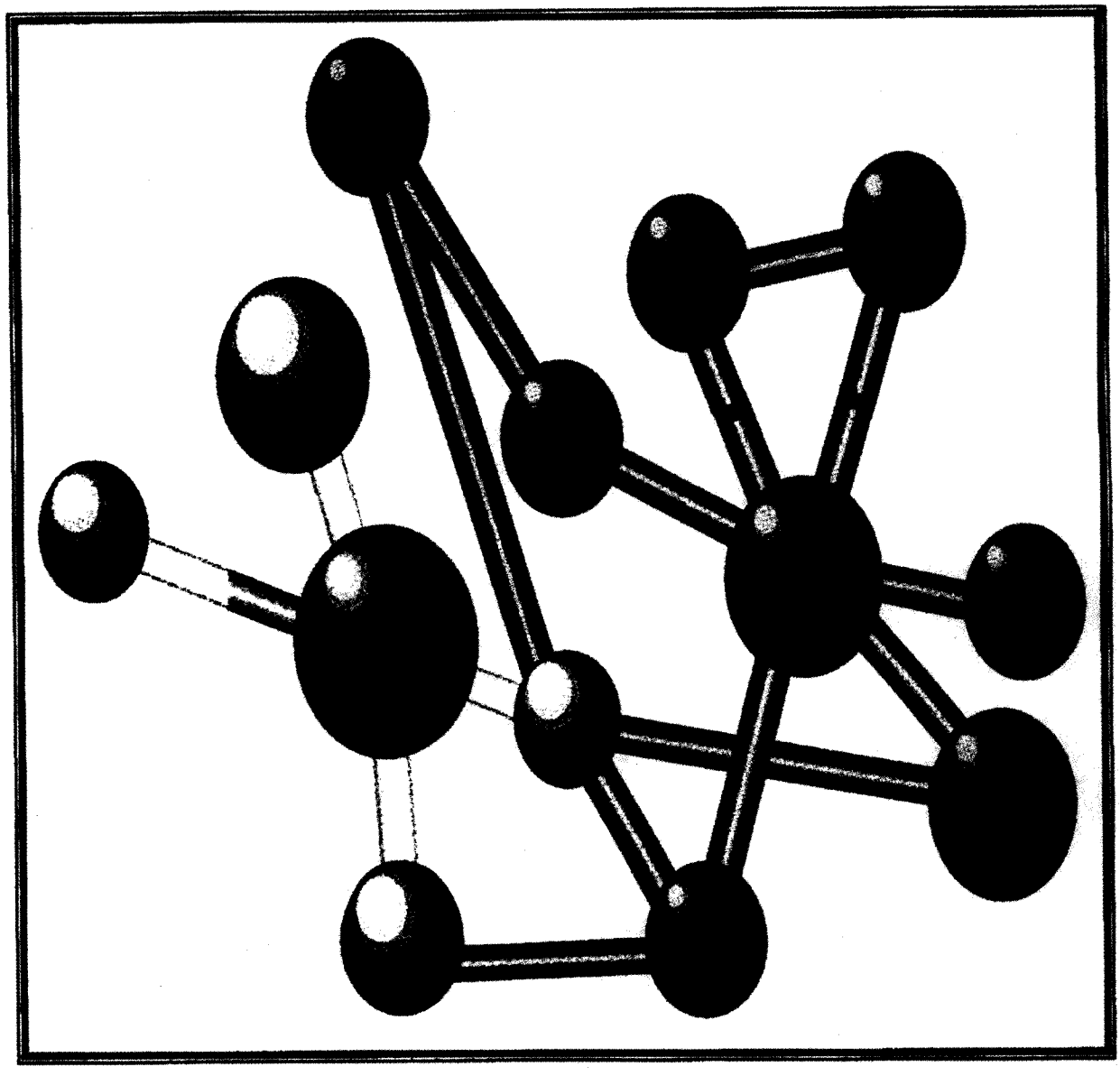
SANDIA NATIONAL LABORATORIES

Hot Cell Facility (HCF) Decontamination Plan



December 1994

SEG

Submitted by:
Scientific Ecology Group, Inc.
1560 Bear Creek Rd.
Oak Ridge, TN 37831

Sandia National Laboratories

Hot Cell Facility (HCF) Decontamination Plan

December 1994

Sandia National Laboratories

Hot Cell Facility (HCF) Decontamination Plan

Prepared by: _____ _____
Date

Reviewed by: _____ _____
Date

Reviewed by: _____ _____
Date

Reviewed by: _____ _____
Date

Approved by: _____ _____
Date

Approved by: _____ _____
Date

December 1994

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1.0 EXECUTIVE SUMMARY

Scientific Ecology Group, Inc. (SEG) has prepared this Decontamination Plan for the Area V Hot Cell Facility (HCF) at the Sandia National Laboratory (SNL). Decontamination of the HCF is part of HCF routine operations and will facilitate worker radiation dose reduction and waste management issues.

The SEG approach to the Decontamination Plan meets the SNL requirements for decontamination, nuclear safety, ALARA, and waste management activities, by providing an organizational structure, levels of authority, and lines of communication. This Decontamination Plan also provides for worker training, project engineering, facility decontamination, radioactive waste management, health and safety, and quality assurance. Due to the unique scope, complexity and nature of the activity, with elevated radiation and contamination levels, SEG will establish an effective interface with the SNL Hot Cell Facility management. This interface will insure confidence that actions taken will not compromise public health or the safety of project personnel.

The SNL ALARA Committee and the Radiological and Criticality Safety Committee (RCSC) will review and recommend approval of this plan and process, as directed in their charters.

This work is being done as part of HCF routine operations and maintenance. The tentative acceptance criteria for the HCF will be based on allowing future work in the area to be conducted with minimal protective clothing and reasonable stay-times. The tentative decontamination criteria are as follows:

Removable Alpha Contamination	< 100 dpm/100 cm^2
Removable Beta-Gamma Contamination	< 5,000 dpm/100 cm^2
General Area Dose Rate	< 5 mR/hr

Three main areas located in Building 6580 will be remediated: Zone 2A; Zone 2 (also referred to as rooms 111 and 112); and reactor rooms 108 and 109. HCF ventilation will also be dismantled and removed as necessary. Additionally, SEG will decontaminate room 212A, a small room located above reactor room 109.

Work will be broken down into 4 main tasks as described in sections 3.1 through 3.4. SEG will be responsible for all work conducted with facility support being provided by the SNL Environmental Safety and Health organizations, Facility Engineering, Security and 6500 Reactor Engineering Technology Center. SEG responsibilities include providing program implementation with appropriate personnel, documents and equipment for the following programmatic areas: worker training, project engineering, facility decontamination, radioactive waste management, health and safety, radiological assessment, and quality assurance. Work on tasks 1, 2, and 3 may be performed simultaneously depending on specific activities and manpower.

Work on task 4, ventilation system removal, will be deferred until all potential for airborne contamination in the ventilated areas has been removed. This will assure that the potential risk of an unmonitored or uncontrolled release of airborne activity is prevented. This task may require additional review and approval before commencement of work.

All radioactive waste generated as a result of decontamination activities will be characterized, packaged and stored in accordance with the SEG Waste Management Plan (see Section 10.0).

Based on the DOE requirements found in DOE Order 5480.21 - Unreviewed Safety Questions (12-24-94) there has been a preliminary determination that there are no Unreviewed Safety Questions (Negative-USQ). The HCF Safety Analysis Report (SAR) SAND 87-2480 (12/87) documents this scope of work through Task 4.

SAFETY DETERMINATION
and
SAFETY EVALUATION

December 13, 1994

ATTACHMENT 2
SAFETY DETERMINATION FORM

Organization 6500	Doc. No.	Rev. No.
Document Title Hot Cell Facility (HCF) Decontamination		

This Safety Determination form is required for all documentation subject to an Unreviewed Safety Question screening. Refer all questions to the Risk Management and NEPA Department (7258).

Part I: Document Screening	Yes	No
1. Is this a substantive change to a document involving revisions, modifications, and upgrades that affect safety; changes that alter functions, meaning, or intent of the document; or a new document?	X	
If YES, proceed to Question 2. If NO, then this procedure is not applicable and no further documentation is required. Obtain review and approval signatures and proceed with implementation.		
2. Does the documentation involve:	X	

- Temporary or permanent changes to a facility, its procedures or other activities and controls as described in facility safety analyses?
- Tests or experiments that are not described in the safety analyses?
- Maintenance activities that require deviation from a SAR procedure, place the facility in a condition where it functions differently than described in the SAR, or might violate a Technical Safety Requirement?
- Maintenance activities where the equipment described in the SAR is removed, its function altered, or if substitute equipment not procured to equivalent specifications is installed?
- Systems or components for which credit has been taken in the accident analysis and for which allowed out-of-service times are not specified in the Technical Safety Requirements?

If YES, proceed to Question 3.

If NO, then this procedure is not applicable and documentation of nuclear safety determination is not required. Obtain review and approval signatures and proceed with implementation.

ATTACHMENT 2
SAFETY DETERMINATION FORM (Cont'd)

Part II: Safety Determination	Yes	No
3. Does the change have the potential to adversely affect nuclear safety or safe facility operations? For example:		X
• Changes in structures, systems, or components (SSCs) that are not explicitly describe in SAR, but that affect the design, function, or method of performing the function of larger SSCs that are described in the SAR.		
• Changes to nonsafety-related equipment that can indirectly affect the capability of safety-related equipment to perform its intended function.		
• Changes that invalidate the *qualification* of components assumed or implied to function in the SAR.		
• Changes that could restrict access to vital areas of the facility, or impede activation of emergency response actions taken to mitigate the consequences of an accident.		
• Changes in facility status or conditions that arise during the modification implementation process and that have the potential to place the facility outside of its authorization basis (i.e., in an unanalyzed condition).		
4. Does the change require revision of any system or component description in the facility safety analyses?	X	
5. Does the change require revision of any procedural or operating description in the facility safety analyses?	X	
6. Does the change involve any tests or experiments that are not described in or enveloped by the facility safety analyses?		X
7. Does the change conflict with the facility Technical Safety Requirements?	X	

If any of the answers to Questions 3, 4, 5, 6, or 7 are YES, prepare a written safety evaluation (Attachment 3).

If the answers to Questions 3, 4, 5, 6, AND 7 are NO, this precludes the occurrence of an Unreviewed Safety Question or Technical Safety Requirements change. However, written statements which support the NO answers must be provided. Use separate sheets for documenting your statements and attach them to this form.

ATTACHMENT 2
SAFETY DETERMINATION FORM (Cont'd)

SIGNATURES	DATES
Originator	
Independent Reviewer	
Facility Owner	

ATTACHMENT 2

See Figures 1 and 2 for facility location and floor plan.

3. No. This decontamination task in for the purpose of removing the significant portion of the radioactive source term in the HCF. See responses to Attachment 3.

4. No. This decontamination task is discussed in Chapter 11 - HCF Decontamination - Sandia Hot Cell (HCF) Facility Safety Analysis Report (SAR) (12/87) SAND87-2480. The full scope of decontamination was projected under this SAR.

ATTACHMENT 3
SAFETY EVALUATION FORM

Part I: Introduction

1. *Describe the proposed change, test or experiment (hereafter referred to as "issue") being evaluated and its expect effects.*

Response:

Decontamination and waste removal activities are being performed in the Hot Cell Facility (HCF) located in the basement of Building 6580 at Sandia National Laboratories (SNL). This decontamination is part of the HCF routine operations and maintenance.

Three main areas located in Building 6580 will be remediated: Zone 2A, Zone 2 (also referred to as Rooms 111 and 112), and Reactor Rooms 108 and 109. HCF ventilation will also be dismantled and removed as necessary. Additionally, Scientific Ecology Group (SEG) will decontaminate Room 212A, a small room located above Reactor Room 109.

Work will be broken down into four main tasks. SEG will be responsible for all work conducted with facility support being provided by the SNL ES&H Organization, Facilities, Security, and Organization 6500. SEG responsibilities include providing program implementation with appropriate personnel, documents, and equipment for the following programmatic areas: worker training, project engineering, facility decontamination, radioactive waste management, radiological assessment, and quality assurance. Work on Tasks 1, 2, and 3 may be performed simultaneously depending on specific activities and manpower.

This decontamination task will result in a dramatic source reduction of the HCF. The goal of this decontamination is to remove the radioactive contamination and radioactive material to a level such that entry into Zone 2A can be done with little or no protective clothing.

2. *Identify the parameters, system, etc., affected by the issue.*

Response:

Systems impacted by this issue include the fire suppression and the ventilation systems. Formal approval of the RCSC will be required prior to breaking the integrity of the SCBs or shutdown and removal of the building ventilation system. These mandatory hold points will ensure formal presentation and review of the operational and radiological condition of the facility prior to authorized removal. The SNL Fire Protection Department (7734) is part of this task review process and will also be providing oversight during the decontamination activity. All systems impacted will be evaluated and approval will be obtained by the SNL organization responsible for regulatory compliance and status of that system. Full compliance to the HCF Operational Safety Requirements (OSRs) SAND88-1723 (12/88) will be met.

3. *Identify the credible failure modes associated with the issue:*

Response:

Prior to any system removal or breech, the radioactive source term will be removed from the HCF. Adherence to this requirement will assure that the only credible failure modes associated with this issue are those already presented in the Sandia Hot Cell Facility (HCF) Safety Analysis Report (12/87) SAND87-2480.

4. *List the references used for this safety evaluation.*

Response:

1. Hot Cell Facility Decontamination Plan, December 1994
2. Sandia Hot Cell Facility (HCF) Safety Analysis Report (SAR) (12/87) SAND87-2480
3. Sandia Hot Cell Facility (HCF) Operational Safety Requirements (12/88) - SAND88-1723

Part II: Potential for Increased Likelihood of Occurrence or Consequences of Design Basis Accidents

5. *Identify the design basis accidents (DBAs) potentially impacted by the issue.*

Response:

No design basic accidents (DBAs) are impacted by this issue. Source term removal will render all DBAs scenarios equivalent to their non-nuclear counterparts.

6. *Discuss how the affected parameters, systems, etc., identified in Part I impact the consequences of the DBAs.*

Response:

Decontamination of areas and components of the Hot Cell Facility are recognized in Chapter 11 of the Sandia Hot Cell Facility (HCF) Safety Analysis Report (SAR), SAND87-2480, as the logical series of events required for facility refit decontamination or decommissioning. Source term removal, decontamination, and system removal performed in that order, prelude the consequences of the DBAs (See Chapter 11 - HCF Decontamination attached).

*Based on 6 above, does the proposed change, test, or experiment increase the consequences of a DBA? Yes ___ No _X_*

11. HCF DECONTAMINATION

At some time in the late 1980s or early 1990s, there will be a possibility that the HCF's activities will be curtailed, and the facility will be either decommissioned or replaced by a new facility. Should this happen, the HCF will be decontaminated and restored to a clean, nonhazardous state that would permit general usage.

11.1 Decontamination

11.1.1 Responsibility

The Health Physics Division is responsible for directing HCF decontamination operations. This organization will determine the need for decontamination, the method employed, and supervise the safe conduct of the decontamination.

11.1.2 Areas and Components

Portions of the HCF that may require decontamination include the SCBs, the interior of the HC, HEPA filter encasements, and portions of the filter system ducts. The glovebox line and the independent gloveboxes may also require decontamination, in whole or in part, as requirements change.

11.1.3 SCBs

The SCBs will be decontaminated, disassembled, and cut up for disposal as solid radioactive material in an approved burial ground.

11.1.4 HC Interior

Any residual radioactive material on the interior of the HC walls will be removed by scraping, scrubbing, washing, etc. If appropriate, the interior will be repainted in order to seal the walls and reduce the residual radioactivity level within the HC to near background levels. It is highly unlikely that the HC interior would ever become so contaminated that these efforts would not suffice for decontamination purposes.

11.1.5 HEPA Filter Encasements

The HEPA filter encasements would be removed if there were a need to do so. They would be cut up and disposed of in the same manner as the SCBs (Section 11.1.3).

7. *Identify the DBAs, if any, for which failure modes associated with the issue can be an initiating event.*

Response:

None. This decontamination task will remove the radioactive source term. The decontamination criteria are as follows:

Removable Alpha Contamination	< 100 dpm/100 cm^2
Removable Beta-Gamma Contamination	< 5,000 dpm/100 cm^2
General Area Dose Rate	< 5 mR/hr

8. *Discuss the impact of such initiating events on the likelihood of occurrence of these DBAs.*

Response: **N/A**

Based on 8 above, does it increase the likelihood of occurrence of a DBA?
Yes _____ *No* X

SEE RESPONSE TO #7

9. *Identify the safety functions and safety systems that are affected, either directly or indirectly, by the issue.*

Response:

- SCB fire suppression system
- Building ventilation system

10. *Discuss the impact of the issue and/or the failure modes associated with it on the likelihood of failure of the system identified in 9.*

Response:

None. The facility SAR must be revised, approved, and reissued prior to recommencement of radiological operations at this facility.

Based on 10 above, does it increase the likelihood of a malfunction of a safety system?
Yes _____ *No* X

11. Discuss the impact of the issue on the performance of the systems identified in 9.

Response: **None** - The facility SAR must be revised , approved, and reissued prior to recommencement of radiological operations at this facility.

Based on 11 above, does it degrade the performance of a safety system below that assumed in the design basis analysis? Yes _____ No __X__

12. Discuss any other nuclear safety/safe facility operation consideration associated with the issue.

Response:

None. The facility SAR must be revised, approved, and reissued prior to recommencement of radiological operations at this facility.

Based on 12 above, does it, in any way, adversely affect nuclear safety or safe facility operations? Yes ____ No __X__

Part III: Potential for Creation of an Unanalyzed Event

13. Based on Part II, assess the impact of the issue and/or associated failure modes to determine whether this impact would modify the facility DBA response to such a degree that the issue should be considered a new type of accident. Discuss the basis for this determination.

Response:

(See Discussion Nos. 9, 10, and 11)

14. Determine whether the failure modes of equipment are important to safety associated with the issue and represent an unanalyzed type of malfunction. Discuss the basis for this determination.

Response:

(See Discussion Nos. 9, 10, and 11)

15. Determine whether the issue, or a failure mode associated with it, increases the probability of any accident outside the authorization/design basis to the point where it should be considered within the authorization/design basis.

Based on 13, 14, or 15 above, does it create the potential for an unanalyzed accident or malfunction? Yes ___ No ____X____

Part IV: Impact on the Margin of Safety

16. Based on the results identified in Part II, discuss the impact of the consequences on the protective boundaries (e.g., limiting control settings, safety limits, etc.).

Response:

(See Responses 1 - 6)

Based on 16 above, do the modified DBA responses associated with the proposed change, test, or experiment exceed the protective boundaries?
Yes _____ *No* __X__

This decontamination task will result in a radiological source reduction.

17. Identify how the protective boundaries, if any, are directly affected by the issue or an associated failure mode.

Response:

(See Responses 1 - 4)

18. Discuss the impact of the issue on the acceptance limits for the protective boundaries identified above.

Response:

None. Limiting conditions for operations will be adhered to and all required surveillances performed. Deviations will be reviewed by the RCSC.

19. Identify the margins of safety related to this issue that are defined in the bases of OSR. Compliance to the OSRs will be mandatory. Sandia Hot Cell Facility (HCF) Operational Safety Requirements SAND88-1723. Any deviations will be reviewed and approved by the RCSC.

Based on 17, 18, and 19 above, does the proposed change, test, or experiment reduce the margin of safety provided for the protective boundaries?
Yes _____ *No* __X__

ATTACHMENT 3
SAFETY EVALUATION FORM (Cont'd)

Based on 19 above, does it reduce other margins of safety in the bases for the Technical Safety Requirements that are not related to the boundaries? Yes___ No___

Part V: Safety Evaluation Conclusion

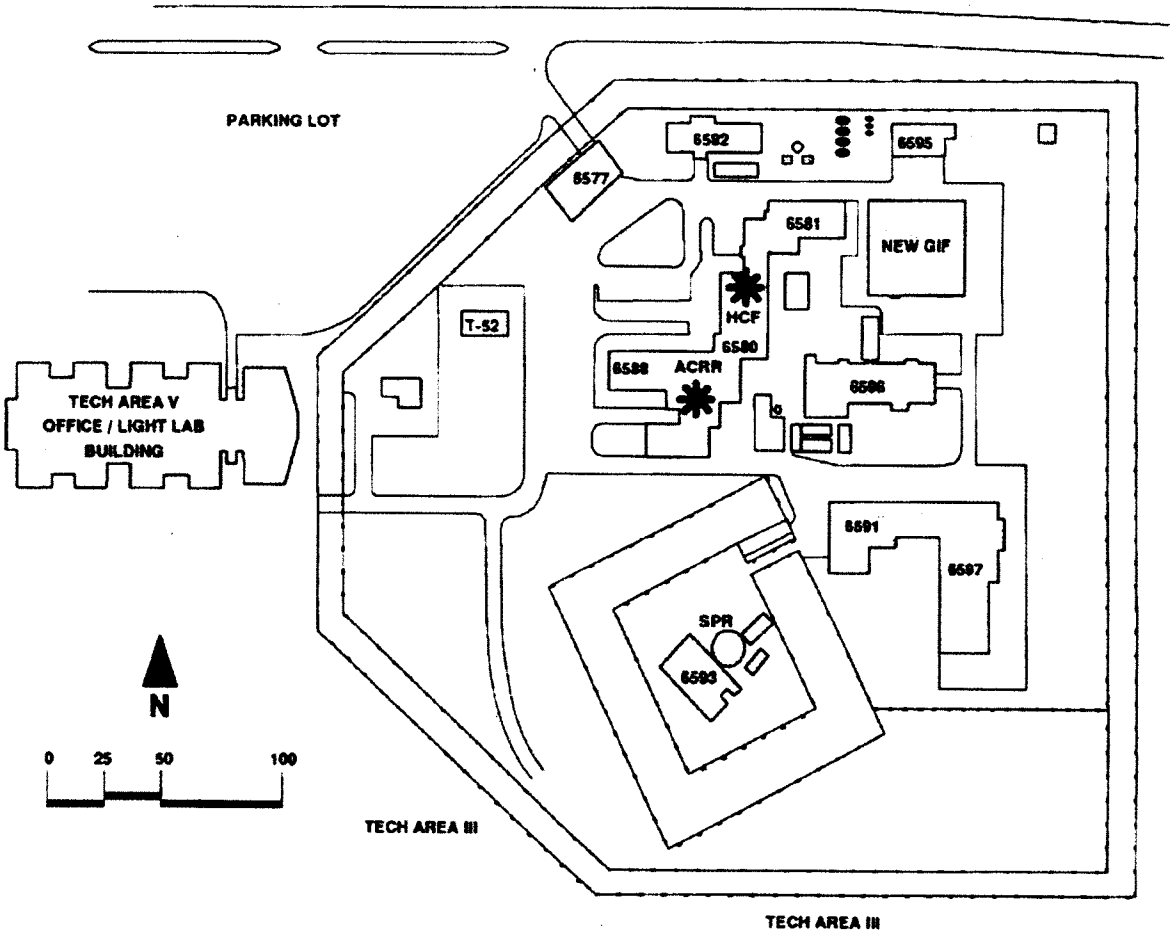
Based on the evaluation in Parts I through IV, the proposed change, test, or experiment

_____ Does not constitute an Unreviewed Safety Question

_____ Does constitute an Unreviewed Safety Question

SIGNATURES	DATES
Originator	
Independent Reviewer	
Risk Management and NEPA Department	
Facility Owner	

FIGURE 2


PARKING LOT
6577
6592
6595
6581
NEW GIF
HCF
6580
T-52
6588
ACRR
6586
TECH AREA V
OFFICE / LIGHT LAB
BUILDING
6591
6587
SPR
6593
N
0
25
50
100
TECH AREA III
TECH AREA III

3.0 SCOPE OF WORK

SEG will perform decontamination and waste management activities in the Hot Cell Facility (HCF) located in the basement of Building 6580 at Sandia National Laboratories (SNL). This work is being done as part of HCF routine operations and maintenance. The tentative acceptance criteria for the HCF will be based on allowing future work in the area to be conducted with minimal protective clothing and reasonable stay-times. The tentative decontamination criteria are as follows:

Removable Alpha Contamination	< 100 dpm/100 cm^2
Removable Beta-Gamma Contamination	< 5,000 dpm/100 cm^2
General Area Dose Rate	< 5 mR/hr

Three main areas located in Building 6580 will be remediated: Zone 2A; Zone 2 (also referred to as rooms 111 and 112); and reactor rooms 108 and 109. HCF ventilation will also be dismantled and removed as necessary. Additionally, SEG will decontaminate room 212A, a small room located above reactor room 109.

Work will be broken down into 4 main tasks as described in sections 3.1 through 3.4. SEG will be responsible for all work conducted with facility support being provided by the SNL Environmental Safety and Health organizations, Facility Engineering, Security and 6500 Reactor Engineering Technology Center. SEG responsibilities include providing program implementation with appropriate personnel, documents and equipment for the following programmatic areas: worker training, project engineering, facility decontamination, radioactive waste management, radiological assessment, and quality assurance. Work on tasks 1, 2, and 3 may be performed simultaneously depending on specific activities and manpower.

Work on task 4, ventilation system removal, will be deferred until all potential for airborne contamination in the ventilated areas has been removed. This will assure that the potential risk of an unmonitored or uncontrolled release of airborne activity is prevented. This task may require additional review and approval before commencement of work.

Prior to mobilization, SEG will prepare work plans and procedures which will provide the guidelines for all on-site work. SEG will mobilize personnel (see Section 2.0) and equipment (see Section 4.0) needed to perform work, and procedures necessary to control key aspects of the work (see Section 7.0). Any radiological, safety or other training needed for on-site personnel will be conducted as part of mobilization activities and on an as needed basis. Specific work packages and radiation/hazardous work permits (RHWP) will be prepared prior to work on each task and/or subtask. ALARA job reviews will be performed as required by the SEG ALARA program/procedure.

All radioactive waste generated as a result of decontamination activities will be characterized, packaged and stored in accordance with the SEG Waste Management Plan (see Section 10.0).

3.1 Task 1 - Zone 2A

Initial work activities in Zone 2A will start with the establishment of area contamination controls. This will include the set up of contaminated area boundaries, postings, waste receptacles and step-off pads. Personnel monitoring stations will be established within easy access of the step-off pad for the performance of personnel frisking during egress.

Baseline surveys and sampling will be performed to provide necessary waste characterization and source term data of the work area. Upon completion of surveying and sampling and the establishment of source terms, decontamination activities will commence. Activities will include dose rate mitigation such as radioactive waste removal, hot component relocation, and basic clean-up of source materials. All waste/components removed will be packaged for storage and/or disposal in accordance with Waste Operations instructions, the Waste Management Plan, or controlling procedure. Internal surfaces of the steel containment boxes (SCB) will require decontamination; preparation for this activity will include establishment of temporary utilities to support the effort. Ventilation systems, electrical service, lighting and a vacuum system will be made operable or auxiliary systems installed. Existing services will be tagged out if required. The interior windows will be protected, and the manipulator arms will be withdrawn for servicing. Final preparation will include the permanent disconnection of existing services.

The levels of smearable contamination on the interior SCB surfaces are anticipated to be extremely high. After SCB dose rates are minimized ($\leq$ 100 mrem/hr) contamination fixation (the application of a strippable or permanent coating) will be employed to stabilize the smearable contamination and mitigate airborne hazards associated with SCB disassembly activities. Pre-coating decontamination will likely be required using aggressive methods to achieve the desired results. Strippable coatings, hands-on decontamination, sponge-jet blasting and grit blasting are methods which may be used.

Cutting preparation will include providing negative ventilation and fire suppression protection for the area. Before disassembly of the SCB's a review of the potential impact with respect to environmental releases will be evaluated. Disassembly of the SCB will be accomplished by sectioning, utilizing a combination of plasma torch cutting and mechanical grinding. Each section will be cut leaving only the rigging tabs in place. Once the SCB is sectioned, the rigging tabs will be cut and the sectioned pieces placed in storage containers in the Zone 2A canyon.

Following SCB removal, the next scheduled activity is the decontamination of the canyon surfaces. Temporary HEPA ventilation will be established as necessary to support decontamination efforts. Multiple decontamination technologies will more than likely be required to reduce the contamination levels below the acceptance criteria. The walls, floor, ceiling and elevator/upper shaft will require decontamination.

Additional component removal will be required to complete the work activities in Zone 2A. The overhead crane, crane rails, overhead components, and floor rails will all need to be removed, sectioned and packaged as required. The last task will be removal of the interior airlocks.

3.2 Task 2 - Rooms 108 and 109

This task primarily involves the removal of radiation sources and loose surface contamination from the rooms. Work in room 108/109 areas may be accomplished in parallel with Zone 2A decontamination activities. Initial preparation tasks will be similar in nature to those for Zone 2A, including the establishment of contamination controls, baseline surveys and source term identification. Dose rate reduction for rooms 108 and 109 will differ from Zone 2A due to the higher dose rates of radioactive components in the area. An engineering evaluation will be performed to establish the criteria for removing, sectioning and packaging the control rod drive blades and other items located in room 109. A project delay for room 109 activities is anticipated due to the ongoing Zone 2A work and engineering design and evaluation requirements. Room 108 pre-job surveys will commence at that time.

All components in room 108 will be removed, packaged and transferred to a designated storage location. Room 108 will then be decontaminated as required. One week will be dedicated to the transfer of high level waste to an outside storage area.

The last activity for task 2 will include the decontamination of room 109 to below the acceptance criteria. A pre-decontamination survey will be performed followed by the manual cleaning of all the interior surfaces. A non-porus coating will be applied to fix removable contamination. This step will conclude all work associated with rooms 108/109.

3.3 Task 3 - Zone 2 (Rooms 111 and 112)

Work activities for rooms 111 and 112 is tentatively scheduled to start approximately nine weeks after the start of the project. The initial tasks will be similar to those in the first two areas including establishing contamination controls, performing baseline surveys and source term identification.

Since the main work task in this area will be to remove the shielded and low activity gloveboxes, a secondary containment will be constructed around each shielded glovebox to prevent uncontrolled airborne releases during disassembly and equipment removal activities. Dose rate reduction activities will start when the secondary containment is established; this will include the removal of all debris and equipment from within the gloveboxes. All waste materials will be packaged immediately following removal.

A gross decontamination of the interior glovebox surfaces and the application of a **coating to fix removable contamination will be performed in preparation for glovebox disassembly.** A tag-out of all box services (air, water, electricity and ventilation) will be performed per procedure. Once the services are verified as tagged out they will be permanently disconnected; this will require the installation of a temporary HEPA ventilation unit for airborne contamination control.

Disassembly of the shielded gloveboxes will begin with the removal and disposal of shielding materials. Glovebox construction disassembly/sectioning methods are as yet to be determined. All waste generated during disassembly will be rigged and packaged as required. The filled packages will be removed from the area and stored.

Low activity glovebox disassembly and removal will incorporate the same sequence of events as the shielded units. The unshielded glovebox work will be expedited due to the lack of shielding and construction hardware. All waste will be packaged and transferred to a designated storage location.

Upon completion of the glovebox disassembly and waste removal activities, rooms 111 and 112 will be decontaminated as required. Post removal and decon surveys will be performed to provide updated radiological data.

3.4 Task 4 - HCF Ventilation System

all other decontamination work activities

Ventilation system removal has been separated from other work activities to be completed as a separate task. **The removal of the ventilation system will be the last activity associated with the project due to the need for ventilation during the decontamination activities.** It must be noted that the ventilation system or auxiliary system be in operation during the work activities. Disassembly will begin at the most outer areas and move progressively toward the main ventilation unit.

Initial preparation activities will include the assembly of scaffolding to permit safe access to the elevated work areas. Initial surveys will be performed to determine the levels of contamination in the ductwork. This will dictate the controls and/or decontamination requirements for removal. **Ducting will be cut into 4-foot sections, and loaded into an approved container for storage and disposal.**

Bold → Task 4- is a hold point, which will be reevalated before commencement of this operation, ~~[illegible]~~ this is to assure that this task will not affect the Safety Analysis documentation for the HCF.

ATTACHMENT 3.1
TENTATIVE SCHEDULE

TECHNICAL APPROACH - PRE MOBILIZATION
SANDIA HOT CELL FACILITY (HCF) PROJECT

Week 1 - 4	Project Planning
Week 1 - 4	Project Equipment Procurement
Week 1 - 2	Project Staffing/Mobilization Preps
Week 3 - 4	Training

TECHNICAL APPROACH - AREA 2 & 2A
SANDIA HOT CELL FACILITY (HCF) PROJECT

Week 5	Contamination Controls Baseline Survey Source Term Reduction
Week 6-7	Dose Rate Mitigation Steel Containment Boxes (SCB) Remove Components Package and store waste
Week 6-9	Contamination Reduction Preparations Temporary Utilities Ventilation, Electrical, Lighting, Vacuum Tagout Existing Services Protect Interior Windows Withdraw Manipulator Arms Remove Existing Services
Week 9-10	Contamination Fixation Strippable Paint Household Paint
Week 10-11	Contamination Removal Activities Strippable Paint Removal Hand Decon Pressure Washing Sponge-Jet Abrasive Blasting CO^2 Blasting
Week 12-14	Steel Containment Box Disassembly Negative Ventilation Fire Suppression Primary Cutting Plasma Torch Mechanical Grinder Install Rigging Tabs Rig Box Plates Cut Rigging Tabs Stage Shipping Container in Alley Remove Box Plates to Shipping Container

TECHNICAL APPROACH - AREA 2 & 2A
SANDIA HOT CELL FACILITY (HCF) PROJECT

Week 15-19	Decontaminate Alley Surfaces Install Auxiliary Ventilation Scabble Floors Install Scaffolding Hand Abrasive Cleaning of Walls/Ceiling Mechanical Abrasive Blasting Vac Pack Sponge-Jet Decontaminate Elevator/Upper Shaft Post Decon Survey Remove Scaffolding
Week 20-21	Remove Overhead Crane/Rails Install Scaffolding Rig Overhead Components Disassemble Overhead Components Remove Scaffolding Remove Floor Rails Remove/Decon/Reinstall Wall Plugs
Week 22-23	Removal of Interior Airlocks

TECHNICAL APPROACH - BASEMENT, ROOM 108/109
SANDIA HOT CELL FACILITY (HCF) PROJECT

Assumptions	Special Nuclear Material has been removed by SANDIA Work will commence in parallel with area 2A work SANDIA will have removed north truck bay wall Maintenance on all shield door hydraulics will be complete Reactor vessel remains intact
Week 5	Contamination Controls Baseline Survey Source Term Identification
Week 6-9	Dose Rate Mitigation Engineering Room and Component Shields Control Rod Blades Containment Plan Shield/Remove Components Project delay for room 109 Wait for cask delivery Wait for completion of Area 2A activity
Week 9-13	Complete equipment removal in room 108 Pre Job Survey Package Equipment Removal and Store Packages Manual Decon Turnover Survey
Week 13-14	Contamination Reduction
Week 15-16	Transfer high rad material to outside storage
Week 17-18	Decon of room 109 Pre decontamination survey Manual Cleaning of Walls/Ceiling Strippable Coating Application Post Decon/turnover Survey

TECHNICAL APPROACH - EXTERIOR GLOVE BOXES ROOMS 111 AND 112
SANDIA HOT CELL FACILITY (HCF) PROJECT

Assumptions	Special nuclear material has been removed by SANDIA Work will commence after work is complete in 2A, 108, and 109 SANDIA will have removed north truck bay wall
Week 14	Contamination Controls Verify Glove Integrity Baseline Survey Source Term Identification Construct Secondary Containment Around Glove Boxes
Week 15-17	Dose Rate Mitigation Remove Interior Debris and Equipment Conduct Gross Decon of Interior Apply Interior Fixative
Week 17-19	Large Glove Box Disassembly Tag Out Services Disconnect Services Connect Temporary Ventilation Remove Shielding Disassemble/Section as required Rig for Packaging Transfer Package waste Remove and store waste Small Glove box Disassembly Tag out services Disconnect services Connect temp ventilation Disassemble and package Remove and store packages
Week 20-21	Decon of glove box area in rooms 111 and 112 Post removal survey Manual cleaning of walls Strippable Coating and/or fixative application Post Decon/turnover Survey

TECHNICAL APPROACH - VENTILATION DUCTS REMOVAL
SANDIA HOT CELL FACILITY (HCF) PROJECT

Week 20-22	Remove Ventilation Ducts in Rooms 111 and 112 Cut in 4 foot sections for disposal Dispose in sealand containers Transport to Oak Ridge for melting Install new HEPA filters and prefilters
Week 23-25	General cleanup and demobilzation
Week 26	Final turnover survey

4.0 FACILITY DESCRIPTION AND EQUIPMENT/MATERIALS

DRAFT

4.1 Facility Description

The Hot Cell Facility (HCF) is located in the basement of Building 6580 located in Area 5 of the Sandia National Laboratory in Albuquerque, New Mexico. The HCF consists of Zone 2A, Zone 2 and the reactor rooms 108 and 109. The HCF as it currently exists in shown in Figure 4-1.

Zone 2A is the "cell" portion of the HCF and contains the three steel containment boxes (SCB). The floor, walls and ceiling of Zone 2A are concrete 0.6 to 1.1 meter thick to shield the high exposure rates in the area. Lead glass windows in the east and west walls and slave manipulators allow for remote work in the area. Large body access to the area is allowed through the airlock on the north end.

Zone 2 is a controlled access area consisting of rooms which nearly surround Zone 2A. Low activity gloveboxes and two shielded containment boxes are located in rooms 111 and 112 which are to the east of the hot cell. An airlock located between the vehicle ramp and the south end of room 111 provides large body access to Zone 2.

Rooms 108 and 109 are adjacent to each other on the northwest side of Zone 2A. Entrance to these rooms is through a hydraulic, magnetite concrete door. Room 108 contains empty casks and drums containing special nuclear material which will be removed by Sandia. Room 109 contains very high exposure rates from a shut-down, free air reactor and control rod blades which are suspended from the ceiling.

Ventilation systems run from the areas to the Mechanical Equipment Room (MER) above the HCF. The MER is not occupied, and access is restricted by a padlock.

4.2 Equipment/Materials

A wide variety of survey equipment and decontamination equipment is required to complete the decontamination project. Portable survey instruments that will be used include the Model 2350 datalogger with various detectors, low volume air samplers, hazardous gas detectors, Model 19 μR meter, Model 177 frisker and a portable ion chamber. Semi-portable survey instruments include alpha/beta counters for smear analysis. Laboratory analysis capabilities such as alpha/beta counter for smears and a gamma spectroscopy system with all associated equipment will be supplied by SNL for health and safety purposes. A personal contamination monitor will also be provided by SNL.

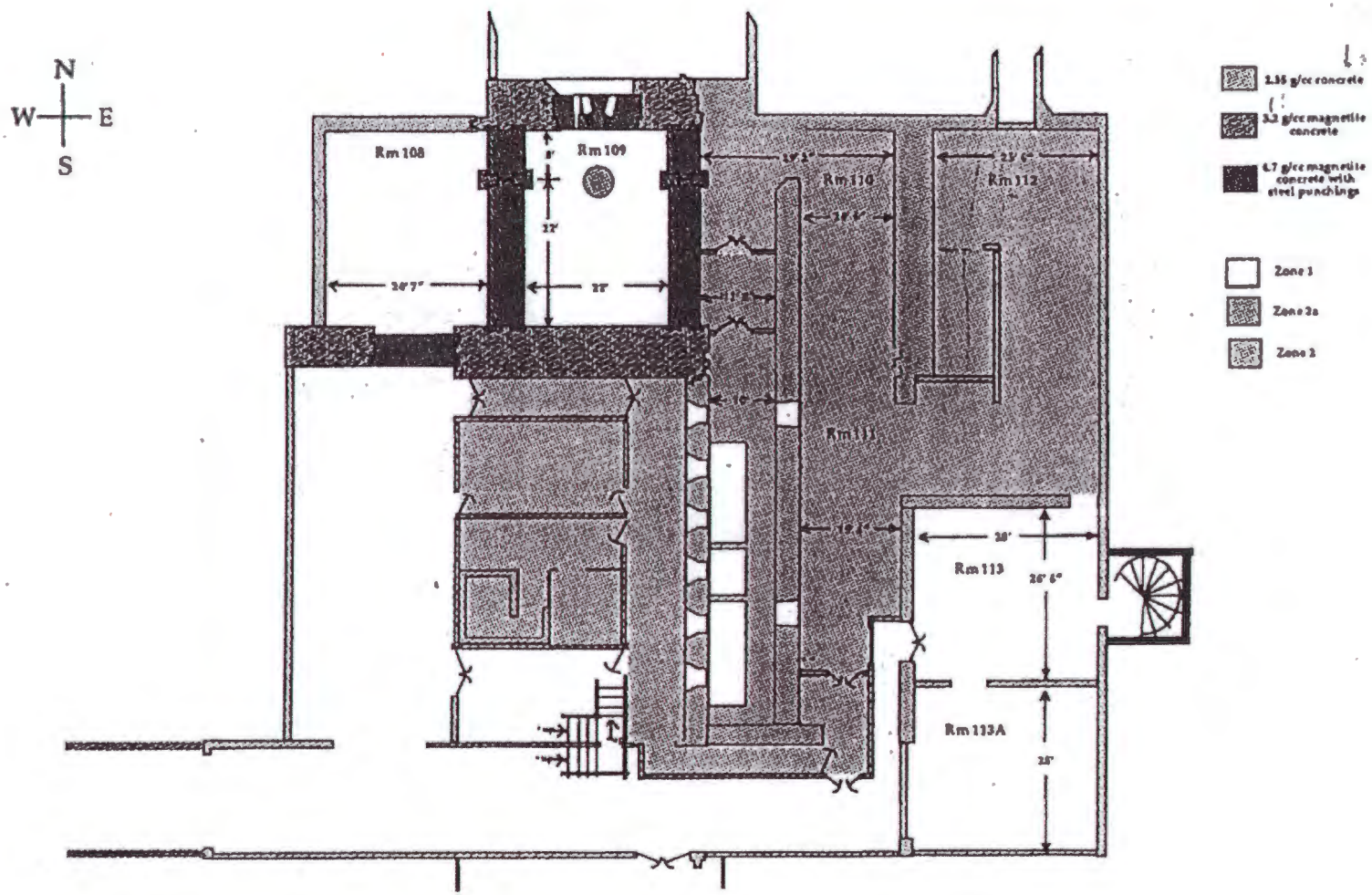


Figure 4-1
Hot Cell Facility

For decontamination, several mechanical and/or chemical technologies may be used such as grit blasting or strippable coatings. This equipment will be provided by SEG as needed (i.e., as the appropriate technology is chosen for each area). The SEG Decontamination Manual will be used by the project team to select the most effective method for decontamination as better radiological characterization data is made available. This manual provides complete descriptions of decontamination equipment that may be used for this project.

Other materials will be necessary for the work to be properly conducted. Personal protective and safety equipment such as protective clothing, spill kits, an emergency eye wash, first aid kits, fire extinguishers, etc. will be available at or near each work area. Laboratory and sampling materials such as smears, planchets, etc. will be kept near the analysis equipment. Other miscellaneous consumables, rad postings, office supplies, etc., will be maintained in the SEG supply area. Attachment 4.1 contains a tentative list of equipment, services and consumables for performance of the work.

4.3 Other Requirements

All work will require HEPA filtered, negative ventilation; the existing ventilation will be used for remediation prior to any work on the ventilation system itself. SEG will require access to building electricity and plumbing. It is not anticipated that any other HCF systems will be affected by the remediation except to be temporarily shutdown if necessary for remediation (e.g., lockout/tagout of electricity in order to work on machinery) or in the event of an emergency.

ATTACHMENT 4.1
EQUIPMENT AND SUPPLIES

SCIENTIFIC ECOLOGY GROUP, INC.
SANDIA NATIONAL LABORATORIES
DECONTAMINATION / GLOVEBOX

EQUIPMENT / EQUIPMENT RENTAL :

Eberline - Portable Alpha Counter, Model SAC-4 :
Eberline - Portable Beta Counter, Model BC-4 :
DCA Dosimeter Charger, Model 909 :
Eberline - Portable Ion Chamber instrument, Model R02 :
F&J -5 Personal Air Samplers w/calibrator charges & carry case
F&J Low Volume Air Samplers w/ spare sample heads :
HEPA ventillation Unit, 2,000cfm
HEPA ventillation Unit, 5,000cfm
Portable HEPA-glove box
Ludlum - Portable Frisker, Model 177 w/44-9 probe & hard case :
NE Technology CM7A Alpha/Beta Frisker w/DP5HA probe & stand :
Field Service Tool Kit
Teletector
Portable arms
Cams
Alarming dosimeter
Teldose system
High range SRDS
Low range SRDS
TMX
Mini ram
SLM
486 Computer System :
Notebook computer :
HP Laser Jet Printer
Fax machine
Copier

CALIBRATION / SOURCES :

Alpha/Beta Counter BC-4 & SAC-4 :
Calibration & Repairs

MATERIALS & SUPPLIES:

Telephone Service
Beeper Service
Video Monitor
Misc / Fed X, etc.
Intercoms
Base stations
Radios / Head sets
Jacking tower
Pallet jacks
Cask transfer device
Floor Scabblers
Grit/sand blaster
Bicarbonate blaster
Vacuums
In-line air monitors

SCIENTIFIC ECOLOGY GROUP, INC.
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ISUMABLES

Coveralls, Tyvek, Disposable w/hood & boots
Coveralls, Saranex, zipper front, w/hood & boots
Gloves, canvas w/knit wrist; white
Gloves, liners-pairs, cotton
Hard Hats
Shoe covers, rubber, yellow, totes
Rubber Gloves
Inserts, yellow and magenta, "Airborne Radioactivity Area"
Inserts, yellow and magenta, "RWP Required for Entry" Pol
Inserts, yellow and magenta, "Radioactive Material"
Inserts, yellow and magenta, "Radiation Area", Polystrene
Inserts, yellow and magenta, "Contaminated Area"
Inserts, yellow and magenta, "Respiratory Protection Requir
Inserts, yellow and magenta, "Notify RP prior to entry"
Inserts, yellow and magenta, "Hot particle area"
Sign, 5 pocket, "caution", yellow and magenta, PVC
Tape, Barricade, 3/4" X 150' yellow/magenta/yellow
Copy Paper
Poly bags 36" X 48" X 4 mil clear no print
Poly bags 36" X 48" X 4 mil yellow "Caution Rad. Mat"
Yellow Bags 18" X 24"
Ziplock Bags, 4"X6"X4 mil., clear
Air Sample Filters
Ear plugs, foam, disposable
Extension Cord, heavy duty, ind. 50'
First Aid Kit
Flash Lights, heavy duty, ind. 2 cell
Masslin 18" X 24"
Masslin mop w/handle
Pad locks, heavy duty, keyed alike
Q tips 6" or 8" long
rubbing Bubbles
1 Pak bag, 4 1/2" X 9" X 4" clear
chets, aluminum C5A
Rope, Rad, yellow & magenta 600'
Quality safety glasses
Smears
Step off Pads 18" X 36", tacky blue 4/box
Step off Pads, pull off sheets printed "remove all protect...."
Tacky Mat 24" X 36"
Duct Tape
Tygon Tubing 1/8" X 1/4" 100'
Air Hose, 100'
HEPA cartridges
HEPA Filters (110010)
Pre- Filters (760598)
HEPA Filters (110001)
Pre- Filters (805057)
MSA Hip-Air Breathing App.
North Duo Twin
Breathing box
Hand Truck
Alkaline Battery "9V"
Alkaline Battery "D"
Drum Lifter / Dispenser
Stanchion
Air Sample Labels
1 Liter Marinelli beaker w / lids
Liquid Nitrogen
Rad Decon Pads
Emergency eye wash station
Hazardous material spill kits
Fire extinguisher
Fire monitors
Paper towels
ray bottles
t Balance
Vials
LSC Coctails
HEPA Charcoal Filters
Ventilation Hose (500 feet)
Sheet Metal Cutters

SCIENTIFIC ECOLOGY GROUP, INC.
SANDIA NATIONAL LABORATORIES
DECONTAMINATION / GLOVEBOX

CONSUMABLES cont'd.
Electric Sheet Metal Cutters
Back Belts
Sawzzall
Outlet Boxes
Lights
gfis
Scaffolding
Platforms
Safety Belts
Slings
Shackles
Tool decon box
Strippable paint
Containers
Misc. tools
Lens Kits
Welding glasses
Welding aprons
Welding hoods
Sand blast hoods
Safety shoes
Knee pads

SUBCONTRACTS
Sample Analysis

5.0 SAFETY ANALYSES

5.1 Decontamination Activities Safety Impact

A review of the work tasks and materials to be used for the Hot Cell Facility decontamination project has been performed. The decontamination activities to be conducted in the Hot Cell Facility will not impact the accuracy, assumptions, or design basis analysis which have been performed and are contained in the Sandia Hot Cell Facility (HCF) Safety Analysis Report of October 14, 1994 (SAR) or the Sandia Hot Cell Facility Safety Analysis Report of December 1987. (SAND 87-2480) (Approved SAR)

Section 16.0, Provisions for Decontamination and Decommissioning (D&D), of the Safety Analysis Report discusses various remediation activities required for decontamination of the facility. Performance of these activities may include, but is not limited to, the following hazards:

- Scabbling (mechanical hazards)
- Vacuuming (airborne contamination)
- Lifting and rigging
- Plasma-torch cutting (fire hazard)
- Gas-torch cutting
- Fork-lift operation
- Rail hoist use
- Grit/Sand blasting
- Welding
- Spray painting

Health and Safety control and monitoring equipment will be installed as necessary to protect the public, the workers, and the environment. These activities do not represent an Unreviewed Safety Question (USQ) for the following reasons: (1) They do not increase the consequences of any accident or malfunction of equipment important to safety that has been previously evaluated in the facility safety analyses; (2) They do not introduce the possibility of creating an accident or malfunction of a different type than any evaluated previously in the facility safety analyses; (3) They do not reduce any margin of safety, as defined in the bases of the Operational Safety Requirements (OSR's) (SAND 88-1723). A thorough discussion of accident analysis is provided in Section 3.0 of the SAR.

The Sandia HCF Manager and Radiation Protection Manager will be notified and authorization received prior to removal or disabling of any building alarm, suppression, or ventilation systems. During decontamination activities, temporary ventilation and containment systems (i.e., HEPA systems, glove boxes, tents, etc.) will be installed to maintain appropriate negative pressure differential and prevent release of contaminants to surrounding areas. Monitoring will be performed while work is in progress to verify integrity of all temporary ventilation and containment systems.

5.2 Operational Hazards

Anticipated chemical, radiological and physical hazards anticipated during the decontamination effort are addressed in detail in the Health and Safety Plan (HASP). Work plans will be clearly written with appropriate warnings at steps that could involve a hazard to the worker, the public, the environment, or to SNL property. Health and Safety requirements will be coordinated with the appropriate SNL staff.

The following text is a summary of the more significant hazards expected to be encountered and methods used to prevent personnel injury and equipment damage.

5.2.1 Chemical Hazards

The SSHO will maintain the names and chemical characteristic information for toxic materials, unusual gases or liquids which SEG may introduce to the site. Material safety data sheets are maintained by the SSHO for all chemicals which are known or anticipated to be used or encountered at the SNL site. The SEG master list of MSDS sheets is provided in Attachment 5.1. The underlined MSDS sheets on this list are provided in Attachment 5.2.

5.2.2 Radiological Hazards

Levels of ionizing radiation will be monitored frequently by SNL Radiation Protection personnel. Every effort will be made to maintain personnel exposures ALARA. The air will be monitored and respiratory protection will be utilized, as necessary, to avoid the possibility of inhalation of contaminants. A review of the work area and work activities to assure that radiation doses are ALARA will be a joint responsibility between SEG and SNL.

5.2.3 Physical Hazards

Physical hazards that may be encountered include lifting/bending, noise, ladders, scaffolds and work platforms, portable hand tools and electrical equipment, fork lifts, rail hoists, confined spaces and stored potential energy. All hazards associated with safety will be evaluated using the OSHA standards of 20 CFR 1910 and 1926, as applicable.

5.2.4 Fire Prevention and Fire Protection

The use of ordinary combustibles (e.g., wood, plastics, etc.) shall be controlled such that their accumulation does not present an increased risk to facilities or personnel. Combustible material shall be stored in such a manner as not to create a fire hazard and such storage shall comply with the applicable DOE Orders, NFPA codes and FM Data Sheets. All cutting, welding and grinding operations shall be conducted in accordance with the requirements of NFPA-51B and FM Data Sheet 10-15. Fire watches will be instituted to increase the level of protection within an area because of ongoing activities, lack of fixed or temporary alarm systems or disabled fire suppresion systems. Personnel performing fire watch duties shall be trained in accordance with the requirements of NFPA-51B and FM Data Sheet 10-15 and qualified annually through testing.

AK5

Attachment 1 – Acceptable Knowledge Documentation Checklist

Site(s): Sandia National Laboratories/New Mexico

Waste Stream Description: Remote Handled/Hot Cell Facility Transuranic Waste (Debris)

Waste Stream Number(s): SNL-HCF-S5400-RH

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Mandatory generator site TRU waste program (PR) information:			
Map of the generator site that identifies TRU waste genertreaand storage areas.	PR1	Y	C1001, I1030, M1014, M1015, P1041, P1102, P1104
Generator site mission descriptions related to TRU waste generation and management identifying defense and non-defense operations.	PR2	Y	C1008, C1038, C1042, C1043, C2001, I1009, I1016, M1015, P1008, P1041, P1044, P1104, P2001, U1014
Overview of the generator site and generator site TRU waste management operations in the context of the facility's mission.	PR3	Y	C2001, I1030, M1014,M1015, P1008, P1015, P1041, P1102, P1104, P2001
Descriptions of historical and current TRU waste generating operaincluding how waste is tracked and managed and/or how operations relative to isotopic composition were tracked.	PR4	Y	C1004, C1008, C1009, C1038, C1039, C1041, C2001, DR1001, DR1003, M1016, P1008, P1015, P1030, P1044, P1101, P1105, P2001, P2005, U1014
Waste identification and/or categorization schemes and terminology used at the generatorincluding codes correlating to specific isotopic distributions.	PR5	Y	C1005, C1021, C1027, C2001, DR1002, I1006, M1010, M1011, M1016, P1015, P1100, P1101, P1105, P2001, P2005
Types and quantities of TRU waste geneincluding historical generation through future projections.	PR6	Y	C1005, C1021, C1027, C1038, C2001,C2004, DR1002, I1002, I1012, I1025, I1046, I1048, M1003, M1006, M1010, M1011, M1013, M1014, M1016, M2004, P1008, P1015, P1030, P1105, P2002, P2005, U1012

COPY

NTPC RECORDS ORIGINAL
DATE REC'D 6-23-14

Attachment 1 – Acceptable Knowledge Documentation Checklist

Waste Stream Number(s): SNL-HCF-S5400-RH

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Correlation of waste streams and description of time of generwaste generating procand area and building/facility where each waste stream was generated.	PR7	Y	C1001, C1004, C1006, C1009, C1021, C1027, C1038, C1039, C1041, C2001, DR1002, I1002, I1009, I1010, I1012, I1013, I1019, I1025, I1030, I1046, I1048, M1001, M1003, M1006, M1010, M1011, M1013, M1014, M1016, M2001, M2003, M2004, P1008, P1015, P1022, P1025, P1030, P1102, P1105, P2002, U1001, U1002, U1012
Certification procedures for waste to be sent to the WIPP facility procedures to ensure that prohibited items are documented and managed in accordance with site-specific certification plans).	PR8	Y	I1042, I1053, M1016, M1020, P1100, P1101, P1105, P2002, P2005
Mandatory generator site TRU waste stream (WS)-specific information:			
Waste stream designation	WS1	Y	C1047, C2001, C2004, DR1002, M1006, M1021, P1105, P2002
Area(s) and building(s) from which the waste stream was or is generated.	WS2	Y	C1001, C1004, C1010, C1011, C1021, C1027, C1038, C1039, C1041, C2001, C2004, DR1002, I1002, I1006, I1016, I1018, I1019, I1020, I1021, I1025, I1028, I1030, I1031, I1039, I1040, I1046, I1048, M1003, M1010, M1011, M1013, M1014, M1015, M1016, M1020, M2001, M2003, P1011, P1012, P1014, P1015, P1022, P1025, P1030, P1037, P1038, P1039, P1047, P1102, P1104, P1105, P2001, P2002, U1001, U1002, U1012, U1014
Waste stream volume and time period of generation	WS3	Y	C1005, C1012, C1027, C1041, C2001, C2004, I1001, I1002, I1020, I1025, I1028, I1030, I1031, I1036, I1039, I1046, I1048, M1003, M1010, M1011, M1013, M1014, M1016, M1019, M1020, M2001, M2003, M2004, P1008, P1011, P1012, P1015, P1025, P1030, P1037, P1038, P1039, P1047, P1105, P2001, P2002, U1012, U1014

Attachment 1 – Acceptable Knowledge Documentation Checklist

Waste Stream Number(s): SNL-HCF-S5400-RH

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Waste generating process (describe for each building) including processes associated with U134 waste generif applicable.	WS4	Y	C1001, C1004, C1006, C1008, C1009, C1021, C1038, C1039, C1041, C2001, DR1002, I1002, I1009, I1010, I1011, I1012, I1013, I1016, I1017, I1018, I1019, I1028, I1031, M1001, M1014, M1020, P1008, P1011, P1012, P1022, P1025, P1037, P1102, P1105, P2001, P2002, P2003, P2005, U1012, U1014
Process flow diagrams. For research/develoanalytical laboratory or other similar processes where process flow diagrams cannot be cra description of the waste generating procrather than a formal process flow dimay be incif justified.	WS5	Y	I1028, I1030, I1031, P1001, P1004, P1011, P1022, P1104, U1012
Summary of basis and rationale for delineating each waste stream including justification for combining waste historically managed separately as TRU mixed and TRU non-mixed waste streams into a single waste sthat is traceable to referenced documents.	WS6	Y	C2001, C2004, DR1001, I1042, M1021, M2004, P1008, P1015, P1100, P1101, P2002
Generator site mission descriptions related to TRU waste generation and management identifying defense and non-defense operations.	WS7	Y	C1008, C1042, C1043, I1009, I1015, I1016, I1030, P1008, P1041, P1044, P2003, U1014
Material inputs or other information that identified the chemical contents of the waste and the stream. Includes events or processes that may have modified the chemical properties of the waste stream after generation.	WS8	Y	C1001, C1004, C1005, C1006, C1008, C1009, C1011, C1015, C1021, C1027, C1038, C1039, C1041, C2004, DR1001, DR1002, I1001, I1002, I1004, I1005, I1006, I1007, I1009, I1010, I1011, I1012, I1013, I1015, I1016, I1017, I1018, I1019, I1020, I1021, I1024, I1025, I1028, I1030, I1031, I1034, I1039, I1040, I1046, I1048, M1001, M1003, M1004, M1006, M1010, M1011, M1013, M1014, M1015, M1016, M1020, M2001, M2003, M2004, P1001, P1007, P1008, P1011, P1012, P1015, P1016, P1022, P1027, P1038, P1039, P1046, P1102, P1104, P1105, P2001, P2003, U1009, U1012, U1014

Attachment 1 – Acceptable Knowledge Documentation Checklist

Waste Stream Number(s): SNL-HCF-S5400-RH

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Physical waste form glovebox materials and chemicals handled during glovebox operaif applicassigned summary category waste matrix code and materials iincluding waste material parameters present in the waste stream. Includes events or processes that may have modified the physical properties of the waste stream after generation.	WS9	Y	C1001, C1004, C1005, C1006, C1008, C1009, C1021, C1027, C1038, C1039, C1041, C2001, C2004, DR1002, I1002, I1006, I1007, I1009, I1016, I1017, I1018, I1019, I1024, I1025, I1048, I1053, M1004, M1006, M1010, M1011, M1013, M1014, M1015, M1016, M1019, M1020, M2004, P1001, P1011, P1015, P1102, P1104, P1105, P2001, P2002, P2003, P2005, U1012, U1014
Waste identifiers assigned by the generator site item descriptionpackaging identification numbers).	WS10	Y	C1005, C1021, C1027, C2001, C2004, DR1002, I1006, M1010, M1011, M1013, M1019, M1020, M2004, P1105, P2001, P2002, P2003, P2005
Specification of the isotopic ratios for the ten WIPP-tracked radionuclides and all radionuclides other than the ten WIPP-tracked radionuclides that contribute to 95 percent of the radioactive hazard for a payload container. Chemical and physical information that could affect the waste isotopic distribas well as calculations used to derive the isotopic distribution.	WS11	Y	C1004, C1005, C1008, C1009, C1010, C1021, C1027, C1041, C2001, I1002, I1008, I1018, I1019, I1020, I1021, I1022, I1025, I1028, I1030, I1031, I1036, I1046, M1001, M1004, M1006, M1010, M1011, M1013, M1014, M1015, M1016, M1020, M1021, M2001, M2003, P1001, P1008, P1009, P1011, P1012, P1014, P1015, P1018, P1022, P1025, P1030, P1046, P1102, P1104, P1105, U1012
State and EPA hazardous waste constituents in the waste stream and state and EPA Hazardous WasteNumbers assincluding documentation regarding how the site has historically managed the including the historical regulatory status of the waste TRU mixed versus TRU non-mixed waste).	WS12	Y	C1001, C1005, C1021, C1039, C1041, DR1001, DR1003, I1009, I1010, I1017, I1018, I1019, M1001, M1006, M1020, M2001, M2003, M2004, P1100, P1104, P2001

Attachment 1 – Acceptable Knowledge Documentation Checklist

Waste Stream Number(s): SNL-HCF-S5400-RH

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Additional acceptable knowledge documentation (briefly describe):			
Process design documents Title II Design)	S1	Y	C1013, C1014, C1016, C1017, I1002, P1003, P1004, P1044, U1004
Standard operating procedures that may include a list of raw materials or reaa description of the process or experiment generating the and a description of the waste generated and how the wastes are managed at the point of generation	S2	Y	C1041, I1002, I1024, I1028, I1031, I1033, I1034, I1035, I1036, I1039, I1040, I1046, I1048, M1014, M1020, P1101, P2002, P2005, U1009, U1012
Preliminary and Final Safety Analysis Reports and technical safety requirements	S3	Y	I1013, I1039, M1014, P1104, P2003, U1012
Waste Packaging records	S4	Y	C2004, M1013, M1016, M1019, M1020, P1105
Test plans or research project reports that describe the rearadionucand other raw materials used in experiments	S5	Y	C1012, I1002, I1004, I1005, I1006, I1007, I1009, I1010, I1012, I1020, I1021, I1022, I1028, I1031, I1032, M1014, M2001, M2003, M2004, P1001, P1002, P1004, P1005, P1006, P1007, P1008, P1009, P1010, P1011, P1012, P1014, P1016, P1018, P1019, P1020, P1021, P1022, P1025, P1026, P1027, P1033, P1034, P1035, P1036, P1037, P1038, P1039, P1040, P1045, P1046, P1047, P1048, P1051, P2001, U1001, U1002, U1009, U1011, U1012, U1014
Site databases chemical inventory database for SARA Title III requireSNM or nuclear material databases)	S6	Y	C1005, P1015, P2001, P2002, P2003
Information from site personnel documented interviews)	S7	Y	C2001, M2001, M2002, M2003, P1105
Standard industry documents industry specification shandreference mateor other vendor information)	S8	Y	I1023, I1030, M1014, P1025, U1012
Analytical data relevant to the waste sincluding results from fingerprint anaspot croutine verification sampling or other processes that collected information pertinent to the waste stream. This may include new information (or previously collected data) which augments required information visual examination not performed in compliance with CCP-Pradiography screening for prohibited items.	S9	Y	C1021, C1027, DR1001, DR1003, I1001, I1025, M1010, M1011, M1013, M1015, M1016, M1020, M1021, M2001, M2002, M2003, M2004, P2001
Material Safety Data Sproduct lor other product information	S10	Y	I1030, M1007, P1102, U1012

Attachment 1 – Acceptable Knowledge Documentation Checklist

Waste Stream Number(s): SNL-HCF-S5400-RH

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Laboratory notebooks that detail the research processes and raw materials used in an experiment	S11	Y	I1006, I1007
Comparable or surrogate sampling and analysis data	S12	N	NA
Other (describe)	S13		I1003, I1026
Safeguards and secMaterials Control and Accountaband other nuclear material control system data Reports of nuclear safety or criticality accidents involving special nuclear materials (SNM)	S14	Y	C1027, C2001, I1025, I1030, I1039, I1046, I1048, M1010, M1011, M1014, M1015, P1102, P2005, U1011, U1012
NMMA logs or inventory records or waste disposal logs providing SNM or nuclear material information	S15	Y	C1027, M1010, M1011, M1013, P1102
Packaging	S16	Y	C1005, C1027, C1047, C2001, C2004, I1048, M1010, M1011, M1013, M1016, M1019, M1020, P1100, P1101, P1105, P2005
OSR-Specific Information (Applies only to sealed sources):			
Evidence that the waste meets the definition of a sealed source reference 10CFR30.4 and 10CFR835.2	O1	N	NA
Documentation that sources are Specialsuch as certificates DOT Special Form Class 7 per 49CFR173.403	O2	N	NA
Contamination survey results for each source reference requirements of 10CFR34.27	O3	N	NA
Source manufacturer's sales catalogues	O4	N	NA
Source purchase records	O5	N	NA
Manufacturer fabrication documents	O6	N	NA
Manufacturer drawings	O7	N	NA
Fuel capsule assembly reports	O8	N	NA
Manufacturer's operational procedures for meeting cleanliness requirements	O9	N	NA
Manufacturer's shipping documents or records	O10	N	NA
Manufacturer welding records	O11	N	NA
TRU batch material records	O12	N	NA
National database radiological information NRC Device Registry)	O13	N	NA
NRC or agreement state regulatory licensing information	O14	N	NA

Attachment 1 – Acceptable Knowledge Documentation Checklist

Waste Stream Number(s): SNL-HCF-S5400-RH

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Documentation of physical markings on the outer source casing or labels attached to devices housing sources	O15	N	NA
Unique physical description attributed to specific source models	O16	N	NA
Acceptable knowledge information regarding waste generated off-site or from similar process: NA			

(1) AK#s are used as identifiers for prwaste stream-specific and supporting elements. The identifiers are to be used in the Acceptable Knowledge Source Document Summary and Acceptable Knowledge Information List to aid in the page location of program and waste stream-specific elements within a given document. N/A means that item is not applicable.

Additional comments:
None

All required AK information has been compiled and source document tracking numbers assigned.

Acceptable Knowledge Expert: John Kleckner / [signature] Date: 6/12/14
Print Sign

AK6

Attachment 4 - Acceptable Knowledge Source Document Information List

Site(s): Sandia National Laboratory

Waste Stream Number: SNL-HCF-S5400-RH

Waste Stream Description: RH Heterogeneous Debris Waste from SNL

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
C1001	Memo from Gwendolyn J. Pirtle to Charles G. Thomas, David S. Barber, and Carlos S. Medrano re: Hot Cell Facility Decontamination	G.J. Pirtle	NA	NA, 05/04/1995
C1002	Letter from Ted R. Schmidt, Manager of Reactor Development and Applications Department, to A.R. Chernoff re: Sandia Hot Cell Facility Operational Safety Requirements Addendum	Ted R. Schmidt	NA	NA, 12/12/1990
C1003	Memos relating to the Nondestructivce Cleaning Rental and H&S Information	Marrion McDonald, Susan Longley, Jeff Downs, D.J. Thompson, W. Larry King, Lonnie Martin,	NA	NA, 1995
C1004	Reactor Accident Experiments and Funding	Sandia National Laboratories	NA	NA, Summer 1978
C1005	(UCNI) Memo from Cathy A. Ottinger re: Candidate Auxiliary Hot Cell Facility Containers	Cathy A. Ottinger	NA	NA, 02/09/1999
C1006	Memo from F. Gonzalez and D. Fenstermacher to S. Wright re: Loading of Experiment FD4.4 and FD4.5	F. Gonzalez and D. Fenstermacher	NA	NA, 11/17/1982
C1008	Memo from D.M. Haaland to R.L. Coats re: High Temperature Equation-of-State Studies of Fast Breeder Reactor Fuels: Evaluations Summary	David M. Haaland	NA	NA, 08/14/1975
C1009	Memo from K.T. Stacicer to Picard re: Radiometric Temperature Measurement	K.T. Stacicer	NA	NA, 02/12/1983
C1010	Memos, re: SRSC, ACRR, ACPR, RCSC, & ACPR Meeting Minutes; TRAN-GAP Fuel Loading Procedure and Approval; Fuel Loading Procedures for Exp in Bldg. 6597; Removal and Encapsulation of ST-1 Fuel Assembly; ST-1 Cutting Procedure; Handling Procedures for WLM Ex	Sandia National Laboratories	NA	NA, 04/75 to 1989
C1011	Memo: Explosive Valves in the ST-2 Experiment	K.O. Reil to M.D. Olbin	NA	NA, November 2, 1987
C1012	Memos: draft Section 5 and 6 of the ARSR quarterly reports	B. Trammell	NA	NA, 02/1983

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Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
C1013	Memo: Suggested Instrumentation for the Fuel Disruption Tests.	J.G. Kelly to A.C. Marshal	NA	NA, January 13, 1982
C1014	Memos: Working Document for Preliminary DFR Test Section Design Concepts; DFR Visual Diagnostics; Preliminary Calculations for the DFR Steam System.	From A.C. Marshall to P.S. Pickard	NA	NA, 09/28/1981, 01/20/1982, 10/27/1991
C1015	Memo: Hydrogen Flow in DFR-PWR Experiments	From J.B. Rivard to P.S. Pickard	NA	NA, February 10, 1984
C1016	Memo: Fission Product Release Rates for Proposed DFR Pre-Irradiated Fuel Experiments	A.C. Marshall	NA	NA, 12/22/1982
C1017	Memo: Preliminary Evaluation of Pre-Irradiated Fuel Experiments for the DFR Program	From A.C. Marshall to P.S. Pickard	NA	NA, February 7, 1983
C1018	Sandia Hot Cell Facility Operational Safety Requirements Addendum and associated memos	G.L. Cano, T.R. Schmidt	SAND88-1723 Addendum	NA, 12/12/1990
C1019	Memo from J. A. Reuscher re: Handling and Accountability of Special Nuclear Materials in TA-V	J. A. Reuscher	NA	NA, 02/15/1979
C1020	Memo from Susan Bourcier, SNL to Manny Trujillo and Tania Hake re: ST 1/2 SNM Accountability Close Out	Susan Bourcier	NA	NA, 06/20/1995
C1021	Memo from Susan Longley to File re: Characterization of waste from Glove Box 9	Susan Longley	NA	NA, 02/05/1997
C1022	Memo from Michael Enghauser to Susan Longley re: Characterizatoin of HCFRW1, HCFRW5, and KC95-02	Michael Enghauser	NA	NA, 09/11/1996
C1023	Memo from Susan Longley to Sherron Hirdman re: Transuranic activity levels in waste from glove boxes 1/2 and 9	Susan Longley	NA	NA, 02/12/1997
C1024	Memo from Michael Enghauser to Susan Longley re: Characterization of GB1CAN1, GB1CAN2	Michael Enghauser	NA	NA, 09/12/1996
C1025	Five memos concerning a 2 kg. Pu-239 puck to be transferred from SNL to LANL.	J. Sichler and E.A. Marques	NA	NA, 1995 - 1996
C1026	Memo Concerning Revision to SNLA Application for Acceptance of LLW at NTS	J. Fisk	NA	NA, 09/09/1994
C1027	Memo Concerning Management Readiness Review of Pu Repackaging Project at the RMWMF	E. Conway	NA	NA, 11/02/2000
C1028	Memo Concerning Independent Surveillance Report	K. McMahon	NA	NA, 06/28/1995
C1029	Memo Concerning Area V Hot Cell Glove Box Waste Characterization	R.P. Reese	NA	NA, 07/18/1995

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
C1030	Memo Concerning the Characterization of Samples LSAs #1573 (19000902), #1560 (19000903), #1559 (19000904), #1572 (19000905), #1564 (19000906), and #1575 (19000910)	K. Chavez and S. Shanks	NA	NA, 01/28/2002
C1031	In-Pile Vapor Pressure Measurements on UO2 and (U, Pu)O2	W. Breitung and K.O. Reil	KfK3939	NA, 08/1985
C1032	Preparation of Gas Sampling Cylinders for Waste Packaging at the TA-V Hot Cell Facility (HCF)	P.H. Helmick	005963	NA, 07/31/1997
C1033	Characterization of Sample LSA Box 1561	K. Chavez and S. Shanks	NA	NA, 08/01/2001
C1034	Characterization of Samples SAF-T-drums #503047 (19000907) and #503048 (19000908)	K. Chavez and S. Shanks	NA	NA, 01/29/2002
C1035	Characterization of Sample Metal Shield and Bracket/Cavity (19000909)	K. Chavez and S. Shanks	NA	NA, 01/30/2002
C1036	Status of Sandia's Disposition Program	J. Sichler	NA	NA, 07/15/1996
C1038	Ken Reil Interview; John Kleckner	NA	NA	NA, 02/03/2010
C1039	Waste Material Parameter Memorandum for Waste Stream SNL-HCF-S5400-RH	John Kleckner	NA	NA, 04/21/2010
C1040	(UCNI) Memos re: Changes to SRS-NPR Irradiated Fuel Sample Cutting Instructions; Letter from SRS to Argonne, re: Info on the MK22/K-13 Fuel Assemblies; SNL Memo, re: Closeout of Modification/Expenditure Form No. 2691 (XR2 recovered depleted fuel pellets)	Sandia National Laboratories	NA	NA, 1991; 09/12/1989, 08/01/1994, 02/06/1995
C1041	Memos re: Modification of Hot Cell Bell Jar/Mass Spec (with supportingmaterials)	Sandia National Laboratories	NA	NA, 1986
C1042	Memorandum to Ines Triay: Determination and Findings, Defense Origin of Nuclear Waste, Kerr-McGee Waste	F. Marcinowski	NA	NA, 4/15/2005
C1043	Memorandum to CCP Central Records, Evaluation of Kerr-McGee Fuel Production and FFTF History	K.J. Peters	KJP:0604:001	NA, 6/28/2004
C1047	Record of Communication between John Kleckner and Tommy Mojica Re: Final Packaging Configuration	NA	NA	NA, 02/21/2011
C1048	Memo to Irene Quintana re: Analysis of Sample Data for Sandia National Laboratory/New Mexico (SNL/NM) Waste Stream SNL-HCF-5400-RH, PKE00047	J. Holderness	NA	NA, 08/26/2011
C1049	Memo to Irene Quintana re: Analysis of Sample Data for Sandia National Laboratory/New Mexico 9SNL/NM) Waste Stream SNL-HCF-S5400-RH, PKE00027/54	J. Holderness	NA	NA, 08/10/2011

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
C2001	Letter from S. Schafer to B. Humphrey regarding TRU Waste Currently Stored at SNL(SJS-121001), and correspondence from CBFO to NNSA concuring with the letter.	S. Schafer	SJS-121001	NA, 10/30/2013
C2002	Memo from S. Crowder to R. Salyer regarding Analysis of Fuel Type PNL-10-40	R. Salyer	NA	NA, 1/15/2013
C2003	e-mail regarding P14A fuel data	R. Salyer	NA	NA, 03/11/2013
C2004	Waste Stream Conatiner Evaluation Memorandums	J. Kleckner	NA	NA, 6/9/2014
C2005	Interview with Keith Marlow	J. Kleckner	NA	NA, 5/22/2014
DR1001	Discrepancy resolution for the assignment of EPA Hazardous Waste Numbers	Kevin J. Peters and Steve Schafer	DR1001	NA, 2/15/2011
DR1002	Discrepancy Resolution for Container #P1110154 (Parent Container C980313)	John Kleckner	DR1002	NA, 04/21/2011
DR1003	AK Discrepancy Resolution DR1003 re: Assignment of EPA Hazardous Waste Numbers	Steve Schafer	DR1003	Revision 1, 08/12/2011
DR1004	Discrepancy Resolution re: The SAP for waste stream SNL-HCF-S5400-RH segregates the three principal sources of waste generation into three radiological categories.	John Kleckner	DR1004	NA, 06/29/2011
DR1005	DR1005, Resolution of Parcel Number Discrepancy	John Kleckner	DR1005	Rev. 0, 02/29/2012
DR2001	Attachment 11 - Acceptable Knowledge Source Document Discrepancy Resolution	John Kleckner	NA	NA, TBD
I1001	EEOS Mass of Cadmium, Lead, and Remaining Package	NA	NA	NA, NA
I1002	Experiment Plan for Effective Equation of State (EEOS) Experiments with Irradiated Fuel	W. Breitung and S.A. Wright	NA	NA, January 1986
I1003	Design of EEOS Pressure Cell and In-Pile Calorimeter	NA	NA	NA, NA
I1004	Damaged Fuel Relocation Experiment DF-2: Results and Analyses	R.D. Gasser, C.P: Fryer, R.O. Gauntt, A.C. Marshall, K.O. Reil, & T.K. Stalker	SAND86-1441	NA, December 1989
I1005	Damaged Fuel Experiment DF-4: Test Result Report	Author: NA	NA	NA, NA
I1006	Summary of Heating Conditions and Disruption for Each Fuel Disruption Experiment	NA	NA	NA, October 1981
I1007	Fuel Disruption Notes: FD1, FD2, HRR, FF and IF FF	NA	NA	NA, NA
I1009	Fuel Disruption Experiment Plan for the FD2/4 Series	S. A. Wright	NA	NA, July 1981

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
I1010	ACRR Source Term Tests, Project Overview	K. O. Reil	NA	NA, NA
I1011	ST-2 Operation Checklist	NA	19 through 22	NA, 11/19/1987
I1012	Star-5 Quick Look Report	S.A. Wright and G. Schumacher	NA	NA, 06/27/1985
I1013	STAR-6 Very Short Quick Look Report	NA	NA	NA, NA
I1014	Non Destructive Cleaning, Mobile Decontamination Unit, Narrative Log	Darren Talley	NA	NA, 08/01/1995
I1015	Effective Equation of State Experiments	K. Reil	5222	NA, NA
I1016	ACRR Source Term Experiments, Program Overview	K.O. Reil	NA	NA
I1017	Annular Core Research Reactor Experiment Plan	K.O. Reil	NA	NA, 08/26/1983
I1018	Project/ Experiment Quality Plan for Damaged Fuel Relocation (DFR)	Albert Marshall	Form RREP-II-5-1	NA, 06/01/1983
I1019	Annual Core Pulse Reactor Experiment Plan for EEOS with Report (EEOS Experiments)	K.O. Reil	NA	NA, 03/31/1975
I1020	Analysis of the DF-1 Experiments using SCDAP	J.N. Lillington	AEEW-M2216	NA, August 1985
I1021	Damaged Fuel Relocation (DFR) Experiments Damage Fuel (DF) Series ACRR Experiment Plan	A.C. Marshall, K.O. Reil, and K.T. Stalker	NA	NA, July 1983
I1022	Handwritten Notes of a proposal for an Experimental Program	NA	NA	NA, NA
I1023	Catalog pages of Hardware for the Source Term Experiments	NA	NA	NA, NA
I1024	Detailed ST-2 Procedures and Gas Manifold Operations; Detailed ST-1 Procedures for Gas Manifold Operation	Author: NA	NA	NA, November 1987
I1025	Project/Experiment Quality Plan for ACRR Source Term Experiments	K.O. Reil	RREP-II-5-1	NA, March 1986
I1026	Severe Accident Source Term Information Needs and Capabilities	Severe Fuel Damage Program Status Meeting	NA	NA, April 9-11, 1984
I1027	Notes of Ken Reil regarding severe accident experiments.	K.O. Reil	NA	NA, August 27, 1982
I1028	Damaged Fuel Relocation (DFR) Experiments: Damaged Fuel (DF) Series DF-2 ACRR Experiment Plan	A.C. Marshall, K.O. Reil, & K.T. Stalker	NA	NA, August 1984

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
I1030	Hot Cell Facility (HCF) Decontamination Plan	NA	NA	NA, December 13, 1994
I1031	DF-2 Experiment Quick Look Report	A.C. Marshall, K.O. Reil, R.W. Ostensen, & K.T. Stalker	NA	NA, NA
I1032	Notes describing the differences between DF-1 and DF-2 Experiments	NA	NA	NA, NA
I1033	Procedures for Gas Manifold Operation, Leak Rate Measurement (Room 107 and Hot Cell) and Back Fill Operations for ST-1.	NA	NA	NA, NA
I1034	ST-1 Procedures in Hot Cell	NA	NA	NA, NA
I1035	Hot Cell Requirements for the Source Term Experiments	NA	NA	NA, NA
I1036	Safe Operating Procedures for Source Term Outside Cask Handling Operations	NA	NA	NA, NA
I1037	Operational Safety Requirements for the Hot Cell Facility	T.F. Luera, G.L. Cano, G.E. Tucker, & D.J. Sasmor	NA	NA, September 24, 1986
I1038	Safe Operating Procedures for the Hot Cell Facility in the Basement of Building 6580	G.L. Cano, G.E. Tucker, & D.J. Sasmor	NA	NA, December 1986
I1039	ST-1 Filter Wire Analysis Procedures	NA	NA	NA, NA
I1040	HCF Procedures for the Recovery of the Fuel/Target and gas sample bottles from the NPR C Series	K.O. Reil, G.L. Cano, & J.S. Philbin	NA	NA, April 6, 1992
I1041	AHCF Campaign Planning Procedure	W. Strong	AP/AHCF-CT/04-001	Issue A, NA
I1042	Work Instructions for Repackaging TRU Waste at Sandia National Laboratories/New Mexico DRAFT	Sandia National Laboratories	SNL-WP-001, R0	Rev. 0, 04/2007
I1043	New Production Reactor Program QA Manual	NA	NA	Rev. 14, 08/28/1992
I1044	Quality Assurance Program Experiment Requirements Annular Core Research Reactor Facility	NA	NA	NA, NA
I1045	Core Operating Documents: Administrative Procedures, Instructions, Guidelines, and Directives	John Sauer	AHCF/AP/01-02	Issue: D, 12/01/2004

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Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
I1046	Characterization of Excess Lead	P.L. Turner	6432 OP-03-002	NA, August 6, 2003
I1047	Radioactive Material Handling and Storage	P.L Turner	6782 AP/04-001	Issue B, 05/27/2005
I1048	Lead Characterization and Repackaging	P.L. Turner, W.R. Strong, & J. Garcia	CHAR/AHCF COP/2004-01	NA, NA
I1049	Radioactive Material Inventory Control Procedure	D.G. Talley	NDC-OP-2	NA, July 24, 1995
I1050	Decontamination Operation Procedure	Darren Talley	NDC-OP-1	Issue A, 08/01/1995
I1051	Equipment Decontamination Request Instruction	Darren Talley	NDC-INST-1	Issue A, 07/28/95
I1052	NDC Instruction Facility Maintenance Request Instruction	Talley; Berry	NDC-INST-2	Issue A, 07/20/1995
I1053	Transuranic Waste Repackaging Plan	Michael Spoemer, Nancy Collins, Betty Humphries	NA	Rev. 1, 04/30/2008
I1054	Radioactive Material Handling and Storage in the RML	D.W. Vehar	RML-AP-001	Issue A, NA
I2001	ST-1 Experiment Plan	K. Reil	NA	Rev. 0, 02/28/1987
I2002	STAR Series Experiment Plan and notes	S. Wright	NA	NA, June 1983
I2003	ACRR Operating Procedure Transfer of STAR Package with distribution memo	S. Longley; S. Wright	NA	NA, 04/22/2002; 06/27/1995
M1001	Sandia National Laboratories Primary Hazard Screening (PHS)	Norman F. Schwers	SNL9A00349-007	NA, 07/08/2003
M1002	Sandia National Laboratories Primary Hazard Screening (PHS)	Norman Schwers	PHS Number: SNL9A00349-006	NA, 05/19/2003
M1003	Hazards Analysis (HA): Hot Cell Facility	N.F. Schwers	SNL9A00349-006	NA, May 27, 2003
M1004	Radiological Survey Form for Post Job and Lead Brick Release and associated supporting data	Brenda Townsend	NA	NA, 03/22/1996
M1005	NDC Operations Logs, Decontamination Operations Checklists, Equipment Decontamination Requests	Sandia National Laboratories	NA	NA, 1995 through 1996
M1006	Completed Equipment Decontamination Requests; Radiological Work Permits; Decontamination Operations Checklists, etc. for NDC Trailer	Sandia National Laboratories	NA	NA, 1995

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
M1007	Collection of MSDSs.	NA	NA	NA, 1987 through 2011
M1010	Disposal Request #005934	K. Sansone	NA	NA, March 31, 1998
M1011	Att 3 - Laboratory Data for Glove Box 9 Paper Towels	NA	NA	NA, 02/05/1997
M1012	AHCF Instrument and Detection Slides	NA	NA	NA, NA
M1013	Review of TRU Disposal Requests: 001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080	NA	NA	NA, NA
M1014	Readiness Assessment Plan for the Non-Destructive Cleaning Mobile Decontamination Unit	D.G. Talley	NA	NA, July 20, 1995
M1015	Miscellaneous Articles and Public Extracts	NA	NA	NA, 1976 to 2008, not inclusive
M1016	Disposal Requests from the 2007/2008 Repackaged Containers	Author(s): Various	NA	NA, NA, Various Dates
M1019	Collection of Spreadsheets Pertaining to TRU Waste Generated at the AHCF and Other Locations on TA-V	Author: NA	NA	NA, NA, Various Dates
M1020	Process Knowledge Evaluations (PKE) for radiological ratios (e.g., PKE00044 and PKE00047)	Author: NA	NA	NA, NA, Various Dates
M1021	Memo to Record, re: Evaluation of Radionuclide Activity Ratios for Hot Cell Facility Wastes (PKE00044 and PKE00047); Memo to Record, re: PKE000047 Radionuclide Activity Ratios	Michael Enghauser	NA	NA, 06/24/2004; 06/24/2004
M2001	e-mail from R. Salyer to B. Humphery regarding MP1 Kerf information in container C00218134 including analytical data and MP-1 experiment results attachments	R. Salyer	NA	NA, 10/24/2012
M2002	Ref. 16 in Analysis of Materials to be Processed in the AHCF - rad analysis of container C00188425 by R. Salyers	R. Salyer	NA	NA, 04/23/2013
M2003	Miscellaneous container C00188425 documentation	R. Aquilar	NA	NA, 04/23/2013
M2004	MP-1 Kerf Summary and attachments	B. Humphrey	NA	NA, 03/30/2013
M2005	No Defined Use (NDU) Experimental Material Disposition Campaign Plan Synopses	NA	NA	NA, 12/18/2012
M2006	Fabrication and Irradiation Data for Fuel Pins PNL-9-6, -10-40, -10-68, -11-41, and -11-52	J. Weber	8151610	NA, 05/11/1981
M2007	Fuel Analysis By Container	NA	NA	Rev. 1, 2, and 3, 09/10/2013

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
M2008	Decryption of a P-10, P-11, and P-14 Fuel Pins	NA	NA	NA, NA
M2009	Fabrication Parameters for Fuel PIN P-42R-C114	NA	NA	NA, NA
M2010	Data file from the MC&A MARS Database listing Containers and Pieces	NA	NA	NA, 10/14/2012
M2011	Irradiated Fuel Data	R. Salyer	NA	NA, 03/07/2013
M2012	Fuels Assigned to Sandia for FD Experiments	NA	NA	NA, NA
M2013	In-Core Fuel Freezing and Plugging Experiments: Preliminary Results of the Sandia TRAN Series I Experiments	D. McArthur, N. Hayden, P. Mast	Sand81-1726	Rev. 7, August 1984
M2016	Bldg. 6588/10 dense pack storage configuration	NA	NA	NA, NA
M2017	Miscellaneous EEOS Reports and information	K. Reil and A. Cronenberg	NA	NA, NA
M2018	FD fuel pin cutting information	various	NA	NA, 1980 - 1982
M2019	SNM Haz Cat 3 container list	W. Strong	NA	NA, 02/04/2010
M2020	Fabrication, Irradiation and Postirradiation Examination of Mixed Oxide Fuel Pins PNL-3-23, 27 & 33	T. Arey, S. Chastain, R. Henderson, G. Baird	HEDL-TME 76-6	NA, January 1976
M2021	Disposal Requests for RH waste containing spent fuel pieces	Various	NA	NA, Various
M2024	Shield Pot Design documents	Various	Various	Various, 2008 - 2010
P1001	Contamination Control in Sandia Equation of State Experiments	W. M. Breitung	SAND80-1277	NA, October 1980
P1002	In-Pile Calorimetry in the Joint Sandia/KfK Equation of State Experiments on Nuclear Fuel	W.M. Breitung	SAND80-2575	NA, February 1981
P1003	A Model for Effective Equation of State of Irradiated Fast Reactor Fuel	E.A. Fischer	NA	NA, July 9, 1991
P1004	Joint In-Pile Equations of State Series on Nuclear Fuels at Sandia National Laboratories	W.M. Breitung, K.K. Murata, K.O. Reil, and G. Schumacher	SAND80-1794	NA, November 1980
P1005	Vapor Pressure Measurements on Liquid Uranium Oxide and (U,Pu) Mixed Oxide	W. Breitung and K.O. Reil	NA	NA, 1989
P1006	Measurements of the Total Pressure from Irradiated (U,Pu) Mixed Oxide	W. Breitung and S.A. Wright	NA	NA, August 1990

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Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
P1007	Proceedings of the International ANS/ENS Topical Meeting on Thermal Reactor Safety, Results of the ACRR-DFR Experiments	K.O. Reil, A.C. Marshall, R.O. Gauntt, R.W. Ostensen, P.S. Pickard, C. Fryer, and K.T. Stalker	ISBN Number 0-89448-121-5 Volume 3	NA, February 2-6, 1986
P1008	In-Pile Vapor Pressure Measurements on (U)O2 and (U,Pu)O2	W. Breitung and K.O. Reil	Kfk 3939	NA, August 1985
P1009	Analysis of Mixed Oxide Fuel Irradiated in EBR-II Measured vs Predicted Burn-Up	L.D. Scott, D.S. Dutt, and D.R. Wilson	HEDL-TME 77-60, UC-79b	NA, May 1978
P1010	In-Pile Determination of Fuel Disruption Mechanisms under LMFBR Loss of Flow Accident Conditions	S.A. Wright, E.A. Fischer, P.K. Mast, and G. Schumacher	NA	NA, October 1985
P1011	The DF-4 Fuel Damage Experiment in ACRR with a BWR Control Blade and Channel Box	R.O. Gauntt, R.D. Gasser, and L.J. Ott	NUREG/CR-4671, SAND86-1443	Rev. 3, November 1989
P1012	Fuel-Disruption Experiments Under High-Ramp-Rate Heating Conditions	S.A. Wright, D.H. Worledge, G.L. Cano, P.K. Mast, and F. Briscoe	NUREG/CR-3662, SAND81-0413	Rev. 7, October 1983
P1013	Technical Safety Requirements for the Auxiliary Hot Cell Facility	R.F. Seylar, Department 6882	SAND2003-4491	NA, February 2004
P1014	Fission Rates, Burnup, and Neutron Flux-Fluence-Spectra Characterization for Mixed Oxide Fuel Experiments in the EBR-II	W.N. McElroy, J.A. Ulseth, E.P. Lippincott, W.Y. Matsumoto, and L.S. Kellogg	HEDL-TME 75-74, UC-79b,d	NA, January 1976
P1015	Sampling and Analysis Plan for Characterization of Waste Arising From Hot Cell Facility Glovebox Decontamination	NA	PLA 95-28	Rev. 1, October 12, 1995
P1016	In-Pile Observation of Fuel and Clad Relocation During LMFBR Core-Disruptive Accidents	S.A. Wright, G. Schumacher, and P.R. Henkel	SAND 86-1416	Rev. 7, April 1989

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Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
P1018	Fission Product Release and Fuel Behavior of Irradiated Light Water Reactor Fuel Under Severe Accident Conditions, The ST-1 Experiment	M.D. Allen, H.W. Stockman, K.O. Reil, and A.J. Grimley	NA	NA, January 1990
P1019	DOE Reactor-Pumped Laser Program	J.R. Felty, R.J. Lipinski, D.A. McArthur, and P.S. Pickard	SAND93-27196C	NA, NA
P1020	FALCON Reactor-Driven Laser Experiments Show Potential	Pickard	NA	NA, October 1991
P1021	Fission Activated Laser as Primary Power for CW Laser	D.K. Monroe	SAND93-1524C	NA, December 1993
P1022	Damaged Fuel Experiment DF-1	R.D. Gasser, C.P. Fryer, R.O. Gauntt, A.C. Marshall, K.O. Reil, and K.T. Stalker	SAND86-1030	NA, January 1990
P1023	Design and Performance Characteristics of the Annular Core Research Reactor	J.A. Reuscher, P.S. Pickard, T.R. Schmidt, J.V. Walker, J.E. Powell, C.H. Karnes, J.H. Davis, W.H. Sullivan, L.D. Posey, K.R. Boldt, D.J. Sasmor, A.C. Marshall, and F.M. Morris	SAND79-0129C	NA, 1978
P1024	Utilization of the Sandia ACRR as a Fast Reactor Safety Test Facility	J.V. Walker, P.S. Pickard, J.E. Powell, R.L. Coats, and W.J. Camp	SAND79-0109A	NA, 1978
P1025	ACRR Fission Product Release Tests: ST-1 and ST-2	M.D. Allen, H.W. Stockman, K.O. Reil, A.J. Grimley, and W.J. Camp	SAND88-0597C	NA, August 1988

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Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
P1026	LMFBR Mixed Oxide Fuels Development Semi-Annual Report, July-December 1975	C.A. Burgess and W.F. Sheely	HEDL-TME 76-24	NA, February 1976
P1027	Fabrication, Irradiation, and Post-Irradiation Examination of Mixed Oxide Fuel Pins, PNL-3-23, 27, and 33	T.T. Arey, S.A. Chastain, R.G. Henderson, and G.R. Baird	HEDL-TME 76-6	NA, January 1976
P1028	Leak Path Factor Evaluation: A MELCOR Application for Nonreactor Nuclear Facilities	L.M. Polizzi	WSRC-MS-2004-00296	NA, NA
P1029	Highly Enriched Uranium Working Group Report on Environmental Safety and Health Vulnerabilities Associated with the Departments Storage of Highly Enriched Uranium	Various Authors	DOE/EH-0525	NA, December 1996
P1030	Plutonium, The First 50 Years	NA	NA	NA, 06/16/2008
P1031	Modifications to MELCOR for the Analysis of Heavy-Water Moderated, U-Al Fuel Reactors	J.P. Church, M.T. Leonard, and K.A. Williams	WSRC-MS 90-9	NA, May 11, 1990
P1032	Uncertainty Analyses Using the MELCOR Severe Accident Analysis Code	R.O. Gauntt	NA	NA, NA
P1033	Guernsey Fast Reactor Safety Topical In-Pile Observations of Fuel and Clad Relocation During LMFBR Initiation Phase Accident Experiments, The STAR Experiments	S.A. Wright, G. Schumacher, P.R. Henkel, and P. Royl	SAND 85-1279C	NA, NA
P1034	Visual Observations of Fuel Disruption in In-Pile LMFBR Accident Experiments	S.A. Wright and P.K. Mast	SAND 81-2246C	NA, NA
P1035	Analysis of In-Pile Fuel Disruption Experiments	R.W. Ostensen and M.F. Young	SAND78-0363C	NA, NA
P1036	Visual In-Pile Fuel Disruption Experiments	G. Cano, R.W. Ostensen, and M.F. Young	SAND 78-0515C	NA, NA
P1037	First Visual In-Pile Fuel Disruption Experiments	G.L. Cano	SAND 78-0622	NA, NA
P1038	Visual Investigation of Reactor Fuels Response to Simulated LOF Heating Conditions, First Series	G.L. Cano, R.W. Ostensen, and M.F. Young	SAND79-0940	Rev. 7, October 1979
P1039	Fuel Disruption Mechanisms Determined In-Pile in the ACRR	S.A. Wright and E.A. Fischer	SAND83-1750	Rev. 7, September 1984

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
P1040	In-Core Fuel Disruption Experiments Simulating LOF Accidents for Homogeneous and Heterogeneous Core LMFBRs: FD2/4 Series	S.A. Wright, P.K. Mast, G. Schumacher, and E.A. Fischer	SAND82-0136C	NA, NA
P1041	Sandia National Laboratories/New Mexico Environmental Information Document, Volume II	J.V. Guerrero, K.A. Kuzio, W.H. Johns, L.S. Bayliss, and B.B. White	SAND99-2022/2	NA, September 1999
P1042	Sandia National Laboratories/New Mexico, Environmental Information Document, Volume I	J.V. Guerrero, K.A. Kuzio, W.H. Johns, L.S. Bayliss, and B.B. White	SAND99-2022/1 & 2	NA, September 1999
P1043	Summary of MELCOR 1.8.2 Calculations for Three LOCA Sequences (AG, S2D, and S3D) at the Slurry Plant	L. Kmetyk and L. Smith	SAND93-2042	NA, March 1994
P1044	The Department of Energy's Tritium Production Program	R.E. Rowberg	RL30425	NA, November 8, 2001
P1045	LWR Severe Core Damage Phenomenology Program Plan - Volume I: Melt-Progression Phenomenology and Damaged Fuel Relocation Programs	Advanced Reactor Research Department 9420	NUREG/CR-2725 and SAND82-1115	NA, November 1982
P1046	Summary Report: Special Committee on Source Terms	American Nuclear Society, NRC, DOE, Electric Power Research Institute	NA	NA, September 1984
P1047	NPR/FCI EXO-FITS Experiments Series Report	M.J. Rightley, D.F. Beck, and M. Berman	SAND91-1544	NA, January 1993
P1048	MELCOR 1.8.0: A Computer Code for Nuclear Reactor Severe Accident Source Term and Risk Assessment Analysis	R.M. Summers, R.K. Cole, E.A. Boucheron, M.K. Carmel, S.E. Dingman, and J.E. Kelly	SAND90-0364	Rev. 3, January 1991
P1049	MELCOR 1.8.1 Assessment: ACRR Source Term Experiments ST-1/ST-2	L.N. Kmetyk	SAND91-2833	NA, April 1992

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
P1050	Project Plan: Fabrication of ACRR Fuel Rods	R.E. Page and R.S. Kemper	TD1699	NA, January 14, 1983
P1051	The Global Nuclear Future, The Next Era of Nuclear Power	T. Sanders	NA	NA, Spring 2002
P1100	Programmatic Waste Acceptance Criteria	J. Jones	POL-95-01	Rev. 1, October 7, 1997
P1101	SNL/NM Waste Handling	L.G. Duran	FOP 00-02	Rev. 4, 6/26/2006
P1102	Building 6580 Hot Cell Facility, Steel Containment Boxes and Zone 2A Process Knowledge Documentation: Isotope Production Program, Hot Cell Facility Decontamination Project	L. Fugelso, S. Longley, and S. Bourcier	NA	NA, June 26, 1996
P1104	Hot Cell Facility (HCF) Safety Analysis Report, Main Report and Appendices	Louis F. Restrepo	SAND94-2650	NA, 10/14/1994
P1105	Series of procedures titled AHCF Campaign Operating Procedure for TRU Waste	Chris Barth; Maryla Wasiolek	AHCF-AP-003.02; AHCF-OP-008.00	Revisions 02 & 00 Respectively, 08/30/2010;12/22/2010
P2001	Preliminary Characterization of Materials in Manzano Storage Bunker 37055	R. Lipinski, R. Lenard, G. Harns	SAND99-0182	NA, April 1999
P2002	Auxiliary Hot Cell Facility Campaign Plans 11, 12, and 14	R. Aquilar	NA	Rev. 1, Rev. 0, draft, 10/16/13, 10/16/2013, and 3/16/13
P2003	Analysis of Materials to be Processed in the Auxiliary Hot Cell Facility (AHCF)	R. Salyer	NA	Rev. 1, 2, and 3, 09/24/13
P2004	Characteristics of UO2-Zr Fuel Rods Irradiated in the BR3 Reactor	J. Adams, B. Dabell	FIN No. A6305	NA, November 2004
P2005	Campaign Operating Procedures for Campaigns 11, 12, and 14	NA	AHCF-OP-017; AHCF-OP-018; and AHCF-OP-019	Rev. 2; Rev. 0; TBD, Various
P2007	Performance of Fast Reactor Mixed-Oxide Fuel Pins During Extended Overpower Transients	H. Tsai, L. Neimark, T. Asaga, S. Shikakura	ANL/CP- 69231 or DE91 015681	NA, February 1991

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
P2008	Fuel-Disruption Experiments Under High-Ramp-Rate Heating Conditions	S. Wright, D. Worledge, G. Cano, P. Mast, F. Briscoe	NUREG/CR-3662 or SAND81 - 0413	Rev. 7, October 1983
P2009	Fabrication Data Package on Fuel Pins for EBR-II Subassemblies PNL 9, 10 and 11	K. Chidester, J. Keenan, W. Warden	HEDL-TME 72-18	NA, May 1972
P2010	Evaluation of FFTF Fuel Pin Design Procedure vis-à-vis Steady State Irradiation Performance in EBR II	R. Jackson	HEDL-TME 75-48 Addendum or UC-79b	NA, November 1975
P2012	Performance of Fast Reactor Mixed-Oxide Fuel Pins During Extended Overpower Transients	H. Tsai and L. Neimark	ANL/CP--69231 or DE91 015681	NA, February 1991
P2013	Reactor Safety Research Quarterly Report January-March 1983 Volume 25	N/A	NUREG/CR-3589 or SAND83 - 2425	R3 and R7, July 1984
U1001	Star 1 Quick Look Report	S.A. Wright, G. Schumacher, and P.K. Henkel	U001	NA, November 29, 1983
U1002	Star -7 Data Report	S.A. Wright and G. Schumacher	U002	NA, July 1987
U1004	Plan for ACRR Source Term Experiments	NA	NA	NA, NA
U1009	DFR TLM Demonstration Test	A.C. Marshall	NA	NA, September 4, 1983
U1010	Radionuclide Release from Severely Damaged Light Water Reactor Fuel, Annular Core Research Reactor Inpile Test Program Plan	Reactor Safety Research Department	SAND84-1582	NA, July 1984
U1011	Reassessment of the Technical Bases for Estimating Source Terms (Draft Report for Comment)	M. Silberberg, J.A. Mitchell, R.O. Meyer, W.F. Pasedag, C.P. Ryder, C.A. Peabody, & J.W. Jankowski	NUREG-0956	NA, July 1985
U1012	ST-2 Experiment Plan, Corrections, and Appendix of Instrumentation, also includes QAP and SOP	K.O. Reil and J.W. Fisk	NA	NA, October 19, 1987

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
U1014	The USNRC Severe Fuel Damage Research Program	M. Silberberg, R.W. Wright, G.P. Marino, P.E. MacDonald, T.M. Howe, B.J. Beuscher, R.W. Miller, P.S. Pickard, R.L. Coats, & J.B. Rivard	NA	NA, NA
U1015	Task Quality Plan for the Transient Fuel and Target Performance Cask	Bill Marshall, Jr.	TWP No. 2840.131	Rev. 0, 04/30/1991
U1021	Collection of Modifications/Expenditures of Nuclear Materials Forms Pertaining to C0, C3, C6, NPR/ACRR, and SRS/NPR and Nuclear Radioactive Material Transfer Forms	NA	NA	NA, 07/09/1991 thru 06/10/1992, not inclusive
U1022	STAR Handling Procedures for Irradiated Fuel Experiements	NA	NA	NA, October 1984
U1025	SRS-NPR Unirradiated Fuel Cutting Instruction; SRS-NPR Irradiated Fuel Sample Cutting Instruction; SRS Fuel Element Cutting Instruction	NA	NA	NA, 1990 - 1991
U1026	Procedure for fabricating uranium oxide fission foils by electrodeposition	NA	NA	NA, 1986
U1027	Procedures for: Coating Aluminum Oxide Tubes with Uranium, in Bldg 6580/Rm 203; Cleanup and Modification of Glove Boxes Nos. 1 and 2; Preirradiated Pin Cutting and Welding	NA	NA	NA, 1984
U1028	Procedures for Setup and Cutting of Experiment DF1 Packages	NA	NA	NA, Not Dated
U1029	CCP Calc Package: SNL-RH-01, Sample Data Input Check Calc-PKE00044	J. Vance	SNL-RH-01	NA, 05/06/2011
U1030	CCP Calc Package: SNL-RH-02, Scaling Factor Development-PKE00044	J. Vance	SNL-RH-02	NA, 05/06/2011
U1031	CCP Calc Package: SNL-RH-03, Determination of Reportable Radionuclides - PKE00044	J. Vance	SNL-RH-03	NA, 05/06/2011
U1032	CCP Calc Package: SNL-RH-04, Drum Dose-to-Curie Derivation for Cs-137	J. Vance	SNL-RH-04	Rev. 1, 05/27/2011
U1033	CCP Calc Package: SNL-RH-05, Uncertainty Analysis for Drums - PKE00044	J. Vance	SNL-RH-05	Rev. 1, 05/27/2011
U1034	CCP Calc Package: SNL-RH-06, DTC and Related Calculations for Drums - PKE00044	J. Vance	SNL-RH-06	Rev. 1, 06/01/2011
U1035	CCP Calc Package SNL-RH-07: Radiochemistry and Mass Spectrometry Data Input Check	J. Vance	SNL-RH-07	Rev. 0, 09/30/2011
U1036	CCP Calc Pakcage SNL-RH-08: Scaling Factor Development Debris - PKE00027	J. Vance	SNL-RH-08	Rev. 0, 09/30/2011

Attachment 4 - Acceptable Knowledge Source Document Information List (continued)

Source Document Tracking Number [a/c]	Title or Description [a]	Author	Document # [b]	Document Revision # and Date
U1037	CCP Calc Package SNL-RH-09: Determination of Reportable Radionuclides	J. Vance	SNL-RH-09	Rev. 0, 09/30/2011
U1038	CCP Calc Package SNL-RH-10: Uncertainty Analysis for Drums - PKE00027	J. Vance	SNL-RH-10	Rev. 0, 09/30/2011
U1039	CCP Calc Package SNL-RH-11: DTC and Related Calculations for Drums - PKE00027	J. Vance	SNL-RH-11	Rev. 0, 09/30/2011
U1040	CCP Calc Package: Radiochemistry and Mass Spectrometry Data Input Check	J. Vance	SNL-RH-12	Revision 0, 11/9/2011
U1041	CCP Calc Package SNL-RH-13: Scaling Factor Development Debris - PKE00047	J. Vance	SNL-RH-13	Rev. 0, 09/30/2011
U1042	CCP Calc Package SNL-RH-14: Determination of Reportable Radionuclides	J. Vance	SNL-RH-14	Rev. 0, 09/30/2011
U1043	CCP Calc Package SNL-RH-15: Uncertainty Analysis for Drums - PKE00047	J. Vance	SNL-RH-15	Rev. 0, 09/30/2011
U1044	CCP Calc Package SNL-RH-16: DTC and Related Calculations for Drums - PKE00047	J. Vance	SNL-RH-16	Rev. 0, 09/30/2011

[a] From Acceptable Knowledge Souce Document Summaries (Attachments 3)

[b] Or publisher's document number if available

[c] In the case where a AK Summary Report has been revised based on information in Attachment 11- Acceptable Knowledge Source Document Discrepancy Resolution form, identify the tracking number.

Acceptable Knowledge Expert: John Kleckner, John Kleckner Date: 6/18/14
Print/Sign

AK7

Attachment 5 – Hazardous Constituents

Site(s): Sandia National Laboratories/New Mexico

Waste Stream Description: Remote Handled/Hot Cell Facility Transuranic Waste (Debris)

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Waste Stream Number: SNL-HCF-S5400-RH								
Compound	Suspected Present? (Y/N)	Used as a solvent? [a] (Y/N/NA)	TC constituent concentration less than regulatory level? [a] (Y/N/NA)	TC Hazardous Waste Number [a]	F-Listed Hazardous Waste Number [a]	U- or P-Listed Hazardous Waste Number [a]	EPA Hazardous Waste Number Assigned (N/Specify HWN)	State Hazardous Waste Number [b]
Toxicity Characteristic Metal Compounds (40 CFR Part 261)								
Arsenic	Yes	N/A	N/A	D004	N/A	N/A	D004	N/A
Barium	Yes	N/A	N/A	D005	N/A	N/A	D005	N/A
Cadmium	Yes	N/A	N/A	D006	N/A	N/A	D006	N/A
Chromium	Yes	N/A	N/A	D007	N/A	N/A	D007	N/A
Lead	Yes	N/A	N/A	D008	N/A	N/A	D008	N/A
Mercury	Yes	N/A	N/A	D009	N/A	U151	D009	N/A
Selenium	No	N/A	N/A	D010	N/A	N/A	N/A	N/A
Silver	Yes	N/A	N/A	D011	N/A	N/A	D011	N/A
Volatile Organic Compounds (40 CFR Part 261)								
1,1,1-Trichloroethane	Yes	Yes	N/A	N/A	F001/F002	U226	F002	N/A
1,1,2,2-Tetrachloroethane	No	N/A	N/A	N/A	N/A	U209	N/A	N/A
1,1,2-Trichloro-1,2,2-trifluoroethane	Yes	Yes	N/A	N/A	F001/F002	N/A	F002	N/A
1,1,2-Trichloroethane	No	N/A	N/A	N/A	F002	U227 [c]	N/A	N/A
1,1-Dichloroethylene	No	N/A	N/A	D029	N/A	U078	N/A	N/A
1,2-Dichlorobenzene	No	N/A	N/A	N/A	F002	U070	N/A	N/A
1,2-Dichloroethane	Yes	N/A	N/A	D028	N/A	U077 [c]	D028	N/A
1,4-Dichlorobenzene	No	N/A	N/A	D027	N/A	U072	N/A	N/A
1,4-Dioxane	No	N/A	N/A	N/A	N/A	U108	N/A	N/A
2-Ethoxyethanol	No	N/A	N/A	N/A	F005	U359 [c]	N/A	N/A
2-Nitropropane	No	N/a	N/A	N/A	F005	U171 [c]	N/A	N/A
Acetone	Yes	Yes	N/A	N/A	F003	U002	No	N/A

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Attachment 5 – Hazardous Constituents (Continued)

Waste Stream Number: SNL-HCF-S5400-RH								
Compound	Suspected Present? (Y/N)	Used as a solvent? [a] (Y/N/NA)	TC constituent concentration less than regulatory level? [a] (Y/N/NA)	TC Hazardous Waste Number [a]	F-Listed Hazardous Waste Number [a]	U- or P-Listed Hazardous Waste Number [a]	EPA Hazardous Waste Number Assigned (N/Specify HWN)	State Hazardous Waste Number [b]
Volatile Organic Compounds (continued)								
Acetonitrile	No	N/A	N/A	N/A	N/A	U003	N/A	N/A
Benzene	Yes	Yes	N/A	D018	F005	U019	F005	N/A
Butanol (n-Butyl alcohol)	Yes	Yes	N/A	N/A	F003	U031 [c]	No	N/A
Carbon disulfide	No	N/A	N/A	N/A	F005	P022 [c]	N/A	N/A
Carbon tetrachloride	Yes	No	N/A	D019	F001	U211 [c]	D019	N/A
Chlorobenzene	No	N/A	N/A	D021	F002	U037	N/A	N/A
Chloroform	Yes	No	N/A	D022	N/A	U044	D022	N/A
Cyclohexanone	No	N/A	N/A	N/A	F003	U057 [c]	N/A	N/A
Ethyl acetate	No	N/A	N/A	N/A	F003	U112 [c]	N/A	N/A
Ethyl benzene	No	N/A	N/A	N/A	F003	N/A	N/A	N/A
Ethyl ether	No	N/A	N/A	N/A	F003	U117 [c]	N/A	N/A
Formaldehyde	No	N/A	N/A	N/A	N/A	U122	N/A	N/A
Hydrazine	No	N/A	N/A	N/A	N/A	U133	N/A	N/A
Isobutanol	No	N/A	N/A	N/A	F005	U140 [c]	N/A	N/A
Methanol	Yes	Yes	N/A	N/A	F003	U154	No	N/A
Methyl ethyl ketone	Yes	Yes	N/A	D035	F005	U159	F005	N/A
Methyl isobutyl ketone	Yes	N/A	N/A	N/A	F003	U161 [c]	No	N/A
Methylene chloride	Yes	Yes	N/A	N/A	F001/F002	U080 [c]	F002	N/A
Pyridine	Yes	Yes	N/A	D038	F005	U196	F005	N/A
Tetrachloroethylene	No	N/A	N/A	D039	F001/F002	U210	N/A	N/A
Toluene	Yes	Yes	N/A	N/A	F005	U220	F005	N/A
trans-1,2-Dichloroethylene	No	N/A	N/A	N/A	N/A	U079	N/A	N/A
Trichloroethylene	Yes	Yes	N/A	D040	F001/F002	U228	F002	N/A
Trichlorofluoromethane	Yes	No	N/A	N/A	F001/F002	U121 [c]	No	N/A
Vinyl Chloride	No	N/A	N/A	D043	N/A	U043	N/A	N/A
Xylenes	Yes	Yes	N/A	N/A	F003	U239	No	N/A

Attachment 5 – Hazardous Constituents (Continued)

Waste Stream Number: SNL-HCF-S5400-RH								
Compound	Suspected Present? (Y/N)	Used as a solvent? [a] (Y/N/NA)	TC constituent concentration less than regulatory level? [a] (Y/N/NA)	TC Hazardous Waste Number [a]	F-Listed Hazardous Waste Number [a]	U- or P-Listed Hazardous Waste Number [a]	EPA Hazardous Waste Number Assigned (N/Specify HWN)	State Hazardous Waste Number [b]
Semivolatile Organic Compounds (40 CFR Part 261)								
2,4-Dinitrotoluene	No	N/A	N/A	D030	N/A	U105	N/A	N/A
Cresols	No	N/A	N/A	D026	F004	U052	N/A	N/A
Dimethyl sulfate	No	N/A	N/A	N/A	N/A	U103	N/A	N/A
Hexachlorobenzene	No	N/A	N/A	D032	N/A	U127 [c]	N/A	N/A
Hexachlorobutadiene	No	N/A	N/A	D033	N/A	U128 [c]	N/A	N/A
Hexachloroethane	No	N/A	N/A	D034	N/A	U131 [c]	N/A	N/A
Nitrobenzene	No	N/A	N/A	D036	F004	U169 [c]	N/A	N/A
Pentachlorophenol	No	N/A	N/A	D037	F027 [c]	N/A	N/A	N/A

Attachment 5 – Hazardous Constituents (Continued)

Waste Stream Number: SNL-HCF-S5400-RH								
Compound	Suspected Present? (Y/N)	Used as a solvent? [a] (Y/N/NA)	TC constituent concentration less than regulatory level? [a] (Y/N/NA)	TC Hazardous Waste Number [a]	F-Listed Hazardous Waste Number [a]	U- or P-Listed Hazardous Waste Number [a]	EPA Hazardous Waste Number Assigned (N/Specify HWN)	State Hazardous Waste Number [b]
Other Constituents								
Wastewater treatment sludges from electroplating operations	No	N/A	N/A	N/A	F006	N/A	N/A	N/A
Spent cyanide plating bath solutions from electroplating operations	No	N/A	N/A	N/A	F007	N/A	N/A	N/A
Spent cyanides stripping and cleaning bath solutions from electroplating operations	No	N/A	N/A	N/A	F009	N/A	N/A	N/A
Beryllium powder	No	N/A	N/A	N/A	N/A	P015	N/A	N/A
Cyanide (soluble cyanide salts)	Yes	N/A	N/A	N/A	N/A	P030	No	N/A
Potassium cyanide	No	N/A	N/A	N/A	N/A	P098	N/A	N/A
Potassium silver cyanide	No	N/A	N/A	N/A	N/A	P099	N/A	N/A
Sodium Cyanide	No	N/A	N/A	N/A	N/A	P106	N/A	N/A
Vanadium pentoxide	No	N/A	N/A	N/A	N/A	P120	N/A	N/A
Hydrofluoric acid	Yes	N/A	N/A	N/A	N/A	U134	No	N/A
Total PCB Concentration [d]	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional EPA Hazardous Constituents (List)	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional State Hazardous Constituents [b] (List) [e]	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potentially Flammable VOCs (Listed Below) [e,f]	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethane	Yes	N/A	N/A	D028	N/A	U077 [c]	D028	N/A
Acetone	Yes	Yes	N/A	N/A	F003	U002	No	N/A

Attachment 5 – Hazardous Constituents (Continued)

Waste Stream Number: SNL-HCF-S5400-RH								
Benzene	Yes	Yes	N/A	D018	F005	U019	F005	N/A
Butanol (n-Butyl alcohol)	Yes	Yes	N/A	N/A	F003	U031 [c]	No	N/A
Methanol	Yes	Yes	N/A	N/A	F003	U154	No	N/A
Methyl ethyl ketone	Yes	Yes	N/A	D035	F005	U159	F005	N/A
Toluene	Yes	Yes	N/A	N/A	F005	U220	F005	N/A
Xylenes	Yes	Yes	N/A	N/A	F003	U239	No	N/A

a Source: Title 40 Code of Federal Regulations Part 261, Identification and Listing of Hazardous Waste
b. Source: Cite applicable state regulation
c. This EPA Hazardous Waste Number is not permitted for WIPP disposal.
d. Source: Title 40 Code of Federal Regulations Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.
e. Add rows or attach additional sheets as necessary
f. Flammable VOCs included in the CH-TRAMPAC

NOTE: If any of the information requested on this form is not available or not applicable, enter N/A in the appropriate box.

Acceptable Knowledge Expert: John Kleckner / [signature] Date: 7/30/14
Print Sign

AK8

Attachment 6 – Waste Form, Waste Material Parameters, Prohibited Items, and Packaging – Example Form Page 1 of 2

Site(s): Sandia National Laboratories/New Mexico

Waste Stream Description: Remote Handled/Hot Cell Facility Transuranic Waste (Debris)

Container ID Numbers: See CCP-TP-005, Attachment 8 for containers in this waste stream

Waste Stream Number: SNL-HCF-S5400-RH	
Physical Waste Form (e.g., debris, solidified waste)	Debris
Summary Category Group [a]	S5000
Waste Matrix Code Group [a]	Heterogeneous debris waste
Waste Matrix Code [b]	S5400
Waste Material Parameter Weights [c]	Estimated Waste Stream Weight Percent Average (attach evaluation justifying percentages)
Iron-based metals/alloys	71.0%
Aluminum-based metals/alloys	10.1%
Other metals	4.3%
Other inorganic materials	4.7%
Cellulosics	3.4%
Rubber	0.9%
Plastics (waste materials)	5.1%
Organic matrix	0.0%
Inorganic matrix	0.5%
Soils/Gravels	0.0%
Packaging Materials	Present (Y/N)?
Steel	Y
Plastics	Y
Prohibited Wastes [d,e,f,g]	Present (Y/N)?
Observable liquid shall be no more than 1 percent by volume of the outermost container at the time of RTR or VE. Observable liquid shall be no more than 60 milliliters or 3 percent by volume, whichever is greater, in an internal container. Observable liquid shall not be present in a container with EPA HWN U134 assigned.	Y
Non-radionuclide pyrophoric materials	N
Sealed containers > 4 liters	Y
Hazardous waste not occurring as co-contaminants with TRU mixed waste (non-mixed hazardous waste)	N

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DATE REC'D 8/6/2014
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Attachment 6 – Waste Form, Waste Material Parameters, Prohibited Items, and Packaging (continued)

Waste Stream Number: SNL-HCF-S5400-RH	
Explosives	N
Compressed gases	Y
Residual hydrofluoric acid (if U134 assigned to stream)	N
Residual PCB liquids [j]	N
Ignitables (EPA Hazardous Waste Number D001)	N
Corrosives (EPA Hazardous Waste Number D002)	N
Reactives (EPA Hazardous Waste Number D003)	N
Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes [h]	N
Spent Nuclear fuel or high-level waste [i]	N
Any un-vented plastic bags > 4 liters that have been heat-sealed	N
Additional Information (if available)	N
Packaging	
Waste container type?	DOT/WIPP compliant 55-galon drum
Liner type?	may or may not contain a plastic drum liner
Is liner punctured?	Y
Is filter vent installed?	Y
Maximum number of confinement layers	1(one)

a. Source: *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (CCP-PO-001) Introduction.
b. Source: *Transuranic Waste Baseline Inventory Report* (DOE/CAO-95-1121) or DOE Waste Treatability Group Guidance (DOE/LLW-217). Note: the waste matrix code should not be assigned at the summary category group level.
c. Source: CCP-PO-001 – Table C3-1. Attach the Waste Material Parameter Evaluation Memorandum used to estimate values include in this Table (see Section 4.4.27).
d. Source: CCP-PO-001 – Section C-1c
e. Source: *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC)(DOE/WIPP-02-3122), Section 3
f. Source: *TRUPACT-II Content Codes* (TRUCON) (DOE/WIPP 89-004)
g. Source: *TRUPACT-II Authorized Methods for Payload Control (TRAMPAC), Nuclear Waste Partnership*, LLC
h. This waste has been approved for disposal at the WIPP by the Permittee as documented by Appendix C1 of the WIPP RCRA Part B Permit Application and the Permittee's approval and assignment of the applicable TRUCON Codes for this waste stream.
i. Source: *Nuclear Waste Policy Act of 1982* (42 U.S.C. 10101)
j. Source: Polychlorinated Biphenyls (PCBs) manufacturing, Processing, Distribution and Commerce, and Use Prohibitions (40 CFR 761)

Acceptable Knowledge Expert: John Kleckner, [signature] Date: 8/6/14
Print Sign

Memorandum

To: CCP Records

From: John Kleckner, AKE

Date: January 24, 2014

Re: Waste Material Parameter Evaluation for Waste Stream SNL-HCF-S5400-RH, Sandia National Laboratories/New Mexico, Remote Handled/Hot Cell Facility Transuranic Waste (Debris)

In accordance to *CCP Acceptable Knowledge Documentation*, CCP-TP-005, Revision 26, Section 4.4.26, Waste Material Parameters (WMPs) shall be estimated on a weight percent basis for the Waste stream, documenting the assumptions, justification, and limitations for deriving the estimated weight percentages.

The WMP weight percentages for this waste stream were estimated by reviewing the container paperwork. Since container paperwork did not always indicate weights for individual items placed in a parcel or drum, these weights were estimated based on the waste description. For most parcels, the net weights were taken from the SNL Radioactive Waste/Nuclear Material Disposition Department Radiological Form included in the DR documentation. A few parcels had other Disposal Request documentation that was viewed as more accurate so that was used (References C1039, M1016, and M1019). The FEW waste, because it had been previously managed as accountable material, does not have standard DRs so content descriptions are based on MC&A records and radiological characterization forms, which are less detailed from the WMP perspective. In addition, many of the FEW containers have the original experimental assemblies, which may or may not have been entirely contaminated if the fuels remained intact during irradiation in ACRR. If the fuels remained intact they could potentially be removed from the assemblies during repackaging (Reference P2002), substantially reducing the volume of waste material. For the FEW containers the following assumptions were made to determine WMP:

1) Net weight of a container was taken from the Radiological Characterization Summary Form (Reference M2021). If a Summary form was not available the net weight is based on SNL's estimate of the average experimental assembly weight of 60 lbs., regardless of the type of container it is currently stored in (Reference P2002).

2) The current outer containers (i.e. shielded casks, drums, assembly packages, and boxes) will be disposed as low-level waste and will not become part of the waste stream.

3) The net weight of each container will consist of 85% Iron-based metal (experiment assemblies, inner packaging [e.g. steel paint cans], fuel cladding), 10% aluminumbased metals (experiment assembly parts), and 5% other metals (experiment assembly parts, fuel, and cladding).

4) The weight of other inorganic materials, cellulosics, rubber, and plastic, prior to repackaging is negligible to the weight of metal.

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DATE REC'D 5-21-14

The WMP estimate for waste stream SNL-HCF-S5400-RH is presented in Table 1, Waste Material Parameter Estimates for SNL-HCF-S5400-RH. These calculations conclude that the average weight percentages for inorganic and organic waste materials for waste stream SNL-HCF-S5400-RH are 90.6 percent and 9.4 percent, respectively, with the predominant WMP being iron based metal alloys. The minimum and maximum weight percentages per drum included in Table 1 represents the lowest and highest estimated non-zero amounts of these materials prior to repackaging. The final packaging of these materials will result in drums that do not include all of these waste material parameters. The estimates in Table 1 take into account the entire waste stream, including the portion of this waste stream that has been shipped to WIPP. Appendix A to this memo is the spreadsheet containing the data collected from review of the container documentation, and was used to derive the WMP estimates.

Table 1. Waste Material Parameter Estimates for SNL-HCF-S5400-RH

Waste Material Parameter	Average Weight Percent (Wt%)	Wt% Range[1]
Iron-based Metals/Alloys	71.0%	3.0% - 95.0%
Aluminum-based Metals/Alloys	10.1%	1.0% - 100.0%
Other Metals	4.3%	1.0% - 80.0%
Other Inorganic Materials	4.7%	0.1% - 100.0%
Cellulosics	3.4%	0.5% - 50.0%
Rubber	0.9%	0.5% - 11.1%
Plastic (waste materials)	5.1%	0.5% - 50.0%
Solidified Inorganic Material	0.5%	3.3% - 10.0%
Solidified Organic Material	0.0%	0.0% - 0.0%
Soils	0.0%	0.0% - 0.0%
Total Inorganic Waste Average	**90.6%**	
Total Organic Waste Average	**9.4%**	

[1] Range includes lowest non-zero estimated values for parcels prior to repackaging.

Waste Material Paramenter Memo
SNL-HCF-S5400-RH
Appendix A

Current Container Number	Waste Parcel ID#	LANMAS Container#	Original Container Number(s)	net Weight (g)	net Weight (lbs)	Iron-based metals/alloys (IM) - 7.86 g/cc	Aluminum-based metals/alloys (AM) - 2.7 g/cc	Other metals (OM)	Other inorganic materials (OI)	Cellulosics (C) - 0.7 g/cc	Rubber (R) - 1.4 g/cc	Plastics (waste materials) (PW) - 2.2 g/cc	Inorganic matrix (IN)	Organic matrix (OR)	Soils
C980395	P9800966		HCF-RW-95-SC-1	8.81E+04	194.00	70460.8	4403.8	0.0	4403.8	4403.8	0.0	4403.8	0.0	0.0	0.0
C980394	P9800965		HCF-RW-95-SC2	8.26E+04	182.00	41314.0	4131.4	4131.4	8262.8	8262.8	0.0	8262.8	8262.8	0.0	0.0
C980403	P9801007		HCRFW5(GB-1-95-		40.00	4952.7	1650.9	3301.8	1650.9	1650.9	1650.9	3301.8	0.0	0.0	0.0
C980405	P9801005		TRU-HCF-95-01?		90.00	16344.0	20430.0	4086.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C980387	P9800958		TRU-HCF-95-02	52664.00	116.00	42131.2	2633.2	2633.2	52.7	2580.5	0.0	2633.2	0.0	0.0	0.0
C980392	P9800963		TRU-HCF-97-05	13166.00	29.00	9216.2	0.0	2633.2	0.0	658.3	0.0	658.3	0.0	0.0	0.0
C980391	P9800962		TRU-HCF-97-06	8626.00	19.00	862.6	0.0	6900.8	431.3	431.3	0.0	0.0	0.0	0.0	0.0
C980465	P9801148		HCF-RW-96-KC-01		124.00	38860.7	0.0	0.0	6480.1	810.0	810.0	9315.2	0.0	0.0	0.0
C980466	P9801149		HCF-RW-95-KC-03		189.00	76012.6	0.0	0.0	4213.4	2733.0	0.0	0.0	2846.9	0.0	0.0
C980467	P9801150		HCF-RW-95-KC-05		256.00	58112.0	21131.6	10565.8	0.0	5282.9	5282.9	15848.7	0.0	0.0	0.0
C980371	P9800935		ST-1		10.00	3632.0	454.0	454.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C980375	P9800939		HCF-RW-96-KC-04		142.00	61244.6	644.7	644.7	644.7	322.3	0.0	644.7	0.0	0.0	0.0
C980376	P9800940		HCF-RW-96-KC-03		204.00	87985.2	926.2	1852.3	0.0	463.1	463.1	926.2	0.0	0.0	0.0
C980373	P9800937		HCF-RW-96-KC-07		138.00	50121.6	6265.2	626.5	313.3	313.3	626.5	4385.6	0.0	0.0	0.0
C980374	P9800938		HCF-RW-96-KC-06		140.00	60382.0	635.6	635.6	635.6	317.8	317.8	635.6	0.0	0.0	0.0
C980377	P9800941		HCF-RW-96-KC-02		340.00	146642.0	3087.2	1543.6	771.8	771.8	771.8	771.8	0.0	0.0	0.0
C980396	P9800964		HCF-RW-KC-96-05		102.00	18866.2	3430.2	5145.3	1715.1	1715.1	5145.3	10290.7	0.0	0.0	0.0
C080210	P9800660				25.50	1286.3	4502.2	643.2	1286.3	1286.3	0.0	2572.7	0.0	0.0	0.0
	P2000938				1.50	454.0	0.0	113.5	0.0	0.0	0.0	113.5	0.0	0.0	0.0
C980378	P9800947		HCF-RW-KC-95-04		108.00	0.0	0.0	0.0	49032.0	0.0	0.0	0.0	0.0	0.0	0.0
C980379	P9800943		HCF-RW-KC-96-08		136.00	30872.0	0.0	0.0	0.0	15436.0	0.0	15436.0	0.0	0.0	0.0
C980380	P9800944		HCF-RW-KC-95-06		130.00	47216.0	2951.0	2951.0	0.0	2951.0	0.0	2951.0	0.0	0.0	0.0
C990236	P9900529		HCF-RW-KC-95-06		76.00	17252.0	0.0	0.0	1725.2	8900.8	1725.2	8900.8	0.0	0.0	0.0
C990238	P9900531		HCF-RW-KC-95-01		137.00	16963.1	0.0	5654.4	5654.4	11308.7	5654.4	16963.1	0.0	0.0	0.0
C990239	P9900532				117.00	1593.5	50462.1	1062.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C980313	P9800776		HCF-RW-1		56.00	0.0	0.0	0.0	25424.0	0.0	0.0	0.0	0.0	0.0	0.0
SNL/NM000178	P0400016				57.00	0.0	0.0	0.0	0.0	12939.0	0.0	12939.0	0.0	0.0	0.0
C080216	P2000836				1.92	436.5	0.0	0.0	0.0	0.0	0.0	436.5	0.0	0.0	0.0
	P9900533				20.95	0.0	9511.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	P9900534				20.95	0.0	9511.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C980281	P9800712		HCF-RW-KC-95-02		125.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C200357	P2000998				25.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217788				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217792				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217803				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217804				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Current Container Number	Waste Parcel ID#	LANMAS Container#	Original Container Number(s)	net Weight (g)	net Weight (lbs)	Iron-based metals/alloys (IM) - 7.86 g/cc	Aluminum-based metals/alloys (AM) - 2.7 g/cc	Other metals (OM)	Other inorganic materials (OI)	Cellulosics (C) - 0.7 g/cc	Rubber (R) - 1.4 g/cc	Plastics (waste materials) (PW) - 2.2 g/cc	Inorganic matrix (IN)	Organic matrix (OR)	Soils
		A00217805				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A00217806				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00186124				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00186629				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00186636				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00186919				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00187138				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00188180				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00188425				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00188432				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00190022				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00191470				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00191876				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973090		C00210003				5440.0	640.0	320.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973095		C00210009(C00				115.6	13.6	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210011				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210014				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973079		C00210015				77.1	9.1	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973077		C00210016				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210017				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973078		C00210018				2125.0	250.0	125.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973085		C00210019(C00				2125.0	250.0	125.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973086		C00210020(C00				2125.0	250.0	125.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973087		C00210021				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973088		C00210022				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210023				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973089		C00210024				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973099		C00210025(C00				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C973062		C00210026				38590.0	4540.0	2270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210033				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00210271				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		C00218134				2065.5	243.0	121.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		P00143301				23154.0	2724.0	1362.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Shaded areas indicate FEW waste														
						1689107.11	239217.54	101806.52	112697.37	81538.86	22447.93	120390.92	11109.71	0.00	0.00
	Shaded areas indicate where there was not enough information to assign specific WMP, so they were left blank.				Wt %	71.0%	10.1%	4.3%	4.7%	3.4%	0.9%	5.1%	0.5%	0.0%	0.0%

Steel Packaging materials	Plastics (packaging materials)	check	net weight (g)	Iron-based metals/alloys wt%	Aluminum-based metals/alloys wt%	Other metals (OM) wt%	Other inorganic materials (OI) wt%	Cellulosics wt%	Rubber wt%	Plastics (waste materials) wt%	Inorganic matrix wt%	Organic matrix wt%	Soils wt%	Steel Packaging materials	Plastics (packaging materials)	total
0.0	0.0		88076.00	80.00%	5.00%	0.00%	5.00%	5.00%	0.00%	5.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		82628.00	50.00%	5.00%	5.00%	10.00%	10.00%	0.00%	10.00%	10.00%	0.00%	0.00%			100.00%
0.0	0.0		18160.00	27.27%	9.09%	18.18%	9.09%	9.09%	9.09%	18.18%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		40660.00	40.00%	50.00%	10.00%					0.00%	0.00%	0.00%			100.00%
0.0	0.0	52664	52664	80.00%	5.00%	5.00%	0.10%	4.90%	0.00%	5.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	13166	13166	70.00%	0.00%	20.00%	0.00%	5.00%	0.00%	5.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	8626	8626	10.00%	0.00%	80.00%	5.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		56296	69.06%	0.00%	0.00%	11.51%	1.44%	1.44%	16.55%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	85806	85806	88.59%	0.00%	0.00%	4.91%	3.18%	0.00%	0.00%	3.32%	0.00%	0.00%			100.00%
0.0	0.0		116224	50.00%	18.18%	9.09%	0.00%	4.55%	4.55%	13.64%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		4540	80.00%	10.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		64468	95.00%	1.00%	1.00%	1.00%	0.50%	0.00%	1.00%	0.00%	0.00%	0.00%			99.50%
0.0	0.0		92616	95.00%	1.00%	2.00%	0.00%	0.50%	0.50%	1.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		62652	80.00%	10.00%	1.00%	0.50%	0.50%	1.00%	7.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	63560	63560	95.00%	1.00%	1.00%	1.00%	0.50%	0.50%	1.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	154360	154360	95.00%	2.00%	1.00%	0.50%	0.50%	0.50%	0.50%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	46308	46308	40.74%	7.41%	11.11%	3.70%	3.70%	11.11%	22.22%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	11577	11577	11.11%	38.89%	5.56%	11.11%	11.11%	0.00%	22.22%		0.00%	0.00%			100.00%
0.0	0.0		681	66.67%	0.00%	16.67%	0.00%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	49032	49032	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		61744	50.00%	0.00%	0.00%	0.00%	25.00%	0.00%	25.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	59020	59020	80.00%	5.00%	5.00%	0.00%	5.00%	0.00%	5.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		34504	50.00%	0.00%	0.00%	5.00%	20.00%	5.00%	20.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		62198	27.27%	0.00%	9.09%	9.09%	18.18%	9.09%	27.27%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		53118	3.00%	95.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		25424	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	25878	25878	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		873	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		9511.3	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0	9511.3	9511.3	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		56750													0.00%
0.0	0.0		11350													
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%

Steel Packaging materials	Plastics (packaging materials)	check	net weight (g)	Iron-based metals/alloys wt%	Aluminum-based metals/alloys wt%	Other metals (OM) wt%	Other inorganic materials (OI) wt%	Cellulosics wt%	Rubber wt%	Plastics (waste materials) wt%	Inorganic matrix wt%	Organic matrix wt%	Soils wt%	Steel Packaging materials	Plastics (packaging materials)	total
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		6400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		136	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		90.7	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		2500	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		2500	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		2500	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		45400	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		2430	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.0	0.0		27240	85.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			100.00%
0.00	0.00	2378316.0	2446738.30	0.00%												
0.0%	0.0%	100.0%														
			Min	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
			Min none zero	3.00%	1.00%	1.00%	0.10%	0.50%	0.50%	0.50%	3.32%	0.00%	0.00%			
			Max	95.00%	100.00%	80.00%	100.00%	50.00%	11.11%	50.00%	10.00%	0.00%	0.00%	0.00%	0.00%	

AK9

Attachment 8 – Waste Containers List*

Site(s): Sandia National Laboratories/New Mexico
Waste Stream Number(s): SNL-HCF-S5400-RH
Waste Stream Description: Remote Handled Hot Cell Facility (HCF) Transuranic Waste (Debris)
Number of Waste Containers in Waste Stream:
Total Existing Volume (m^3): 10.5 (2.8 already shipped to WIPP, 7.7 to be shipped)
Is waste expected to be generated in the future?: No
If yes, Estimated Future Volume (m^3): N/A
Assumptions: Assumes each container to be shipped is repackaged into a 55-gal drum
Waste Stream Container Evaluation Memo(s) for Added Containers: N/A

Repackaged Conntainer ID#[2]	Original Container ID#	MC&A Container ID#	Container Type	Generation /Close Date	Generation Point
SNLNM007018	C980403	NA	55-gal drum[1]	6/1/2011	SNL HCF
SNLNM007099	C980405	NA	55-gal drum[1]	8/23/2011	SNL HCF
SNLNM007098	C980392	NA	55-gal drum[1]	8/19/2011	SNL HCF
SNLNM007024	C980391	NA	55-gal drum[1]	4/27/2011	SNL HCF
SNLNM007115	C980466	NA	55-gal drum[1]	7/25/2011	SNL HCF
SNLNM007117	C980467	NA	55-gal drum[1]	7/28/2011	SNL HCF
SNLNM007112	C980375	NA	55-gal drum[1]	7/13/2011	SNL HCF
SNLNM007011	C980373	NA	55-gal drum[1]	1/21/2011	SNL HCF
SNLNM007116	C980374	NA	55-gal drum[1]	8/2/2011	SNL HCF
SNLNM007118	C980377	NA	55-gal drum[1]	8/4/2011	SNL HCF
SNLNM007008	C980396	NA	55-gal drum[1]	2/8/2011	SNL HCF
SNLNM007010	C080210	NA	55-gal drum[1]	2/23/2011	SNL HCF
SNLNM007113	C980378	NA	55-gal drum[1]	7/18/2011	SNL HCF
SNLNM007007	C980379	NA	55-gal drum[1]	1/27/2011	SNL HCF
SNLNM007009	C980380	NA	55-gal drum[1]	2/16/2011	SNL HCF
SNLNM007025	C990236	NA	55-gal drum[1]	5/4/2011	SNL HCF
SNLNM005339	C990238	NA	55-gal drum[1]	12/2/2010	SNL HCF
SNLNM007017	C990239	NA	55-gal drum[1]	5/26/2011	SNL HCF
SNLNM007026	SNL/NM000178	NA	55-gal drum[1]	6/14/2011	SNL HCF
SNLNM007019		NA	55-gal drum[1]	6/14/2011	SNL HCF
SNLNM007119	C980281	NA	55-gal drum[1]	8/10/2011	SNL HCF
SNLNM007020	C200357	NA	55-gal drum[1]	3/8/2011	SNL HCF
TBD	NA	A00217788	experiment capsule	1977 - 1983	SNL HCF
TBD	NA	A00217792	experiment capsule	1983 - 1985	SNL HCF
TBD	NA	A00217803	experiment capsule	1983 - 1985	SNL HCF
TBD	NA	A00217804	experiment capsule	1983 - 1985	SNL HCF
TBD	NA	A00217805	experiment capsule	1983 - 1985	SNL HCF
TBD	NA	A00217806	experiment capsule	1983 - 1985	SNL HCF
TBD	NA	C00186124	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF

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Repackaged Conntainer ID#[2]	Original Container ID#	MC&A Container ID#	Container Type	Generation /Close Date	Generation Point
TBD	NA	C00186629	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00186636	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00186919	30-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00187138	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00188180	Shielded Cask	1987	SNL HCF
TBD	NA	C00188425	30-gal drum	1987	SNL HCF
TBD	NA	C00188432	36"Hx28"Lx17"W grey box	1983 - 1985	SNL HCF
TBD	NA	C00190022	30-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00191470	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00191876	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	C973090	C00210003	FD cask overpacked in 55-gal drum	1987	SNL HCF
TBD	C973095	C00210009 (C00217991) (C00219374)	2- gal can (C00210009), overpacked into a 30-gal drum(C00217991), overpacked into a 55-gal drum (C00219374)	1986 - 1993	SNL HCF
TBD	NA	C00210011	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00210014	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	C973079	C00210015	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	C973077	C00210016	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00210017	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	C973078	C00210018	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	C973085	C00210019 (C00218038)	Shielded metal cask (C00210019) overpacked into a metal box (C00218038)	1977 - 1983	SNL HCF

Repackaged Conntainer ID#[2]	Original Container ID#	MC&A Container ID#	Container Type	Generation /Close Date	Generation Point
TBD	C973086	C00210020 (C00218038)	Shielded metal cask (C00210020) overpacked into a metal box (C00218038)	1977 - 1983	SNL HCF
TBD	C973087	C00210021	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	C973088	C00210022	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00210023	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	C973089	C00210024	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	C973099	C00210025 (C00219360)	10-gal drum(C00210025) overpacked in 55-gal drum (C00219360)	1977 - 1983	SNL HCF
TBD	C973082	C00210026	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00210033	FD cask overpacked in 55-gal drum	1977 - 1983	SNL HCF
TBD	NA	C00210271	Paco Cask	1987	SNL HCF
TBD	NA	C00218134	Paco Cask	1987 1992	SNL HCF
TBD	NA	P00143301	experiment capsule	1986 - 1993	SNL HCF

[1] 30-gallon drum overpacked into 55-gallon drum during repackaging at the AHCF

[2] For FEW containers to be repacked, ID# is listed as To Be Determined (TBD) and will be updated on the AK tracking spreadsheet

*This list may change as a result of on going characterization activites, and should be considered a representation of the waste at the time the report was initially published. The RH SNL AK Tracking Spreadsheet should always be referenced for the current inventory.

Acceptable Knowledge Expert: John Kleckner / [signature] **Date:** 6/17/14
Print Sign

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	**Source Document Tracking Number:** C2004
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	**Category:** ☑ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a]: Waste Stream Conatiner Evaluation Memorandums	
Source Document Reference Information (author(s), document and revision number, date, publisher): J. Kleckner, NA, NA, 6/9/2014, CCP	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR6, WS1, WS2, WS3, WS6, WS8, WS9, WS10, S4, S16	Throughout	e-file(s): C2004 add containers memo to SNL-HCF-S5400-RH 6-9-2014.pdf Per CCP-TP-005, Memo to SPM documenting the evaluation of containers to be aded to waste stream SNL-HCF-S5400-RH.

Source Document Data Limitations (if any):

1. None

Acceptable Knowlege Expert:

Elizabeth Lickliter, Elizabeth Lickliter Date: 6/10/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

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WASTE STREAM CONTAINER EVALUATION MEMORAMDUM

To: Irene Joo, CCP SPM

From: John Kleckner, CCP AKE

Date: June 9, 2014

RE: Addition of containers to Waste Stream SNL-HCF-S5400-RH from repackaging Campaign 11

The purpose of this memorandum is to satisfy the requirements of CCP AK Documentation procedure (CCP-TP-005, Rev. 26, Section 4.10) for updating AK for the addition of waste stream containers.

After the initial identification, characterization, and subsequent shipment to WIPP of containers in waste stream SNL-HCF-S5400-RH (documented in AK Summary Report CCP-AK-SNL-500 Rev.4), additional potential RH waste was identified. This material is described as fuel examination waste (FEW) generated from the Hot Cell Facility that SNL managed as accountable material. An extensive initial container evaluation was performed by Steve Schafer dated 10/30/2013 (C2001). The AK Summary report was subsequently revised (Rev. 5) in January 2014 to include the FEW waste.

Repackaging of the FEW waste to meet WIPP disposal and transportation requirements is ongoing at the AHCF under packaging Campaigns 11, 12, and 14. After each packaging campaign, source document C2004 will be appended with an additional memorandum evaluating the new containers for addition to waste stream SNL-HCF-S5400-RH.

The parent containers repackaged during Campaign 11 consisted of nineteen containers with Mixed Oxide (MOX) material and contained experiment assemblies associated with Sandia's Fuel Disruption (FD) experiment series. Eighteen of the experiment assemblies were contained in shielded casks, known as Fuel Disruption (FD) casks, which were over-packed in 55-gallon drums and weighed approximately 1500 lbs. One experiment package was contained in a 30 gallon drum. The experiment assemblies weigh approximately 60 lbs. The casks, 55-gallon and 30-gallon drums from the parent containers were not contaminated, so they were not added to the waste stream. Since the SNL Material Control and Accountability (MC&A) kept records of the specific fuel and quantities in each of the FEW containers, radiological characterization was developed independently of the original containers in waste stream SNL-HCF-S5400-RH and is described in CCP-AK-SNL-501. Table 1 lists the drums generated during packaging Campaign 11 and the associated parent containers, as well as a description of the contents of each daughter container. These containers will be added

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to the AK Tracking Spreadsheet. Table 2 summarizes key information of the parent containers.

Based on review of the container documentation (M2021), campaign plans (P2002), VE BDRs generated during packaging of these drums, and radiological characterization developed from MC&A data, the containers are bounded by the current revision of the AK Summary Report for the following:

- Waste generation location and process
- Time period of generation
- Physical form compared to the assigned Waste Material Parameters and waste matrix code
- Chemical content
- Prohibited items
- Radionuclides

Table 1. FEW Containers Added to SNL-HCF-S5400-RH

Drum ID	Campaign #	Package Date	Vent Date	Parent Container(s)	VE Waste Description
SNL001401 (30-gallon drum)	11	3/5/14	3/5/14	C00210018, C00210014, C00186636, C00187138, C00186629, and C00210023	DRUM BAG, PRESSURE TRANSDUCERS, HARDWARE, O-RINGS, MIRROR MOUNTING BRACKETS, MIRRORS, LIGHT BULBS, LAMP ASSEMBLIES, FUEL PELLETS AND PIECES, FUEL MOUNTING FIXTURES, QUARTZ WINDOWS, LIGHT BULB MOUNTING BASE, WIRE, PRESSURE SOLENOID VALVES, CONTAINER LABELS, EYE BOLTS, ASSEMBLY HOUSINGS, BREACHED AND EMPTY BAGS, TAPE, WIPES
SNL001402 (30-gallon drum)	11	3/13/14	3/13/14	C00210015, C00210033, C00210021, C00210024, C00210026, and C00210022	PRESSURE TRANSDUCERS, VALVE ASSEMBLIES, HARDWARE, QUARTZ WINDOWS, LAMP ASSEMBLIES, MIRROR MOUNTING BRACKETS, MIRRORS, LIGHT BULB MOUNTING BASES, LIGHT BULBS, ASSEMBLY HOUSINGS, O-RINGS, FUEL PELLETS AND PIECES, FUEL MOUNTING FIXTURES, WIRE, BREACHED AND EMPTY BAGS, PRESSURE VALVES, CONTAINER LABELS
SNL001403 (30-gallon drum)	11	3/26/14	3/26/14	C00210011, C00210016, C00210017, C00186124, C00191876, C00191470, and C00186919	DRUM BAG, HARDWARE, PRESSURE TRANSDUCERS, VALVE ASSEMBLIES, QUARTZ WINDOWS, LAMP ASSEMBLIES, MIRROR MOUNTING BRACKETS, MIRRORS, LIGHT BULB MOUNTING BASES, PRESSURE VALVES, OPEN AND EMPTY PIPE, ASSEMBLY HOUSINGS,. FUEL PELLETS AND PIECES, O-RINGS, FUEL MOUNTING FIXTURES, LIGHT BULBS, WIRE, CONTAINER LABELS, ELECTRIC MOTORS, EYE BOLTS, BREACHED AND EMPTY BAGS, OPEN AND EMPTY CONTAINMENT

Table 2. FEW Parent Containers

Parent Container	Campaign #	Fuel Source (SFNID/Fuel Name)	Fuel Descriptions(s) or Designators(s)	Experiments	Disposal Request (DR)#	Container Type
C00186124	11	415/PNL MOX Fuel	Rod segments - PNL MOX Fuel	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55 gallon drum
C00186629	11	415/PNL MOX Fuel	Rod segments - PNL MOX Fuel	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55 gallon drum
C00186636	11	415/PNL MOX Fuel	Rod segments - PNL MOX, PNL 09-44	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55 gallon drum
C00186919	11	415/PNL MOX Fuel	Fuel pin parts and pellets from PNL MOX fuel - PNL 10-74	Fuel Disruption (FD)	none*	30-gallon drum
C00187138	11	415/PNL MOX Fuel	Rod segments - PNL MOX Fuel	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55 gallon drum
C00191470	11	415/PNL MOX Fuel	Rod segments - PNL MOX, PNL 09-44	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55-gallon drum
C00191876	11	415/PNL MOX Fuel	Rod segments - PNL MOX Fuel	Fuel Disruption (FD)	none*	FD shielded cask overpacked in 55-gallon drum
C00210011	11	416/PNL MOX Fuel	Fuel pin sections/pellets from SLA (LANL) fuel & PNL 09-44	Fuel Disruption (FD) (HRR-5)	none*	FD shielded cask overpacked in 55-gallon drum

Parent Container	Campaign #	Fuel Source (SFNID/Fuel Name)	Fuel Descriptions(s) or Designators(s)	Experiments	Disposal Request (DR)#	Container Type
C00210014	11	416/PNL MOX Fuel	Fuel pin sections/pellets from SLA (LANL) fuel & PNL 11-18	Fuel Disruption (FD) (HRR-2)	none*	FD shielded cask overpacked in 55-gallon drum
C00210015	11	416/PNL MOX Fuel	MOX fuel "debris", PNL 10-12; includes experimental hardware	Fuel Disruption (FD), FD-2.6	004969	FD shielded cask overpacked in 55-gallon drum
C00210016	11	416/PNL MOX Fuel	MOX Fuel, PNL 09-65; includes experimental hardware	Fuel Disruption (FD), FD-2.8	005087	FD shielded cask overpacked in 55-gallon drum
C00210017	11	416/PNL MOX Fuel	Pellets and fuel pin parts from Fresh fuel & PNL 10-12	Fuel Disruption (FD) 2.4	none*	FD shielded cask overpacked in 55-gallon drum
C00210018	11	416/MOX Fuel (KFK)	MOX fuel pellets, KfK; includes experimental hardware	Fuel Disruption (FD), FD-4.5	007154	FD shielded cask overpacked in 55-gallon drum
C00210021	11	416/PNL MOX Fuel	MOX fuel pin sections, PNL 11-18; includes experimental hardware.	Fuel Disruption (FD), FD-4.1	004967	FD shielded cask overpacked in 55-gallon drum
C00210022	11	416/PNL MOX Fuel	MOX fuel, PNL 10-74; includes experimental hardware.	Fuel Disruption (FD), FD-4.3	004966	FD shielded cask overpacked in 55-gallon drum
C00210023	11	416/PNL MOX Fuel	Pellets and fuel pin sections from SLA (LANL) fuel & PNL 11-18	Fuel Disruption (FD) (HRR-3)	none*	FD shielded cask overpacked in 55-gallon drum
C00210024	11	416/PNL MOX Fuel	MOX fuel, PNL 10-74; includes experimental hardware	Fuel Disruption (FD), FD-4.2	004965	FD shielded cask overpacked in 55-gallon drum

Parent Container	Campaign #	Fuel Source (SFNID/Fuel Name)	Fuel Descriptions(s) or Designators(s)	Experiments	Disposal Request (DR)#	Container Type
C00210026	11	416/PNL MOX Fuel, FD-2.7	MOX Fuel, PNL 09-65; includes experimental hardware	Fuel Disruption (FD), FD-2.7	004968	FD shielded cask overpacked in 55-gallon drum
C00210033	11	416/PNL MOX Fuel	Fuel pin sections/pellets, SLA (LANL) & PNL 09-44 fuels	Fuel Disruption(F) (HRR-4)	none*	FD shielded cask overpacked in 55-gallon drum

AK10

AK10

CONTAINERID: SNL001403

SNL

AK DATA

Container	Container Type	WSID
SNL001403		SNL-HCF-S5400-RH

BDR DATA

BDRID	Type	Status	Gen Date	PDF Link
SNLRHDTC14001	DTC	Ready	2014-06-13	PDF Link (click here)

BDRID	Type	Status	Gen Date	PDF Link
SNLRHVE14001	VE	Complete	2014-03-26	PDF Link (click here)

NCR DATA

Container ID	NCRID	BDRID	Status	Final Disposition	Relea
SNL001403	NCR-RHSNL0762140	SNLRHVE14001	Closed	Use-As-Is	Resolv

Release Reason

CCP-AK-SNL-500 Revision 6 has been issued and the AKE has updated the waste packaging to include the new maximum layers of confinement. The containers in Block 3 are now detailed in the AK and can be used as is.

Actual Condition

The number of Layers of Confinement listed on tl Confinement listed in the AK Summary Report.

Container ID	NCRID	BDRID	Status	Final Disposition	Relea
SNL001403	NCR-RHSNL0763140	SNLRHDTC14001	Open	Rework	None

Release Reason

Default status for new entry.

Actual Condition

The Dose-to-Curie spreadsheet for the containers new revision.

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PAGE

CONTAINERID: SNL001502

SNL

AK DATA

Container	Container Type	WSID
SNL001502		SNL-HCF-S5400-RH

BDR DATA

BDRID	Type	Status	Gen Date	PDF Link
SNLRHVE14002	VE	Complete	2014-07-02	PDF Link (click here)

NCR DATA

Container ID	NCRID	BDRID	Status	Final Disposition	Relea
SNL001502	NO DATA				

Release Reason **Actual Condition**

AK11

CONTAINERID	WDS_STATUS	CLOSUREDATE	VENTDATE	COMMENT	WASTESTREAM	DISPOSAL_DATE	WASTE_MATRIX_CODE	AK_REPORT
A00217788				Closure Date: 1977 - 1983; To be repackaged; added per JKleckner.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
A00217792				Closure Date: 1983 - 1985; To be repackaged; added per JKleckner.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
A00217803				Closure Date: 1983 - 1985; To be repackaged; added per JKleckner.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
A00217804				Closure Date: 1983 - 1985; To be repackaged; added per JKleckner.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
A00217805				Closure Date: 1983 - 1985; To be repackaged; added per JKleckner.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
A00217806				Closure Date: 1983 - 1985; To be repackaged; added per JKleckner.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
P00143301				Closure Date: 1986 - 1993; To be repackaged; added per JKleckner.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
SNL001401		03/05/2014	03/05/2014	Repackaged was C00210018, C00210014, C00186636, C00187138, C00186629, and C00210023 per SSchafer 040714 email.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
SNL001402		03/13/2014	03/13/2014	Repackaged was C00210015, C00210033, C00210021, C00210024, C00210026 and C00120022 per SSchafer 040714 email.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
SNL001403		03/26/2014	03/26/2014	Repackaged was C00210011, C00210016, C00210017, C00186124, C00191876, C00191470 and C00186919 per SSchafer 040714 email.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
SNL001501		04/29/2014	04/29/2014	Parent Container C00210271 per SSchafer 061714 email.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
SNL001502		06/12/2014	06/12/2014	Parent Containers C00210019(C00218038), C00210020(C00218038), C00190022, C00210025(C00219360), C00188432, C00210009(C00219374).	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
SNL001503		07/02/2014	07/02/2014	Parent Containers C00218134, C00188180, C00188425. Non-Radiological Debris Items from Containers C00210019 (C00218038), C00210003, C00190022, C00210025 (C00219360), C00210020 (C00218038), C00188432, C00219374 (C00217991, C00210009) per SSchafer 070814 email.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
SNL001504		07/02/2014	07/02/2014	Parent Container C00210003 per SSchafer 070814 email.	SNL-HCF-S5400-RH		S5400	CCP-AK-SNL-500
SNLNM005339	EMPLACED_CNTR	12/02/2010	12/02/2010	Parent Container C990238	SNL-HCF-S5400-RH	12/21/2011	S5400	CCP-AK-SNL-500
SNLNM007007	EMPLACED_CNTR	01/27/2011	01/27/2011	Parent Container C980379	SNL-HCF-S5400-RH	12/21/2011	S5400	CCP-AK-SNL-500
SNLNM007008	EMPLACED_CNTR	02/08/2011	02/08/2011	Parent Container C980396	SNL-HCF-S5400-RH	12/21/2011	S5400	CCP-AK-SNL-500
SNLNM007009	EMPLACED_CNTR	02/16/2011	02/16/2011	Parent Container C980380	SNL-HCF-S5400-RH	01/04/2012	S5400	CCP-AK-SNL-500
SNLNM007010	EMPLACED_CNTR	02/23/2011	02/23/2011	Parent Container C080210	SNL-HCF-S5400-RH	01/04/2012	S5400	CCP-AK-SNL-500
SNLNM007011	EMPLACED_CNTR	01/21/2011	01/21/2011	Parent Container C980373	SNL-HCF-S5400-RH	01/04/2012	S5400	CCP-AK-SNL-500
SNLNM007017	EMPLACED_CNTR	05/26/2011	05/26/2011	Parent Container C990239; Exclude per JKleckner email 121211; Added back per JKleckner email 030812.	SNL-HCF-S5400-RH	05/15/2012	S5400	CCP-AK-SNL-500
SNLNM007018	EMPLACED_CNTR	06/01/2011	06/01/2011	Parent Container C980403; Exclude per JKleckner email 121211; Added back per JKleckner email 030812.	SNL-HCF-S5400-RH	05/10/2012	S5400	CCP-AK-SNL-500
SNLNM007019	EMPLACED_CNTR	06/14/2011	06/14/2011	Parent Container SNL/NM000178	SNL-HCF-S5400-RH	05/04/2012	S5400	CCP-AK-SNL-500
SNLNM007020	EMPLACED_CNTR	03/08/2011	03/08/2011	Parent Container C200357; Exclude per JKleckner email 121211; Added back per JKleckner email 030812.	SNL-HCF-S5400-RH	05/09/2012	S5400	CCP-AK-SNL-500
SNLNM007024	EMPLACED_CNTR	04/27/2011	04/27/2011	Parent Container C980391; Exclude per JKleckner email 121211; Added back per JKleckner email 030812.	SNL-HCF-S5400-RH	05/09/2012	S5400	CCP-AK-SNL-500
SNLNM007025	EMPLACED_CNTR	05/04/2011	05/04/2011	Parent Container C990236; Exclude per JKleckner email 121211; Added back per JKleckner email 030812.	SNL-HCF-S5400-RH	05/10/2012	S5400	CCP-AK-SNL-500
SNLNM007026	EMPLACED_CNTR	06/14/2011	06/14/2011	Parent Container SNL/NM000178	SNL-HCF-S5400-RH	05/04/2012	S5400	CCP-AK-SNL-500
SNLNM007098	EMPLACED_CNTR	08/19/2011	08/19/2011	Parent Container C980392; Exclude per JKleckner email 121211; Added back per JKleckner email 030812.	SNL-HCF-S5400-RH	05/09/2012	S5400	CCP-AK-SNL-500
SNLNM007099	EMPLACED_CNTR	08/23/2011	08/23/2011	Parent Container C980405; Exclude per JKleckner email 121211; Added back per JKleckner email 030812.	SNL-HCF-S5400-RH	05/10/2012	S5400	CCP-AK-SNL-500
SNLNM007112	EMPLACED_CNTR	07/13/2011	07/13/2011	Parent Container C980375	SNL-HCF-S5400-RH	05/04/2012	S5400	CCP-AK-SNL-500
SNLNM007113	EMPLACED_CNTR	07/18/2011	07/18/2011	Parent Container C980378	SNL-HCF-S5400-RH	01/10/2012	S5400	CCP-AK-SNL-500
SNLNM007115	EMPLACED_CNTR	07/25/2011	07/25/2011	Parent Container C980466	SNL-HCF-S5400-RH	01/10/2012	S5400	CCP-AK-SNL-500
SNLNM007116	EMPLACED_CNTR	08/02/2011	08/02/2011	Parent Container C980374	SNL-HCF-S5400-RH	01/05/2012	S5400	CCP-AK-SNL-500
SNLNM007117	EMPLACED_CNTR	07/28/2011	07/28/2011	Parent Container C980467	SNL-HCF-S5400-RH	01/10/2012	S5400	CCP-AK-SNL-500
SNLNM007118	EMPLACED_CNTR	08/04/2011	08/04/2011	Parent Container C980377	SNL-HCF-S5400-RH	01/05/2012	S5400	CCP-AK-SNL-500
SNLNM007119	EMPLACED_CNTR	08/10/2011	08/10/2011	Parent Container C980281	SNL-HCF-S5400-RH	01/05/2012	S5400	CCP-AK-SNL-500

AK12

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: DR1005
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☐ TRU Waste Management Program Information ☐ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☑ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : DR1005, Resolution of Parcel Number Discrepancy	
Source Document Reference Information (author(s), document and revision number, date, publisher): John Kleckner, DR1005, Rev. 0, 02/29/2012	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
S16	Throughout	Nature of Discrepancy: Disposal request DR204139 in M1016 appears to have listed the wrong parcel number on several pages. Parcel numbers P2000988 appears to have been mistakenly used instead P2000998. Resolution: A detailed review of the DR204139 indicates that the parcel number P2000988 was incorrectly used on several pages in the DR. Based on the description of the parcel, it is apparent that the parcel number should be P2000998. Parcel number 2000998 is consistent with the initial inventory list received from SNL/NM personnel and is confirmed in a series of emails ending 6/6/2011.

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DATE REC'D 5/20/2014
EPF

Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: DR1005

Waste Stream Number(s): SNL-HCF-S5400-RH

Source Document Data Limitations (if any):

1. None.

Acceptable Knowlege Expert:

STEVE SCHAFER, [signature] Date: 1/12/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

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Attachment 11 – Acceptable Knowledge Source Document Discrepancy Resolution

Waste Stream Number(s): SNL-HCF-S5400-RH

Waste Stream Description: Remote Handled Hot Cell Facility Transuranic Waste (Debris)

AK Source Document Discrepancy Form Tracking Number: DR1005

Tracking #	Category[a]	Title	Document/Rev#	Author	Date	Publisher	Page #
M1016	Unpub.	TRU Waste Disposal Requests	N/A	Various	Various	SNL/NM	Various
See Attachment 1		E-mail – Subject: RE: DR 204139	N/A	Steve Schafer, Mike Enghauser	6/6/2011	N/A	All
			CG 3/27/12				

Nature of Discrepancy:
Disposal request DR204139 in source document M1016 appears to have listed the wrong parcel number on several pages in the document. Parcel numbers P2000988 appears to have been mistakenly used instead P2000998.

Resolution:
A detailed review of the DR204139 indicates that the parcel number P2000988 was incorrectly used on several pages in the DR. Based on the description of the parcel, it is apparent that the parcel number should be P2000998. Parcel number P2000998 is consistent with the initial inventory list received from SNL/NM personnel and is confirmed in a series of e-mails ending 6/6/2011 (see Attachment 1).

Discrepancy Resolved: [X] Yes [ ] No

Acceptable Knowledge Expert: John Kleckner (Print) / (Sign) Date: 2/29/12

Site Project Manager: Irene Quintana (Print) / (Sign) Date: 2/29/12

[a]Published Document or Controlled Database (Pub.); Unpublished Data (Unpub.); Internal Procedure or Note (Proc.); Correspondence (Corr.) or Discrepancy (Disc.)

NTPC RECORDS ORIGINAL
DATE REC'D 5/20/2014

Attachment 1

Original Message-----
From: Enghauser, Michael William [mailto:mwengha@sandia.gov]
Sent: Monday, June 06, 2011 10:28 AM
To: Steve Schafer
Subject: RE: DR 204139

Yes.

Mike Enghauser, CHP
Waste Characterization Project Leader
Radioactive & Mixed Waste Management
Phone 505-284-6116

-----Original Message-----
From: Steve Schafer [mailto:steve.schafer@comcast.net]
Sent: Monday, June 06, 2011 10:25 AM
To: Enghauser, Michael William
Subject: RE: DR 204139

Just to make sure I have it correct, the documentation included in the DR is for parcel P2000998, it just has the wrong number on some of the pages - right?

Steve Schafer
(303) 989-3292 - Office
(303) 250-6540 - Cell
steve.schafer@comcast.net

Attachment 1 (continued)

-----Original Message-----

From: Enghauser, Michael William [mailto:mwengha@sandia.gov]
Sent: Monday, June 06, 2011 9:57 AM
To: Steve Schafer
Subject: RE: DR 204139

Steve,

I took a look at the database records and the disposal request documentation. The correct parcel ID for container C200357 is P2000998. As you identified, the parcel referred to as P2000988 should be P2000998.

Mike

Mike Enghauser, CHP
Waste Characterization Project Leader
Radioactive & Mixed Waste Management
Phone 505-284-6116

-----Original Message-----
From: Steve Schafer [mailto:steve.schafer@comcast.net]
Sent: Monday, June 06, 2011 8:00 AM
To: Enghauser, Michael William
Subject: DR 204139

Mike,

Could you also take a look at DR 204139? Several pages in the DR refer to parcel P2000988, which I think should be P2000998.

Steve Schafer
(303) 989-3292 - Office
(303) 250-6540 - Cell
steve.schafer@comcast.net

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Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: DR2001
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☐ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☑ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a]: Attachment 11 - Acceptable Knowledge Source Document Discrepancy Resolution	
Source Document Reference Information (author(s), document and revision number, date, publisher): John Kleckner, NA, NA, ~~TBD~~ 6/18/14 CP 7/2/14, CCP	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
WS10, S7	Throughout	e-file(s): DR2001 Attachment 11 (rev.26) SNL-HCF-S5400-RH 6-18-14.pdf Discrepency resolution regarding the overpack ID#s for container C00210009

Source Document Data Limitations (if any):

1. None

Acceptable Knowlege Expert:

John Kleckner / [signature] Date: 6/22/14

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

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Attachment 11 - Acceptable Knowledge Source Document Discrepancy Resolution

Page 1 of 2

Waste Stream Number(s): SNL-HCF-S5400-RH

Waste Stream Description: Remote Handled Hot Cell Facility Transuranic Waste (Debris)

AK Source Document Discrepancy Form Tracking Number: **DR2001**

Tracking #		Title	Document/ Rev#	Author	Date		Page #
N/A		P2003 – Analysis of Material to be Processed in the Auxiliary Hot Cell Facility (AHCF) Rev. 3	NA/ Rev. 3	R. Salyer	9/24/13		9 of 17
			JR 7/2/14				

Nature of Discrepancy: It appears that there was a discrepancy for container C00210009 between Table 3 of Rev. 2 and Rev. 3 for the above referenced document. In Rev. 3 the overpack container is listed in parenthesis as C00219374, while Rev. 2 lists it as C00217991.

Resolution: Randy Salyer was contacted by e-mail to address this apparent discrepancy. He said that container C0021009 was overpacked into C00217991, which was subsequently overpacked into C00219374 for site transportation purposes. Attachment A to this DR contains the e-mail and response. The AK tracking spreadsheet was also updated to reflect both overpack numbers.

Discrepancy Resolved: ☒ Yes ☐ No

Acceptable Knowledge Expert: John Kleckner / [signature] Date: 6/18/14
Print Sign

Site Project Manager: Irene ~~Quintana~~ Joo 6/18/14 / [signature] Date: 6/18/14
Print Sign

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DATE REC'D 07/16/2014

Attachment 11 - Acceptable Knowledge Source Document Discrepancy Resolution

Attachment A

From: Salyer, Randy [mailto:rlsalye@sandia.gov]
Sent: Tuesday, June 10, 2014 1:35 PM
To: john kleckner
Subject: RE: [EXTERNAL] FW: Documents

John,
Yes, They are over packs, nothing was removed. C00210009 was a small can approximately 2 gallon, C00217991 is a 30 gallon, and C00219374 is a 55 gallon. The reason for the over packs was to make it easier for Crit Safety to apply a generic CSI for transport and staging at the Hot Cell Facility.
Randy

From: john kleckner [mailto:jpkleck@msn.com]
Sent: Tuesday, June 10, 2014 12:54 PM
To: Salyer, Randy
Cc: 'Steve Schafer'
Subject: [EXTERNAL] FW: Documents

Hi Randy,
Steve and I are preparing for the EPA audit this month, and I happen to notice that on the attached PDF file you sent, the associated overpack container for C00210009 is C00219374 (changed from C00217991 from rev.2). Based on the title of the worksheet for C00210009 in the attached excel workbook, it appears that C00217991 was overpacked into C00219374. Is that correct? Or was C00210009 removed from C00217991 and then overpacked into C00219374?

John Kleckner, CCP AKE
Technical Specialists
office: 303 216 0210
mobile: 303 994 1798

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Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: DR1004
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☐ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☑ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : Discrepancy Resolution re: The SAP for waste stream SNL-HCF-S5400-RH segregates the three principal sources of waste generation into three radiological categories.	
Source Document Reference Information (author(s), document and revision number, date, publisher): John Kleckner, DR1004, NA, 06/29/2011	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
WS1, WS9, S16	Throughout	Nature of Discrepancy: The Sampling and Analysis Plan (SAP) CCP-AK-SNL-505 for waste stream SNL-HCF-S5400-RH segregates the three principal sources of waste generation into three radiological categories. Based on the AK packaging information, parent container C080216 contained one parcel from PKE00027/54 and two parcels from PKE00047. Instead the waste is comingled in the parent container. Resolution: The interim disposition of this NCR instructed the AKE to 1) investigate the cause of the waste comingled rather than segregated parcels, and 2) provide documentation of the investigation for further use of sample results.

Source Document Data Limitations (if any):

1. None.

Acceptable Knowlege Expert:

STEVE SCHAFER / [signature] Date: 1/12/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

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Attachment 11 - Acceptable Knowledge Source Document Discrepancy Resolution

Waste Stream Number(s): SNL-HCF-S5400-RH

Waste Stream Description: Remote Handled Hot Cell Facility Transuranic Waste (Debris)

AK Documentation Type: ☐ TRU Waste Management Program Information ☒ Waste Stream Specific Information ☒ Supporting Information

AK Source Document Discrepancy Form Tracking Number: DR1004

Tracking #	Category *	Title	Document/ Rev#	Author	Date	Publisher	Page #
N/A	N/A	CCP Nonconformance Report (NCR)	NCR-RHSNL-2351-11/Rev. 0	S. Pattee	05/03/11	N/A	1 to 3
		N/A SO 7/11/2011					

Nature of Discrepancy: The Sampling and Analysis Plan (SAP) CCP-AK-SNL-505 for waste stream SNL-HCF-S5400-RH segregates the three principal sources of waste generation into three radiological categories. Based on the AK packaging information, parent container C080216 contained 1 parcel from PKE00027/54 and two parcels from PKE00047. Instead the waste is comingled in the parent container.

NTPC RECORDS ORIGINAL
DATE REC'D 5/20/2014

Resolution: The interim disposition of this NCR instructed the AKE to 1) investigate the cause of the waste comingled rather than segregated parcels, and 2) provide documentation of the investigation for further use of sample results. The following is the result of the investigation:

1) Container paperwork indicates that container C080216 consists of 3 parcels P9900533, P9900534, and P2000836. Parcels P9900533 and P9900534 were characterized under PKE00047, while parcel P2000836 was characterized under PKE00027/54 A review of video of the repackaging of these parcels into container C080216 in 10/22/08 clearly shows that the contents of these parcels were removed from their original plastic bags and comingled into C080216. This was done to verify the contents of the parcels didn't contain any prohibited items. This was the only RH repackaging that comingled parcels characterized under different PKE's. On 4/20/11 the contents of C80216 were removed for visual examination and placed into a 30-gal drum P1110155 and then over packed into 55-gal drum SNLNM007023. The contents of the container described in BDR# RH SNL VE 110006 match the items seen in the 10/22/08 video. Parcels P9900533 and P9900534 contained 4 large (2 each) metal apparatuses about 2 feet long. Parcel P2000836 contained a 1 gal metal can containing latex gloves, plastic, pipettes, small filters, and other small items. Although the items from each parcel could be segregated, it appears that that there was likely cross contamination when the items were combined into C080216. Thus, a new radiological dose to curie radiological distribution for this container based on both PKE00047 and PKE00027/54 will need to be developed.

2) This discrepancy resolution and the repackaging video for container C80216 (source document M1016) provides documentation of this investigation.

Discrepancy Resolved: ☒ Yes ☐ No

Acceptable Knowledge Expert: John Kleckner (Print) / (Sign) Date: 6/29/11

Site Project Manager: Irene Quintana (Print) / (Sign) Date: 6/29/11

* Published Document or Controlled Database (Pub.), Unpublished Data (Unpub.), Internal Procedure or Note (Proc.), Correspondence (Corr.) or Discrepancy (Disc.)

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Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	**Source Document Tracking Number: DR1002**
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☐ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	**Category:** ☐ C - Correspondence ☑ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a]: Discrepancy Resolution for Container #P1110154 (Parent Container C980313)	
Source Document Reference Information (author(s), document and revision number, date, publisher): John Kleckner, DR1002, NA, 04/21/2011	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
WS1, WS2, WS4, WS8, WS9, WS10, S4, S7	Throughout	Nature of Discrepancy: Container #P11110154 (parent container C980313) waste does not meet waste stream description or waste matrix code listed in CCP-AK-500 Rev. 1. Waste appears to be entirely homogeneous solids, not debris. Resolution: SNL Disposal Request #41213 was reviewed again, and although it indicates it contains solidified material (homogeneous solids), it is vague whether entire contents were solidified material. The waste was generated during decontamination of the Hot Cell Facility as described in CCP-AK-SNL-500, Rev. 1. A homogeneous solids waste stream will be added to the CCP-AK-SNL-500 to correctly characterize container #P1110154 (parent container C980313).

Source Document Data Limitations (if any):

1. None.

Acceptable Knowlege Expert:

Kevin J. Peters, Date: 1/16/14
Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

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Attachment 11 - Acceptable Knowledge Source Document Discrepancy Resolution

Waste Stream Number(s): SNL-HCF-S5400-RH

Waste Stream Description: Remote Handled Hot Cell Facility Transuranic Waste (Debris)

AK Documentation Type: ☐ TRU Waste Management Program Information ☒ Waste Stream Specific Information ☒ Supporting Information

AK Source Document Discrepancy Form Tracking Number: **DR1002**

Tracking #	Category *	Title	Document/ Rev#	Author	Date	Publisher	Page #
N/A	N/A	CCP Nonconformance Report (NCR)	NCR-RHSNL-2350-11/Rev. 0	S. Pattee	04/06/11	N/A	1 to 3

N/A 4/20/11

Nature of Discrepancy: Container #P1110154 (parent container C980313) waste does not meet waste stream description or waste matrix code listed in CCP-AK-SNL-500 Rev.1. Waste appears to be entirely homogeneous solids, not debris.

Resolution: SNL Disposal Request# 41213 was reviewed again, and although it indicates it contains solidified material(homogeneous solids), it is vague whether entire contents were solidified material. The waste was generated during decontamination of the Hot Cell Facility as described in CCP-AK-SNL-500 Rev. 1. A homogenous solids waste stream will be added to the CCP-AK-SNL-500 to correctly characterize container #P1110154(parent container C980313).

Discrepancy Resolved: ☒ Yes ☐ No

Acceptable Knowledge Expert: John Kleckner (Print) / (Sign) Date: 4/21/11

Site Project Manager: Irene Quintana (Print) / (Sign) Date: 4/21/11

* Published Document or Controlled Database (Pub.); Unpublished Data (Unpub.); Internal Procedure or Note (Proc.); Correspondence (Corr.) or Discrepancy (Disc.)

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Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: DR1003
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☑ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : AK Discrepancy Resolution DR1003 re: Assignment of EPA Hazardous Waste Numbers	
Source Document Reference Information (author(s), document and revision number, date, publisher): Steve Schafer, DR1003, Revision 1, 08/12/2011, NA ~~[illegible]~~ CR 01/20/14	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR4, WS12, S9	Throughout	The DR was revised to include EPA HWN D028 for 1,2-DCA. Nature of Discrepancy: During review of EPA HWN assignment for waste originating from D&D of Sandia/NM HCF, inconsistencies were identified that require correction to the AK Summary reports for these CH and RH waste streams. Resolution: Based on CCP AK research and review of the SNL/NM AK sources, several sources for EPA hazardous constituents were identified and the following EPA HWNs were assigned: D004, D005, D006, D007, D008, D009, D011, D018, D019, D022, D035, D038, F002, and F005. Three of the identified hazardous constituents were assigned EPA HWNs as characteristic constituents (i.e., D-codes), however these constituents are also listed as spent solvents (F-codes) and no non-solvent use has been identified for these constituents. If documentation is not available to demonstrate a non-solvent use for an F-listed constituent, the F-listed EPA HWN is ordinarily assigned to the TRU waste stream. This approach is consistent with the intent and requirement of the WIPP-WAP regarding the assignment of F-listed EPA HWN when the UCL90 exceeds the PRQL for these constituents in headspace gas sampling and analysis, and a non-solvent use, packaging source, or radiolysis source cannot be established. Based on this rationale, the assigned EPA HWN will be changed for the following: Benzene: Since no non-solvent use was identified, assign F005 instead of D018 Methyl ethyl ketone: Since no non-solvent use was identified, assign F005 instead of D035 Pyridine: Since no non-solvent use was identified, assign F005 instead of D038 Additionally, review of source documents did not identify selenium in HCF waste, and selenium was not detected in samples of HCF waste, therefore, EPA HWN D010 will not be assigned to this waste stream. The corrected EPA HWNs assigned to HCF TRU waste are D004, D005, D006, D007, D008,

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Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: DR1003
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☑ DR - Discrepancy Resolution ☐ I - Internal procedures ☐ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : AK Discrepancy Resolution DR1003 re: Assignment of EPA Hazardous Waste Numbers	
Source Document Reference Information (author(s), document and revision number, date, publisher): Steve Schafer, DR1003, Revision 1, 08/12/2011, NA ~~Rev 0, 10/15/14 CP 11/17/14~~ CP 01/20/14	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR4, WS12, S9	Throughout	The DR was revised to include EPA HWN D028 for 1,2-DCA. Nature of Discrepancy: During review of EPA HWN assignment for waste originating from D&D of Sandia/NM HCF, inconsistencies were identified that require correction to the AK Summary reports for these CH and RH waste streams. Resolution: Based on CCP AK research and review of the SNL/NM AK sources, several sources for EPA hazardous constituents were identified and the following EPA HWNs were assigned: D004, D005, D006, D007, D008, D009, D011, D018, D019, D022, D035, D038, F002, and F005. Three of the identified hazardous constituents were assigned EPA HWNs as characteristic constituents (i.e., D-codes), however these constituents are also listed as spent solvents (F-codes) and no non-solvent use has been identified for these constituents. If documentation is not available to demonstrate a non-solvent use for an F-listed constituent, the F-listed EPA HWN is ordinarily assigned to the TRU waste stream. This approach is consistent with the intent and requirement of the WIPP-WAP regarding the assignment of F-listed EPA HWN when the UCL90 exceeds the PRQL for these constituents in headspace gas sampling and analysis, and a non-solvent use, packaging source, or radiolysis source cannot be established. Based on this rationale, the assigned EPA HWN will be changed for the following: Benzene: Since no non-solvent use was identified, assign F005 instead of D018 Methyl ethyl ketone: Since no non-solvent use was identified, assign F005 instead of D035 Pyridine: Since no non-solvent use was identified, assign F005 instead of D038 Additionally, review of source documents did not identify selenium in HCF waste, and selenium was not detected in samples of HCF waste, therefore, EPA HWN D010 will not be assigned to this waste stream. The corrected EPA HWNs assigned to HCF TRU waste are D004, D005, D006, D007, D008,

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Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory		Source Document Tracking Number: DR1003
Waste Stream Number(s): SNL-HCF-S5400-RH		
AK # [b]	Source Doc. Page # [c]	AK Information Summary
		D009, D011, D019, D022, F002, and F005.

Source Document Data Limitations (if any):

1. None.

Acceptable Knowlege Expert:

STEVE SCHAFER / [signature] Date: 1/12/2012 2014 [signature] 5/21/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

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Attachment 11 – Acceptable Knowledge Source Document Discrepancy Resolution

Waste Stream Number(s): SNL-HCF-S5400-RH, ID-SNL-HCF-S5400, and SNL-HCF-S5400 (PK)

Waste Stream Description: TRU mixed heterogeneous debris resulting from the decontamination of the SNL/NM Hot Cell Facility

AK Documentation Type: [X] TRU Waste Management Program Information [X] Waste Stream Specific Information [X] Supplemental Information							
AK Source Document Discrepancy Form Tracking Number: **DR1003, Revision 1** – Discrepancy Resolution: Assignment of EPA Hazardous Waste Numbers							
Tracking #	**Category[a]**	**Title**	**Document/Rev#**	**Author**	**Date**	**Publisher**	**Page #**
N/A	Pub.	CCP Acceptable Knowledge Summary Report for Sandia National Laboratories/New Mexico Remote Handled Hot Cell Facility Transuranic Waste (Debris), Waste Stream: SNL-HCFS5400-RH	CCP-AK-SNL-500, Rev. 2	CCP	7/6/2011	CCP	All
N/A	Pub.	CCP Acceptable Knowledge Summary Report for Idaho National Laboratory, Sandia National Laboratories/New Mexico Hot Cell Facility Contact-Handled Transuranic Waste (Debris), Waste Stream: ID-SNL-HCF-S5400	CCP-AK-INL-021 Rev. 1	CCP	5/12/2011	CCP	All
DR1001	Disc.	Discrepancy resolution for the assignment of EPA Hazardous Waste Numbers	N/A	S. Schafer	2/15/2011	N/A	All
DR1003	Disc.	Discrepancy resolution for the assignment of EPA Hazardous Waste Numbers	N/A	S. Schafer	6/15/2011	N/A	All
See Attachment 1	Various	Revised Summary of EPA Hazardous Waste Numbers Assigned to HCF TRU Debris Waste (Attachment 1 provides specific AK sources and page numbers)	N/A	S. Schafer, K. Peters	8/11/2011	N/A	See Attachment 1

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Nature of Discrepancy

During review of EPA HWN assignment for waste originating from D&D of the Sandia/NM HCF, inconsistencies were identified that require correction to the AK Summary reports for these CH and RH waste streams.

Resolution:

Based on CCP AK research and review of the SNL/NM AK sources, several sources for EPA hazardous constituent were identified and the following EPA HWNs were assigned: D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D022, D035, D038, F002, and F005.

1) Three of the identified hazardous constituents were assigned EPA HWNs as characteristic constituents (i.e., D-codes), however these constituents are also listed as spent solvents (F-codes) and no non-solvent use has been identified for these constituents. If documentation is not available to demonstrate a non-solvent use for an F-listed constituent, the F-listed EPA HWN is ordinarily assigned to the TRU waste stream. This approach is consistent with the intent and requirement of the WIPP-WAP regarding the assignment of F-listed EPA HWN when the UCL_{90} exceeds the PRQL for these constituents in headspace gas sampling and analysis, and a non-solvent use, packaging source, or radiolysis source cannot be established. Based on this rational, the assigned EPA HWN will be changed for the following:

Benzene: Since no non-solvent use was identified, assign F005 instead of D018.

Methyl ethyl ketone: Since no non-solvent use was identified, assign F005 instead of D035

Pyridine: Since no non-solvent use was identified, assign F005 instead of D038

2) Additionally, review of source documents did not identify selenium in HCF waste, and selenium was not detected in samples of HCF waste, therefore, EPA HWN D010 will not be assigned to this waste stream. EPA HWN D010 was initially assigned in error and will be removed.

3) Revision 1 to DR1003 is to address the initial misidentification of 1,2-DCA. During the initial characterization work for SNL HCF RH and CH waste, 1,2-DCA was misidentified during review of source document C1021 as 1,2-dichloroethene and no EPA HWN was assigned. 1,2-DCA is correctly identified as 1,2-dichloroethane, and the waste stream should be assigned EPA HWN D028 for this constituent. See Attachment 1.

The corrected EPA HWNs assigned to HCF TRU waste are D004, D005, D006, D007, D008, D009, D011, D019, D022, D028, F002, and F005.

Nature of Discrepancy

During review of EPA HWN assignment for waste originating from D&D of the Sandia/NM HCF, inconsistencies were identified that require correction to the AK Summary reports for these CH and RH waste streams.

Resolution:

Based on CCP AK research and review of the SNL/NM AK sources, several sources for EPA hazardous constituent were identified and the following EPA HWNs were assigned: D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D022, D035, D038, F002, and F005.

1) Three of the identified hazardous constituents were assigned EPA HWNs as characteristic constituents (i.e., D-codes), however these constituents are also listed as spent solvents (F-codes) and no non-solvent use has been identified for these constituents. If documentation is not available to demonstrate a non-solvent use for an F-listed constituent, the F-listed EPA HWN is ordinarily assigned to the TRU waste stream. This approach is consistent with the intent and requirement of the WIPP-WAP regarding the assignment of F-listed EPA HWN when the UCL_{90} exceeds the PRQL for these constituents in headspace gas sampling and analysis, and a non-solvent use, packaging source, or radiolysis source cannot be established. Based on this rational, the assigned EPA HWN will be changed for the following:

Benzene: Since no non-solvent use was identified, assign F005 instead of D018.

Methyl ethyl ketone: Since no non-solvent use was identified, assign F005 instead of D035

Pyridine: Since no non-solvent use was identified, assign F005 instead of D038

2) Additionally, review of source documents did not identify selenium in HCF waste, and selenium was not detected in samples of HCF waste, therefore, EPA HWN D010 will not be assigned to this waste stream. EPA HWN D010 was initially assigned in error and will be removed.

3) Revision 1 to DR1003 is to address the initial misidentification of 1,2-DCA. During the initial characterization work for SNL HCF RH and CH waste, 1,2-DCA was misidentified during review of source document C1021 as 1,2-dichloroethene and no EPA HWN was assigned. 1,2-DCA is correctly identified as 1,2-dichloroethane, and the waste stream should be assigned EPA HWN D028 for this constituent. See Attachment 1.

The corrected EPA HWNs assigned to HCF TRU waste are D004, D005, D006, D007, D008, D009, D011, D019, D022, D028, F002, and F005.

Discrepancy Resolved: [X] Yes [ ] No

Acceptable Knowledge Expert: Steve Schafer (Print) / (Sign) Date: 8/11/2011

Site Project Manager: Irene Quintana (Print) / Irene Quintana (Sign) Date: 8/12/11

[a] Published Document or Controlled Database (Pub.); Unpublished Data (Unpub.); Internal Procedure or Note (Proc.); Correspondence (Corr.) or Discrepancy (Disc.)

DR1003, Revision 1, Attachment 1

Revised Summary of EPA Hazardous Waste Numbers (HWNs) Assigned to SNL-HCF TRU Waste (Revised from DR1001, and DR1003 Rev. 0)

1,2-Dichloroethane – EPA HWN D028

Sampling results indicate 1,2-dichloroethane (1,2-DCA) below TCLP limits . The EPA HWN for 1,2-dichlorethane will be assigned unless additional documentation and/or analysis is obtained (e.g., representativeness of the sampling event, appropriate number of samples collected, and assumptions regarding the original source of the solvent deposited on the sampled filters).

AK Source	Location	Comment
C1021	PDF Pg. 12 of 20	Detected in GB 6/7 samples but below TCLP limits.
M1010	PDF Pg. 110 of 153	Summary of data in C1021.

1,1,1-Trichloroethane (111-TCA) – EPA HWN F002

Source documents indicate chemical was detected from samples taken from HCF, but does not indicate how it was used. F002 will be applied, unless SNL can provided additional documentation verifying that 1,1,1-trichloroethanewas not used as a solvent.

AK Source	Location	Comment
M1010	PDF Pg. 100, 110 of 153	Detected in GB 4/5 and GB 6/7 samples. Does not indicate how it was used.
P1104	PDF Pg. 115, 128, 129 of 1354	SAR indicates chemical was used in HCF, but does not indicate how or specifically where

1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113, Freon TF) and Trichlorofluoromethane (Freon-11) – EPA HWN F002

Source documents indicate Freon-113 was detected from samples taken from HCF. P1015 and P1102 indicate Freon-113 was used as a lubricant/cooling fluid, but M1010 implies that it was "used as a solvent" in the TDU. C1004 indicates Freon-11 was used as a fuel simulent (i.e., nonsolvent use). F002 will be applied, unless SNL can provided additional documentation verifying that Freon was not used as a solvent in the TDU.

AK Source	Location	Comment
C1021	PDF Pg. 6 – 16 of 20	Freon-113 Detected in TDU (Tool Decontamination Unit in GB 9) samples.
C1004	PDF Pg. 67 o 239	Refrigerant-11 used as a fuel simulent; this would not be considered being used for its solvent properties.
M1010	PDF Pg. 98 – 101 and 102 – 103 of 153	Freon-113 Detected in TDU samples. Indicates was used as a solvent in the TDU, but not specific.

P1015	PDF Pg. 9,18,24,34-35, 41-43 of 43	Indicates Freon-113 was used as a cutting lubricant only in GBs 4-7 and 9.
P1102	PDF Pg. 3-5, 7-9, 20-23, 39, 43, 49-53, 93-97 of 238	Indicates Freon-113 was used as lubricant/coolant during grinding and polishing operations.
P1104	PDF Pg. 115, 128, 406, 637, 638 of 1354	Freon is used as a general term on pg. 115, 128, 406, 637 and 638. Indicates Freon it is used as a cleaner.

Arsenic – EPA HWN D004

Based on a review of the source document below and the AK Record, no source for the arsenic detected below was identified. The EPA HWN for arsenic (D004) will be assigned unless additional documentation and/or analysis (e.g., representativeness the sampling event and assumptions regarding the original source of arsenic deposited on the sampled filter) is provided by the site.

AK Source	Location	Comment
C1021	PDF Pg. 6 , 7, 10 of 20	Samples taken from HCF detected in only one sample below regulatory limits.

Barium – EPA HWN D005

Barium is was detected in HCF samples above regulatory limits, and is a fission product in the ST project.

AK Source	Location	Comment
C1021	PDF Pg. 2, 6-10 of 20	Detected in samples from GB4/5, 6/7, and GB9 well above regulatory limits
M1010	PDF Pg. 98 – 101 and 104 – 111 of 153	Summary of same information in C1021.
P1018	PDF Pg. 5-9 of 16	Fission product form ST-1 project.
P1025	PDF Pg. 6, 7, 9, 12 of 13	Fission product from ST-1 and ST-2.
P1046	PDF Pg. 7 of 15	Fission product from the ST project .

Benzene – EPA HWN D018/F005

Sampling results indicate benzene at above TCLP limits. Recommend replacing D018 with F005 to be consistent with current code assignment practices.

AK Source	Location	Comment
C1021	PDF Pg. 6 – 12 of 20	Detected in GB 4/5 samples above TCLP limits, but data is suspect.
M1010	PDF Pg. 98 – 101 of 153	Summary of data in C1021.
P1104	PDF Pg. 108, 358-359, 405-407of 1354	HCF SAR indicates chemical is expected be used in HCF, but does not indicate where or how.

Cadmium – EPA HWN D006

Multiple source documents show that cadmium was used in the HCF. C1021 indicates sample results show that cadmium was present in levels above regulatory limits. D006 will be applied unless SNL can provided additional documentation verifying that cadmium in below the TCLP limits.

AK Source	Location	Comment
C1010	PDF Pg. 102 of 120	Indicates cadmium sleeve used in HCF.
C1012	PDF Pg. 13 of 34	Indicates cadmium filter used in HCF.
C1021	PDF Pg. 2, 6-12 of 20	Detected in GB 6/7 and GB 9 samples above TCLP limits.
see Table 7 of CCP-AK-SNL-500	various	Cadmium is well documented that it was used in the HCF.

Carbon Tetrachloride – EPA HWN D019

None of the activities in the HCF would be considered major degreasing, thus F001 is not applicable. Sampling results indicate carbon tetrachloride at below TCLP limits . The EPA HWN for carbon tetrachloride (D019) will be assigned unless additional documentation and/or analysis (e.g., representativeness of the sampling event and assumptions regarding the original source of the solvent deposited on the sampled filters) is provided by the site.

AK Source	Location	Comment
C1021	PDF Pg. 6 – 12 of 20	Detected in GB 6/7 samples but below TCLP limits.
M1010	PDF Pg. 104 - 111 of 153	Summary of data in C1021.
P1104	PDF Pg. 406, 637 of 1354	HCF SAR indicates carbon tetrachloride is expected be used in HCF, but does not indicate where or how.

Chloroform – EPA HWN D022

HCF SAR indicates chloroform cold be present in the HCF. Sampling results did not identify chloroform. indicates not detected above TCLP limits. The EPA HWN for chloroform (D022) will be assigned unless additional documentation and/or analysis (e.g., representativeness the sampling event and assumptions regarding the chloroform identified in the ACF SAR) is provided by the site.

AK Source	Location	Comment
P1104	PDF Pg. 359 of 1354	HCF SAR indicates chemical could be present in HCF, but does not indicate where or how it was used.
C1021	PDF Pg. 9, 11, 12 of 20	Not detected above MDL.

Chromium – EPA HWN D007

Multiple source documents show that chromium alloys or oxides were used in the HCF. C1021 indicates sample results show that chromium is present in levels above TCLP limits.

AK Source	Location	Comment
C1021	PDF Pg. 6 - 10 of 20	Detected in GB 4/5,GB 6/7, and TDU samples above TCLP limits.
M1010	PDF Pg. 104 - 111 of 153	Summary of data in C1021.
P1102	PDF Pg. 7-9, 27, 52 of 238	Chromium identified in alloys used in the HCF
I1002	throughout document	shielding in EEOS experiments
P1001	PDF Pg. 66, 67, and 68 of 114	Indicates use of chrome (NiChrome oxide) in EEOS experiments
see Table 7 of CCP-AK-SNL-500	various	Chromel/Aluminel used in EEOS, DFR, and ST-2 experiments Chromium oxide used in EEOS experiments

Lead – EPA HWN D008

Multiple source documents show that lead was used in the HCF. C1021 indicates sample results show that lead was present in levels above regulatory limits. Lead is present in several containers as described below.

AK Source	Location	Comment
C1021	PDF Pg. 7 and 10 of 20	detected in GB 6/7 samples above regulatory limits
M1016	DRs 005944, 091006/005962, 081289/005939, 071132/041206	Container SNL/NM006417 contains unused silver or lead wire solder. SNL/NM006401 contains an electric motor and soldering iron. SNL/NM006426 contains and electric air pump. SNL/NM006418 contains electrical parts
I1001	PDF Pg. 1 – 6 of 6	lead shielding used in pressure cell of EEOS experiments.
I1002	throughout document	shielding in EEOS experiments
see Table 7 of CCP-AK-SNL-500	various	Lead is well documented as used in the HCF

Methylene chloride – EPA HWN F002

Based on the documents listed below, HWN F002 will be assigned, unless SNL can provide documentation verifying that this chemical was not used as a solvent.

AK Source	Location	Comment
C1021	PDF Pg. 11 and 12 of 20	detected in GB 4/5 and 6/7 samples
M1010	PDF Pg. 100 of 153	summary based on C1021

P1104	PDF Pg. 34, 406 - 410 of 1354	HCF SAR indicates methylene chloride is expected be used in HCF, but does not indicate where or how. Accident scenario based on spill of methylene chloride.

Methyl ethyl ketone (MEK) (2-butanone) – EPA HWN D035/F005

Sampling results indicate the presence of MEK. Recommend replacing D035 with F005 to be consistent with current code assignment practices. F005 will be assigned pending additional documentation relating to chemical concentration and/or solvent usage.

AK Source	Location	Comment
C1021	PDF Pg. 11 and 12 of 20	Detected in GB 4/5 and 6/7 samples below regulatory limits
M1010	PDF Pg. 100 of 153	summary based on C1021
P1104	PDF Pg. 359 of 1354	HCF SAR indicates MEK is expected be used in HCF, but does not indicate where or how.

Mercury – EPA HWN D009

Sampling results indicate mercury above TCLP limits. HWN D009 will be assigned unless additional documentation and/or analysis (e.g., representativeness of the sampling event and assumptions regarding the original source of mercury deposited on the sampled filters) is provided by the site.

AK Source	Location	Comment
C1021	PDF Pg. 10 of 20	Mercury detected above regulatory limits in a GB 6/7 filter sample.
M1010	PDF Pg. 108 of 153	same as C1021
P1001	PDF Pg. 61 of 114	Mercury vapor lamps used in UV-ozone box in HCF

Pyridine – EPA HWN D038/F005

Only the HCF SAR (C1104) indicates the presence of pyridine in the HCF. Recommend replacing D038 with F005 to be consistent with current code assignment practices. The EPA HWN for pyridine (F005) will be assigned unless additional documentation is provided by SNL.

AK Source	Location	Comment
P1104	PDF Pg. 359 of 1354	HCF SAR indicates Pyridine is expected be used in HCF, but does not indicate where or how.

Selenium – EPA HWN D010

No source documents identified the an indication that selenium was used in the HCF. Sampling indicates not detected above TCLP limits. Recommend removing D010 for selenium.

AK Source	Location	Comment
C1021	PDF Pg. 9 and 10 of 20	Total analyses did not detected selenium above MDL.

Silver – EPA HWN D011

Silver is well documented to have been used in the HCF in either its pure form and as silver nitrate and silver chloride. Silver wire is present in one of the containers. Several electronic items in inventory potentially contain silver.

AK Source	Location	Comment
C1021	PDF Pg. 9 of 20	Silver detected above regulatory limits in GB 6/7 filter, paper towel , and fume hood samples.
M1016	DR204133.pdf Pg. 1, 21, 22, and 32.	Silver wire identified during repackaging of drum SNL/NM006417
see Table 7 of CCP-AK-SNL-500	various	Silver is well documented that it was used in the HCF

Toluene – EPA HWN F005

Sampling results from the GBL indicate the presence of Toluene. None of the source documents discuss how toluene was used. F005 will be assigned unless SNL can provide additional documentation verifying toluene was not used as a solvent in the HCF.

AK Source	Location	Comment
C1021	PDF Pg. 2 and 12 of 20	Indicates toluene detected in glovebox 6/7 and 9 filter samples. States "frequently used as solvents..."
M1010	PDF Pg. 99, 100, and 110 of 153	Indicates toluene detected in glovebox 6/7 and 9 filter samples. Does not indicate how it was used.
P1104	PDF Pg. 359 of 1354	HCF SAR indicates toluene may be used in HCF, but does not indicate where or how.

Trichloroethylene (Trichloroethene)) – EPA HWN F002

The AK record identifies trichloroethene (trichloroethylene) used for its solvent properties during ultrasonic cleaning of EEOS components. Other source documents mention trichloroethylene, but do not describe how it was used. F002 will be applied, unless SNL can provided additional documentation verifying that trichloroethylene was

not used as a solvent in the HCF.

AK Source	Location	Comment
C1021	PDF Pg. 8 of 20	Identifies trichloroethylene detected in samples collected from GB6/7, but below TCLP levels. Does not indicate how it was used.
M1010	PDF Pg. 99, 100, 106 of 153	Pg. 99 indicates employees verified solvents were used (but does not indicate if they were used for their solvent properties.) Pg. 106 is the same as C1021, Pg. 8 above.
M1011	PDF Pg. 61 of 96	table IV.1 indicates trichloroethylene used in Ultrasonic cleaning of EEOS pressure cell components.
P1001	PDF Pg. 58 of 114	discusses trichloroethylene used in ultrasonic cleaning for EEOS components
P1004	PDF Pg. 76 and 77 of 92	use in ultrasonic cleaning for EEOS
P1008	PDF Pg. 57 of 164	same as M1011
P1104	PDF Pg. 406 of 1354	listed in SAR as in inventory in the HCF, but does not discuss how it is used.

AK13

Attachment 3 – Visual Examination Site Project Manager Checklist

Batch Data Report No.: SNLRHVE14001

1. Has all the data received an independent technical review as evidenced by a completed checklist (Attachment 2) and the appropriate ITR signature?		☐ NO	☒ YES
2. Are BDR contents complete and match the Visual Examination Batch Data Report Table of Contents?		☐ NO	☒ YES
3. Is the BDR complete (appropriately filled in forms for each container)?		☐ NO	☒ YES
4. Have the RH Quality Assurance Objectives (QAOs) for VE been met?			
Precision – reconciled discrepancies between operators		☐ NO	☒ YES
Accuracy – trained operators		☐ NO	☒ YES
Representativeness – description of container contents		☐ NO	☒ YES
Completeness – completed data form and/or recording		☐ NO	☒ YES
Comparability – proper training and adequate AK for unopened containers		☐ NO	☒ YES
5. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☒ N/A

Comments

No NCRs

SPM:

Laura Nelson
Printed Name

Laura Nelson
Signature

5/15/14
Date

CCP RECORDS ORIGINAL
DATE REC'D 5/16/14

Attachment 4 – Visual Examination Batch Data Report Cover Sheet

Batch Data Report No.: SNLRHVE14001 Date: 03/26/14

	Waste Container ID Number:
1	SNL001401
2	SNL001402
3	SNL001403
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

SP 3/26/14

N A

CCP RECORDS ORIGINAL
DATE REC'D 3/14/14

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Attachment 5 – Visual Examination Batch Data Report Table of Contents

Batch Data Report No.: SNLRHVE14001 Date: 03/26/14

Item	Description	Page No.
1	Visual Examination Batch Data Report Cover Sheet (Attachment 4)	1
2	Visual Examination Batch Data Report Table of Contents (Attachment 5)	2
3	Visual Examination Data Forms (Attachment 1)	3
4	Visual Examination Independent Technical Reviewer Checklist (Attachment 2)	15
5	Copy of NCRs (N/A [If not applicable])	N/A

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL	
Examination Date: 03/05/14	Batch Number: SNLRHVE14001
Procedure #: CCP-TP-500	Revision #: 13 / Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A / Recording Stop: N/A
Initial Container ☒ N/A	Final Container ☐ N/A
Container or Package ID Number:	Container or Package ID Number: SNL001401
Container Type:	Container Type: 55 GAL
Waste Matrix Code:	Waste Matrix Code: S5400
Waste Stream:	Waste Stream: SNL-HCF-S5400-RH
	Rigid Liner: ☐Y ☒N Type: / Rigid Liner Lid: ☐ Y ☒N
	Rigid Liner Vented or Hole Size: N/A
Percent Fill: / Percent Organic Waste:	Percent Fill: 85 / Percent Organic Waste: ~~0~~ 10 SP 4-24-14
Layers of Confinement: / Closure Method:	Layers of Confinement: 1 ~~0~~ SP 3/14/14 / Closure Method: SP 3/14/14 ~~N/A~~ Filtered
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-019DS, SERIAL # FN-2205	

Waste Description:

30 GALLON DRUM (ID# SNL001401) (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number _SNL001401_____

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does NOT match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags NOT defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1: Spencer Pattee (Print Name)	Signature	4-24-14
		03/05/14 (Date)
		3/14/14
Visual Examination Operator 2: Dav id Hemsing (Print Name)	Signature: DAVE HEMSING	02/05/14 (Date)
	DAVE HEMSING	03/14/14
	DAVE HEMSING	04/24/14

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Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 02/28/14	Batch Number: SNLRHVE14001		
Procedure #: CCP-TP-500	Revision #: 13	Video Number N/A:	
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start :N/A	Recording Stop: N/A	
Initial Container ☐ N/A	Final Container ☒ N/A		
Container or Package ID Number:SNL001401	Container or Package ID Number:		
Container Type: 30 GAL. DRUM	Container Type:		
Waste Matrix Code:S5400	Waste Matrix Code:		
Waste Stream:SNL-HCF-S5400-RH	Waste Stream:		
	Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N	
	Rigid Liner Vented or Hole Size:		
Percent Fill: 95	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): Filter: NUCFIL-013, Serial # FN-833 Container Closed: 03/05/14			

Waste Description:
EXPERIMENTAL ASSEMBLIES: C00210018, C00210014, C00186636, C00187138, C00186629, C00210023

DRUM BAG (P)	QUARTZ WINDOWS (0IM)
PRESSURE TRANSDUCERS (P) (IM) (OM)	LIGHT BULB MOUNTING BASE (P) (OIM) (IM)
HARDWARE (IM)	WIRE (0M) (P)
O-RINGS (R)	PRESSURE SOLENOID VALVES (OM) (IM) (P)
MIRROR MOUNTING BRACKETS (IM)	CONTAINER LABELS (C)
MIRRORS (OIM)(OM)	EYE BOLTS (IM)
LIGHT BULBS (OIM)(OM)	ASSEMBLY HOUSINGS (AM)
LAMP ASSEMBLIES (OIM)(IM)(OM)	BREACHED AND EMPTY BAGS (P)
FUEL PELLETS AND PIECES (OM)	TAPE (P)
FUEL MOUNTING FIXTURES (OM)	WIPES (C)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number __SNL001401_____

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

03/05/14
Date

Visual Examination Operator 2:

David Hemsing
Print Name

Signature

03/05/14
Date

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Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/13/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start:N/A	Recording Stop:N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number:SNL001402	
Container Type:		Container Type: 55 GAL	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream:SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill:85	Percent Organic Waste: ~~0~~ 10 SP 4-24-14
Layers of Confinement:	Closure Method:	Layers of Confinement: 1 ~~0~~ SP 3/14/14	Closure Method: Filtered ~~N/A~~ SP 3/14/14
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-019DS, SERIAL# FN-2226			

Waste Description:

30 GALLON DRUM (ID# SNL001402) (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001402

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1: Spencer Pattee (Print Name)	Signature	Date 4-24-14 3/13/14 3/14/14
Visual Examination Operator 2: David Hemsing (Print Name)	Signature DAVE HEMSING	Date 03/13/14 03/14/14 04/24/14

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Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/06/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: SNL001402		Container or Package ID Number:	
Container Type: 30 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 95	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-013 SERIAL # FN-858 CLOSURE DATE: 03/13/14			

Waste Description:

EXPERIMENTAL ASSEMBLIES: C00210015, C00210033, C00210021, C00210024, C00210026, C00210022

DRUM BAG (P)	LIGHT BULBS (OIM) (OM)
PRESSURE TRANSDUCERS (P) (AM) (OM) (IM)	ASSEMBLY HOUSINGS (AM)
VALVE ASSEMBLIES (AM) (OM) (IM)	O-RINGS (R)
HARDWARE (IM) (P)	FUEL PELLETS AND PIECES (OM)
QUARTZ WINDOWS (OIM)	FUEL MOUNTING FIXTURES (OM)
LAMP ASSEMBLIES (OIM) (OM) (IM)	WIRE (OM) (P)
MIRROR MOUNTING BRACKETS (IM)	BREACHED AND EMPTY BAGS (P)
MIRRORS (OIM) (OM)	PRESSURE VALVES (IM) (OM)
LIGHT BULB MOUNTING BASES (P) (OIM) (IM)	CONTAINER LABELS (C)
ELECTRIC MOTORS (IM) (OM) (P)	WIPES (C)
TAPE (P)	

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number _SNL001402_

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

3/13/14
Date

Visual Examination Operator 2:

David Hemsing
Print Name

DAVE HEMSING
Signature

03/13/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/26/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start:N/A	Recording Stop:N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number:SNL001403	
Container Type:		Container Type: 55 GAL	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream:SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill:85	Percent Organic Waste: ~~0~~ 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-019DS, SERIAL# FN-2210			

Waste Description:

30 GALLON DRUM (ID# SNL001403) (IM)

GP 4-24-14

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001403

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1: Spencer Pattee (Print Name)	Signature	4-24-14 / 3/26/14 (Date)
Visual Examination Operator 2: David Hemsing (Print Name)	Signature: DAVE HEMSING	03/26/14 (Date)
	DAVE HEMSING	04/24/14

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 03/14/14		Batch Number: SNLRHVE14001	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A

Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: SNL001403		Container or Package ID Number:	
Container Type: 30 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 100	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-013, SERIAL # FN-838 CLOSURE DATE: 03/26/14			

Waste Description:
EXPERIMENTAL ASSEMBLIES: C00210011, C00210016, C00210017, C00186124, C00191876, C00191470, C00186919

DRUM BAG (P)

HARDWARE (IM)

PRESSURE TRANSDUCERS (P) (AM) (OM) (IM)

VALVE ASSEMBLIES (AM) (OM) (IM)

QUARTZ WINDOWS (OIM)

LAMP ASSEMBLIES (OIM) (OM) (IM)

MIRROR MOUNTING BRACKETS (IM)

MIRRORS (OIM) (OM)

LIGHT BULB MOUNTING BASES (OIM) (OM) (P)

PRESSURE VALVES (IM) (OM)

OPEN AND EMPTY PIPE (IM)

CONTAINMENT LID (OM)

WIPES (C)

ASSEMBLY HOUSINGS (AM)

FUEL PELLETS AND PIECES (OM)

O-RINGS (R)

FUEL MOUNTING FIXTURES (OM)

LIGHT BULBS (OIM) (OM)

WIRE (OM) (P)

CONTAINER LABELS (C)

ELECTRIC MOTORS (OM) (IM) (P)

EYE BOLTS (IM)

BREACHED AND EMPTY BAGS (P)

OPEN AND EMPTY CONTAINMENT (OM)

BREACHED INNER VESSEL (OM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001403

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

3/26/14
Date

Visual Examination Operator 2:

David Hemsing
Print Name

Signature

03/26/14
Date

Attachment 2 – Visual Examination Independent Technical Reviewer Checklist

Batch Data Report No.: SNLRHVE14001

1. Were data generation and reduction conducted in a technically correct manner in accordance with the methods (procedure) used?	☐ NO	☒ YES	☐ N/A
2. Was the correct revision of the operating procedure used?	☐ NO	☒ YES	☐ N/A
3. Were all the transcription errors corrected?	☐ NO	☐ YES	☒ N/A
4. Are BDR contents complete and match the Visual Examination Batch Data report Table of Contents?	☐ NO	☒ YES	☐ N/A
5. Does the BDR include VE for no more than 20 containers?	☐ NO	☒ YES	☐ N/A
6. Is all data recorded signed and dated in reproducible ink?	☐ NO	☒ YES	☐ N/A
7. Is all raw data recorded clearly, legibly, and accurately?	☐ NO	☒ YES	☐ N/A
8. Are all changes to original data lined out, initialed and dated by the individual making the changes or an individual authorized to make the change?	☐ NO	☒ YES	☐ N/A
9. Is there an adequate written description of the contents?	☐ NO	☒ YES	☐ N/A
10. Were the recording equipment checks satisfactory?	☐ NO	☐ YES	☒ N/A
11. Has each container in this BDR been evaluated for the presence of prohibited wastes?	☐ NO	☒ YES	☐ N/A
12. Has the physical waste form in each container in this BDR been evaluated against the Waste Stream Description and the Waste Matrix Code?	☐ NO	☒ YES	☐ N/A
13. Have the RH Quality Assurance Objectives (QAOs) for VE been met?	☐ NO	☒ YES	☐ N/A
Precision – reconciled discrepancies between operators or between the operator and ITR.	☐	☒	☐
Accuracy – trained operators	☐	☒	☐
Representativeness – description of container contents	☐	☒	☐
Completeness – completed data form and/or recording	☐	☒	☐
Comparability – proper training and adequate AK source documents are available for unopened containers.	☐	☒	☐
14. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☒ N/A

Comments: None

Independent Technical Reviewer:

F. Wesley Root — Printed Name

F. Wesley Root — Signature

05-01-14 — Date

DIVIDER PAGE ONLY

Not part of page count

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record [ ] Copy
[ ] Fax Record
[ ] Electronic Record

Attn:	Danette Acosta	From:	Laura Nelson
Ship to:	CCP Records	Site:	Denver
	4021 National Parks Highway	Company:	NWP
	MS:GSA:212	Telephone Number:	505-400-8984
	Carlsbad, NM 88220	Date Sent:	5/15/14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14001	SPM Checklist	5/15/14	1
	NA		

Comments

NA

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

Records Accepted [X] D Acosta — Signature | Danette Acosta — Printed Name | 5/16/14 — Date

Records Rejected [ ] _____ Signature | _____ Printed Name | _____ Date

Reason for Rejection:

Re-submittal: _____ Signature | _____ Printed Name | _____ Date

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	4235
DESTINATION TEL #	913038432208
DESTINATION ID	DENVER
ST. TIME	05/16 10:35
TIME USE	00'14
PAGES SENT	1
RESULT	OK

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record
[ ] Fax Record
[ ] Electronic Record
[ ] Copy

Attn:	Danette Acosta	From:	Laura Nelson
Ship to:	CCP Records	Site:	Denver
	4021 National Parks Highway	Company:	NWP
	MS:GSA:212	Telephone Number:	505-400-8984
	Carlsbad, NM 88220	Date Sent:	5/15/14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14001	SPM Checklist	5/15/14	1
	NA		

Comments

NA

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

AK14

Attachment 3 – Visual Examination Site Project Manager Checklist

Batch Data Report No.: SNLRHVE14002

1. Has all the data received an independent technical review as evidenced by a completed checklist (Attachment 2) and the appropriate ITR signature?		☐ NO	☑ YES
2. Are BDR contents complete and match the Visual Examination Batch Data Report Table of Contents?		☐ NO	☑ YES
3. Is the BDR complete (appropriately filled in forms for each container)?		☐ NO	☑ YES
4. Have the RH Quality Assurance Objectives (QAOs) for VE been met?			
Precision – reconciled discrepancies between operators		☐ NO	☑ YES
Accuracy – trained operators		☐ NO	☑ YES
Representativeness – description of container contents		☐ NO	☑ YES
Completeness – completed data form and/or recording		☐ NO	☑ YES
Comparability – proper training and adequate AK for unopened containers		☐ NO	☑ YES
5. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☑ N/A

Comments

No NCR's

SPM:

Laura Turner — Printed Name

Laura Turner — Signature

7/30/14 — Date

CCP RECORDS ORIGINAL
DATE REC'D 7/30/14

Attachment 4 – Visual Examination Batch Data Report Cover Sheet

Batch Data Report No.: SNLRHVE14002 Date: 07/02/2014

	Waste Container ID Number:
1	SNL001501
2	SNL001502
3	SNL001503
4	SNL001504
5	
6	
7	
8	
9	
10	
11	N A
12	
13	SP
14	07/02/14
15	
16	
17	
18	
19	
20	

001

CCP RECORDS ORIGINAL
DATE REC'D 7/30/14

Attachment 5 – Visual Examination Batch Data Report Table of Contents

Batch Data Report No.: SNLRHVE14002 Date: 07/02/2014

Item	Description	Page No.
1	Visual Examination Batch Data Report Cover Sheet (Attachment 4)	001
2	Visual Examination Batch Data Report Table of Contents (Attachment 5)	002
3	Visual Examination Data Forms (Attachment 1)	003
4	Visual Examination Independent Technical Reviewer Checklist (Attachment 2)	035
5	Copy of NCRs (N/A [If not applicable])	N/A

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 4/29/2014		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A

Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number: SNL001501	
Container Type:		Container Type: 55 GAL. DRUM	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream: SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:N/A	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill: 85	Percent Organic Waste:30
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED

Comments (e.g., filter information, NCRs):
Filter: NUCFIL-019DS, Serial # FN-2227

Waste Description:

30 GALLON DRUM (ID#SNL001501) (IM)

003

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001501

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name
Signature
4/29/14 — Date

Visual Examination Operator 2:

David Hemsing — Print Name
Signature
04/29/14 — Date

004

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL	
Examination Date: 04/25/14	Batch Number:SNLRHVE14002
Procedure #: CCP-TP-500	Revision #:13 / Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A / Recording Stop: N/A
Initial Container ☐ N/A	Final Container ☒ N/A
Container or Package ID Number:SNL001501	Container or Package ID Number:
Container Type: 30 GAL. DRUM	Container Type:
Waste Matrix Code: S5400	Waste Matrix Code:
Waste Stream: SNL-HCF-S5400-RH	Waste Stream:
	Rigid Liner: ☐Y ☐N Type: / Rigid Liner Lid: ☐ Y ☐N
	Rigid Liner Vented or Hole Size:
Percent Fill: 60 / Percent Organic Waste: 40	Percent Fill: / Percent Organic Waste:
Layers of Confinement: N/A / Closure Method: N/A	Layers of Confinement: / Closure Method:
Comments (e.g., filter information, NCRs): Filter: NUCFIL-013, Serial # FN-856 Container Closed 4/29/2014	

Waste Description:

CONTAINS ITEMS FROM PACO CASK C00210271

3/16" THICK STAINLESS STEEL INNER CONTAINMENT SLEEVE CUT IN TWO PIECES (IM)

BAGS (P)

HARDWARE (IM) (AM)

FUEL FRAGMENTS (OM) (IM)

EPOXY FRAGMENTS (P)

SLIDE CONTAINERS (P)

FUEL AND CLADDING (IM) (OM)

MET MOUNTS (P)

WIRE (OM)

OPEN PAINT CANS (IM)

WIRE BAILS (IM)

PAINT CAN LIDS (IM)

FILTER CARTRIDGES (AM) (C)

BROKEN BOTTLES (P)

KERF (OM) (IM) (P)

O-RINGS (R)

SCOTCH BRITE PADS (P)

TAPE (P)

MASSELIN (C)

INNER CONTAINMENT LID (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001501

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
Spencer Pattee
Print Name
Signature
4/29/14
Date

Visual Examination Operator 2:
David Hemsing
Print Name
Signature
04/29/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/12/14	Batch Number:SNLRHVE14002		
Procedure #: CCP-TP-500	Revision #: 13	Video Number:N/A	
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A	Recording Stop: N/A	

Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number:SNL001502	
Container Type:		Container Type: 55 GALLON DRUM	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream:SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type:N/A	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill:85	Percent Organic Waste: 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED

Comments (e.g., filter information, NCRs):
Container Filter : NUCFIL-019DS, Filter # : FN-2228
Container Closed on 06/12/14

Waste Description:

30 GALLON DRUM #SNL001502 (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001502

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A
SP 7/25/14

Visual Examination Operator 1:
SPENCER PATTEE
Print Name
Signature
6/12/14
Date

Visual Examination Operator 2:
DAVE HEMSING
Print Name
Signature
06/12/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL	
Examination Date: 06-11-2014	Batch Number:SNLRHVE14002
Procedure #: CCP-TP-500	Revision #: 13 / Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A / Recording Stop: N/A

Initial Container ☐ N/A	Final Container ☒ N/A
Container or Package ID Number: SNL001502	Container or Package ID Number:
Container Type: 30 GALLON DRUM	Container Type:
Waste Matrix Code: S5400	Waste Matrix Code:
Waste Stream: SNL-HCF-S5400-RH	Waste Stream:
	Rigid Liner: ☐Y ☐N Type: / Rigid Liner Lid: ☐ Y ☐N
	Rigid Liner Vented or Hole Size:
Percent Fill: 85 / Percent Organic Waste: 10	Percent Fill: / Percent Organic Waste:
Layers of Confinement: 0 / Closure Method: N/A	Layers of Confinement: / Closure Method:

Comments (e.g., filter information, NCRs):
Container Filter: NUCFIL-013 Serial # : FN-843
Container Closed: 06/12/2014

Waste Description:

DRUM LINER BREACHED (P)

7 GALLON DRUM #1308, BOTTOM (IM)

7 GALLON DRUM #1307, TOP (IM)

WIPES (C)

TAPE (P)

009

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001502

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments:

N/A

Visual Examination Operator 1:

SPENCER PATTEE
Print Name

Signature

6/12/14
Date

Visual Examination Operator 2:

DAVE HEMSING
Print Name

DAVE HEMSING
Signature

06/12/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 05/27/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 1307		Container or Package ID Number:	
Container Type: 7 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): Closure Date: 5/27/14			

Waste Description:

SHIELD POT # 8351 (IM) (OM)

BRACING (IM)

011

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 1307

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments:

N/A

Visual Examination Operator 1:

SPENCER PATTEE
Print Name

Signature

5/27/14
Date

Visual Examination Operator 2:

DAVE HEMSING
Print Name

DAVE HEMSING
Signature

05/27/14
Date

012

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 05/27/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number :N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 8351		Container or Package ID Number:	
Container Type: SHIELD POT		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 80	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): Closure Date: 05/27/14 CONTAINS CONTENTS FROM C00210019			

Waste Description:

CONTAINER: ¾ INCH LEAD LINED SHIELD POT

FUEL AND CLADDING (OM) (IM)

HARDWARE (IM)

013

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 8351

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
SPENCER PATTEE
Print Name
Signature
5/27/14
Date

Visual Examination Operator 2:
DAVE HEMSING
Print Name
Dave Hemsing
Signature
05/27/14
Date

014

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/01/2014		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 1308		Container or Package ID Number:	
Container Type: 7 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs):			
CONTAINER CLOSED: 6/11/2014			
Waste Description:			
SHIELD POT # 8352 (IM) (OM)			
BRACING (IM)			

015

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 1308

Prohibited Item(s) Summary	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments:

N/A

Visual Examination Operator 1:

SPENCER PATTEE
Print Name

Signature

6/11/14
Date

Visual Examination Operator 2:

DAVE HEMSING
Print Name

DAVE HEMSING
Signature

06/11/14
Date

016

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/01/2014		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number :N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 8352		Container or Package ID Number:	
Container Type: SHIELD POT		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 80	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): CONTAINS CONTENTS FROM C00210020, C00190022, C00219360, C00188432, C00219374 CONTAINER CLOSED: 6/11/2014			

Waste Description:

CONTAINER: ¾ INCH LEAD LINED SHIELD POT

FUEL AND CLADDING (OM) (IM)

EPOXY (P)

PELLET HOLDERS (P)

HARDWARE (IM)

SWEEPINGS AND CUTTINGS (IM) (OM) (P)

017

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 8352

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
SPENCER PATTEE
Print Name
Signature
6/11/14
Date

Visual Examination Operator 2:
DAVE HEMSING
Print Name
Signature
06/11/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 07/02/14		Batch Number: SNLRHVE14002	
Procedure #:CCP-TP-500		Revision #:13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number: SNL001503	
Container Type:		Container Type: 55 GALLON DRUM	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream: SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type: N/A	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill: 85	Percent Organic Waste: 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): DRUM LID FILTER : NUCFIL – 019DS Serial # : FN-2215 DRUM CLOSURE DATE : 07/02/14			
Waste Description: 30 GALLON DRUM # SNL001503 (IM)			

019

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001503

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name
Signature
07/02/14 — Date

Visual Examination Operator 2

Dave Hemsing — Print Name
Dave Hemsing — Signature
07/02/14 — Date

020

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL	
Examination Date: 6-17-14	Batch Number: SNLRHVE14002
Procedure #: CCP-TP-500	Revision #: 13 / Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A / Recording Stop: N/A

Initial Container ☐ N/A	Final Container ☒ N/A
Container or Package ID Number: SNL001503	Container or Package ID Number:
Container Type: 30 GALLON DRUM	Container Type:
Waste Matrix Code: S5400	Waste Matrix Code:
Waste Stream: SNL-HCF-S5400-RH	Waste Stream:
	Rigid Liner: ☐Y ☐N Type: / Rigid Liner Lid: ☐ Y ☐N
	Rigid Liner Vented or Hole Size:
Percent Fill: 100 / Percent Organic Waste: 10	Percent Fill: / Percent Organic Waste:
Layers of Confinement: 0 / Closure Method: N/A	Layers of Confinement: / Closure Method:

Comments (e.g., filter information, NCRs):
Contains Material contents of Containers: C00218134, C00188180, C00188425
Contains Non-Radiological Debris Items from Containers: C00210019, C00210003, C00190022, C00219360, C00210020, C00188432, C00219374
FILTER: NUCFIL-013 SERIAL #:FN-848
CLOSED; 07/02/14

Waste Description:

BREACHED DRUM BAG (P)	BRASS CAPS (OM) (IM)
OPEN AND EMPTY 1R CONTAINER (IM) (OM)	O-RINGS (R)
LIDS (IM) (OM)	FUEL WITH CLADDING (OM) (IM)
VERMICULITE (OIM)	WIPES (C)
OPEN PAINT CANS (IM)	SWEEPINGS AND CUTTINGS (IM) (OM) (P)
KERF (OM) (IM)	FUEL PIECES (OM)
TAPE (P) (C)	FILTERS (IM)
OPEN AND EMPTY 2R CONTAINERS (IM) (OM)	STEEL WOOL (IM)
SCRAP PAPER (C)	SCRAP PLASTIC (P)
HARDWARE (IM) (P) (C)	FOAM (P)
OPEN AND EMPTY TUBES (IM) (OM)	SLIDE CASE (P)
OPEN 2 GALLON CAN (IM)	SPACER (C)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001503

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments N/A

Visual Examination Operator 1: Spencer Pattee (Print Name)	Signature	07/02/14 (Date)
Visual Examination Operator 2: Dave Hemsing (Print Name)	Signature	07/02/14 (Date)

022

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 07/02/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☒ N/A		Final Container ☐ N/A	
Container or Package ID Number:		Container or Package ID Number: SNL001504	
Container Type:		Container Type: 55 GALLON DRUM	
Waste Matrix Code:		Waste Matrix Code: S5400	
Waste Stream:		Waste Stream: SNL-HCF-S5400-RH	
		Rigid Liner: ☐Y ☒N Type: N/A	Rigid Liner Lid: ☐ Y ☒N
		Rigid Liner Vented or Hole Size: N/A	
Percent Fill:	Percent Organic Waste:	Percent Fill: 85	Percent Organic Waste: 10
Layers of Confinement:	Closure Method:	Layers of Confinement: 1	Closure Method: FILTERED
Comments (e.g., filter information, NCRs): DRUM LID FILTER : NUCFIL – 019DS Serial # : FN-2220 DRUM CLOSURE DATE : 07/02/14			
Waste Description: 30 GALLON DRUM # SNL001504 (IM)			

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001504

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
Spencer Pattee
Print Name
Signature
07/02/14
Date

Visual Examination Operator 2:
Dave Hemsing
Print Name
Signature
07/02/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: SNL001504		Container or Package ID Number:	
Container Type: 30 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 10	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): FILTER: NUCFIL-013 SERIAL # FN-855 CLOSED: 07/02/14			

Waste Description:

BREACHED DRUM LINER BAG (P)

7 GALLON DRUM #1310 BOTTOM (IM)

7 GALLON DRUM #1309 TOP (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number SNL001504

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A
SP 7-25-14

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

07/02/14
Date

Visual Examination Operator 2:

Dave Hemsing
Print Name

Signature

07/02/14
Date

026

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A
Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 1309		Container or Package ID Number:	
Container Type: 7 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:
Comments (e.g., filter information, NCRs): CLOSED 06/30/14			

Waste Description:

SHIELD POT #8353 (IM) (OM)

BRACING (IM)

027

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 1309

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
Spencer Pattee
Print Name
Signature
6/30/14
Date

Visual Examination Operator 2:
Dave Hemsing
Print Name
Dave Hemsing
Signature
06/30/14
Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL	
Examination Date: 06/30/14	Batch Number: SNLRHVE14002
Procedure #: CCP-TP-500	Revision #: 13 / Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A	Recording Start: N/A / Recording Stop: N/A
Initial Container ☐ N/A	Final Container ☒ N/A
Container or Package ID Number: 8353	Container or Package ID Number:
Container Type: SHIELD POT	Container Type:
Waste Matrix Code: S5400	Waste Matrix Code:
Waste Stream: SNL-HCF-S5400-RH	Waste Stream:
	Rigid Liner: ☐Y ☐N Type: / Rigid Liner Lid: ☐ Y ☐N
	Rigid Liner Vented or Hole Size:
Percent Fill: 40 / Percent Organic Waste: 0	Percent Fill: / Percent Organic Waste:
Layers of Confinement: 0 / Closure Method: N/A	Layers of Confinement: / Closure Method:
Comments (e.g., filter information, NCRs): CONTAINS CONTENTS OF: C00210003 CLOSED: 06/30/14	

Waste Description:

CONTAINER TYPE: ¾ INCH LEAD LINED SHIELD POT

FUEL AND CLADDING (IM) (OM)

CUTTINGS (IM) (OM)

FUEL PIECES (OM)

029

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 8353

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments: N/A

Visual Examination Operator 1:
Spencer Pattee
Print Name
Signature
6/30/14
Date

Visual Examination Operator 2
Dave Hemsing
Print Name
Dave Hemsing
Signature
06/30/14
Date

Attachment 1 – Visual Examination Data Form

Site ID:RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #: 13	Video Number: N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start: N/A	Recording Stop: N/A

Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number: 1310		Container or Package ID Number:	
Container Type: 7 GALLON DRUM		Container Type:	
Waste Matrix Code: S5400		Waste Matrix Code:	
Waste Stream: SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 85	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:

Comments (e.g., filter information, NCRs):
CLOSED: 06/30/14
CONTENTS FROM C00210003

Waste Description:

SHEILD POT # 8354 (OM) (IM)

BRACING (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 1310

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	

Comments N/A

Visual Examination Operator 1:

Spencer Pattee — Print Name
Signature
6/30/14 — Date

Visual Examination Operator 2:

Dave Hemsing — Print Name
Signature
06/30/14 — Date

Attachment 1 – Visual Examination Data Form

Site ID: RHSNL			
Examination Date: 06/30/14		Batch Number: SNLRHVE14002	
Procedure #: CCP-TP-500		Revision #:13	Video Number:N/A
Recording Equipment Check: ☐SAT ☐UNSAT ☒N/A		Recording Start:N/A	Recording Stop:N/A

Initial Container ☐ N/A		Final Container ☒ N/A	
Container or Package ID Number:8354		Container or Package ID Number:	
Container Type: SHEILD POT		Container Type:	
Waste Matrix Code:S5400		Waste Matrix Code:	
Waste Stream:SNL-HCF-S5400-RH		Waste Stream:	
		Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐Y ☐N
		Rigid Liner Vented or Hole Size:	
Percent Fill: 40	Percent Organic Waste: 0	Percent Fill:	Percent Organic Waste:
Layers of Confinement: 0	Closure Method: N/A	Layers of Confinement:	Closure Method:

Comments (e.g., filter information, NCRs):
CONTAINS CONTENTS OF: C00210003
CLOSED: 06/30/14

Waste Description:

CONTAINER TYPE : ¾ INCH LEAD LINED SHEILD POT

FUEL WITH CLADDING (IM) (OM)

CUTTINGS (IM) (OM)

SPRING (IM)

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number 8354

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☒	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☒	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☒	
Does the container have observable liquid containing PCBs?	☐	☒	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☒	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☒	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☒	
Is there an indication of wastes containing explosives or compressed gases?	☐	☒	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☒	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☒	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☒	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☒	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☒	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☒	
Is the waste consistent with the TRUCON Code?	☒	☐	
Comments: N/A			

Visual Examination Operator 1:

Spencer Pattee
Print Name

Signature

6/30/14
Date

Visual Examination Operator 2:

Dave Hemsing
Print Name

Dave Hemsing
Signature

06/30/14
Date

Attachment 2 – Visual Examination Independent Technical Reviewer Checklist

Batch Data Report No.: SNLRHVE14002

1. Were data generation and reduction conducted in a technically correct manner in accordance with the methods (procedure) used?	☐ NO	☒ YES	☐ N/A
2. Was the correct revision of the operating procedure used?	☐ NO	☒ YES	☐ N/A
3. Were all the transcription errors corrected?	☐ NO	☐ YES	☒ N/A
4. Are BDR contents complete and match the Visual Examination Batch Data report Table of Contents?	☐ NO	☒ YES	☐ N/A
5. Does the BDR include VE for no more than 20 containers?	☐ NO	☒ YES	☐ N/A
6. Is all data recorded signed and dated in reproducible ink?	☐ NO	☒ YES	☐ N/A
7. Is all raw data recorded clearly, legibly, and accurately?	☐ NO	☒ YES	☐ N/A
8. Are all changes to original data lined out, initialed and dated by the individual making the changes or an individual authorized to make the change?	☐ NO	☒ YES	☐ N/A
9. Is there an adequate written description of the contents?	☐ NO	☒ YES	☐ N/A
10. Were the recording equipment checks satisfactory?	☐ NO	☐ YES	☒ N/A
11. Has each container in this BDR been evaluated for the presence of prohibited wastes?	☐ NO	☒ YES	☐ N/A
12. Has the physical waste form in each container in this BDR been evaluated against the Waste Stream Description and the Waste Matrix Code?	☐ NO	☒ YES	☐ N/A
13. Have the RH Quality Assurance Objectives (QAOs) for VE been met?	☐ NO	☒ YES	☐ N/A
Precision – reconciled discrepancies between operators or between the operator and ITR.	☐	☐	☒
Accuracy – trained operators	☐	☒	☐
Representativeness – description of container contents	☐	☒	☐
Completeness – completed data form and/or recording	☐	☒	☐
Comparability – proper training and adequate AK source documents are available for unopened containers.	☐	☒	☐
14. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☒ N/A

Comments: None

Independent Technical Reviewer:

F. Wesley Root	F. Wesley Root	07-26-14
Printed Name	Signature	Date

DIVIDER PAGE ONLY

Not part of page count

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record
[ ] Fax Record
[ ] Electronic Record
[ ] Copy

Attn:	Sheila Pearcy	From:	Wes Root
Ship to:	S.M. Stoller Rec. Mgmt. Govt.	Site:	ANL-E
	CCP Records	Company:	Nuclear Waste Partnership LLC
	4021 National Parks Hwy	Telephone Number:	630-252-8306
	Carlsbad, NM 88220	Date Sent:	7-26-14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14002	Batch Data Report – Waste Container ID Numbers: SNL001501, SNL001502, SNL001503, SNL001504.	7-2-14	35
	WR 7-26-14		

Comments

Completed BDR for Sandia National Laboratory.

(When the Record accepted line has been completed, the rest of the page below may be left blank.)

Acceptance/Rejection Signature and Date

Records Accepted [X]	[signature]	Danette Acosta	7/30/14
	Signature	Printed Name	Date
Records Rejected [ ]			
	Signature	Printed Name	Date

Reason for Rejection:

Re-submittal:

Signature	Printed Name	Date

```
*********************
***   TX REPORT   ***
*********************

TRANSMISSION OK

TX/RX NO                0101
DESTINATION TEL #       916302526706
DESTINATION ID          WES ROOT
ST. TIME                07/30 07:02
TIME USE                00'16
PAGES SENT                1
RESULT                  OK
```

Controlled Copy

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record [ ] Copy
[ ] Fax Record
[ ] Electronic Record

Attn:	Sheila Pearcy	From:	Wes Root
Ship to:	S.M. Stoller Rec. Mgmt. Govt.	Site:	ANL-E
	CCP Records	Company:	Nuclear Waste Partnership LLC
	4021 National Parks Hwy	Telephone Number:	630-252-8306
	Carlsbad, NM 88220	Date Sent:	7-26-14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14002	Batch Data Report – Waste Container ID Numbers: SNL001501, SNL001502, SNL001503, SNL001504.	7-2-14	35
	WR 7-26-14		

Comments

Completed BDR for Sandia National Laboratory.

(When the Record accepted line has been completed, the rest of the page below may be left blank.)

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record [ ] Copy
[ ] Fax Record
[ ] Electronic Record

Attn:	Danette Acosta	From:	Laura Nelson
Ship to:	CCP Records	Site:	Denver
	4021 National Parks Highway	Company:	NWP
	MS:GSA:212	Telephone Number:	505-400-8984
	Carlsbad, NM 88220	Date Sent:	7/30/14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14002	SPM Checklist	7/30/2014	1
	NA		

Comments

NA

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

Records Accepted [X] D Acosta (Signature) Danette Acosta (Printed Name) 7/30/14 (Date)

Records Rejected [ ] _____ (Signature) _____ (Printed Name) _____ (Date)

Reason for Rejection:

Re-submittal: _____ (Signature) _____ (Printed Name) _____ (Date)

```
*********************
***   TX REPORT   ***
*********************

TRANSMISSION OK

TX/RX NO                0113
DESTINATION TEL #       913038432208
DESTINATION ID          DENVER
ST. TIME                07/30 09:29
TIME USE                00'17
PAGES SENT                1
RESULT                  OK
```

Controlled Copy

Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

[X] Original Record
[ ] Fax Record
[ ] Electronic Record
[ ] Copy

Attn:	Danette Acosta	From:	Laura Nelson
Ship to:	CCP Records	Site:	Denver
	4021 National Parks Highway	Company:	NWP
	MS:GSA:212	Telephone Number:	505-400-8984
	Carlsbad, NM 88220	Date Sent:	7/30/14
Telephone Number:	575-234-7523		

Document Number	Title / Description	Record Date	Total Pages
SNLRHVE14002	SPM Checklist	7/30/2014	1
	NA		

Comments

NA

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

AK15

AK15

Attachment 13 – CCP Waste Stream Characterization Checklist – Example Form

CCP Waste Stream Characterization Checklist

Site(s): SNL

Waste Stream Number: SNL-HCF-S5400-RH Lot # (if applicable) 3

Waste Stream Description: S5000 Debris Waste

Acceptable Knowledge Information or other data points[a]	Characterization Method(s)	Acceptable Knowledge Re-evaluation Required? Yes/No[b]?	Comments[c]
Physical waste form/description	AK, VE	NO	VE data sheets indicate consistency with Attachment 6 of CCP-TP-005 and section 5.0 of CCP-AK-SNL-500
Waste material parameters weights	AK	NO	VE data sheets indicate consistency with Attachment 6 of CCP-TP-005 and section 5.0 of CCP-AK-SNL-500
Waste percent volume consistent with nondestructive examination or visual examination data and audio/video tapes or equivalent media	AK, VE	NO	VE data sheets indicate consistency with waste stream description in section 5.0 of CCP-AK-SNL-500
Summary Category Group assignment	AK, VE	NO	Assignment of Summary Category Group S5000 is consistent with VE data sheets
Waste Matrix Code assignment	AK, VE	NO	Assignment of Waste Matrix Code S5400 is consistent with VE data sheets
Absence of prohibited items	AK, VE	NO	VE confirmed the absence of prohibited items
EPA Hazardous Waste Number assignment[d]	AK	NO	EPA Hazardous Waste Code assignments were made in CCP-AK-SNL-500
Toxicity characteristic code assignment	AK	NO	Toxicity Characteristic Code assignments were made in CCP-AK-SNL-500
VOCs from packaging materials or radiolysis present	AK	NO	No VOCs associated with packaging or radiolysis were identified by AK, CCP-TP-005, Attachment 5
State Hazardous Waste Number assignment	AK	NO	New Mexico State HWNs are identical to EPA assignment
Radionuclides present	AK	NO	Radionuclides present were determined according to CCP-AK-SNL-501
Other radiological parameters: (specify)	AK	NO	The 14 radionuclides constituting greater than 95% of the hazard were calculated and reported, CCP-AK-SNL-501

Attachment 13 – CCP Waste Stream Characterization Checklist – Example Form (Continued)

CCP Waste Stream Characterization Checklist

Additional Comments:

VE BDRS: SNLRHVE14001

Radiological Data: SNLRHDTC14001

a. Identified in the AK Summary Report or included in the in-process record documentation (e.g., BDR's)
b. If "yes," AKE completes an *Acceptable Knowledge Re-evaluation Checklist.*
c. Identify the source of the waste testing information (e.g., VE or RTR batch data reports). Note if an AK Sufficiency Determination has been approved to meet any characterization parameter.
d. Ensure that, if a toxicity characteristic contaminant is identified, it is not included as a listed waste, and if analytical data regarding the concentration are not available, the corresponding EPA Hazardous Waste Number is applied.

Site Project Manager:

Laura Turner	Draft	Date: Draft
Print	Sign	

Acceptable Knowledge Expert:

Draft	Draft	Date: Draft
Print	Sign	

CHARACTERIZATION INFORMATION SUMMARY

WSPF # SNL-HCF-S5400-RH

Lot 3

TABLE OF CONTENTS

Characterization Information Cover Page..... 002

Correlation of Container Identification Numbers to Batch Data Report Numbers..... 003

RTR/VE Summary of Prohibited Items and AK Confirmation..... 004

Reconciliation with Data Quality Objectives..... 005

CCP Characterization Information Summary Cover Page

Waste Stream # SNL-HCF-S5400-RH Lot #: 3

AK Expert Review: Steve Schafer Date: DRAFT

SPM Review: Laura Turner Date: DRAFT

SPM signature certifies that through Acceptable Knowledge testing and/or analysis that the waste identified in this summary is not corrosive, ignitable, reactive, or incompatible with the TSDF.

A summary of the Acceptable Knowledge regarding this waste stream containing specific information about the corrosivity, reactivity, and ignitability of the waste stream is included as an attachment to the Waste Stream Profile Form. By reference, that information is included in this lot.

List of procedures used:

Visual Examination (VE)

CCP-TP-500	Rev. 13	09/23/13	CCP Remote-Handled Waste Visual Examination
CCP-TP-500	Rev. 12	07/18/13	CCP Remote-Handled Waste Visual Examination
CCP-TP-500	Rev. 11	04/21/11	CCP Remote-Handled Waste Visual Examination
CCP-TP-500	Rev. 10	09/23/13	CCP Remote-Handled Waste Visual Examination

Project Level Data Validation / DQO Reconciliation:

CCP-TP-001	Rev. 21	06/06/13	CCP Project Level Data Validation and Verification
CCP-TP-001	Rev. 20	09/27/12	CCP Project Level Data Validation and Verification
CCP-TP-001	Rev. 19	12/29/10	CCP Project Level Data Validation and Verification
CCP-TP-001	Rev. 18	08/09/10	CCP Project Level Data Validation and Verification
CCP-TP-002	Rev. 26	06/19/13	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-002	Rev. 25	02/11/13	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-002	Rev. 24	12/28/11	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-002	Rev. 23	12/29/10	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-002	Rev. 22	06/30/10	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-005	Rev. 26	08/12/13	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 25	06/19/13	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 24	11/28/11	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 23	06/30/11	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 22	04/21/11	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 21	12/29/10	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 20	11/01/10	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev. 19	07/06/10	CCP Acceptable Knowledge Documentation
CCP-TP-530	Rev. 11	06/19/13	CCP RH TRU Waste Certification and WWIS/WDS Data Entry
CCP-TP-530	Rev. 10	04/25/11	CCP RH TRU Waste Certification and WWIS/WDS Data Entry
CCP-TP-530	Rev. 9	12/11/09	CCP RH TRU Waste Certification and WWIS/WDS Data Entry

WAP Certification:

CCP-PO-001	Rev. 21	05/31/13	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-001	Rev. 20	06/16/11	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-001	Rev. 19	12/29/10	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-001	Rev. 18	06/30/10	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-510	Rev. 1	01/22/14	CCP/SNL Interface Document
CCP-PO-510	Rev. 0	11/18/10	CCP/SNL Interface Document

WAC Certification:

CCP-PO-002	Rev. 27	05/31/13	CCP Transuranic Waste Certification Plan
CCP-PO-002	Rev. 26	07/14/11	CCP Transuranic Waste Certification Plan
CCP-PO-002	Rev. 25	12/29/10	CCP Transuranic Waste Certification Plan
CCP-PO-002	Rev. 24	06/30/10	CCP Transuranic Waste Certification Plan

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream: # SNL-HCF-S5400-RH

Lot # 3

Container ID Number	Historical Container ID	NDA BDR or Radiological Characterization BDR	RTR BDR	VE BDR	Load Management/ Overpack Yes
SNL001401	NA	SNLRHDTC14001	N/A	SNLRHVE14001	N/A
SNL001402	NA	SNLRHDTC14001	N/A	SNLRHVE14001	N/A
SNL001403	NA	SNLRHDTC14001	N/A	SNLRHVE14001	N/A

DRAFT
Signature of Site Project Manager

Laura Turner
Printed Name

DRAFT
Date

CCP RTR/VE Summary of Prohibited Items and AK Confirmation

Waste Stream Number: SNL-HCF-S5400-RH Lot #: 3

Container Number	RTR Prohibited Items[ab]	Visual Examination Prohibited Items [ab]	Does the Physical Form of the Waste Match the Waste Stream Description as determined by AK
See correlation of container ID numbers for list of remaining drum numbers in this Lot.	RTR was not used to certify any containers in this lot.	None of the containers in this lot had prohibited items identified during Visual Examination technique	The physical form of the waste found in all the containers in this lot match the Waste Stream Description as determined by AK.
a. See Batch Data Reports b. If AK has assigned U134 to this waste stream, then any liquids in these containers are prohibited items (not acceptable by the TSDF).			
Justification for the selection of RTR and/or VE: VE was selected as the characterization method for this lot because the containers were newly generated and met all the Data Quality Objectives for NDE for waste stream SNL-HCF-S5400-RH.			

DRAFT	Laura Nelson	**DRAFT**
Site Project Manager Signature	Printed Name	Date

CCP Reconcilliation with Data Quality Objectives

WSF# SNL-HCF-S5400-RH Lot # 3

Sampling Completeness

VE
Number of Valid Samples: 3 Number of Total Samples Analyzed: 3
Percent Complete: 100 (QAO is 100%)

RTR
Number of Valid Samples: NA Number of Total Samples Analyzed: NA
Percent Complete: NA (QAO is 100%)

NDA
Number of valid samples: 3 Number of Total Samples Analyzed: 3
Percent Complete: 100 (QAO is 100%)

	Y/N/NA	Reconciliation Parameter
1	Y	Waste Matrix Code.
2	Y	Waste Material Parameter Weights.
3	Y	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	Y	The TRU activity reported in the BDRs for each container demonstrates with a 95% probability that the container of waste contains TRU radioactive waste.
5	N	AK Sufficiency. Is there an approved AK sufficiency Determination for this waste stream?
6	Y	The data demonstrates whether the waste stream exhibits a toxicity characteristic under Title 40 Code of Federal Regulations (CFR), Part 261, Identification and Listing of Hazardous Waste, Subpart C, Characteristics of Hazardous Waste.
7	Y	Does the waste stream contain listed waste found in 20.4.1.200 NMAC incorporating 40 CFR Part 261, Subpart D, Lists of Hazardous Wastes.
8	Y	Waste stream can be classified as hazardous or nonhazardous at the 90-percent confidence level.
9		The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in CCP-PO-001 Sections C3-1 through C3-2 prior to submittal of a waste stream profile form for a waste steam or waste stream lot.

	Completeness	Comparability	Representativeness
Radiography	NA	NA	NA
VE	Y	Y	Y

Comments: N/A

DRAFT	Laura Turner	DRAFT
Signature of Site Project Manager	Printed Name	Date

CCP Reconcilliation with Data Quality Objectives

WSF# SNL-HCF-S5400-RH Lot # 3

AK16

AK16

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

CP:
UFC:5900.00

INTER-OFFICE CORRESPONDENCE

DATE: June 16, 2014

FROM: L. Turner LOCATION: Project Quality Assurance

TO: CCP Records Custodian GSA-212 LOCATION: Support and RH Development

SUBJECT: NMED ACCEPTABLE KNOWLEDGE ACCURACY REPORT: CCP-AK-SNL-500 SANDIA NATIONAL LABORATORY REMOTE-HANDLED TRANSURANIC (RH-TRU) WASTE STREAM NUMBER SNL-HCF-S5400-RH, LOTS 1 THROUGH 3.

Purpose

CCP-TP-005, Revision 26, *CCP Acceptable Knowledge Documentation*, requires that Acceptable Knowledge (AK) accuracy be evaluated and documented, either on a lot or waste stream basis. The purpose of this correspondence is to document the results of the AK accuracy evaluation for the containers in waste stream SNL-HCF-S5400-RH, Heterogeneous Debris Waste, lots 1 through 3. One prior accuracy result was issued for waste stream SNL-HCF-S5400-RH at Sandia National Laboratory (SNL). It is documented in the following interoffice correspondence letter:

- CP:12:01273, dated May 31, 2012, accounted for 22 containers in lots 1 through 2 with an accuracy of 95.5 percent

Methodology

In accordance with CCP-TP-005, the *CCP Waste Stream Characterization Checklist* (Attachment 13) was used to perform the AK accuracy review for lots 1 through 3 in waste stream SNL-HCF-S5400-RH. An *Acceptable Knowledge Re-evaluation Checklist* (Attachment 10) was not generated for the review of this report.

The results of the AK accuracy evaluation for waste stream SNL-HCF-S5400-RH, lots 1 through 3, are documented on the attached *CCP Acceptable Knowledge Accuracy Report* form (Attachment 14).

A total of 25 RH-TRU waste containers have been evaluated for AK accuracy and one container had its Waste Matrix Codes (WMCs) reassigned, no containers had their Environmental Protection Agency (EPA) Hazardous Waste Numbers (HWNs) reassigned, or were found to have radiological data inconsistent with AK. The results of the AK accuracy determination for waste stream SNL-HCF-S5400-RH, lots 1 through 3, are addressed in the following sections of this correspondence.

Results of Acceptable Knowledge Accuracy Determination

Acceptable Knowledge Re-Evaluation and Confirmation for Waste Stream SNL-HCF-S5400-RH:

As discussed above no AK re-evaluation checklist was generated for this waste stream. The following parameters were described in AK Summary Report CCP-AK-SNL-500.

- The AK identifies the waste as heterogeneous debris waste.
- The waste stream was determined to contain Resource Conservation and Recovery Act (RCRA) regulated constituents and is assigned the following EPA HWNs: D004, D005, D006, D007, D008, D009, D011, D019, D022, D028, F002 and F005.

No EPA HWNs were reassigned to this waste stream.

The waste material parameters, EPA HWNs, and radionuclides are, within reasonable error, as predicted in AK Summary Report CCP-AK-SNL-500. No additional AK re-evaluations are required at this time.

Other Considerations

A CCP-TP-005 Attachment 10 was not generated for this waste stream. No drums were eliminated from Waste Stream SNL-HCF-S5400-RH due to the radioisotopic content. Based on the criteria for calculating accuracy, the accuracy for the waste stream is 96 percent, as calculated below.

Summary

There are 25 RH-TRU waste containers in lots 1 through 3 for waste stream SNL-HCF-S5400-RH; 24 of these containers are consistent with AK.

[(24/25)*100]= 96%

This AK Accuracy Report has been prepared in accordance with CCP-TP-005. The included Attachment 14 and CCP-TP-002, Attachment 4, *CCP Correlation of Container Identification Numbers to Batch Data Report Numbers,* contain the listing of the waste containers evaluated in this waste stream for the AK accuracy evaluation.

If you have any questions, or if you would like more information about the contents of this AK Accuracy Report, please contact me at (505) 400-8984.

LMN:jmc

Attachments

1. CCP-TP-005, Attachment 14, *CCP Acceptable Knowledge Accuracy Report*
2. CCP-TP-002, Attachment 4, *CCP Correlation of Container Identification Numbers to Batch Data Report Numbers*

cc: (without attachments)
I. S. Joo ED
D. W. Moody ED

Attachment 14 – CCP Acceptable Knowledge Accuracy Report – Example Form

CCP Acceptable Knowledge Accuracy Report

Site(s): Sandia National Laboratory (SNL)

Waste Stream Number(s): SNL-HCF-S5400-RH

Waste Stream Description: Heterogeneous Debris Waste

Waste Containers:	Waste Matrix Code Reassigned? (Y/N)	EPA Hazardous Waste Number Reassigned? (Y/N)	Radiological Data Consistent with AK? (Y/N)
See Attachment 2 for a listing of Containers	N	N	Y
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

Total containers in this report: 25
Total containers consistent with AK: 24
Percent containers consistent with AK: 96%

Site Project Manager:
Laura Turner / Date:
Print Sign

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream: # SNL-HCF-S5400-RH

Lot #

Container ID Number	Historical Container ID	NDA BDR or Radiological Characterization BDR (CH only)	RTR BDR	VE BDR	Solids Sampling BDR	Solids Analytical BDR	Load Management/ Overpack Yes	Permit Required Headspace Gas BDR		
								Sample	Analysis	
SNLNM005339	NA	SNLRHDTC11001	N/A	RHSNLVE100001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007007	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007008	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007009	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007010	NA	SNLRHDTC11001	N/A	RHSNLVE110002	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007011	NA	SNLRHDTC11001	N/A	RHSNLVE110001	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007020*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007021*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007023*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007024*	NA	NA	N/A	NA	N/A	N/A	N/A	SNHSG1101	ECL11019M	ECL11019G
SNLNM007119	NA	SNLRHDTC11002	N/A	SNLRHVE11010	N/A	N/A	N/A	NA	NA	NA
SNLNM007118	NA	SNLRHDTC11002	N/A	SNLRHVE11010	N/A	N/A	N/A	NA	NA	NA
SNLNM007116	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA
SNLNM007117	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA
SNLNM007115	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA
SNLNM007113	NA	SNLRHDTC11002	N/A	SNLRHVE11009	N/A	N/A	N/A	NA	NA	NA
SNLNM007112	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA
SNLNM007019	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA
SNLNM007026	NA	SNLRHDTC11002	N/A	SNLRHVE11008	N/A	N/A	N/A	NA	NA	NA

* Containers are not eligible for certification as the radiological scaling factor has not been developed. These containers are included for the characterization WWIS/WDS module for the HSG data only.

Signature of Site Project Manager

Laura Nelson
Printed Name

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream: # SNL-HCF-S5400-RH

Lot # 2

Container ID Number	Historical Container ID	NDA BDR or Radiological Characterization BDR	RTR BDR	VE BDR	Solids Sampling BDR	Solids Analytical BDR	Load Management/ Overpack Yes	Permit Required Headspace Gas BDR			Transportation BDR
								Sample	Analysis		
SNLNM007020	NA	SNLRHDTC11001	NA	RHSNLVE110003	NA	NA	NA	HSG1101	ECL11019M	ECL11019G	NA
SNLNM007024	NA	SNLRHDTC11001	NA	SNLRHVE11007	NA	NA	NA	HSG1101	ECL11019M	ECL11019G	NA
SNLNM007098	NA	SNLRHDTC11002	NA	SNLRHVE11018	NA	NA	NA	NA	NA	NA	NA
SNLNM007099	NA	SNLRHDTC11002	NA	SNLRHVE11018	NA	NA	NA	NA	NA	NA	NA
SNLNM007018	NA	SNLRHDTC11002	NA	SNLRHVE11007	NA	NA	NA	NA	NA	NA	NA
SNLNM007025	NA	SNLRHDTC11002	NA	SNLRHVE11007	NA	NA	NA	NA	NA	NA	NA
SNLNM007017	NA	SNLRHDTC11002	NA	SNLRHVE11007	NA	NA	NA	NA	NA	NA	NA

Signature of Site Project Manager

Laura Nelson
Printed Name

5/31/12
Date

DRAFT

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream: # SNL-HCF-S5400-RH

Lot # 3

Container ID Number	Historical Container ID	NDA BDR or Radiological Characterization BDR	RTR BDR	VE BDR	Load Management/ Overpack Yes
SNL001401	NA	SNLRHDTC14001	N/A	SNLRHVE14001	N/A
SNL001402	NA	SNLRHDTC14001	N/A	SNLRHVE14001	N/A
SNL001403	NA	SNLRHDTC14001	N/A	SNLRHVE14001	N/A

DRAFT
Signature of Site Project Manager

Laura Turner
Printed Name

DRAFT
Date

DRAFT

AK17

AK17

NWP
Nuclear Waste Partnership LLC
A URS-led partnership with B&W and AREVA

QA:14:01003 *
UFC:2300.00

INTER-OFFICE CORRESPONDENCE

DATE: January 14, 2014

FROM: V. K. Cannon V.K.Cannon LOCATION: Assurance Programs

TO: D. E. Gulbransen ED LOCATION: National TRU Program Certification

SUBJECT: INFORMATION COPY OF COMPLETED CENTRAL CHARACTERIZATION PROGRAM SURVEILLANCE REPORT SUR-CCP-0009-13, CONTROL OF ACCEPTABLE KNOWLEDGE

Attached is the subject report from Quality Assurance.

No Nonconformance or other corrective action reports were issued as a result of this surveillance. There were no items corrected during the surveillance and no observations or recommendations. See the report for details.

If you have any questions, please contact me at Extension 7111 or 8112.

DRL:sap

Attachment

cc: NWP

A. J. Fisher	ED
H. T. Greenwood	ED
M. S. Hendrickson	ED
J. E. Hoff	ED
F. M. Ito	ED
L. R. Jones	ED
W. R. Ledford	ED
T. L. Mueller	ED
M. Walker	ED
NTP Records Custodian	GSA-212

Stoller

M. L. Billett	ED
S. K. Pearcy	ED

TOTAL # OF PAGES 6

*Revised letter number

P.O. Box 2078 • Carlsbad, New Mexico USA 88221-2078
Phone: (575) 234-7200 • Fax: (575) 234-7083

CCP RECORDS ORIGINAL
DATE REC'D 2/18/14

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

QA:14:01001
UFC:2300.00

INTEROFFICE CORRESPONDENCE

DATE: January 13, 2014

FROM: V. K. Cannon V.K. Cannon LOCATION: Assurance Programs

TO: D. E. Gulbransen ED LOCATION: National TRU Program Certification

SUBJECT: INFORMATION COPY OF COMPLETED CENTRAL CHARACTERIZATION PROGRAM SURVEILLANCE REPORT SUR-CCP-0009-13, CONTROL OF ACCEPTABLE KNOWLEDGE

Attached is the subject report from Quality Assurance.

No Nonconformance or other corrective action reports were issued as a result of this surveillance. There were no items corrected during the surveillance and no observations or recommendations. See the report for details.

If you have any questions, please contact me at Extension 7111 or 8112.

DRL:ses

Attachment

cc: NWP

A. J. Fisher	ED
H. T. Greenwood	ED
M. S. Hendrickson	ED
J. E. Hoff	ED
F. M. Ito	ED
L. R. Jones	ED
W. R. Ledford	ED
T. L. Mueller	ED
M. Walker	ED
NTP Records Custodian	GSA-212

Stoller

M. L. Billett	ED
S. K. Pearcy	ED

CCP RECORDS ORIGINAL
DATE REC'D 2/12/14

QUALITY ASSURANCE SURVEILLANCE REPORT
Central Characterization Project
Surveillance Report SUR-CCP-0009-13
"Control of Acceptable Knowledge"

Date Initiated:	December 11, 2013
Surveillance Number:	SUR-CCP-0009-13
Assessment Type:	Surveillance
Project Area:	CCP Control of Acceptable Knowledge, Carlsbad, NM
Basis for Surveillance:	CCP-TP-005, *CCP Acceptable Knowledge Documentation,* rev. 26 CCP-QP-002, *CCP Training and Qualification Plan,* rev. 35 CCP-QP-008, *CCP Records Management,* rev. 21
Surveillance Team:	W. Ledford, Team Lead T. Mueller, Team Member

Surveillance Lead: _____ W. R. Ledford — 1/10/2014 Date

Assurance Programs Manager: _____ V. K. Cannon — 1/13/14 Date

QUALITY ASSURANCE SURVEILLANCE REPORT
CENTRAL CHARACTERIZATION PROGRAM
SURVEILLANCE REPORT SUR-CCP-0009-13
"CCP Control of Acceptable Knowledge"

I. Summation of Results:

On December 11 - 13, 2013, a surveillance was conducted to evaluate CCP compliance to the requirements of CCP-TP-005, *CCP Acceptable Knowledge Documentation,* rev. 26, CCP-QP-002, *CCP Training and Qualification Plan,* rev. 35, and CCP-QP-008, *CCP Records Management,* rev. 21. The surveillance team focused on the CCP Acceptable Knowledge (AK) documentation, records, and training of Acceptable Knowledge Experts. A sample of AK documentation from the Idaho National Laboratory, Argonne National Laboratory-East, and Oak Ridge National Laboratory was reviewed.

The surveillance team determined that CCP is in compliance with the AK documentation and records requirements. The personnel who generated/reviewed the AK documentation were qualified as required.

This surveillance determined that the CCP processes were adequate, satisfactorily implemented, and effective. No Corrective Action Reports or Nonconformance Reports were issued as a result of this surveillance.

II. Surveillance Scope:

This surveillance was performed in accordance with CCP-QP-021, Revision 9, *CCP Surveillance Program.* The surveillance focused primarily on the requirements specified in CCP-TP-005, *CCP Acceptable Knowledge Documentation,* rev. 26, CCP-QP-002, *CCP Training and Qualification Plan,* rev. 35, and CCP-QP-008, *CCP Records Management,* rev. 21.

III. Criteria:

The criteria used during the surveillance were those specified in CCP-TP-005, *CCP Acceptable Knowledge Documentation,* rev. 26, CCP-QP-002, *CCP Training and Qualification Plan,* rev. 35, and CCP-QP-008, *CCP Records Management,* rev. 21.

IV. Personnel Contacted During the Surveillance

M. Billett, S. Pearcy, T. Greenwood

V. Findings (NCR/CAR)

None

VI. Issues Corrected During Surveillance

None

VII. Concerns previously identified

None

VIII. Observations

None

IX. Recommendations

None

X. Objective Evidence

The following documents and activities were reviewed for evidence of compliance during the surveillance:

Document Number	Description
Argonne National Laboratory - East	
C303	Handwritten memo dated 10121/1994. Subject: Change postings In to Areas I, II, IV to reconcile books to SPM _ attached logbooks for Area I FGE, and Area III FGE
C2007	Work Plan for the Preparation of Specimens from the Characterization of Pins UW02010 (AIG 498A) and UW08036 (AIG 4988)
DR024	Waste Stream AERHDM Volume Projection Corrections
P397	ET-PFS Facility Support Agreement
P602	Analysis of Three Mile Island and Quad Cities Spent Nuclear Fuel Samples
U069	Information on Fuel Elements UBA-15, UBB-23, UCA-37, UCD-45, UCE-47
Idaho National Laboratory	
D005	Discrepancy Resolution for EPA Hazardous Waste Number Assignments for Waste Streams ID-RF-83114and ID-RF-83150·A, Rev. 1
P024	Content Code Assessments for INEL Contact-Handled Stored Transuranic Wastes
P167	Neptunium Processing at the Rocky Flats Plant
P545	RWMC Waste Handling and Overpacking
Oak Ridge National Laboratory	
CCP-AK-ORNL-001, Att.7	NDA Memorandum
CCP-AK-ORNL-002, Att. 7	NDA Memorandum
DR001	Discrepancy Resolution for OR-NFS-CH-HET; EPA Hazardous Waste Numbers
DR027	AK Reevaluation for 2 Most Prevalent

Document Number	Description
	Radionuclides
DR030	Acceptable Knowledge Source Document Discrepancy Resolution – Drum NFS0929
M016	VE Data
M210	TRU Project Waste Processing Facility Job Recipe. Subject: Soil-like Waste Remediation
M621	Oak Ridge National Laboratory Fabrication Department Test Report
P252	Glove Box Operations
P412	Fabrication and Preirradiation Data for High Flux Isotope Reactor Prototype Target Rods
P956	Segregation and Management of Solid Radioactive Materials
P1405	Geochemical Survey of the Unaka Mountain Roadless Area, Unicoi County, Tennessee
Training Records	AKE Qualification Records for C. Chancellor; J. Montoya; C. A. Dickerson; A. Johns; S. Nance, K. Peters; D. B. Becker

DIVIDER PAGE ONLY

Not part of page count

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

QA:13:01082
UFC:2300.00

INTEROFFICE CORRESPONDENCE

DATE: November 13, 2013

FROM: Thueller for V. K. Cannon

LOCATION: Assurance Programs

TO: D. E. Gulbransen ED

LOCATION: National TRU Program Certification

SUBJECT: NOTIFICATION OF SURVEILLANCE SUR-CCP-0009-13, CONTROL OF CENTRAL CHARACTERICATION PROGRAM ACCEPTABLE KNOWLEDGE

Quality Assurance (QA) Assurance Programs has scheduled a surveillance according to CCP-QP-021, *CCP Surveillance Program*. The surveillance will verify that the control of Acceptable Knowledge complies with the requirements of applicable procedures.

The surveillance scope, outlined in the attached Surveillance Plan, is based on the applicable procedures. A report of the surveillance results will be prepared and distributed to project management.

If you have any questions, please contact Wayne Ledford at Extension 7563.

TLM:jmc

Attachment

cc: NWP

A. J. Fisher	ED
M. S. Hendrickson	ED
J. E. Hoff	ED
L. R. Jones	ED
W. R. Ledford	ED
T. L. Mueller	ED
M. L. Sensibaugh	ED
M. A. Walker	ED
NTPC Records Custodian	GSA-212

Stoller

M. L. Billett	ED
S. K. Pearcy	ED

TechSpecs

T. Greenwood	ED

NTPC RECORDS ORIGINAL
DATE REC'D 1-29-14 GL

SURVEILLANCE PLAN

Control of CCP Acceptable Knowledge

Surveillance number:	SUR-CCP-0009-13
Organization to be Assessed:	CCP Inventory and AK Support
Scope:	CCP Control of Acceptable Knowledge
Location:	Project Office
Planned Initiation Date:	12/10/2013
Surveillance Team Lead:	W. Ledford
Surveillance Team Member:	T. Mueller
Planned Contacts:	• M. Billett • T. Greenwood • S. Pearcy
Objective(s):	Examine documents and interview personnel to verify achievement of quality through procedure(s) compliance.
Applicable Requirements Documents:	• CCP-TP-005, *CCP Acceptable Knowledge Documentation,* rev. 26 • CCP-QP-002, *CCP Training and Qualification Plan,* rev. 35 • CCP-QP-008, *CCP Records Management,* rev. 21

Prepared by: W. Ledford Date: 11/7/2013

DIVIDER

PAGE

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

QA:13:00200
UFC:2300.00

INTER-OFFICE CORRESPONDENCE

DATE: October 17, 2013

FROM: J. E. Hoff LOCATION: Quality Assurance

TO: Distribution LOCATION: Various

SUBJECT: TRANSMITTAL AND CLOSURE OF NWP QUALITY ASSURANCE AUDIT I13-06, CENTRAL CHARACTERIZATION PROGRAM QUALITY ASSURANCE PROGRAM

Nuclear Waste Partnership, LLC (NWP), Quality Assurance (QA) internal audit I13-06, *Central Characterization Program Quality Assurance Program*, was performed in two segments (on July 15 through 18 and August 21 through 26, 2013, at the project office in Carlsbad and on August 13 through15, 2013, at Los Alamos National Laboratory), to evaluate the adequacy and effective implementation of the Central Characterization Program (CCP) QA Program for compliance with DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document;* WIPP Procedure (WP) 13-1, *NWP Quality Assurance Program Description,* and associated implementing procedure requirements as applicable.

This audit evaluated one half of the CCP QA Program as well as activities associated with Acceptable Knowledge (AK) which are assessed every year. On alternate years, opposite halves of the QA Program are evaluated. The program criteria evaluated during the project office portion of this audit included:

- Qualification and Training
- Document Control (follow up to previous audit, only)
- Identification and Control of Material, Parts, and Components
- Work Processes
- Inspection and Testing
- Control of Measuring and Test Equipment
- Handling, Storage, and Shipping
- Inspection, Test, and Operating Status
- Quality Improvement

Additionally, each year's audit includes a site visit to one of the waste generating sites at which CCP is active. This audit included an evaluation of the activities at Los Alamos National Laboratory (LANL). During this portion of the audit, all applicable criteria of the CCP QA Program were evaluated.

The results of this audit indicate that the required activities related to the CCP QA Program are adequately and effectively implemented to ensure that program requirements are met, with the exceptions documented in the audit findings. This audit resulted in two findings, two conditions corrected during the audit (CDA), and three observations. The findings will be documented on WIPP Form (WF) 13-299 and WF13-300 and resultant corrective actions will be tracked and closed through the WIPP Issues Management Process. The CDAs and observations require no response. Therefore, this audit is considered closed with the issuance of this report.

If you have any questions or require additional information concerning this audit, please contact Mr. D. Hood at (575) 234-8754.

TDH:ses

Attachment

P.O. Box 2078 • Carlsbad, New Mexico USA 88221-2078
Phone: (575) 234-7200 • Fax: (575) 234-7083

A. J. Fisher	ED
D. E. Gulbransen	ED
M. W. Pearcy	ED
D. K. Ploetz	ED
T. R. Reynolds	ED
M. L. Sensibaugh	ED
C. E. Simmons	ED
M. R. Walentine	ED

cc:	W. W. Allen	ED
	V. K. Cannon	ED
	M. S. Hendrickson	ED
	L. E. Hernandez	ED
	F. M. Ito	ED
	S. A. Punchios	451-27
	T. L. Proctor	ED
	Quality Assurance Audit I13-06 File	

NUCLEAR WASTE PARTNERSHIP
QUALITY ASSURANCE AUDIT REPORT
Central Characterization Program Quality Assurance Program
I13-06

I. EXECUTIVE SUMMARY:

Nuclear Waste Partnership, LLC (NWP), Quality Assurance (QA) Audit I13-06, *Central Characterization Program Quality Assurance Program*, was performed in two segments (on July 15 through 18 and August 21 through 26, 2013 at the project office in Carlsbad and on August 13 through15, 2013 at Los Alamos National Laboratory), to evaluate the adequacy and effective implementation of the Central Characterization Program (CCP) QA Program for compliance with DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document;* WIPP Procedure (WP) 13-1, *NWP Quality Assurance Program Description*; and associated implementing procedure requirements as applicable.

The previous audit of the CCP QA Program resulted in one finding related to Document Control. A review for effectiveness of corrective actions was performed during this audit with satisfactory results.

The results of this audit indicate that the required activities related to the CCP QA Program are adequately and effectively implemented to ensure that program requirements are met, with the exceptions documented in the audit findings. This audit resulted in two findings, two conditions corrected during the audit (CDA), and three observations. The findings will be documented on WIPP Forms (WF) 13-299 and 13-300 and resultant corrective actions will be tracked and closed through the WIPP Issues Management Process. The CDAs and observations require no response. Therefore, this audit is considered closed with the issuance of this report.

II. AUDIT DETAILS:

Purpose and Scope:

The purpose of this audit was to evaluate the adequacy and effective implementation of one half of the CCP QA Program as well as activities associated with Acceptable Knowledge (AK) which are assessed every year. On alternate years, opposite halves of the QA Program are evaluated. The program criteria evaluated during the project office portion of this audit included:

- Qualification and Training
- Document Control (follow up to previous audit, only)
- Identification and Control of Material, Parts, and Components
- Work Processes
- Inspection and Testing
- Control of Measuring and Test Equipment
- Handling, Storage, and Shipping
- Inspection, Test, and Operating Status
- Quality Improvement

Additionally, each year's audit includes a site visit to one of the waste generating sites at which CCP is active. This audit included an evaluation of the activities at Los Alamos National Laboratory (LANL). During this portion of the audit, all applicable criteria of the CCP QA Program were evaluated.

The approach to this audit included observation of processes, documentation reviews, personnel interviews, and evaluations of associated procedures in order to determine the adequacy and effective implementation of the related program requirements. Where deemed appropriate, elements of the Integrated Safety Management System (ISMS) and Conduct of Operations were also evaluated.

A technical specialist was not required for the scope of this audit.

Criteria Used:

- DOE/CBFO-94-1012, Revision 11, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document*
- ASME/NQA-1-1989
- WIPP Procedure (WP) 13-1, Revision 33, *Washington TRU Solutions LLC Quality Assurance Program Description*
- WP 15-GM.03, Revision 6, *Integrated Safety Management System Description*
- WP 04-CO.01, Revision 2, *Conduct of Operations*

NWP Audit Team:

Lead Auditor:
Mr. T. D. Hood, QA, Oversight Programs

Auditors:
Ms. T. L. Proctor, QA, Assurance Programs

Auditor-in-Training:
Ms. L. E. Hernandez, QA, Assurance Programs

Inclusive Dates of Audit:

July 15 through 18 and August 21 through 26, 2013 (CCP offices in Carlsbad)
August 13 through 15, 2013 (LANL)

Location of Audit:

Skeen-Whitlock Building, Carlsbad, New Mexico
Los Alamos National Laboratory, Los Alamos, New Mexico

Safety and Security:

The audit in Carlsbad took place in an office environment, with no personal protection equipment being necessary. Audit activities at LANL involved the NWP Audit Team's presence in areas where steel-toed footwear and eye protection were required; team members complied with all safety requirements. Additionally, access to certain areas required use of a personal dosimeter and an escort; the NWP Audit Team complied with these requirements.

Access to all areas of LANL required badging; the NWP Audit Team maintained compliance.

During the audit, records storage locations were observed to be adequately designated and their access controlled via authorized-access signs and/or locked cabinets/areas.

Conclusions:

In addition to CCP activities assessed at the Carlsbad project office, the NWP Audit Team traveled to LANL to assess the CCP activities conducted at LANL. For the LANL portion of the assessment, the NWP Audit Team evaluated applicable facets of personnel qualification; instructions and procedures; document control; control of purchased product; material identification and control; work processes; inspection and testing; control of measuring and test equipment; handling, storage, and shipping; inspection and test status; nonconforming item control; corrective action; records; and assessments.

The NWP Audit Team concluded that the portions of the CCP QA Program subject to this audit are satisfactorily implemented, with the exceptions documented in the audit findings. The audit findings are not considered a significant hindrance to overall implementation of the QA Program. The NWP Audit Team

commends the professionalism, knowledge, competence, and courtesy displayed by all personnel contacted during the audit.

The NWP Audit Team confirmed that applicable higher-tier requirements from DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document* and WP 13-1, *Quality Assurance Program Description* are adequately addressed in implementing procedures.

The NWP Audit Team observed a number of personnel in the process of conducting activities requiring qualification and specialized training while at LANL. Additionally, documents reviewed during the audit revealed additional names of qualified personnel. A sample of the aforementioned personnel was selected and their qualification and training records were verified to be adequate for the applicable processes. The NWP Audit Team verified that a list of qualified individuals (LOQI) is maintained for personnel performing work at the mobile loading unit area and in the waste characterization processing areas at LANL. Additionally, training and qualification was confirmed for personnel responsible for tracking and controlling measuring and test equipment (M&TE).

The NWP Audit Team verified that activities observed in process at LANL were conducted using guidance from established instructions, procedures, standing orders, and/or drawings. Logbooks were verified to be used and completed properly at each inspection/examination station visited. One issue was found related to compliance with a nondestructive assay (NDA) procedure; this issue is identified in audit finding I13-06-F-01. The NWP Audit Team verified implementation of various requirements from the interface agreement between CCP and LANL. One issue was identified with regards to distribution of surveillance reports; this issue is identified in audit finding I13-06-F-02.

During the previous audit, the NWP Audit Team assessed the Document Control activities conducted by Document Services personnel at the Skeen Whitlock Building (SWB). It was noted that during the review process for proposed changes to controlled documents, the review and approval was not always conducted in accordance with procedural requirements (refer to Finding I12-12-F-01). During audit I13-06, corrective actions were evaluated and found to be effective in preventing similar occurrences.

While at LANL, the NWP Audit Team took note of the revision levels of documents (e.g., procedures, standing orders, work instructions, etc) in use. The NWP Audit Team also took note of the document/procedure revisions referenced/recorded in various documents reviewed during the audit (e.g., batch data reports [BDRs], etc). The listed revision levels were compared to the document revisions found on the sftp site (the on-line site set up for CCP personnel to access controlled documents) and in the Quality and Manufacturing Integrated System (Q&MIS) and were found to be the documents current at the time of use, with one exception. Three obsolete standing orders were observed to be posted at one location, these were promptly removed; refer to condition corrected during the audit I13-06-CDA-01.

The NWP Audit Team assessed the control of purchased material while at LANL. The NWP Audit Team witnessed receipt inspection of two different items (drums and filter vents) and verified that the procured items were received and inspected according to procedural requirements and that nonconforming items were placed on hold and a nonconformance report (NCR) was issued.

Identification and control of materials, parts, and components was verified by review of BDRs, observation of receipt inspection, and observation of various items (e.g., drums, spare parts, filter vents) in storage at LANL.

The NWP Audit Team verified that work processes are adequately controlled by CCP. Work processes such as NDA, headspace gas analysis, radiographic examination, visual examination (VE), mobile loading and leak testing of Type B Packaging, and waste certification / entry into WIPP Waste Information System (WWIS)/Waste Data System (WDS) were verified to be performed by qualified personnel, in accordance with established and current procedures, and when applicable, using proper equipment.

Inspection and testing activities witnessed by the NWP Audit Team while at LANL included real time radiography (RTR), NDA, and headspace gas (hydrogen/methane) analysis. No leak testing (TRUPACT-II/HalfPACT) or VE were in process during the audit. Personnel qualifications were verified for all personnel observed performing inspection/testing, as well as several persons whose names were selected from BDRs reviewed for all examination processes in use at LANL. Current procedures were verified to be on-site and in use at each station visited by the NWP Audit Team. Processes were being conducted in accordance with the procedures, with one exception. Refer to audit finding I13-06-F-01 for details.

Adequate control of measuring and test equipment (M&TE) was verified by the NWP Audit Team. One person responsible for tracking and ensuring calibration of M&TE in the project office in Carlsbad was interviewed and calibration data records and an M&TE log were reviewed. Several instruments observed at the mobile loading area at LANL were included in the instruments whose records were reviewed.

Controls related to handling, storage, and shipping were assessed for CCP activities. The NWP Audit Team verified that items in storage at LANL (e.g., drums, filter vents, spare parts for Type B Packaging, etc) were identified and controlled adequately. No items requiring special environments or controls were observed.

The NWP Audit Team verified via review of BDRs that inspection and test results are identified in the reports and the reports are traceable to applicable containers. Nonconforming items were observed to be marked with NCR tags. Suspect items were observed to be marked with administrative hold tags.

The NWP Audit Team verified through review of a sample of NCRs that nonconforming items are identified, their conditions evaluated, and remedial action is taken. While at LANL, the NWP Audit Team verified that containers related to the reviewed LANL NCRs that were "open" had NCR tags applied. Semi-annual trending reports were reviewed and their distribution to affected and interested parties was confirmed.

Programmatic conditions adverse to quality were verified to be identified via corrective action requests (CARs). The NWP Audit Team reviewed a sample of CARs and verified the CARs are processed in a manner to identify corrective actions, assign responsible parties, determine if adverse conditions are significant, assign root cause analyses when applicable, verify completion of corrective actions, and close the CARs. CARs were observed to be included in the semi-annual trending reports.

While at LANL, the NWP Audit Team verified that quality assurance records are adequately identified, classified, generated and completed, validated, collected, stored, maintained, protected, and transmitted as necessary. This includes hard copy records as well as electronic records. Corrections that were seen to have been made to all quality records reviewed during the audit were confirmed to have been made properly. Records requested for review during the project office portion of the audit were observed to be properly stored and were readily retrievable.

While at LANL, the NWP Audit Team verified that assessments, i.e., surveillances and management assessments, are scheduled; conducted by independent, qualified personnel; and reported to interested parties. The process was verified to produce identification of conditions adverse to quality and their resolution, when applicable. It was noted that audits are not conducted, other than an annual internal audit (which is this audit). It was verified that the combination of the surveillances, management assessments, and annual internal audits provide an adequate assessment of the QA Program's implementation.

The NWP Audit Team reviewed various documents related to AK processes to verify compliance with requirements from CCP-TP-005, Revision 25, *CCP Acceptable Knowledge Documentation* and the WIPP Hazardous Waste Facility Permit. One issue was noted regarding an AK related NCR that had one trend code annotated on the NCR whereas a different trend code was listed in the database; the error was corrected promptly – refer to condition corrected during the audit I13-06-CDA-02.

The audit also included evaluations for the appropriate application of the Integrated Safety Management System (ISMS). Evidence was observed during the course of the audit that supports the positive application of three ISMS Core Functions. Specifically, the NWP Audit Team was able to confirm the application of the following ISMS Core Functions:

- Core Function Number 1, *Define the Scope of Work* – Procedures are established for the CCP QA Program,
- Core Function Number 4, *Perform Work Within Controls* - Procedures are established to assure processes are conducted appropriately, and
- Core Function Number 5, *Provide Feedback and Continuous Improvement* – Periodic assessments of the CCP QA Program are conducted, and necessary corrective actions are taken when adverse conditions are identified.

This audit resulted in the identification of two findings, two CDAs, and three observations. The findings will be documented on WF 13-299 and 13-300 and resultant corrective actions will be tracked and closed through the WIPP Issues Management Process. The CDAs and observations require no response. Therefore, this audit is considered closed with the issuance of this report.

FINDING:

I13-06-F-01

Condition(s) Noted:

RTR was being conducted in accordance with CCP-TP-053, *Standard Real-Time Radiography (RTR) Inspection Procedure,* Revision 13, on several containers from a batch identified with BDR number LA-RTR2-13-0099. One of the containers (number 94122) failed due to the contents not matching the waste stream description. The RTR technician completed a VPM [Vendor Project Manager] Administrative Hold Tag and applied it to the container, but he did not complete an NCR.

Requirement(s) Not Met:

CCP-TP-053, *Standard Real-Time Radiography (RTR) Inspection Procedure,* Revision 13, Section 4.4.2.H.1 states, "IF any hazardous waste(s) NOT identified in the AK Summary Report(s) for the waste stream being characterized...are noted during the RTR examination, THEN perform the following: Initiate an NCR in accordance with CCP-QP-005."

I13-06-F-02

Condition(s) Noted:

Surveillance Reports SUR-LANL-0004-13 and SUR-LANL-0005-13 were not sent to the LANL TRU Program (LTP) Project Director (identified as Ms. Kathy Johns-Hughes), as required.

Requirement(s) Not Met:

CCP-PO-012, *CCP / Los Alamos National Laboratory (LANL) Interface Document,* Revision 13, Section 3.3.5 states, "NWP Assurance Programs Manager...ensures surveillances of waste characterization activities at LANL are performed on a periodic basis and surveillance reports are provided to the CCP SPM, the CCP LANL Project Manager/Designee, and the LANL TRU Program (LTP) Project Director."

CONDITIONS CORRECTED DURING THE AUDIT (CDAs):

I13-06-CDA-01

Condition(s) Noted:

Three obsolete standing orders were observed posted in the headspace gas analysis area at LANL:

- CCP-SO-072, cancelled July 25, 2013
- CCP-SO-088, cancelled July 25, 2013
- CCP-SO-089, cancelled April 30, 2013

Requirement(s) Not Met:

DOE/CBFO-94-1012, *Quality Assurance Program Document,* Revision 11, section 1.4.2 states, "The distribution and use of controlled documents and forms that document or prescribe work, including changes and editorial corrections to documents, shall be controlled to meet the following requirements:

C. The disposition of obsolete or superseded documents and forms shall be controlled to avoid their inadvertent use."

Action(s) Taken and Verification of Completion:

The standing orders were removed. Removal was verified by the site CCP QA representative.

I13-06-CDA-02

Condition(s) Noted:

NCR-LANL-1369-12, dated July 26, 2012, was annotated with trend code K, whereas the Integrated Data Center (IDC) database showed trend code H.

Requirement(s) Not Met:

WP 13-1, *Quality Assurance Program Description*, Revision 33, Section 1.4.1 states, "Documents that specify or prescribe work shall be reviewed for adequacy, **correctness**, and completeness prior to approval and issuance as controlled documents."

Action(s) Taken and Verification of Completion:

A Change Control Board (CCB) was requested to change the trend code for NCR-LANL1369-12 from H to K. An email from IDCADmin@wipp.ws was sent statusing the IDC CCB Request #DCR-2013-1198 from open to closed (meaning the action was complete). These actions were verified by the NWP Audit Team.

OBSERVATION(S):

I13-06-O-01

Condition(s) Noted:

At the time the condition annotated in finding I13-06-F-01 was discovered, the technician stated that CCP-TP-066 allows the failed scan to be designated a Fast Scan and for the condition to be documented on Attachment 2 to CCP-TP-066 and referred to the SPM [Site Project Manager] for resolution (without an NCR being initiated). However, CCP-TP-066, *CCP Radiography Screening Procedure for Prohibited items,* Section 4.6.10 addresses only prohibited items (there are no provisions in CCP-TP-066 for using a Fast Scan to reject a container with contents that do not match the designated waste steam).

I13-06-O-02

Condition(s) Noted:

Surveillance Reports SUR-LANL-0004-13 and SUR-LANL-0005-13 do not include the dates the surveillances were performed in the body of the report; however, the dates of performance are documented in each line item in the Checklist (Attachment 1) to the reports.

I13-06-O-03

Condition(s) Noted:

The following are not listed in CCP-PO-012, *CCP / Los Alamos National Laboratory (LANL) Interface Document,* Revision 13, Attachment 1, *Acronyms and Key Definitions*

- LTP (LANL TRU Program)
- SSS-PM (Shipping and Safe Storage Manager)
- VOCs (Volatile Organic Compound)
- EA (Expert Analyst)
- CPP (Central Procurement Program)

III. ATTACHMENTS:

Attachment 1, *Table of Personnel Contacted*
Attachment 2, *Table of Documents Reviewed*

IV. SIGNATURES:

Prepared by: _____ 10-16-13
T. D. Hood, Lead Auditor — Date
Oversight Programs

Approved by: _____ 10-17-13
V. K. Cannon, Manager — Date
Assurance Programs

Attachment 1, *Table of Personnel Contacted*

[A] Attended Audit Entrance Meeting **[B]** Contacted During the Audit **[C]** Attended Audit Exit Meeting

Name	A	B	C
Nuclear Waste Partnership			
Val Cannon	X	X	X
Antonio Chavarria	X*	X	
Jim Eastham		X	
Ed Gulbransen	X		
A.J. Fisher	X	X	
Laura Jones		X	
Creta Kirkes		X	
Tommy Mojica	X*	X	
Robbie Morrison		X	
Terry Mueller	X	X	
Leon Navarrete		X	
Jose Payanes		X	
Mark Pearcy			X
Mike Ramirez	X	X	
Nick Roberts		X	
Mike Rogers		X	
Mike Sensibaugh		X	
Chris Sexton		X	
Craig Simmons	X*	X	
Veronica Waldram		X	
Mak Walker	X	X	
Los Alamos National Laboratory			
Ed Anaya		X	
Sara Aragon		X	
Tim Barton		X	
Cathy Buffington		X	
Davis Christensen		X	
Aaron Elliott		X	
Maria Escarega		X	
Terri-Anne Groover		X	
Thad Hasselstrom		X	
Dave Hemsing		X	
Bob Houdashelt		X	
Erik Loechell		X	
Benito Maestas		X	
Kevin McTaggart		X	
Floyd Ortiz		X	
Mary Reed		X	
Eddie Rios		X	
Robert Rios		X	
David Sager		X	
Mike Simmons		X	
Nathan Wales		X	
S.M. Stoller Corporation			
Cheryl Armijo		X	
Ranada Baca		X	
Michele Billet		X	
Paulette Henry		X	
Leon Navarrete		X	
Sheila Pearcy		X	

X* - entrance meeting at LANL

Attachment 2, *Table of Documents Reviewed*

Document Identification	Document Title or Description
DOE/CBFO-94-1012, Revision 11	*U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document*
DOE/CBFO-94-1012, Revision 11	*U.S. Department of Energy Carlsbad Field Office Quality Assurance* (QA) *Program Document*
DOE/WIPP-02-3183, Revision 8	*CH [Contact-Handled] Packaging Program Guidance*
DOE/WIPP-02-3184, Revision 13	*CH Packaging Operations Manual*
DOE/WIPP-02-3185, Revision 2	*CH Packaging Maintenance Manual*
DOE/WIPP-02-3220, Revision 13	*CH Packaging Operations for High-Wattage Waste*
DOE/WIPP-06-3345, Revision 5	*Waste Isolation Pilot Plant Flammable Gas Analysis*
CCP-AK-LANL-010, Revision 6	*Central Characterization Program Acceptable Knowledge Summary Report for Los Alamos National Laboratory TA-21 DP West Facility*
CCP-AK-LANL-014, Revision 1	*Central Characterization Program Acceptable Knowledge Summary Report for Los Alamos National Laboratory TA-39 Two-Stage Gas Fun Facility*
CCP-CM-003, Revision 3	*Central Characterization Program High Efficiency Neutron Counter (HENC-01) (Equipment #NDA-HENC-01) Equipment Description*
CCP-CM-029, Revision 1	*Central Characterization Program High Energy Real-Time Radiography System HE-RTR*
CCP-PO-001, Revision 21	*Central Characterization Program TRU Waste Characterization Quality Assurance Project Plan*
CCP-PO-002, Revision 27	*Central Characterization Program Transuranic Waste Certification Plan*
CCP-PO-005, Revision 23	*Central Characterization Program Conduct of Operations*
CCP-PO-012, Revision 12 and 13	*Central Characterization Program/Los Alamos National Laboratory (LANL) Interface Document*
CCP-QP-002, Revision 35	*Central Characterization Program Training and Qualification Plan*
CCP-QP-005, Revision 23	*Central Characterization Program TRU Nonconforming Item Reporting and Control*
CCP-QP-008, Revision 21	*Central Characterization Program Records Management*
CCP-QP-010, Revision 24	*Central Characterization Program Document Preparation, Approval, and Control*
CCP-QP-014, Revision 5	*Central Characterization Program QA Trend Analysis and Reporting*
CCP-QP-015, Revision 12	*Central Characterization Program Procurement*
CCP-QP-016, Revision 18	*Central Characterization Program Control of Measuring and Testing Equipment*
CCP-QP-017, Revision 3	*Central Characterization Program Identification and Control of Items*
CCP-QP-018, Revision 10	*Central Characterization Program Management Assessment*
CCP-QP-019, Revision 7	*Central Characterization Program Quality Assurance Reporting to Management*
CCP-QP-021, Revision 8	*Central Characterization Program Surveillance Program*
CCP-QP-023, Revision 4	*Central Characterization Program Handling, Storage and Shipping*
CCP-QP-026, Revision 14	*Central Characterization Program Inspection Control*
CCP-QP-027, Revision 6	*Central Characterization Program Test Control*
CCP-QP-029, Revision 0	*Central Characterization Program Corrective Action Management*
CCP-QP-030, Revision 9	*Central Characterization Program Written Practice for the Qualification of CCP Helium Leak Detection Personnel*
CCP-TP-001, Revision 21	*Central Characterization Program Project Level Data Validation and Verification*
CCP-TP-002, Revision 26	*Central Characterization Program Reconciliation of DQOs and Reporting Characterization Data*
CCP-TP-005, Revision 24 and 25	*Central Characterization Program Acceptable Knowledge Documentation*
CCP-TP-011, Revision 17	*Central Characterization Program Radiography Inspection Operating Procedure*
CCP-TP-030, Revision 32	*Central Characterization Program CH TRU Waste Certification and WWIS/WDS Data Entry*
CCP-TP-033, Revision 20	*Central Characterization Program Shipping of CH TRU Waste*
CCP-TP-053, Revision 13	*Central Characterization Program Standard Real-Time Radiography (RTR) Inspection Procedure*
CCP-TP-054, Revision 3	*Central Characterization Program Adjustable Center of Gravity Lift Fixture*

Document Identification	Document Title or Description
	Preoperational Checks and Shutdown
CCP-TP-055, Revision 5	*Central Characterization Program Varian Porta-Test Leak Detector Operations*
CCP-TP-059, Revision 1	*Central Characterization Program Operating the Super High Efficiency Neutron Counter (SuperHENC) Using NDA 2000*
CCP-TP-063, Revision 14	*Central Characterization Program Operating the High Efficiency Neutron Counter Using NDA 2000*
CCP-TP-064, Revision 7	*Central Characterization Program Calibrating the High Efficiency Neutron Counter and the Super High Efficiency Neutron Counter Using NDA 2000*
CCP-TP-066, Revision 13	*Central Characterization Program Radiography Screening Procedure for Prohibited Items*
CCP-TP-069, Revision 6	*Central Characterization Program Sealed Source Visual Examination and Packaging*
CCP-TP-076, Revision 0	*Central Characterization Program Operating the Mobile ISOCS Large Container Counter Using NDA 2000*
CCP-TP-082, Revision 9	*Central Characterization Program Waste Container Filter Vent Operation*
CCP-TP-083, Revision 7 and 8	*Central Characterization Program Gas Generation Testing*
CCP-TP-086, Revision 18	*Central Characterization Program CH Packaging Payload Assembly*
CCP-TP-101, Revision 6	*Central Characterization Program Data Reviewing, Validating, and Reporting Procedure for the NDA Counters at LANL Using NDA 2000*
CCP-TP-103, Revision 11	*Central Characterization Program Operating the High Efficiency Neutron Counter Using NDA 2000*
CCP-TP-113, Revision 17	*Central Characterization Program Standard Contact-Handled Waste Visual Examination*
CCP-TP-120, Revision 16	*Central Characterization Program Container Management*
CCP-TP-121, Revision 4	*Central Characterization Program RTR #1 Operating Procedure*
CCP-TP-122, Revision 3	*Central Characterization Program RTR #2 Operating Procedure*
CCP-TP-198, Revision 7	*Central Characterization Program HE-RTR Operating Procedure*
CCP-TP-508, Revision 8	*Central Characterization Program Standard Real-Time Radiography Inspection Procedure*
CCP-TP-530, Revision 11	*Central Characterization Program RH TRU Waste Certification and WWIS/WDS Data Entry*
WP 04-CO.01-1 through -18	*Conduct of Operations Series*
WP 13-1, Revision 33	*Nuclear Waste Partnership LLC Quality Assurance Program Description*
WP 15-GM.03, Revision 6	*Integrated Safety Management System Description*
NM4890139088-TSDF	*WIPP Hazardous Waste Facility Permit*
CCP Standing Order (SO) CCP-SO-104, Revision 0	*Use of WIPP Form in concert with CCP CAR* [Corrective Action Report]
Audit Report I11-05	Washington TRU Solutions LLC, Quality Assurance Audit Report, *Central Characterization Project Quality Assurance Program*
Audit Report I12-12	Nuclear Waste Partnership LLC, Quality Assurance Audit Report, *Central Characterization Project Quality Assurance Program*
Surveillance Report S11-18	Washington TRU Solutions Quality Assurance *Acceptable Knowledge*
	Email from A. Chavarria, to T. Proctor, dated July 25, 2013, subject: NCR-LANL-1369-12
	Email from IDCAdmin@wipp.ws to A. Chavarria, dated July 25, 2013, subject: Status on your IDC CCB Request #DCR-2013-1198 Has Changed
Waste Stream LA-MSG04.001 files contained:	CCP-TP-005 Attachment 1, Attachment 3, Attachment 4, Attachment 5, Attachment 6, Attachment 7, Attachment 8, Attachment 10 and Attachment 11 Memorandum dated January 16, 2013 (did not contain number) and Memorandum P2010-3324 Source Documents: C002, C003, C022, C031, D009, D058, D060, DR001, DR002, DR003, DR005, DR007 and P012
Waste Stream LA-MHD04.001	CCP-TP-005 Attachment 1, Attachment 3, Attachment 4, Attachment 5, Attachment

Document Identification	Document Title or Description
files contained:	6, Attachment 7, Attachment 8, Attachment 10, Attachment 11, Attachment 13 and Attachment 14 Memorandum P2010-2316, Memorandum P2010-2555, Memorandum P2010-3316, Memorandum P2010-3285, Memorandum P2010-3279, Memorandum P2010-3278 and Memorandum CP:13:01260 Source Documents: C002, C003, C022, C031, D009, D058, D060, DR001, DR002, DR003, DR005, DR007 and P012
Waste Stream LA-MHD10.001 files contained.	CCP-TP-005 Attachment 1, Attachment 3, Attachment 4, Attachment 5, Attachment 6, Attachment 7, Attachment 8, Attachment 11, Attachment 13 and Attachment 14 Memorandum P2010-3293, Memorandum P2010-3323 and Memorandum CP:13:01269 Source Documents: C011, D003, D011, D012, DR001, M005 and P015
	CCP Mobile Loading Unit (MLU) Transportation Personnel List of Qualified Individuals (LOQI), August 6, 2013
	RH WDS Master Template.xls, Revision 4, Addendum #4, SCO #1066 Excel 2003/2007 Microsoft Windows XP printout
	CH WDS Master Template.xls, Revision 8, Addendum #8, SCO #1065, Excel 2003/2007 Microsoft Windows XP printout
	Interoffice Correspondence QA:13:01050, from V. K. Cannon to D. E. Gulbransen, dated June 27, 2013, subject: Information Copy of Completed Central Characterization Program Surveillance Report SUR-LANL-0005-13, Tagging and Segregation of Drums and Mover Verification at Los Alamos National Laboratory
	Interoffice Correspondence QA:13:01045, from V. K. Cannon to D. E. Gulbransen, dated June 5, 2013, subject: Information Copy of Completed Central Characterization Program Surveillance Report SUR-LANL-0004-13, Flammable Gas Analysis at Los Alamos National Laboratory
	Interoffice Correspondence QA:13:01003, from V. K. Cannon to M. L. Sensibaugh, dated January 21, 2013, subject: Central Characterization Program Surveillance/Assessment Schedule for Calendar Year 2013; with schedule
	Interoffice Correspondence QA:13:01046, from V. K. Cannon to D. E. Gulbransen, dated June 12, 2013, subject: Notification of Quality Assurance Surveillance SUR-LANL-0005-13, Tagging and Segregation of Drums and Mover Verification; with Surveillance Plan SUR-LANL-0005-13
	Interoffice Correspondence QA:13:01041, from V. K. Cannon to D. E. Gulbransen, dated May 15, 2013, subject: Notification of Quality Assurance Surveillance SUR-LANL-0004-13, Flammable Gas Analysis; with Surveillance Plan SUR-LANL-0004-13
	Letter Number CP:13:01034, from D. E. Gulbransen to C. G. Fesmire, dated January 22, 2013, subject: Semiannual Report on the National Waste Partnership (NWP) Quality Assurance Program Second Half of Calendar Year 2012 (July 1 through December 31, 2012)
	CCP 2013 Assessment Schedule Audits and Assessments Attachment, revised June 12, 2013
	Software Change Order Numbers 455, 1148, 1198 and 1141
CH-TRUCON, Revision 48, April 2013	Table 2B (Continued), *Summary of Approved Content Codes and Corresponding Shipping Categories for Close-Proximity Shipments (20-Day Shipping Period)*
	Email from L. Dominguez to Distribution, dated July 12, 2013, subject: NCR/CAR Request LANL AK6 LA-MHD01.001 Lot 389
	WWIS Data Entry Completed Record Documentation for CH LANL AK6 LA-MHD01.001, Lots 358, 359, 360, 361, 362, and 363 for Batch #3635-026, -028, -030, -032, -035, -037, and -039
	WWIS Data Entry Completed Record Documentation for RH INL ID-EFEF-S5400, Lots 16, 19, and 20 for Batch #RH081-005, -007, and -009
	LANL AK Tracking Spreadsheet, AKTSS-7/23/13
	PO Number 501578 Attachment 1 – CCP Receipt Inspection Verification Sheet

Document Identification	Document Title or Description
	Open CAR Status Report, dated 7/15/13
	CCP Corrective Action Reports (CARs): CAR-LANL0001110 CAR-LANL0002110 CAR-LANL0003110 CAR-LANL0004110 CAR-LANL0001120 CAR-LANL0002120 CAR-LANL0003120 CAR-LANL0004120 CAR-LANL0005120 CAR-LANL0006120 CAR-LANL0007120 CAR-LANL0001130 CAR-LANL0002130 CAR-LANL0003130
	CCP Nonconformance Reports (NCRs): NCR-LANL0050130 NCR-LANL0085120 NCR-LANL0187131 NCR-LANL0197130 NCR-LANL0199130 NCR-LANL0552130 NCR-LANL0561130 NCR-LANL0585130 NCR-LANL0586130 NCR-LANL0587130 NCR-LANL0588130 NCR-LANL0594130 NCR-LANL0608130 NCR-LANL0609130 NCR-LANL0660130 NCR-LANL0661130 NCR-LANL0704080 NCR-LANL0737130 NCR-LANL1005120 NCR-LANL1010120 NCR-LANL1019120 NCR-LANL1020120 NCR-LANL1025120 NCR-LANL1026120 NCR-LANL1369120 NCR-LANL1532120 NCR-LANL1546120 NCR-LANL1548120 NCR-LANL1624120 NCR-LANL1791120 NCR-LANL1970120 NCR-LANL1971120 NCR-LANL2051120 NCR-LANL3636110 NCR-LANL3637110 NCR-LANL3967110 NCR-SRS0541120
	Attachment 2 – CCP Records Transmittal/Receiving Form: Document Number: 2013-05517, Contamination Radiation Survey Report, August 9, 2013; Document Number: N/A, NDE Daily Pre-Operational Checklist, August 7, 2013
MA-CCP-0013-13	Management Assessment, signed June 11, 2013
	Certificate of Conformance for NucFil-072 Filter, dated July 29, 2013
	Certificate of Conformance for NucFil-013 Carbon Filters
	Document Action Request for Document Number: DOE/WIPP 06-3345, Revision 5, Title: *Waste Isolation Pilot Plant Flammable Gas Analysis*
	http://swoosh.lanl.gov/trucks website
	Certificate of Calibration File for the following: XC0052, XC0350, XC0365, XC0424, XC0425, XC0822, XC0882
	WIPP Records Inventory and Disposition Schedule (RIDS) for NWP/CCP/NTPC/CH for All Sites, dated August 1, 2013
	Back-up file reports for the following servers: Churchrock.PNG, Duran.PNG, Dixon. PNG, Garrison.PNG, Dunken.PNG, Whiterock.PNG
	CCP – *Los Alamos National Labs (LANL) List of Qualified Individuals*, July 12, 2013, 3:29pm
	CCP – *Los Alamos National Labs (LANL) List of Qualified Individuals*, August 8, 2013, 3:30pm
QCard-001	*WIPP Procurement Q-Card User Qualification Card,* (and it's supporting documentation of CON-008, *Graded Approach to the Application of QA Controls to Purchase Requisitions*; CON-010, *Credit Card Program*; and SCI-101, *Suspect/ Counterfeit Items*; examination results) for the following: Chris Sexton
VE-01	*Visual Examination (VE) Operator/Independent Technical Reviewer (ITR) for Contact-Handled (CH) Waste Qualification Card,* (and its supporting documentation of the WAP [Waste Analysis Plan]/QAPjP [QA Project Plan] Briefing and Test, and CCP VE Comprehensive Examination results) for the following: Levie Archuleta Duane Clemons Robert Geyer Anthony Harley Tommy Mojica Kenneth Salazar Joseph Stepzinski Michael Trujillo
RTR-02	*Real-Time Radiography (RTR) Operator/ITR Qualification Card,* (and its supporting documentation of the WAP/QAPjP and RTR Examination Results; Level II SNT-TC-1A Certification, and current Eye Examination) results for the following:

Document Identification	Document Title or Description
	Aaron Elliott Thaddeus Hasselstrom Benito Maestas Michael Simmons Kenneth Simpson
NDA-02	*Non-Destructive Assay (NDA) Operator/ITR for the High Efficiency Neutron Counter (HENC) 1 and 2 Systems Qualification Card,* for the following: NDA Dominic Archuleta Richard Baumann Maria Escarcega
	Blank Qualification Cards: • VE-01, Revision 4; • VE-OSRP-01, Revision 6, *Visual Examination (VE) Operator/Independent Technical Reviewer (ITR) for Los Alamos National Laboratory (LANL) – Off Site Source Recovery Program (OSRP)*; • RTR-02, Revision 4; • NDA-02, Revision 3; • NDA-13, Revision 2, *Non-Destructive Assay (NDA) Operator/ITR for the LANL Super High Efficiency Neutron Counter (HENC) System Qualification Card*; and • NDA-16, Revision 0, *Non-Destructive Assay (NDA) Operator/ITR for the Mobile ISOCS* [In-Situ Object Counting System] *Large Container Counter (MILCC) System Qualification Card*
	National TRU Program Certification for JA-101, Revision 1, *Analysis of Positions for Qualification*
	RCT [Retrieval, Characterization and Transportation]/CCP/CH Records Inventory and Disposition Schedule (RIDS), dated August 2, 2012
	Integrated Data Center CCP Nonconformance Report (NCR) Database
	WIPP Forms (WFs): WF13-101 and WF13-103
	Semi-annual Trend Reports for Calendar Year (CY) 2011 and CY2012: CP:12:01128 (January – June) CP:12:01115 (July – December) CP:12:01451 (January – June) CP:13:01034 (July – December)
	30 day list for LANL (shows M&TE due in next 30 days)
	60 day list for LANL (shows M&TE due in next 60 days)
	Print-out list of CCP controlled M&TE
	Integrated Data Center on-line database of M&TE information
	Certificates of Calibration for: • Mettler Toledo balance, file number 032799 • Torque wrench, file number 039953 • Torque wrench, file number 037909 • Torque wrench, file number 023342 • Torque wrench , file number 027332 • Electronic scale, identification number XC0987
	Shipping Authorization, dated 7/16/13 (for sending Barometer with identification number XC0903 out for calibration). Attached were *Quotation for Metrology Services* from Edison ESI, Attachment 1 – *Quality Credit Card Purchase Log* (WP 15-PC3044), *Q-Card Authorization*, *Inspection Plan*, and *Requirements for NWP/CCP M&TE Calibration.*
CCP-LANL- Standing Order (SO) -021, Revision 3	*CCP-TP-120 Rev 12, Section 4.1.7 [B.3] Clarification*
CCP- SO-036, Revision 1	*NCR/VPM Hold Tag Guidance*
CCP-SO-037, Revision none	*Additional Review and Approval of ICALs for Flammable Gas Analysis*
CCP-SO-052, Revision 0	*CCP Operations Work Schedules*
CCP-SO-072, Revision 0	*Guidance to Apply RTV-732 to Filter Vents*
CCP-SO-080, Revision 1	*Designation of Packaging Weights*
CCP-SO-088, Revision 0	*Drum Aspiration Time Requirements for Containers Sampled in the Flammable Gas Analysis (FGA) Process When Using Sampling Scenario 2*
CCP-SO-089, Revision 0	*Number of Filters Required on an SWB, TDOP, or SLB2 Before Headspace Gas*

Document Identification	Document Title or Description
	Sampling Can Be Performed
CCP-SO-104, Revision 0	*Use of WIPP Form in concert with CCP CAR*
CCP-SO-LANL-32, Revision 2	*Pipe Overpack Component (POC) Percent Fill and Weight Guidance*
CCP-SO-LANL-47, Revision 1	*CCP RTR2 Operational and Intermittent E11 and/or E12 Error Code Occurrences*
CCP-SO-LANL-49, Revision 4	*Controlling High FGE Containers*
CCP-SO-LANL-50, Revision 0	*Handling of High Americium (AM-241) Activity Debris Drums*
CCP-SO-LANL-51, Revision 0	*High Energy RTR Key Control*
CCP-SO-LANL-59, Revision 0	*Additional Filter Information for CIN-01 Containers Through FGA*
CCP-LANL-Operator Aid (OA)-2012-01, Revision 2	*LANL Standard Packaging Weights for RTR*
OA-NDA-002, Revision none	No title
OA-NDA-004, Revision 3	No title
OA-NDA-005, Revision 2	*Container Parameters*
LANL-NDE-RTR2-010	Logbook (for 2013)
LANL-NDE-HERTR02-003	Logbook (for 2013)
LANL-NDA-HENC-02-013	Logbook (for 2013)
LANL-NDA-HENC-014	Logbook (for 2013)
LANL-NDA-SHENC-004	Logbook (for 2013)
NTPC-MILCC-002	Logbook (for 2013)
LANL-HSG-TRANS-017	Logbook (for 2013)
LAVE500333	BDR for VE of container S835304
3LANDA0149	BDR for NDA of containers 93213, 93214, 93215, 93232, 93163
3LANDA0167	BDR for NDA of containers 93209, 93269, 93478, 93501, 93535
LA-RTR2-13-0086	BDR for real-time radiography (RTR) of containers 67198, 67182, 67181, 67178, 67179, 66986, 67304, 67180, 67187, 67185, 66945, 67183, 67186
LA-RTR2-13-0088	BDR for RTR of containers 93866, 93863, 93856, 93859, 93871, 93861, 93880, 93877
LA-HERTR-13-0078	BDR for RTR of containers S811731, 93081
LA-HERTR-13-0072	BDR for RTR of containers 53885, 54211, 52304, 53877, 93756, 93809, 93810, 93777, 93770, 93769, 93771
LAVE550115	BDR for VE of containers 67210, 67366
LAVE550116	BDR for VE of containers 67216, 67301
1LANDA1795	BDR for NDA of containers 93834, 93833, 93838, 93839, 93827, 93192, 93153, 92559, 92561, 62025
1LANDA1796	BDR for NDA of containers 93080, 67186, 66882, S800594, 66657, 67187, 67185
2LANDA1182	BDR for NDA of containers 93819, 93092, 93201, 93203, 93205, 91504, S850246, 93347, 93226
2LANDA1183	BDR for NDA of containers 67179, 67304, 67180, 67198, 67182, 67178, 67181, 67344
	Reviewed the following BDRs in-process (while observing examination being performed on the container[s] listed below) – not all related documents were completed at time of review: • LA-RTR2-13-0099, containers 94128, 94122, 94138 • LAHERTR-13-0092, container 94154 • 2LANDA1210, container 57333 • 1LANDA1827, container 94108
	Email from T. A. Groover, dated 5/1/13, delegating Dave Hemsing as Visual Examination Expert (VEE)
	Reviewed training/qualification/documentation files for the following personnel (persons involved with the CCP Mobile Loading Unit [MLU] area): • Ed Anaya

Document Identification	Document Title or Description
	○ CH Packaging Operator SME/OJT [Subject Matter Expert/On-the-Job-Trainer] ○ RH Packaging Operator SME/OJT ○ TRUPACT-III Packaging Operator SME/OJT ○ HLD [Helium Leak Detection] Level II ○ PCLT [Pressure Change Leak Detection] Level II ○ Eye examination • Bob Houdashelt ○ CH Packaging Operator SME/OJT ○ RH Packaging Operator SME/OJT ○ HLD Level II ○ Eye examination • Kevin McTaggart ○ CH Packaging Operator SME/OJT ○ HLD Level II ○ Eye examination • Wade Weyerman ○ HLD Level III (including TRUPACT-III)

AK18

Attachment 3 - Acceptable Knowledge Source Document Summary

Site(s): Sandia National Laboratory	Source Document Tracking Number: M1013
Waste Stream Number(s): SNL-HCF-S5400-RH	
Acceptable Knowledge Documentation Type: ☑ TRU Waste Management Program Information ☑ Waste Stream-Specific Information ☑ Additional Information	Category: ☐ C - Correspondence ☐ DR - Discrepancy Resolution ☐ I - Internal procedures ☑ M - Miscellaneous ☐ P - Published plans, documents, and procedures ☐ U - Unpublished Documents
Title or Description of Source Document [a] : Review of TRU Disposal Requests: 001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080	
Source Document Reference Information (author(s), document and revision number, date, publisher): NA, NA, NA, NA, Sandia National Laboratories	

AK # [b]	Source Doc. Page # [c]	AK Information Summary
PR6, PR7, WS2, WS3, WS8, WS9, WS10, WS11, S4, S9, S15, S16	Throughout	This is a miscellaneous list of inventory for the indicated drums. The lists indicate the presence of U-238, U-235, U-234, Pu-241, Cm-243, Cm-244, Eu-155, Pu-239, Cs-137, Cs-134, Sr-90, Am-241, Pu-240, Eu-154, and Co-60. Document provides a detailed list of contents of each drum, with item identifiers and control numbers. The container numbers match up with the containers in document C1026, that, per Betty Humphries, was shipped as special nuclear material, not waste. Chemicals: brass, lead, platinum, silver

NTPC RECORDS ORIGINAL
DATE REC'D 5-20-14

Attachment 3 - Acceptable Knowledge Source Document Summary (continued)

Site(s): Sandia National Laboratory	Source Document Tracking Number: M1013

Waste Stream Number(s): SNL-HCF-S5400-RH

Source Document Data Limitations (if any):

1. None.

Acceptable Knowlege Expert:

STEVE SCHAFER, [signature] Date: 1/12/2014

Print /Sign

a Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
b Obtain from Acceptable Knowledge Documentation Checklist
c For microfilm or microfiche, identify box, tape, reel number and location.

AK19

AK19 M013

Review Of TRU Disposal Requests
001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080

PKE54 Notes

- The available documentation is difficult to interpret for Pu-239, Pu-240, Am-241 and is incomplete for Pu-238. However, Pu-238 is documented in SAND89-0308 as the dominant transuranic by activity based on 1989 ORIGEN runs but ORIGIN results can not be located.
- Request additional sampling (swipes) with subsequent radiochemical analysis for isotopic plutonium, isotopic americium, Cs-137, Sr-90, and Pu-241 to characterize these containers.

001179 - P9900530 - drum 98150

- Per Susan Longley, contains Butvar from the Zone 2A paint can pit. The pit was used for the storage of metal (paint) cans containing ion chromatography residue from the ST project, which was solidified using Aquaset. The applicable PKE for this material is PKE 000054.
- Analyzed by portable gamma spectroscopy (August 4, 1998).
- Modeled as one 12"D x 14"H RCC with 0.43 g/cc CH2 inside 55-gallon metal drum.
- Cs-137 and Cs-134 were detected by quantitative portable gamma spectroscopy (89001901).
- Sr-90, Am-241, Pu-239, and Pu-240 scaled using PKE54 activity ratios.
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.1) = 0.193 Ci
- Need to review basis for TRU assignment - PKE54.
- TRU concentration assigned at 412 nCi/g.

005934 - P9801002 - TRU-HCF-95-03
005934 - P9801003 - LSA314
005934 - P9801004 - GB9
005934 - P9801005 - TRU-HCF-95-01
005934 - P9801006 - LSA316
005934 - P9801007 - HCFRW5
005934 - P9801008 - GB1-CAN2
005934 - P9801009 - GB1-CAN1

- Analyzed by portable gamma spectroscopy (August 4, 1998).
- Need to review basis for TRU assignment.

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005934 - P9801003 - LSA314

- Has been reworked to reduce U-235 and Pu-239

Current RadTrack information

Review Of TRU Disposal Requests
001179, 005934, 005939, 005940, 007242, 994027, 994506, 994655, 204041, 204073, 204114, 204256, 041213, 061080

P_NUM	P_OLD	C_NUM	Lbs	C	Ft3	RPSD Material	SG (Actual)	RPSD SG	AF	RPSD Mean Cs-137 (Ci)	RT Cs-137 (Ci)	RT U-235 (g)	RT TRU (nCi/g)
P9801002	TRU-HCF-95-03	C980408	202	55	7.2	CH2	1.42	1.42	5	6.14E-06	3.51E-05	< 0.5	391
P9801003	LSA314	SNL0314	1576	744	92	SS	0.13	7.9	4	2.50E-07	1.49E-06	0.8	602
P9801004	GB9	C980406	37	30	4.1						3.95E-08	16.8	3930
P9801005	TRU-HCF-95-01	C980405	1540	Paco	7.2	SS	0.81	8.28	20	8.70E+00	9.90E+00	12.7	2.83E+04
P9801006	LSA316	SNL0316	2500	744	92	1.67"SS, Rest Paper	0.28	8.28,0.50	20	1.50E+00	3.42E+01	44.6	4960
P9801007	HCFRW5	C980403	40	QUEEN	7.2	Steel	5.38	5.38	5	2.89E+01	1.63E+02	213	1.03E+06
P9801008	GB1-CAN2	SNL2376	48	55	4	Steel	0.8	8.28	10	9.86E-02	1.12E+00	1.4	5900
P9801009	GB1-CAN1	SNL2365	130	55	4	Steel	2.37	8.28	10	5.35E-01	6.05E+00	9.1	1.2E+04

005939 - P9800960 - Metal piece GB#1
005939 - P9800961 - Waste drum #223

- Analyzed by portable gamma spectroscopy (February 19, 1997).

- P9800961 - Waste drum #223
  - Contains metal and machine parts form GB#3 (a shielded box formerly located in room 112 used for the ion chromatogaphic examination of effluent form the Source Term experiments).
  - The applicable PKE for this material is PKE 000027 (pertains to GB#3).
  - Cs-137, Cs-134, and Eu-154 were detected by quantitative portable gamma spectroscopy (59100074).
  - Modeled as 80% full 55-gallon metal drum with 0.144 g/cc steel.
  - Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2) = 0.041 Ci
  - Need to review basis for TRU assignment – PKE27.

- TRU concentration assigned at 901 nCi/g.

- P9800960 - Metal piece GB#1 C980389
  - Long piece of metal removed from GB#1during HCF decon effort
  - Modeled as one 2" x 4" x 5" rectangular volume with 7.86 g/cc iron item.
  - Cs-137, Co-60, Cs-134, Eu-154, and Am-241 were detected by quantitative portable gamma spectroscopy (59100067).
  - Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 6) = 0.184 Ci
  - February 6, 1997 Susan Longley memo for TRU and uranium characterization is not present.
  - Would be TRU alone just using average Am-241quantitative portable gamma spectroscopy estimate (228 nCi/g).
  - Need to review basis for TRU assignment - February 6, 1997 Susan Longley memo.
  - TRU concentration assigned at 1900 nCi/g.

005940 - P9800962 - TRU-HCF-97-06
005940 - P9800963 - TRU-HCF-97-05

- Analyzed by portable gamma spectroscopy (March 6, 1997).
- Waste from glove boxes 1 and 2.
- February 6, 1997 Susan Longley memo for TRU and uranium characterization is not present.
- 5-gallon AN can placed inside PVC container with concrete fill and plug inside 55-gallon metal drum.
- Mean portable gamma spectroscopy results should be reasonably accurate.
- Need to review basis for TRU assignment - February 6, 1997 Susan Longley memo.

005940 - P9800962 - TRU-HCF-97-06 C980391
- Brass tubes present.
- Cs-137, Cs-134, Co-60, and Eu-154 were detected by quantitative portable gamma spectroscopy (79100003).
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.5) = 1.71 Ci
- Net mass = 19 lbs
- TRU concentration assigned at 23,100 nCi/g.

005940 - P9800963 - TRU-HCF-97-05 C980392
- Brass soldering stand present.
- Cs-137, Cs-134, Co-60, and Eu-154 were detected by quantitative portable gamma spectroscopy (79100002).
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.2) = 0.526 Ci
- Net mass = 29 lbs
- TRU concentration assigned at 4,650 nCi/g.

007242 - P9900532 C990239

- Contains effective equation of state (EEOS) experiment vessel.
- Effective equation of state (EEOS) experiments discussed in SAND-77-1094C.
- Per Susan Longley, this vessel consists of an aluminum container surrounded by approximately 2 inches of lead. The vessel "contains" experimental material, such as thermocouples, wiring and aluminum supports, used in the effective equation of state (EEOS) project performed in glove boxes 1 and 2. The applicable PKE is number 000047.
- Need to review basis for TRU assignment – PKE47.
- Cs-137, Eu-154, and Co-60 were detected by quantitative portable gamma spectroscopy (89002701).
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 4.7) = 0.46 Ci
- Modeled as 100% full 10"D x 28"H vessel containing 1.47 g/cc steel. 10"D x 28"H vessel modeled as being surrounded by 2" lead cask inside 55-gallon metal drum.
- Is this a aluminum container surrounded by approximately 2 inches of lead or an aluminum container surrounded by a 2" lead cask?
- I assume the thermocouples are part of the aluminum container. If so, then not RCRA per Carla's evaluation.
- Radiological characterization does not use the updated PKE47 RMWMF sampling activity ratios.
- TRU concentration assigned at 1010 nCi/g.
- It would be best to model the EEOS experiment vessel by itself. Exposure rates unknown.

- The safety analysis of Liquid Metal Fast Breeder Reactor (LMFBR) systems requires knowledge of the vapor pressure of reactor fuels up to 6000 K. A new technique was developed to obtain experimental vapor pressure data for reactor fuel materials at high temperatures and pressures. Fuel samples are pulse fission heated in the Annular Core Pulse Reactor (ACPR) at heating rates comparable to those anticipated during a severe LMFBR transient. Since the vapor of reactor fuels may contain several dissociated fuel species, volatile fission products, and/or fission gas, and the evolution of that pressure may be time or rate dependent, the terminology ``effective equation-of-state (EEOS) measurement`` was used to differentiate these results from the vapor pressure of pure materials. This technique can be easily applied to plutonium bearing and previously irradiated fuels. The EEOS technique was used to determine the vapor pressure of high purity uranium dioxide with an oxygen-to-metal ratio of 2.08. Energy depositions of up to 2720 J/g relative to room temperature were obtained, resulting in measured pressures in excess of 38 mpa.

994027 - P9900534 - EEOS-1 C990249
994027 - P9900533 - EEOS-2 C990248

- Contains effective equation of state (EEOS) experiment vessel.
- Per Susan Longley, contains two packages with 2 aluminum welding rod each (2.5"D x 25"H RCC) removed from room 108. These two packages are known as EEOS #1 and EEOS #2 because the welding rods were used in glove box 1 for the EEOS project. Each package consists of a 30-gallon drum containing cardboard packing material surrounding two aluminum welding rods. Because these rods were used in glove box 1, the applicable PKE is number 000047.
- Need to review basis for TRU assignment – PKE47.
- Analyzed by portable gamma spectroscopy (June 25, 1998).
- Cs-137, Co-60, and Eu-154 were detected by quantitative portable gamma spectroscopy (89002001 and 89002002).
- All other nuclides scaled using PKE47activity ratios.

- Radiological characterization does not use the updated PKE47 RMWMF sampling activity ratios.
- Modeled as one 5"D x 25"H RCC with 1.35 g/cc aluminum w 0.7 g/cc cellulose packing material inside 30-gallon metal drum.
- Should be modeled as one RCC with an effective volume equal to 4020 cc (3.535"D x 25"H) then Al is ~2.7 g/cc.
- P9900534 - EEOS-1
  - Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.6) = 0.556 Ci
  - 0.556 Ci corresponds to 2570 nCi/g using updated PKE47 RMWMF sampling activity ratios.
  - Assigned Cs-137 activity probably ~2-3 times too high.
  - TRU concentration assigned at ~5950 nCi/g.
- P9900533 - EEOS-2
  - Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 2.6) = 0.260 Ci
  - 0.260 Ci corresponds to 1200 nCi/g using updated PKE47 RMWMF sampling activity ratios.
  - Assigned Cs-137 activity probably ~2-3 times too high.
  - TRU concentration assigned at ~2780 nCi/g.

994506 - P2000703 C200260

- Based on the DR paperwork, the 30-gallon metal drum contains one 2.6 lb parcel.
- The parcel is assigned in RADTRACK at roughly 400 grams of enriched uranium.
- The parcel consists of irradiated U and Np fission foils.
- The irradiation time and location of irradiation is not provided in the DR.
- The gamma spec results from 1999 used for nuclide and activity assignment are qualitative.
- TRU concentration assigned at 5,240 nCi/g.
- Pull the parcel from the 30-gallon metal drum and perform quantitative portable gamma spec on the bag of waste.
- READY

994655 - P2000704 C200259

- Contains mixed oxide powders removed from room 108 (assumed origin is glove box 9) of the Hot Cell Facility.
- Contains "< 1 gram UPuO2 w/<25%PuO2" and "< 1/2 gram UPuO2 w/<25%PuO2" in a 1-gallon paint can.
- Mixed oxide, or MOX fuel, is a blend of oxides of plutonium and natural uranium, reprocessed uranium, or depleted uranium.
- Analyzed by on-site laboratory gamma spectroscopy in non-standard counting geometry.
- Cs-137, Am-241, Pu-239, and Co-60 detected by on-site laboratory gamma spectroscopy (gamma spec result + 2-sigma error).
- Sr-90 assigned at 1:1 to Cs-137.
- U-238 and U-235 assigned using on-site laboratory gamma spectroscopy results.
- Pu-238 and U-234 scaled to Cs-137 using off-site analysis results for glove box 9 materials (PKE54).
- Pu-240 and Pu-241 scaled to Am-241 using MT-52 and 10 year decay period.
- TRU concentration assigned at 12,900 nCi/g.
- Based on PK, assign Pu using mass = 0.375*(239/(239+32)) = 0.331 grams and assume reactor grade Pu with decay period of 30 years.

- Based on PK, assign U using mass equal to (0.75+.375)*(238/(238+32)) = 0.992 grams and assume DU.
- Cs-137, Sr-90, and Co-60 negligible.
- Definitely TRU waste.
- Pyrophoric powders?
- READY

204041 - P2000836 C200321

- Contains 1-gallon paint can with plastic pipettes, plastic sheeting, and 2 dime size filters (expected to be from the ion chromography lab).
- Analyzed by on-site laboratory gamma spectroscopy in non-standard counting geometry.
- Two filters collected with analysis by on-site laboratory gamma spectroscopy in standard counting geometry and on-site laboratory alpha spectroscopy.
  - Am-241 = 90 dpm, Pu-239/240 = 20 dpm, Cm-243 = 1.0 dpm, Cm-244 = 1.7 dpm
- Cs-137, Am-241, Eu-154, Eu-155, and Cs-134 detected by on-site laboratory gamma spectroscopy (gamma spec result + 2-sigma error).
- Sr-90, Pu-239, and Pu-240 scaled to Cs-137 using PKE54.
- Need to review basis for TRU assignment – PKE54.
- Cm-243 and Cm-244 scaled to Am-241 using on-site laboratory alpha spectroscopy results.
- Pu-241 scaled at 30:1 activity ratio to Am-241.
- TRU concentration assigned at 1130 nCi/g.

204073 - P2000702 C200259

- Contains piece of uranium < ~40-mL from LANL obtained for use with the FALCON project in TA-V (aka Bodette Tin Can).
- Original container from LANL labeled as "possible Pu contamination".
- Analyzed by on-site gamma spectroscopy in an unknown geometry and a swipe was collected from the surface of the item and subsequently analyzed by on-site alpha spectroscopy.
- On-site gamma spectroscopy detected U-235 and Am-241and no fission products (unirradiated).
- Since the on-site gamma spectroscopy geometry used is unknown, results likely to be highly inaccurate. Attenuation correction associated with a lump of uranium is also likely needed.
- On-site alpha spectroscopy detected U-234, U-235, Pu-239, and Am-241.
- On-site alpha spectroscopy activities for U-234 and U-235 inconsistent with our standard DU, U-nat, or EU ratios (U-234 = 3.3 x U-235)
- Collect swipe, gamma spec swipe, and perform liquid scintillation analysis on swipe.
- Perform quantitative portable gamma spectroscopy and use lump correction (estimate size of uranium piece and provide a good weight).
- TRU concentration assigned at 170 nCi/g.
- READY

204114 - P2000938 C200339

- Contains 1-gallon metal can labeled as "ST samples" and a 1-pint can placed in a 55-gallon drum.

- The 1-gallon metal can contains empty plastic bottles and at least one plastic bag. Additional info is as follows - contains degraded poly bottle labeled 'conc HNO3'. This bottle was no longer intact and was broken in half. There were also two empty 50-ml poly bottles and a plastic bag. The inside of the can was very corroded, but there was no visible liquid. The exposure rate associated with this can is on the order of 11 mR/hr closed window on contact and 80 mR/hr open window.
  - Cs-137, Cs-134, and Eu-154 were detected by quantitative portable gamma spectroscopy (99002403).
  - Modeled as 100% full ~ 1-gallon aluminum can with 0.02 g/cc polyethylene.
  - Sample mass = 67 grams per RPSD quantitative portable gamma spectroscopy report.
- The 1-pint can contains small sections of platinum and iron wires and what appear to be platinum coupons or discs. This can is labeled "ST samples" and originally contained some silver wires also, which were removed and are being managed separately. The exposure rate associated with this can was approximately 5 R/hr (closed window) on contact with the bottom of the can. The open window, on contact measurement pegged the detector at > 50 R/hr.
  - Cs-137, Cs-134, and Eu-154 were detected by quantitative portable gamma spectroscopy (99002402).
  - Modeled as 40% full 1.9-pint aluminum can with 0.1 g/cc platinum.
  - Sample mass = 36 grams per RPSD quantitative portable gamma spectroscopy report.
- The purpose of the Source Term (ST) project was to identify the radionuclides released during a loss of coolant and fuel melting accident, similar to what occurred at Three Mile Island.
- The Cs-137 results should be reasonably accurate based on review of portable gamma spectroscopy results (modeled geometry and associated matrix attenuation).
- The 123 keV peak of Eu-154 was detected in both portable gamma spectroscopy results. Could be used for differential attenuation analysis but not really necessary.
- Radiological characterization does not use the updated PKE44 RMWMF sampling activity ratios.
- SortingTeam will repackage and update with new PKE44 ratios.
- TRU concentration assigned at 1830 nCi/g using a net weight of 1.5 lbs.
- Waste volume << 7.2 ft3 listed on DR. WCT to change waste volume in RadTrack once Sorting Team visually examines.
- Perform quantitative portable gamma spectroscopy and update with new PKE44 ratios.
- READY

204256 - P2001751 C200826

- One 55-gallon metal drum (C1224) containing a radioactive contaminated metal disk and approximately six cobalt-60 pellets. The metal disk is approx 8" in diameter. The pellets are approx. 0.25 inches in diameter and 0.25 to 0.5 inches in length. These items were recovered from work-off activities at TA-2, Radioactive Waste Landfill (RWL). The items were placed into a 5-gallon poly bucket and overpacked in a 55-gallon metal drum.
- Analyzed by on-site Q2 gamma spectroscopy & a swipe was collected for liquid scintillation analysis.
- Am-241 and Pu-239 were detected by Q2 gamma spectroscopy.
- Pu-240 and Pu-241 scaled to Pu-239 using MT-52 and 20 year decay period.
- Liquid scintillation analysis results used for H-3 assignment assuming 10% of the SA was swiped. Result likely a false positive due to all the gross alpha and gross beta or Pu-241.
- TRU concentration assigned at 1,010 nCi/g.

- Perform quantitative portable gamma spectroscopy on the 5-gallon poly bucket only.
- READY

041213 - P9800777 & P9800776

- Waste from TA-5 Hot Cell Facility glove box 3 of room 112
- Associated with Source Term (ST-1) experiments
- The purpose of the ST project was to identify the radionuclides released during a loss of coolant and fuel melting accident, similar to what occurred at Three Mile Island.
- The applicable PKE for this material is PKE 000044.

P9800776 - HCF-RW-1 - Queen Cask

- Contains four 1-gallon aluminum canisters with solidified slurry placed on top of one another inside a paco cask.
- Analyzed by portable gamma spectroscopy (September 11, 1996).
- Cs-137, Cs-134, and Eu-154 were detected by quantitative portable gamma spectroscopy (59100043).
- Modeled as four 100% full 1-gallon canisters containing 7.54 g/cc sand and being surrounded by 2" lead.
- Actual density of slurry is ~1.6 g/cc.
- Assigned Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 5) = 84.9 Ci
- Assigned Cs-137 activity probably ~200 times too high.
- TRU concentration assigned at ~78,000 nCi/g.

P9800777 - Drum 1151 - 55-gallon drum C980312

- Analyzed by portable gamma spectroscopy (September 12, 1996).
- Cs-137, Cs-134, and Eu-154, and Co-60 were detected by quantitative portable gamma spectroscopy (59100054).
- Modeled as 85% full 55-gallon metal drum containing 8.28 g/cc steel.
- Effective density material is 0.35 g/cc.
- Cs-137 activity = (gamma spec result + 2-sigma error) x (accuracy factor of 10) = 13.2 Ci
- Assigned Cs-137 activity orders of magnitude too high (> 1000 times too high or more).
- TRU concentration assigned at ~20,000 nCi/g.
- Perform quantitative portable gamma spectroscopy and update with new PKE44 ratios.

061080 - P0600041 C060119

- Contains soil removed from SGTs excavated from the SNL radioactive waste landfill in ~ 50% full 2.5-gallon poly
- Analyzed by on-site Q2 gamma spectroscopy, off-site analysis for Pu and Am, & off-site gross alpha, beta, tritium.
- Cs-137 was detected by Q2 gamma spectroscopy.
- Am-241 and Pu-239 not detected by Q2 gamma spectroscopy (MDAs were 11.2 nCi/g and 1590 nCi/g, respectively).
- Assigned Am-241 and Pu-239 at 43 nCi/g and 236 nCi/g, respectively, based on off-site analysis for Pu and Am.
- Off-site gross alpha, beta sample results were very low. Aliquot apparently didn't contain much radioactivity.

- Could attempt quantitative portable gamma spectroscopy but Am-241 and Pu-239 detection limits would likely be too high to be useful.
- No additional characterization information required.
- TRU concentration assigned at 284 nCi/g.
- READY

FD

FD materia In Spent Fuel Database

Container No	Control Number	Material Name	Description	Item Identifier	Unit	Element Wt	Isotopic Wt	Iso Wt %
186124	47357	Enriched uranium	PREIRRADIATED MIXED OXIDE	SLA-8	g U	1	1	65
186629	47340	Enriched uranium	PREIRRADIATED MIXED OXIDE	SLA-6	g U	1	1	65
186636	47302	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDL 9-44 PEL#13	g U	1	0	30
186919	127097	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-8-1A	g U	1	1	65
187138	47326	Enriched uranium	PREIRRADIATED MIXED OXIDE	SLA-4	g U	1	0	30
190022	96485	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118B6-A	g U	1	1	65
190022	104531	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-4A	g U	1	0	65
190022	104555	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-6A	g U	1	0	65
190022	106122	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B4-A	g U	1	0	30
190022	106146	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B6-A	g U	1	0	30
191470	47319	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDL 9-44 PEL#32	g U	1	0	30
191876	47333	Enriched uranium	PREIRRADIATED MIXED OXIDE	SLA-5	g U	1	1	65
210011	53785	Enriched uranium	PELLETS/HRR-5	00589-3	g U	1	0	40.85
210011	53792	Enriched uranium	PELLETS/HRR-5	00589-4	g U	1	0	40.85
210011	85502	Enriched uranium	SCRAP PARTS/HRR-5	PNL944C5A	g U	2	1	30
210011	85564	Plutonium-239	SCRAP PARTS/HRR-5	PNL944C5B	g Pu	1	0	12
210014	54331	Enriched uranium	PELLETS-HRR-2	00591-3	g U	1	1	68
210014	54348	Enriched uranium	PELLETS-HRR-2	00591-4	g U	1	1	68
210014	85397	Enriched uranium	SCRAP/HRR-2	PNL1118C6A	g U	2	1	65
210014	85472	Plutonium-239	SCRAP/HRR-2	PNL1118C6B	g Pu	1	0	12
210015	97017	Plutonium-239	PREIRRAD. MIXED OXIDE (SCRAP)	PNL1012D3-B	g Pu	1	1	12
210015	97055	Enriched uranium	PREIRRAD. MIXED OXIDE (SCRAP)	PNL1012D3-A	g U	3	2	65
210016	106139	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B5-A	g U	4	1	30
210016	106207	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65B5-B	g Pu	1	1	12
210017	54133	Enriched uranium	PELLETS-FD2.4	00591-1	g U	1	1	68
210017	54249	Enriched uranium	PELLETS-FD2.4	00591-2	g U	1	1	68
210017	81887	Enriched uranium	SCRAP PART/FD2.4	PNL10-12BCA	g U	2	1	65
210017	81894	Plutonium-239	SCRAP PARTS/FD2.4	PNL10-12BCB	g Pu	1	0	12
210018	108126	Enriched uranium	MIXED OXIDE PELLET	KFK1-A	g U	5	5	93
210018	108133	Plutonium-239	MIXED OXIDE PELLET	KFK1-B	g Pu	2	2	20
210019	106085	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65A-A	g U	13	4	30
210019	106160	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B8-A	g U	3	1	30
210019	106177	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65C-A	g U	15	4	30
210019	106184	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65A-B	g Pu	4	4	12
210019	106214	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65B8-B	g Pu	1	1	12

210019	106221	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65C-B	g Pu	5	4	12
210019	131117	Enriched uranium	PREIRRADIATED MIXED OXIDE	L-END	g U	1	1	65
210019	131124	Enriched uranium	PREIRRADIATED MIXED OXIDE	R-END	g U	1	1	65
210019	143288	Plutonium-239	P15-2A- PREIRRAD. MIXED OXIDE	EXPT. NO. 1	g Pu	1	1	88
210019	143295	Plutonium-239	P15-2A- PREIRRAD. MIXED OXIDE	EXPT. NO. 2	g Pu	1	1	88
210019	143318	Plutonium-239	P15-2A- PREIRRAD. MIXED OXIDE	EXPT. RESIDUE	g Pu	10	9	88
210020	43069	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL1118C1-A	g U	1	0	65
210020	43076	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL1118C2-A	g U	1	1	65
210020	43083	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL1118D-A	g U	21	14	65
210020	43090	Plutonium-239	PREIRRADIATED MIXED OXIDE	HEDLPNL1118D-B	g Pu	7	6	12
210020	43106	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL1118D2-A	g U	1	1	65
210020	43151	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL944B-A	g U	4	1	30
210020	43168	Plutonium-239	PREIRRADIATED MIXED OXIDE	HEDLPNL944B-B	g Pu	1	1	12
210020	43175	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL944B1-A	g U	1	0	30
210020	43205	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL944C1-A	g U	1	0	30
210020	43236	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL944D-A	g U	24	7	30
210020	43243	Plutonium-239	PREIRRADIATED MIXED OXIDE	HEDLPNL944D-B	g Pu	8	7	12
210020	43250	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL9441-A	g U	1	0	30
210020	43267	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL94413-A	g U	1	0	30
210020	43274	Enriched uranium	PREIRRADIATED MIXED OXIDE	HEDLPNL94432-A	g U	1	0	30
210020	85359	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118C2A	g U	1	1	65
210020	85533	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL944C8A	g U	2	1	30
210020	96447	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118B2-A	g U	1	0	65
210020	96454	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118B3-A	g U	1	0	65
210020	96461	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1118B4-A	g U	1	0	65
210020	97024	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1012D7-B	g Pu	5	4	12
210020	97031	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D1-A	g U	1	0	65
210020	97048	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D2-A	g U	1	0	65
210020	97062	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D4-A	g U	1	0	65
210020	97079	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D5-A	g U	1	0	65
210020	97086	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D6-A	g U	1	0	65
210020	97093	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1012D7-A	g U	15	10	65
210020	104487	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074A-A	g U	14	9	65
210020	104494	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074C-A	g U	14	9	65
210020	104500	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-1A	g U	1	0	65
210020	104524	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-3A	g U	1	0	65
210020	104562	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-7A	g U	1	0	65

210020	104586	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074-A-B	g Pu	5	4	12
210020	104593	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074-C-B	g Pu	5	4	12
210020	106092	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B1-A	g U	1	0	30
210020	106115	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B3-A	g U	1	0	30
210020	106153	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B7-A	g U	1	0	30
210020	108140	Enriched uranium	PREIRRADIATED MIXED OXIDE	KFK2-A	g U	1	1	93
210020	127103	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-8-2A	g U	2	1	65
210020	127110	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074B-8-2B	g Pu	1	1	12
210020	127127	Enriched uranium	PREIRRADIATED MIXED OXIDE	KFK3A	g U	1	1	93
210021	96478	Enriched uranium	PREIRRAD. MIXED OXIDE (SCRAP)	PNL1118B5-A	g U	4	2	65
210021	96522	Plutonium-239	PREIRRAD. MIXED OXIDE (SCRAP)	PNL1118B5-B	g Pu	1	1	12
210022	104548	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-5A	g U	3	2	65
210022	104616	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074B-5B	g Pu	1	1	12
210023	*54355*	*Enriched uranium*	*PELLETS-HRR-3*	*00591-5*	*g U*	*1*	*1*	*68*
210023	*54362*	*Enriched uranium*	*PELLETS-HRR-3*	*00591-6*	*g U*	*1*	*1*	*68*
210023	*85403*	*Enriched uranium*	*SCRAP PARTS/HRR-3*	*PNL1118C7A*	*g U*	*2*	*1*	*65*
210023	*85489*	*Plutonium-239*	*SCRAP PARTS/HRR-3*	*PNL1118C7B*	*g Pu*	*1*	*0*	*12*
210024	104517	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL1074B-2A	g U	3	2	65
210024	104609	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL1074B-2B	g Pu	1	1	12
210025	43212	Enriched uranium	SCRAP	HEDLPNL944C2-A	g U	2	1	30
210025	43212	Enriched uranium	SCRAP	HEDLPNL944C2-A	g U	2	1	30
210025	43229	Plutonium-239	SCRAP	HEDLPNL944C2-B	g Pu	1	1	12
210025	43229	Plutonium-239	SCRAP	HEDLPNL944C2-B	g Pu	1	1	12
210025	85380	Enriched uranium	SCRAP	PNL1118C5A	g U	2	1	65
210025	85380	Enriched uranium	SCRAP	PNL1118C5A	g U	2	1	65
210025	85465	Plutonium-239	SCRAP	PNL1118C5B	g Pu	1	0	12
210025	85465	Plutonium-239	SCRAP	PNL1118C5B	g Pu	1	0	12
210026	106108	Enriched uranium	PREIRRADIATED MIXED OXIDE	PNL-9-65B2-A	g U	3	1	30
210026	106191	Plutonium-239	PREIRRADIATED MIXED OXIDE	PNL-9-65B2-B	g Pu	1	1	12
210033	53730	Enriched uranium	PELLETS-HRR-4	00589-1	g U	1	0	40.85
210033	53778	Enriched uranium	PELLETS-HRR-4	00589-2	g U	1	0	40.85
210033	*85526*	*Enriched uranium*	*SCRAP/HRR-4*	*PNL944C7A*	*g U*	*2*	*1*	*30*
210033	*85588*	*Plutonium-239*	*SCRAP*	*PNL944C7B*	*g Pu*	*1*	*0*	*12*
DB Cask1	43113	Enriched uranium	PIN-WCC DEBRIS BED CASK 1	HEDLPNL1157-A	g U	43	28	65
DB Cask1	43120	Plutonium-239	PIN-WCC DEBRIS BED CASK 1	HEDLPNL1157-B	g Pu	14	12	12
DB Cask1	43137	Enriched uranium	PIN-WCC DEBRIS BED CASK 1	HEDLPNL1161-A	g U	42	28	65
DB Cask1	43144	Plutonium-239	PIN-WCC DEBRIS BED CASK 1	HEDLPNL1161-B	g Pu	14	12	12
DB Cask1	43281	Enriched uranium	PIN-WCC DEBRIS BED CASK 1	HEDLPNL950-A	g U	42	13	30

DB Cask1	43298	Plutonium-239	PIN-WCC DEBRIS BED CASK 1	HEDLPNL950-B	g Pu	14	12	12

Waste Parcel Report

Package ID #: P0700239

Form Number: 061240

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Placed In Storage?: ☑

Mixed: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐ Void?: ☐

Waste Type:

- ☐ Over 50% Debris?
- ☐ Over 50% Soil?
- ☐ Fine Particulates Present?
- ☐ Batteries Present?
- ☐ Sources over 100 uCi?
- ☐ Contains Wastewater
- ☐ Etiologic Agents Present?
- ☐ Chelating or Complexing Agent Present?
- Chelating or Complexing Agent %: 0
- ☐ Potentially Pyrophoric?

Estimated Parcel Gross Weight (From Attachment 2 if available)

14.50 gram 3.20E-02 Lbs

Estimated Parcel Volume (From Attachment 2 if available)

0.00 Cu. Ft. 2.10E-03 Cu. Ft.

Additional Waste Description (From Attachment 2)

Waste Description

4 SEALED RADIOACTIVE SOURCES PURCHASED BETWEEN 1984 AND 1985. THE 4 SOURCES ARE TRU WASTE. SOURCES ARE NO LONGER REQUIRED FOR PROJECT RELATED WORK. THE SOURCES ARE CONSERVATIVELY BEING SUBMITED AS MIXED WASTE SINCE BACKING MATERIALS FOR MANY AM-241 SOURCES ARE CONSTRUCTED WITH THE RCRA REGULATED METAL SILVER. IN "RCRA" PGS (3) (4), THE CONTAINS INORGANIC CONSTITUENTS ABOVE REGULATORY THRESHOLDS SPECIFIED IN 40 CFR 268.48, TABLE UTS QUESTION HAS CONSERVATIVELY BEEN MARKED AS YES SINCE SOURCE BACKING MATERIALS MAY POTENTIALLY CONTAIN SILVER. SOURCE INFORMATION IS AS FOLLOWS: RS905, MSN-123751, MEASURED SOURCE WEIGHT 5.98 G, TRU CONC 1.81E+03 NCI/G RS906, MSN-123752, MEASURED SOURCE WEIGHT 2.25; TRU CONC 4.67E+04
NCI/G RS907, MSN-1237520,
MEASURED SOURCE WEIGHT 4.74; TRU CONC 2.17E+03 NCI/G RS911, MSN-7Q395, MEASURED SOURCE WEIGHT 1.53 G, TRU CONC 7.45E+02 NCI/G SEE ATTACHED COPIES OF MANUFACTURER SOURCE CERTIFICATES FOR ADDITIONAL INFORMATION

Change Request Comments

Waste Parcel Keyword List

Radiological Information

Nuclide Activity Date: 12/4 /2006

Maximum Contact Exposure Rate:

16 mR/hr

☐ Contact Dose Rate N/A H-3 Only

Nuclides

Waste Parcel Report

Package ID #: P0700239

Form Number: 061240

Mixed: ☑

Void?: ☐

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Placed in Storage?: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐

Nuclide	*Activity*	*Units*	*Activity (Ci)*
Am-241	1.27E-04	Ci	1.27E-04

☐ Approval To Exceed 2 KG U-235 ER

☑ TRU

Safeguards

○ CATIII

○ CATIV

Basic for Radiological Determination:

Process Knowledge

Additional Radiological Comments:

See attached copies of manufacturer source certificates for additional information! In addition, see ACTIVITY OR ACTIVITY CONCENTRATION TO ACTIVITY CALCULATION WORKSHEET

RMWMF Treatment Information

☐ Waste Treated? Treatment Date m

☐ Treatment Occurred Before One Year?

☐ Waste Treated to meet LDR Standards??

☐ Were all LDR Treatment Standards Met?

☐ Solidification ☐ Deactivation

☐ Neutralization ☐ Stabilization

☐ Macroencapsulation ☐ Mechanical Processing

Chemical Characterization

☐ Liquid Flashpoint < 140 F

☐ Oxidizer

☐ Aqueous Liquid with pH <= 2 or >= 12.5

pH:

☐ Ignitable Compressed Gas

☐ Solid Capable of Fire Through Friction

☐ Liquid Corrodes Steel

☐ Normally Unstable

☐ Reacts Violently with Water

☐ Explosive when Mixed with Water

☐ Forms Toxic Gas with Water

☐ Contains Cyanide or Sulfde

☐ Capable of Explosion with Initiator

☐ Capable of Explosion at Std Temp and Pressure

☐ Contains Explosive

☑ Contains TCLP Metals

☐ Organics over Regulatory Limits

☐ Contains UHC Inorganic

☐ Contains UHC Organic

☐ Contains Soils with Inorganics over 10 x Limit

☐ Contains Soils with Organics over 10 x Limit

☐ Contains Spent Solvents

☐ Contains a Commericial Chemical Product

☐ Contains Other Hazardous Waste

☐ Does Waste Contain PCBs?

Concentration in PPM:

Waste Parcel Report

Package ID #: P0700239

Form Number: 061240

Mixed: ☑

Void?: ☐

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Placed in Storage?: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐

☐ Does Waste Contain Asbestos?

☐ Has Waste been Wetted?

○ Friable ○ Non-Friable

Friable Concentration 0 %

RMWMF Determination:

Is Waste TSCA Regulated? ☐

TSCA Determination Basis Process Knowledge

Treatability Group 21 SEALED SOURCES WITH TCLP METALS

Permit Process SUPPORT ACTIVITIES (RP & WM)

Permit Descripion DEBRIS

H and T Codes: S01 Awaiting NMED Approval?: ☐

Date Permission Received to Generate Mixed Waste: 7/10/2006

RCRA Data

Code	Chemical	Quantity	Units	Waste Item Description	Justification
D011	SILVER	>5	mg/l	TCLP	

Basis for RCRA Determination:

Process Knowledge

Additional RCRA/TSCA Related Comments

Chargeback

ER Waste ☐

Amnesty Waste ☐

Exempt Waste ☐

Facility Code: NMRW

Exempt Comment:

Uploaded to Financial System on: Wednesday, February 07, 2007

Biennial Data

California Code of Regulations (CCR) Information

Waste Parcel Report

Package ID #: P0700239

Form Number: 061240

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Placed in Storage?: ☑

Mixed: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐

Void?: ☐

☐ Is waste a non-RCRA hazardous waste per California Code of Regulations (CCR), Title 22, Division 4.5?

Basis for Non-RCRA Hazardous Waste Determination:

Not Applicable

Date Permission Received to Generate CCR Waste?

Process Safety Management (PSM) Chemical Information

Disposal Request Report

Void: ☐
Void Date:
Data Check?: ☑

Form Number: 061240
DR Number: 061240
Log Date: 8/24/2006
DR Date: 8/1/2006

Waste Generator/Custodian Information

Generator

Last Name: KIRK-SCHWEITZ
Telephone #: (505) 845-0456
First Name: ANN
Department: 5991

Pickup Contact

Mills, James J.
Phone: (505)845-0584
Parcel Types: 1 x Other

Custodian

Last Name:
Telephone #:
First Name:
Department:

Generation Location

TA: 3
Building: 6642
Room: TR55
Additional Location Information: INSIDE TRANSPORTCONTAINER

Chargeback Data

Project #: 3327
Task #: 2.03.01.06

Generation Frequency: (●) One-Time ( ) Intermittent ( ) Continuous

NTS Waste Stream Information

NTS Waste Stream ID
SNL/NM PKE #
Waste Stream Name

Data Entry Comments:

This Disposal Request contains 1 Parcel (s)

Parcel	Pickup Date	Shipped	Container	Facility	Location
P0700239	2/5/2007	No	C070128	F6925	LR06B

Flag
GREATER THAN CLASS C
TRANSURANIC > 100 nCi per gram

Waste Parcel Report

Package ID #: P0700239

Form Number: 061240

Ready for Pickup?: ☑ Shipped Off Site?: ☐

Placed in Storage?: ☑

Mixed: ☑

Pickup Date: 2 /5 /2007 Material (Not Waste): ☐ Void?: ☐

PARCEL INFORMATION

Is Waste RCRA-Regulated? ☑

Does Waste Contain PCBs? ☐

Does Waste Contain Asbestos? ☐

Does Waste Contain Beryllium? ☐ Percent Beryllium by Weight: 0

Has Waste Been Treated Prior to Submitting DR? ☐

If Yes, Was the Waste Treated to Meet an LDR Treatment Standard? ☐

Is Accountable Nuclear Material Present? ☐

Fissile: ☐

- (●) Non-Accountable
- ( ) Accountable Nuclear Material
- ( ) Accountable Special Nuclear Material

Waste Security Classification

- (●) Unclassified ( ) CRD ( ) SRD
- ( ) CFRD ( ) SFRD ( ) Other

Visual Observation Protection Needed? ☐

CWS #: Not Applicable

Package Type

Package Description: OTHER

Type B Container ☐

Other Size and Composition: 2 Gal AN Can

Other Tare Wt (lbs):

Scale Serial #:

Containers Inspected? ☑

RWNMDD Container ID: Not Applicable

SNL Barcode Present? ☐

Survey #: S95961

Waste Accumulation Start Date: 2/15/2006 Date Waste Last Added: 2/15/2006

All Physical Forms Present

- ☑ Solids Present
- ☐ Liquids Present
- ☐ Gases Present

Primary Physical Form

- (●) Solid Only
- ( ) Liquids Present
- ( ) Gases Present

☐ Free Liquids?

☐ Compressed Gases?

If Liquids Present

Liquids Only

- ( ) Aqueous
- ( ) Organic
- ( ) Sludge

or

Liquids & Solids

- ( ) Aqueous
- ( ) Organic
- ( ) Sludge

Summary

No.	Container ID		Cat 2 Frac
1	C00210016	FD exp (PNL9)	0.0038
2	C00210018	EEOS exp (KFK1)	0.0149
3	C00210015	FD exp (PNL10)	0.0029
4	C00210026	FD (PNL9)	0.0029
5		W79-JTA Debris	
6		W79-JTA Debris	
7		W79-JTA Debris	
8		DF,TRAN,STAR,Pin red,gold,green,FALCON,Melt Prog,ST	
9	C00210019	EEOS exp (PNL15), FD (PNL9)	0.0314
10	C00210020	FD (PNL9,PNL10,PNL11), EEOS (KFK2)	0.0985
11	C00210021	FD (PNL11)	0.0038
12	C00210022	FD (PNL10)	0.0029
13	C00210024	FD (PNL10)	0.0029
14	C00210003	ST (BR3 Belgium)	0.4108
15		W79-JTA Debris	
16		W79-JTA Debris	
17		W79-JTA Debris	
18		W79-JTA Debris	
19	C00210009	Pellets (FE070, FE094), EEOS residue (GB9, Lot-2A)	0.1118
20		ZPR Plates (Type B)	
21		ZPR Plates (Type B)	
22		33 Ci, Jeff Jarry (?), 284-3080, 3220 lb, Co60? & Fe55	
23	C00210025	FD (PNL9,PNL11)	0.0038
24	200060-PNL3	Never used in exp (PNL3)	0.1247
25		Np237	
26	200218-DB1	FD (PNL9,PNL11,P14A), STAR (P14A,P42R)	0.9316
27	200217-DB2	(BR3 Belgium)	0.8579
28	200216-GG	(BR3 Belgium)	0.4979
29		B-61 DU Parts	
	Total:		3.1022

Table C6-3 Radiography Checklist
A-14-26 SNL/CCP Certification Audit August 5 – 7, 2014

(Not included in the scope of the audit)

Table C6-4 Visual Examination (VE) Checklist
SNL/CCP Certification Audit A-14-26
August 5 - 7, 2014

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Visual Examination (VE) Checklist

	WAP Requirement[1] SNL/CCP Audit A-14-26 Table C6-4 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	TRAINING					
296	Is there documentation which shows that a standardized training program for visual examination operators has been developed? Is it specific to the site and include the various waste configurations generated/stored at the site? (Section C1-2)	CCP-QP-002, S. 4.1.2, 4.2 NOTE, & 4.3.5 CCP-TP-500, S. 2.2	Y	VE records for 3 VE operators **(GEN-7)**	Y	
297	Is there documentation which shows that the visual examination operators receive training on the specific waste generating processes, typical packaging configurations, and waste material parameters expected to be found in each Waste Matrix Code at the site? (Section C1-2)	CCP-QP-002, S. 4.1.2, 4.2 NOTE, & 4.3.5 CCP-TP-500, S. 2.2	Y	VE records for 3 VE operators **(GEN-7)**	Y	
298	Are the visual examination personnel requalified once every two years? (Section C1-2)	CCP-QP-002, S. 4.1.2 [H] & 4.3.5 CCP-TP-500, S. 2.2	Y	VE records for 3 VE operators **(GEN-7)**	Y	
298a	Does the training include the following regardless of Summary Category Group? • Identifying and describing the contents of a waste container by examining all items in waste containers of previously packaged waste. • Identifying when VE cannot be used to meet the DQOs. (Section C1-2)	CCP-QP-002, S. 4.1.2 & 4.3.5 CCP-TP-500, S. 1.1	Y	VE records for 3 VE operators **(GEN-7)**	Y	
	VISUAL EXAMINATION EXPERT REQUIREMENTS					
300	Does documentation ensure that the site has designated a visual examination expert? Is the visual examination expert familiar with the waste generating processes that have taken place at the site? Is the visual examination expert familiar with all of the types of waste being characterized at that site? (Section C1-2)	CCP-QP-002, S. 3.1.6 [D], 4.2 [NOTE], & 4.4.1 CCP-TP-500, S. 3.3	Y	VEE Appointment letter and training records **(VE-1)**	Y	
301	Does documentation ensure that the visual examination expert shall be responsible for the overall direction and implementation of the visual examination aspects of the program? Does the site's QAPjP specify the selection, qualification, and training requirements of the visual examination expert?	CCP-PO-001, S. C1-2 CCP-TP-500, S. 3.3	Y	VEE Appointment letter and training records **(VE-1)**	Y	

	WAP Requirement[1] SNL/CCP Audit A-14-26 Table C6-4 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	(Section C1-2)					
	VISUAL EXAMINATION PROCEDURES					
304	Do procedures indicate that all visual examination activities are documented on video/audio media or VE performed by using a second operator to provide additional verification by reviewing the contents of the waste container to ensure correct reporting? (Section C1-2)	CCP-TP-500, S. 1.1 & Att. 1	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
304a	Are procedures in place to ensure that when VE is performed using a second operator, each operator performing VE shall observe for themselves the waste being placed in the container or the contents within the examined waste container when waste is not removed? (Section C1-2)	CCP-TP-500, S. 4.0 [NOTE] & Att. 1	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	
313	Do site procedures ensure that when liquid is found, the non-transparent internal container holding the liquid will be assumed to be filled with liquid and this volume will be added to the total liquid in the container being characterized using VE? The container being characterized using VE would then be rejected and/or repackaged to exclude the internal container if it is over the TSDF-WAC limits. (Section C-3b)	CCP-TP-500 Att. 1 & Table 1	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)**	Y	

	WAP Requirement[1] SNL/CCP Audit A-14-26 Table C6-4 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	QUALITY ASSURANCE OBJECTIVES					
314	Are process procedures in place to meet the following Quality Assurance Objectives? Precision • Precision is maintained by reconciling any discrepancies between the operator and the independent technical reviewer with regard to identification of waste matrix code, liquids in excess of TSDF-WAC limits, and compressed gases. Accuracy • Accuracy is maintained by requiring operators to pass a comprehensive examination and demonstrate satisfactory performance in the presence of the VE expert during their initial qualification. VE operators shall be requalified every two years. Completeness • A validated VE data form will be obtained for 100 percent of the waste containers subject to VE. Comparability • The comparability of VE data from different operators shall be enhanced by using standardized VE procedures and operator qualifications. (Section C3-2b)	Bullet 1 CCP-TP-500, Att. 1-3 Bullet 2 CCP-QP-002 S. 4.3.5 & 4.1.2 [H] Bullet 3 CCP-TP-500, Att. 1 & 2 Bullet 4 CCP-QP-002, 4.3.5 CCP-TP-500, (ALL)	Y	VE BDRs: SNLRHVE14001 SNLRHVE14002 **(GEN-1)** VE records for 3 VE operators **(GEN-7)**	Y	

1. The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

VE1

Armijo, Cheryl - TFE

From: Joo, Irene - NWP
Sent: Wednesday, January 22, 2014 4:06 PM
To: Billett, Michele - Stoller; Armijo, Cheryl - Stoller
Subject: VEE Appointment of Spencer Pattee

Mr. Spencer Pattee is appointed as the Visual Examination Expert (VEE) for the CCP Sandia National Laboratory (SNL) RH project at the Technical Area V, Building 6591. Mr. Pattee has served as a Visual Examination Operator at multiple host sites processing RH waste since 2009. Mr. Pattee's experience of approximate five years performing Visual Examination on various RH waste streams provides the experience and qualification to perform the VEE duties at SNL Technical Area V, Building 6591.

Please place a copy of this email in the applicable training records.

Irene Joo
RH Operations Manager
Nuclear Waste Partnership, LLC.
Contractor for U.S. Department of Energy
(720)982-7174
irene.joo@wipp.ws

TABLE OF AUDITED DOCUMENTS			
NUMBER	PROCEDURE NUMBER	REV	PROCEDURE TITLE
1.	CCP-PO-001	21	CCP Transuranic Waste Characterization Quality Assurance Project Plan
2.	CCP-PO-002	27	CCP Transuranic Waste Certification Plan
3.	CCP-PO-005	24	CCP Conduct of Operations
4.	CCP-QP-002	37	CCP Training and Qualification Plan
5.	CCP-QP-005	24	CCP TRU Nonconforming Item Reporting and Control
6.	CCP-QP-008	22	CCP Records Management
7.	CCP-QP-010	24	CCP Document Preparation, Approval, and Control
8.	CCP-QP-016	19	CCP Control of Measuring and Testing Equipment
9.	CCP-QP-017	4	CCP Identification and Control of Items
10.	CCP-QP-021	10	CCP Surveillance Program
11.	CCP-QP-022	14	CCP Software Quality Assurance Plan
12.	CCP-QP-028	15	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
13.	CCP-TP-001	21	CCP Project Level Data Validation and Verification
14.	CCP-TP-002	26	CCP Reconciliation of DQOs and Reporting Characterization Data
15.	CCP-TP-005	26	CCP Acceptable Knowledge Documentation
16.	CCP-TP-163	4	CCP Evaluation of Waste Packaging Records for Visual Examination of Records
17.	CCP-TP-500	13	CCP Remote-Handled Waste Visual Examination
18.	CCP-TP-506	5	CCP Preparation of the RH TRU Waste AK Characterization Reconciliation Report
19.	CCP-TP-530	11	CCP RH TRU Waste Certification and WWIS/WDS Data Entry
20.	WP 13-QA.03	23	Quality Assurance Independent Assessment Program
21.	WP 15-GM1002	2	Issues Management Processing of WIPP Forms

Effective Date: 05/19/14

WP 13-QA.03
Revision 23

Quality Assurance Independent Assessment Program

Cognizant Department: Quality Assurance

Approved by: Val Cannon

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

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CHANGE HISTORY SUMMARY

REVISION NUMBER	DATE ISSUED	DESCRIPTION OF CHANGES
18	06/20/11	Added allowance for the Assurance Programs manager to extend the time limit for issuance of an audit report. (6.0)
19	02/28/12	Added discussion of effectiveness reviews (Introduction). Added clarification for developing criteria for (4.3) and performing (5.0) effectiveness reviews. Deleted reference to EFCOG Contractor Guide For Performance of Effectiveness Reviews (4.3, 5.0).
20	01/25/13	• Deleted requirements to enter external assessment findings in CTS throughout the document. • Updated organization names in accordance with MD 1.1.
21	03/04/13	• Removed from section 2.0 last bullet of lead assessor responsibilities and last bullet of surveillor responsibilities. • Added to sections 5.0 and 6.0 provisions to document findings corrected during assessment on the WIPP Form in accordance with • WP 04-IM1000 (Corrective action for CBFO CAR 12-020). • Deleted attachment 9, and added reference to WP 09-CN3025 in section 4.3. • Deleted Attachment 10, Concerns Form and its mention from section 5.0.

22	05/22/13	• Added statement to Introduction that commercial grade surveys are performed in accordance with this procedure and WP 09-CN3040, *Commercial Grade Item Dedication*. • Added bullets in section 2.0 to delegate the responsibility for identifying the need for technical assistance when performing assessments to the lead assessor and surveillor. • Reworded lead auditor/surveillor actions to be consistent with QAPD language in section 4.3. • Added additional methods for performing effectiveness reviews in section 5.0. • Deleted requirement in section 5.0 to notify CBFO of deficiencies in DOE requirements (Original requirement was deleted in DOE O 226.1B). • Deleted note in section 6.0 about issuing WIPP Forms for assessment findings (this information is discussed elsewhere). • Changed P-A Coordinator to Compliance Coordinator throughout. • Added discussion item “Potential hazards” to attachment 10.
23	05/19/14	• Changed “04-IM1000” to “15-GM1002” throughout. • Updated references table. • Revised Introduction section 1.0 concerning Record Inventory and Disposition Schedules. • Deleted in section 2.0, third bullet, approval of the assessment schedules. • Revised bullet in subsection 4.1 to be consistent with the scope and frequency of audits performed in accordance with the contractor assurance system. • Modified in subsection 4.1the last bullet. • Deleted in subsection 4.2, bullets three, five and seven. • Modified subsection 4.3 for clarity. • Added in section 6.0, “internal” in bullet four for clarity. • Added in section 8.0 “will be tracked in commitment tracking system (CTS).”

23 (cont.)		• Removed Attachment 3, Example of QA Fiscal Year External and Internal Audit Schedules. • Added in attachment 5, bullet “Initiate WIPP Form for CDA.” • Removed in attachment 7, “CTS Coordinator.”

ABBREVIATIONS and ACRONYMS

ALARA	as low as reasonably achievable
CAM	continuous air monitor
CAQ	condition adverse to quality
CBFO	Carlsbad Field Office
CDA	corrected during assessment
CFR	Code of Federal Regulations
CH	contact-handled
CMS	Central Monitoring System
CTS	commitment tracking system
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
HEPA	high-efficiency particulate air (filter)
HVAC	Heating, Ventilation, and Air Conditioning
ISM	Integrated Safety Management
NRC	U.S. Nuclear Regulatory Commission
NWP	Nuclear Waste Partnership LLC
P-A	Price-Anderson
PPE	personal protective equipment
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QSL	Qualified Suppliers List
RH	remote-handled
SDD	System Design Description
VSS	Vital Safety System
WHB	Waste Handling Building
WIPP	Waste Isolation Pilot Plant

1.0 INTRODUCTION[1]

The purpose of this document is to define and prescribe quality assurance (QA) methods and techniques used to identify, schedule, plan, perform, report, and close independent assessments, and to identify the resulting records.

This document applies to Nuclear Waste Partnership LLC (NWP) QA personnel qualified to lead and/or perform independent assessments. It also applies to cognizant managers of organizations being assessed.

Independent assessments may be performed as audits or surveillances. Audits are generally larger, more formal assessments of quality program elements or supplier programs. Surveillances are generally smaller assessments of specific activities, but may also be expanded and performed on quality program elements. Where the term "assessment" is used in this document, it applies to both audits and surveillances. Where actions apply only to an audit or surveillance, it will be so stated.

Commercial grade surveys are performed in accordance with this procedure and WP 09-CN3040, *Commercial Grade Item Dedication*.

Effectiveness reviews are conducted as surveillances to verify the effectiveness of corrective actions implemented to prevent the recurrence of significant issues, problems, or events.

Assessments may contain elements of inspections, testing, monitoring work in progress, and checking to support the reviews that comprise assessment activities.

Assessments evaluate the adequacy of program documents and implementation, including effectiveness of established programs, and processes for compliance with WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description* (NWP QAPD), other QA program documents, and purchase order requirements, as applicable. Assessments focus on improving items, services, and processes by emphasizing the achievement of quality by line organizations. Regularly scheduled program assessments may be supplemented by or integrated with additional technical assessments (e.g., surveillances and limited scope audits).

Assessments are performed using reviews, interviews, observation and monitoring, and checks. Actual and/or potential deficiencies are noted. Supplier assessments verify conformance to applicable purchase orders and the QA requirements imposed by contract, or evaluate potential for providing products or services in compliance with NWP QA requirements. Scheduling is based on frequency required by regulation, ongoing project activities (e.g., previous audit results, adverse trends, or requests from other line organizations), and capabilities. Internal assessment findings and associated corrective actions are entered and tracked in the Issues Management (WIPP Form) System in accordance with WP 15-GM1002, *Issues Management Processing of WIPP Forms*.

Implementation of the program generates the following record(s), as applicable. Any records generated are handled in accordance with departmental Records Inventory and Disposition Schedules.

- NWP QA Independent Assessment Subject Master Table
- Audit Plan
- Assessment Checklist
- Audit Report
- Audit follow-up documentation
- Surveillance Report
- Surveillance follow-up documentation
- Independent Assessment Record File Completion Checklist
- Technical Specialist/Auditor Participation Indoctrination for Quality Assurance Audits
- Independent Assessment Log (Attachment 8)

2.0 RESPONSIBILITIES

The Assurance Programs manager is responsible for:

- Implementation of this document.
- Ensuring that assessment personnel have sufficient authority and organizational freedom to carry out their assigned responsibilities.
- Qualification of lead auditors and QA Surveillors (surveillors) in accordance with WP 13-QA.04, *Quality Assurance Department Administrative Program*.
- Assignment of assessment team leaders.
- Concurrence with assessment team selection.
- Assignment of surveillors.

The lead assessor is responsible for:

- Selecting the assessment team.
- Identifying the need for technical assistance when performing assessments.
- Approving assessment checklists.
- Organizing and directing the assessment.
- Reporting the assessment results.

The surveillor is responsible for:

- Performing surveillances.
- Identifying the need for technical assistance when performing assessments.

- Organizing and directing the surveillance.
- Reporting the surveillance results.

3.0 DEFINITIONS

Corrected During the Assessment (CDA) – An isolated condition adverse to quality (CAQ) requiring only remedial action to correct and for which resolution can be verified through review of objective evidence prior to the exit meeting.

Finding – A condition, applicable to the program or process being audited, that deviates from specified requirements defined by codes, standards, or other established specifications (a clear violation of a clear requirement).

Observation – A condition that, if left unattended, could become a deviation from established acceptance criteria; or a suggestion that, if enacted, could strengthen the existing program.

4.0 PREPARATION FOR ASSESSMENTS

4.1 QA Independent Assessment Identification

Waste Isolation Pilot Plant (WIPP) program elements or activities requiring independent assessment are found in:

- WP 13-1, Nuclear Waste Partnership LLC Quality Assurance Program Description
- DOE/CBFO 94-1012, U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document
- Hazardous Waste Facility Permit NM4890139088-TSDF

Additional programs, processes, or activities important to compliance application, nuclear safety, waste characterization, or the isolation of waste within the disposal system require independent assessments to verify adequate and effective performance. These programs are found in:

- Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2000-2, Configuration Management Vital Safety Systems
- DOE/WIPP-04-3310, WIPP Environmental Policy Statement
- DOE/WIPP-07-3372, Waste Isolation Pilot Plant Documented Safety Analysis
- DOE/WIPP-07-3373, Waste Isolation Pilot Plant Technical Safety Requirements
- EFCOG Contractor Guide For Performance of Effectiveness Reviews
- NWP procedures that prescribe assessments

Activities which affect the following require independent assessments, in accordance with the contractor assurance system established by U.S. Department of Energy (DOE) Order 226.1B, Implementation of Department of Energy Oversight Policy:

- Environment, safety, and health (e.g., protection of the environment, workers, and the public from damage or injury)
- Safeguards and security
- Emergency management
- Cyber security

Independent assessments performed in accordance with the contractor assurance system include evaluations of compliance with the following, as applicable:

- Laws
- Regulations
- National standards
- DOE directives
- DOE-approved plans and program documents (e.g., authorization basis documents and QA program)
- Site-specific procedures/manuals
- Criteria review and approach documents
- Contractual performance objectives, and other contractually mandated requirements

The scope and frequency of audits performed in accordance with the contractor assurance system must ensure that:

- Assessments required by applicable DOE directives, including environment, safety, and health, safeguards and security, emergency management, and cyber security, are being performed;
- The effectiveness of safety management programs, including programs that are credited in the safety basis, is being assessed adequately;
- Deficiencies are being self-identified; and
- Effective, corrective actions are being taken.

Supplier audits are based on requests for new suppliers to be added to the NWP Qualified Suppliers List (QSL); those suppliers currently on the QSL which are due for reevaluation, or have their authorized scope changed; and suppliers providing products or services under Title 10 *Code of Federal Regulations* (CFR) Part 71, that require a facility audit every three years. These requests and reevaluations are processed in accordance with WP 13-QA3012, *Supplier Evaluation/Qualification*.

The Assurance Programs manager or assigned cognizant individual will:

- Review WIPP requirements documents and identify needs for independent assessments based on both written requirements for independent assessments and other programs or processes that affect safety, storage of waste, or the environment, the importance of which necessitates assurance of compliance.

- Upon notification from a QA procurement reviewer or a NWP Contracting Officer that a project is scheduled to begin or is ongoing, evaluate the need for initial and follow-on independent assessments based on this section 4.0.

- Review the potential assessment to be added using the criteria in the Assessment Priority Determination Tables (provided in attachment 1). Document a decision for either an audit or a surveillance on the NWP QA Independent Assessment Subject Master Table (example provided in attachment 2).

- Determine a frequency at which the assessment should be performed. If established by the requirement, that frequency is to be used. If not established by requirement, determine an adequate frequency based on relative risk, hazards, and complexity of the processes and activities to be evaluated. Also consider the scope and coverage of previous oversight activities, and historical performance. Document the frequency on the NWP QA Independent Assessment Subject Master Table.

4.2 QA Independent Assessment Scheduling

Assessments will be scheduled to begin as early in the life of a project or activity as practicable, and will continue at intervals consistent with the schedule for accomplishing the work.

The Assurance Programs manager or assigned cognizant individual will:

- Evaluate the timing of the first, or next, occurrence for the assessment to be scheduled against all current or planned assessments. Consider resources, date required, time available, known regulatory oversight preparedness needs, associated historical issues, and client expectations, then schedule the assessment to best accommodate the need.

- Document internal and external (supplier) audits on the NWP QA Fiscal Year Electronic Audit Schedule. Suppliers of parts and materials, and services regulated by 10 CFR 71, Subpart H, will require the performance of a site audit on a triennial basis. (Reg. Guide 7.10, section 18.2)

- Develop additional informal schedule tools to track assessments, as necessary.

- Revise or update QA assessment schedules, as applicable, to reflect current needs.
- Make schedule(s) available to CBFO via the NWP QA webpage link.

4.3 QA Independent Assessment Planning

Assessments include audits and surveillances. Direction regarding assessments applies to both audits and surveillances. The term "assessor" denotes the person performing either the audit or surveillance, as appropriate. Any direction specific to either audits or surveillances is indicated where applicable.

The Assurance Programs manager or delegate will:

- Maintain the Independent Assessment Log. The log (see example in attachment 9) will be used to issue assessment numbers, and collect certain information regarding the assessments.
- Assign a qualified lead auditor to lead/perform audits. Determine if an audit team is necessary due to size or complexity of the scope.
- Assign a qualified surveillor or qualified lead auditor to perform surveillances.

The lead auditor/surveillor will:

- Obtain from the assessment coordinator an audit or surveillance number that denotes the type of assessment ("I" or "E" for internal or external audit, or "S" for surveillance, the fiscal year, and a sequential number beginning with 01 (e.g., I06-01, E06-01, S06-01).
- Contact the cognizant individual for internal audits/surveillances or the supplier for external audits/surveillances to determine any safety/security issues and precautions of which the team should be aware. This includes Personal Protective Equipment (PPE), badging, logistics information, etc. Document the safety/security issues and precautions in the audit plan.
- Select an assessment team, if a team is needed, based on the scope, complexity, or special nature of the work being assessed, technical qualifications, knowledge of the items and activities being assessed, availability, experience, and the prospective assessor's ability to provide an objective contribution.
- Ensure the following, as applicable:
  - Personnel having direct responsibility for performing the activities being assessed shall not be involved in the selection of the team. Team members shall have the authority to carry out their assigned responsibilities and be independent from the items and/or processes being assessed. Assessors shall be authorized in accordance with WP 13-QA.04, and/or perform under the supervision of a lead auditor.
  - During assessments, Technical Specialists may be used when evaluating the adequacy of technical processes. The lead assessor will

determine when technical specialist support is needed and will document the determination in the body of the report. Technical Specialists will be indoctrinated by the lead assessor commensurate with the scope, complexity, or special nature of the work being assessed, and of the assessments process associated with their duties. The indoctrination will be documented using a format similar to that defined in attachment 9. Attachment 9 may also be used to indoctrinate other assessors from the assessment group, at the discretion of the lead assessor.

— External peers or subject matter experts may be used as necessary to support assessment activities.

- Ensure that the team members collectively have appropriate training and experience commensurate with the scope of the assessment.

- Indoctrinate the audit team to the audit process, as needed, and their associated tasks before the audit. Include a review of potential hazards and plan accordingly for proper PPE (personal protective equipment), ALARA (as low as reasonably achievable), and additional controls deemed necessary. Document the indoctrination using a format similar to that defined in attachment 9.

- Prepare the audit plan, for both internal audits and external supplier audits, using guidance in attachment 4, and obtain QA management approval. The audit plan will include purpose, scope (including the work to be assessed and related corrective actions since previous assessments), requirements, audit personnel, organizations to be notified, applicable documents, written procedures to be used, schedule, safety/security issues and precautions, and background. Background should include previous findings, Corrective Action Requests, and weaknesses noted within the intended scope. For external supplier assessments, obtain supplier history from the QSL file or Coordinator.

- Review, with team members, any plan generated, pertinent background information that includes previous audit or oversight results, applicable procedures, and applicable technical documents so that team members are familiar with the work being assessed.

- If the assessment is external, notify the affected organization or company management by correspondence of the scheduled assessment, identifying the scope of the assessment. The notification need not include the audit checklist.

- Determine, with QA management, when internal surveillances are to be formally announced prior to performance. In such cases, notify the organization to be surveilled by correspondence of the surveillance, its scope, and schedule.

Assessor(s) will:

- Refer to the NWP QA Independent Assessment Subject Master Table for identification of requirements documents from which assessment criteria should be developed.

- Develop the criteria to be used during the assessment based on approved requirements; will also consider the following when developing criteria:

- For internal assessments, include criteria, as applicable, to assess application of Integrated Safety Management (ISM) in accordance with Management Policy MP 1.28, *Integrated Safety Management*, and WP 15-GM.03, *Integrated Safety Management System Description*. The Safety Management Responsibilities section of the latter document provides a source from which criteria can be generated. For internal assessments, the intention is to review the ISM controls in evidence or exhibited in the activity being assessed. For external assessments, ISM controls may be considered regarding the hazards that the assessor could encounter (e.g., anticipated hazards mitigated by adequate PPE).

- Although Graded Approach is assessed separately, consider possible criteria in accordance with WP 09-CN3005, *Graded Approach to Application of QA Controls*.

- Consider Conduct of Operations criteria applicable to the activity being assessed.

- Consider environmental controls or environmental response to unusual occurrences applicable to the activity being assessed.

- Consider software controls applicable to the activity being assessed.

- When assessing a WIPP Vital Safety System (VSS), develop criteria from the following:

  - Applicable portion of WP 09-CN3025, Annual System Health/Walkdown/Requalification, Attachment 1, Assessment Boundary for Vital Safety System Definitions

  - General for VSS assessments - Timely closure of modifications, Cognizant Engineer walkdowns, periodic maintenance performed as required in System Design Descriptions (SDDs), maintenance performed in accordance with manufacturer recommendations, combustible materials in the disposal circuit in the underground, software QA

- For an audit, develop the audit checklist(s) under the direction of the lead auditor using the guidance in attachment 5. Checklist line items are generally written as directions to verify conformance of the activity being evaluated with established requirements, or as questions whether or not the activity being evaluated conforms with the requirement.

- For a surveillance, the criteria may be identified briefly on the Surveillance Report or on a detailed checklist to be filed with the assessment. Examples of brief criteria include, "observe actions based on steps XX through and including YY," or "observe waste hoist lifting activity for adherence to Procedure XXX, Revision Y, Section ZZ," or "review 15 WIPP Forms for adequacy, completeness, and implementation of corrective actions," etc. Criteria typically are found in QA manuals and program plans, procedures, previous assessments and corrective action documents, and contract requirements.

- For Effectiveness Reviews of completed corrective actions for 'significant' WIPP Forms, P-A externally-reportable issues, etc., develop criteria considering the following:

  — Effectiveness reviews are performed to verify the effectiveness of corrective actions that have been implemented to prevent the recurrence of significant issues.

  — Effectiveness is measured by a significant change in one or more of these four measures:

    1. The probability of the original event recurring

    2. The frequency of the problem recurring

    3. Reduction in the magnitude or severity of the problem

    4. Elimination of the original problem

5.0 ASSESSMENT PERFORMANCE

The lead auditor/surveillor will:

- For audits and external surveillances (optional for internal surveillances), conduct an entrance meeting with the assessment team and appropriate personnel representing the assessed organization(s). The entrance meeting is intended to introduce the assessors, explain the purpose, scope, and schedule for the assessment, and establish interfaces and contacts with the organization being assessed.

- For Effectiveness Reviews of completed corrective actions for 'significant' WIPP Forms, Price-Anderson (P-A) externally reportable issues, etc., perform the assessment using one or more of the following methods. The method selected should be appropriate for the specific corrective/preventive actions. The direct observation method is the method of preference, but other methods should also be applied, as necessary.

  — Observe the work or performance of an evolution.

  — Conduct facility inspections or activity monitoring.

  — Utilize past performance indicators to track any ongoing recurrences.

  — Review databases or similar problems.

  — Run a test to challenge the system or process (if applicable).

  — Run a mock item through the process, or complete a performance test (if applicable).

  — Perform a walkthrough of the work, process, or evolution.

— Interview impacted managers and workers on their understanding of, and involvement with, the implemented corrective actions.

— Review a documented, previously completed equivalent evaluation of the original problem prior to initiating the effectiveness review.

The assessment team will:

- Evaluate the applicable quality program element(s) by examining objective evidence, observing activities in progress, examining items (including components, specimens, and machinery, etc.), and/or interviewing personnel responsible for the activity. Include technical evaluations of the applicable procedures, instructions, activities, and items, as appropriate. Objective evidence related to the planning and technical aspects of the work performance is to be examined to the depth necessary to determine if these elements are being implemented effectively.

- Review previous corrective actions, as applicable, to evaluate implementation and effectiveness when recurring problems are found.

- Observe, to the extent possible, actual operations to verify conformance to requirements.

- Record the results of the evaluations performed on the assessment checklist or surveillance report, as applicable.

- Record, on the assessment checklist or surveillance report, as applicable, objective evidence examined, including all documents reviewed, with sufficient detail so that any conditions or practices may be noted in the report with adequate detail. Include, as applicable, document number, title, and revision.

- Record, on the assessment checklist or surveillance report, as applicable, the results of observations of processes or items, including the quantity of items examined to indicate the size or breadth of the examination. Identify the items, where possible.

- Record, on the assessment checklist or surveillance report, as applicable, the names of personnel interviewed.

- Inform the lead auditor/surveillor of progress and/or problems with assigned tasks periodically during the assessment.

- Notify immediately the lead auditor/surveillor if conditions are identified during an internal audit or surveillance that qualify as an event or potentially reportable occurrence under the requirements of 10 CFR Part 21, 10 CFR Part 71, WP 12-ES3918, Reporting Occurrences in Accordance with DOE Order 232.2, etc.

- Notify immediately the lead auditor/surveillor if conditions are identified that are believed to be unsafe. If an internal assessment condition requires immediate work stoppage, proceed as directed in MP 1.2, *Stop-Work Policy*. During external assessments, notify the supplier management, or their designated point-of-contact.

- Acknowledge and track any CDAs. Verify that the actions completed correct the condition. Document CDAs on a WIPP Form, in accordance with WP 15-GM1002, for trending.

The lead auditor/surveillor will:

- Notify QA management and the management of the assessed organization as soon as practicable if conditions are discovered that could have a significant adverse impact on prior work or affect work in progress, or if conditions require prompt attention. If conditions require immediate attention as defined in WP 12-ES3918 or MP 1.2, perform action as directed by the appropriate document.

- Notify the management of the assessed organization as soon as practicable of any issues identified, to assure accuracy, and allow opportunity for resolution during the assessment.

- Notify Packaging Manager of issues that affect nuclear packaging (TRUPACTs, HalfPACTs, etc.) or are otherwise potentially reportable to the U.S. Nuclear Regulatory Commission (NRC), to allow them to screen for reportability under 10 CFR Part 21 or 10 CFR Part 71, etc.

- For audits and external surveillances, conduct an exit meeting with appropriate personnel representing the assessed organization(s). The exit meeting is intended to provide a general overview of the evaluation of the program element and any issues requiring attention.

6.0 ASSESSMENT REPORTING

The reporting of the assessment, if performed as an audit or external surveillance, will follow the guidance provided in attachment 6; and, if performed as an internal surveillance, will use the example provided in attachment 8.

Assessments that involve sensitive (e.g., permit- or personnel-related) information are to be coordinated through the NWP Legal Counsel. The lead auditor/surveillor and QA management will determine the necessary reviewers (i.e., NWP Legal Counsel, etc.) for proper processing of such assessment information.

The lead auditor/surveillor/manager will:

- Prepare the assessment report with the assistance, as necessary, of the assessment team, and sign the report.

- Ensure that the assessment report includes the following, as appropriate:

  — Assessment purpose and scope (surveillances to include criteria used)

  — Identification of assessors

  — Identification of personnel contacted

  — Identification of documents reviewed, including revision indicator

— Summary statement(s) indicating program (or program element) adequacy, implementation, effectiveness (applicable to scope), and a brief statement of ISM evaluations performed

— Commendable practices or situations (if any are identified)

— Findings (conditions adverse to quality, if any are identified) – Enter internal (NWP) conditions adverse to quality into the Issues Management System using the WIPP form in accordance with WP 15-GM1002. Identify findings in the report as directed in attachments 6 and 8. Concisely describe in the report (and on the WIPP Form for internal findings) the specific condition that deviates from the requirements, with sufficient detail to enable remedial actions to be taken by the audited organization, and subsequent closure by QA. Clearly quote or state the requirement from which the deviation was noted. Group findings of a common nature together whenever possible so that systematic breakdowns can be identified. Evaluate findings based on the relative importance to indicate the degree of impact on compliance application, waste characterization, repository performance assessment, waste isolation, waste transportation, nuclear safety, environmental protection, or management and operation of the WIPP facility.

— Observations (if any are identified) - Concisely state either the condition observed that, if left unaddressed, could deteriorate into a finding, or the suggestion that could strengthen the existing program or process.

— Corrected During Assessment (CDA) - Concisely describe the CAQ found, the requirement from which the condition deviated, and the action(s) taken to resolve the condition. Document CDAs on a WIPP Form, in accordance with WP 15-GM1002, for trending.

— Include the following statement in external supplier audit reports:

(Name of Company) will be (select "retained on," "added to," "added to pending successful resolution of finding," or "removed from") the NWP QSL for (state the scope or limitations of products or services authorized).

— Include the following statement in audit reports for suppliers currently on the NWP QSL:

If the agreements and commitments contained herein are deemed by the supplier to involve a change in the order concerning work scope, price, or schedule, it is agreed that such work will not commence or continue until authorized by a written change notice. It is understood that if the supplier commences such work without a written change notice, it is at the supplier's risk.

- Using cover correspondence, issue the assessment report to all affected entities within 45 calendar days of conclusion of the audit. The 45 calendar day time limit may be extended at the discretion of the Assurance Programs manager.

  — Cognizant department manager (all reports)

  — Compliance Coordinator (all reports)

  — CTS Coordinator (external reports containing findings)

  — Facility point-of-contact (external reports)

  — QSL Coordinator (external qualification or requalification audits)

  — Packaging Manager (reports affecting packaging)

  — Assessment Coordinator (all reports)

  — Lessons Learned Coordinator (reports containing findings determined by the lead auditor/surveillor/management to be potential Lessons Learned issues)

  — QA assessment file for this assessment

  — Others as designated by QA management

Because internal findings are transferred to WIPP Forms, internal reports are considered closed at the time of issue. For external audit reports, include direction to the supplier for responding to any findings.

- Document internal CDAs on a WIPP Form, in accordance with WP 15-GM1002, for trending.

- For external supplier qualification audits, complete the Supplier Evaluation/QSL Update Request Form in accordance with WP 13-QA3012, and forward to the QSL Coordinator.

It is recommended to electronically file a copy of the completed checklist and the report in the applicable assessment folder within "Assessment Reports" in the shared folder WQNRA on the Torreon server.

7.0 ASSESSMENT RESPONSE

The cognizant manager of the assessed WIPP organization will review the assessment (audit or surveillance) results assigned to their organization on the WIPP Form, and respond using the Issues Management (WIPP Form) process in accordance with WP 15-GM1002.

The facility contact (for external assessments) is expected to respond as directed in the issuing cover letter and report. Any request for extension of corrective action due date shall be reviewed by the Assurance Programs Manager or designee.

8.0 ASSESSMENT FOLLOW-UP

In accordance with WP 15-GM1002, the WIPP Form screening committee will assign the lead auditor/surveillor/manager as a technical reviewer of actions/corrective action plans developed in response to a WIPP Form issued as the result of an internal audit/surveillance finding. As a technical reviewer, the lead auditor/surveillor/manager will be responsible for determining the long-term effectiveness of the corrective actions, and will be expected to sign the Corrective Action Plan, so indicating, in accordance with WP 15-GM1002. Issues that cannot be resolved will be referred to management.

For external supplier audit or surveillance findings and the resulting supplier's committed actions will be tracked in commitment tracking system (CTS); the lead auditor/surveillor/manager will review the supplier's actions, and report completion based on the supplier's approved commitment(s).

9.0 ASSESSMENT CLOSURE AND FILING

The lead auditor/surveillor/manager will:

- For external supplier audits or surveillances with findings, verify that the corrective actions were completed as committed, issue a closure letter to the supplier and any other affected organizations, and ensure that copies are distributed to the QSL Coordinator (if applicable) and the Compliance Coordinator.

- Review, using the file checklist (attachment 7), the assessment file for completeness: purge working documents, sign the checklist, notify the assessment coordinator, and forward the complete file to the QA file. The assessment file is to include:

  — Audit Plan (for audits)

  — Completed Assessment Checklist (required for audits, or when used for surveillances)

  — Completed Assessment Report (including identification of documents reviewed and personnel contacted)

  — Assessment response (for external assessments)

  — Corrective Action completion, follow-up, and verification (for external assessments)

  — Other documentation determined to be necessary to support the assessment (closure correspondence, etc.)

REFERENCES	
DOCUMENT NUMBER AND TITLE	KEY STEP
10 CFR Part 21, "Reporting of Defects and Noncompliance"	
10 CFR Part 71, "Packaging and Transportation of Radioactive Material"	
Reg. Guide 7.10, *Establishing Quality Assurance Programs for Packaging Used in Transport of Radioactive Material (NRC)*	
DNFSB Recommendation 2000-2, *Configuration Management Vital Safety Systems*	
DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*	
Hazardous Waste Facility Permit, Waste Isolation Pilot Plant, Permit #NM4890139088 TSDF, Issued by New Mexico Environment Department	
DOE/CBFO 94-1012, *Carlsbad Field Office Quality Assurance Program Document*	
DOE/WIPP 04-3310, *WIPP Environmental Policy Statement*	
DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*	
DOE/WIPP-07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*	
EFCOG Contractor Guide for Performance of Effectiveness Reviews	
MP 1.2, *Stop-Work Policy*	
MP 1.28, *Integrated Safety Management*	
WP 09-CN3005, *Graded Approach to Application of QA Controls*	
WP 09-CN3025, *Annual System Health/Walkdown/Requalification*	
WP 09-CN3040, *Commercial Grade Item Dedication*	
WP 12-ES3918, *Reporting Occurrences in Accordance with DOE Order 232.2*	
WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description*	**1**
WP 13-QA.04, *Quality Assurance Department Administrative Program*	
WP 13-QA3012, *Supplier Evaluation/Qualification*	
WP 15-GM.03, *Integrated Safety Management System Description*	
WP 15-GM1002, *Issues Management Processing of WIPP Forms*	

Attachment 1 – NWP QA Internal Assessment Priority Determination Tables

Determine whether the assessment will be performed as an audit or surveillance using the tables below:

- Review the assessment to be performed against the criteria in the Risk and Hazard Table to determine a numeric value.
- Review the assessment also against the criteria in the Importance and Complexity Table to determine a numeric value.
- Multiply the two numeric values.
- Use the Assessment Priority Table and the number derived from the previous bullet to determine the priority of the assessment to be performed and schedule the type of assessment indicated.

Risk and Hazard Table	
Description	Probability and Consequence Level
If not performed, improbable undetected impact on environment safety, health, safeguards and security, emergency management, cyber security, or QA	1
If not performed, possible minor undetected impact on environment, safety, health, safeguards, and security, emergency management, cyber security, or QA	2
If not performed, possible major undetected impact on environment, safety, health, safeguards, and security, emergency management, cyber security, or unknown status of QA program, or possible continuation of negative trend or repetitive nonconformance	3

Importance and Complexity Table	
Description	Importance and Complexity Level
Necessary to verify actions in document other than a requirement-source or implementing procedure	1
Necessary to verify an action required by an implementing procedure	2
Necessary to complete an assessment required by an implementing procedure	3
Necessary to complete an assessment required by an implementing procedure, and complex in nature	4
Necessary to complete a specific program assessment requirement, or commitment (both non-complex and complex in nature)	4

Attachment 1 – NWP QA Internal Assessment Priority Determination Tables

Assessment Priority Table		
Derived Numeric Value	Priority	Action
1-4	Low	Schedule Surveillance
5-8	Medium	Schedule Surveillance or Audit
9-12	High	Schedule Audit

Attachment 2 –Example of NWP QA Internal Assessment Subject Master Table

NWP QA INDEPENDENT ASSESSMENT SUBJECT MASTER TABLE							
Area of Interest	**Source/Reference**	**Risk/Hazard**	**Complexity**	**Priority**	**Audit**	**Surv**	**Frequency**
Management System NWP Organization Facility Ops Chain of Command QA Organization	Source WP 13-1, R.27, §1.1 Reference DSA/TSR 10 CFR 71 Subpart H	3	4	12	**X**		Biennial (frequency not specified in 830.122, NQA-1, WP 13-1, R.27, or WP 13-QA.03)
Personnel Qualification and Training **Facility Staff Qualifications Training** **Qualified Operators**	Source WP 13-1, R.27, §1.2 Reference DSA/TSR 10 CFR 71 Subpart H DSA/TSR	3	4	12	**X**		Biennial

Attachment 3 – Audit Plan Guidance

NUCLEAR WASTE PARTNERSHIP LLC
QUALITY ASSURANCE AUDIT PLAN
Title of audit (subject)

Audit number

Audited organization(s) (and location if supplier audit)

1. Purpose and Scope of the audit

2. Applicable Requirements Documents
   WP 13-1, *NWP Quality Assurance Program Description*
   (Any others, including regulatory documents containing requirements)

3. Procedure(s) to be used to perform the audit
   WP 13-QA.03, *Quality Assurance Independent Assessment Program*

4. Hazards, Safety/security issues
   Precautions
   Badging, logistics information
   PPE (if any)

5. Audit Team
   Lead Auditor
   Team Auditors (if any)
   Technical Expertise (if any)
   Anticipated Observers (if any)

6. Schedule
   Pre-Audit Meeting
   Audit Activities
   Post-Audit Meeting

7. Background
   Previously reported findings (if any)
   Previous corrective action issues (if any)
   Previously reported weaknesses (if any)

8. Signatures:

Prepared by: _____ Approved by: _____
(Printed Name) (Printed Name)
Lead Auditor Manager, Assurance Programs

Attachment 4 – Example of NWP Quality Assurance Assessment Checklist

(The following table is shown on first page only, followed by the second table as space allows.)

NWP Quality Assurance Assessment Checklist	
Organization Assessed: _____	Assessment Number: _____
Requirements Documents: _____	Dates of Assessment: _____
Assessor(s): _____	**Key: S=Satis., U=Unsat., N=N/A**

(The top row of the following table is a header to be shown on each page to which this table expands with usage.)

Item	[Type in Assessment # here] Assessment Item	Reference Document(s)	**Key**	Assessor Comments
	(Add rows as needed)			

(The following signature line is shown on the last page only, following the end of the above table.)

Approved by: _____ _____
Lead Auditor/Surveillor (print name and sign) Date:

Notes: Refer to the NWP QA Independent Assessment Subject Master Table for identification of requirements documents from which assessment criteria should be developed.
Review any corrective actions committed as a result of the previous assessment; develop criteria to evaluate their effectiveness.
Develop criteria that evaluate a broad range of the requirements with enough detail to be meaningful in verifying compliance and effectiveness.
Develop criteria to evaluate effectiveness of Graded Approach and the ISM system.

Attachment 5 – Audit Report Guidance

Nuclear Waste Partnership LLC
Quality Assurance (select either **Internal** or **External**) **Audit Report**
[Descriptive, yet concise **title** - if external, provide company and address]
[**Audit Number**]

I. Executive Summary: Concise summary (generally one page or less), written in paragraph format including brief mention of organization audited (include location for external supplier) and audit date, abbreviated purpose and scope, results in general terms, conclusion of program adequacy (including ISM), any commendable situations noted, and any major issues requiring further action.

II. Audit Details

Purpose and Scope (more detailed than the Executive Summary)
Criteria used (identify or make reference to checklist, and specifically address ISM)
Audit Team
Inclusive dates of audit
Location(s) of audit
Conclusion(s) regarding compliance, effectiveness, and ISM evaluations performed. Include a statement addressing the number of findings, observations, and/or "CDAs." An acceptable method would be, "The assessment resulted in 2 Findings, 0 Observations, and 3 issues closed during the assessment."
Commendable practices or activities (if applicable)

[Include the following statement, as applicable, in assessment reports containing findings.]

Response to Findings (external supplier audits only) - When responding to audit findings, the following elements are required to be addressed:

- Cause of nonconformance
- Interim actions planned to correct the nonconformance
- Evaluation of the extent of the condition beyond that cited in the report
- Actions planned to prevent recurrence
- Schedule of implementation/completion

Findings (are to be numbered as [audit no.]-F-[sequential number beginning with 01], and internal findings are to also cross-reference to the WIPP Form Number. Example – "S04-027-F-01 issued as WF04-120")

- Condition noted
- Requirement not met

Observations (numbered as [assessment no.]-O-[sequential number beginning with 01])

- Condition (noted, or considered to be an improvement)

Attachment 5 – Audit Report Guidance

Conditions corrected during the assessment (numbered as [assessment no.]-CDA-[sequential number beginning with 01])

- Condition noted
- Requirement from which condition deviated
- Action taken, and verification of completion
- Initiate WIPP Form for CDA

[Include the following statements in external supplier audit reports]

[Name of company] will be [select "retained on," "added to," "added to, pending successful resolution of findings," or "removed from"] the NWP Qualified Suppliers List for [state the scope or limitations of products or services authorized].

If the agreements and commitments contained herein are deemed by the supplier to involve a change in the order concerning work scope, price, or schedule, it is agreed that such work will not commence until authorized by a written change notice. It is understood that if the supplier commences such work without a written change notice, it is at the supplier's expense.

III. Attachments:

1. Table of Personnel Contacted
2. Table of Documents Reviewed
3. (Any other information deemed appropriate for attachment)

IV. Signatures:

Prepared by: _____ _____
(Printed Name) Date

Approved by: _____ _____
(Printed Name) Date
Manager, Assurance Programs

Attachment 5 – Audit Report Guidance

Attachment 1 Table of Personnel Contacted

[A] Attended Audit Entrance Meeting
[B] Contacted During the Audit
[C] Attended Audit Exit Meeting

Personnel Contacted	A	B	C
(Added rows as needed)			

Attachment 2 Table of Documents Reviewed

Document Identification	Document Title or Description
(Add rows as needed)	

Attachment 6 – Example of Independent Assessment Record File Completion Checklist

INDEPENDENT ASSESSMENT RECORD FILE COMPLETION CHECKLIST

Assessment No. _____

	Complete
Audit Team/Technical Specialist Indoctrination	☐
Assessment Plan (required for audit, optional for surveillance)	☐
Assessment report	☐
Assessment response (if external assessment contained findings)	☐
Assessment Checklist (required for audit)	☐
Closure letter (if external assessment contained findings)	☐
Other	
_____	☐
_____	☐
_____	☐
_____	☐

I have reviewed the above listed records and verified their completeness and legibility.

_____

Lead Auditor/Surveillor Signature Date

Attachment 7 – Example of Surveillance Report

Nuclear Waste Partnership LLC Quality Assurance **(make this a header row)** **Surveillance Report Number:** **Date:**	
Subject	Organization(s) Surveilled
Scope Surveillor(s)	
Requirement References (include revision no.)	
Surveillance Criteria [ ] Checklist on file in QA	
Personnel Contacted (* indicates persons to whom a copy of this report is to be distributed)	
Documents reviewed [ ] See attachment	
Details/Results/Conclusions [ ] WIPP Form(s) identified in Findings _____ _____ _____ _____ [Print and Sign] Date [Print and Sign] Date Lead Auditor/Surveillor Manager, Assurance Programs	
cc: Manager of assessed organization, WIPP Form Coordinator (if containing findings), Compliance Coordinator, Assessment Coordinator, Packaging Manager (if containing packaging issues) Page 1 of (total)	

Make the top row a header to appear on every page.
Insert pagination (page X of Y) at the bottom center

Attachment 8 – Example of NWP QA Independent Assessment Log

NWP QUALITY ASSURANCE
INDEPENDENT ASSESSMENT LOG

Assessment Number	Subject/Manufacturer	Location	Date Performed	Lead Auditor/ Surveillor	Assessment Team	Results Findings/CDAs/ Observations	Status of External Findings
E05-06	Supplier X	Wichita, KS	5/10/2005	(Name)	(Names)	8 Findings 1 CDA 2 Obs.	All findings closed 5/10/05, QA:05-00287

Attachment 9 – Technical Specialist/Auditor Participation Indoctrination for Quality Assurance Audits Example

Technical Specialist/Auditor Participation Indoctrination
for Quality Assurance Audits
Audit XXX0XX
(Audit Title)

In preparation for participation as a Technical specialist/Auditor, this documentation serves as a record that the below listed individual has been indoctrinated per the requirements of the NWP QAPD, and procedure WP 13-QA.03.

Items discussed:

- Applicable portion of the NWP QAPD
- Applicable section of WP 13-QA.03, which includes audit checklist preparation and completion, documentation required during the audit process, and the audit report format.
- Applicable requirements documentation associated with this audit.
- Expectations of an Auditor.
- Potential hazards. Plan accordingly for proper PPE, ALARA, and additional controls deemed necessary, i.e., badging, logistics, etc.

Experience Background:

(Enter short biography for each specialist [auditor as desired] detailing previous experience and qualifications.)

Technical Specialist/Auditor:

Print Name	Signature

Lead Auditor:

Print Name	Signature

Controlled Copy

Effective Date: MAY 3 1 2013

CCP-PO-001
Revision 21

CCP Transuranic Waste Characterization Quality Assurance Project Plan

Approved by: _____ Date: 4-16-13
CCP Site Project Manager
Mike Ramirez

Approved by: _____ Date: 4-16-13
Quality Assurance
Val Cannon

Approved by: _____ Date: 4-16-13
NTPC Manager
Ed Gulbransen

Approved by: _____ Date: 4-17-13
DOE-CBFO Quality Assurance Acting Director
Martin Navarrete

Approved by: _____ Date: 4-17-13
DOE-CBFO
Office of National TRU Program Director
for J.R. Stroble

Nuclear Waste Partnership
Carlsbad, NM

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
3	01/14/2002	Added Tables B-9, B-10, and B-11; Revised the CCP Organization Chart, Figure A-1; and made numerous editorial corrections.
4	05/31/2002	Revised the CCP Organization Chart, Figure A-1 and added 3 new positions in the responsibilities Section A-4; corrected an error in Table B3-1; revised Section B4-2; revised Sections B3-10, B3-12,B-4, and subsections, and revised Tables B3-11, B3-12, and B3-13 to reflect the current WAP.
5	02/05/2003	Revised the CCP Organization Chart, Figure A-1 and section A-4c to update to the Vice President of National TRU Program Division title. Changes made to implement the Drum Age Criteria (DAC) permit Modification.
6	06/11/2003	Updated to Revision 5 of the QAPD.
7	01/08/2004	Added procedures to Table B-9 and Table B-11.
8	03/15/2004	Added procedures to Table B-9, Table B-10 and Table B-11. Modified Site Project Quality Assurance Officer description and CCP Organization chart. Updated Table B1-2, Table B3-3, Section B3-5 to reflect the WAP. Updated Table B3-6, Table B4, Table B1-4, Section B-3a(2), B-3d(1)(a), Table B-1, and Table B-8 to delete PCBs. Section B-1c, 6th bullet revised to reflect the language of the WAP.
9	01/14/05	Revised to add procedures to Table B-9, Table B-10, and Table B-11. Incorporated CBFO DRR comments.
10	02/24/05	Revised to add procedure to table B-11, to incorporate LANL Off-Site Recovery Program Project Scope.
11	03/10/2005	Revised to add procedures to Section B1-2a and Table B-11. Added new table, Table B-9A, Solids Sampling Procedures Used by CCP.
12	03/22/2006	Revised procedures tables, Added new Table B-9, Listing of Permitted hazardous waste numbers and updated responsibilities.

RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
13	11/16/2006	Revised to implement changes to the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/RH PMR.
14	03/28/2007	Revised procedure tables to add references to sections implemented by the procedure, and to align the wording of Section B7-2 with the wording in the permit.
15	08/10/2007	Revised to remove Visual Examination (VE) Expert decisions and signature and date from Table B3-11, Testing Batch Data Report Contents. Added the Idaho National Laboratory (INL) procedures to Attachment 1, Implementing Procedures.
16	10/31/2007	Revised to incorporate statistical terminology and text changes included in September 2007 Class 1 Permit Notifications and update Attachment 1, Implementing Procedures.
17	06/23/2009	Updated to agree with the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit Class 1 Modification dated July 2008.
18	06/30/2010	Revised to incorporate modifications to the Hazardous Waste Facility Permit. To make editorial changes that are needed and to change the Waste Isolation Pilot Plant (WIPP), Waste Information System (WWIS) to WWIS/Waste Data System (WDS).
19	12/29/2010	Revised to include changes from Permit Renewal.
20	06/16/2011	Revised to incorporate Class 2 Permit Modification (Transuranic Package Transporter Model III and Standard Large Box 2).
21	05/31/2013	Revised to clarify hierarchy of documents, adding Nuclear Waste Partnership (NWP) LLC, 13-1, *Quality Assurance Program Description*, also revised due to the Class 2 permit modification request (PMR) to the Waste Isolation Pilot Plant (WIPP) Permit, and made other administrative changes as needed.

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A INTRODUCTION

The Central Characterization Program (CCP) is tasked with characterizing and certifying transuranic (TRU) waste for disposal at the Waste Isolation Pilot Plant (WIPP). Characterization consists of acceptable knowledge (AK), radiography and visual examination (VE). This work is conducted in accordance with the Nuclear Waste Partnership, LLC (NWP), *Quality Assurance Program Description* (QAPD) and this Quality Assurance Project Plan (QAPjP).

This QAPjP describes how waste characterization and certification by the CCP comply with NM 4890139088-TSDF, *Waste Isolation Pilot Plant Hazardous Waste Facility Permit* (HWFP), Attachment C - C6, *Waste Analysis Plan* (WAP) (New Mexico Environment Department [NMED]) and WP 13-1, the NWP QAPD. The format of this QAPjP parallels that of the WAP.

NOTE

Throughout this document, there are references to procedures that implement the requirements. These references appear as a letter and one to three digits in parenthesis where the requirement is stated. Document users should then be able to refer to Attachment 1, Implementing Procedures, where these references list the procedure number and title.

A-1 Background

The WAP is organized such that it specifies that the generator/storage sites (hereinafter referred to as “sites”) conduct their own TRU waste characterization and certification, including their own data generation level and project level data validation and verification. However, some sites (typically small quantity sites) do not have the resources necessary to characterize and certify their TRU waste. Additionally, other sites have expressed interest in using subcontractors to augment their existing capabilities. The CCP was established to assist these sites as well as to provide cost-effective TRU waste characterization, confirmation, and certification, including data generation level and project level data validation and verification.

The CCP may provide its services to a site by contracting directly with that site. If this is the case, the scope of services provided by CCP are specified in a Statement of Work (SOW) issued by the site. The SOW also specifies health and safety requirements, quality requirements, and other requirements specific to that site. A site-specific interface document may also be prepared which provides more detail on the site-CCP interface.

The site has general management oversight responsibility for work performed by the CCP at the site. The site is responsible for ensuring that CCP conducts its activities in compliance with site requirements.

A-2 Scope

This QAPjP specifies quality requirements, management activities, and procedures necessary to meet the specific data quality objectives (DQOs) for TRU waste characterization as defined in the WAP and QAPD. Only TRU waste that has been characterized and certified in accordance with the WAP is shipped to the WIPP facility. TRU waste characterization and certification activities conducted by the CCP are performed in accordance with the requirements and implementing procedures identified in this QAPjP. In some cases, some characterization or certification activities are shared between the CCP and the Host site. The applicable implementing site documentation is specified in a SOW and supplemented by a site interface document, if required.

This QAPjP meets WAP characterization and certification requirements for contact-handled (CH) and remote-handled (RH) TRU waste. As used in this document, the term TRU waste includes TRU and TRU-mixed wastes. The term “characterization” is used where applicable to indicate the entire characterization process. Additionally, the WAP allows waste streams to be divided into waste stream lots. Therefore, the term waste stream may be used to indicate waste stream lots.

B PROJECT DESCRIPTION

Consistent with requirements in the WAP, CCP uses AK to initially characterize TRU waste. Section C4 of this QAPjP outlines the process used to characterize TRU waste using AK. AK documentation provides the basis for identifying the TRU waste eligible for WIPP disposal. The characterization process is based on the following:

- Waste considered for characterization is defense-related and has a TRU alpha activity greater than 100 nanocuries (nCi) per gram (g)
- Resource Conservation and Recovery Act (RCRA) hazardous waste determinations are made initially using AK for TRU waste streams

AK information for each waste stream is compiled in AK reports and supporting documentation. Based on AK, waste streams are delineated according to Summary Category Group, and waste matrix codes are assigned to each waste stream.

The CCP evaluates the characterization necessary to certify a particular waste stream. If additional characterization is needed to supplement site capabilities, the CCP uses mobile characterization facilities to perform characterization activities. Mobile characterization support is provided in accordance with this QAPjP. The CCP has the option to use data or transportation services from established TRU waste characterization activities at a U.S. Department of Energy (DOE)-Carlsbad Field Office (CBFO)-certified site.

B-1 Central Characterization Program Organization and Responsibilities

The CCP organization is shown in Figure B-1, CCP Organization, and responsibilities are described in the following sections. Figure B-1 includes generic CCP positions. More specific positions are described in the SOW or site interface plan.

B-2 Central Characterization Program (CCP) Manager

The CCP Manager is responsible for the day-to-day management and direction of CCP activities related to the characterization, certification, transportation, and disposal of TRU waste for DOE-CBFO. The CCP Manager is responsible for the following:

- Ensuring successful CCP/site interface
- Ensuring CCP plans and operations are coordinated, integrated, and consistent with DOE-CBFO programs, policies, and guidance
- Coordinating CCP activities and functioning as principal point of contact with DOE-CBFO and other regulating agencies
- Reviewing and approving this QAPjP

B-3 Site Project Manager

The Site Project Manager (SPM) oversees TRU waste characterization and certification activities and is responsible for the following:

- Developing, maintaining, reviewing, approving, and implementing CCP procedures and plans
- Scheduling revisions and distribution of CCP procedures and plans and forwarding these documents (if significantly revised) to DOE-CBFO for review and approval before implementation
- Reviewing and approving site interface documents (if used)
- Participating in internal audits and assessments
- Assisting Quality Assurance (QA) in developing project assessment criteria and responses to deficiency reports
- Halting characterization or certification activities if problems affecting the quality of the certification or work processes exist

- Ensuring CCP personnel receive appropriate training and orientation and maintain proficiency in work assignments
- Evaluating AK reports
- Reconciling AK information with characterization data
- Reconciling verified data with DQOs
- Ensuring that conditions adverse to quality are resolved and that corrective actions are implemented in a timely manner
- Preparing and submitting SPM Data Validation Summaries, Waste Stream Profile Forms (WSPFs), Characterization Information Summaries, and Waste Stream Characterization Packages (if requested by DOE-CBFO)
- Reviewing semi-annual QA/Quality Control (QC) summary reports and forwarding them and comments to the DOE-CBFO

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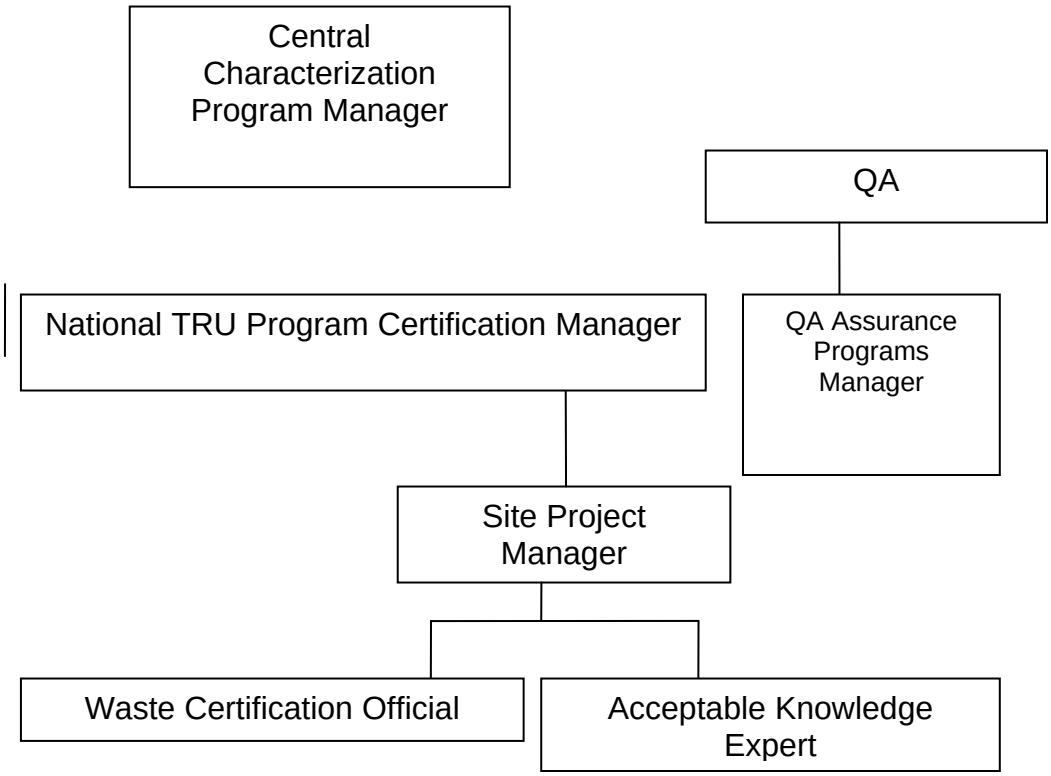
Figure B-1. CCP Organization



C WASTE ANALYSIS PLAN

C-0 Introduction and Attachment Highlights

This QAPjP has been prepared for waste characterization activities to be conducted to meet requirements set forth in 20.4.1.500 New Mexico Administrative Code (NMAC) (incorporating 40 Code of Federal Regulation [CFR] §264.13) for waste disposal at the WIPP. This QAPjP includes test methods for complying with the general waste analysis requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.13), and a description of the QA/QC program. Before the CCP offers waste for shipment to the WIPP, the CCP implements the applicable requirements of this QAPjP.

TRU waste contains TRU radioactive components and may contain hazardous components, as defined in the New Mexico Hazardous Waste Act (HWA) and 20.4.1.200 NMAC (incorporating 40 CFR, §268.35. TRU waste is designated and separately packaged as either CH or RH, based on the radiological dose rate at the surface of the waste container.

The hazardous components of the TRU waste to be managed at the WIPP facility are designated in Table C-5, Listing of Permitted Hazardous Waste Numbers. Some of the waste is also identified by unique state hazardous waste numbers and is certified by the CCP if it meets the conditions of the WIPP Hazardous Waste Permit, Part 2, Table 2.3.4. This document describes the measures that will be taken to ensure that the TRU mixed wastes received at the WIPP facility are within the scope of Table C-5 as established by 20.4.1.500 NMAC (incorporating 40 CFR §264), and that they comply with unit-specific requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.600), Miscellaneous Units.

The CCP has developed this QAPjP to comply with the requirements of the WAP for characterizing CH TRU wastes. The hazardous components of the TRU waste disposed at the WIPP facility are described on a WSPF for each waste stream (T2). TRU waste that may be certified by the CCP are generated at DOE facilities by defense activities, including the following:

- Production of nuclear products
- Plutonium recovery
- Research and development
- Decontamination and decommissioning

Some TRU waste is retrievably stored at the DOE sites. Additional TRU waste is generated and packaged into containers at these sites. Retrievably stored waste is defined as TRU waste generated after 1970 and before NMED notifies the Permittees, by approval of the final audit report, that the characterization requirements of the WAP

at a site have been implemented. Newly-generated waste is defined as TRU waste generated after NMED approves the final audit report for a site. Waste characterization of retrievably stored TRU waste is performed on an ongoing basis, as the waste is retrieved. AK information is assembled for both the retrievably stored and newly generated waste. Waste characterization of newly generated TRU waste is performed as it is generated, although some characterization occurs post-generation.

Waste characterization is defined in Part 1 as the activities performed by the waste generator to satisfy the general waste analysis requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.13[a]) before waste containers have been certified for disposal at WIPP. The characterization process for WIPP waste is presented in Figure C-2, Waste Characterization Process. CCP waste characterization programs are first audited by DOE, with the NMED approving the final audit report. After this, CCP determines whether AK alone is sufficient for characterization, or whether a radiography or VE in conjunction with AK is necessary to adequately characterize wastes. If an AK Sufficiency Determination is sought, information is provided to the Permittees for their review and DOE's provisional approval; NMED determination of adequacy of the AK information is required before final approval by DOE. If the radiography or VE route is chosen, sites proceed to perform radiography or VE in conjunction with AK and in accordance with this QAPjP. Once an AK Sufficiency Determination is obtained, or when required radiography or VE data are obtained, sites would then prepare and submit the WSPF for DOE's approval. Once the WSPF is approved, CCP may ship waste to WIPP. The Permittees will perform waste confirmation prior to shipment of the waste from the generator/storage site to WIPP pursuant to Section C7, performing radiography or VE of a representative subpopulation of certified waste containers, to ensure that the wastes meet the applicable requirements of the *Treatment, Storage, and Disposal Facility Waste Acceptance Criteria* (TSDF-WAC).

C-0a Waste Characterization

Characterization requirements for individual containers of TRU waste are specified on a waste stream basis. The WAP defines a waste stream as waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity. Waste streams are grouped by waste matrix code groups related to the physical and chemical properties of the waste (DOE 1995b). The CCP uses the characterization techniques described in this QAPjP to assign the appropriate waste matrix code groups to waste streams for WIPP disposal. The waste matrix code groups are solidified inorganics, solidified organics, salt waste, soils, lead/cadmium metal, inorganic nonmetal waste, combustible waste, graphite, filters, heterogeneous debris waste, and uncategorized metal. Waste matrix code groups are grouped into three Summary Category Groups: Homogeneous Solids (Summary Category Group S3000), Soil/Gravel (Summary Category Group S4000), and Debris Waste (Summary Category Group S5000).

TRU wastes are initially categorized into the three broad Summary Category Groups that are related to the final physical form of the wastes. This categorization is based on the Summary Category Group constituting the greatest volume of waste for a waste stream. Waste characterization requirements for these groups are specified in Section C-2. Each of the three groups is described below.

S3000 - Homogeneous Solids

Homogeneous solids, are defined as solid materials, excluding soil, that do not meet the NMED criteria for classification as debris (20.4.1.800 NMAC [incorporating 40 CFR §268.2(g) and (h)]). Included in the series of homogeneous solids are inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste. Other waste streams are included in this Summary Category Group based on the specific waste stream types and final waste form. This Summary Category Group is expected to contain toxic metals and spent solvents. This category includes wastes that are at least 50 percent by volume homogeneous solids.

S4000 - Soils/Gravel

This Summary Category Group includes S4000 waste streams that are at least 50 percent by volume soil/gravel. This Summary Category Group is expected to contain toxic metals.

S5000 - Debris Wastes

This Summary Category Group includes heterogenous waste that is at least 50 percent by volume materials that meet the criteria specified in 20.4.1.800 NMAC (incorporating 40 CFR §268.2 [g]). Debris means solid material exceeding a 2.36 inch (in.) (60 millimeter [mm]) particle size that is intended for disposal and that is:

1. a manufactured object, or

2. plant or animal matter, or

3. natural geologic material.

Particles smaller than 2.36 inches in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material.

The most common hazardous constituents in the TRU waste to be managed in the WIPP facility consist of the following:

Metals

Some of the TRU waste to be emplaced in the WIPP facility contains metals for which 20.4.1.200 NMAC (incorporating 40 CFR §261.24), toxicity characteristics were established (EPA Hazardous Waste Numbers D004 through D011). Cadmium, chromium, lead, mercury, selenium, and silver are present in discarded tools and equipment, solidified sludges, cemented laboratory liquids, and waste from decontamination and decommissioning activities. A large percentage of the waste consists of lead-lined gloveboxes, leaded rubber gloves and aprons, lead bricks and piping, lead tape, and other lead items. Lead, because of its radiation-shielding applications, is the most prevalent toxicity-characteristic metal present.

Halogenated Volatile Organic Compounds

Some of the TRU waste to be emplaced in the WIPP facility contains spent halogenated volatile organic compound (VOC) solvents identified in 20.4.1.200 NMAC (incorporating 40 CFR §261.31) (EPA Hazardous Waste Numbers F001 through F005). Tetrachloroethylene; trichloroethylene; methylene chloride; carbon tetrachloride; 1,1,1-trichloroethane; and 1,2-trichloro-1,2,2,-trifluoroethane (EPA Hazardous Waste Numbers F001 and F002) are the most prevalent halogenated organic compounds identified in TRU waste that may be managed at the WIPP facility during the Disposal Phase. These compounds are commonly used to clean metal surfaces prior to plating, polishing, or fabrication; to dissolve other compounds; or as coolants. Because they are highly volatile, only small amounts typically remain on equipment after cleaning or, in the case of treated waste waters, in the sludges after clarification and flocculation. Radiolysis may also generate halogenated volatile organic compounds.

Nonhalogenated Volatile Organic Compounds

Xylene, methanol, and n-butanol are the most prevalent nonhalogenated VOCs in TRU waste that may be managed at the WIPP facility during the Disposal Phase. Like the halogenated VOCs, they are used as degreasers and solvents and are similarly volatile. The same analytical methods that are used for halogenated VOCs are used to detect the presence of nonhalogenated VOCs. Radiolysis may also generate non-halogenated volatile organic compounds.

The CCP will characterize waste in accordance with this QAPjP, and ensure that waste proposed for storage and disposal at WIPP meets the applicable requirements of the

TSDF-WAC in Part 2. The CCP will assemble the AK information in an auditable record[1] for the waste stream as described in Section C4. For those waste streams with an approved AK Sufficiency Determination (see below), radiography or VE per the methods described in Section C1 are not required.

All waste characterization activities specified in this QAPjP and associated attachments shall be carried out at generator/storage sites and DOE approved laboratories in accordance with this QAPjP. The DOE will audit the CCP waste characterization programs and activities as described in Section C-3. Waste characterization activities at the generator/storage sites include the following, although not all these techniques will be used on each container, as discussed in Section C-3:

- Radiography, an x-ray technique used to determine the physical contents of containers.
- VE of the contents of opened containers as an alternative way to determine their physical contents.
- Compilation of AK documentation into an auditable record.

C-0b AK Sufficiency Determination

CCP may submit a request to the Permittees for an AK Sufficiency Determination (Determination Request) to be exempt from the requirement to perform radiography or VE based on AK(T5). The contents of the Determination Request are specified in Section C4-3d.

The Permittees shall evaluate the Determination Request for completeness and technical adequacy. This evaluation shall include, but not be limited to whether the Determination Request is technically sufficient for the following:

[1]"Auditable records" means those records which allow the Permittees to conduct a systematic assessment, analysis, and evaluation of the Permittees' compliance with the WAP and the Permit.

- The Determination Request must include all information specified in Section C4-3d.
- The AK Summary must identify relevant hazardous constituents, and must correctly identify all toxicity characteristic and listed hazardous waste numbers.
- All hazardous waste number assignments must be substantiated by supporting data and, if not, whether this lack of substantiation comprises the interpretation.
- Resolution of data discrepancies between different AK sources must be technically correct and documented.
- The AK Summary must include all the identification of waste material parameter weights by percentage of the material in the waste stream, and determinations must be technically correct and substantiated by supporting information.
- All prohibited items specified in the TSDF-WAC should be addressed and conclusions drawn and must be substantiated by supporting information.
- If the AK record includes process control information specified in Section C4-3b, the information should include procedures, waste manifests, or other documentation demonstrating that the controls were adequate and sufficient.
- The site must provide the supporting information necessary to substantiate technical conclusions with the Determination Request, and this information must be correctly interpreted.

The Permittees will review the Determination Request for technical adequacy and compliance with the requirements of the Permit, using trained and qualified individuals in accordance with standard operating procedures that shall, at a minimum, address all of the technical and procedural requirements listed above. The Permittees shall resolve comments with the CCP.

If DOE determines that the AK is sufficient, it shall inform the public of the Determination Request, the Permittees' evaluation of it, and the date and time of a public meeting to provide information to and solicit comments from interested members of the public regarding the Determination Request. Notice of the meeting and comment period shall be provided by the following methods:

1. Written notice to all individuals on the facility mailing list;
2. Public notice in area newspapers, including the Carlsbad Current-Argus, Albuquerque Journal, and Santa Fe New Mexican;

3. Notice on the WIPP Home Page;

4. E-mail notification as specified In Permit Section 1.11.

DOE shall take written comment on the Determination Request for at least 30 days following the public meeting. DOE shall compile all such comments, including any disagreement between the DOE and commenters.

If DOE provisionally approves the Determination Request, it may forward it along with all relevant information submitted with the Determination Request to NMED for an evaluation that the provisional approval made by the DOE is adequate. DOE shall also provide to NMED, as a separate appendix to the Determination Request, the compilation of all comments and DOE's response to each comment. After submitting a Determination Request to NMED, the Permittees will post a link to the transmittal letter to NMED on the WIPP Home Page and inform those on the e-mail notification list as specified in Permit Section 1.11. Based on the results of NMED's evaluation, the Permittees will notify the CCP whether the AK information is sufficient and the Determination Request is approved. The DOE will not approve a Determination Request that NMED has determined to be inadequate unless the CCP resolves the inadequacies and provides the resolution to NMED for evaluation of adequacy. Should the inadequacies not be resolved to NMED's satisfaction, the DOE shall not submit a Determination Request for the same waste stream at a later date. DOE shall not submit a Determination Request, if a previous Determination Request is pending evaluation by NMED.

In the event the DOE disagrees, in whole or in part, with an evaluation performed by NMED resulting in a determination by NMED that the DOE's provisional approval for a particular waste stream is inadequate, the DOE may seek dispute resolution. The dispute resolution process is specified in Part 1. The Secretary's final decision under Permit Section 1.16.4 shall constitute a final agency action.

By July 1 of each year, the Permittees shall submit to NMED a list of waste streams the Permittees may submit for an AK Sufficiency Determination during the upcoming federal fiscal year. The Permittees will post a link to the transmittal letter to NMED and announce a public meeting to discuss the list with interested members of the public on the WIPP Home Page and inform those on the e-mail notification list as specified in Permit Section 1.11.

If the CCP does not submit a Determination Request, or if the DOE does not approve a Determination Request, or if NMED finds that the DOE's provisional approval of a Determination Request is inadequate, the CCP shall perform radiography or VE on 100 percent of the containers in a waste stream.

If the CCP submits a Determination Request, the DOE provisionally approves the Determination Request and NMED finds that the DOE's provisional approval is adequate, neither radiography nor VE of the waste stream is required.

C-0c Waste Stream Profile Form Completion

After a complete AK record has been compiled and either a Determination Request has been approved by the DOE or the CCP has completed the applicable representative testing requirements specified in Section C1, the CCP will complete a WSPF and Characterization Information Summary (CIS) (T2). The requirements for the completion of a WSPF and a CIS are specified in Sections C3-6b(1) and C3-6b(2) respectively.

The WSPF and the CIS for the waste stream resulting from waste characterization activities are transmitted to the Permittees, who shall review them for completeness, and screen them for acceptance before the CCP proceeds with payload assembly of TRU waste into the CH or RH Packaging. The review and approval process will ensure that the submitted waste analysis information is sufficient to meet the DQOs for AK in Section C-4a(1) and allow the Permittees to demonstrate compliance with the requirements of the WIPP-WAP. Only TRU waste that meets the characterization requirements of the WAP is certified by the CCP. Only waste certified to meet the TSDF-WAC, specified in the WAP, is accepted at the WIPP facility for disposal in the permitted Underground Hazardous Waste Disposal Unit (HWDU). DOE will approve and provide NMED with copies of the approved WSPF and accompanying CIS prior to waste stream shipment. Upon notification of DOE's approval of the WSPF, the CCP may be authorized to ship waste to WIPP.

In the event that the Permittees request detailed information on a waste stream, the CCP provides a Waste Stream Characterization Package, as described in Section C3-6b(3). For each waste stream, this package will include the WSPF, the CIS, and the AK summary. The Waste Stream Characterization Package will also include specific Batch Data Reports (BDRs), and raw data associated with waste container characterization as requested by the Permittees.

C-0d Waste Confirmation

The Permittees will perform waste confirmation on a representative subpopulation of each waste stream shipment after certification and prior to shipment pursuant to Section C7. The Permittees will use radiography, review of radiography audio/video recordings, VE, or review of VE records (e.g., VE data sheets or packaging logs) to examine at least 7 percent of each waste stream shipment to confirm that the waste does not contain ignitable, corrosive, or reactive waste. Waste confirmation will be performed by the Permittees prior to shipment of the waste from the generator/storage site to WIPP.

C-1 Identification of TRU Waste to be Managed at the WIPP Facility

C-1a Waste Stream Identification

TRU waste destined for disposal at WIPP is characterized on a waste stream basis. The waste streams are delineated using AK. Required AK is specified in Section C-3a and Section C-4 of this QAPjP.

C-1b Waste Summary Category Groups and Hazardous Waste Accepted at the WIPP Facility

Once a waste stream is delineated, a waste matrix code is assigned to the waste stream based on its physical form. Waste streams are then assigned to one of the Summary Category Groups; S3000-Homogeneous Solids, S4000-Soils/Gravel, and S5000-Debris Wastes. These Summary Category Groups are then used to determine further characterization requirements.

The CCP considers only those TRU waste streams that are assigned EPA hazardous waste numbers listed in Table C-5. Waste identified by unique state hazardous waste numbers is acceptable at WIPP provided they meet the requirements of the TSDF-WAC. The CCP performs characterization of all waste streams as required by the WAP. If during the characterization process, new hazardous waste numbers are identified, those wastes are prohibited for disposal at the WIPP facility until a permit modification has been submitted and approved by NMED.

C-1c Waste Prohibited at the WIPP Facility

The following TRU wastes are prohibited for disposal at the WIPP facility:

- Liquid waste is not acceptable at WIPP. Liquid in the quantities delineated below is acceptable.
  - Observable liquid shall be no more than 1 percent by volume of the outermost container at the time of radiography or visual examination
  - Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited
  - Containers with hazardous waste number U134 assigned shall have no observable liquid
  - Overpacking the outermost container that was examined during radiography or VE or redistributing untreated liquid within the container shall not be used to meet the volume limits

- Non-radionuclide pyrophoric materials, such as elemental potassium.
- Hazardous wastes not occurring as co-contaminants with TRU waste (non-mixed hazardous waste).
- Wastes incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes.
- Wastes containing explosives or compressed gases.
- Wastes with polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization.
- Wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (Hazardous Waste Numbers D001, D002, or D003).
- Any waste container from a waste stream (or waste stream lot) that has not undergone either radiographic or VE of a statistically representative subpopulation of the waste stream in each shipment, pursuant to Section C7.
- Any waste container from a waste stream which has not been preceded by an appropriate, certified WSPF (see Section C-1d).
- Waste that has ever been managed as high-level waste and waste from tanks specified in Table C-4, Waste Tanks Subject to Exclusion, unless specifically approved through a Class 3 permit modification.

Before accepting a container holding TRU waste, the Permittees will perform waste confirmation activities pursuant to Section C7 on each waste stream shipped to confirm that the waste does not contain ignitable, corrosive, or reactive waste and the assigned EPA hazardous waste numbers are allowed for storage and disposal by this QAPjP. Waste confirmation activities will be performed on at least 7 percent of each waste stream shipment. If a waste stream shipment contains fewer than 14 containers, one container will be examined to satisfy waste confirmation requirements. Section C-4 and Section C7 include descriptions of the waste confirmation processes that the Permittees will conduct prior to receiving a shipment at the WIPP facility.

Containers are vented through filters allowing any gases that are generated by radiolytic and microbial processes within a waste container to escape, thereby preventing over pressurization or development of conditions within the container that would lead to the formation of ignitable, corrosive, reactive, or other characteristic wastes. To ensure the integrity of the WIPP facility, waste streams identified to contain incompatible materials or materials incompatible with waste containers are not shipped to WIPP unless they are treated to remove the incompatibility. The CCP does not certify waste streams

identified to contain incompatible materials or materials incompatible with waste containers or backfill.

C-1d Control of Waste Acceptance

The CCP will provide a WSPF and CIS to the Permittee for each waste stream prior to shipment of the waste (T2). The WSPF and CIS elements are found in Section C3-6b(1) and Section C3-6b(2). The CCP will provide the WSPF to the Permittees for each waste stream prior to its acceptance for disposal at WIPP. The WSPF and the CIS will be transmitted to the Permittees for each waste stream. After WSPF submittal, if continued waste characterization activities reveal discrepancies that identify different hazardous waste numbers or indicate that the waste belongs to a different waste stream, the waste is redefined to a separate waste stream and a new WSPF is submitted.

The Permittees are responsible for the review of the WSPF and CISs to verify compliance with the restrictions on TRU wastes for WIPP disposal. Waste characterization data ensures the absence of prohibited items specified in Section C-1c. CCP determines by procedure the specific circumstances under which a WSPF is to be revised versus when a new WSPF is required.

The CCP provides a Waste Stream Characterization Package (as described in Section C3-6b(3)) to the Permittees upon request. The option for the Permittees to request additional information ensures that the waste being offered for disposal is adequately characterized and accurately described on the WSPF.

C-1e Waste Generating Processes at the WIPP Facility

Not applicable. This section applies to the Permittee.

C-2 Waste Characterization Program Requirements and Waste Characterization Parameters

The CCP has developed the procedures which specify the programmatic waste characterization requirements (Q10). DOE will evaluate the procedures during audits and as part of the review and approve of the WSPF.

CCP must notify the Permittees and obtain DOE approval prior to making data-affecting modifications to procedures (Q10). Program procedures shall address the following minimum elements:

- Waste characterization and certification procedures for retrievably stored and newly generated wastes to be sent to the WIPP facility.

- Methods used to ensure prohibited items are documented and managed. These will include procedures for performing radiography, VE, or treatment, if these methods are used to ensure prohibited items are not present in the waste prior to shipment of the waste to WIPP.

- Identify the organization(s) responsible for compliance with waste characterization and certification procedures.

- Identify the oversight procedures and frequency of actions to verify compliance with waste characterization and certification procedures.

- Develop training specific to waste characterization and certification procedures.

- Ensure that personnel may stop work if noncompliance with waste characterization or certification procedures is identified.

- Develop a nonconformance process that complies with the requirements in Section C3 to document and establish corrective actions.

- As part of the corrective action process, assess the potential time frame of the noncompliance, the potentially affected waste population(s), and the reassessment and recertification of those wastes.

- A listing of all approved hazardous waste numbers which are acceptable at WIPP are included in Table C-5.

For those waste streams or containers that are not amenable to radiography (e.g., RH TRU waste, direct loaded ten-drum overpacks [TDOPs]) for waste confirmation by the Permittees pursuant to Section C7, CCP VE data may be used for waste acceptance. In those cases, the Permittees will review the CCP VE procedures to ensure that data sufficient for the Permittees' waste acceptance activities pursuant to Section C7 will be obtained and the procedures meet the minimum requirements for VE specified in Section C1-1.

The following waste characterization parameters are obtained from the CCP prior to waste certification:

- Determination whether TRU waste streams comply with the applicable provisions of the TSDF-WAC.

- Determination whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C).

- Determination whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D).

- Estimation of waste material parameter weights.

Table C-1, Summary of Parameters, Characteristic Methods, and Rationale for Transuranic Mixed Waste, provides the parameters of interest for the constituent groupings and testing methodologies.

C-3 Generator Waste Characterization Methods

The characterization techniques used by the CCP include AK and may also include, as necessary, VE, and radiography. Characterization activities are performed in accordance with this QAPjP. Table C-1, Summary of Parameters, Characterization Methods, and Rationale for Transuranic Mixed Waste, provides a summary of the characterization requirements for TRU waste.

C-3a Acceptable Knowledge

AK is used in TRU waste characterization activities in five ways:

- To delineate TRU waste streams

- To assess whether TRU mixed wastes comply with the TSDF-WAC

- To assess whether TRU wastes exhibit a hazardous characteristic (New Mexico Hazardous Waste Management Regulations in 20.4.1.200 NMAC incorporating 40 CFR §261 Subpart C)

- To assess whether TRU wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D)

- To estimate waste material parameter weights

AK is discussed in detail in Section C4, which outlines the minimum set of requirements and DQOs met by the CCP in order to use AK.

C-3b Radiography and Visual Examination

Radiography and VE are nondestructive qualitative and quantitative techniques used to identify and verify waste container contents as specified in Section C1. The CCP performs radiography or VE of 100 percent of CH-TRU waste containers in waste streams except for those waste streams for which the DOE approves a Determination Request. No RH-TRU waste will be shipped to WIPP for storage or disposal without

documentation of radiography or VE of 100 percent of the containers as specified in Section C1. VE consists of either observing the filling of waste containers or opening full containers and physically examining their contents. Radiography and/or VE are used, when necessary, to examine a waste container to verify the physical form of the waste matches its waste stream description as determined by AK. These techniques detect observable liquid in excess of TSDF-WAC limits and containerized gases which are prohibited for WIPP disposal. The prohibition of liquid in excess of TSDF-WAC limits and containerized gases prevents the shipment of corrosive, ignitable, or reactive wastes. Radiography and/or VE are also able to verify the physical form of the waste matches its waste stream description (i.e., Homogeneous Solids, Soil/Gravel, or Debris Waste [including uncategorized metals]).

If the physical form does not match the waste stream description, the waste is designated as another waste stream and assigned the preliminary hazardous waste numbers associated with that new waste stream assignment. That is, if radiography and/or VE indicate that the waste does not match the waste stream description produced by AK characterization, a nonconformance report (NCR) is completed and the inconsistency resolved as specified in Section C4 (Q5), and the NCR will be dispositioned as specified in Section C3-7. The proper waste stream assignment is determined (including preparation of a new WSPF), the correct hazardous waste numbers are assigned, and the resolution is documented. The AK verification process is discussed in Section C4.

If CCP uses VE, the detection of any liquid in non-transparent internal containers, detected from shaking the internal container, is handled by assuming that the internal container is filled with liquid and adding this volume to the total liquid in the container being characterized using VE. The container being characterized using VE is then repackaged or rejected to exclude the internal container if it does not meet the requirements of the TSDF-WAC. When radiography is used or VE of transparent containers is performed, if any liquid in internal containers is detected, the volume of liquid is added to the total for the container being characterized using radiography or VE. Radiography, or the equivalent, is used as necessary on the existing or stored waste containers to verify the physical characteristics of the TRU waste corresponding with its waste stream identification and waste matrix code and to identify prohibited items. Radiographic examination protocols and QA/QC methods are provided in Section C1. Radiography and VE shall be subject to the Audit and Surveillance Program.

C-4 Data Verification and Quality Assurance

The CCP ensures that its applicable waste characterization process performance for generator/storage sites sending TRU waste to the WIPP for disposal meets WAP requirements through data validation, verification, usability and reporting controls. Verification occurs at three levels: 1) the CCP data generation level, 2) the CCP project

level, which consists of verification and validation by the CCP to ensure that applicable WAP requirements are met and; 3) the Permittee level. The validation and verification process and requirements at each level are described in Section C3-4. The validation verification process at the Permittee Level is also described in C-5.

C-4a Data Generation and Project Level Verification Requirements

C-4a(1) Data Quality Objectives

The waste characterization data obtained through implementation of this QAPjP are used by the Permittees to ensure that the regulatory requirements of the WAP are met with regard to compliance and to ensure that TRU wastes are properly managed during the disposal phase.

To satisfy the RCRA regulatory compliance requirements, the following are DQOs established by the WAP and flowed down to this QAPjP (T2):

Acceptable Knowledge

- To delineate TRU waste streams.
- To assess whether TRU mixed wastes comply with the applicable requirements of the TSDF-WAC.
- To assess whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261, Subpart C).
- To assess whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261, Subpart D).
- To estimate waste material parameter weights.

Radiography and VE

- Verify the TRU mixed waste streams contain no prohibited items and to verify the physical form of the waste matches the waste stream description as to be determined by AK.

Reconciliation of these DQOs by the SPM as applicable, is addressed in Section C3-11. Reconciliation requires determining whether sufficient types, quality, and quantity of data have been collected to ensure that the DQOs cited above can be achieved.

C-4a(2) Quality Assurance Objectives

The CCP shall demonstrate compliance with each Quality Assurance Objective (QAO) associated with the characterization methods in Section C3. The SPM performs reconciliation of the data with the DQOs established in this QAPjP. The SPM concludes that all of the DQOs have been met for the characterization of the waste stream prior to submitting a WSPF to the DOE for approval (T2).

The following QAO elements are considered for each technique, as a minimum:

- Precision - a measure of the mutual agreement among multiple measurements
- Accuracy - the degree of agreement between a measurement result and the true or known value
- Completeness - a measure of the amount of valid data obtained from a method compared to the total amount of data obtained (expressed as a percentage)
- Comparability - the degree to which one data set can be compared to another
- Representativeness - the degree to which sample data represent characteristics of a population

A more detailed discussion of the QAOs can be found in Section C3, which describes the QAOs associated with each test method.

C-4a(3) Data Generation

BDRs, in a format approved by the DOE, are used by CCP for reporting waste characterization data. The CCP formats for reporting waste characterization data in BDRs are specified in several procedures. These procedures comply with the waste characterization data reporting requirements described in Section C3.

C-4a(4) Data Verification

BDRs document the testing, and on-line results from required characterization activities, and required QA/QC activities. Data validation, review, and verification are performed at the data generation level and the CCP project level before the required data are transmitted to the Permittees (T1). Section C3 discusses the data validation process in greater detail. NMED may request, through the Permittees, copies of any BDR and/or the raw data validated by the CCP to check the DOE's audit of the validation and verification process.

C-4a(5) Data Transmittal

As part of the waste characterization data submittal, the CCP transmits the data electronically to the Permittees via the WIPP Waste Information System (WWIS)/Waste Data System (WDS) (T30, T530). Data will be entered into the WWIS/WDS in the exact format required by the data base as specified in Section C-5a(1) for WWIS/WDS reporting requirements and the *Waste Data System User's Manual* (DOE 2009) for the WWIS/WDS data fields and format requirements. BDRs include the information required by Section C3-4 and are transmitted by hard copy or electronically (provided a hard copy is available on demand) from the data generation level to the CCP project level.

Once a waste stream is fully characterized the SPM submits a WSPF, accompanied by a CIS for that waste stream to the Permittees, which includes a record of reconciliation with DQOs as described in Sections C3-6b(1) and C3-6b(2).

The WSPF, the CIS, and information from the WWIS/WDS is used as the basis for acceptance of waste characterization information on TRU wastes to be disposed of at WIPP.

C-4a(6) Records Management

Records related to waste characterization activities performed by the generator/storage sites will be maintained in the testing facility files or generator/storage site project files or at the WIPP Records Archive facility. Raw data obtained by testing TRU mixed waste in support of the WAP will be identifiable, legible, and provide documentary evidence of quality. TRU mixed waste characterization records submitted to the Permittees shall be maintained in the WIPP facility operating record and be available for inspection by NMED. A detailed description of CCP site-specific records management activities is provided in Section C7.

Records inventory and disposition schedule (RIDS) or an equivalent system shall be prepared and approved by CCP. All records relevant to an enforcement action under this Permit, regardless of disposition, shall be maintained in CCP Records at the generator/storage site or at the WIPP Records Archive facility until NMED determines they are no longer needed for enforcement action, and then dispositioned as specified in the approved RIDS. All waste characterization data and related QA/QC records for TRU mixed waste to be shipped to the WIPP facility are designated as either Lifetime Records or Non-Permanent Records. Records that are designated as Lifetime Records shall be maintained for the life of the waste characterization program by CCP Records or generator/storage sites plus six years or transferred for permanent archival storage to the WIPP Records Archive facility.

Waste characterization records include characterization records (i.e., headspace gas sampling and homogeneous solids and soil/gravel sampling/analysis) generated through implementation of previous requirements in this WAP. Those waste characterization records designated as Non-Permanent Records shall be maintained for 10 years from the date of (record) generation by CCP Records or at the participating generator/storage site or at the WIPP Records Archive facility and then dispositioned according to their approved RIDS. If a generator/storage site ceases to operate, all records shall be transferred before closeout to the Permittees for management at the WIPP Records Archive facility. Table C-2, Required Program Records, is a listing of records designated as Lifetime Records and Non-Permanent Records.

Classified information will not be transferred to WIPP. Notations will be provided to the Permittees indicating the absence of classified information. The approved CCP RIDS will identify the appropriate disposition of classified information. Nothing in the WIPP Permit is intended to, nor should it be interpreted to, require disclosure of any DOE classified information to persons without appropriate clearance to view such information.

C-5 Permittee Level Waste Screening and Verification of TRU Mixed Waste

This section is not applicable to CCP. This section applies to the Permittees.

C-5a Phase I Waste Stream Screening and Verification

The first phase of the waste screening and verification process occurs before TRU waste is shipped to the WIPP facility. Before the Permittees begin the process of accepting TRU waste from the CCP, an initial audit is conducted as part of the Audit and Surveillance Program. The audit of CCP provides verification of characterization procedures; BDR preparation; and recordkeeping that ensures that all applicable provisions of the WAP requirements are met. Another portion of the Phase I verification is the WSPF approval process. At the WIPP facility, this process includes verification that all of the required elements of a WSPF and CIS are present and that the summarized waste characterization information meets acceptance criteria required for compliance with the WAP (Section C3-6b(1)).

The CCP has prepared this QAPjP, which includes applicable WAP requirements. This document is submitted to DOE for review and approval. The CCP implements the specific parameters of this QAPjP after Permittee approval. An initial audit is performed after QAPjP implementation and prior to the CCP being certified for shipment of waste to WIPP. Additional audits, focusing on the results of waste characterization, are performed at least annually. The DOE has the right to conduct unannounced audits and to examine any records that are related to the scope of the audit. See Section C-5a(3) for further information regarding audits.

When the required waste stream characterization data have been collected by the CCP and the initial audit is successfully completed, the SPM will verify that the waste stream characterization meets the applicable WAP requirements as part of the project level verification (T2). If the waste characterization does not meet the applicable requirements of the WAP, the waste stream cannot be managed, stored, or disposed of at the WIPP until those requirements are met. The SPM will then complete the WSPF and submit it to the Permittees, along with the accompanying CIS for that waste stream. All data necessary to check the accuracy of the WSPF is transmitted to the Permittees. This provides notification that the CCP considers that the waste stream (identified by the waste stream identification number) has been adequately characterized for disposal prior to shipment to WIPP. The Permittees then compare radiography and VE data obtained subsequent to submittal and approval of the WSPF (and prior to submittal) with characterization information presented on this form. If the Permittees determine (through the data comparison) that the characterization information is adequate, DOE will approve the WSPF. Prior to the first shipment of containers from the approved waste stream, the approved WSPF and accompanying CIS is provided to NMED. If the data comparison indicates that analyzed containers have hazardous wastes not present on the WSPF, or a different waste matrix code applies, the WSPF is in error and is resubmitted. Ongoing WSPF examination is discussed in detail in Section C-5a(2).

Audits of CCP will be conducted as part of the Audit and Surveillance Program. The RCRA portion of the CCP audit program will provide on-site verification of waste characterization procedures; BDR preparation; and record keeping to ensure that all applicable provisions of the WAP requirements are met. As part of the waste characterization data submittal, the CCP also transmits the data on a container basis via the WWIS/WDS prior to shipment of that container. This data submittal occurs at any time as the data are being collected, but is complete for each container prior to shipment of that container. The WWIS/WDS conducts internal edit/limit checks based on the approved WSPF. The Permittees compare ongoing characterization data obtained and submitted via the WWIS/WDS to the approved WSPF. If this comparison shows that containers have hazardous wastes not reported on the WSPF, or a different waste matrix code applies, the data are rejected and the waste containers are not accepted for shipment until a new or revised WSPF is submitted to Permittees' and approved by the DOE.

If discrepancies regarding hazardous waste number assignment or Waste Matrix Code designation arise as a result of the Phase I review, the CCP is contacted by the Permittees and provides the necessary additional information to resolve the discrepancy before that waste stream is approved for disposal at the WIPP facility. If the discrepancy is not resolved, the waste stream is not approved for shipment.

C-5a(1) WWIS/WDS Description

The CCP supplies the required data to the Permittees via the WWIS/WDS (T30, T530). The WWIS/WDS Data Dictionary includes all of the data fields, the field format and the limits associated with the data as established by the WIPP WAP. These data will be subjected to edit and limit checks that are performed automatically by the database, as defined in the *Waste Data System User's Manual* DOE/WIPP-09-3427(DOE, 2009). The Permittees will coordinate the data transmission with CCP. Actual data transmission will use appropriate technology to ensure the integrity of the data transmissions. The Permittees will require sites with large waste inventories and large databases to populate a data structure provided by the Permittees that contains the required data dictionary fields that are appropriate for the waste stream (or waste streams) at the site. The Permittees will access these data via the Internet to ensure an efficient transfer of this data. Small quantity sites will be given a similar data structure by the Permittees that is tailored to their types of waste. Sites with very small quantities of waste will be provided with the ability to assemble the data interactively to this data structure on the WWIS/WDS.

The Permittees will use the WWIS/WDS to verify that all of the supplied data meet the applicable edit and limit checks prior to the shipment of any TRU waste to WIPP. The WWIS/WDS automatically notifies the CCP if any of the supplied data fails to meet the requirements of the edit and limit checks via an appropriate error message. The CCP corrects the discrepancy with the waste or the waste data and re-transmits the corrected data prior to acceptance of the data by the WWIS/WDS. The Permittees review data reported for each container of each shipment prior to providing notification to the CCP that the shipment is acceptable.

Access to the WWIS/WDS is controlled by the Permittees' Data Administrator (DA) who controls the WWIS/WDS users based on approval from management personnel.

The CCP only has access to CCP data supplied to WWIS/WDS, and only until the data have been formally accepted by the Permittees. After the data have been accepted, the data are protected from indiscriminate change and only changed by an authorized DA.

C-5a(2) Examination of the Waste Stream Profile Form and Container Data Checks

The Permittees verify the completeness and accuracy of the WSPF (Section C3-6b(1)). The assignment of the waste stream description, waste matrix code group, and Summary Category Groups; the AK summary documentation; the methods used for characterization; the DOE certification, and appropriate designation of hazardous waste number(s) are examined by the Permittees. If the WSPF is inaccurate, efforts are made to resolve discrepancies by contacting the CCP in order for the waste stream to be eligible for shipment to the WIPP facility. If discrepancies in the

waste stream are detected, the CCP implements a non-conformance action to identify, document, and report discrepancies.

The WSPF shall pass all verification checks by the Permittees in order for the waste stream to be approved by DOE for shipment to the WIPP facility. The WSPF check against waste container data will occur during the initial WSPF process (Section C-5a). Waste data transferred via the WWIS/WDS after WSPF approval is compared with the approved WSPF. Any container from an approved hazardous waste stream with a description different from its WSPF is not shipped to the WIPP for disposal.
The CCP verifies that the three different types of data specified below are available for every container holding TRU waste before that waste is managed, stored, or disposed at WIPP: 1) an assignment of the waste stream's waste description (by waste matrix codes) and waste matrix code group; 2) a determination of ignitability, reactivity, and corrosivity; and 3) a determination of compatibility. The CIS indicates if the waste was checked for the characteristics of ignitability, corrosivity, and reactivity.

Any container with unresolved discrepancies associated with hazardous waste characterization will not be managed, stored, or disposed at the WIPP facility until the discrepancies are resolved. If discrepancies cannot be resolved, the DOE will revoke the approval status of the waste stream and CCP will suspend shipments of the waste stream. Waste stream approval will not be reinstated until the CCP demonstrates all corrective actions have been implemented and the CCP waste characterization program is reassessed by the DOE.

C-5a(3) Audit and Surveillance Program

This section is not applicable to the CCP. It applies to the Permittees.

C-5b Phase II Waste Shipment Screening and Verification

For each container shipped, the CCP provides the following information (T86):

Hazardous Waste Manifest Information:

- Generator/storage site name and EPA Identification Number
- CCP contact name and phone number
- Quantity of waste
- List of up to six state and/or federal hazardous waste numbers in each line item

- Listing of all shipping container identification numbers (IDs) (Shipping Package serial number)

- Signature of authorized generator representative

Specific Waste Container information:

- Waste Stream Identification Number
- List of hazardous Waste Numbers per Container
- Certification Data
- Shipping Data (assembly numbers, ship date, shipping category, etc.)

This information is also supplied electronically to the WWIS/WDS. The container-specific information will be supplied electronically as described in Section C-5a(1), and is supplied prior to shipment.

C-5b(1) Examination of the EPA Uniform Hazardous Waste Manifest and Associated Waste Tracking Information

Manifest discrepancies will be identified during manifest examination and container bar-code WWIS/WDS data comparison. A manifest discrepancy is a difference between the quantity or type of hazardous waste designated on the manifest and the quantity or type of hazardous waste the WIPP facility actually receives. The CCP technical contact (as listed on the manifest) is contacted to resolve the discrepancy. Errors on the manifest are corrected by the WIPP facility with a verbal (followed by a mandatory written) concurrence by the CCP technical contact. If the manifest discrepancies are not resolved in thirty (30) days of waste receipt, the shipment is returned to the facility where the CCP performed the characterization.

C-5b(2) Examination of the Land Disposal Restriction Notice

TRU waste designated by the Secretary of Energy for disposal at WIPP is exempt from the Land Disposal Restrictions (LDRs) by the WIPP Land Withdrawal Act Amendment (Public Law 104-201). This amendment states that WIPP “Waste is exempted from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S.C. 6924[m]) and shall not be subjected to the Land Disposal prohibitions in section 3004(d), (e), (f), and (g) of the Solid Waste Disposal Act.”

Therefore, with the initial shipment of a TRU waste stream, the CCP provides the Permittees with a onetime written notice. The notice includes the information listed below:

Land Disposal Restriction Notice Information:

- EPA hazardous waste numbers and Manifest Numbers of first shipment of a mixed waste stream
- Statement: this waste is not prohibited from land disposal
- Date the waste is subject to prohibition

This information is the applicable information taken from column "268.7(a)(4)" of the "Generator Paperwork Requirements Table" in 20.4.1.800 NMAC (incorporating 40 CFR §268.7(a)(4)). Note that item "5" from the "Generator Paperwork Requirements Table" is not applicable since waste analysis data are provided electronically via the WWIS/WDS and item "7" is not applicable since waste designated by the Secretary of Energy for disposal at WIPP is exempted from the treatment standards.

The Permittees review the LDR notice for accuracy and completeness. The CCP prepares this notice in accordance with the applicable requirements of 20.4.1.800N MAC (incorporating 40 CFR §268.7(a)(4)).

C-5b(3) Verification

This section is not applicable to CCP. This section applies to the Permittees.

C-6 Permittees' Waste Shipment Screening QA/QC

This section is not applicable to CCP. This section applies to the Permittees.

C-7 Records Management and Reporting

All waste characterization data for each TRU waste container transmitted to WIPP shall be maintained by the Permittees for the active life of the WIPP facility plus two years (Q8). The active life of the WIPP facility is defined as the period from the initial receipt of TRU waste at the facility until NMED receives certification of final closure of the facility. After their active life, the records shall be retired to the WIPP Records Archive facility and maintained for 30 years. These records will then be offered to the National Archives. However, this disposition requirement does not preclude the inclusion of these records in the permanent marker system or other requirements for institutional control.

Waste characterization and waste confirmation data and documents related to waste characterization that are part of the WIPP facility operating record are managed in accordance with the following guidelines:

C-7a General Requirements

- Records shall be legible
- Corrections shall be made with a single line through the incorrect information, and the date and initial of the person making the correction shall be added
- Black ink is encouraged, unless a copy test has been conducted to ensure the other color ink will copy
- Use of highlighters on records is discouraged
- Records shall be reviewed for completeness
- Records shall be validated by the cognizant manager or designee

C-7b Records Storage

- Active records shall be stored when not in use
- Quality records shall be kept in a one-hour (certified) fire-rated container or a copy of a record shall be stored separately (sufficiently remote from the original) in order to prevent destruction of both copies as a result of a single event such as fire or natural disaster
- Unauthorized access to the records is controlled by locking the storage container or controlling personnel access to the storage area

C-8 Reporting

This section is not applicable to CCP. This section applies to the Permittees.

Table C-1. Summary of Parameters, Characterization Methods, and Rationale for Transuranic Mixed Waste

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S3000-Homogeneous Solids	• Solidified inorganics • Salt waste • Solidified organics	Physical waste form	Acceptable knowledge, radiography and/or visual examination	• Determine waste matrix • Demonstrate compliance with waste acceptance criteria (e.g., no liquid in excess of TSDF-WAC limits, no incompatible wastes, no compressed gases)
S4000-Soil/Gravel	• Contaminated soil/debris			
S5000-Debris Waste	• Uncategorized metal (metal waste other than lead/cadmium) • Lead/cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous debris waste • Composite filter waste	Hazardous constituents • Listed • Characteristic	Acceptable knowledge	• Determine assignment of EPA hazardous waste numbers

Table C-2. Required Program Records Maintained in Generator/Storage Site Project Files

Lifetime Records
• Field sampling data forms • Field and laboratory chain-of-custody forms • Test facility and laboratory batch data reports • Waste Stream Characterization Packages • Sampling plans • Data reduction, validation, and reporting documentation • AK documentation • WSPFs and CIS
Non-Permanent Records
• Nonconformance documentation • Variance documentation • Assessment documentation • Gas canister tags • Methods performance documentation • PDP documentation • Sampling equipment certifications • Calculations and related software documentation • Training/qualification records • QAPjPs documentation (all revisions) • Calibration documentation • Analytical raw data • Procurement records • QA and technical procedures (all revisions) • Audio/video recordings (radiography, VE)

Table C-3. WIPP Waste Information System Data Fields[a]

Characterization Module Data Fields [b]	
Container ID [c] Generator EPA ID Generator Address Generator Name Generator Contact Hazardous Code Layers of Packaging Liner Exists Liner Hole Size Filter Model Number of Filters Installed Item Description Code Haz. Manifest Number NDE Complete [e]	Transporter EPA ID Transporter Name Visual Exam Container [e] Waste Material Parameter [d] Waste Material Weight [d] Waste Matrix Code Waste Matrix Code Group Waste Stream Profile Number
Certification Module Data Fields	
Container ID [c] Container type Container Weight Contact Dose Rate Container Certification date Container Closure Date Handling Code	
Transportation Data Module	
Contact Handled Package Number Assembly Number[f] Container IDs [c,d] ICV Closure Date Ship Date Receive Date	
Disposal Module Data	
Container ID [c] Disposal Date Disposal Location	

[a] This is not a complete list of the WWIS/WDS data fields.
[b] Some of the fields required for characterization are also required for certification and/or transportation.
[c] Container ID is the main relational field in the WWIS/WDS Database.
[d] This is a multiple occurring field for each waste material parameter, nuclide, etc.
[e] These are logical fields requiring only a yes/no.
[f] Required for 7-Packs of 55-gallon drums, 4-packs of 85-gallon drums, or 3-packs of 100-gallon drums to tie all of the drums in that assembly together. This facilitates the identification of waste containers in a shipment without need to breakup the assembly.

Table C-4. Waste Tanks Subject to Exclusion

Hanford Site - 177 Tanks	
A-101 through A-106	C-201 through C-204
AN-101 through AN-107	S-101 through S-112
AP-101 through AP-108	SX-101 through SX-115
AW-101 through AW-106	SY-101 through SY-103
AX-101 through AX-104	T-101 through T-112
AY-101 through AY-102	T-201 through T-204
B-101 through B-112	TX-101 through TX-118
B-201 through B-204	TY-101 through TY-106
BX-101 through BX-112	U-101 through U-112
BY-101 through BY-112	U-201 through U-204
C-101 through C-112	
SRS - 51 Tanks	
Tank 1 through 51	
Idaho National Laboratory - 15 Tanks	
WM-103 through WM-106	WM-180 through 190

Table C-5. Listing of Permitted Hazardous Waste Numbers

EPA Hazardous Waste Numbers			
F001	D019	D043	U079
F002	D021	P015	U103
F003	D022	P030	U105
F004	D026	P098	U108
F005	D027	P099	U122
F006	D028	P106	U133*
F007	D029	P120	U134*
F009	D030	U002*	U151
D004	D032	U003*	U154*
D005	D033	U019*	U159*
D006	D034	U037	U196
D007	D035	U043	U209
D008	D036	U044	U210
D009	D037	U052	U220
D010	D038	U070	U226
D011	D039	U072	U228
D018	D040	U078	U239*

* Acceptance of U-numbered wastes listed for reactivity, ignitability, or corrosivity characteristics is contingent upon a demonstration that the wastes no longer exhibit the characteristic of reactivity, ignitability, or corrosivity.

Figure C-1. Waste Stream Profile Form (Example Only)

(1) Waste Stream Profile Number:					
(2) Generator site name:			(3) Generator site EPA ID:		
(4) Technical contact:			(5) Technical contact phone number:		
(6) Date of audit report approval by New Mexico Environment Department (NMED):					
(7) Title, version number, and date of documents used for WIPP-WAP Certification:					
(8) Did your facility generate this waste?	YES		NO		
(9) If no, provide the name and EPA ID of the original generator:					
Waste Stream Information[1]					
(10) WIPP ID:			(11) Summary Category Group:		
(12) Waste Matrix Code Group:			(13) Waste Stream Name:		
(14) Description from the ATWIR:					
(15) Defense TRU Waste:	YES		NO		
(16) Check One:	CH		RH		
(17) Number of SWBs (17a) Number of SLB2	(18) Number of Drums		(19) Number of Canisters		
(20) Batch Data Report numbers supporting this waste stream characterization:					
(21) List applicable EPA Hazardous Waste Numbers:[2]					
(22) Applicable TRUCON Content Numbers:					
(23)**Acceptable Knowledge Information[1]**					
(For the following, enter the supporting documentation used [i.e., references and dates])					
Required Program Information					
(23A) Map of site:					
(23B) Facility mission description:					
(23C) Description of operations that generate waste:					
(23D) Waste identification/categorization schemes:					
(23E) Types and quantities of waste generated:					
(23F) Correlation of waste streams generated from the same building and process, as applicable:					
(24) Waste certification procedures:					
(25)Required Waste Stream Information					
(25A) Area(s) and building(s) from which the waste stream was generated:					
(25B) Waste stream volume and time period of generation:					
(25C) Waste generating process description for each building:					
(25D) Waste Process flow diagrams:					
(25E) Material inputs or other information identifying chemical/radionuclide content and physical waste form:					
(25F) Waste Material Parameter Weight Estimates per unit of waste					
(26) Which Defense Activity generated the waste:					
	Weapons activities including defense inertial confinement fusion				Naval Reactors development
	Verification and control technology				Defense research and development
	Defense nuclear waste and material by products management				Defense nuclear material production
	Defense nuclear waste and materials security and safeguards and security investigations				

Figure C-1. Waste Stream Profile Form (Example Only) (continued)

(27)Supplemental Documentation:	
(27A) Process design documents:	
(27B) Standard operating procedures:	
(27C) Safety Analysis Reports:	
(27D) Waste packaging logs:	
(27E) Test plans/research project reports:	
(27F) Site databases:	
(27G) Information from site personnel:	
(27H) Standard industry documents:	
(27I) Previous analytical data:	
(27J) Material safety data sheets:	
(27K) Sampling and analysis data from comparable/surrogate Waste:	
(27L) Laboratory notebooks:	
Confirmation Information2	
For the following, when applicable, enter procedure title(s), number(s) and date(s)	
(28)	Radiography:
	Visual Examination:
(29) Comments: For a list of the waste characterization procedures used and date of respective procedures see the list of procedures on the attached CIS.	

Reviewed by AK Expert: **YES** ☐ **Date:**_____

Reviewed by STR (if necessary): **YES** ☐ **N/A** ☐ **Date:**_____

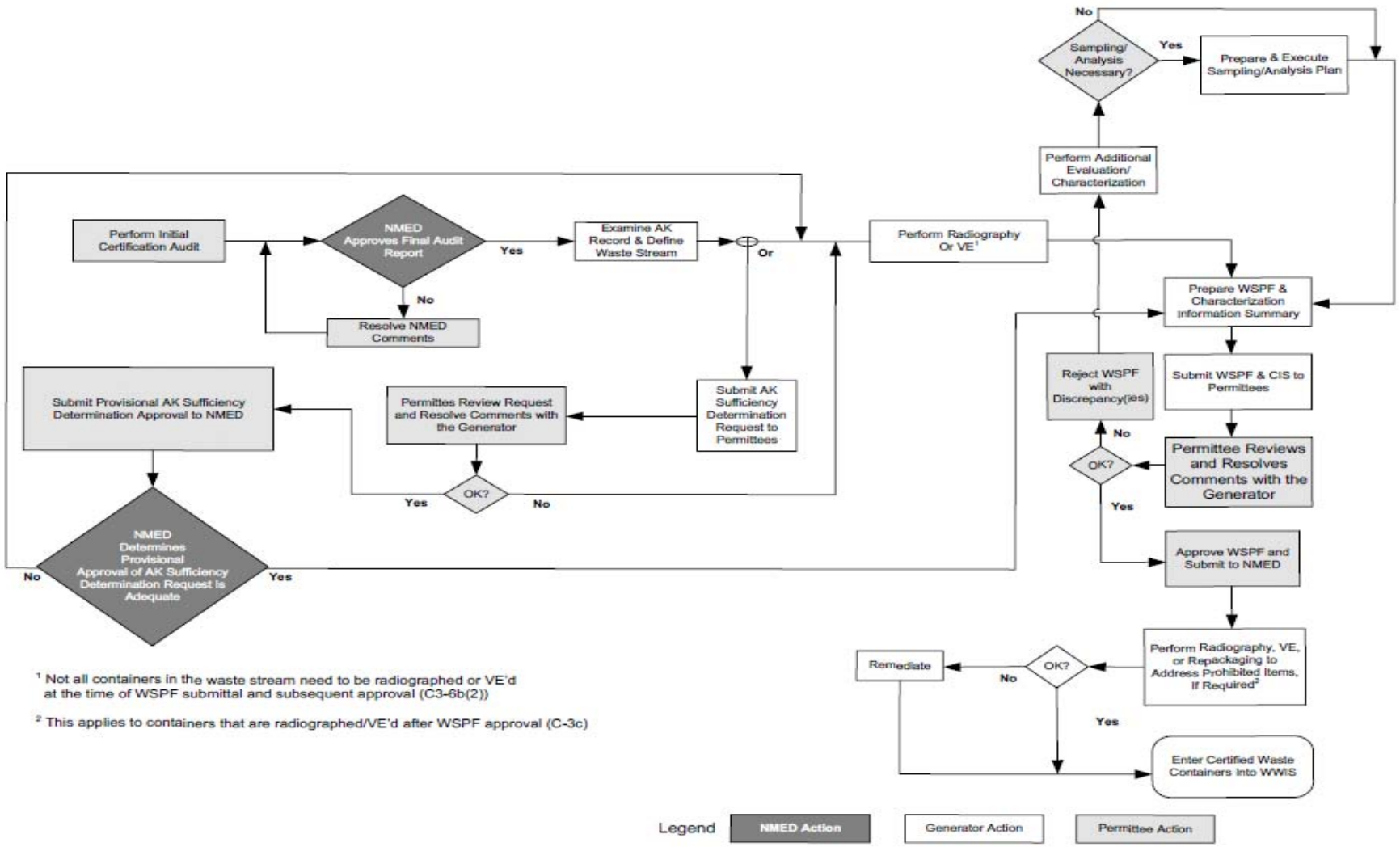
Waste Stream Profile Form Certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature of Site Project Manager	Printed Name	Date

Controlled
Copy

Figure C-2. Waste Characterization Process (Reprinted from the WAP, Figure C-2)



[1] Not all containers in the waste stream need to be radiographed or VE'd at the time of WSPF submittal and subsequent approval (C3-6b(2))

[2] This applies to containers that are radiographed/VE'd after WSPF approval (C-3c)

Figure C-3. TRU Mixed Waste Screening and Verification Flow Diagram

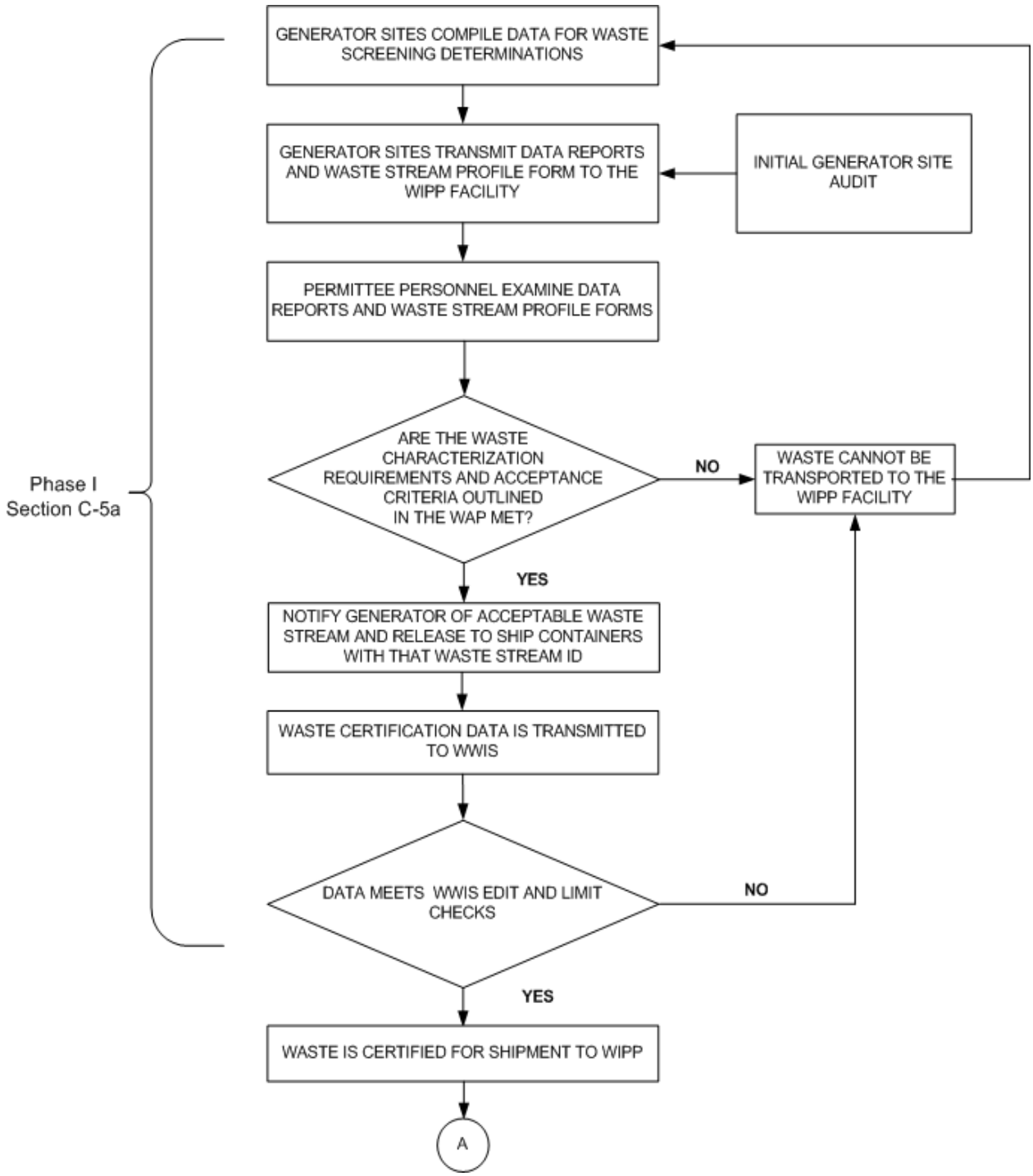
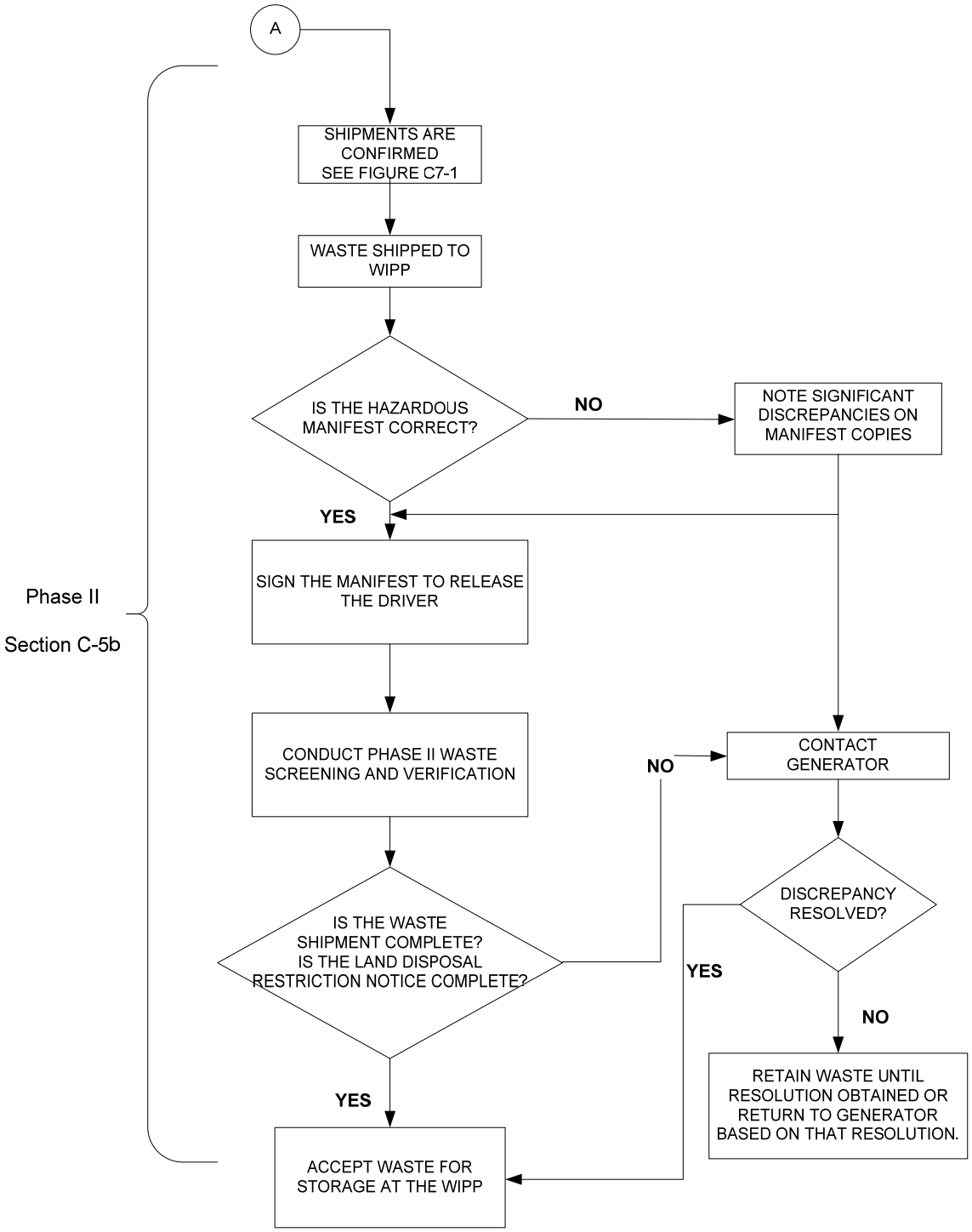


Figure C-3. TRU Mixed Waste Screening and Verification Flow Diagram (continued)



C1 WASTE CHARACTERIZATION TESTING METHODS

CCP characterizes TRU waste for shipment to WIPP by using the following methods, if applicable, for characterization of TRU waste. These methods include requirements for radiography or VE. This section describes these methods, QC requirements.

C1-1 Radiography

Radiography aids in the examination and identification of containerized waste. There is no equivalent EPA method. Personnel perform radiography in accordance with the procedures to meet the WAP requirements described in the following sections (T53, T508). Additionally, these procedures include instructions specific to the radiography method used. For example, details about moving the drum in a specific way in order to detect liquids are included in the radiography procedures. QAOs for radiography are contained in Section C3-2a.

All activities required to achieve the radiography objectives are described in the QAPjP and radiography-related Standard Operating Procedures (SOPs). A radiography system (e.g., real time radiography, digital radiography/computed tomography) normally consists of the following components: x-ray-producing device; imaging system; an enclosure for radiation protection; a waste container handling system; an audio/visual recording system; and an operator control and data acquisition station. The radiography equipment has controls (or an equivalent process) that allow the operator to control image quality for materials of varying density. On some radiography systems, it should be possible to vary the voltage, typically between 150-400 kilovolts (kV), to provide an optimum degree of penetration through the waste. For example, high-density material is examined with the x-ray device set on the maximum voltage. This ensures maximum penetration through the waste container. Low-density material is examined at lower voltage settings to improve contrast and image definition. The imaging system utilizes a fluorescent screen, a low-light television camera, or x-ray detectors to generate the image.

To perform radiography, the waste container is scanned while the operator views the television screen. A video and audio recording is made of the waste container scan and is maintained as a Non-Permanent Record. A radiography data form is also used to document the waste matrix code, to ensure that the waste container contains no ignitable, corrosive, or reactive waste by documenting the absence of liquids in excess of TSDF-WAC limits or compressed gases, and verify that the physical form of the waste is consistent with the waste stream description documented in the AK Summary Report. Containers whose contents prevent full examination of the remaining contents are subject to VE unless the CCP certifies that VE would provide no additional relevant information for that container based on the acceptable knowledge information for the waste stream. Such certification shall be documented in CCP records.

For containers which contain classified shapes and undergo radiography, the radiography video and audio recording will be considered classified. The radiography data forms will not contain classified information.

The radiography system involves qualitative and semi-quantitative evaluations of visual displays. Operator training and experience are the most important considerations for ensuring QC in regard to the operation of the radiography system and for interpretation and disposition of radiography results. Only trained personnel are allowed to operate radiography equipment.

Standardized training requirements for radiographic operators are based on existing industry standard training requirements.

Formal and on-the-job training (OJT) elements are listed below. In addition, radiography personnel are instructed in the specific waste generating practices, typical packaging configurations, and associated waste material parameters expected to be found in the waste matrix code. OJT and apprenticeship of radiography personnel are conducted by experienced, qualified radiography operators prior to qualification of training candidates. Training describes the site equipment, waste configurations, and the level of waste characterization efforts for the CCP. In addition, radiography operators are trained on the types of waste, physical forms, packaging configurations, and QC requirements for site waste characterized by the CCP.

All of the radiography QC requirements specified in the QAPjP shall be incorporated into the CCP training programs and radiography operations, so that data quality and comparability will not be affected (T28, T510). The radiography training program is subject to the audit and surveillance program. The training program includes items required by CCP-QP-002, *CCP Training and Qualification Plan,* and the required elements listed below.

One or more training containers with items (including prohibited items) common to the waste streams to be characterized and internal containers of various sizes is scanned semi-annually by each operator. The audio and video media are then reviewed by a supervisor to ensure that operators' interpretations remain consistent and accurate. Imaging system characteristics are verified on a routine basis.

Independent replicate scans and replicate observations of the video output of the radiography process are performed under uniform conditions and procedures. Independent replicate scans are performed on one waste container per day or once per testing batch, whichever is less frequent by a qualified radiography operator that was not involved in the original scan of the waste container. Independent observations of one scan (not the replicate scan) are made once per day or once per testing batch, whichever is less frequent, by a qualified radiography operator that was not involved in the original scan of the waste container. A testing batch is a suite of waste containers

undergoing radiography using the same testing equipment. A testing batch can be up to 20 waste containers without regard to waste matrix.

Oversight functions include periodic audio/video media reviews of accepted waste containers and are performed by qualified radiography operators that were not involved in the original scans of the waste containers. The results of this independent verification are available to the radiography operators who performed the original scans. The SPM is responsible for monitoring the quality of the radiography data and calling for corrective action, when necessary.

C1-2 Visual Examination

The CCP may use VE to verify container's contents. VE is performed by physically examining the contents of waste containers to verify the Waste Matrix Code and to verify that the container is properly included in the appropriate waste stream (T6, T113, T163, T500).

VE is conducted on a waste container to identify and describe all waste items, packaging materials, and waste material parameters in the waste containers. VE activities are documented on video/audio media or by using a second operator to provide additional verification by reviewing the contents of the waste container to ensure correct reporting. When VE is performed using a second operator, each operator performing the VE will observe for themselves the waste being placed in the waste container or the contents within the examined waste container when waste is not removed. The results of all VE are documented on VE data forms, which are used to document the Waste Matrix Code, ensure that the waste container contains no ignitable, corrosive, or reactive waste by documenting the absence of liquids in excess of TSDF-WAC limits or compressed gases, and verify that the physical form of the waste is consistent with the waste stream description documented in the AK Summary.

VE recorded on video/audio media shall meet the following minimum requirements:

- The video/audio media shall record the waste packaging event for the container such that all waste items placed into the container are recorded in sufficient detail and shall contain an inventory of waste items in sufficient detail that another trained VE operator can identify the associated waste material parameters.

- The video/audio media shall capture the waste container identification number.

- The personnel loading the waste container shall be identified on the video/audio media or on packaging records traceable to the loading of the waste container.

- The date of loading of the waste container will be recorded on the video/audio media or on packaging records traceable to the loading of the waste container.

VE performed using two generator site personnel shall meet the following minimum requirements:

- At least two generator site personnel who witnessed the packaging of the waste shall approve the data forms or packaging records attesting to the contents of the waste container.

- The data forms or packaging records shall contain an inventory of waste items in sufficient detail that another trained VE operator can identify the associated waste material parameters.

- The waste container identification number shall be recorded on the data forms or packaging records.

VE video/audio media of containers which contain classified shapes, shall be considered classified information. VE data forms or packaging records will not contain classified information.

Waste container packaging records may be used to meet the VE DQOs, Sections C-4a(1). These records must meet the minimum requirements listed above for either VE recorded on video/audio media or VE performed by two generator site personnel, and shall be reviewed by operators trained and qualified to the requirements listed below. The operators will prepare data forms based on the VE records. VE BDRs will be prepared, reviewed, and approved as described in Section C-4 and Section C3.

There will be standardized training for VE. VE operators are instructed in the specific waste-generating processes, typical packaging configurations, and waste material parameters expected to be found in each waste matrix code at the site. The training covers the various waste configurations generated/stored at the site. The particular physical forms and packaging configurations will vary at each site, so operators will be trained to examine the types of waste that are generated, stored and/or characterized at that site. Training will include the following regardless of Summary Category Group:

- Identifying and describing the contents of a waste container by examining all items in waste containers of previously packaged waste

- Identifying when VE cannot be used to meet the DQOs

VE personnel are requalified once every two years.

The SPM designates VE experts. Designated VE experts are familiar with the waste-generating processes that have taken place at the site and waste types for wastes being characterized at a particular site. VE experts are responsible for the overall direction and implementation of VE activities for the CCP at that site. VE experts meet the qualification and training requirements specified in CCP-QP-002 and make decisions based on training, previous experience, and knowledge of the waste stream.

C2 RESERVED

C3 QUALITY ASSURANCE OBJECTIVES AND DATA VALIDATION TECHNIQUES FOR WASTE CHARACTERIZATION METHODS

C3-1 Validation Methods

The CCP performs validation of qualitative and quantitative data so that characterization data are of known and acceptable quality.

The qualitative data or descriptive information generated by radiography and VE are not amenable to statistical data quality analysis. However, radiography and VE are complementary techniques yielding similar data for determining the waste matrix code. The waste matrix code is determined to ensure that the container is properly included in the appropriate waste stream.

Data validation is used to assess the quality of waste characterization data collected based on project precision, accuracy, completeness, comparability, and representativeness objectives. These objectives are described below:

Precision

Precision is a measure of the mutual agreement among multiple measurements.

Accuracy

Accuracy is the degree of agreement between a measured result and the true or known value.

Completeness

Completeness is a measure of the amount of valid data obtained from a method compared to the total amount of data collected.

Comparability

Comparability is the degree to which one data set can be compared to another.

Representativeness

Representativeness is the degree to which sample data represent a characteristic of a population.

C3-2 Nondestructive Examination Methods

Quality Assurance Objectives

The QAOs for nondestructive examination (NDE) are detailed in this section. NDE can be either radiography or VE. If the QAOs in this section are not met, then corrective actions are taken. NDE is a primary qualitative determination. The objective of NDE for the program is to verify that the physical form of waste matches the waste stream description as determined by AK and the absence of prohibited items. CCP describes all of the activities required to achieve these objectives in this QAPjP and the operating procedures listed in Section C1.

C3-2a Radiography (T53, T508)

Data to meet the QAOs for radiography are obtained from a video and audio recorded scan provided by trained radiography operators at the Host site. Results are also recorded on a radiography data form. The precision, accuracy, completeness, and comparability objectives for radiography data follow.

Precision

Precision is maintained by reconciling any discrepancies between two radiography operators with regard to identification of the waste matrix code, liquids in excess of TSDF-WAC limits, and compressed gases through independent replicate scans and independent observations. The precision of radiography is also verified prior to use by tuning precisely enough to demonstrate compliance with QAOs listed in Section C-4a through viewing an image test pattern.

Accuracy

Accuracy is obtained by using a target to tune the image for maximum sharpness and by requiring operators to successfully identify 100 percent of the items required to meet the DQOs for radiography specified in Section C. Section C-4a(1) in a training container during their initial qualification and subsequent requalification.

Completeness

To ensure completeness, video and audio media recording of the radiography of the radiography examination and a validated radiography data form are obtained for 100 percent of retrievably stored waste containers that are examined by radiography. All video and audio media recordings and radiography data forms are subject to validation as indicated in Section C3-7.

Comparability

The comparability of radiography data from different operators is enhanced by using standardized radiography procedures and operator qualifications.

C3-2b Visual Examination (T6, T113, T163, T500)

Results must be recorded on a VE data form. The precision, accuracy, completeness, and comparability objectives for VE data are presented below.

Precision

Precision is maintained by reconciling any discrepancies between the operator and the independent technical reviewer with regard to identification of waste matrix code, liquids in excess of TSDF-WAC limits, and compressed gases.

Accuracy

Accuracy is maintained by requiring operators to pass a comprehensive examination and demonstrate satisfactory performance in the presence of the VE expert during their initial qualification. VE operators shall be requalified every two years.

Completeness

A validated VE data form will be obtained for 100 percent of the waste containers subject to VE.

Comparability

The comparability of VE data from different operators shall be enhanced by using standardized VE procedures and operator qualifications.

C3-3 Acceptable Knowledge (T5)

AK documentation provides qualitative information that cannot be assessed according to specific data quality goals that may be used for quantitative techniques. To ensure that the AK process is consistently applied, the CCP complies with the following data quality requirements for AK documentation.

- Precision - The qualitative determinations, such as compiling and assessing AK documentation, do not lend themselves to statistical evaluations of precision. However, the AK information is assessed by independent review during internal and external audits.

- Accuracy - The percentage of waste containers which require reassignment to a new waste matrix code and/or designation of a different hazardous waste number, based on testing data and discrepancies identified during waste confirmation is reported as a measure of AK accuracy. The CCP calculates the AK accuracy in accordance with CCP-TP-005, *CCP Acceptable Knowledge Documentation*.

- Completeness - The AK record contains 100 percent of the required information (Section C4-3). The usability of the AK information is assessed for completeness during audits.

- Comparability - The CCP ensures comparability by meeting the training requirements and complying with the minimum standards outlined for procedures that are used to implement the AK process. The CCP assign hazardous waste numbers in accordance with Section C4-3b and will provide the information regarding the waste being characterized to other sites that store or generate a similar waste stream.

- Representativeness - Representativeness is a qualitative parameter that is satisfied by ensuring that the process of obtaining, evaluating, and documenting AK information is performed in accordance with the minimum standards established in Section C4. The CCP assesses and documents the limitations of the AK information used to assign hazardous waste numbers (e.g., purpose and scope of information, date of publication, type and extent to which waste parameters are addressed).

The CCP complies with the nonconformance notification and reporting requirements of Section C3-7of this QAPjP if the results of testing specified in this QAPjP are inconsistent with AK documentation.

In addition, performance with regard to the use of AK information is tracked by assessing the frequency of inconsistencies among information, and documenting AK inconsistencies identified through radiography and VE. The AK process and waste stream documentation are evaluated through internal assessments by QA and assessments by auditors external to the organization (i.e. the Permittees).

C3-4 Data Review, Validation, and Verification Requirements

Data review, validation, and verification are performed at the CCP data generation level in accordance with CCP data generation level characterization procedures. Data validation and verification are performed at the project level by the CCP project staff.

Data review determines whether raw data was properly collected and ensures that it was properly reduced. Data validation verifies that the reported data satisfy the

WAP requirements and are accompanied by signature release. Data verification authenticates that the data are presented accurately, represent the testing activities performed, and have been subject to the appropriate level of review. By meeting the requirements in this section, the CCP ensures that records furnish documentary evidence of quality.

The following types of BDRs (as applicable to the characterization process in use) are required for data validation and verification, and quality assurance activities:

- The Testing BDR or equivalent includes all data pertaining to radiography or VE for up to 20 waste containers without regard to waste matrix. Table C3-3, Testing Batch Data Report Contents lists the information required in Testing BDRs (identified with an "X") and other information necessary for data validation but optional for inclusion in the Testing BDR (identified with an "O")

C3-4a Data Generation Level (T6, T32, T53, T106, T113, T143, T188, T500, T508)

The minimum requirements for raw data collection and management include the following:

- All data are signed and dated in reproducible ink by the individual generating the data, or by use of unalterable electronic signature.
- All data are recorded clearly, legibly, and accurately in field records.
- All changes to original data are lined out, initialed, and dated by the individual making the change. A justification for changing the original data may also be included. Original data are not obliterated or otherwise disfigured so as to be unreadable. Data changes are made only by the individual who originally collected the data, or by an individual authorized to change the data.
- All data are transferred and reduced from field records completely and accurately.
- All field records are maintained as specified in Table C-2.
- All data are organized in standard formats (i.e., BDRs) specified in procedures.

- All electronic and video data are stored appropriately to ensure that waste containerand associated QC data are readily retrievable. In the case of classified information, additional security provisions may apply that could restrict retrievability. The additional security provisions will be documented in CCP procedures when required.

Data review, validation, and verification at this level involves scrutiny and signature release from qualified independent technical reviewers not involved in the generation or recording of the data under review as specified below. Individuals conducting the data review, validation, and verification use checklists that address the items in this section. Checklists are forwarded with BDRs to the CCP Project Office.

C3-4a(1) Independent Technical Review (T6, T32, T53, T106, T113, T143, T188, T500, T508)

The independent technical reviewer ensures by review of raw data that data generation and reduction are technically correct, calculations are verified correct, deviations are documented, and QA/QC results are complete, documented correctly, and compared against the criteria specified in this QAPjP. This review is to validate and verify all of the work done by the originator.

One hundred percent of the BDRs must receive an independent technical review. This review is performed by an individual by a trained and qualified individual who was not involved in the generation or recording of the data under review. The independent technical review is performed as soon as practicably possible in order to determine and correct negative quality trends in the testing, process. However at a minimum, the independent technical review must be performed before any waste associated with the data reviewed is managed, stored, or disposed at WIPP. The reviewer(s) must release the data as evidenced by signature, and as a consequence ensure the following:

- Data generation and reduction were conducted in a technically correct manner in accordance with the methods used (procedure revision) and data were reported in the proper units and correct number of significant figures.

- Calculations were verified by a valid calculation program, a spot check of verified calculation programs, and/or 100 percent check of all hand calculations. Values that are not verifiable to within rounding or significant difference discrepancies are rectified prior to completion of independent technical review.

- The data were reviewed for transcription errors.

- The testing, data QA documentation for BDRs is complete and includes, as applicable, raw data, calculation records, calibration records, (or reference to an available calibration package), and Corrective action is taken to ensure that all BDRs are complete and include all necessary raw data prior to completion of the independent technical review.

- Radiography tapes were reviewed (independent observation) on a waste container basis at a minimum of once per testing batch or once per day of operation, whichever is less frequent (Section C1-3). The radiography tape was reviewed against the data reported on the radiography form to ensure that the data are correct and complete.

- QAOs have been met according to the methods outlined in Sections C3-2 and C3-3.

C3-4b Project Level

Data validation and verification at this level involves scrutiny and signature release from the SPM (T1, T500, T508). Any nonconformance identified during this process is documented on an NCR (Section C3-7).

The SPM ensures that a repeat of the data generation level review, verification and validation is performed on the data for a minimum of one randomly chosen waste container quarterly (every three months). This exercise documents that the data generation level review, verification, and validation are being performed in accordance with implementing procedures.

C3-4b(1) Site Project Manager Review

The SPM review is the final validation that all of the data contained in BDRs from the data generation level are complete and are properly reviewed, as evidenced by signature release and completed checklists.

One hundred percent of the BDRs have SPM signature release. At a minimum, the SPM signature release is performed before any waste associated with data reviewed is shipped to the WIPP. This signature release ensures the following (T1, T500, T508):

- Data generation level independent technical review, validation, and verification are performed as evidenced by completed review checklists and by the appropriate signature releases.

- Independent technical reviewers were not involved in the generation or recording of the data under review.

- Batch data review checklists are complete.
- BDRs are complete and data are properly reported (i.e., data are reported in the correct units, with the correct significant figures.
- Data are within established data assessment criteria and meet all applicable QAOs as described in Sections C3-2 through C3-3.
- Testing batch QC checks (e.g., replicate scans, measurement system checks) were properly performed. Radiography data are complete and acceptable based on evidence of videotape review of one waste container per day or once per testing batch, whichever is less frequent, as specified in C1-1.

C3-4b(2) Preparing SPM Summary and Data Validation Summary

To document the project level validation and verification described above, the SPM (or designee) prepares an SPM Summary, and Data Validation Summary (T1). These reports may be combined to eliminate redundancy. The SPM Summary includes a validation checklist for each BDR. Checklists for the SPM Summary are of sufficient detail to validate all aspects of a BDR that affect data quality.

The SPM Data Validation Summary provides verification that, on a per waste container as evidenced by BDR reviews, all data have been validated in accordance with this QAPjP. The SPM Data Validation Summary identifies each BDR data report reviewed (including all waste container numbers), describes how the validation was performed and whether or not problems were detected (e.g., nonconformance reports), and includes a statement indicating that data are acceptable. Summaries must include release signatures.

C3-4b(3) Preparing Waste Stream Characterization Packages

If requested by the Permittee, the SPM provides a Waste Stream Characterization Package. The SPM must ensure that the Waste Stream Characterization Package (described in Section C3-6b(3)) supports the waste characterization determinations.

C3-4c Permittee Level

Not applicable to CCP. This is a Permittee function.

C3-5 Reconciliation with Data Quality Objectives

Reconciling the results of waste testing with DQOs ensures that data are of adequate quality to support regulatory compliance programs. When waste is characterized by

CCP, reconciliation with the DQOs is the responsibility of the SPM and occurs prior to waste shipment (T2).

C3-5a Reconciliation at the Project Level

The SPM ensures that all data generated and used in decision making meet the DQOs providing in Section C-4a(1). DQO reconciliation is the responsibility of the SPM, who assesses whether data of sufficient type, quality, and quantity to meet the DQOs (Section C-4a(1)) have been collected and determines whether the variability of the data set is small enough to provide the required confidence in the results.

The SPM determines for each waste stream characterized, whether sufficient data have been collected to determine the following required waste parameters (T2):

- Waste matrix code.
- Waste material parameter weights.
- That each container of waste is transuranic radioactive waste.
- Whether the waste stream exhibits a toxic characteristic or is listed under 40 CFR §261, Subpart C.
- Whether the waste stream contains listed waste found in 20.1.4.200 NMAC incorporating 40 CFR §261, Subpart D.
- Whether the waste stream can be classified as hazardous or nonhazardous
- Whether the overall completeness, comparability, and representativeness QAOs were met for the testing procedures specified in Sections C3-2 and C3-3 prior to submittal of a WSPF for a waste stream or waste stream lot.

If the SPM determines that insufficient data have been collected to make the determinations listed above, additional data collection efforts are undertaken.
The reconciliation of a waste stream is performed, as described in Section C4, prior to submittal of the WSPF and CIS to the Permittees for that waste stream. The CCP does not ship TRU waste stream to the WIPP unless the SPM determines that the WAP-required waste parameters listed above are met for that waste stream.

C3-5b Reconciliation at the Permittee Level

Not applicable to the CCP. This is a Permittee function.

C3-6 Data Reporting Requirements

Data reporting requirements define the type of information and the method of transmittal for data transfer from the data generation level to the CCP Project Office and from the CCP Project Office to the Permittee.

C3-6a Data Generation Level

Data are transmitted by hard copy or electronically (with hard copies available on demand) from the data generation level to the CCP Project Office. Transmitted data include all BDRs, and data review checklists. The BDR forms and checklists must contain all the information required by the testing techniques described in Sections C1 through C6, as well as the signature releases to document the review, validation, and verification as described in Section C3-4. BDRs and checklists are on approved forms as provided in procedures.

BDRs are forwarded to the SPM. All BDRs are assigned serial numbers, and each page is numbered. The serial number is the same as the batch number. QA documentation, including raw data, is maintained in either testing facility files, or the CCP files in accordance with CCP-QP-008.

C3-6b Project Level

The CCP Project Office prepares a WSPF for each waste stream certified for shipment to the WIPP based on information obtained from AK and BDRs, if applicable (T2). The CCP Project Office ensures that the CIS and Waste Stream Characterization Package (when requested by the Permittee) are prepared as appropriate. The SPM verifies these reports are consistent with information found in BDRs. Summarized testing are included in the CIS. The contents of the WSPF, the CIS, and the Waste Stream Characterization Package are discussed in the following sections.

A Waste Stream Characterization Package is submitted only when requested by the Permittee. These reports are reviewed, validated, and verified by the SPM (T2).

After approval of a WSPF and the associated CIS by the DOE, CCP will maintain a cross reference of container identification number to each BDR.

A Waste Stream Characterization Package will be transmitted by hard copy or electronically from the SPM to the Permittees when requested.

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C3-6b(1) Waste Stream Profile Form (T2)

The WSPF shall include the following information:

- Site name
- Site EPA ID
- Date of audit report approval by NMED (if obtained)
- Original generator of waste stream
- Whether waste is CH or RH
- The Waste Stream WIPP Identification Number
- Summary category group
- Waste matrix code group
- Waste Material Parameter Weight Estimates per unit of waste
- Waste stream name
- A description of the waste stream
- Applicable U.S. EPA Hazardous Waste Numbers
- Applicable TRUPACT Content (TRUCON) codes
- A listing of AK documentation used to identify the waste stream
- The waste characterization procedures used and the reference and date of the procedure
- Certification signature of SPM, name, title, and date signed

C3-6b(2) Characterization Information Summary (T2)

The CIS shall include the following elements, if applicable:

- Data reconciliation with DQOs.

- Radiography and VE summary to document that prohibited items are not present, and to verify that the physical form of the waste matches the waste stream description as determined by AK.

- A justification for the selection of radiography and/or VE as an appropriate method for characterization of the waste.

- A complete listing of all container identification numbers used to generate the WSPF, cross-referenced to each BDR.

- Complete AK summary, including waste stream name and number, the point of generation, waste stream volume (current or projected), generation dates, TRUCON codes, Summary Category Group, Waste Matrix Code(s) and Waste Matrix Code Group, other TRU Waste Baseline Inventory Report (TWBIR) information, waste stream description, areas of operation, generation processes, RCRA determinations, radionuclide information, all references used to generate the AK summary, and any other information required by Section C4-2b.

- Method for determining Waste Material Parameter Weights per unit of waste.

- List of any AK Sufficiency Determinations requested for the waste stream.

- Certification through acceptable knowledge or testing that any waste assigned the Hazardous Waste Number of U134 (hydrofluoric acid) no longer exhibits the characteristic of corrosivity. This is verified by ensuring that no liquid is present in U134 waste.

C3-6b(3) Waste Stream Characterization Package (T2)

The waste stream characterization package is submitted when requested by the Permittee and includes the following information:

- WSPF (Section C3-6b(1))

- Applicable CIS (Section C3-6b(2))

- Complete AK summary (Section C3-6b(2))

- BDRs supporting the characterization of the waste stream and any others requested by the Permittee

- Raw testing data requested by the Permittee

C3-6b(4) WIPP Waste Information System Data Reporting (T30)

The WWIS/WDS data dictionary includes the data, field formats, and limits associated with waste characterization data established by the WAP. These data are subject to edit and limit checks that are performed automatically by the database, as defined in the "Waste Data System User's Manual" (DOE 2009).

C3-7 Nonconformances (Q5)

The status of CCP activities are monitored and controlled by the SPM in accordance with the nonconformance and procurement procedures identified below. This includes nonconformance identification, documentation, and reporting.

Nonconformances

Nonconformances are uncontrolled and unapproved deviations from an approved plan or procedure (e.g., this QAPjP). In the context of this QAPjP, deficiencies and nonconformances are synonymous. Nonconforming items and activities are those that do not meet the CCP requirements, procurement document criteria, or approved work procedures. The CCP personnel are responsible for promptly reporting any nonconformance to management. The CCP reconciles and corrects nonconformance items, as appropriate, in accordance with the DOE-CBFO QAPD. The disposition of nonconforming items is identified and documented and nonconforming items are identified by marking, tagging, or segregating and appropriate notifications are made to the site. When a nonconformance related to the CCP is observed or detected, the QA is notified, and affected management reviews the content of the NCRs and assists the QA in processing the NCR. For each container selected for confirmation pursuant to Section C7, the Permittees will examine the respective NCR documentation to verify NCRs have been dispositioned for the selected container.

The CCP identifies and documents nonconformances as follows:

- The NCR procedure establishes the method for CCP personnel to identify, document, control, and disposition nonconforming activities, processes, items, and materials. NCRs are initiated by any individual identifying a nonconformance during performance of work tasks, random observations, inspections, or any other review of CCP procedures, operations, and activities. The CCP personnel identify deficient items by marking, tagging, or segregating them. This procedure implements the requirements of Section 1.3.2 (Nonconformances) of the DOE-CBFO QAPD.

- Corrective Action Reporting and Control procedures establishes the method for personnel to identify and correct potential problems and conditions adverse to quality, in addition to precluding their recurrence, and if necessary,

stopping associated work activities (Q8). Any person may temporarily stop work prior to evaluation of the condition by the responsible CCP supervisor. The CCP supervisor then evaluates and reports the condition, as necessary, in accordance with CCP-QP-029, *CCP Corrective Action Management.* This procedure implements the requirements of Section 1.3.3 (Corrective Action) of the DOE-CBFO QAPD.

Management at all levels fosters a "no-fault" attitude to encourage the identification of nonconforming items and processes within the CCP. Nonconformances may be detected and identified by anyone performing activities in support of this QAPjP, including:

- The CCP project staff - during field operations, supervision of subcontractors, data validation and verification, and self-assessment
- Testing Facility staff - during the preparation for and performance of testing; calibration of equipment; QC activities; data review, validation, and verification; and self-assessment.
- QA personnel - during oversight activities or audits

An NCR is prepared for each nonconformance identified. Each NCR is initiated by the individual(s) identifying the nonconformance. The NCR is then processed by knowledgeable and appropriate personnel. The NCR includes or references results of, QC tests, audit reports, internal memoranda, or letters, as appropriate. The NCR provides the following information:

- Identification of the individual(s) identifying or originating the nonconformance
- Description of the nonconformance
- Method(s) or suggestions for correcting the nonconformance (corrective action)
- Schedule for completing the corrective action
- An indication of the potential ramifications and overall usability of the data, if applicable
- Any approval signatures specified in the nonconformance procedures.

The SPM oversees the NCR process for the CCP, identifies and tracks the status of deficiencies, reports this information to the Permittees, and is responsible for verifying the close-out of the NCRs.

Nonconformances are tracked and trended in accordance with procedures (Q5, Q14) that establish the method for evaluating trends in nonconformances and identifying appropriate corrective actions.

The SPM ensures that relevant project personnel are notified of nonconformances and verifying completion of corrective action for nonconformances.

Nonconformance to DQOs

For any non-administrative nonconformance related to applicable requirements specified in this QAPjP which are first identified at the SPM signature release level (i.e., a failure to meet a DQO), the SPM will provide a written notification to the Permittees within seven (7) calendar days of identification and shall also provide a nonconformance report within 30 calendar days of identification of the incident. The CCP implements a corrective action process and resolves identified nonconformances prior to shipment of any affected waste to the WIPP.

DOE Corrective Action Process

This section is not applicable to the CCP.

C3-8 Special Training Requirements and Certifications (Q2)

The SPM is responsible for ensuring that all personnel maintain proficiency in the work performed and identifies additional training if required. The training and qualification process for CCP personnel and subcontracted personnel who perform work to support the CCP is documented and controlled. In accordance with these plans, only personnel trained to applicable CCP-related plans and procedures perform CCP activities. Before performing CCP-related activities, assigned staff receive indoctrination into the scope, purpose, and objectives of the WAP and the specific QAOs of assigned tasks. Personnel assigned to perform activities under this QAPjP have the education, experience, and training applicable to the functions associated with the work.

Evidence of personnel proficiency and demonstration of competence in the task(s) assigned are demonstrated and documented. All personnel designated to work on specific aspects of the WAP maintain qualification (i.e., training and certification) throughout the duration of the work as specified in this QAPjP and applicable procedures. Job performance is evaluated and documented at periodic intervals, as specified in the appropriate implementing procedures.

CCP personnel involved in WAP activities (as flowed down in this QAPjP) receive continuing training to ensure that job proficiency is maintained and documented. The due date for required continuing training courses and requalification shall be the end of the month of the anniversary date when the training was previously completed. Training

includes both education in principles and enhancement of skills. Job performance is evaluated and documented at periodic intervals, as specified in the implementing procedures or in CCP-QP-002. Documentation of training, consisting of training records that specify the scope of training, dates of completion, and job proficiency are maintained by the CCP Project Office and/or the site records system as QA records.

The minimum qualifications for certain specified positions for the WAP are summarized in Table C3-2. This QAPjP specify the titles and minimum training and qualification requirements for personnel performing QAPjP activities.

Evaluation of CCP personnel qualifications includes a comparison of the job description to the skills, training, and experience included in the individual's resume, training records, and other documented bases for job assignment. This evaluation is also performed for personnel who change positions because of a transfer or promotion as well as personnel assigned to short-term or temporary work assignments that may affect the quality of CCP activities. Procedures identify the responsible persons for ensuring all personnel maintain proficiency in the work performed and identify any additional training that may be required.

C3-9 Changes to WAP Related Plans or Procedures

Controlled changes to WAP-related CCP plans or procedures are managed through the document control process (Q10). The SPM reviews all nonadministrative changes and evaluates whether those changes could impact DQOs specified in the WAP. Any changes to the WAP-related plans or procedures that could impact DQOs (i.e., those changes that require prior approval of the DOE as defined in Section C5-2) are reported to the DOE within five days of identification by the project level review.

Table C3-1. Waste Material Parameters and Descriptions

Waste Material Parameter	Description
Iron-Based Metals/Alloys	Iron and steel alloys in the waste excluding the waste container materials.
Aluminum-Based Metals/Alloys	Aluminum or aluminum-based alloys in the waste materials.
Other Metals	All other metals found in the waste materials (e.g., copper, lead, zirconium, tantalum, etc.).
Other Inorganic Materials	Non-metallic inorganic waste, including concrete, glass, firebrick, ceramics, sand, and inorganic sorbents.
Cellulosics	Materials generally derived from high polymer plant carbohydrates (e.g., paper, cardboard, wood, cloth).
Rubber	Natural or man-made elastic latex materials (e.g., surgeon's gloves, leaded rubber gloves).
Plastics (Waste Materials)	Generally man-made materials, often derived from petroleum feedstock (e.g., polyethylene and polyvinylchloride).
Organic Matrix	Cemented organic resins, solidified organic liquids and sludges.
Inorganic Matrix	Any homogeneous materials consisting of sludge or aqueous-based liquids that are solidified with cement, calcium silicate, or other solidification agents; (e.g., waste water treatment sludge, cemented aqueous liquids, and inorganic particulates).
Soils/Gravel	Generally consists of naturally-occurring soils that have been contaminated with inorganic waste materials.
Steel (Packaging Materials)	208-liter (55-gallon) drums.
Plastics (Packaging Materials)	90-mil polyethylene drum liner and plastic bags.

Table C3-2. Minimum Training and Qualification Requirements

Personnel	Requirements
Radiography Operators[a]	Site-specific training based on waste matrix codes and waste material parameters as described in Section C3-4; requalification every 2 years

[a] Operators are responsible for the actual operation of testing equipment.

Table C3-3. Testing Batch Data Report Contents

Required Information	Radiography	VE	Comment
Batch Data Report Date	X	X	
Batch number	X	X	
Waste container number	X	X	
Waste stream name and/or number	O	O	
Waste matrix code	X	X	Summary Category Group included in waste matrix code.
Implementing procedure (specific version used)	X	X	If procedure cited contains more than one method, the method used must also be cited. Can use revision number, date, or other means to track specific version used.
Container type	O	O	Drums, Pipe Overpack, SWB, TDOP, etc.
Video media reference	X	X	Reference to video media applicable to each container. For VE for newly generated waste, video media is not required if two trained operators review the contents of the waste container to ensure correct reporting.
Imaging check	O	N/A	
Camera check	N/A	O	
Audio check	O	O	
QC documentation	X	X	

Table C3-3. Testing Batch Data Report Contents (continued)

Required Information	Radiography	VE	Comment
Verification that the physical form matches the waste stream description and waste matrix code	X	X	Summary Category Group included in waste matrix code.
Comments	X	X	
Reference to or copy of associated NCRs, if any	X	X	Copies of associated NCRs must be available.
Verify absence of prohibited items	X	X	
Operator signature and date of test	X	X	Signatures of both operators required for visual verification of AK.
Data review checklists	X	X	All data review checklists will be identified.

LEGEND:
X = Required in Batch Data Report
O = Information must be documented and traceable; inclusion in Batch Data Report is optional.

C4 ACCEPTABLE KNOWLEDGE

C4-1 Introduction

The RCRA regulations codified in 40 CFR and the New Mexico Hazardous Waste Management Regulations in 20.4.1 NMAC, Subparts 100 through 600, Subpart 800, and Subpart 900, authorize the use of AK in appropriate circumstances by waste generators or treatment, storage, or disposal facilities to characterize hazardous waste. AK is described in *Waste Analysis at Facilities that Generate, Treat, Store and Dispose of Hazardous Waste: A Guidance Manual* (EPA 1994a). AK, as an alternative to waste sampling and analysis, is used to meet all or part of RCRA waste characterization requirements (EPA 1994a).

EPA's 1994 Waste Analysis Guidance Manual broadly defines the term "acceptable knowledge" to include process knowledge, whereby detailed information on the wastes is obtained from existing published or documented waste analysis data or studies conducted on hazardous waste generated by processes similar to that which generated the waste; facility records of analysis performed before the effective date of RCRA; and sampling and waste analysis data obtained from generators of similar wastes that send their wastes off-site for treatment, storage, or disposal (EPA 1994a). If it is determined that AK alone is insufficient to accurately characterize a waste, radiography and/or VE, may be used to complete the waste characterization process and satisfy the requirements of the WAP. AK is used in TRU waste characterization activities in five ways:

- To delineate TRU waste streams
- To assess whether TRU mixed wastes comply with the applicable requirements of the Treatment, Storage, and Disposal Facility Waste Acceptance Criteria (TSDF-WAC)
- To assess whether TRU mixed wastes exhibit hazardous characteristic (20 NMAC 4.1.200, incorporating 40 CFR § 261 Subpart C)
- To assess whether TRU mixed wastes are listed wastes (20 NMAC 4.1.200, incorporating 40 CFR § 261 Subpart D)
- To estimate waste material parameter weights

Radiography and/or VE may be performed to augment the characterization of wastes based on AK when an AK Sufficiency Determination has not been requested by the generator/storage site or, if requested, has not been granted by the DOE (see Section C4-3d). TRU waste streams undergo applicable provisions of the AK process prior to shipment of the waste to WIPP.

C4-2 Acceptable Knowledge Documentation

The CCP collects and compiles, in a logical sequence, AK information that progresses from general facility information (TRU waste management program information) to more detailed waste-specific information (TRU waste stream information).

The CCP implements the AK process as specified in the WAP to characterize TRU waste (T5). The AK information is then compiled into the AK report (and supporting documentation), as shown in Figure C4-1, Compilation of Acceptable Knowledge Documentation, in Attachment C-4 of the WAP.

The following sections include the information the Permittee will require for the CCP to characterize TRU waste using AK. Because waste generating processes are site-specific, CCP will, as necessary, augment the required AK records with additional supporting information as discussed in Section C4-2c. If the required information is not available for a particular waste stream, the waste stream is not eligible for an AK Sufficiency Determination as specified in Section C4-3d.

C4-2a Required TRU Waste Management Program Information

TRU waste management program information clearly defines waste categorization schemes and terminology, provides a breakdown of the types and quantities of TRU waste that are generated and stored by the site (and processed by the CCP), and describes how waste is tracked and managed, including historical and current operations. Information related to TRU waste certification procedures and the types of documentation (e.g., WSPFs) used to summarize AK are also provided.

The following information is included as part of the AK written record:

- A map of the site with the areas and facilities involved in TRU waste generation, treatment, and storage identified
- Facility mission description as related to TRU waste generation and management
- Description of the operations that generate TRU waste at the site
- Description of waste identification and characterization schemes used at the site or facility (e.g., content codes, item description codes)
- Types and quantities of TRU waste generated, including historical generation through future projections. Includes time and facility/site of generation
- Description of correlation of waste streams generated from the same building and process (e.g., sludge, combustibles, metals, and glass)

- Waste certification procedures for TRU wastes to be shipped to the WIPP

C4-2b Required TRU Waste Stream Information

The CCP uses AK to delineate site-specific waste streams for shipment to the WIPP. The available process information and data that supports the AK used to characterize waste streams are compiled in AK summary reports and supporting documentation in accordance with CCP-TP-005. The type and quantity of supporting documentation may vary by waste stream, depending on the waste generating process and site specific requirements imposed by the Permittee. At a minimum, the waste process information on each waste stream includes the following written information:

- Areas and buildings from which the waste stream was or is generated
- The waste stream volume and time period of waste generation
- Waste generating process described for each building (e.g., batch waste stream generated during decommissioning operations of glove boxes), including processes associated with U134 waste generation, if applicable
- Documentation regarding how the site has historically managed the waste, including the historical regulatory status of the waste (i.e., TRU mixed versus TRU non-mixed waste)
- Process flow diagrams. In the event that a process flow diagram cannot be created, a description of the waste generating process, rather than a formal process flow diagram, is used to satisfy this requirement. The use of the waste generating process description is justified, and the justification is placed in the AK record
- Material inputs or other information that identify the chemical content of the waste stream and physical waste form (e.g., glove box materials and chemicals handled during glove box operations; events or processes that may have modified the chemical or physical properties of the waste stream after generation; data obtained through VE of newly generated waste that later undergoes radiography; information demonstrating neutralization of U134 [hydrofluoric acid] and waste compatibility)

The AK written record includes a summary that identifies all sources of waste characterization information used to delineate the waste stream. The basis and rationale for delineating each waste stream, based on the parameters of interest, is clearly summarized and traceable to referenced documents. Assumptions made in delineating each waste stream also are identified and justified. If discrepancies exist between required information, then the CCP may consider applying all hazardous waste numbers indicated by the information to the subject waste stream but must assess and

evaluate the information to determine the appropriate hazardous waste numbers consistent with RCRA requirements.

Implementing procedures address the following AK processes:

- Identifying and assigning the physical waste form of the waste
- Delineating waste streams and assigning Summary Category Groups and waste matrix codes
- Resolving inconsistencies in AK documentation
- Radiography and VE, if applicable
- For newly generated waste, procedures describing process controls used to ensure prohibited items (specified in Section C) are documented and managed
- Procedures to ensure that radiography and VE include a list of prohibited items that the operator verifies are not present in each container (e.g., liquid exceeding TSDF-WAC limits, corrosives, ignitables, reactives, and incompatible wastes)
- Procedures for documenting how changes to waste matrix code, waste stream assignment, and associated hazardous waste numbers based on material composition are documented for any waste
- Procedures that ensure the assignment of EPA hazardous waste numbers is appropriate, consistent with RCRA requirements, and considers site historical waste management
- Procedures for estimating waste material parameter weights

C4-2c Additional Acceptable Knowledge Information

CCP shall obtain additional acceptable knowledge information. CCP shall collect information as appropriate to augment required information and provide any other information obtained to further delineate waste stream. Adequacy of this information shall be assessed by DOE during audits. CCP will use this information to compile the acceptable knowledge written record.

All additional specific, relevant acceptable knowledge documentation assembled and used in the acceptable knowledge process, whether it supports or contradicts any required acceptable knowledge documentation, shall be identified and an explanation provided for its use (e.g., identification of a toxicity characteristic). Additional

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documentation may be used to further document the rationale for the hazardous characterization results. The collection and use of additional information shall be assessed by DOE during site audits to ensure that hazardous waste characterization is supported, as necessary, by such information. Similar to required information, if discrepancies exist between additional information and the required information, then CCP may consider applying all hazardous waste numbers indicated by the additional information to the subject waste stream, but must assess and evaluate the information to determine the appropriate hazardous waste numbers consistent with RCRA requirements. All information considered must be documented and placed in the auditable record, including applicable discrepancy resolution documentation.

Additional AK documentation includes, but is not limited to, the following information:

- Process design documents (e.g., Title II Design)
- Standard operating procedures that may include a list of raw materials or reagents, a description of the process or experiment generating the waste, and a description of wastes generated and how the wastes are managed at the point of generation.
- Preliminary and final safety analysis reports and technical safety requirements
- Waste packaging records
- Test plans or research project reports that describe reagents and other raw materials used in experiments
- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements)
- Information from site personnel (e.g., documented interviews)
- Standard industry documents (e.g., vendor information)
- Analytical data relevant to the waste stream, including results from fingerprint analyses, spot checks, routine verification sampling or other processes that collected information pertinent to the waste stream. This may also include new information which augments required information (e.g., VE not performed in compliance with the WAP, radiography screening for prohibited items)
- Material Safety Data Sheet, product labels, or other product package information

- Sampling and analysis data from comparable or surrogate waste streams (e.g., residues, equivalent nonradioactive materials)

- Laboratory notebooks that detail the research processes and raw materials used in an experiment

C4-3 Acceptable Knowledge Training, Procedures, and Other Requirements

The CCP uses the following to characterize TRU waste by means of AK information:

1) compiling the required and supporting additional AK documentation in an auditable record;

2) auditing AK records, and

3) WSPF approval and waste confirmation.

C4-3a Qualifications and Training Requirements (Q2)

The CCP and site personnel responsible for compiling AK, assessing AK, and resolving discrepancies associated with AK are qualified and trained in the following areas, at a minimum:

- WAP and TSDF-WAC requirements;

- State and Federal RCRA regulations associated with solid and hazardous waste characterization;

- Discrepancy resolution and reporting; and

- CCP and site-specific procedures associated with waste characterization using AK.

Position-specific qualification and training requirements such as those listed above for functional positions within the CCP are established by the SPM and documented (Q2). The SPM ensures that personnel conducting AK activities are qualified and trained as specified.

C4-3b Acceptable Knowledge Assembly and Compilation

The CCP process allows for the consistent application of the AK process and requirements, and addresses the following requirements (T5):

- Written procedures outlining the specific methodology used to assemble AK records, including the origin of the documentation, how it is used, and any

limitations associated with the information (e.g., identify the purpose and scope of a study that included limited sampling and analysis data).

- Written procedures to compile the required AK record.

- Written procedures ensuring that unacceptable wastes (e.g., reactive, ignitable, corrosive) are identified and segregated from TRU waste populations sent to the WIPP.

- Procedures to evaluate AK and resolve discrepancies. For example, if different sources of information indicate hazardous wastes are present in a waste stream, the CCP includes all sources of information in its records and may choose to either conservatively assign hazardous waste numbers or assign only those numbers deemed appropriate and consistent with RCRA requirements. All information used to justify assignment of hazardous waste numbers must be placed in the auditable record. Further the assignment of hazardous waste numbers is traceable in the AK record to required documentation.

- Procedures to identify hazardous wastes and assign the appropriate hazardous waste numbers to each waste stream in accordance with the following minimum baseline requirements:

  - Compiling all of the required information in an auditable AK record.

  - Reviewing the compiled information and delineating waste streams. Delineation of waste streams must comply with the definition in C-0a and justify combining waste historically managed separately as TRU mixed and TRU non-mixed waste streams into a single waste stream.

  - Reviewing the compiled information to determine if the waste stream is compliant with the TSDF-WAC.

  - Reviewing the required information to determine whether the waste is listed under 20.4.1.200 NMAC (incorporating 40 CFR §261), Subpart D. Assigning all the hazardous waste numbers unless the CCP chooses to justify an alternative assignment and documents the justification in an auditable record.

  - Reviewing the required information to determine if the waste exhibits a hazardous characteristic or contains toxicity characteristic hazardous constituents specified in 20.4.1.200 NMAC (incorporating 40 CFR §261), Subpart C. If a toxicity characteristic contaminant is identified and is not included as a listed waste, sites may evaluate available data and assign the toxicity characteristic hazardous waste number consistent with RCRA

requirements. All data examined to reach the hazardous waste number determination must be placed in the auditable record and must present a clear justification for the hazardous waste number analyses.

- Reviewing the compiled information to provide an estimate of material parameter weights for each container to be stored or disposed of at WIPP.

- For newly generated wastes, procedures are developed and implemented to characterize hazardous waste using AK prior to packaging the waste.

- The CCP ensures that results of other audits of the CCP TRU waste characterization activities are available in the CCP files.

- The CCP identifies all process controls (implemented to ensure that the waste contains no prohibited items and to control hazardous waste content and/or physical form) that may have been applied to retrievably stored waste and/or may presently be applied to newly generated waste. Process controls are applied at the time of waste generation/packaging to control waste content, whereas any activities performed after waste generation/packaging to identify prohibited items, hazardous waste content, or physical form are waste characterization activities not process controls. The AK record must contain specific process controls and supporting documentation identifying when these process controls are used to control waste content. See Section C-2 for programmatic requirements related to process controls.

C4-3c Criteria for Assembling an Acceptable Knowledge Record and Delineating the Waste Stream

CCP-TP-005 describes the process for assembling AK documentation into an auditable record. The first step is to assemble the required AK information and any additional information regarding the materials and processes that generate a specific waste stream. AK records are generated in compliance with the following criteria (T5):

- AK information is compiled in an auditable record, including a road map for applicable information.

- The overview of the facility and TRU waste management operations in the context of the facility's mission is correlated to specific waste stream information.

- Correlations between waste streams, with regard to time of generation, waste generating processes, and site-facilities are described in the AK summary report (Section C4-2b). For newly generated wastes, the rate (or schedule) and quantity of waste to be generated are also maintained in the AK process descriptions compiled in the AK summary report.

- A reference list provided in Section C4-3b that identifies documents, databases, QA protocols, and other sources of information that support AK information.

Container inventories are delineated into waste streams by correlating the container identifications to all of the required AK information and additional information (T5). The CCP assigns a waste matrix code and waste stream description to each container of waste using AK.

C4-3d AK Sufficiency Determination Request Contents (T5)

The CCP may submit an AK Sufficiency Determination Request (Determination Request). The Determination Request shall include, at a minimum.

- A complete AK Summary that addresses the following technical requirements:

  - Executive Summary

  - Waste Stream Identification Summary including a demonstration that the waste stream has been properly delineated and meets the Permit definition of waste stream (Attachment C, Introduction);

  - Mandatory Program Information (including, but not limited to, facility location and description, mission, defense waste assessment, spent nuclear fuel and high-level waste assessment, description of waste generating processes, research/development [as necessary], facility support operations [as applicable], types and quantities of TRU waste generated, correlation of waste streams to buildings/processes, waste identification and categorization, physical form identifiers);

  - Mandatory Waste Stream Information (including, but not limited to, Area and Building of Generation, waste stream volume/period of generation) (including, for newly generated waste, the rate and quantity of waste to be generation), waste generating activities, types of waste generated, material input related to physical form and identification of percentage of each waste material parameter in the waste stream, chemical content information including hazardous constituents and hazardous waste identification, prohibited item content (including documented evidence that the waste meets the TSDF-WAC Permit Sections 2.3.3.1 through 2.3.3.10), waste packaging, presence of filter vents, number of layers of confinement;

  - Types of supporting information gathered;

  - Container specific data (if available and relevant); and

- A complete reference list including all mandatory and additional information.

- An AK roadmap (defined as a cross reference between mandatory programmatic and mandatory waste stream information, with references supporting these requirements).

- A complete reference list including all mandatory and additional documentation.

- Additional relevant information for the required programmatic and waste stream data addressed in the AK Summary, examples of which are presented in Section C4-2c.

- Identification of any mandatory requirements supported only by upper tier documents (i.e., there is insufficient supporting data).

- Description or other means of demonstrating that the AK process described in the Permit was followed (for example, AK personnel were appropriately trained; discrepancies were documented, etc.).

- Information showing that CCP has developed a written procedure for compiling the AK information and assigning hazardous waste numbers as required in Section C4-3b.

- Information showing that CCP has assessed the AK process (e.g., internal audits, Section C4-3b).

C4-3e Requirements for Re-evaluating Acceptable Knowledge Information (T5)

AK includes information on the waste physical form, base materials composing the waste, and the waste generating process. Waste testing (i.e., radiography/VE) may be used to augment AK information prior to waste shipment. If retrievably stored waste must be repackaged, either VE prior to or during waste packaging or radiography after waste packaging, shall be used to confirm acceptable knowledge information.

The WSPF and CIS (including the AK summary) will be reviewed by the Permittees for each waste stream prior to DOE approval of the WSPF. The Permittees review will ensure that the submitted AK information was collected under procedures that ensure implementation of the WAP, provides data sufficient to meet the DQOs in Section C-4a(1), and allow the Permittees to demonstrate compliance with the waste analysis requirements of the Permit. A detailed discussion of the Permittees' waste stream review and DOE's WSPF approval process is provided in Section C-1d.

Re-Evaluation Based on Visual Examination and Radiography

The CCP has established procedures for re-evaluating AK if the results of waste confirmation indicate that the waste to be shipped does not match the approved waste stream, or if data obtained from VE or radiography for waste streams without an AK Sufficiency Determination exhibit this discrepancy. The CCP procedures describe how waste AK is re-evaluated, the waste is reassigned, and appropriate hazardous waste numbers assigned. If the re-evaluation requires that the waste matrix code be changed for the waste stream or the waste does not match the approved waste stream, the following minimum steps are taken to re-evaluate AK:

- Existing information is reviewed based on the container identification number and all differences in hazardous waste number assignments are documented
- If differences exist between the hazardous waste numbers that were assigned, the information is re-assessed, and required AK information associated with the new designation is documented
- Reassess and document all testing data associated with the waste
- The reassignment of the waste matrix code is documented and verified (e.g., verification that the waste was generated within the specified time period, area, and building and waste generating process, and that the process material inputs are consistent with the waste material parameters of waste identified during VE or radiography)
- Changes to AK records are recorded
- If discrepancies exist in the AK information for the revised waste matrix code, the discrepancies are documented in an NCR in accordance with CCP-QP-005. The NCR documents the segregation of the affected portion of the waste stream, and defines the corrective actions necessary to fully characterize the waste.

C4-3f Acceptable Knowledge Data Quality Requirements (T5)

DQOs for testing techniques are described in Section C3. Testing results are used to augment the characterization of wastes based on AK. To ensure the process is consistently applied and ensure that AK information is accurate, complete, and is representative of the waste stream being evaluated, the CCP complies with data quality requirements for AK documentation in Section C3.

The CCP addresses quality control by tracking its performance with regard to the use of AK by:

- Assessing the frequency of inconsistencies among information

- Documenting the results of waste discrepancies identified by CCP during waste confirmation using radiography, review of radiography audio/video recordings, VE, or review of VE records

In addition, the AK process and waste stream documentation is evaluated through internal assessments by QA organizations and assessment by auditors or observers external to the CCP (i.e., DOE-CBFO, NMED, EPA).

C4-3g Audits of Acceptable Knowledge

The DOE conducts an initial audit of the CCP prior to certifying the CCP for shipment of waste to the WIPP. This audit establishes an approved baseline that is reassessed annually by the DOE. The CCP does not certify waste for disposal until all corrective actions have been completed.

C5 QUALITY ASSURANCE PROJECT PLAN REQUIREMENTS

C5-1 Quality Assurance Project Plans

The CCP has developed and implemented this QAPjP to address the applicable waste characterization requirements specified in the WAP (P1). This QAPjP includes the qualitative or quantitative criteria to ensure that waste characterization activities are being performed satisfactorily. The organization(s) and position(s) responsible for implementation of this QAPjP are identified in Section B. Throughout this QAPjP, CCP documents are referenced that detail how each of the required elements of the characterization project are performed.

This QAPjP follows the format of the WAP and is implemented by the CCP through procedures that address TRU waste characterization activities. Compliance with CCP documents ensures that tasks are performed in a consistent manner that results in achieving the quality required under the QA program. The organization, format, content, and designation of the CCP procedures is described in the CCP-QP-010, *CCP Document Preparation, Approval, and Control*.

C5-2 Document Review, Approval, and Control (Q10)

Prior to the implementation of characterization activities, the SPM ensures that written procedures have been developed for implementing the requirements of this QAPjP. Procedures ensure that tasks are performed in a consistent manner and achieve the quality required for the quality assurance program. The SPM is responsible for ensuring that the procedures meet the organization, format, content, and designation of standard operating procedures. CCP procedures are written so that they may be implemented at several sites simultaneously. Site-specific issues such as safety policies, technical specification requirements, or organizational necessities, may require the CCP to prepare site-specific procedures to supplement the procedures used to ensure WAP compliance. These procedures are identified in the SOW or site interface document. These procedures are prepared and controlled as are the other existing CCP operating procedures and are subject to site specific review requirements. As a minimum, the following requirements are addressed in CCP procedures:

- Responsibilities of the organizations affected by the document,
- Technical, regulatory, quality assurance, or other program requirements.
- Sequential description of work to be performed,
- Quantitative or qualitative acceptance criteria sufficient for determining that activities were satisfactorily accomplished.

- Prerequisites, limits, precautions, process parameters, and environmental conditions,
- Special qualifications and training requirements,
- Verification points and hold points,
- Methods for demonstrating that the work was performed as required (such as provisions for recording inspection and test results, checklists, or sign-off blocks), and
- Identification and classification of QA records to be generated by the implementing procedure.

Procedures also include examples of data (e.g., reports, forms, and data validation checklists), as appropriate. Internal review and approval requirements are specified. In addition, CCP procedures are formatted, as follows:

- Purpose
- Scope
- Requirements
- Responsibilities
- Procedures
- Records

CCP procedures are reviewed for consistency with the QAPjP in accordance with the above listed requirements. The SPM is responsible for ensuring that the most current version of all procedures is readily available for use as needed by project personnel after procedures have been reviewed and approved for use.

The SPM ensures that the preparation, issuance, and change to documents that specify quality requirements or prescribe activities affecting quality for the CCP program be controlled to assure that correct and current documents are used and referenced. The CCP uses a document control format consisting of a unique document identification number, current revision number, data, and page number, which will be placed in the header on the individual pages of the document. CCP documents are delineated into five areas: quality procedures, denoted by CCP-QP-XXX; technical procedures, denoted by CCP-TP-XXX; health and safety plans denoted by CCP-HSP-XXX; configuration management denoted by CCP-CM-XXX; and CCP Project Office documents (i.e., this QAPjP), denoted by CCP-PO-XXX. “XXX” denotes a sequential number.

Qualified and independent personnel review all CCP documents (including this QAPjP) prior to approval and issuance. Reviews consider the technical adequacy, completeness, and correctness of CCP documents and the inclusion of and compliance

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with the requirements established by the WAP. Approval is indicated by a signature and date page included in the front of the document. The SPM ensures that:

- Revisions to site implementing documents are denoted by including the current revision number and date on the document title page and each page of the document.

- Revised pages are marked in redline/strikeout for expeditious review of the entire document.

- A vertical bar, indicating the change to the text, is included along the left-hand margin of the page, except in the case of full document revisions.

- Revised document submittals identify the changes, the reason for the changes, and the justification for concluding that the revised contents continue to satisfy the requirements of the QA program.

- Revisions that affect performance criteria or data quality (e.g., sampling or analytical methods, QAO, calibration requirements), other than editorial or minor changes, undergo the same level of review and approval as the baseline version of each document. These documents are reviewed and approved by the same functional organizations that performed the original review/approval, unless other organizations are specifically designated in accordance with approved procedures. Editorial or minor changes may be made without the same level of review and approval as the original or otherwise changed documents. The following items are considered editorial or minor changes:

  - Correcting grammar or spelling (provided the meaning has not changed),

  - Renumbering sections or attachments,

  - Updating organizational titles (*A change in an organizational title accompanied by a change in responsibilities is not considered an editorial change*),

  - Changes to non-quality-affecting schedules,

  - Revised or reformatted forms, providing the original intent is not altered, and

  - Attachments marked “Example” or exhibits clearly intended to be representative only

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- CCP personnel are responsible for reporting any obsolete or superseded information to the SPM

- All CCP changes are evaluated and approved by the SPM, the appropriate personnel are notified before implementation, and the affected documents are revised as necessary

- Changes that affect performance criteria or data quality, and would take the activity out of compliance because they alter a requirement are not made without prior approval by DOE.

In addition, the SPM is responsible for ensuring that non-administrative changes, non-editorial changes, or changes that could affect performance criteria or data quality, such as sample handling and custody requirements, sampling and analytical testing procedures, quality assurance objectives, calibration requirements, or QC sample acceptance criteria (i.e., those changes that require prior approval of DOE as defined in Section C5-2) shall be reported to DOE within five days of identification by the project level review. The SPM ensures that the document control system is implemented to control the process for initiating, revising, modifying, reviewing, and distributing project documents and changes to project documents. As potential changes to project information are identified by the SPM, documents are revised as necessary and distributed to affected organizations in accordance with this procedure.

C6 AUDIT AND SURVEILLANCE PROGRAM

C6-1 Introduction

The WIPP audit and surveillance program ensures that the CCP conducts testing of wastes in accordance with the current WAP and that waste certification information is being managed properly. The CCP addresses deficiencies identified during the audits. A deficiency is any failure to comply with an applicable requirement of the WAP.

C6-2 Audit Procedures

This section does not apply to the CCP.

C6-3 Audit Position Functions

This section does not apply to the CCP.

C6-4 Audit Conduct

During audit interviews or audit meetings, CCP may be advised of deficiencies identified within their areas of responsibility to establish a clear understanding of the identified condition.

The personnel will be given the opportunity to correct any deficiency that can be corrected during the audit period.

When a deficiency is identified by the DOE audit team, a Corrective Action Report (CAR) is issued to the CCP. The CCP reviews the CAR which is used to evaluate the extent and cause of the deficiency, and submits an approved response to the Permittees indicating remedial actions and actions taken to preclude recurrence. If these responses to the CAR are acceptable, DOE communicates the acceptance to the CCP.

The CCP completes the remedial actions and actions to preclude recurrence and requests DOE to close the CAR. Following the completion of corrective actions, the Permittees may schedule and perform a verification visit to assure that corrective actions have been completed and are effective.

The corrective action response includes a discussion of the investigation performed to determine the extent and impact of the deficiency, a description of the remedial actions taken, determination of root cause, and action taken to preclude recurrence.

The CCP responds to any deficiencies and observations within thirty (30) days of receipt of any CARs and indicates the corrective action taken or to be taken. If the corrective action has not been completed, the response indicates the expected date the action will be completed. CARs applicable to WAP requirements are resolved prior to waste shipment.

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C7 TRU WASTE CONFIRMATION

Introduction

This section of the QAPjP describes the actions that the Permittees will take to approve and accept waste for and disposal at the WIPP, including waste confirmation activities. Discussion of the Permittees' actions that are relevant to CCP will be included here. The Permittees demonstrate compliance with the WIPP-WAP by ensuring that the waste characterization processes performed by CCP produce data compliant with the WIPP-WAP and through the waste screening and verification processes. Verification occurs at three levels: 1) the data generation level, 2) the project level, and 3) the Permittee level. The Permittees also examine a representative subpopulation of waste prior to shipment to confirm that the waste contains no ignitable, corrosive, or reactive waste; and that assigned EPA Hazardous Waste Numbers are allowed by the WIPP RCRA Permit. The waste confirmation activities described herein occur prior to shipment of the waste from the CCP to WIPP.

C7-1 Permittee Confirmation of TRU Mixed Waste

This section does not apply to CCP.

C7-1a Permittee Confirmation of a Representative Subpopulation of the Waste

The Permittees will confirm that the waste contains no ignitable, corrosive, or reactive waste through radiography or the use of VE of a statistically representative subpopulation of the waste. Prior to shipment to WIPP, waste confirmation will be performed on randomly selected containers from each CH- and RH-TRU waste stream shipment.

C7-1b Radiography Methods Requirements

This section describes the portion of the Permittees' confirmation program that applies to CCP.

For containers that have been characterized using radiography by CCP in accordance with the method in Section C1-1, the Permittees may perform confirmation by review of CCP's radiography audio/video recordings.

When confirmation is performed by review of audio/video recorded scans produced by CCP as specified in Section C1-1, independent observations will be performed on two waste containers per shipment or two containers per day, whichever is less frequent.

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C7-1c Visual Examination Methods Requirements

This section describes the portion of the Permittees' confirmation program that applies to CCP.

VE may also be used as a waste confirmation method by the Permittees. VE shall be conducted by the Permittees in accordance with written standard operating procedures to describe the contents of a waste container. VE shall be conducted to identify and describe all waste items, packaging materials, and waste material parameters. VE may be used by the Permittees to examine a statistically representative subpopulation of the waste certified for shipment to WIPP to confirm that the waste contains no ignitable, corrosive, or reactive waste. This is achieved by confirming that the waste contains no liquid in excess of TSDF-WAC limits or compressed gases, and that the physical form of the waste matches the waste stream description documented on the WSPF. During packaging, the waste container contents are directly examined by trained personnel. This form of waste confirmation may be performed by the Permittees at the waste generator/storage site. VE may be documented on video and audio media, or by using a second operator to provide additional verification by reviewing the contents of the waste container to ensure correct reporting. When VE is performed using a second operator, each operator performing the VE shall observe for themselves the waste being placed in the waste container or the contents within the examined waste container when waste is not removed. The results of all VE shall be documented on data forms.

In order to keep radiation doses as low as reasonably achievable, the Permittees may use their own trained VE operators to perform VE for waste confirmation by reviewing CCP VE data, which includes VE data forms, waste packaging records, and may also include audit/video media. If the Permittees perform waste confirmation by review of video media, the video record of the VE must be sufficiently complete for the Permittees to confirm the Waste Matrix Code and waste stream description, and verify the waste contains no liquid in excess of TSDF-WAC limits or compressed gases. CCP VE video/audio media subject to review by the Permittees shall meet the following minimum requirements:

- The video/audio media shall record the waste packaging event for the container such that all waste items placed into the container are recorded in sufficient detail and shall contain an inventory of waste items in sufficient detail that a trained Permittee VE operator can identify the associated waste material parameters.

- The video/audio media shall capture the waste container identification number.

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- The personnel loading the waste container shall be identified on the video/audio media or on packaging records traceable to the loading of the waste container.

- The date of loading of the waste container will be recorded on the video/audio media or on packaging records traceable to the loading of the waste container.

The Permittees may also use their own trained VE operators to perform VE for waste confirmation by reviewing VE data forms or packaging logs prepared by the generator during their packaging of the waste. To be acceptable, the CCP VE data must be signed by two CCP personnel who witnessed the packaging of the waste and must provide sufficient information for the Permittees to determine that the waste container contents match the waste stream description on the WSPF and the waste contains no liquid in excess of TSDF-WAC limits or compressed gases. The Permittees will document their review of CCP VE data on Permittee VE data forms. CCP VE forms or packaging records subject to review by the Permittees shall meet the following minimum requirements:

- At least two generator site personnel shall approve the data forms or packaging records attesting to the contents of the waste container.

- The data forms or packaging records shall contain an inventory of waste items in sufficient detail that a trained Permittee VE operator can identify the associated waste material parameters.

- The waste container identification number shall be recorded on the data forms or packaging records.

VE video media of containers which contain classified shapes shall be considered classified information. VE data forms will not contain classified information.

C7-2 Noncompliant Waste Identified During Waste Confirmation

This section describes the portion of the Permittees' confirmation program that applies to CCP.

If the Permittee identifies noncompliant waste during waste confirmation at a CCP site, (i.e., the waste does not match the waste stream description documented in the WSPF or there is liquid in excess of TSDF-WAC limits or compressed gases) the waste will not be shipped.

The DOE will suspend further shipments of the affected waste stream and issue a CAR to CCP. Shipments of affected waste streams will not resume until the CAR has been closed.

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As part of the corrective action plan in response to the CAR, CCP will evaluate whether the waste characterization information documented in the CIS or WSPF for the waste stream must be updated because the results of waste confirmation for the waste stream indicated that the TRU waste being examined did not match the waste stream description. CCP will thoroughly evaluate the potential impacts on waste that has been shipped to WIPP. The DOE will evaluate the potential that prohibited items were shipped to WIPP and what remedial actions should occur, if any. The results of these evaluations will be provided to NMED before shipments of affected waste stream resume. If the CIS and/or WSPF requires revision, shipments of the affected waste stream shall not resume until the revised waste stream waste characterization information has been reviewed and approved by the DOE. If CCP certifies noncompliant waste at a site more than once during a running 90-day period, the DOE will suspend acceptance of CCP's waste from that CCP site until the DOE finds that all corrective actions have been implemented and the site complies with all applicable requirements of the WIPP-WAP.

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ACRONYMS AND ABBREVIATIONS

AK	acceptable knowledge
BDR	Batch Data Report
CAR	Corrective Action Report
CBFO	Carlsbad Field Office
CCP	Central Characterization Program
CFR	Code of Federal Regulations
CH	contact-handled
CIS	Characterization and Information Summary
DA	data administrator
DOE	U.S. Department of Energy
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
HWA	New Mexico Hazardous Waste Act
HWDU	Hazardous Waste Disposal Unit
HWFP	Hazardous Waste Facility Permit
ID	identification number
INL	Idaho National Laboratory
kV	kilovolts
LDR	Land Disposal Restrictions
nCi	nanocuries
NCR	nonconformance report
NDE	nondestructive examination
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NWP	Nuclear Waste Partnership
OJT	on-the-job training
PCB	polychlorinated biphenyls
PDP	Performance Demonstration Program
QA	quality assurance
QAO	quality assurance objective
QAPD	Quality Assurance Program Document
QAPjP	quality assurance project plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RH	remote-handled
RIDS	records inventory and disposition schedule
SLB2	standard large box 2
SOP	standard operating procedure
SOW	Statement of Work
SPM	site project manager
SRS	Savannah River Site
SWB	standard waste box
TDOP	ten-drum overpack
TRU	transuranic

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ACRONYMS AND ABBREVIATIONS (Continued)

TRUCON	*TRUPACT Content (Code)*
TSDF-WAC	*Treatment, Storage, and Disposal Facility Waste Acceptance Criteria*
TWBIR	*Transuranic Waste Baseline Inventory Report*
VE	visual examination
VOC	volatile organic compound
WAP	Waste Analysis Plan
WDS	Waste Data System
WIPP	Waste Isolation Pilot Plant
WSPF	Waste Stream Profile Form
WWIS	WIPP Waste Information System

Attachment 1 – Implementing Procedures

Reference Number	Procedure Number	Procedure Title
Q1	CCP-QP-001	CCP Graded Approach
Q2	CCP-QP-002	CCP Training and Qualification Plan
Q5	CCP-QP-005	CCP TRU Nonconforming Item Reporting and Control
Q8	CCP-QP-008	CCP Records Management
Q10	CCP-QP-010	CCP Document Preparation, Approval, and Control
Q14	CCP-QP-014	CCP Quality Assurance Trend Analysis and Reporting
Q15	CCP-QP-015	CCP Procurement
Q16	CCP-QP-016	CCP Control of Measuring and Testing Equipment
Q17	CCP-QP-017	CCP Identification and Control of Items
Q18	CCP-QP-018	CCP Management Assessment
Q19	CCP-QP-019	CCP Quality Assurance Reporting to Management
Q21	CCP-QP-021	CCP Surveillance Program
Q22	CCP-QP-022	CCP Software Quality Assurance Plan
Q23	CCP-QP-023	CCP Handling, Storage and Shipping
Q26	CCP-QP-026	CCP Inspection Control
Q27	CCP-QP-027	CCP Test Control
Q28	CCP-QP-028	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
Q29	CCP-QP-029	CCP Corrective Action Management
Q30	CCP-QP-030	CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel
Q40	CCP-QP-040	Support Training
T1	CCP-TP-001	CCP Project Level Data Validation and Verification

Attachment 1 – Implementing Procedures (Continued)

Reference Number	Procedure Number	Procedure Title
T2	CCP-TP-002	CCP Reconciliation of DQOs and Reporting Characterization Data
T5	CCP-TP-005	CCP Acceptable Knowledge Documentation
T6	CCP-TP-006	CCP Visual Examination Technique for Idaho National Laboratory (INL) Newly Generated TRU Waste
T28	CCP-TP-028	CCP Radiographic Test Drum and Training Container Construction
T30	CCP-TP-030	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
T53	CCP-TP-053	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
T86	CCP-TP-086	CCP CH Packaging Payload Assembly
T113	CCP-TP-113	CCP Standard Contact-Handled Waste Visual Examination
T163	CCP-TP-163	CCP Evaluation of Waste Packaging Records for Visual Examination of Records
T500	CCP-TP-500	CCP Remote-Handled Waste Visual Examination
T508	CCP-TP-508	CCP RH Standard Real-Time Radiography Inspection Procedure
T512	CCP-TP-512	CCP Remote-Handled Waste Sampling
T530	CCP-TP-530	CCP RH TRU Waste Certification and WWIS/WDS Data Entry

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Effective Date: MAY 3 1 2013

CCP-PO-002
Revision 27

CCP
Transuranic
Waste Certification Plan

Approved by: _____ Date: 5-30-13
CCP Site Project Manager
Mike Ramirez

Approved by: _____ Date: 5-30-13
NWP Quality Assurance
Val Cannon

Approved by: _____ Date: 5/30/13
NTPC Manager
Ed Gulbransen

Approved by: _____ Date: 5-30-13
DOE-CBFO
Office of Quality Assurance Acting Director
Dennis Miehls

Approved by: _____ Date: 5-30-13
DOE-CBFO
Office of National TRU Program Director
J.R. Stroble

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
4	05/17/2002	Revised to reflect requirements of new Department of Energy (DOE)/WIPP 02-3122, *Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (CH-WAC) (WIPP).
5	02/12/2003	Added CCP-TP-046, CCP-TP-047 AND CCP-TP-048 to Attachment 1, Table A.3-3, NDA Procedures.
6	06/11/2003	Updated to Revision 5 of the Quality Assurance Program Description (QAPD).
7	11/20/2003	Supplemented the description of the CCP organization in Section 4.1.1; added work planning criteria to Section 4.1.2[B]; revised Sections 4.10 and 4.10.2 to better describe how independent assessments are scheduled and conducted; updated procedure references.
8	01/08/2004	Added Procedures into Tables A-3.3, B-1, B-3, and B-4. Removed cancelled procedure (CCP-TP-080) from Table B-4.
9	03/15/2004	Incorporate changes to Revision 1 of DOE/WIPP-02-3122, Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant and other editorial changes. Changed references to match WAC.
10	11/15/2004	Revised to add procedures into Tables B-1, B-2, B-3 and B-4 in Attachment 4: Procedure Tables. Editorial changes throughout document. Incorporated Revision 20 of the Transuranic Package Transporter Modell II (TRUPACT-II) Safety Analysis Report (SAR), Revision 3 of the HalfPACT SAR, Revision 2 of the WIPP Waste Acceptance Criteria. Incorporated Carlsbad Field Office (CBFO) Document Release Record (DRR) comments.
11	02/24/2005	Revised to incorporate LANL Off-Site Source Recovery (OSR) Project. The Facility Quality Assurance Officer (FQAO) responsibilities were removed from this document to address Environmental Protection Agency (EPA) concerns regarding document consistency.
12	03/10/2005	Added procedures to Table A-3.3, Table B-1, and Table B-3. Added new Table B-3A, Solids Sampling Procedures.
13	05/09/2005	Incorporated changes to Revision 3 of DOE/WIPP-02-3122, CH-WAC for the WIPP. Updated 2.0 in Attachment 8. Updated web links in Section 5.
14	12/29/2005	Incorporated changes to Table 3.3.22, ^{239}Pu FGE Limits for Packages and Rev. 2 of the CH-TRAMPAC and editorial changes.

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
15	03/22/2006	Revised to add procedures to Attachment 1, Radioassay Requirements for Contact-Handled Transuranic Waste, Table A-3.3, NDA Procedures and Attachment 4, Procedure Tables, and editorial corrections throughout. Updated Figure 2-1, Central Characterization Project (CCP) Organization. Changed all references to DOE O 414.1A to DOE O 414.1. Updated step 3.2.2(B) (B.1) and step 3.2.6(B)(B.2) to address Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
16	11/16/2006	Revised to incorporate Revision 5 of DOE/WIPP 02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant.*
17	11/16/2006	Revised in response to concerns raised during the Idaho National Laboratory (INL) Remote-Handled (RH) Audit A-06-21. Corrected Section 4.4.1[B] and Attachment 11.
18	11/16/2006	Revised to incorporate Revision 6.0 of DOE/WIPP 02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant.*
19	05/22/2007	Revised to change the references for quality planning, list CCP special processes, and add a new Section 5.7 addressing configuration management of CCP equipment.
20	11/02/2007	Revised for the addition of Remote Handled Waste shipments.
21	01/26/2009	Revised procedure lists to include new and modified procedures/titles. Also, revised to incorporate Revision 6.2 of DOE/WIPP 02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*.
22	01/12/2010	Revised to incorporate Revision 6.4 of DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*.
23	04/07/2010	Revised to add Hanford Non-Destructive Assay (NDA) equipment.
24	06/30/2010	Revised to incorporate Revision 6.5 of DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*.
25	12/29/2010	Revised to incorporate Revision 7.0 of DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* and minor editorial changes.
26	07/14/2011	Revised to incorporate revision 7.1 and 7.2 of DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, minor editorial changes, and delete Appendix 11.

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
27	05/31/2013	Revised to incorporate Revision 7.3 and Revision 7.4 of DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, which incorporates the changes resulting for the Class 2 Permit modification entitled “Revised Waste Analysis Plan Waste Characterization Methods” which was approved by New Mexico Environment Department (NMED) on March 13, 2013, incorporate organizational changes to reflect the transition to Nuclear Waste Partnership (NWP), to clarify the hierarchy of quality assurance (QA) program documents, and minor editorial changes.

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1.0 INTRODUCTION

The Central Characterization Program (CCP) is tasked with characterizing and certifying Transuranic (TRU) waste for disposal at the Waste Isolation Pilot Plant (WIPP). Accordingly, the CCP must comply with DOE/WIPP 02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC). The WAC establishes the specific physical, chemical, radiological, and packaging criteria for acceptance of defense TRU waste shipments at WIPP. The WAC also requires that the CCP produce documents, including a certification plan, that addresses applicable requirements and criteria pertaining to packaging, characterization, certification, and shipping of defense TRU waste to WIPP for disposal.

The CCP may provide its services to a site by contracting directly with that site. If this is the case, the scope of services provided by CCP is specified in a Statement of Work (SOW) issued by the site. The SOW also specifies health and safety requirements, quality requirements, and other requirements specific to that site. A site-specific interface document may also be prepared which provides more detail on the site-CCP interface. The CCP has the option to use data from established TRU waste characterization activities at a U.S. Department of Energy (DOE)-Carlsbad Field Office (CBFO)-certified site, per site-specific interface documents. Transportation services may be provided through the CCP Certified Program or by other DOE-CBFO certified sites.

The site has general management oversight responsibility for work performed by the CCP at the site. The site is responsible for ensuring that CCP conducts its activities in compliance with site requirements, as defined in the site-specific interface document for that location.

Figure 1-1, CCP Document Hierarchy for TRU Waste Characterization, Certification, and Transportation illustrates the hierarchy of regulatory requirements for TRU waste characterization, certification, and transportation, and reflects the flow-down of requirements from higher-level documents to site-level program documents and implementing procedures. To ensure that future changes to the WAC and other relevant requirements documents are appropriately reflected, this CCP Transuranic Waste Certification Plan (hereinafter referred to as the Plan) will be reviewed at least annually and updated as necessary.

This Plan establishes the programmatic framework and criteria within which the CCP ensures that TRU wastes can be certified as compliant with the WAC. This Plan includes the following sections:

- Section 2.0, ORGANIZATION OF THE CCP, describes the interaction between the characterization, certification, and transportation personnel, and lists the responsibilities of key CCP officials.

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- Section 3.0, COMPLIANCE PLAN FOR CH-WAC, describes CCP activities and specific documents that implement and verify compliance with each requirement.

- Section 4.0, WASTE ACCEPTANCE REQUIREMENTS AND CRITERIA FOR RH WASTE, describes CCP activities and specific documents that implement and verify compliance with each requirement.

- Section 5.0, QUALITY ASSURANCE PLAN, describes how the CCP complies with DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document* (QAPD) (Reference 18), the WAC (Reference 47), DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* (WCPIP) (Reference 17), and provides the QA Plan for transportation as required by Title 10 *Code of Federal Regulations* (CFR), *Energy,* Part 71, *Packaging and Transportation of Radioactive Material,* Subpart H, *Quality Assurance*.

This Plan and associated Quality Assurance (QA) Plan (Section 5.0), CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (QAPjP), CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC),* and CCP-PO-505, *Remote-Handled Transuranic Waste Authorized Methods for Payload Control* establish the programmatic framework for the CCP's waste characterization, certification, and transportation activities. The QA Plan (Section 5.0) within this Plan implements all of the applicable CBFO QAPD requirements. These documents are submitted to the CBFO for review and approval. CCP will not characterize, certify, or ship TRU wastes to the WIPP before CBFO approval of this Plan.

1.1 CBFO Organization and Responsibilities

1.1.1 DOE-CBFO Office Director, Office of (Quality Assurance Manager)

[A] The DOE-CBFO QA Manager provides independent oversight of QA activities of the CCP and approves this Plan. This will include audits and surveillances to ensure that CCP is in compliance with this Plan.

1.1.2 DOE-CBFO Office Director, Office of National TRU Program

[A] The DOE-CBFO Office Director, Office of National TRU Program provides overall policy direction and oversees the CCP characterization and certification activities and approves this Plan.

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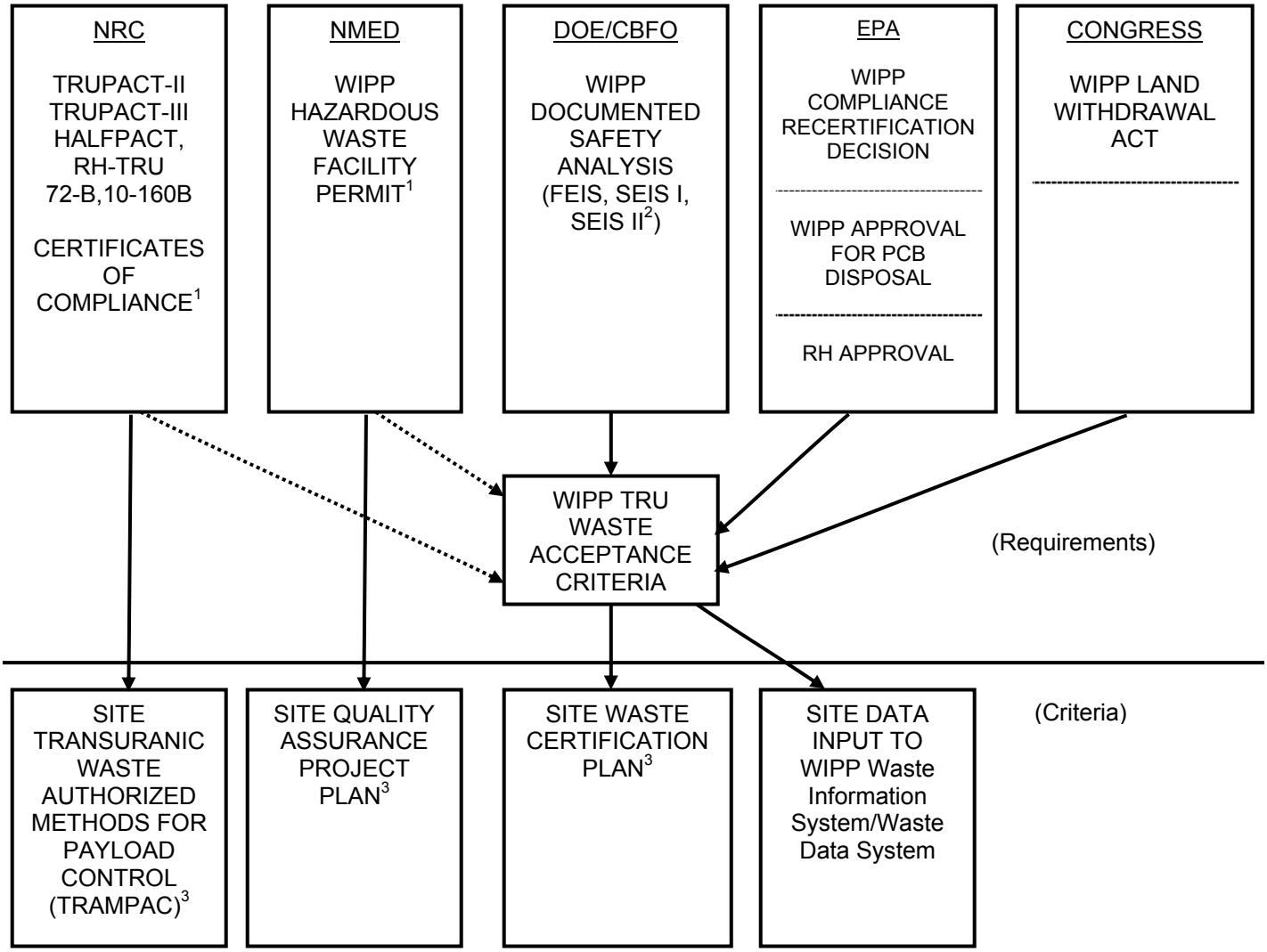
Figure 1-1. CCP Document Hierarchy for TRU Waste Characterization, Certification, and Transportation



Note 1: The TRAMPACs as referenced by the TRUPACT-II, TRUPACT-III, HalfPACT, and RH-TRU 72-B Certificates of Compliance, the Safety Analysis Report (SAR) as referenced by the 10-160B Certificate of Compliance, and the WIPP Hazardous Waste Facility Permit (HWFP) provide detailed requirements. This Plan provides only an overview of these requirements.

Note 2: Final Environmental Impact Statement (FEIS), Supplemental Environmental Impact Statement (SEIS).

Note 3: All work performed by the site for the CBFO must be performed under an approved QA program. The site-specific Transuranic Waste Authorized Methods for Payload Control (TRAMPAC) can be a separate document or can be embodied in the site waste certification plan. The 10-160B SAR does not require the preparation of a site-specific TRAMPAC. Instead, acceptable methods for payload compliance for the 10-160B package are implemented by a Nuclear Regulatory Commission (NRC)-approved site-specific Appendix to the 10-160B SAR.

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2.0 ORGANIZATION OF THE CCP

The responsibilities for TRU waste management of the CCP are distributed within various organizations. This section identifies the organizations involved in the CCP and describes the responsibilities of and interactions between these organizations.

2.1 Organization and Responsibilities

2.1.1 CCP Management

[A] CCP management has overall responsibility for successfully accomplishing activities subject to the QAPD. Management provides the necessary planning, organization, direction, control, resources, and support to achieve their defined objectives. Management is responsible for planning, performing, assessing, and improving the work.

[B] CCP management is responsible for establishing and implementing policies, plans, and procedures that control the quality of work, consistent with the provisions of the CBFO QAPD.

[C] Ensuring that adequate technical and QA training is provided for personnel performing activities subject to the CBFO QAPD.

[D] CCP management is responsible for ensuring that individual workers are knowledgeable of requirements for work they perform and are provided the necessary resources and administrative controls needed to accomplish assigned tasks.

[E] Ensuring compliance with all applicable regulations, DOE orders and requirements, and applicable federal, state, and local laws.

[F] Ensuring that personnel adhere to procedures for the generation, identification, control, and protection of QA records.

[G] Exercising the authority and responsibility to STOP unsatisfactory work such that cost and schedule do not override environmental, safety, or health considerations.

[H] Developing, implementing, and maintaining plans, policies, and procedures that implement the CBFO QAPD.

[I] Identifying, investigating, reporting, and correcting quality problems.

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[J] Members of CCP management are responsible for achieving and maintaining quality in their area. Quality achievement is the responsibility of those performing the work. Quality achievement is verified by persons or organizations not directly responsible for performing the work.

[K] CCP management empowers employees by delegating authority and decision making to the lowest appropriate level in the organization.

[L] Figure 2-1, CCP Organization, is a functional organization chart pertaining to TRU waste characterization and certification activities at the CCP. The following subsections identify the organizations that oversee the CCP and describe the roles and responsibilities of key positions within the CCP charged with implementing the requirements defined in this Plan.

2.1.2 NTPC Certification Manager

[A] The National TRU Program Certification (NTPC) Manager is responsible for the day-to-day management and direction of CCP activities. The NTPC Certification Manager is responsible for:

[A.1] Ensuring successful CCP/site interface.

[A.2] Ensuring CCP plans and operations are coordinated, integrated, and consistent with DOE-CBFO programs, policies, and guidance.

[A.3] Coordinating CCP activities and functioning as principal point-of-contact (POC) with DOE-CBFO and other regulating agencies.

[A.4] Reviewing and approving this Plan.

2.1.3 CCP Certification Manager

[A] The CCP Certification Manager is the principal POC with DOE (including CBFO and National TRU Program [NTP]) for technical activities associated with TRU waste. The CCP Certification Manager performs the Site Project Manager (SPM) duties described in Appendix E of the CBFO QAPD. The CCP Certification Manager may delegate specific individuals within CCP to perform functions that are the responsibility of an SPM. The use of the term “SPM” in this Certification Plan refers to those delegated individuals. This delegation is documented by the completion and approval of an SPM Qualification Card in accordance with CCP-QP-002.

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The CCP Certification Manager coordinates with the CCP Waste Certification Official (WCO) and Transportation Certification Official (TCO) and oversees CCP activities to ensure that TRU waste is characterized and certified compliant with WIPP requirements. Specific responsibilities assigned to the CCP Certification Manager include the following:

[A.1] Reviewing and approving this Plan.

[A.2] Developing, maintaining, reviewing, approving, and implementing CCP procedures and plans. Development, approval, and implementation of procedures and plans will occur at the earliest time consistent with the schedule for accomplishing the activities.

[A.3] Scheduling revisions and distributing CCP procedures and plans and forwarding these documents (if significantly revised) to DOE-CBFO for review and approval before implementation. The term “significantly revised” means non-editorial changes in accordance with the CBFO QAPD, Section 1.4.3.

[A.4] Ensuring CCP personnel receive appropriate training and are properly qualified, so that suitable proficiency is achieved and maintained.

[A.5] Obtaining Acceptable Knowledge (AK) information from waste generators regarding U.S. Environmental Protection Agency (EPA) hazardous waste numbers.

[A.6] Reviewing and approving interface documents.

[A.7] Waste selection and tracking.

[A.8] Halting characterization or certification activities if problems affecting the quality of certification processes or work products exist.

[A.9] Validating and verifying characterization data.

[A.10] Reconciling verified data with data quality objectives (DQOs).

[A.11] Evaluating and reconciling AK information with characterization data.

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[A.12] Preparing and submitting SPM Data Validation Summaries, Waste Stream Profile Forms (WSPFs), Characterization Information Summaries, Waste Stream Characterization Packages, and QA/Quality Control (QC) reports to DOE-CBFO.

[B] The CCP Certification Manager may delegate any of these activities to another individual; however, the CCP Certification Manager retains ultimate responsibility for ensuring that CCP certification requirements are met.

2.1.4 CCP Transportation Certification Official (TCO)

[A] The CCP TCO documents and certifies that payload containers and assemblies to be transported meet the requirements of CCP-PO-003. Specific responsibilities of the TCO include the following:

[A.1] Reviewing the applicable CCP transportation plans and transportation procedures.

[A.2] Interfacing with the SPM, CCP Certification Manager, WCO, and QA on matters associated with waste transportation.

[A.3] Reviewing and maintaining CCP-PO-003.

[A.4] Ensuring that data used in completion of the transportation documents are accurate and demonstrate that the waste is acceptable for transportation.

[A.5] Preparing and signing Payload Container Transportation Certification Documents (PCTCDs) and Overpack Payload Container Transportation Certification Documents (OPCTCDs).

[A.6] Preparing and signing Payload Assembly Transportation Certification Documents (PATCDs).

[A.7] Assisting QA with preparation of responses to deficiency reports in transportation matters.

[A.8] Ensuring that the transportation data entered into the WIPP Waste Information System/Waste Data System (WWIS/WDS) are accurate and demonstrate that waste is acceptable for disposal at WIPP.

[A.9] Reviewing interface documents.

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[A.10] Halting transportation certification activities if problems affecting the certification or work process exist.

2.1.5 NWP Quality Assurance (QA) Manager

[A] The (NWP) Nuclear Waste Partnership QA Manager has the overall responsibility and authority to perform independent assessments to verify the organization's achievement of quality and assure the effective implementation of the QA program. The NWP QA Manager has the responsibilities and authorities described in Section 1.1.5 of WP 13-1, Nuclear Waste Partnership LLC Quality Assurance Program Description (NWP QAPD).

2.1.6 Quality Assurance (QA)

[A] QA provides QA oversight and planning for TRU waste characterization and certification, verifies the implementation of the QAPjP and the QA requirements of this Plan, and provides day-to-day guidance to CCP staff on quality-related matters. QA has the authority to STOP CCP work activities if quality is not assured or controlled. QA has no assigned responsibilities unrelated to the QA Program that would prevent appropriate attention to QA matters. QA is responsible for verifying the achievement of quality by those performing the work. As shown in the organization chart in Figure 2-1, the Assurance Programs Manager reports to the NWP QA Manager, so that required authority and organizational freedom are provided, including sufficient independence from cost and schedule considerations. The Assurance Programs Manager performs the duties and has the responsibilities and authorities described for the site project QA manager in Appendix E of the CBFO QAPD. QA specific responsibilities include the following:

[A.1] Reviewing and approving CCP procedures and plans including this Plan.

[A.2] Coordinating and participating in internal and external audits and assessments to verify compliance.

[A.3] Tracking compliance and evaluating trends in compliance with QA objectives (QAOs).

[A.4] Performing assessments of testing facilities.

[A.5] Tracking and trending CCP nonconformances and corrective action reports (CARs).

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[A.6] Verifying CCP corrective actions.

[A.7] Submitting semi-annual and other QA/QC reports to the CCP Certification Manager and DOE-CBFO.

[A.8] Participating in the development of responses to Corrective Action Reports generated by DOE-CBFO or other external assessment organizations.

[A.9] Reviewing and approving supplier and subcontractor QA Plans.

[A.10] Reviewing interface documents.

[A.11] Providing guidance to all CCP organizations concerning identification, control, and protection of QA records.

[A.12] STOPPING work if quality is not ensured or controlled.

[A.13] Providing day-to-day guidance on quality-related matters to CCP staff.

[A.14] Maintaining liaison with participant QA organizations and other affected organizations.

[A.15] Developing, establishing, and interpreting QA policy and ensuring effective implementation.

[A.16] Interfacing, as appropriate, with the DOE-CBFO staff, participants, and other stakeholders on QA matters.

[A.17] Assisting CCP organizations with quality planning, documentation, quality measurement, and problem identification and resolution.

[A.18] Initiating, recommending, or providing solutions to quality problems through designated channels.

[A.19] Ensuring that further processing, delivery, installation, or use is controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred.

[A.20] Coordinating with responsible management on resolution of differences of opinion involving the definition and implementation of QA Program requirements. If not resolved, progressively elevating

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the issues to successively higher levels of management as necessary.

[A.21] Ensuring that a graded approach is used to exercise control over activities affecting quality to an extent consistent with their importance.

[A.22] Interfacing with the CCP WCO and TCO on matters related to waste certification and transportation.

[A.23] Providing inspection services for procurement, including source inspections

[A.24] Providing vendor qualification and maintenance of the NWP Qualified Suppliers List (QSL) for vendors used by the CCP.

[B] QA may delegate one or more individuals to perform the above functional responsibilities; however, QA retains ultimate responsibility for ensuring compliance with QA requirements.

2.1.7 CCP Waste Certification Official (WCO)

[A] The CCP WCO is responsible for reviewing data and information necessary to document TRU waste payload containers prepared for shipment to WIPP meet specified criteria. The WCO coordinates activities related to waste certification. Specific duties and responsibilities of the WCO include the following:

[A.1] Certifying that waste packages meet WAC requirements.

[A.2] Interfacing with the CCP Certification Manager, SPM, TCO, and QA on matters related to waste certification.

[A.3] Stopping waste certification activities if problems affecting the quality of certification processes or work products exist.

[A.4] Ensuring that certification data entered into the WIPP WWIS/WDS are accurate and demonstrate the acceptability of the waste for transport to and disposal at the WIPP.

[A.5] Reviewing the applicable CCP plans and procedures and any other waste certification-related documents.

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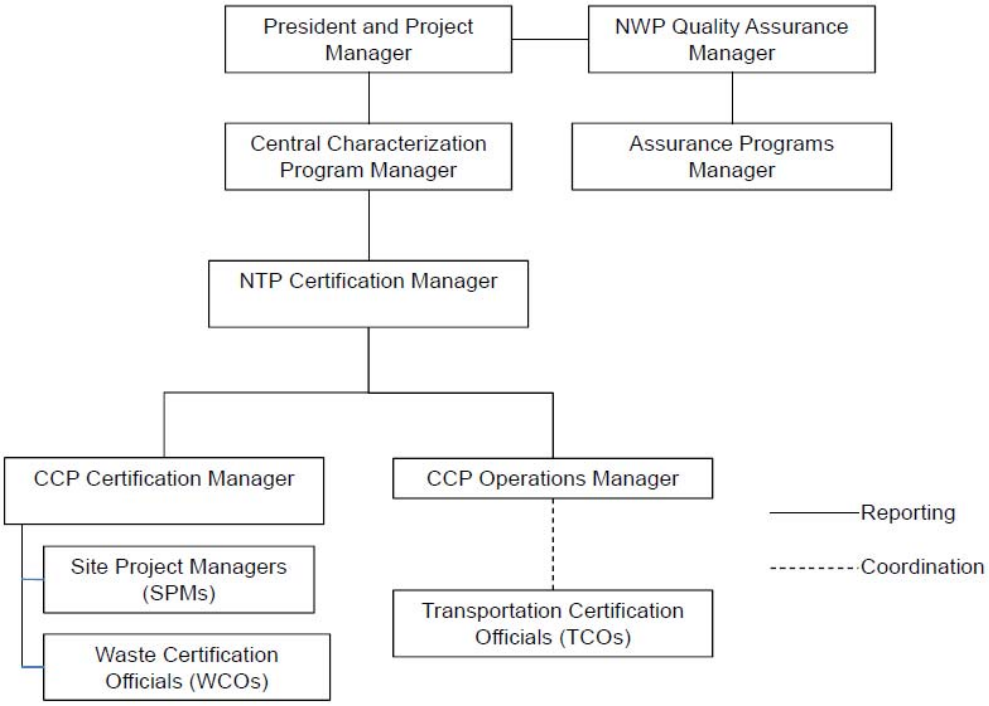
[A.6] Reviewing this Plan.

[A.7] Preparing responses to deficiency reports.

[B] The WCO may delegate one or more individuals to perform the above responsibilities; however, the WCO retains ultimate responsibility for ensuring compliance with WAC requirements.

Figure 2-1. CCP Organization



3.0 COMPLIANCE PLAN FOR CH-WAC

This section describes how the CCP complies with the requirements of the WIPP WAC and associated requirements contained in the WIPP Documented Safety Analysis (DSA) (Reference 4), the Transuranic Package Transporter II (TRUPACT-II), Transuranic Package Transporter III (TRUPACT-III), and/or HalfPACT Certificates of Compliance (References 5 and 6), the WIPP Land Withdrawal Act (LWA) (Reference 2) the WIPP HWFP (Reference 9), the Compliance Recertification Decision (Reference 10), the Initial Report for Polychlorinated Biphenyl (PCB) Disposal Authorization (Reference 11), the EPA letter of approval to land dispose non-liquid PCBs at WIPP (References 12 and 13), and the Revision to the Record of Decision for the DOE's WIPP Disposal Phase and associated WIPP National Environmental Policy Act (NEPA) database (References 14 and 15).

3.1 Organization of Requirements

WAC requirements are organized under five major categories: container properties, radiological properties, physical properties, chemical properties, and data package contents. Sections 3.2 through 3.6 correlate with the organization in the WAC for Contact-Handled (CH) TRU waste requirements and identify methods of compliance to meet each requirement. Procedures that implement the process controls, techniques, tests, and other actions to be applied to each TRU payload container, waste stream, and shipment are also identified. Revisions of requirements in referenced documents controlled by agencies or organizations other than DOE (e.g., EPA, NMED, and NRC) shall have precedence over values quoted in this Plan. Changes incorporated in future revisions of the CH-WAC will be reflected in future revisions of this Plan.

Regarding any discussions of compliance and verification methods, if a requirement is not met, personnel will initiate a Nonconformance Report (NCR) or a CAR in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*. Corrective action will be taken in accordance with CCP-QP-029, *CCP Corrective Action Management,* to resolve nonconformances. Section 5.3 of this Plan provides additional details about the NCR/CAR process. Only waste from a properly characterized waste stream will be certified as meeting the requirements and associated criteria contained in this Plan. Waste containers for a waste stream that has not been represented by an approved WSPF will not be shipped to WIPP for disposal (Reference 9, Part 2, Section 2.3.3.10). The required characterization, certification, and shipment data will be transmitted to WIPP using the WWIS/WDS.

3.1.1 DOE Operations and Safety Requirements for WIPP

[A] The WIPP DSA (Reference 4) addresses TRU waste handling and emplacement operations. The waste acceptance for emplacement in the WIPP will conform to the WAC.

3.1.2 NRC Transportation Safety Requirements for Type B Packages

[A] Acceptable methods for payload compliance control are defined in the TRUPACT-II, TRUPACT-III and HalfPACT Certificates of Compliance and implemented by the CH-TRAMPAC (References 23a and 23b). For shipments to WIPP, the CCP has prepared a CCP CH-TRAMPAC (CCP-PO-003) and a CCP TRUPACT-III TRAMPAC (CCP-PO-050 *CCP Trupact-III TRU Waste Authorized Methods For Payload Control [CCP TRUPACT-III TRAMPAC]*) describing compliance with each payload parameter. The CCP CH-TRAMPAC and CCP TRUPACT-III TRAMPAC will contain sufficient detail to allow reviewers to adequately understand and evaluate the compliance methodology for each payload parameter.

[B] The QA Program in Section 5.0 of this Plan defines the QA activities that apply to the use of NRC-approved transportation packaging in accordance with Title 10 CFR Part 71, Subpart H (Reference 24).

3.1.3 NMED Hazardous Waste Facility Permit Requirements

[A] TRU waste is classified as TRU mixed waste if it contains hazardous constituents regulated under the New Mexico Hazardous Waste Act (Reference 25). Only TRU mixed waste and TRU waste that have been characterized in accordance with WIPP Waste Analysis Plan (WIPP WAP) and that meet the treatment, storage, and disposal facility waste acceptance criteria as presented in permit Sections 2.3.3.1 through 2.3.3.10 will be shipped to WIPP for disposal. The CCP QAPjP describes compliance with the WIPP WAP.

3.1.4 EPA Compliance Recertification Decision Requirements

[A] Title 40 CFR §194.24(c) (Reference 26) requires the DOE to specify the limiting values for waste components to be emplaced in the repository. The EPA's Recertification Decision specifies waste components (including free water,

metals, and cellulose, plastic, and rubber) and their limits that are associated with the waste proposed for disposal at WIPP.

[B] CCP estimates or determines the weight of cellulose, plastics, and rubber, and reports this estimate in the WWIS/WDS on a container basis. In addition, CCP quantifies and reports the activity values of each of the following radionuclides for purposes of tracking the inventory curie content: ^{241}Am, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{233}U, ^{234}U, ^{238}U, ^{90}Sr, and ^{137}Cs. The presence or absence of these radionuclides is determined using AK documentation and radioassay in accordance with Appendix A of the WAC. The results of these determinations are reported in the WWIS/WDS on a payload container basis. TRU waste payload containers shall contain more than 100 nanocuries per gram (nCi/g) of waste of alpha-emitting TRU isotopes with half-lives greater than 20 years, as specified in Section 3.3.3.

3.1.5 EPA Approval for PCB Disposal

PCB contaminated TRU and PCB contaminated TRU waste mixed with a hazardous waste including PCB remediation waste, PCB Articles, and PCB bulk product waste may be stored and disposed at the WIPP (References 11, 12, 13, 14, and 15). Waste streams identified as containing PCBs shall be brought to the attention of the CBFO in order that a determination can be made regarding their acceptability at WIPP. Applicable waste acceptance criteria are addressed in Sections 3.2.5, 3.4.1, and 3.5.6.

3.1.6 Land Withdrawal Act Requirements (Public Law 102-579)

[A] WIPP can only accept radioactive waste generated by atomic energy defense activities of the United States (Reference 1). A TRU waste is eligible for disposal at the WIPP if it has been generated in whole or in part by one or more of the following functions (References 27 and 28):

- Naval reactors development
- Weapons activities, including defense inertial confinement fusion
- Verification and control technology

- Defense nuclear materials production
- Defense nuclear waste and materials by-products management
- Defense nuclear materials security and safeguards and security investigations
- Defense research and development

Using AK, CCP determines that each waste stream to be disposed at WIPP is “defense” TRU waste.

[B] High-level radioactive waste or spent nuclear fuel shall neither be transported, emplaced, nor disposed of at the WIPP. Also, no TRU waste may be transported by or for the DOE to or from the WIPP, except in Type B packages:

- the design of which has been certified by the NRC, **AND**
- that have been determined by the NRC to satisfy its QA requirements.

3.2 Container Properties Criteria and Requirements

3.2.1 Payload Container Description

[A] Requirements

[A.1] Each payload container shall be assigned to a payload shipping category (References 23a and 23b). Authorized payload containers are listed in Table 1, Authorized Payload Container Contents. Payload containers shall meet U.S. Department of Transportation (DOT) Specification 7A, Type A, packaging requirements delineated in 49 CFR 173.465 (Reference 4, Section 2.6.2; Reference 9, Attachment A1, Section A1-1b, Reference 12, Section VI.F). Payload containers must be made of steel and be in good and unimpaired condition prior to shipment from the generator/storage sites. To demonstrate compliance with the requirement that payload containers be in good and unimpaired condition, the exterior of all payload containers shall undergo 100 percent visual inspection prior to loading into a Type B package. The results of this visual inspection

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shall be documented using Appendix 7, Payload Container Integrity Checklist, of this Plan. A payload container in good and unimpaired condition, 1) does not have significant rusting, 2) is of sound structural integrity, and, 3) does not show signs of leakage. Significant rusting is a readily observable loss of metal due to oxidation (e.g., flaking, bubbling, or pitting) that causes degradation of the payload container's structural integrity. Rusting that causes discoloration of the payload container surface or consists of minor flaking is not considered significant. A payload container is not of sound structural integrity if it has breaches or significant denting/deformation. Breaching is defined as a penetration in the payload container that exposes the internals of the container. Significant denting/deformation is defined as damage to the payload container that results in creasing, cracking, or gouging of the metal, or damage that affects payload container closure. Dents or deformations that do not result in creasing, cracking, or gouging or affect payload container closure are not considered significant. CCP will report to the WWIS/WDS the number and types of payload containers planned for shipment to the WIPP.

[B] Compliance and Verification

[B.1] The CCP procures payload containers (e.g., drums, Standard Waste Box [SWBs], Standard Large Box2 [SLB2] and Ten-Drum Overpack [TDOPs]) that meet the following requirements:

(a) SWBs, SLB2s, and TDOPs are procured to the same standards and specifications as the containers used in Type A testing.

(b) New 55-gallon drums are procured as UN1A2 reusable drums, in accordance with applicable requirements of 49 CFR 173, which is allowable per CBFO memo CBFO:NTP:JFS97-1144UFC5822. Drums may also be procured to the same standards and specifications as the drums used in Type A testing.

[B.2] Recovered drums are inspected to ensure that they are DOT Specification 17C or 17H or meet

UN1A2 requirements for reusable drums. Permanent markings embossed on the bottom of the drums are used to verify the drum type if procurement records are not available. Alternatively, if the markings are not visible (e.g., drums that are galvanized through a dipping process, which obscures the embossing), the drums are inspected and inspection results are compared to requirements for 17C, 17H, or UN1A2 drums. Personnel examine retrievably stored containers for compliance with the applicable requirements and verify that the containers are in good condition in accordance with site-specific container management procedures (See Appendix 4, Procedure Tables, Table B-1), and CCP-TP-033, *CCP Shipping of CH-TRU Waste*. CCP-TP-033 contains Appendix D from the WAC, and is used to document compliance with the Payload Container Integrity Checklists.

[B.3] Personnel document their procurement acceptance and/or visual inspections. If packages cannot be shown to meet the above requirements by procurement records and/or physical examination, CCP personnel take corrective action (e.g., repackage the waste into a certifiable container) to resolve the nonconformance.

[B.4] Personnel will report the number and types of containers to WIPP using WWIS/WDS, in accordance with CCP-TP-030, *CCP CH-TRU Waste Certification and WWIS/WDS Data Entry*.

Table 1. Authorized Payload Container Contents

Payload Container	Contents
55-gallon drum	Either direct loaded or containing a pipe component (commonly referred to as a pipe overpack container [POC])
85-gallon drum[1]	Either direct loaded or containing a 55-gallon drum
100-gallon drum	Direct loaded
Shielded container	Containing a 30-gallon steel drum
SWB	Either direct loaded or containing up to four 55-gallon drums, up to three 85-gallon drums, up to two 100-gallon drums, or one bin
SLB2	Direct loaded or containing various individual containers (4 x 4 x 7-foot boxes and 5 x 5 x 8-foot boxes as well as other containers of smaller sizes)
TDOP	Either direct loaded or containing up to ten 55-gallon drums or up to six 85-gallon drums or one SWB

[1]The term "85-gallon drum" includes 75-gallon to 88-gallon drums.

3.2.2 Container Weight and Center-of-Gravity

[A] Requirements

[A.1] See the CH-TRAMPAC for weight limits and center-of-gravity requirements (Reference 23a). See the TRUPACT-III TRAMPAC for applicable weight limits (Reference 23b).

3.2.3 Assembly Configurations

[A] Requirements

[A.1] See the CCP CH-TRAMPAC and TRUPACT-III TRAMPAC for payload assembly configuration requirements (References 23a and 23b).

3.2.4 Removable Surface Contamination (Payload Containers)

[A] Requirements

[A.1] The removable surface contamination for each CH-TRU waste payload container, payload assembly and packaging must be measured and documented prior to shipment. Removable surface contamination

on CH-TRU waste payload containers, container assemblies, and packaging shall not be greater than 20 disintegrations per minute (dpm) per 100 square centimeters (cm^2) for alpha-emitting radionuclides and 200 dpm per 100 cm^2 for beta-gamma-emitting radionuclides (Reference 9, Attachment A1, Section A1-1d[2]; References 29 and 30).

[A.2] Fixing surface contamination to meet the above criterion is not permitted.

[B] Compliance and Verification

[B.1] A Host site Radiological Control Technician (RCT) surveys TRU waste payload containers, payload assemblies and packaging, for removable surface contamination before they are loaded for shipment. The RCT assesses removable contamination and documents the results in accordance with Host site radiological survey procedures. If the RCT determines that removable contamination exceeds 20 dpm per 100 cm^2 for alpha-emitting radionuclides or 200 dpm per 100 cm^2 for beta-gamma-emitting radionuclides, personnel determine whether surface contamination can be removed to meet established limits. If compliance with removable surface contamination limits cannot be achieved, personnel segregate and disposition noncompliant container(s) in accordance with CCP-QP-005. The survey results are added to the container data package. The WCO confirms removable surface contamination survey results in accordance with Host site radiological survey procedures. CCP-TP-033 is utilized to comply with requirements of this section.

3.2.5 Container Identification/Labeling

[A] Requirements

[A.1] Each CH-TRU waste payload container shall be uniquely identified by means of bar code labels permanently attached in conspicuous locations. (Reference 23a, Section 2.4; Reference 23b, Section 2.3). The unique payload container identification number shall include a site identifier as a prefix (References 23a and 23b, Section 6.2.1).

[A.2] The container identification number shall be in medium to low density Code 39 bar code symbology as required by American National Standards Institute (ANSI) Standard ANSI/Association for Automatic Identification and Mobility (AIM) BC1-1995 (Reference 31) in characters at least 1-in. high, and alphanumeric characters at least 0.5-in. [inch] high. In the case of a 55-gallon, 85-gallon, or 100-gallon drum, or a shielded container, a minimum of three bar code identification labels shall be placed at approximately equal intervals around the circumference of the drum or shielded container (e.g.,120 degrees for three labels, 90 degrees for four labels) so that at least one label is clearly visible when drums or shielded containers are assembled into a payload assembly (e.g., a label must be visible after slip sheets and wrapping are applied). The bar code labels are required on the flat sides of SWBs. For TDOPs and SLB2s, a minimum of one bar code is required.

[A.3] Payload containers shall be marked “Caution Radioactive Material” using a yellow and magenta label as specified in 10 CFR Part 835 (Reference 30).

[A.4] Payload containers whose content are also Resource Conservation and Recovery Act (RCRA) regulated (mixed-TRU) shall be additionally marked “Hazardous Waste” as specified in 40 CFR §262.32 (Reference 33).

[A.5] For TRU and mixed-TRU wastes containing PCBs, the payload containers shall be marked in accordance with 40 CFR §761.40 (Reference 13).

[A.6] Additionally, DOT Type B packages (i.e., the TRUPACT-II, TRUPACT-III and HalfPACT) containing PCBs must be properly marked in accordance with the EPA letter of approval and 40 CFR §761.40 (References 12 and 13).

[A.7] If an empty drum or shielded container is used as dunnage to complete a shipment to the WIPP, the drum shall be labeled with a unique payload identification number and “EMPTY” or “DUNNAGE.”

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[A.8] If a seven-pack of 55-gallon drums, a four-pack of 85-gallon drums, a three-pack of 100-gallon drums, or a SWB is shipped as dunnage to fill a TRUPACT-II, the drums or SWB will be labeled as “EMPTY” or “DUNNAGE” but will not be labeled with the unique site-specific payload container identification numbers (CINs) or included in WWIS/WDS data.

[B] Compliance and Verification

[B.1] Fifty-five gallon, 85-gallon, 100-gallon drums or shielded container certified will have a minimum of three bar code labels equally spaced around the drum that identify the site and contain a unique identification number in accordance with the Host site-specific container management procedure(s). Bar code labels will be affixed on the flat side of SWBs, while on a TDOP, a minimum of one bar code will be affixed.

[B.2] After verifying payload parameters, personnel ensure each container is marked with the appropriate site and container identification number in accordance with the host site-specific container management procedures. The TCO verifies the container marking (e.g., barcode, Radiation Material, PCB, or Hazardous Waste labels) in accordance with CCP-TP-033.

[B.3] Refer to Section 3.2.6[B] of this Plan for compliance with the dunnage requirements and verifications.

3.2.6 Dunnage

[A] Requirements

[A.1] See the CCP CH-TRAMPAC for dunnage requirements (Reference 23a).

[A.2] The use of dunnage shall be minimized.

[A.3] In the event the use of dunnage cannot be avoided, the preferred practice for maximizing the efficiency of waste handling and the utilization of disposal room capacity is to ship them in assemblies (e.g., a seven-pack assembly of 55-gallon drums).

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[B] Compliance and Verification

[B.1] The minimization of the use of dunnage is through load management. The use of dunnage drums is reviewed and approved concurrently with the review and approval of shipment assemblies by the WWIS/WDS Data Administrator on a case-by-case basis.

3.2.7 Filter Vents

[A] Requirements

[A.1] Payload containers that have been stored in an unvented condition (i.e., no filters and/or unpunctured liner) shall be aspirated for a specific length of time as described in the CH-TRAMPAC to ensure equilibration of any gases that may have accumulated in the closed payload container (References 23a and 23b, Section 5.3.1). All payload containers (including overpacks, but not dunnage containers) shall be vented with one or more filters to control gas concentration and pressure (Reference 4, Section 2.6.2; Reference 47, Reference 23a, Section 2.5.1; Reference 23b, Section 2.4.1; Reference 9, Attachment A1, Section A1-1b[2]). Filters shall meet the specifications described in the WIPP Hazardous Waste Facility Permit and the CH-TRAMPAC, and TRUPACT-III TRAMPAC (Reference 9, Attachment A1, Section A1-1d [1]; Reference 23a, Section 2.5.1; Reference 23b, Section 2.4.1). The model number of each filter vent or combination of filter vents will be reported using the WWIS/WDS.

[B] Compliance and Verification

[B.1] Personnel will procure approved filters for use on TRU waste containers. Filters will be selected from the DOE-CBFO-approved filter list. Filters will be procured in accordance with CCP-QP-015, *CCP Procurement*.

[B.2] The personnel visually verify that filter vents, if present, have been installed properly. If filter vents are not installed, personnel procure filter vents that meet specifications and install the correct number of

filter vents. The WCO confirms payload venting in accordance with CCP-TP-030. When a payload container does not meet the payload container filter requirements, an NCR is initiated. Nonconforming filters are replaced as necessary.

3.3 Radiological Properties

3.3.1 Radionuclide Composition

[A] Requirements

[A.1] The radionuclide composition of each waste container being characterized must be quantified and reported for purposes of tracking the inventory curie content. The activities and masses of the following radionuclides must be reported: ^{241}Am, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{233}U, ^{234}U, ^{238}U, ^{90}Sr, and ^{137}Cs. The estimated activities and masses, including their associated total measurement uncertainties (TMU) expressed in terms of one standard deviation for these ten radionuclides shall be reported to the WWIS/WDS on a payload container basis. For any of these ten radionuclides whose presence can be substantiated from AK, direct measurement, computations, or a combination thereof, and whose measured data are determined to be below the lower limit of detection (LLD) for that radionuclide, the site shall report the character string “< LLD” to the WWIS/WDS for the activity and mass of that radionuclide; otherwise a value of zero shall be reported. Quantitative estimates for LLD shall not be used when calculating related radiological properties of the waste such as TRU alpha activity concentration, ^{239}Pu Fissile Gram Equivalent (FGE), decay heat, etc.

[A.2] In addition, all radionuclides other than the ten WIPP-tracked radionuclides (i.e., ^{241}Am, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{233}U, ^{234}U, ^{238}U, ^{90}Sr, and ^{137}Cs) that contribute to 95 percent of the radioactive hazard for the payload container shall be reported on the bill of lading or manifest in accordance with Title 49 CFR, *Transportation* §172.203, (Reference 36) and Title 49 CFR §173.433, (Reference 37). The activities and masses of these other radioisotopes shall also be reported to the WWIS/WDS along with their

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associated TMU, expressed in terms of one standard deviation for each waste container.

[B] Compliance and Verification

[B.1] CCP uses AK and measurements to determine radionuclide composition. The requirements for nondestructive assay (NDA) are presented in Appendix 1, Radioassay Requirements for Contact-Handled Transuranic Waste. NDA personnel quantify radionuclide values in accordance with the applicable procedures listed in Appendix 1, Table A-2.1, NDA Procedures. NDA personnel use AK data and assay measurements and calculations to create an isotopic profile of each waste container. The activities and masses of the ten WIPP-tracked radionuclides including TMU (one standard deviation) and all radionuclides other than the ten WIPP-tracked radionuclides including TMU (one standard deviation) that contribute to 95 percent of the radioactive hazard for the payload container being characterized will be reported for each container using WWIS/WDS in accordance with procedure CCP-TP-030. In addition, all radionuclides other than the ten WIPP-tracked radionuclides that contribute to 95 percent of the radioactive hazard for the payload container shall be reported on the bill of lading or manifest in accordance procedure CCP-TP-033.

[B.2] For any of the ten WIPP-tracked radionuclides whose presence can be substantiated from AK, direct measurement, or a combination thereof, and whose measured data are determined to be below the LLD for that radionuclide, the CCP will report the character string “< LLD” to the WWIS/WDS for the activity and mass of that radionuclide; otherwise a value of zero will be reported.

3.3.2 Fissile Material Quantity (^{239}Pu FGEs)

[A] Requirements

[A.1] For each payload container, the sum of ^{239}Pu FGE plus two times its associated TMU, expressed in terms of one standard deviation, shall comply with the limits in Table 2, ^{239}Pu FGE Limits for Payload Containers (Reference 4, Section 6.4.2 References 23a and 23b, Section 3.1.1). The values calculated for ^{239}Pu FGE and its associated TMU, expressed in terms of one standard deviation, shall be reported to the WWIS/WDS for each payload container.

[A.2] See the CCP CH-TRAMPAC for ^{239}Pu FGE limits applicable to the TRUPACT-II and/or HalfPACT packaging (Reference 23a).

[A.3] See the CCP CH-TRUPACT-III TRAMPAC for ^{239}Pu FGE limits applicable to the TRUPACT-III packaging (Reference 23b).

Table 2. ^{239}Pu FGE Limits for Payload Containers

Waste Container Type	Be/BeO Limits	Special Waste Container Geometry/Material Requirements	^{239}Pu FGE Limit
Non-Machine Compacted Waste			
55- (excluding pipe overpacks), 85-, and 100-gallon drums	≤ 1% by weight of the waste	None	≤ 200
55-gallon drum configured as a pipe overpack (i.e., a standard, S100, S200, or S300 pipe overpack)	≤ 1% by weight of the waste	None	≤ 200
Shielded Container	≤ 1% by weight of the waste	None	≤ 200
SLB2	≤ 1% by weight of the waste	The minimum ^{240}Pu content in grams for the SLB2 waste container, denoted in the adjacent ^{239}Pu FGE Limit column as a parenthetical, shall be determined after the subtraction of two times the error (i.e., two standard deviations)	≤ 325 ≤ 340 (5) ≤ 360 (15) ≤ 380 (25)
SWB	≤ 1% by weight of the waste	None	≤ 325
TDOP	≤ 1% by weight of the waste	None	≤ 325
55- (excluding pipe overpacks), 85-, and 100-gallon drums	>1% by weight of the waste up to 100 kg	None	≤ 100
SWB	>1% by weight of the waste	None	≤ 100
TDOP	>1% by weight of the waste	None	≤ 100

Table 2. ^{239}Pu FGE Limits for Payload Containers (Continued)

Waste Container Type	Be/BeO Limits	Special Waste Container Geometry/Material Requirements	^{239}Pu FGE Limit
Machine Compacted Waste			
Pipe overpacks (i.e., a standard, S100, S200 , or S300 pipe overpack)	> 1% by weight of the waste	None	≤ 140
55- (excluding pipe overpacks), 85-, and 100-gallon drums	≤ 1% by weight of the waste	Partially compacted waste. Applies to waste that has been compacted such that the distribution and form of polyethylene in the waste does not exceed 0.646 gram/cubic centimeter (g/cm^3), i.e., 70% of the theoretical full density of polyethylene (0.923 g/cm^3).	≤ 200
55- (excluding pipe overpacks), 85-, and 100-gallon drums	≤ 1% by weight of the waste	Fully compacted waste without design vertical spacing. Applies to waste that has been compacted such that the distribution and form of polyethylene in the waste exceeds 0.646 g/cm^3, i.e., 70% of the theoretical full density of polyethylene (0.923 g/cm^3).	≤ 170
55- (excluding pipe overpacks), 85-, and 100-gallon drums	≤ 1% by weight of the waste	Fully compacted waste with design vertical spacing. Applies to waste that has been compacted such that the distribution and form of polyethylene in the waste exceeds 0.646 g/cm^3, i.e., 70% of the theoretical full density of polyethylene (0.923 g/cm^3), and the dimensions of the payload containers (e.g., 100-gallon drums) ensure a minimum 0.5-in. separation between their compacted waste contents and other axially adjacent payload containers.	≤ 200
Shielded Container	≤ 1% by weight of the waste	None	≤ 200

Table 2. ^{239}Pu FGE Limits for Payload Containers (Continued)

Waste Container Type	Be/BeO Limits	Special Waste Container Geometry/Material Requirements	Waste Container
Machine Compacted Waste			
SWB/TDOP	≤ 1% by weight of the waste	Fully compacted waste with design vertical spacing. Applies to waste that has been compacted such that the distribution and form of polyethylene in the waste exceeds 0.646 g/cm^3, i.e., 70% of the theoretical full density of polyethylene (0.923 g/cm^3), and contains one 16-gauge steel 100-gallon drum having a top and bottom design spacing of 0.75 and 0.50-inches, respectively, with no loose material or other drums of waste in the SWB/TDOP.	≤ 250
SWB/TDOP	≤ 1% by weight of the waste	Fully compacted waste with design vertical spacing. Containing one 55-, 85-, or 100-gallon drum whose design ensures a minimum of 0.5-in. vertical spacing between drum contents and the exterior top and bottom of the drum (e.g., a recessed lid) with no loose material or other drums of waste in the SWB/TDOP.	≤ 200
SWB/TDOP	≤ 1% by weight of the waste	Partially compacted waste. Containing one 55-, 85-, or 100-gallon drum whose contents have been compacted such that the distribution and form of polyethylene in the waste does not exceed 0.646 g/cm^3, i.e., 70% of the theoretical full density of polyethylene (0.923 g/cm^3) with no loose material or other drums of waste in the SWB/TDOP.	≤ 200
SWB/TDOP	≤ 1% by weight of the waste	Fully compacted waste with design vertical spacing. Applies to waste that has been compacted such that the distribution and form of polyethylene in the waste exceeds 0.646 g/cm^3, i.e., 70% of the theoretical full density of polyethylene (0.923 g/cm^3).	≤ 185

[B] Compliance and Verification

[B.1] Personnel obtain the CH-TRU waste fissile content in accordance with the processes described in Appendix 1, Radioassay equipment is qualified under the corresponding Performance Demonstration Program (PDP) requirements. CCP calculates the fissile or fissionable radionuclide content of the CH-TRU waste container as ^{239}Pu FGE according to approved calculation methods in accordance with CCP-TP-033.

[B.2] Personnel compile and review AK to make initial determinations about radionuclide content and concentrations. CCP confirms AK by obtaining information on the isotopic composition of the waste through radioassay of the filled payload container.

[B.3] Personnel compute the container ^{239}Pu FGE and container ^{239}Pu FGE TMU manually or using a computational algorithm. Individual radionuclide mass quantities and TMUs are converted to ^{239}Pu FGE by multiplying the mass value (g) by ^{239}Pu FGE conversion factors (FGE/g) listed in Table 3.1.2 of the CH-TRAMPAC (Reference 23a) and Table 3.1-1 of the TRUPACT-III TRAMPAC (Reference 23b). The ^{239}Pu FGE of each payload container shall be calculated from the isotopic composition and quantity of radionuclides. The ^{239}Pu FGE value plus two times the measurement error shall be less than the applicable limit for each payload container.

[B.4] The total ^{239}Pu FGE error is the square root of the sum of the squares of the individual ^{239}Pu FGE TMUs. Two times this error shall be added to the ^{239}Pu FGE of the Type B package payload and compared to the limit. The ^{239}Pu FGE of the radionuclides in each payload container will be reported to the WIPP using the WWIS/WDS and the TRUPACT-II and TRUPACT-III payload total FGE will be recorded on the PATCD. Payload containers shipped to the WIPP will meet both the Type B package and the WIPP repository requirements for criticality.

3.3.3 TRU Alpha Activity Concentration

[A] Requirements

[A.1] TRU waste containers to be disposed of at the WIPP shall contain greater than 100 nCi/g of waste of alpha-emitting TRU isotopes, with half-lives greater than 20 years. Without taking into consideration the TMU, the TRU alpha activity concentration for a payload container is determined by dividing the TRU alpha activity of the waste by the weight of the waste. The weight of the waste is the weight of the material placed into the payload container (i.e., the net weight of the container). The weight of the waste is typically determined by subtracting the tare weight of the payload container (including the weight of the rigid liner and any shielding external from the waste, if applicable) from the gross weight of the payload container. In the event waste containers (e.g., 55-gallon, 85-gallon or 100-gallon drums) that have been radioassayed are overpacked in a payload container (e.g., in a SWB), CCP shall sum the

individual TRU alpha activity values of the individual waste containers and divide by the sum of the individual net waste weights (i.e., less container, shielding, and liner weights as appropriate) to determine the activity per gram for the payload container. Should CCP utilize load management by overpacking waste containers, the determination of the payload container's TRU alpha activity concentration shall be in accordance with Appendix 8, Payload Management of TRU Alpha Activity Concentration. Loading a 55-gallon pipe-overpack with cans is considered direct loading, not overpacking for the purposes of calculating the weight of the container. The TRU alpha activity concentration shall be reported to the WWIS/WDS; however, there are no reporting requirements for its associated TMU (Reference 35, Chapter 4).

[B] Compliance and Verification

[B.1] Personnel measure TRU alpha activity concentration in accordance with the NDA processes described in Appendix 1. Personnel calculate the TRU alpha activity concentration of the CH TRU waste container manually or using computational algorithms. Personnel will subtract the tare weight of the containers before calculating the TRU alpha activity concentration. Personnel validate and verify calculation programs, before the data are used in accordance with CCP-QP-022, *CCP Software Quality Assurance Plan*. Assay data are validated and verified, and submitted in batch data reports (BDRs) to the CCP Project Office. The WCO confirms the reported TRU alpha activity concentration is appropriately calculated and above the specified limit.

3.3.4 ^{239}Pu Equivalent Activity

[A] Requirements

[A.1] ^{239}Pu equivalent curie (PE-Ci) limits are shown in Table 3, PE-Ci Limits. PE-Ci quantities shall be calculated in accordance with Appendix 5 for each payload container and reported to the WIPP using the WWIS/WDS (Reference 4, Section 3.3.2.3.1 and Table 3.3-6). There are no reporting requirements for the associated TMU.

Table 3. PE-Ci Limits

Payload Container	Packing Configuration	PE-Ci Limit
55-, 85-, and 100-gallon drum	Direct loaded – all approved waste forms other than solidified/vitrified waste	≤ 80 PE-Ci
Shielded Container	Direct loaded – vented 30-gallon inner steel drum – all approved waste forms other than solidified/vitrified waste	≤ 80 PE-Ci
SLB2	Direct loaded – all approved waste forms other than solidified/vitrified waste	≤560 PE-Ci
SWB	Direct loaded (or a bin) – all approved waste forms other than solidified/vitrified waste	≤ 560 PE-Ci
TDOP	Direct loaded – all approved waste forms other than solidified/vitrified waste	≤ 800 PE-Ci
85-gallon drum	Overpacking an undamaged[1] 55-gallon drum – all approved waste forms other than solidified/vitrified waste	≤ 1100 PE-Ci
SWB, TDOP	Overpacking an assembly of undamaged[1] 55- or 85-gallon drums with no single payload container within the assembly exceeding 1100 PE-Ci – all approved waste forms other than solidified/vitrified waste	≤ 1200 PE-Ci
TDOP	Overpacking an undamaged[1] SWB – all approved waste forms other than solidified/vitrified waste	≤ 1200 PE-Ci
Pipe Overpacks (Standard, S100, S200, and S300)	All approved waste forms	≤ 1800 PE-Ci
All	Solidified/vitrified waste	≤ 1800 PE-Ci

[1] An undamaged container provides an additional barrier should a breach occur in the overpack. When overpacking one or more damaged waste containers, direct loaded PE-Ci limits apply.

[B] Compliance and Verification

[B.1] Personnel calculate the activity of the CH-TRU waste container as PE-Ci according to the methodology in Appendix 5 of this Plan and CCP-TP-030. Personnel identify payload containers exceeding limits stated in Table 2, segregate them, and disposition them in accordance with approved nonconformance and corrective action management procedures. The WCO verifies compliance of the PE-Ci limits. Personnel will report the PE-Ci activity to the WIPP using the WWIS/WDS.

3.3.5 Radiation Dose Equivalent Rate

[A] Requirements

[A.1] The external radiation dose equivalent rate of individual payload containers shall be:

[A.2] ≤200 milliroentgen equivalent man (mrem)/hour (hr) at the surface with the exception of the S100 and S300 pipe overpacks which are limited to ≤179 mrem/hr and ≤155 mrem/hr, respectively, at the surface (References 23a and 23b, Section 3.2; Reference 4, Sections E1 and 2.1). Internal payload container shielding shall not be used to meet this criterion, except for authorized shielded payload container configurations such as the use of 55-gallon drums containing a pipe component or a shielded container (Reference 23a, Section 2.9). Total dose equivalent rate and the neutron contribution to the total dose equivalent rate shall be reported for each payload container in the WWIS/WDS.

[A.3] See the CCP CH-TRAMPAC and TRUPACT-III TRAMPAC for associated package requirements (References 23a and 23b).

[B] Compliance and Verification

[B.1] A Host site RCT measures surface dose rates of the individual payload containers in accordance with site radiological survey procedures using the beta-gamma and neutron dose rates for each container at the surface, and records the results for each payload container. If the combined beta-gamma and neutron dose rate exceeds the dose rate specified in step 3.3.5[A] at the surface for any container, the container is rejected, marked, and segregated. Total dose equivalent rate and the neutron contributions to the total payload container dose rate will be reported separately using the WWIS/WDS in accordance with CCP-TP-030.

3.3.6 Decay Heat

[A] Requirements

[A.1] See the CCP CH-TRAMPAC and TRUPACT-III TRAMPAC for decay heat requirements (References 23a and 23b).

[B] Compliance and Verification

[B.1] Personnel will compute the payload container decay heat and the measurement error manually or using a computational algorithm in accordance with CCP-TP-030. Personnel will ensure that the results of the calculations are equal to or less than the limits of the assigned shipping category. Individual radionuclide mass quantities and errors are converted to decay heat by multiplying the mass values (g) by decay heat conversion factors (W/g). Table 3.1-2 in the CH-TRAMPAC and TRUPACT-III TRAMPAC (References 23a and 23b) lists ^{239}Pu FGE, decay heat, and specific activity for many radionuclides. The values calculated for decay heat and its associated TMU (expressed in terms of one standard deviation) shall be reported to the WWIS/WDS for each payload container in accordance with CCP-TP-030.

3.4 Physical Properties

3.4.1 Observable Liquid

[A] Requirements

[A.1] Liquid waste is not acceptable at the WIPP. Observable liquid containing PCBs is prohibited at the WIPP.

Liquid in the quantities delineated below is acceptable:

- Observable liquid shall be less than 1 percent[1] by volume of the outermost container at the time of radiography or visual examination (VE) (Reference 9).

[1]The limit of “less than 1 percent” is taken from the CH-TRAMPAC and TRUPACT-III TRAMPAC and is more restrictive than the limit of “no more than 1 percent” in the HWFP.

- Internal containers with more than 60 milliliters (ml) or 3 percent by volume observable liquid, whichever is greater, are prohibited.

- Containers with Hazardous Waste Number U134 assigned shall have no observable liquid.

- Overpacking the outermost container that was examined during radiography or visual examination or redistributing untreated liquid within the container shall not be used to meet the liquid volume limits.

(Reference 9, Part 2, Section 2.3.3.1, Attachment C, Sections C-1c and C-3b; Reference 23a, Section 2.6.1; Reference 23b, Section 2.5.1; Reference 35, Appendix TRU Waste; Reference 12, Conditions of Approval, II.A.2).

[B] Compliance and Verification

[B.1] Initially, AK is used to determine container contents. Personnel estimate liquid volume by radiography and/or VE, in accordance with site-specific radiography and VE procedures (See Appendix 4, Tables B-2 and B-3). During VE, if personnel detect any liquid waste in non-transparent internal containers by shaking the internal container, they will assume that the internal container is completely filled and add the entire volume of the internal container to the total liquid in the container being characterized using VE. Personnel reject payload containers whose liquid volumes exceed the limits defined in 3.4.1 [A.1]. If necessary, personnel repackage noncompliant waste containers in accordance with site-specific VE procedures (See Appendix 4, Table B-3).

3.4.2 Sealed Containers

[A] Requirements

[A.1] Sealed containers that are greater than four liters (L) (nominal) are prohibited except for solid inorganic waste (Waste Material Type II.2) packaged in a metal container (Reference 23a, Section 2.8.1; Reference 23b, Section 2.7.1).

[B] Compliance and Verification

[B.1] Personnel will ensure that payload containers are verified to be free of sealed containers greater than four liters. Personnel use VE and/or Real-Time Radiography to ensure prohibited physical waste forms are not present in waste containers (See Appendix 4, Table B-2 through B-3).

Payload containers rejected for sealed containers greater than four liters or more are marked and segregated. The container is repackaged and reprocessed to verify the criteria are met. The WCO confirms the sealed container criteria in accordance with CCP-TP-030.

3.5 Chemical Properties

3.5.1 Pyrophoric Materials

[A] Requirements

[A.1] Radioactive pyrophoric materials shall be present only in small residual amounts (<1 percent by weight) in payload containers and shall be generally dispersed in the waste. Radioactive pyrophorics in concentrations greater than 1 percent by weight and all nonradioactive pyrophorics shall be reacted (or oxidized) and/or otherwise rendered nonreactive prior to placement in the payload container (References 23a and 23b, Section 4.1.1). Nonradionuclide pyrophoric materials are not acceptable at the WIPP (Reference 4, Section 11.4.1; Reference 9, Attachment C, Section C-1c; Reference 9, Part 2, Section 2.3.3.2; References 23a and 23b, Section 4.1.4).

[B] Compliance and Verification

[B.1] Personnel verify compliance with pyrophorics restriction by obtaining information documented in AK. VE and radiography verify there is no indication and document that waste does not contain pyrophorics or other prohibited material (See list of real-time radiography [RTR] and VE procedures in Appendix 4, Tables B-2 and B-3). Personnel review and evaluate AK to verify that waste-producing processes included

no pyrophorics or other prohibited materials. AK includes sampling and analysis data, documentation of waste stream descriptions, or actions to treat or stabilize the waste to eliminate specific characteristics.

3.5.2 Hazardous Waste

[A] Requirements

[A.1] Hazardous wastes not occurring as co-contaminants with TRU wastes (non-mixed hazardous wastes) are not acceptable at the WIPP. Each CH-TRU-mixed waste container shall be assigned one or more EPA hazardous waste codes as appropriate. Only EPA hazardous waste codes listed as allowable in the WIPP Hazardous Waste Facility Permit may be managed at the WIPP. Some of the waste may also be identified by unique state hazardous waste codes. These wastes are acceptable at the WIPP as long as the Treatment, Storage, and Disposal Facility WAC are met (Reference 9, Attachment C, Section C-1b; Reference 9, Part 2, Section 2.3.4). Wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA hazardous waste numbers of D001, D002, or D003) are not acceptable at WIPP. In the context of this Plan, hazardous waste codes are synonymous with hazardous waste numbers (Reference 9, Attachment C, Section C-1c; Reference 9, Part 2, Sections 2.3.3.3, 2.3.3.7, and 2.3.4).

[B] Compliance and Verification

[B.1] Personnel will ensure that each individual waste payload container is assigned to a waste stream identified by acceptable EPA hazardous waste codes and documented on a DOE-approved WSPF. Personnel will report the hazardous waste codes for each container to the WIPP via the WWIS/WDS in accordance with CCP-TP-030. EPA hazardous waste codes are assigned based on AK. CCP uses CCP-TP-005, CCP Acceptable Knowledge Documentation, to compile, review, evaluate, confirm and report AK documentation. The AK Summary Report delineates waste streams and assigns hazardous waste codes. If data are insufficient to

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demonstrate that the concentration of the constituent is less than the regulatory level, the EPA hazardous waste number for the identified constituent is applied to the waste stream. CCP will report hazardous waste codes in accordance with CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data*; CCP-TP-005 and CCP-TP-030.

3.5.3 Chemical Compatibility

[A] Requirements

[A.1] TRU waste containing incompatible materials or materials incompatible with payload container and packaging materials, shipping container materials, other wastes, repository backfill, or seal and panel closure materials are not acceptable for transport in the TRUPACT-II, TRUPACT-III, or HalfPACT or for disposal at the WIPP. Chemical constituents shall conform to the lists of allowable materials in Tables 4.3-1 through 4.3-8 of the CH-TRAMPAC. Other chemicals or materials not identified in these tables are allowed provided that they meet the requirements as specified in Section 4.3.1 of the CH-TRAMPAC and TRUPACT-III TRAMPAC (Reference 9, Attachment C, Section C-1c; Reference 9, Part 2, Section 2.3.3.4; References 23a and 23b, Sections 4.3 and 4.4).

[B] Compliance and Verification

[B.1] Personnel ensure compliance with the chemical compatibility requirements based on AK. Only wastes that have been shown to meet the approved chemical lists in Tables 4.3-1 through 4.3-8 of the CH-TRAMPAC and Tables 4.3-1 through 4.3-7 of the TRUPACT-III TRAMPAC are acceptable at the WIPP. The WCO confirms compliance with the chemical compatibility criteria in accordance with CCP-TP-030. If necessary, personnel repackage CH TRU waste containers not meeting the chemical compatibility requirement.

3.5.4 Explosives, Corrosives, and Compressed Gases

[A] Requirements

[A.1] Waste shall contain no explosives, corrosives, or compressed gases (pressurized containers) (Reference 9, Attachment C, Section C-1c; Reference 9, Part 2, Sections 2.3.3.5 and 2.3.3.7; References 23a and 23b, Section 4.2.1).

[B] Compliance and Verification

[B.1] Personnel ensure that explosives, compressed gases, and corrosive liquids are not present in payload containers. Chemicals (e.g., oxidizers) capable of forming explosive mixtures under some conditions are also prohibited from the waste. Waste-generation processes are assessed for safety hazards such as potential explosion hazards and potential inadvertent production of explosive materials in accordance with CCP-TP-005. Corrosives must be either excluded from the payload container or processed to neutralize the corrosive material or otherwise render it noncorrosive. CCP operating procedures describe the specific actions taken to ensure compliance with the corrosive material prohibition, (e.g., site-specific radiography and VE procedures [See Appendix 4, Tables B-2 and B-3]).

[B.2] Personnel verify compliance with the prohibited items requirement by obtaining AK information (e.g., administrative, operating, QA procedures, and safety assessments) documenting that waste does not contain explosives, corrosives, or pressurized containers. Personnel review and evaluate AK to verify that waste-producing processes included no prohibited or restricted materials. AK includes sampling and analysis data, documentation of waste stream descriptions, or actions to treat or stabilize the waste to eliminate specific characteristics. Personnel verify that prohibited materials are not in the waste container through radiography or VE (See list of RTR and VE procedures in Appendix 4, Tables B-2 and B-3).

3.5.5 HSG VOC Concentrations

[A] Requirements

[A.1] The headspace gas (HSG) of payload containers shall be determined in accordance with a site-specific TRAMPAC (References 23a and 23b, Section 5.2), as required.

[B] Compliance and Verification

[B.1] CCP Personnel ensure that the required QAOs meet the requirements specified for gas generation rates in the Gas Generation QAPjP. For those payload containers that exceed the flammable volatile organic compound (VOC) limit, a determination of compliance with the flammable (gas/VOC) concentration limit as described in the CH-TRAMPAC allows the payload container to be shipped in the Type B package under the test category.

[B.2] Test category payload containers are tested by direct measurement in accordance with gas generation testing (GGT) procedures (See Appendix 4, Table B-4) to quantify the hydrogen/methane, VOC, and total gas generation rates (as appropriate) for purposes of determining if all applicable limits are met in accordance with CCP-TP-030.

[B.3] Representative sampling of HSG may be used to quantify the hydrogen/methane, VOC, and total gas generation rates (as appropriate) for purposes of determining if all applicable limits are met in accordance with CCP-TP-030.

3.5.6 Polychlorinated Biphenyl (PCB) Concentration

[A] Requirements

[A.1] For TRU and mixed-TRU wastes containing PCBs meeting the condition of approval in Reference 12, the payload container data entered into the WWIS/WDS shall include the earliest date of waste generation (i.e., the date of removal from service for disposal), the date of waste certification for disposal, and the date the waste was sent to the WIPP for disposal (Reference 12, Section III.D.4). Additionally,

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the estimated weight of the PCBs in kilograms (kg) (as recorded on the Uniform Hazardous Waste Manifest [UHWM]) and a description of the type of PCB waste (e.g., PCB Articles, PCB remediation waste), shall be entered into the WWIS/WDS (Reference 13, § 761.207 [a][2] and § 761.180). Hanford, Idaho National Laboratory, Savannah River Site, Oak Ridge National Laboratory, Knolls Atomic Power Laboratory, and Los Alamos National Laboratory are authorized to ship their TRU and TRU-mixed wastes containing PCBs to WIPP (References 14 and 15).

[B] Compliance and Verification

[B.1] Personnel use AK obtained from CCP-TP-005, and/or verification, and testing to demonstrate compliance with the PCB requirement. Personnel use nondestructive examination (NDE) (VE and RTR) procedures (See Appendix 4, Tables B-2 and B-3) during packaging of newly generated waste to identify the presence of PCBs. For retrievably stored debris waste, personnel compile, record, and evaluate AK to demonstrate compliance with the PCB limitation. The WCO verifies compliance with the PCB requirements.

3.6 Data Package Contents

3.6.1 Characterization and Certification Data

[A] Requirements

[A.1] Sites shall prepare a WSPF for each waste stream. Each WSPF shall be approved by the DOE-CBFO prior to the first shipment of that waste stream. Characterization and certification information for each payload container shall be submitted to the WWIS/WDS and approved by the WWIS/WDS Data Administrator. Sites are required to estimate the cellulose, plastics, and rubber (CPR) weights and report these estimates in the WWIS/WDS on a payload container basis. Any payload container from a waste stream that has not been preceded by an appropriate certified WSPF is not acceptable at the WIPP (Reference 9, Part 2, Section 2.3.3.10).

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[B] Compliance and Verification

[B.1] Personnel will verify compliance with the data package requirements by reviewing data packages in accordance with CCP-TP-001, *CCP Project Level Data Validation and Verification,* and CCP-TP-005. Personnel will prepare and submit the WSPF to DOE-CBFO in accordance with procedure CCP-TP-002. The WCO ensures that the WWIS/WDS data are entered into the system and transmitted to the DOE-CBFO for approval before waste shipment in accordance with CCP-TP-030. Waste containers will be certified under an approved WSPF prior to shipment.

3.6.2 Shipping Data

[A] Requirements

[A.1] Sites shall prepare either a Bill of Lading or a UHWM for CH-TRU waste shipments as required by the transportation requirements. The Land Disposal Restriction (LDR) notification for CH-TRU mixed waste shipments shall state that the waste is not prohibited from land disposal (Reference 9, Attachment C, Section C-5b(2); References 23a and 23b, Section 6).

[B] Compliance and Verification

[B.1] Personnel verify compliance with the data package requirements by reviewing the data packages in accordance with CCP-TP-001 and CCP-TP-005. The TCO and WCO ensure that the WWIS/WDS data are entered into the system and transmitted to DOE-CBFO for approval before waste shipment in accordance with CCP-TP-030 and CCP-TP-033.

[B.2] The TCO prepares a PCTCD/OPCTCD for each payload container and a PATCD for each payload assembly in accordance with the CCP CH-TRAMPAC prior to loading the container into a Type B package. The TCO completes the PCTCD/OPCTCD and PATCD to certify an individual payload container and a PATCD to certify the payload assembly for shipping in accordance with CCP-TP-033, which is based on

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Section 6.0 of the CCP CH-TRAMPAC. The PCTCDs, OPCTCDs, and the PATCDs are completed prior to shipping the Type B package. The LDR Exemption Notification form is completed for mixed waste shipments in accordance with CCP-TP-033. The shipping site's transportation personnel or personnel prepare a bill of lading or UHWM. For non-mixed waste shipments, a Bill of Lading is prepared. A UHWM is prepared for mixed waste shipments. If the TCO is the shipper of record, shipping data are prepared in accordance with CCP-TP-033.

[B.3] CCP Transportation is tasked with the final review of the payload assembly and documentation. The final approval of the assembly and documentation (UHWM or Bill of Lading) is done by CCP Transportation or other certified Host site program.

4.0 WASTE ACCEPTANCE REQUIREMENTS AND CRITERIA FOR RH WASTE

This section describes how the CCP complies with the requirements of the WIPP WAC for RH waste and associated requirements contained in the WIPP DSA (Reference 4), RH TRU 72-B and 10-160B Certificates of Compliance (References 7 and 8), WIPP LWA (Reference 2), WIPP Hazardous Waste Facility Permit (Reference 9), Compliance Recertification Decision (Reference 10), Initial Report for PCB Disposal Authorization (Reference 11), EPA letter of approval to land dispose non-liquid PCBs at WIPP (References 12 and 13), Revision to the Record of Decision for the DOE's WIPP Disposal Phase and associated WIPP NEPA database (References 14 and 15), EPA's letter of approval of DOE's RH TRU Waste Characterization Program (Reference 16), and the WCPIP (Reference 17).

4.1 Organization of Requirements

The purpose of Section 4.0 and related appendices is to describe the compliance methods and rationale for the requirements and associated criteria that must be met for RH TRU waste to be transported to, managed at, and disposed of in the WIPP. The requirements/criteria and associated compliance methods are organized under five major headings: Container Properties, Radiological Properties, Physical Properties, Chemical Properties, and Data Package Contents. Sections 4.7 through 4.11 correlate with the organization in the WIPP WAC for RH TRU waste requirements and identify methods of compliance to meet each requirement. Procedures that implement the process controls, techniques, tests, and other actions to be applied to each RH-TRU payload container, waste stream, and shipment are also identified. Revisions of requirements in referenced documents controlled by agencies or organizations other than DOE (e.g., EPA, NMED and NRC) shall have precedence over values quoted in this Plan. Changes incorporated in future revisions of the WIPP WAC for RH waste will be reflected in future revisions of this Plan.

In addition to the discussion described in this section, a CCP RH-TRU Waste Certification Plan for 40 CFR Part 194 compliance is presented in Appendix 11, CCP RH TRU Waste Certification Plan for 40 CFR Part 194 Compliance to this Plan. This Appendix satisfies the WCPIP requirement for a waste certification plan that provides, among other things, a listing of the DQOs specified in the WCPIP and the identification of methods and a description of the rationale that will be used to assess compliance with those DQOs.

Regarding any discussions of compliance and verification methods, if a requirement is not met, personnel will initiate an NCR or a CAR in accordance with CCP-QP-005. Corrective action will be taken in accordance with CCP-QP-029 to resolve nonconformances. Section 5.3

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provides additional details about the NCR/CAR process. Only waste from a properly characterized waste stream will be certified as meeting the requirements and associated criteria contained in this Plan. Waste containers for a waste stream which has not been represented by an approved WSPF will not be shipped to WIPP for disposal (Reference 9, Part 2, Section 2.3.3.10). The required characterization, certification, and shipping data will be transmitted to the WIPP using the WWIS/WDS.

4.2 DOE Operations and Safety Requirements for WIPP

4.2.1 The WIPP DSA addresses waste handling and emplacement operations. Waste acceptance for emplacement in the WIPP will conform to the WAC to meet the DSA (Reference 4).

4.3 NRC Transportation Safety Requirements

4.3.1 Acceptable methods for payload compliance are defined in the RH-TRU 72-B and 10-160B Certificates of Compliance (References 7 and 8).

Acceptable methods for payload compliance for the RH-TRU 72-B are implemented by the RH-TRAMPAC (Reference 41). CCP-PO-505 describes how CCP will ensure compliance with each payload parameter. The CCP RH-TRAMPAC contains sufficient detail to allow reviewers to adequately understand and evaluate the compliance methodology for each payload parameter.

The payload requirements for the 10-160B package and site-specific compliance are specified by the 10-160B SAR (Reference 38). Prior to use of the 10-160B package, CCP will prepare a CCP Appendix if applicable. For shipments in the 10-160B package, CCP verifies compliance to the requirements for the applicable site-specific appendix to the 10-160B SAR. The 10-160B SAR does not require the preparation of a site-specific “TRAMPAC.”

4.3.2 The QA Program described in Section 5.0 defines the QA activities that apply to the use of NRC-approved transportation packaging in accordance with 10 CFR Part 71, Subpart H (Reference 24).

4.4 NMED Hazardous Waste Facility Permit Requirements

4.4.1 TRU waste is classified as TRU-mixed waste if it contains hazardous constituents regulated under the New Mexico Hazardous Waste Act (Reference 25). Only TRU-mixed waste and TRU waste that have been characterized in accordance with the WIPP WAP and that meet the Treatment, Storage and Disposal Facility (TSDF) WAC as presented in permit Sections 2.3.3.1 through 2.3.3.10 will be shipped to WIPP for disposal. The CCP QAPjP describes compliance with the WIPP WAP.

4.5 EPA Compliance Recertification Decision Requirements

4.5.1 Title 40 CFR § 194.24(c) requires the DOE to specify the limiting values for waste components to be emplaced in the repository (Reference 26). The EPA's Compliance Recertification Decision (Reference 10) identifies the repository limits for several waste components including free water, metals, and CPR.

4.5.2 CCP estimates or determines the weight of CPR and reports this estimate in the WWIS/WDS on a container basis. The repository limit for CPR is a maximum of 2.2×10^7 kg. In addition, CCP quantifies and reports the activity values of each of the following radionuclides for purposes of tracking the inventory curie content: ^{241}Am, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{233}U, ^{234}U, ^{238}U, ^{90}Sr, and ^{137}Cs. The presence or absence of these radionuclides is determined using AK documentation and radiological characterization techniques performed in accordance with the WCPIP. The results of these determinations are reported in the WWIS/WDS on a payload container basis. TRU waste payload containers shall contain more than 100 nCi/g of alpha-emitting TRU isotopes with half-lives greater than 20 years, as specified in Section 4.8.3 (Reference 47).

4.5.3 EPA Approval for PCB Disposal

PCB-contaminated TRU and PCB-contaminated TRU waste mixed with a hazardous waste including PCB remediation waste, PCB articles, and PCB bulk product waste may be stored and disposed at the WIPP (References 11, 12, 13, 14 and 15). Applicable waste acceptance criteria are addressed in Sections 4.7.5 (Identification/Labeling), 4.9.1 (Observable Liquids), and 4.10.6 (Polychlorinated Biphenyls).

Waste streams identified as containing PCBs shall be brought to the attention of the CBFO in order that a determination can be made regarding their acceptability at WIPP.

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4.6 WIPP Land Withdrawal Act Requirements (Public Law 102-579)

4.6.1 WIPP can accept only radioactive waste generated by atomic energy defense activities of the United States (Reference 2, Section 2[19]). A TRU waste is eligible for disposal at WIPP if it has been generated in whole or in part by one or more of the following functions (References 27 and 28):

- naval reactors development
- weapons activities, including defense inertial confinement fusion
- verification and control technology
- defense nuclear materials production
- defense nuclear waste and materials by-products management
- defense nuclear materials security and safeguards and security investigations
- defense research and development

Using AK, CCP determines that each waste stream to be disposed of at WIPP is "defense" TRU waste (Reference 2).

4.6.2 High-level radioactive waste or spent nuclear fuel shall neither be transported, emplaced, nor disposed of at WIPP (Reference 2, Section 12). Also, no TRU waste may be transported by or for the DOE to or from WIPP, except in packages:

- the design of which has been certified by the NRC, and
- that have been determined by the NRC to satisfy its QA requirements.

4.7 Container Properties

4.7.1 Description

[A] Requirements

[A.1] The only payload containers authorized for receipt of RH-TRU waste in the RH bay of the Waste Handling Building at WIPP include 55-gallon drums and RH-TRU waste canisters shipped in 10-160B and RH-TRU 72-B packaging, respectively (references 7 and 8). The site shall report the number and type of payload containers to WIPP using the WWIS/WDS.

[A.2] Payload containers must meet DOT Type 7A standards (Reference 4, Section 2.5.2). Prior to loading in the transportation packaging, the exterior of a payload container must undergo 100 percent visual inspection to ensure compliance with the requirement that payload containers be in good and unimpaired condition. The results of this visual inspection must be documented. Inspection of 55-gallon drums shall be documented using the payload container integrity checklist contained in Appendix 7. A payload container is in good and unimpaired condition if it does not have significant rusting, is of sound structural integrity, and does not show signs of leakage.

The RH-TRU waste canister shall comply with the specifications in the CCP RH-TRAMPAC (Reference 7).

[B] Compliance and Verification

[B.1] CCP only uses RH-TRU 72-B waste canisters for use in the RH-TRU 72-B cask as payload containers for RH waste. The only authorized payload container of RH-TRU waste for shipment in the 10-160B to WIPP is a 55-gallon drum. CCP reports the number and type of payload containers to WIPP using the WWIS/WDS in accordance with procedure CCP-TP-530, *CCP RH TRU Waste Certification and WWIS/WDS Data Entry*.

[B.2] The CCP procures canisters in accordance with procedure CCP-QP-015 to comply with specifications

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of Appendix 1.3.4 of the DSA for the RH-TRU 72-B Cask.

One hundred percent visual inspection of the exterior of the payload container is performed to ensure that the payload container is in good and unimpaired condition. The results of this inspection are documented. Inspection of payload containers for compliance to requirements is performed in accordance with CCP-TP-507, *CCP Shipping of Remote-Handled Transuranic Waste*.

All payload containers are assigned to a Content Code per procedure CCP-TP-530.

4.7.2 Weight Limits

[A] Requirements

[A.1] Each payload container shall comply with the following maximum weight limit:

- Removable Lid Canister (direct loaded or drum loaded) – 4,240 lbs (Reference 39)
- Welded Lid Canister (direct loaded) – 5,250 lbs (Reference 40)
- Welded Lid Canister (drum loaded) – 5,980 lbs (Reference 40)
- NS15 Neutron Shielded Canister – 3100 lbs (Reference 41)
- NS30 Neutron Shielded Canister – 3100 lbs (Reference 41)
- 1,000 lbs (453.59 kg) per 55-gallon drum (Reference 17, Section 2.4.1; Reference 4, Section 2.5.2.2)

See the RH-TRU 72-B and/or 10-160B packaging Certificates of Compliance for applicable package weight limits (References 7 and 8).

[B] Compliance and Verification

[B.1] CCP verifies the weight limits of the canister and the RH-TRU 72-B cask are within tolerance using DOE/WIPP 02-3284, *RH Packaging Operations Manual.* The TCO certifies compliance to applicable weight limits on the Packaging Transportation Certification Document (PTCD) in accordance with CCP-TP-507.

[B.2] CCP verifies the weight limits of the payload containers and the 10-160B cask are within tolerance using DOE/WIPP 06-3336, 10-160B RH Cask Program Guidance. The TCO certifies compliance to applicable weight limits in accordance with CCP-TP-507.

4.7.3 Assembly Configurations

[A] Requirements

[A.1] See the RH-TRU 72-B and/or 10-160B packaging Certificates of Compliance for assembly configuration requirements (References 7 and 8).

[B] Compliance and Verification

[B.1] Loading of waste, either direct loading or loading with drums, into RH-TRU canisters is performed in accordance with site-specific canister loading procedures.

[B.2] Loading of waste drums, into a 10-160B Cask is performed in accordance with 10-160B loading procedures.

4.7.4 Removable Surface Contamination

[A] Requirements

[A.1] Removable surface contamination on TRU waste payload containers, payload assemblies, and packagings shall not exceed 20 dpm/100 cm^2 alpha and 200 dpm/100 cm^2 beta-gamma (Reference 9, Attachment A1, Section A1-1d[2]; References 29 and 30). The fixing of surface contamination to meet these criteria is not allowed by WIPP in accordance

with best management practices for ensuring worker radiation dose is within the as low as reasonably achievable (ALARA) guidelines.

[B] Compliance and Verification

[B.1] Compliance is achieved by measurement using radiological contamination surveys. Specifically, a Host site RCT surveys RH-TRU waste canisters for removable surface contamination prior to loading into the cask. Packaging (i.e., cask) is surveyed for removable surface contamination after completion of cask loading and prior to shipment. Survey results are then compared to removable surface contamination limits to determine compliance per procedure CCP-TP-530. If removable contamination exceeds limits, surfaces may be wiped and cleaned and resurveyed to achieve compliance. Fixing of surface contamination is prohibited.

4.7.5 Identification/Labeling

[A] Requirements

[A.1] Each payload container shall be labeled with a unique payload container identification number permanently applied in a conspicuous location. The unique payload container identification number shall include a site identifier as a prefix.

[A.2] For the RH-TRU waste canisters, payload container labeling shall be as follows:

- Each canister shall be labeled with a unique payload container identification number (ID) that includes a site identifier as a prefix.
- The characters composing the canister ID number shall be approximately 2-inches high and of a color contrasting with their background.
- A minimum of three canister ID numbers shall be placed at approximately equal intervals around the circumference of the canister and within 18-inches of the top of the canister.

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[A.3] Exceptions to the labeling/identification requirements may be granted upon request to and approval from the CBFO.

[A.4] The 10-160B 55-gallon payload container identification shall be in medium to low density Code 39 bar code symbology as required by ANSI, standard ANSI/AIM BC1-1995 (Reference 31) in characters at least 1-in. high and alphanumeric characters at least ½-in. high. In the case of 55-gallon drums, the labels must be placed approximately 120 degrees apart so that one label is visible once the containers are assembled into a 5-drum carriage.

[A.5] Payload containers shall be marked "Caution Radioactive Material" using a yellow and magenta label as specified in 10 CFR Part 835 (Reference 30). Those payload containers whose contents are also RCRA regulated (mixed-TRU), shall be additionally marked "Hazardous Waste" as specified in 40 CFR §262.32 (Reference 33). For TRU and TRU-mixed wastes containing PCBs, the payload containers shall be marked in accordance with 40 CFR §761.40 (References 12 and 13). Additionally, DOT Type B packages containing PCBs must be properly marked in accordance with 40 CFR §761.40 (References 12 and 13).

[A.6] If an empty 55-gallon drum is used as dunnage to complete a payload configuration in the 10-160B package, the dunnage container shall be labeled with the following information:

- Unique payload container identification number
- “EMPTY” or “DUNNAGE”

[A.7] If a five-drum carriage of only dunnage 55-gallon drums is used in the 10-160B, the containers shall be labeled only “EMPTY” or “DUNNAGE,” and the unique container identification number label is not required for these containers.

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[B] Compliance and Verification

[B.1] CCP verifies canisters are labeled in accordance with CCP-TP-507 procedure. This procedure must include instructions to satisfy the following requirements:

- Each canister is labeled with a unique ID that includes a site identifier as a prefix.
- Characters composing the canister ID number on labels are approximately 2-inches high and of a color contrasting with their background.
- A minimum of three canister ID labels are placed on a canister at approximately equal intervals around the circumference of the canister and within 18-inches of the top of the canister.
- Alternate labeling of payload containers may be used only after a request to use an alternate labeling approach is submitted and approved by CBFO on a case-specific basis.

[B.2] CCP verifies payload containers are marked in accordance with CCP-TP-507 procedure. These procedures must contain instructions to ensure the following:

- All RH-TRU and TRU mixed payload containers are marked “Caution Radioactive Material” using a yellow and magenta label.
- All RH-TRU mixed waste payload containers are marked “Hazardous Waste.”
- All RH-TRU DOT Type B packages containing PCBs are marked in accordance with 40 CFR § 761.40.

[B.3] CCP verifies 10-160B 55-gallon payload containers are labeled in accordance with procedure CCP-TP-507.

4.7.6 Dunnage

[A] Requirements

[A.1] See the 10-160B packaging Certificate of Compliance for dunnage requirements (Reference 8).

To maximize the efficiency of operations at the WIPP, CCP will minimize the use of dunnage drums.

[B] Compliance and Verification

[B.1] The use of dunnage is not applicable to the RH-TRU 72-B shipping package. The minimization of the use of dunnage for the 10-160B Cask is through payload configuration. The use of dunnage drums is reviewed and approved concurrently with the review and approval of shipment assemblies by the WWIS/WDS Data Administrator on a case-by-case basis.

[B.2] CCP verifies 10-160B 55-gallon dunnage containers are labeled in accordance with procedure CCP-TP-507.

4.7.7 Filter Vents

[A] Requirements

[A.1] Each payload container and any sealed secondary or internal containers (greater than four liters in size), in the payload container shall meet the filter vent specifications of Reference 4, Section 2.5.2; Reference 7; Reference 8; Reference 9, Attachment A1, Section A1-1b[2]; and Reference 41; Section 2.4.1. These filter vents shall meet the specification of the 10-160B SAR and RH-TRAMPAC (Reference 38; Reference 41, Section 2.4.1).

The model number of each filter vent or combination of filter vents installed on a payload container shall be reported to the WWIS/WDS database (Reference 48).

[B] Compliance and Verification

[B.1] The TCO verifies the presence and model of filter(s) installed on individual payload containers in accordance with CCP-TP-507. CCP verifies any sealed secondary or internal containers (greater than

four liters in size), overpacked in the payload container shall be either vented or filtered to meet the specifications of Reference 7 or Appendix 1.3.5 of Reference 8 by VE using CCP-TP-500, *CCP Remote-Handled Waste Visual Examination,* or an evaluation of the AK record. CCP procures filters in accordance with CCP-QP-015 to specifications that comply with all applicable requirements for filter vents. Only filters identified on the listing of approved CBFO filter vent models are procured by CCP.

[B.2] The model numbers of each filter vent or combination of filter vents installed on a payload container (and internal containers, as applicable) are reported to the WWIS/WDS in accordance with procedure CCP-TP-530.

4.8 Radiological Properties

With respect to the required radiological properties identified within this Section, they can be divided into two distinct groups.

The first group includes the activities and masses of the ten WIPP-tracked radionuclides (i.e., ^{241}Am, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{233}U, ^{234}U, ^{238}U, ^{90}Sr, and ^{137}Cs), and the TRU alpha activity concentration (i.e., >100 nCi/g of alpha-emitting TRU isotopes with half lives greater than 20 years), of the waste. Total activity will be quantified and tracked to ensure compliance with the LWA limits for RH-TRU waste including limiting activity to 23 curies per liter (Ci/l) per canister, limiting disposed RH-TRU waste to 5.1 million curies, and limiting surface dose rates of canister to 1000 roentgen equivalent man per hour (rem/hr). No more than 5 percent by volume of the RH-TRU waste received at WIPP may have a surface dose rate in excess of 100 rem/hr. Estimates of their activities and masses shall be derived from a system of controls certified by CBFO that includes AK, computations, measurements, and sampling (Reference 35). CCP RH-TRU Waste Certification Plan for 40 CFR Part 194, Compliance, provides the methods and requirements used to characterize the radiological composition of the RH-TRU waste.

The second group includes the remaining radionuclides contributing to the FGE, the PE-Ci, and the decay heat of the payload container. This set of radiological data is regulated both by the NRC as specified in the RH transportation documentation (References 7 and 8), and the CBFO as required by the WIPP DSA (Reference 4). PE-Ci quantities shall be calculated for each payload container in accordance with Appendix 5. Any method that complies with the Certificate of Compliance may be used to quantify the remaining radiological properties at the discretion of the shipping facility.

However, the resulting data (e.g., AK from Safeguards and Security data), the source and method from which the data was generated, and the basis for the reliability of the data shall be submitted to and approved by CBFO prior to use.

4.8.1 Radionuclide Composition

[A] Requirements

[A.1] RH-TRU waste received at the WIPP shall not exceed 23 curies per liter maximum activity level (averaged over the volume of the canister) (Reference 2, Section 7).

[A.2] Contents of the 10-160B may include fissile material contaminants provided the mass limits of the 10 CFR 71.15 are not exceeded and the plutonium content does not exceed 0.74 tera-bequerel (20 curies) (Reference 8). The quantity of radioactive material must not exceed 3,000 times the Type A quantity (Reference 8).

[A.3] The activities and masses of ^{241}Am, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{233}U, ^{234}U, ^{238}U, ^{90}Sr, and ^{137}Cs shall be established on a payload container basis for purposes of tracking their contributions to the total WIPP radionuclide inventory (Reference 35). The estimated activities and masses, including their associated TMU expressed in terms of one standard deviation, for these ten radionuclides shall be reported to the WWIS/WDS on a payload container basis. For any of these ten radionuclides whose presence can be substantiated from AK, direct measurement, computations, or a combination thereof, and for which measured data are determined to be below the LLD for that radionuclide, the site shall report the character string “< LLD” to the WWIS/WDS for the activity and mass of that radionuclide; otherwise a value of zero shall be reported (Reference 17, Section 2.4.6).

[A.4] In addition, all radionuclides other than the ten WIPP-tracked radionuclides (i.e., ^{241}Am, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{233}U, ^{234}U, ^{238}U, ^{90}Sr, and ^{137}Cs), that contribute to 95 percent of the radioactive hazard for the payload container shall be reported on the RH-TRU 72-B or 10-160B bill of lading or manifest. The activities and masses of these other

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radioisotopes shall also be reported to the WWIS/WDS along with their associated TMU, expressed in terms of one standard deviation, for each waste container (Reference 35).

[B] Compliance and Verification

[B.1] CCP determines the radionuclide composition and quantity through a combination of AK and established radionuclide measurement methods (e.g., CCP-TP-504, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*). The radionuclide measurement methods that may be used are described in greater detail in Appendix 11. Radionuclide measurement is either performed directly on the payload container or on all of the smaller waste containers composing the payload container. If radionuclide measurement is not performed directly on the payload container itself, then, the measurement values (and uncertainties) for the payload container are calculated from the associated measurement results for all of the smaller containers composing the payload container.

CCP uses radionuclide measurement results to calculate and quantitate the total activity averaged over the volume of the payload container in the RH-TRU 72-B Cask to determine compliance with the 23 Ci/l limit.

CCP uses radionuclide measurement results to quantitate the activity and masses of the ten WIPP-tracked radionuclides and all other radionuclides that contribute to 95 percent of the radioactive hazard in a payload container. The activities and masses of these radionuclides, including their associated TMU (expressed in terms of one standard deviation), are reported to the WWIS/WDS on a payload container basis per procedure CCP-TP-530 and are reported on the Bill of Lading or UHWM. For any of the ten WIPP-tracked radionuclides that are measured below the LLD and whose presence can be substantiated from AK, direct measurement, computations, or a combination thereof, are reported as “< LLD” for its activity and mass to the WWIS/WDS.

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[B.2] The contents of the 10-160B may include fissile material contaminants provided the mass limits of the 10 CFR 71.15 are not exceeded and the plutonium content does not exceed 0.74 tera-bequerel (20 curies) (Reference 8). The quantity of radioactive material must not exceed 3,000 times the Type A quantity (Reference 8). Compliance to these requirements are accomplished and verified through procedures CCP-TP-507 and 10-160B loading procedures.

4.8.2 ^{239}Pu Fissile Gram Equivalent/^{235}U Fissile Equivalent Mass (FEM)

[A] Requirements

[A.1] Each canister must comply with the limits in either Table 4 or Table 6. For a canister, either the sum of the ^{239}Pu FGE plus two times its associated TMU, expressed as one standard deviation, shall comply with the applicable limits in Table 4 or the ^{235}U Fissile Equivalent Mass (FEM) weight percentage plus two times is associated TMU, with TMU expressed in terms of one standard deviation, shall comply with the applicable limit in Table 6 (Reference 7).

[A.2] See the 10-160B packaging Certificates of Compliance for applicable ^{239}Pu FGE requirements (Reference 8 and Table 5 for associated drum requirements).

[A.3] The values calculated for the ^{239}Pu FGE or ^{235}U FEM and their associated TMUs (expressed in terms of one standard deviation) shall be reported to the WWIS/WDS for each payload container.

Table 4. ^{239}Pu FGE Limits for a Canister Shipped in an RH-TRU 72-B Package

Payload Contents	^{239}Pu FGE Limit (Removable/Welded Lid Canister)	^{239}Pu FGE Limit (Neutron Shielded Canister)
Non-Machine-Compacted Waste		
Be/BeO limited to ≤ 1 percent by weight of the waste	≤ 315	≤ 245
Be/BeO limited to ≤ 1 percent by weight of the waste including credit taken for ≥ 5g of ^{240} Pu Poisoning[1]	≤ 325	≤ 245
Be/BeO limited to ≤ 1 percent by weight of the waste including credit taken for ≥ 15g of ^{240}Pu Poisioning[1]	≤ 350	≤ 245
Be/BeO limited to ≤ 1 percent by weight of the waste including credit taken for ≥ 25g of ^{240}Pu Poisioning[1]	≤ 370	≤ 245
Be/BeO > 1 percent by weight of the waste and is chemically or mechanically bound	≤ 305	Unauthorized
Be/BeO > 1 percent by weight of the waste and is not chemically or mechanically bound	≤ 100	Unauthorized
Machine-Compacted Waste		
Be/BeO limited to ≤ 1 percent by weight of the waste	≤ 245	≤ 245
Be/BeO > 1 percent by weight of the waste	Unauthorized	Unauthorized

[1]The minimum ^{240} Pu content for the RH-TRU waste canister shall be determined after the subtraction of two times the error.

Table 5. ^{239}Pu FGE Limits for Drums Shipped in a 10-160B Package

Payload Contents	^{239}Pu FGE Limit
Non-Machine-Compacted Waste	
55-gallon drum (Be/BeO limited to ≤ 1 percent by weight of the waste)	≤ 200 g
55-gallon drum (Be/BeO > 1 percent by weight of the waste)	≤100 g
Machine-Compacted Waste	
55-gallon drum (Be/BeO limited to ≤1 percent of the weight of the waste)	≤ 170 g
55-gallon drum (Be/BeO limited ≤ 1 percent of the weight of the waste). 1.0-in. design spacing must be maintained between drum content and exterior top and bottom	≤ 200 g

Table 6. ^{235}U FEM Limit for a Canister Shipped in an RH-TRU 72-B Package

Payload Contents	Weight % ^{235}U FEM (Removable/Welded Lid Canister)	Weight % ^{235}U FEM (Neutron Shielded Canister)
Non-machine compacted homogenous solid/sludge with a particle size characteristic dimension of 1 in. or less that is primarily uranium (in terms of heavy metal component) with waste matrix distributed to not exceed enrichment limit (Reference 41).	≤ 0.96	Not Applicable

[B] Compliance and Verification

[B.1] CCP determines the quantity of fissile material in a payload container using established radionuclide measurement methods performed on the contents of the payload container as described in Appendix 11. Radionuclide measurement results are used to calculate the ^{239}PuFGE and associated uncertainty (expressed as one standard deviation) for a payload container.

[B.2] CCP determines the presence and quantity of beryllium on a waste stream basis by AK and is documented in the associated waste stream AK Summary Report. AK documentation is collected, evaluated and reported in accordance with CCP-TP- 005 and is summarized on a waste stream basis in AK Summary Reports.

[B.3] CCP compares the measured/calculated FGE plus two times uncertainty for a payload container and cask to the applicable FGE limits based on beryllium content.

[B.4] CCP reports the values calculated for the FGE and its associated uncertainty for each payload container to the WWIS/WDS as two separate items in accordance with CCP-TP-530.

4.8.3 TRU Alpha Activity Concentration

[A] Requirements

[A.1] TRU waste payload containers shall contain more than 100 nCi/g of alpha-emitting TRU isotopes with half-lives greater than 20 years (Reference 2, Section 2 [18]). Without taking into consideration the TMU, the TRU alpha activity concentration for a payload container is determined by dividing the TRU alpha activity of the waste by the weight of the waste.

The TRU alpha activity concentration shall be reported to the WWIS/WDS (Reference 35, Chapter 4; Reference 17, Section 2.4.5).

[B] Compliance and Verification

[B.1] CCP uses established radionuclide measurement methods (see Appendix 11) to quantitate the amount of alpha-emitting TRU isotopes with half-lives greater than 20 years (i.e., TRU alpha activity) in the waste contents of payload containers. Calibrated scales are used to determine the weight of waste material in payload containers (i.e., determine the net weight). The TRU alpha activity concentration is calculated by dividing the measured TRU alpha activity (without uncertainty) in a payload container by its net weight. Calculations are performed either manually or with the use of validated computational algorithms. If containers (e.g., 55-gallon or 30-gallon drums) are loaded into a canister, the TRU alpha activity concentration for the canister is determined by dividing the summation of the individual TRU alpha activity values of the individual waste containers by the summation of the individual net weights. Methods used to determine the TRU alpha activity

concentration have a lower limit of detection of 100 nCi/g or less.

The TRU alpha activity concentration for a payload container is reported to the WWIS/WDS in accordance with CCP-TP-530.

4.8.4 ^{239}Pu Equivalent Activity

[A] Requirements

[A.1] PE-Ci limits are shown in Table 7.

[A.2] PE-Ci quantities shall be calculated for each payload container (see Appendix B), and reported to WIPP using the WWIS/WDS (Reference 4, Section 3.3.2.3.1 and Table 3.3-6). There are no reporting requirements for the associated TMU (Reference 44).

Table 7. PE-Ci Limits

Payload Container	Packing Configuration	PE-Ci Limit
RH TRU Waste Canister 55-Gallon Drum (shipped in a 10-160B)	All approved waste forms other than solidified/vitrified waste	≤ 240 ≤ 80
RH TRU Waste Canister 55-Gallon Drum (shipped in a 10-160B)	Solidified/vitrified waste	≤ 1,800

[B] Compliance and Verification

[B.1] CCP uses established radionuclide measurement methods (see Appendix 11) to quantitate the amount of radioactive material in payload containers. The measurement results are used to calculate the PE-Ci for each payload container as specified in Appendix 5. CCP compares the calculated PE-Ci (without uncertainty) value to the applicable PE-Ci limits for a payload container, assembly or drum to determine compliance with applicable limits.

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CCP reports the calculated PE-Ci quantities for each payload container to WIPP using the WWIS/WDS in accordance with CCP-TP-530.

4.8.5 Radiation Dose Equivalent Rate

[A] Requirements

[A.1] The external surface radiation dose equivalent rate of individual containers must be ≥ 200 mrem/hr and ≤ 1,000 rem/hr (Reference 2, Sections 2 and 7).

[A.2] Total dose equivalent rate and the neutron contribution to the total dose equivalent rate shall be reported for each payload container in the WWIS/WDS (Reference 2, Section 16 and Reference 17, Section 2.4.4).

[A.3] See the RH-TRU 72-B and/or 10-160B packaging Certificates of Compliance for applicable radiation dose equivalent rate requirements (References 7 and 8).

[B] Compliance and Verification

[B.1] CCP using Host site personnel or records, measure container dose equivalent rates in accordance with site radiological survey procedures. The measurements are compared to applicable radiation dose equivalent rate limits and restrictions to determine compliance. The total dose equivalent rate and the neutron contribution to the total dose equivalent rate for each payload container are reported to the WWIS/WDS in accordance with CCP-TP-530.

4.8.6 Decay Heat

[A] Requirements

[A.1] See the RH-TRU 72-B and/or 10-160B packaging Certificates of Compliance for applicable decay heat requirements (References 7 and 8).

[B] Compliance and Verification

[B.1] CCP uses established radionuclide measurement methods (see Appendix 11) to quantitate the activity and mass of the radionuclides contained within the payload container. The measurement results are used to calculate the total decay heat (and TMU) for each payload container and payload assembly.

CCP compares the calculated decay heat value plus TMU (expressed in terms of one standard deviation) to the applicable decay heat limit for a payload container and payload assembly, as applicable, to determine compliance.

CCP reports the calculated decay heat values and associated TMU (expressed in terms of one standard deviation) for each payload container to WIPP using the WWIS/WDS in accordance with CCP-TP-530.

4.9 Physical Properties

4.9.1 Observable Liquid

[A] Requirements

[A.1] Liquid waste is not acceptable at the WIPP. Observable liquid containing PCBs is prohibited at the WIPP. Liquid in the quantities delineated below is acceptable.

- Observable liquid shall be less than 1 percent[1] by volume of the outermost container at the time of radiography or visual examination (Reference 9).
- Internal containers with more than 60 ml or 3 percent by volume observable liquid, whichever is greater, are prohibited.
- Containers with Hazardous Waste Number U134 assigned shall have no observable liquid.

[1]The limit of “less than 1 percent” is taken from the RH-TRAMPAC and is more restrictive than the limit of “no more than 1 percent” in the HWFP.

- Overpacking the outermost container that was examined during radiography or visual examination or redistributing untreated liquid within the container shall not be used to meet the liquid volume limits.

For sites that use VE, the detection of any liquid in non-transparent internal containers, detected from shaking the internal container, will be handled by assuming that the internal container is filled with liquid and adding this volume to the total liquid in the container being characterized using VE (Reference 9, Part 2, Section 2.3.3.1; Reference 9, Attachment C, Sections C-1c and C-3b; Reference 41, Section 2.5.1; Reference 35; Reference 12, Conditions of Approval, II.A.2).

[B] Compliance and Verification

CCP initially uses AK to determine container contents. AK documentation is collected and compiled in accordance with DOE/WIPP-02-3214 and/or CCP-TP-005. Personnel estimate liquid volume by AK, radiography or VE of the waste. Personnel reject payload containers found to exceed the criteria in 4.9.1[A.1].

4.9.2 Sealed Containers

[A] Requirements

[A.1] Sealed containers that are greater than four liters (nominal), are prohibited except for metal containers packaging solid inorganic waste: this packaging configuration does not generate flammable gas (Reference 41, Section 2.7.1).

[B] Compliance and Verification

[B.1] CCP achieves compliance through AK, radiography or VE of the waste contents of payload containers. VE is performed in accordance with procedure CCP-TP-500 and radiography is performed in accordance with procedure CCP-TP-508, *CCP RH Standard Real-Time Radiography Inspection Procedure*. Unvented rigid containers greater than four liters in volume are identified and controlled by an

NCR in accordance with CCP-QP-005 and dispositioned appropriately.

4.9.3 Physical Form

[A] Requirements

[A.1] Debris waste (S5000), shall be reported in WWIS/WDS as plastic using the volume of the waste container multiplied by 620 kg/cubic meters (m^3), up to the net weight of the waste. Soils and gravel (S4000) shall be reported to WWIS/WDS as the net weight of the waste with the waste material parameter type of "soil." Homogeneous solids (S3000) shall be reported to the WWIS/WDS as the net weight of the waste with the waste material parameter type appropriate to the waste. Debris included in containers of S3000 or S4000 waste shall be reported to WWIS/WDS as plastic with an estimated weight. Plastic packaging will also be reported to WWIS/WDS (as packaging), (Reference 17, Section 2.4.3).

[B] Compliance and Verification

[B.1] CCP using CCP-TP-530, reports the data to WWIS/WDS as follows: Debris waste (S5000), as plastic using the volume of the waste container multiplied by 620 kg/m^3, up to the net weight of the waste. If the net weight of the waste is greater than the calculated plastic, the excess is assigned to the material parameters by the percentages described in the AK Report. Soils and gravel (S4000), as the net weight of the waste with the waste material parameter type of "soil." Homogenous solids (S3000), as the net weight of the waste with the waste material parameter type appropriate to the waste. Debris included in containers of S3000 or S4000 waste shall be reported to WWIS/WDS as plastic with an estimated weight. Plastic packaging will also be reported to WWIS/WDS (as packaging).

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4.10 Chemical Properties

4.10.1 Pyrophoric Materials

[A] Requirements

[A.1] Radioactive pyrophoric materials shall be limited to residual amounts (<1 percent by weight), in payload containers and shall be generally dispersed in the waste. Radioactive pyrophorics in concentrations ≥1 percent by weight and all nonradioactive pyrophorics shall be reacted (or oxidized), and rendered nonreactive prior to placement in the payload container (Reference 41, Section 4.4.1). Nonradionuclide pyrophoric materials are not acceptable at WIPP (Reference 4, Section 11.4.1; Reference 9, Attachment C, Section C-1c; Reference 9, Part 2, Section 2.3.3.2.

[B] Compliance and Verification

[B.1] CCP demonstrates compliance through acceptable knowledge documentation. Radiography and VE will be used, when necessary, to examine a waste container to verify its physical form. Specifically, AK is used to demonstrate that nonradionuclide pyrophoric materials are not present in a waste stream and that pyrophoric radioactive materials are limited to residual amounts. Waste streams for which AK documentation indicates the possible presence of radioactive pyrophorics in concentrations greater than or equal to 1 percent by weight are reacted (or oxidized), and rendered nonreactive. AK documentation is collected and compiled in accordance with DOE/WIPP-02-3214 and CCP-TP-005 and is summarized on a waste stream basis in AK Summary Reports.

4.10.2 Hazardous Waste

[A] Requirements

[A.1] Hazardous wastes not occurring as co-contaminants with TRU wastes (non-mixed hazardous wastes), are not acceptable at WIPP. Each RH-TRU mixed waste container shall be assigned one or more hazardous waste numbers as appropriate. Only EPA hazardous waste numbers listed as allowable in the Hazardous Waste Facility Permit may be managed at WIPP. Some of the waste may also be identified by unique state hazardous waste codes. These wastes are acceptable at WIPP as long as the TSDF waste acceptance criteria are met (Reference 9, Attachment C, Section C-1b; Reference 9, Part 2, Sections 2.3.3.3 and 2.3.4). Wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA hazardous waste numbers of D001, D002, or D003), are not acceptable at WIPP (Reference 9, Attachment C, Section C-1c; Reference 9, Part 2, Sections 2.3.3.7 and 2.3.4).

[B] Compliance and Verification

[B.1] CCP assigns EPA hazardous waste numbers to waste streams based on AK. AK is the basis for demonstrating compliance that hazardous waste, if present in TRU waste, occurs only as co-contaminants with the TRU waste. A more detailed description of the AK process used to assign EPA hazardous waste numbers to a waste stream is presented in the QAPjP. AK documentation is compiled, evaluated and reported in accordance with DOE/WIPP-02-3214 and CCP-TP-005 and is summarized by waste stream in an AK Summary Report.

4.10.3 Chemical Compatibility

[A] Requirements

[A.1] TRU waste containing incompatible materials or materials incompatible with payload container and packaging materials, shipping container materials, other wastes, repository backfill, or seal and panel closure materials are not acceptable for transport in

the RH-TRU 72-B or 10-160B packages or for disposal at the WIPP. Chemical constituents shall conform to the lists of allowable materials in the RH-TRU 72-B RH-TRAMPAC and Appendix 4.10.2 of the 10-160B SAR (References 41 and 38).

[A.2] The total quantity of the trace chemicals/materials (materials that occur in the waste in quantities less than 1 percent [weight]), not listed in Table 4.3-1, in the payload container is restricted to less than 5 percent weight (Reference 41). Chemical constituents in a payload of a particular waste-specific content code shall conform to the allowable chemical list for that content code. The content code must be reported to the WWIS/WDS for each payload container (References 7 and 8).

[B] Compliance and Verification

[B.1] Personnel ensure compliance with the chemical compatibility requirements based on AK. The WCO confirms compliance with the chemical compatibility criteria in accordance with CCP-TP-530. If necessary, personnel repackage waste containers not meeting the chemical compatibility requirement.

4.10.4 Explosives, Corrosives, and Compressed Gases

[A] Requirements

[A.1] Waste shall contain no explosives, corrosives, or compressed gases (pressurized containers), (Reference 9, Attachment C, Section C-1c; Reference 9, Part 2, Sections 2.3.3.5 and 2.3.3.7; Reference 41, Section 4.2.1).

[B] Compliance and Verification

[B.1] CCP assesses compliance through acceptable knowledge documentation. Specifically, AK is used to determine if explosives, corrosives, and/or compressed gases may be present in a waste stream. Radiography and VE will be used, when necessary, to examine a waste container to verify its physical form. AK documentation is collected and compiled in accordance with procedure CCP-TP-005 and is

summarized on a waste stream basis in AK Summary Reports.

4.10.5 Headspace Gas Concentrations

[A] Requirements

[A.1] The headspace gas of payload containers shall meet the requirements of the TRAMPAC (if shipping in RH-TRU 72-B packaging), or Appendix 4.10.2 (if shipping in the 10-160B packaging) (References 9, 41, and 38 respectively).

[B] Compliance and Verification

[B.1] CCP demonstrates compliance through the following methods:

- AK that demonstrates that the concentration of flammable VOCs in the headspace of waste containers of a waste stream is less than 500 parts per million (ppm).

AK documentation is collected, evaluated and reported in accordance with DOE/WIPP-02-3214 and CCP-TP-005 and is summarized on a waste stream basis in AK Summary Reports. Headspace gas sampling is performed in accordance with approved procedures.

4.10.6 Polychlorinated Biphenyls (PCBs)

[A] Requirements

[A.1] For TRU and TRU-mixed wastes containing PCBs meeting the conditions of approval in Reference 12, the payload container data entered into the WWIS/WDS shall include the earliest date of waste generation (i.e., the date of removal from service for disposal), the date of waste certification for disposal, and the date the waste was sent to the WIPP for disposal (Reference 12, Section III.D.4). Additionally, the estimated weight of the PCBs in kilograms (as recorded on the UHWM) and a description of the type of PCB waste (e.g., PCB remediation waste, PCB bulk product waste, etc.), shall be entered into the WWIS/WDS (Reference 13, §761.207(a)(2) and

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§761.180). Hanford, Idaho National Laboratory, Savannah River Site, Oak Ridge Reservation, Knolls Atomic Power Laboratory, and Los Alamos National Laboratory are authorized to ship their TRU and TRU-mixed wastes containing PCBs to WIPP (References 14 and 15).

[B] Compliance and Verification

[B.1] CCP uses AK (which may include results of sampling and analysis) to identify waste streams that may contain PCBs. For waste streams that are identified as PCB contaminated, the AK record also includes a description of the type of PCB waste present (e.g., PCB remediation waste, PCB bulk product waste). AK documentation is collected, evaluated and reported in accordance with DOE/WIPP-02-3214 and CCP-TP-005 and is summarized on a waste stream basis in AK Summary Reports. Special information identified below is entered into the WWIS/WDS for each affected payload container in accordance with procedure CCP-TP-530.

1. Date of removal from service.

2. Date of waste certification for disposal.

3. Date the waste was sent to the WIPP for disposal.

4. The estimated weight of the PCBs in kilograms.

5. Description of the type of PCB waste.

CCP only certifies and ships PCB contaminated TRU waste from sites with an approved EPA PCB waste disposal authorization.

4.11 Data Package Contents

4.11.1 Characterization and Certification Data

[A] Requirements

[A.1] Sites shall prepare a WSPF for each waste stream. Each WSPF shall be approved by the Permittees prior to the first shipment of that waste stream.

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Characterization and certification information for each payload container shall be submitted to the WWIS/WDS and approved by the Data Administrator. Any payload container from a waste stream that has not been preceded by an appropriate certified WSPF is not acceptable at WIPP (Reference 9, Part 2, Section 2.3.3.10).

[A.2] See the WCPIP (Reference 17) for additional characterization and certification data requirements.

[B] Compliance and Verification

[B.1] CCP prepares and submits WSPFs to the Permittees for review and approval per the instructions given in procedure CCP-TP-002. Characterization data for each payload container used to prepare the WSPF and the Characterization Reconciliation Report is submitted to the WWIS/WDS in accordance with procedure CCP-TP-530. CPR weights are estimated and input into the WWIS/WDS as described in Section 4.5.

4.11.2 Shipping Data

[A] Requirements

[A.1] Sites shall prepare either a bill of lading or a UHWM for RH TRU waste shipments as required by the transportation requirements. The land disposal restriction notification for RH TRU mixed waste shipments shall state that the waste is not prohibited from land disposal (Reference 9, Attachment C, Section C-5b(2); Reference 41).

[B] Compliance and Verification

[B.1] CCP prepares and completes the UHWM and/or Bill of Lading in accordance with CCP-TP-507. The Land Disposal Restriction Exemption Notification is completed for mixed waste shipments in accordance with procedure CCP-TP-507 and states that the waste is not prohibited from land disposal.

5.0 QUALITY ASSURANCE PLAN

The CBFO QAPD establishes QA program requirements for the programs, projects, and activities sponsored by CBFO. The NWP QAPD describes how NWP applies the QA program requirements of the CBFO QAPD to NWP activities, including CCP. This QA plan describes and implements the NWP QAPD requirements for the CCP. It is based on the NWP QAPD as it applies to the characterization, certification, and transportation of TRU waste as performed by CCP, and therefore incorporates the applicable requirements from the regulatory and commitment QA program source documents identified in the CBFO QAPD. This QA plan also fulfills the requirements for a transportation QA plan as required in 10 CFR Part 71, Subpart H. The scope of the integrated Quality Assurance Program Requirements for Nuclear Facilities (NQA)-1 Program is to ensure that all items and activities that are important to the safe containment of TRU Waste in the WIPP are in compliance with Program objectives. Applicable criteria are also identified in the individual element descriptions contained in this QA Plan.

The QA program is developed and maintained through an ongoing process that selectively applies QA criteria as appropriate to the function or work activity being performed. The organization of this QA Plan is generally based on the CBFO QAPD elements.

The QA program is implemented in accordance with a set of Quality Procedures that are applicable to all CCP activities, independent of the location where these activities are performed. The QA program also includes Technical Procedures and other documentation, some of which are site-specific and some of which are applicable across CCP. Implementing Technical Procedures are listed in the tables in Appendix 4.

QA program document references are included, as applicable, in each of the individual QA element descriptions throughout this QA Plan.

5.1 Organization and Quality Assurance Program

(Applicable Criteria: 10 CFR 830.122 Criterion 1
40 CFR 194.22(a)(2)(i)
ASME NQA-1-1989, Criterion 1
DOE O 414.1 Criterion 1
CBFO QAPD, Section 1.1
NWP QAPD, Section 1.1)

This QA program applies to items and activities affecting waste characterization, certification, and transportation by the CCP. The QA program elements are integrated into CCP items and activities through reviews, assessments, inspections, and approval and control of records and documents. The CCP has identified the Program Manager, the

Certification Program Manager, SPM, Assurance Programs Manager, TCO, and WCO as being responsible for ensuring QA within CCP. The responsibilities of each of these positions, as well as other personnel involved with TRU waste characterization and certification, are summarized in this Plan (Section 2.1).

Figure 1-1 (see Section 1.0) illustrates the hierarchy and interrelationships of QA documents governing the QA program. Quality management documents are audited and/or assessed to ensure they meet CCP requirements.

Personnel plan certification activities and document the planning process. Planning documentation is subject to review by subject matter experts (SMEs). CCP planning documentation consists of this Plan, the WIPP WAP, the WAC, the QAPjP, the CH-TRAMPAC, RH-TRAMPAC, the GGT QAPjP, implementing procedures, QA plans, training plans, and facility and certification process designs.

5.1.1 Organization

(Applicable criteria: 10 CFR Part 830.122 Criterion 1
DOE O 414.1 Criterion 1
ASME NQA-1-1989, Criterion 1
CBFO QAPD Section 1.1.1
NWP QAPD, Section 1.1)

The organization structure, functional responsibilities, levels of authority, and lines of communication for activities affecting quality are documented in this Plan, and CCP implementing procedures. Specific duties and responsibilities assigned to CCP management are summarized in the Plan, Section 2.1.1, and in CCP-PO-001.

The QA organization is responsible for ensuring the implementation of the QA program and verifying that activities affecting quality have been correctly performed. They have sufficient authority, access to work areas, and organizational freedom to identify quality problems; initiate, recommend, or provide solutions to quality problems; verify implementation of solutions; and ensure that further processing, delivery, installation, or use is controlled until proper disposition of nonconformances, deficiencies, or unsatisfactory conditions has occurred. QA personnel have direct access to responsible management at a level where appropriate action can be effected. They report to a management level such that required authority and organizational freedom are provided, including sufficient independence from cost and schedule considerations. Specific duties and responsibilities assigned to QA are summarized in the Plan, Section 2.1.4, and in CCP-PO-001.

The organizational structure of CCP, and the assignment of responsibilities, is based on the following QA principles, such that:

- Quality is achieved and maintained by those who have been assigned responsibility for performing work.
- Quality achievement is verified by personnel or organizations that are not directly responsible for performing the work.
- The individuals or organizations responsible for establishing and executing the QA program may delegate any or all of the work, but shall retain responsibility therefore.
- Responsibility for the control of further processing, delivery, installation, or operation of nonconforming items shall be designated in writing.
- When more than one organization is involved in the execution of activities covered by this document, the responsibility and authority of each organization shall be clearly established and documented.
- The external interfaces between organizations and the internal interfaces between organizational units, and changes thereto, shall be documented.
- Interface responsibilities shall be defined and documented.

All personnel involved with TRU waste certification and packaging are responsible for achieving and maintaining the quality of their activities and products. All personnel are responsible for promptly reporting existing, developing, or potential conditions adverse to quality to responsible management for evaluation and action. Management personnel are responsible for achieving and maintaining quality in the work activities under their control.

[A] Communication and Interface Responsibilities

(Applicable Criteria: CBFO QAPD Section 1.1.1.4
NWP QAPD, Section 1.1.10 and 1.1.11)

CCP management communicates to all levels of the organization timely information pertinent to quality performance, including status of the quality program, status and resolution of significant quality problems, lessons learned, quality management practices and improvements, and trend analysis results.

The responsibility and authority of the CCP and each participating organization are clearly established and documented in an interface document for each site. The external interfaces between CCP participant organizations, the internal interfaces between organizational units, and interface changes are documented. Interface responsibilities are defined and documented and include the requirements for management, performance, and assessment. Interfaces between CCP and the waste generating sites are detailed in project-level Interface Agreement documents specifically written for each site. Interfaces between CCP and NWP support organizations are defined in CCP implementing procedures.

[B] Reports to Management

(*Applicable Criteria: CBFO QAPD Appendix E, Section 8*
NWP QAPD, Section 1.1.8)

QA provides the QA interface between facilities and the CCP Certification Manager and SPM. QA oversees the NCR/CAR process for CCP related deficiencies and coordinates with the CCP Certification Manager and SPM to track and notify the appropriate personnel of nonconformances, and verify corrective action completion in accordance with CCP-QP-005. QA at project sites report the results of their surveillance assessments to the Assurance Programs Manager, and together they track assessment results and corrective actions. QA prepares and transmits a semi-annual QA report to the CCP Certification Manager and the DOE.

[C] Delegation of Work

(Applicable Criteria: CBFO QAPD Section 1.1.1.5
NWP QAPD, Section 1.1.6)

Management empowers employees by delegating authority and decision making to the lowest appropriate level in the organization. If work is delegated, the individual making the delegation retains responsibility for the delegated work. QA is responsible for determining the effectiveness of the QA program, which is accomplished through internal reporting procedures, audits, and assessments.

[D] Resolution of Disputes

(Applicable Criteria: CBFO QAPD Section 1.1.1.6
NWP QAPD, Section 1.1.7)

Disputes related to QA program requirements will be resolved by QA and cognizant personnel. If not resolved, the issues will be elevated progressively to successively higher levels of management as necessary.

[E] QA Management

(Applicable Criteria: CBFO QAPD, Section 1.1.3.A
NWP QAPD, Section 1.1.5)

QA Management shall:

[E.1] Schedule and conduct QA assessments.

[E.2] Maintain liaison with participant QA organizations and other affected organizations.

[E.3] Ensure preparation, review, and issuance of QA plans and procedures that implement the provisions of the NWP QAPD.

[E.4] Review and approve supplier and subcontractor QA plans.

[E.5] Track or perform trend analysis of quality problems, and report quality problem areas.

[E.6] Provide for the administrative processing of documentation of concerning conditions adverse to quality.

[E.7] Have direct access to responsible management at a level where appropriate action can be effected.

[E.8] Be sufficiently independent from cost and schedule considerations.

[E.9] Have the organizational freedom to communicate with management.

[E.10] Have no assigned responsibilities unrelated to the QA program that would prevent appropriate attention to QA matters.

[E.11] Develop, establish, and interpret QA policy and ensure effective implementation.

[E.12] Interface, as appropriate, with the CBFO staff, participants, and other stakeholders on QA matters.

[E.13] Assist subordinate organizations with quality planning, documentation, quality measurement, and problem identification and resolution.

[E.14] Provide guidance to all applicable subordinate organizations concerning identification, control, and protection of QA records.

[F] The QA organization shall have sufficient authority, access to work areas, and organizational freedom to:

(Applicable Criteria: CBFO QAPD, Section 1.1.1.3.B
NWP QAPD, Section 1.1.5)

[F.1] Identify quality problems.

[F.2] Recommend solutions.

[F.3] Verify implementation of solutions.

[F.4] Ensure that unsatisfactory conditions are controlled until proper disposition has occurred.

5.1.2 Implementation of the QA Program

(Applicable criteria: 40 CFR 194.22(a)(1)
ASME NQA-1-1989, Criterion 2
CBFO QAPD Section 1.1.2
NWP QAPD, Section 1.1.8)

The QA program is planned, implemented, and maintained in accordance with the requirements found in the CBFO QAPD, NWP QAPD, American Society of Mechanical Engineers (ASME) NQA-1-1989, 40 CFR § 194.22, and 10 CFR § 830.122. The QA program identifies the activities and items to which it applies, and provides control over activities affecting quality to an extent consistent with their importance. The QA program has been implemented during the process of program development, start-up, and operation.

The QA program provides for the planning and accomplishment of activities affecting quality under suitable controlled conditions.

Controlled conditions include the use of appropriate equipment, suitable environmental conditions for performing waste characterization and transportation activities, and assurance that prerequisites have been satisfied. This program also provides for special controls, processes, test equipment, tools, and skills to attain the required quality and for verification of quality.

[A] Grading Items and Activities and Applying Management Controls

(Applicable Criteria: CBFO QAPD Section 1.1.2.3
NWP QAPD, Section 1.1.8.2)

The graded approach to application of QA controls is used by the CCP to determine the importance of the item or activity with respect to the CCP mission, regulatory requirements, hazards, and life-cycle of the item or activity. Management controls are applied commensurate with the determined importance of the item or activity. The CCP uses the graded approach in accordance with CCP-QP-001, *CCP Graded Approach*, to comply with CBFO QAPD and NWP QAPD requirements for grading items and activities and applying management controls. Revisions to CCP-QP-001 are submitted to CBFO for approval prior to implementation.

[B] Work Planning

(Applicable Criteria: CBFO QAPD Section 1.1.2.4
NWP QAPD, Section 1.1.12)

CCP performs and documents planning to ensure that work is accomplished under suitably controlled conditions. CCP implements planning in accordance with CCP-QP-010, *CCP Document Preparation, Approval and Control,* and CCP-QP-026*, CCP Inspection Control*. As appropriate, planning elements include:

[B.1] Definition of work scope, objectives, and a listing of the primary tasks involved.

[B.2] Identification of scientific approaches or technical methods used to collect, analyze or study results of applicable work.

[B.3] Identification of field and testing standards and quality criteria.

[B.4] Identification of applicable implementation documents; appropriate nationally recognized standards will be used whenever possible.

[B.5] Identification of field and testing equipment or other equipment.

[B.6] Identification of, or provisions for the identification of, required records and the recording of objective evidence of the results of the work performed.

[B.7] Identification of prerequisites, special controls, specific environmental conditions, processes, or skills.

[B.8] Identification of computer software.

[C] Peer Review

(Applicable criteria: CBFO QAPD Section 1.1.2.5
NWP QAPD, Section 1.1.12)

When peer reviews are required, they are accomplished in accordance with CCP-TP-511, *CCP Peer Review*.

5.2 Personnel Qualification and Training

(Applicable criteria: 10 CFR 830.122 Criterion 2
ASME NQA-1-1989, Criterion 2
DOE O 414.1 Criterion 2
CBFO QAPD Section 1.2
NWP QAPD, Section 1.2)

The QA program provides for training and qualification, as necessary, of personnel performing activities affecting quality to ensure that suitable proficiency is achieved and maintained. Personnel performing work in support of CCP receive QA training and are qualified to ensure that proficiency is achieved and maintained in the performance of their assigned tasks. Records documenting qualifications and completed training programs are maintained and controlled. Training and qualification are performed in accordance with CCP-QP-002, *CCP Training and Qualification Plan* and CCP-QP-040, *Support Training.*

5.2.1 Qualification Requirements

(*Applicable criteria: CBFO QAPD Section 1.2.1*
NWP QAPD, Section 1.2.1)

The CCP Certification Manager and Training determine qualification standards for each job category relevant to the CCP and ensure that qualifications of personnel, including minimum education and experience, have been verified. Personnel maintain minimum qualifications in accordance with CCP-QP-002. The CCP Certification Manager determines which positions relevant to the CCP require minimum qualifications. The period of effectiveness for qualification associated with special processes and operations that require special skills and the requalification criteria are specified or referenced in CCP-QP-002. The CCP Certification Manager ensures that auditable records documenting personnel qualifications are maintained as described in CCP-QP-008, *CCP Records Management*. Records of qualified personnel, their areas of qualification, and qualification periods (as appropriate) are retained in the records files.

5.2.2 Training Requirements

(Applicable criteria: CBFO QAPD Section 1.2.2
NWP QAPD, Section 1.2.2)

The CCP Certification Manager and Training ensure that personnel receive indoctrination and training on the scope, purpose, and objectives and the specific QAOs of the tasks being performed. Personnel performing activities affecting quality are trained according to the training plan to ensure they achieve and maintain proficiency. Personnel receive initial and continuing training requisite with their activities and level of responsibility, as described in CCP-QP-002.

Training is designed, developed, conducted, and evaluated in accordance with requirements described in CCP-QP-002. Training programs may include classroom instruction; practical hands-on experience; supervised on-the-job training (OJT); self-paced individual study; and written, oral, or practical demonstration of worker competence. The CCP Certification Manager analyzes job positions and determines task responsibilities for personnel to ensure education, experience, and training is commensurate with minimum requirements specified. The CCP Certification Manager is responsible for ensuring that auditable records documenting the required training and qualifications are maintained in accordance with CCP-QP-002.

5.3 Quality Improvement

(Applicable Criteria: 10 CFR 830.122 Criterion 3
ASME NQA-1-1989, Criteria 15 & 16
DOE O 414.1 Criterion 3
CBFO QAPD Section 1.3
NWP QAPD, Section 1.3)

Quality improvement is a management process, carried out to improve items, services, products, or processes. All aspects of quality work activities and the management system are subject to continuous improvement through the assessment and feedback processes.

Conditions adverse to quality are identified promptly and corrected as soon as practical. In the case of a significant condition adverse to quality, the cause of the condition is determined and corrective action taken to preclude recurrence. The identification, cause, and corrective action for significant conditions adverse to quality are documented and reported to appropriate levels of management. Follow-up action is taken to verify implementation of corrective actions.

Items that do not conform to specified requirements are controlled to prevent inadvertent installation or use. Controls are provided for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations.

Personnel continually evaluate and improve project activities. QA ensures that quality improvement is achieved by identifying and controlling conditions adverse to quality, analyzing trends, reporting and tracking nonconformances, and implementing corrective actions. These quality improvement activities detect and prevent unacceptable quality problems and thereby increase accuracy and reliability, and reduce variability. Data analysis and trending are performed in accordance with CCP-QP-014, *CCP Quality Assurance Trend Analysis and Reporting.*

A condition adverse to quality is an all-inclusive term used in reference to failures; malfunctions; deficiencies; and nonconforming items, materials, parts, or components, and processes. Personnel ensure that nonconforming items, materials, parts, or components are adequately identified and segregated from acceptable items and materials to preclude their inadvertent use. CCP and Host site personnel have the authority to stop certification, packaging, and transportation activities and/or refuse to accept work products or services (e.g., procured items, documentation, packaging, and waste shipments) that do not conform to requirements. Personnel report conditions adverse to quality to QA personnel, who ensure that the condition adverse to quality is investigated and that corrective action is taken as described in this section. Employees have

the responsibility to stop work that poses a clear and imminent danger to the safety and health of employees, subcontractors, visitors, or the environment.

Personnel notify QA of conditions adverse to quality affecting waste to be shipped to WIPP and forward CARs related to violations of the WIPP Hazardous Waste Facility Permit to QA for tracking. Conditions adverse to quality are documented, evaluated for significance, corrected, tracked, and reported in accordance with CCP-QP-029 and CCP-QP-005. All violations of the WIPP Hazardous Waste Facility Permit will be managed as significant conditions adverse to quality.

Deficiencies are uncontrolled and unapproved deviations from an approved plan, procedure, or expected result. Deficiencies specific to the CCP also include documentation or management practices that do not meet the requirements related to waste certification or payload container preparation, which are identified in the WIPP WAP, RH-TRAMPAC, CH-TRAMPAC, WAC, QAPD, and applicable federal and state regulations. Personnel are responsible for identifying any condition that affects compliance with these requirements. Assessments may often identify systems, processes, products, or services that do not meet performance criteria established in planning documents. When deficiencies are found, personnel take prompt action to rectify the situation.

Any individual who identifies a condition adverse to quality initiates an NCR or CAR in accordance with CCP-QP-005 or CCP-QP-029. If the safety or quality of the certification process could be compromised by continued use of a nonconforming item, the item is taken out of service and tagged or otherwise identified to prevent reuse or acceptance until the nonconformance is corrected. QA or the QA personnel at the facility where the nonconformance is identified ensures that an NCR is initiated and that corrective action is taken to resolve the nonconformance.

NCRs and CARs are forwarded to the CCP Project Office QA personnel. QA is responsible for validating and tracking CCP-related deficiencies to ensure that corrective action is implemented and that the corrective action resolves the nonconformance. Significant conditions adverse to quality are evaluated by QA and other affected organizations to determine if a work suspension is necessary. If necessary, work will be suspended until the condition is corrected and verified by QA. Personnel notify DOE-CBFO within seven calendar days of identification of any non-administrative nonconformance related to applicable requirements specified in the WIPP WAP, which are first identified at the SPM's signature release level. Personnel submit the NCR to DOE-CBFO within 30 calendar days of identification of the deficiency. QA ensures dissemination of information that may prevent problems or help improve

parallel processes in other waste generator or activities and re-evaluates system performance after corrective actions have been implemented. The CCP Certification Manager provides the resources necessary to accomplish corrective actions. Any containers with unresolved discrepancies associated with waste characterization cannot be certified for disposal; this includes containers affected by CAR's applicable to WIPP WAP and WAC requirements.

QA and the CCP Certification Manager are jointly responsible for identifying the following:

- Trends in nonconformances
- Root causes of nonconformances
- Specific, measurable corrective actions to resolve current problems and prevent recurrence
- Personnel responsible for implementing corrective actions
- Schedules for completing corrective actions

5.4 Documents

(Applicable Criteria: 10 CFR 830.122 Criterion 4
ASME NQA-1-1989, Criteria 6
DOE O 414.1 Criterion 4
CBFO QAPD Section 1.4
NWP QAPD, Section 1.4)

The preparation, issue, and change of documents that specify quality requirements or prescribe activities affecting quality are controlled to assure that correct documents are being employed. These documents, including changes, are reviewed for adequacy and approved for release by authorized personnel.

Personnel prepare and control documents supporting the quality of the CCP in accordance with CCP-QP-010. Document control coordinators will ensure that:

- Documents are controlled during the review and approval process.
- Applicable criteria for the review are identified. Criteria will consider technical adequacy, accuracy, completeness and compliance with requirements.
- Pertinent background information or data is made available to the reviewer.

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- Reviews are performed by individuals other than the originator, who are also technically competent in the subject area.

- Organizations or technical disciplines affected by the document review the document.

- QA reviews documents that translate CBFO QAPD, WAC, WIPP WAP, CH-TRAMPAC, RH-TRAMPAC and WCPIP requirements.

- Review comments are resolved and evidence of review comment resolution is maintained.

- Documents are approved for release and distributed in accordance with CCP-QP-010. These documents include:

  - Program planning documents such as this Plan, the QAPjP, the TRAMPAC

  - Plans and procedures implementing TRU waste characterization, certification and packaging

  - Procedures implementing QA requirements

- Changes to documents, other than those designated as editorial changes, are reviewed by the same organizations that performed the original review and approval.

NWP controlled procedures are used for functions that NWP performs in support of CCP. These functions include procurement support, source inspection support, independent assessments, vendor audits, and QSL maintenance.

5.5 Records

(Applicable Criteria: 10 CFR Part 21
10 CFR Part 71
10 CFR 830.122 Criterion 4
ASME NQA-1-1989, Criterion 17
ASME NQA-2a-1990, Addenda, Part 2.7
ASME NQA-3 1989
Waste Isolation Pilot Plant Hazardous Waste Facility Permit
DOE O 414.1 Criterion 4
CBFO QAPD Section 1.5
NWP QAPD, Section 1.5
DOE O 414.1
DOE O 266.1
DOE G-414.1-2A
SNT-TC-1A-1980
NRC Certificate Number 9212
NRC Certificate Number 9218
NRC Certificate Number 9279
NRC Certificate Number 9204
NUREG-1297 (1988)
NUREG/BR-0167 (1993)
40 CFR Part 191
40 CFR Part 194)

Records that furnish documentary evidence of quality are specified, prepared, and maintained. Records are legible, identifiable, and retrievable. Records are protected against damage, deterioration, or loss. Requirements and responsibilities for record transmittal, distribution, retention, maintenance, and disposition are established and documented.

A QA record is an authenticated record that provides objective evidence of the quality of items and/or activities. The minimum lifetime and nonpermanent QA records are identified in the QAPjP. QA records are controlled and maintained to certify compliance with requirements and to reflect completed work. QA records are indexed, classified, controlled, and maintained by records management personnel as described in CCP-QP-008. The Records Inventory and Disposition Schedule (RIDS) is also defined in CCP-QP-028, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning*.

Waste characterization data and QA/QC records related to TRU waste to be shipped to WIPP are designated as either Lifetime Records, or Non-Permanent Records. Records that are designated as Lifetime Records are maintained for the life of the waste characterization program

plus six years; **OR** transferred for permanent archival storage to the WIPP Records Archive. Waste characterization records designated as Non-Permanent Records will be maintained for ten years from the date of record generation and then dispositioned according to their approved RIDS.

5.6 Work Process

(Applicable Criteria: 10 CFR 830.122 Criterion 5
DOE O 414.1 Criterion 5
CBFO QAPD Section 2.1
NWP QAPD, Section 2.1)

The work processes and items supporting and affecting quality are controlled through plans and procedures identified in this Plan, the QAPjP, and the TRAMPAC.

Characterization, fabrication, installation, and inspection processes affecting the quality of items or services are controlled by procedures. Special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive examination, are performed by qualified personnel using qualified procedures in accordance with specified requirements.

5.6.1 Work

(Applicable Criteria: CBFO QAPD Section 2.1.1
ASME NQA-1-1989, Criterion 1
NWP QAPD, Section 2.1.1)

The CCP Certification Manager ensures that activities are controlled and conducted in accordance with facility-specific procedures that describe and control work processes applicable to TRU waste characterization or certification.

Individual operating procedures provide controls for performance of special processes. Special process training and qualification requirements are described in CCP-QP-002.

Each individual performing work is responsible for ensuring that work processes are controlled and comply with established criteria. The CCP Certification Manager is responsible for ensuring that workers have the correct procedures, materials, and training to perform the required work. Instructions and procedures are maintained current with a documented and controlled method of revision. Instructions, procedures, and drawings are readily

available to personnel at locations requiring their use through either hard copy or electronic media.

5.6.2 Implementing Procedures

(Applicable criteria: ASME NQA-1-1989, Criterion 5
CBFO QAPD Section 2.1.2
NWP QAPD, Section 2.1.2)

Activities affecting quality are prescribed by and performed in accordance with documented instructions, procedures, or drawings of a type appropriate to the circumstances. These documents include or reference appropriate quantitative or qualitative acceptance criteria for determining that the prescribed activities have been satisfactorily accomplished.

Procedures and plans are developed, reviewed, approved, revised, and distributed in accordance with CCP-QP-010. CCP technical and QA personnel comply with the applicable technical standards and administrative controls described in procedures, which are reviewed and approved by the CCP Certification Manager and QA in accordance with CCP-QP-010. The CCP Certification Manager ensures personnel perform work following established procedures. For work processes such as procurement, source inspection, and independent assessments, applicable NWP non-CCP specific procedures are also used. CCP specific implementing procedures describe the required interfaces with applicable NWP general use procedures.

The procedures identified in this Plan, the QAPjP, and the TRAMPAC provide the following information:

- organizational and individual responsibilities
- training and qualification requirements
- technical, regulatory, and QA requirements
- step-by-step instructions for the process
- equipment specifications
- identification and control of items used or installed
- prevention of damage or loss and minimization of deterioration of items and materials during handling, storage, and shipment of items

- methods and criteria for ensuring and verifying the acceptability of equipment and materials used in the process (e.g., calibration)
- prerequisites, precautions, process parameters, and other limiting conditions
- products of the process
- quantitative and/or qualitative criteria for determining that prescribed process activities have been performed satisfactorily
- records generated by the process
- package and design control of equipment and materials

5.6.3 Item Identification and Control

(Applicable Criteria: ASME NQA-1-1989, Criterion 8
CBFO QAPD Section 2.1.3
NWP QAPD, Section 2.1.3)

Controls have been established to assure that only correct and accepted items are used or installed. Identification is maintained on items or in documents traceable to the items, or in a manner which assures that identification is established and maintained.

Items are identified and traced from time of receipt through end use. Physical markings, labels, tags or segregation are used to provide item identification and status. Specific details are provided in CCP-QP-017, *CCP Identification and Control of Items*.

5.6.4 Special Processes

(Applicable Criteria: ASME NQA-1-1989, Criterion 9
CBFO QAPD Section 2.1.4
NWP QAPD, Section 2.1.5)

Special processes that control or verify quality, such as those used in nondestructive examination, are performed by qualified personnel using qualified procedures in accordance with specified requirements.

Processes are considered to be special processes if:

- results are highly dependent on the control of the process
- results are highly dependent on the skill of the operator, or

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- quality of the results cannot be readily determined by inspection or test of the product.

Implementing procedures have been developed to control special processes: NDE, NDA, DTC, Flammable Gas Analysis, GGT, and Helium Leak Detection. Training and qualification requirements for operators are identified in CCP-QP-002.

5.6.5 Handling, Storage, and Shipping

(Applicable Criteria: ASME NQA-1-1989, Criterion 13
CBFO QAPD Section 2.1.5
NWP QAPD, Section 2.1.6)

Handling, storage, cleaning, packaging, shipping, and preservation of items are controlled to prevent damage or loss and to minimize deterioration. Controls are provided through work and inspection procedures, shipping instructions, or other appropriate documents.

Measures are established in CCP-QP-015 and CCP-QP-023, *CCP Handling, Storage and Shipping*, to ensure that systems, components and items used for repair work for maintenance purposes or packaging purposes are adequately identified to preclude the use of incorrect or defective items. Also, where replacement of limited shelf life items is specified, measures are established to preclude use of items whose shelf life or time in operation has expired. Handling, storage, cleaning, shipping, and other means of preserving, transporting, and packaging of items are controlled in accordance with CCP-QP-023.

5.7 Configuration Management

(Applicable Criteria: CBFO QAPD Section 2.2
NWP QAPD, Section 2.2)

5.7.1 Equipment Configuration

CCP applies configuration management controls to characterization equipment, including vendor owned equipment, operated by CCP and its subcontractors on behalf of CBFO. In accordance with CCP-CM-001, *CCP Equipment Change Authorization and Documentation*, personnel:

- Coordinate the reviews of new equipment and changes/modifications/repairs to existing equipment.
- Establish and apply unique equipment numbering.

- Develop all required equipment change/modification/repair requests.
- Determine training needs due to equipment changes/modifications/repairs.
- Obtain appropriate approvals for equipment modifications, changes, repairs, and process drawing and document changes when required.
- Coordinate with host facility representatives in their reviews to ensure that proposed modifications comply with host facility Authorization Basis requirements.
- Oversee the implementation of approved changes.
- Ensure appropriate technical documentation is maintained on equipment changes/modifications/repairs.

5.7.2 Software Configuration

CCP applies configuration management controls to computer software and hardware/software configurations in accordance with the requirements of CCP-QP-022, as described in Section 5.14 of the Plan.

5.8 Procurement

(Applicable Criteria: 10 CFR 830.122 Criterion 7
ASME NQA-1-1989 Criteria 4 & 7
DOE O 414.1 Criterion 7
CBFO QAPD Section 2.3
NWP QAPD, Section 2.3)

Applicable design bases and other requirements necessary to ensure adequate quality are included or referenced in documents for procurement of items and services. Procurement documents require suppliers to have a QA program consistent with the graded application of quality requirements. Procurements are controlled to ensure conformance with specified requirements. Procurement controls provide for source evaluation and selection, evaluation of objective evidence of quality furnished by the supplier, source inspection, audit, and examination of items or services upon delivery or completion.

CCP implements procedures to ensure that procurement of items and services important to safety and quality meet requirements and perform as intended. Procurement controls are applicable to equipment and services,

including commercial grade items that directly affect testing, and data quality. Other NWP organizations provide support to the CCP for procurement process elements such as procurement planning, supplier selection and evaluation, bid evaluation, supplier performance evaluation, requisition review and processing, and procurement records. Personnel adhere to procurement and record keeping practices established in written procedures. The procurement criteria are implemented according to CCP-QP-015, NWP procedure WP 15-PC3609, *Preparation of Purchase Requisitions and Purchase Requisition Change Notices*, and the procedures specified in the following subsections.

When deemed appropriate, CCP may permit some or all supplier work to be performed under the NWP QA program, provided that the requirements are adequately implemented. In these cases, procurement documents shall specify the NWP QA implementing procedures, including CCP specific procedures that are applicable to the supplier and that CCP will provide these applicable documents to the supplier.

5.8.1 Procurement Document Review and Approval

(Applicable Criteria: CBFO QAPD Section 2.3.5
NWP QAPD, Section 2.3.2)

The CCP Certification Manager ensures that personnel control procurement documents in accordance with CCP-QP-015. Procurements are planned and controlled to ensure that suppliers have QA programs consistent with the intended use of the item being procured. Procurement activities shall be planned as early as possible. At a minimum, the activities shall be planned no later than the start of those procurement activities that are required to be controlled. Procurement documents supporting waste management and packaging and transportation activities must include required specifications and acceptance criteria. Procurement documents are reviewed by appropriate organizations and engineering disciplines to ensure that they contain adequate scope of work, technical requirements, supplier QA program requirements, and provisions for acceptance. Qualified personnel verify suppliers' conformance to procurement document requirements.

5.8.2 Acceptance of Items or Services
(Applicable Criteria: CBFO QAPD Section 2.3.7
NWP QAPD, Section 2.3.4)

The SPM ensures that personnel control items and services purchased (including supplier evaluations and inspections) in accordance with CCP-QP-015, NWP Procedure

WP 15-PC3609, and CCP-QP-001. Methods shall be established for the acceptance of an item or service being furnished by a supplier. Prior to offering an item or service for acceptance, the supplier shall verify that the item or service complies with the procurement requirements. Documentary evidence of conformance to the procurement specifications is provided before installation or use of systems, components, items, and services, and is retained in accordance with CCP-QP-015. Acceptance of quality related systems, components, items and services will be through source verification, receipt inspection, post-installation testing, or supplier certificate of conformance as appropriate to the quality level. Supplier nonconformances will be documented, tracked, and dispositioned in accordance with CCP-QP-015. An example of conditions requiring a report of nonconformance include: The item does not conform to the original requirement even though the item can be restored to a condition such that its capability to function is unimpaired (i.e., a waiver is requested).

5.8.3 Control of Supplier Nonconformances

(Applicable Criteria: CBFO QAPD Section 2.3.8
NWP QAPD, Section 2.3.5)

Subcontractors perform work that directly affects the quality of characterization and certification data. CCP-QP-015, describes how personnel control subcontractor services. Subcontractors may support activities under a “staff augmentation” role or for procurement of products and services. Staff augmentation subcontractors operate under the umbrella of the QA program and are subject to applicable requirements for functions that they perform. Subcontractors who support the CCP will be informed of the need to perform operations in compliance with requirements.

If subcontractors are authorized to perform procurements of quality-affecting items and services, they are required to establish procurement controls and a QA program to ensure that purchased materials, equipment, and services conform to the procurement and QA program documents. NWP adds and maintains such subcontractors on the NWP QSL, to support the scope of work and ensure that the appropriate subcontractor QA controls are applied. The controls must include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products on delivery. Subcontractors are subject to periodic assessments and audits at intervals consistent with the importance, complexity, and quantity of the product or services provided to ensure compliance with

procurement requirements. Subcontractors shall submit copies of CCP-related, quality affecting documents to the CCP Certification Manager.

Items and services procured are subject to control of nonconformances. Quality Levels are determined for items and services procured for use, and quality-affecting items are evaluated for adequacy prior to use through receipt inspection, source inspection, functional testing, or other appropriate means. Items that are found deficient are documented, controlled to prevent use, evaluated, and corrective actions performed.

A combination of CCP specific and NWP general use procedures are used to exercise controls over supplier nonconformances. They include:

- CCP-QP-015, *CCP Procurement*
- CCP-QP-029, *CCP Corrective Action Management*
- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- WP 15-PC3609, *Preparation of Purchase Requisitions and Purchase Requisition Change Notices*

5.8.4 Commercial Grade Items

(Applicable Criteria: CBFO QAPD Section 2.3.9
NWP QAPD, Section 2.3.6 and 2.3.7)

Commercial grade items may be used when specified by design. Commercial grade items are identified in procurement documents using manufacturer or distributor catalog numbers or descriptions. Data collection and test instruments procured as commercial grade items that are intended for use in quality related applications are calibrated by qualified suppliers of calibration services prior to use. Commercial grade items are procured in accordance with CCP-QP-015, CCP-QP-026, WP 13-QA1003, *Quality Assurance Receipt/Source Inspections*, WP 15-PC3609, WP 13-QA3012, *Supplier Evaluation and Qualification,* and NWP Procurement Services Commercial Instruction C1015 *Supplier Selection*.

5.9 Inspection and Testing

(Applicable Criteria: 10 CFR 830.122 Criterion 8
ASME NQA-1-1989, Criteria 10 & 14
DOE O 414.1 Criterion 8
CBFO QAPD Section 2.4
NWP QAPD, Section 2.4)

Inspections required to, verify conformance of an item or activity to specified requirements are planned and executed. Characteristics to be inspected and inspection methods to be employed are specified. Inspection results are documented. Inspection for acceptance is performed by persons other than those who performed or directly supervised the work being inspected.

The status of inspection and test activities is identified either on the items or in documents traceable to the items where it is necessary to assure that required inspections and tests are performed and to assure that items which have not passed the required inspections and tests are not inadvertently installed, used, or operated. Status is maintained through indicators appropriate to the activity or item, such as physical location and tags, markings, travelers, stamps, inspection records, or other suitable means. The authority for application and removal of tags, markings, labels, and stamps is specified.

Equipment is tested, inspected, and maintained in accordance CCP-QP-016*, CCP Control of Measuring, Testing, and Data Collection Equipment*; CCP-QP-026, and CCP-QP-027, *CCP Test Control*. CCP personnel identify and control items (e.g., items with limited shelf or operating lives, materials, equipment, and samples) and ensure that only correct and accepted items are used according to CCP-QP-026. These procedures and documents address planning, parameters for evaluation, techniques to be used qualifications of inspection and test personnel, hold points, documentation, acceptance criteria, and organizational responsibilities.

Personnel routinely test and inspect items and processes and control, calibrate, and maintain equipment to ensure proper operation and data quality. Procedures identified above implement an inspection program that establishes criteria for inspection of activities affecting quality by, or for, the organization performing the activity, and to verify conformance with the requirements for accomplishing the activity. The verification is performed in accordance with written procedures, instructions, or drawings. Personnel performing the inspections are independent from the individuals performing the activity being inspected. Equipment modifications, repairs, and replacement are inspected in accordance with the original design and inspection requirements unless an approved

alternative exists. The inspection program also provides for identification and documentation of deficiencies discovered during the inspection. Measures are established to indicate, by the use of markings, tags, stamps, labels, routing cards, or other suitable means, the status of inspections and tests performed. These measures provide for the identification of items that have satisfactorily passed required inspections and tests, where necessary, to preclude inadvertent bypassing of the inspections and tests.

Quality related procured items are inspected by qualified personnel at receipt or at the source prior to shipment. These inspections may include dimensional verification, functional testing, verification of documentation or other appropriate methods.

5.9.1 Qualification of Inspection and Test Personnel

(Applicable Criteria: CBFO QAPD Section 2.4.1
NWP QAPD, Section 2.4.1)

Inspection and test personnel are trained and qualified in accordance with CCP-QP-002, CCP-QP-030, *CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel*, and CCP-QP-032, *CCP Written Practice for the Qualification of CCP Pressure Change Leak Testing Personnel*. Candidates for inspection and test positions are evaluated for previous education, experience, training, and testing as appropriate. Minimum qualifications are established, and personnel selected for these activities are documented to have experience or training commensurate with the scope, complexity, or special nature of the inspections or tests performed. Inspection and test personnel are indoctrinated in the technical and QA objectives, requirements, and controls, and formal or OJT is performed as appropriate. Qualifications are documented, and records maintained in the Records System.

Job performance of inspection and test personnel is evaluated at periodic intervals, and is performed through review of evidence of continued satisfactory performance or redetermination of capability. If personnel are found to not perform adequately, they are removed from that function until the required capability is demonstrated. Personnel that have not performed inspection or testing activities in their qualified area for more than a year are re-evaluated for the required capability.

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5.9.2 Qualification of Nondestructive Examination Personnel

(Applicable Criteria: CBFO QAPD Section 2.4.2.A
NWP QAPD, Section 2.4.1.2)

Personnel performing NDE are trained and certified in accordance with CCP-QP-002. This procedure implements the requirements of the American Society of Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A, June 1980 edition. Training and certification of NDE personnel are documented and records maintained in the Records System.

5.9.3 Inspection Planning

(Applicable Criteria: CBFO QAPD Section 2.4.3.1
NWP QAPD, Section 2.4.2.1)

Inspections are planned, performed and documented in accordance with CCP-QP-026. Inspection planning includes identification of work operations to be inspected, inspection hold points, identification of characteristics to be inspected, inspection methods, acceptance criteria, sampling requirements, method of documentation of inspection results, Measuring and Testing Equipment (M&TE) to be used, and identification of statistical methods for sampling.

The types of inspections that may be performed include:

- in-process inspections and monitoring
- final inspection
- in-service inspections

Each of these types of inspections may include review of documentation, examination or verification of physical characteristics, performance of tests, or other means of verifying quality and conformance to the applicable requirements. Inspections are documented and records maintained as part of the Records System.

5.9.4 Test Requirements

(Applicable Criteria: ASME NQA-1-1989, Criterion 11
CBFO QAPD Section 2.4.4
NWP QAPD, Section 2.4.3)

Tests required to verify conformance of an item or computer program to specified requirements and to demonstrate satisfactory

performance for service shall be planned and executed. Characteristics to be tested and test methods to be employed are specified. Test results are documented and their conformance with acceptance criteria are evaluated.

Tests required to collect data are planned, executed, documented and evaluated. Test planning includes identification of test procedures, test requirements and acceptance limits, including required levels of precision and accuracy, identification of M&TE, test prerequisites, hold points, and test and data documentation requirements. Test results are documented and their conformance with acceptance criteria are evaluated by qualified personnel.

Testing is performed in accordance with CCP-QP-027.

5.9.5 Monitoring, Measuring, Testing, and Data Collection Equipment

(Applicable Criteria: 10 CFR 830.122, Criterion 5
ASME NQA-1-1989, Criterion 12
CBFO QAPD Section 2.4.5
NWP QAPD, Section 2.5)

Tools, gages, instruments, and other measuring and test equipment used for activities affecting quality are controlled and at specified periods calibrated and adjusted to maintain accuracy within necessary limits. This equipment is controlled in accordance with CCP-QP-016.

[A] Use and Control of M&TE

(Applicable Criteria: CBFO QAPD Section 2.4.6
NWP QAPD, Section 2.5.1)

Measuring and test equipment with the necessary range and accuracy is provided to qualified personnel for the inspection, test, and acceptance of material, parts, components, and systems. The specific controls imposed on measuring and test equipment are described in procedure CCP-QP-016, and CCP-QP-026. M&TE are labeled, and any that are found to be out of calibration are reviewed to determine the impact. Records are maintained in the Records System.

[B] Calibration

(*Applicable Criteria: CBFO QAPD Section 2.4.7*
NWP QAPD, Section 2.5.1)

Equipment accuracy is ensured by periodic calibration that is traceable to national standards or a documented equivalent basis for calibration. M&TE shall be calibrated to provide traceability of the calibration against certified equipment having known valid relationships to nationally recognized standards. If nationally recognized standards do not exist, the basis for calibration shall be documented. The specific controls imposed on measuring and test equipment are described in procedure CCP-QP-016, and CCP-QP-026.

5.10 Management Assessments

(Applicable Criteria: 10 CFR 820.122 Criterion 9
ASME NQA-1-1989 Criterion 2
DOE O 414.1 Criterion 9
CBFO QAPD Section 3.1
NWP QAPD, Section 3.1)

Management regularly assess the adequacy of that part of the QA program for which they are responsible to assure its effective implementation, and ensure compliance with applicable requirements. Management assessments are conducted according to CCP-QP-018, *CCP Management Assessment*. CBFO and external regulatory agencies also conduct assessments. QA tracks deficiencies identified during assessments; identifies corrective actions to resolve deficiencies according to CCP-QP-029 and CCP-QP-005, and ensures the resolutions are reported to the CCP Certification Manager and CBFO. Documentation of deficiencies identified in activities conducted at waste generating sites are also reported to the appropriate organizations at those sites, in accordance with interface documents.

Management periodically assesses the performance of its organization to determine the effectiveness of QA Program provisions that enable the organization to comply with requirements of the WIPP WAP, QAPD, WAC, and applicable procedures and documents. Managers evaluate QA Program effectiveness by focusing on the identification and resolution of both systemic and management issues and problems, and identifying strengths and weaknesses to facilitate actions to improve quality efficiency and cost-effectiveness. Management assessments may include an introspective evaluation to determine whether the entire integrated management system effectively focuses on meeting strategic goals. Management assessments are conducted as described in CCP-QP-018.

Management is responsible for the conduct of these assessments and reports at least annually on relevant findings.

5.11 Independent Assessments

(Applicable Criteria: 10 CFR 830.122, Criterion 10
ASME NQA-1-1989, Criterion 18
DOE O 414.1, Criterion 10
CBFO QAPD Section 3.2
NWP QAPD, Section 3.2)

Planned and scheduled audits are performed to verify compliance with all aspects of the QA program and to determine its effectiveness. These audits and surveillances are performed in accordance with written procedures or checklists by personnel who do not have direct responsibility for performing the activities being audited. Audit and surveillance results are documented and reported to and reviewed by responsible management. Follow-up actions are taken where indicated.

Documented independent assessments (audits and surveillances) are used to measure item service and quality, process adequacy and effectiveness, and to promote improvement.

5.11.1 Surveillances

(Applicable Criteria: CBFO QAPD Section 3.2.1
NWP QAPD, Section 3.2)

Surveillances are conducted primarily to monitor work in progress and to follow up on corrective actions. Surveillance results are reported and monitored similar to other assessment activities. At each host location, surveillances are scheduled as early in the project as practical. Surveillances are performed in accordance with CCP-QP-021, *CCP Surveillance Program*.

5.11.2 Audits

(Applicable Criteria: CBFO QAPD Section 3.2.2
NWP QAPD, Section 3.2)

Internal and external audits are planned and scheduled throughout the life of the CCP and are conducted by qualified personnel.

The CCP is subject to CBFO certification audits. A CBFO audit of is conducted before any waste characterized by the CCP is shipped to the WIPP and annually thereafter. In addition, the CBFO may conduct audits on a random basis. These audits are scheduled

through the CBFO QA Manager who coordinates the plans and schedule through the CCP Certification Manager.

5.12 Sample Control Requirements

(Applicable Criteria: CBFO QAPD Section 4.1
NWP QAPD, Section 4.1)

This section identifies the requirements for controlling samples of waste and environmental media. Control measures stated in site specific container management procedures (see Appendix 4, Table B-1) and analysis procedures include provisions for the identification, handling, storage and shipping, archiving, and identification of nonconforming drums.

Samples/drums are controlled and identified in a manner consistent with their intended use in accordance with container management procedures specific to each site (See Appendix 4, Table B-1).

5.12.1 Sample Identification

(Applicable Criteria: CBFO QAPD Section 4.2
NWP QAPD, Section 2)

[A] Waste containers used as samples are labeled and tracked in accordance with site specific container management procedures. Each waste container used as a sample is checked for physical marking that:

[A.1] Are applied using materials and methods that provide a clear and legible identification.

[A.2] Are not obliterated or hidden on the surface.

[B] If samples/waste containers used as samples are stored, they are controlled in accordance with container management procedures and the method requirements for characterization.

5.12.2 Handling, Storing, and Shipping Samples

(Applicable Criteria: CBFO QAPD Section 4.3
NWP QAPD, Section 4.3)

[A] Handling, storing, cleaning, packaging, and shipping waste containers used as samples is conducted in accordance with

established work and inspection implementing procedures, CCP-QP-023.

5.12.3 Disposition of Nonconforming Samples

(Applicable Criteria: CBFO QAPD Section 4.4
NWP QAPD, Section 4.4)

[A] Waste containers used as samples that do not conform to requirements are reported on an NCR in accordance with CCP-QP-005.

[B] The disposition of waste containers used as samples is identified and documented in accordance with CCP-QP-005.

5.13 Data Documentation, Control, and Validation

(Applicable Criteria: CBFO QAPD Section 5.3
NWP QAPD, Section 4.6 and 4.7)

5.13.1 Data are controlled to prevent loss and ensure integrity, security and freedom from error. Erroneous, rejected or superseded data are controlled to prevent use. Data uncertainty levels are determined prior to use. Data reduction methods are prescribed in technical procedures to allow validation of the reduction process. Data verification and validation is performed to assure accuracy, completeness and traceability in accordance with QA and technical procedures. These procedures include CCP-TP-001 and CCP-TP-002.

5.13.2 Data validation is a systematic process used to review data to ensure that the required data quality characteristics have been obtained. Results of the review may require that qualifiers be placed on the use of the data.

5.13.3 Validation methods shall be planned and documented. The documentation shall include the acceptance criteria used to determine if the data are valid.

5.13.4 All applicable data collected shall be validated. Validation shall include the following:

[A] The relevant documentation is reviewed to evaluate the technical adequacy, the suitability for the intended use, and the adequacy of the QA record.

[B] The results of the data review shall be documented.

[C] The reviewer shall be independent of the collection activities.

5.13.5 Data validation shall be controlled to permit independent reproducibility by another qualified individual.

5.13.6 Data considered as established fact by the scientific and engineering community, such as engineering handbook data, critical tables, etc., do not require validation.

5.14 Software

(Applicable Criteria: ASME NQA-2a-1990 Part 2.7
CBFO QAPD Section 6
NWP QAPD, Section 6)

Computer software and hardware/software configurations used in activities are developed, documented, verified, validated, and tested prior to use in compliance with requirements contained in the QAPD, QAPjP, and NQA-1, Subpart 2.7, *Quality Assurance Requirements of Computer Software for Nuclear Facility Applications* (ASME 1989). CCP-QP-022 describes the processes for computer software development, validation, and verification.

Software used are identified and controlled through inventory and categorization, and configuration management is maintained. CCP-QP-022 provides the controls for configuration management; software procurement and development; software life-cycle management including installation, testing, verification and validation, operation, and retirement; access controls; and required documentation. Software problems are identified and reported, and changes to software are controlled.

5.15 Performance Demonstration Program (PDP)

The CCP participates in the PDP. PDP samples are processed according to procedures applicable to the specific testing and CCP-TP-058, *CCP NDA Performance Demonstration Plan*.

6.0 REFERENCES

NOTE

The current revision of these reference documents is applicable. The Internet links are provided for informational purposes only and may change.

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2. Public Law 102-579, 106 Stat. 4777, 1992 (as amended by Public Law 104-201, 1996). Waste Isolation Pilot Plant Land Withdrawal Act. (http://www.wipp.energy.gov/library/CRA/BaselineTool/Documents/Regulatory%20Tools/10%20WIPPLWA1996.pdf)

3. 42 U.S.C. 6901 et seq. Resource Conservation and Recovery Act (RCRA) of 1976. (http://www.epa.gov/epawaste/inforesources/online/index.htm)

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9. New Mexico Environment Department. *Waste Isolation Pilot Plant Hazardous Waste Facility Permit.* NM4890139088-TSDF, Santa Fe, New Mexico. (http://www.nmenv.state.nm.us/wipp/pdfpermit.html)

10. 75 FR70584. Criteria for the Certification and Recertification of the Waste Isolation Pilot Plant's Compliance with the Disposal Regulations: Recertification Decision: EPA Final Rule. Federal Register75:70584-70595, November 18, 2010, Radiation Protection Division, Washington, D.C. (http://www.gpo.gov/fdsys/pkg/FR-2010-11-18/pdf/2010-28806.pdf)

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12. U.S. Environmental Protection Agency, Letter and enclosed *Conditions of Approval* from Carl E. Edlund (Director, Multimedia Planning and Permitting Division, EPA) to Edward Ziemanski (Acting Manager, Carlsbad Field Office, DOE), dated January 5, 2011, granting approval for WIPP to dispose of TRU and TRU-mixed wastes containing PCBs. (http://www.wipp.energy.gov/rcradox/final/EPA_Letter_to_DOE_2011-0105.pdf)

13. Title 40 CFR Part 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions*. Code of Federal Regulations, Washington, D.C., Office of Federal Register, National Archives and Records Administration. (http://www.gpoaccess.gov/cfr/index.html)

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste

A.1 Introduction

Radioassay techniques are used to determine the radionuclide content of waste. Radioassay methods include both nondestructive and destructive techniques. The term "radioassay" includes all types of assay techniques. NDA refers only to nonintrusive assay techniques, whereas radiochemistry (RC) is used to refer to destructive assay techniques. This appendix is intended to apply to NDA activities conducted within the WIPP CCP.

Common NDA techniques rely on detection of gamma rays, neutrons, or heat generated by the waste. NDA is performed on a waste container basis.

RC will not be performed by CCP. If plans change, then RC will be performed in compliance with the requirements of the current WAC, and this Plan will be revised.

The DOE is required to collect radiological characterization data to:

- Track the WIPP radionuclide inventory, by isotopic activity and mass, for those radionuclides listed in Section 3.3.1,
- Demonstrate that each payload container disposed of at the WIPP contains TRU waste as specified in Section 3.3.3, and
- Verify that applicable transportation and facility limits on individual payload containers and assemblies for FGE, PE-Ci, and decay heat are not exceeded, as specified in Section 3.3.2, 3.3.4 and 3.3.6.

The radioassay process quantifies at least one of the more prevalent radionuclides known to be present in the waste. The remaining listed radionuclides present in the waste in significant quantities will be identified by direct measurement of isotopic ratios as discussed in Section A.2. The isotopic ratios are then used to quantify radionuclides based on the assay value.

The requisite data on isotopic ratios and quantities will be derived from AK (see Section A.2), radioassay or both using CBFO approved NDA or RC techniques, instruments and procedures. Each site must technically justify that the AK and/or radioassay techniques, instruments and procedures used:

- Are appropriate for the specific waste stream and waste content code descriptions being assayed, and
- Will result in unbiased values for the cumulative activity and mass of the WIPP radionuclide inventory.

Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

Existing radioassay data collected prior to the implementation of a QA program pursuant to 40 CFR §194.22(a)(1) may only be qualified in accordance with an alternate methodology that is approved by CBFO and employs one or more of the following methods:

- Peer review in accordance with NUREG-1297 (Reference A1),
- Corroborating data,
- Confirmatory testing (i.e., testing made on a representative sub-population of payload containers within a waste stream), or
- Demonstrating the equivalence of an alternative QA program (as described in Reference A2, Section 5.4).

Proposals for alternative approaches to identification and quantification of radioisotopes (e.g., quantification of isotopic ratio AK on a waste stream basis) must be submitted to CBFO for review and approval. CBFO will report such proposals to the EPA for consideration prior to issuing approval.

Controlled changes to radioassay (NDA or RC) related plans or procedures are managed through the document control process described in CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*. The CCP Certification Manager and QA shall review all such changes and report to the CBFO those changes that could impact compliance with the criteria in this document. The CCP Certification Manager shall ensure that site approved changes to radioassay related plans or procedures affecting either the performance criteria or data quality of certified systems/processes are not used in the collection of waste certification data prior to CBFO's review and approval. Related testing, calibration, and training performed in accordance with these site-approved changes, however, are not precluded from being conducted prior to CBFO's review and approval. (Memorandum from CBFO to Distribution, CBFO:NTP:RMK:VW:02-2734: UFC:5822, July 29, 2002.)

The CCP program will establish or confirm isotopic ratios by direct measurements and these ratios will be used in conjunction with measured or AK data to calculate WIPP-reportable values.

Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

A.2 Radionuclide Isotopic Ratios

Establishing isotopic ratios for use in quantifying radionuclides is performed by direct measurement of the containers using WIPP-certified systems. Sites may opt to qualify AK as permitted by 40 CFR §194.22(b) by performing confirmatory testing using WIPP-certified radioassay systems. When a site performs direct measurements of isotopic ratios, it is expected that all containers in the waste stream will be measured, with the understanding that, in some cases, valid data may not be obtainable for given containers for technical reasons (e.g., lack of sufficient signal or poor counting statistics). All such instances will be documented and appropriately dispositioned by the measurement facility. For those few waste containers for which direct measurement does not yield useable isotopic ratio information, AK may be used. The assay programs will establish or confirm isotopic ratios by direct measurement and these ratios will be used in conjunction with the reported data to calculate WIPP-reportable values.

A.2.1 Methods for Confirmation of Isotopic Ratio AK

As a minimum, to confirm existing AK data, it is necessary to compare ratios of the two most prevalent radionuclides in the isotopic mix. For weapons and reactor grade plutonium, these are typically ^{239}Pu and ^{240}Pu. For heat source waste, the predominant radionuclides are typically ^{238}Pu and ^{239}Pu. Measured isotopic ratios for ^{241}Am may confirm existing AK by waste stream.

However, due to the fluctuation of ^{241}Am in certain waste streams, it may become necessary to measure ^{239}Pu to ^{241}Am isotopic ratios on all containers in that waste stream.

^{241}Am is the daughter of ^{241}Pu, which decays with a half-life of about 14 years. If the time since the chemical separation of the plutonium is known, the quantity of measured ^{241}Am can be used to calculate the quantity of ^{241}Pu. This assumes there was no ^{241}Am in the waste just after the chemical separation and that no ^{241}Am was added to or removed from the waste during the time since the separation. Since ^{241}Am is an indirect measurement of ^{241}Pu, it could be compared (by ratio) to any plutonium isotope (^{239}Pu or ^{240}Pu) associated with weapons and reactor grade plutonium.

For weapons grade and reactor grade waste, isotopic ratio values for ^{238}Pu can be assumed to be valid in AK data if the values for ^{239}Pu and ^{240}Pu have been confirmed. Because ^{242}Pu cannot be measured using NDA methods, the contribution of ^{242}Pu isotopic ratio is calculated by correlation techniques.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

For some of the generator sites that were involved primarily in weapons production, the fissile isotopes ^{235}U and ^{233}U and the fissionable isotope ^{238}U may not have been measured when the transuranic waste was originally assayed (i.e., using non-WIPP-certified systems), primarily because the plutonium isotopes were the radionuclides of interest to the generator site. However, other forms of AK may be available. If so, then the AK can be confirmed by data generated on a WIPP-certified system. If valid AK does not exist, then the data generated on a WIPP-certified system can only be used to detect or calculate ^{238}U, ^{235}U, and ^{233}U or to confirm their absence. Because ^{234}U cannot be measured using NDA methods, the isotopic ratios for ^{234}U may be calculated from the ^{235}U enrichment. Values or lack thereof, for ^{137}Cs can be confirmed by the data generated on a WIPP-certified system. This is typically done by measuring ^{137}Cs directly, or by comparing the NDA measured ^{241}Am 662 kiloelectron volt (keV) peak to the other ^{241}Am peaks (e.g., the 125 keV or 721 keV peaks) to determine if the 662 keV peak's intensity is consistent with the expected ^{241}Am intensity. A disproportionate response for the 662 keV peak relative to the other ^{241}Am peaks may indicate the presence of ^{137}Cs. ^{90}Sr may be calculated from the value for ^{137}Cs and AK. If detected, a waste container's concentration of ^{137}Cs can be used to derive a value of ^{90}Sr through the application of the appropriate scaling factor(s). All scaling factors used will be technically sound and based on known, documented relationships or correlations. The data report for the waste containers for which the ^{90}Sr, value is derived in this manner shall reflect the use of a scaling factor(s) and provide sufficient documentation to enable its independent calculation. Finally, the gamma spectra must be carefully examined for significant presence of other radionuclides to ensure compliance with transportation requirements. Data obtained for radionuclides other than the WIPP-tracked radionuclides presented above are required to address confounding isotope issues (i.e., masking) with regard to NDA. When RC is used for confirmation radioassay instead of NDA, less reliance on calculated isotopics is required.

CCP will technically justify that the techniques used to confirm the absence or the ratio of non-measurable radionuclides are valid for the particular radioassay method used to confirm AK.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

A.2.2 Acceptable Knowledge (AK) Documentation

The use of AK information concerning the radiological composition of a waste stream will be documented either in the AK Summary Report for the waste characterization of the waste stream or in another controlled document approved by the SPM. Should this information be contained in AK package(s) prepared to meet other general waste characterization requirements, it need not be duplicated in other controlled documents that address the radiological properties of the waste stream; however, all relevant information must be included in the AK record. CCP uses procedure CCP-TP-005, *CCP Acceptable Knowledge Documentation*, to compile, review, evaluate, confirm, and report AK documentation.

The following discussion is included for the sake of completeness.

A.2.2.1 Required Elements

This section identifies the required radiological information that each TRU waste site or measurement facility must maintain for a waste stream. A TRU waste generator site or waste characterization facility may use AK to delineate the distribution of the 10 WIPP-tracked radioisotopes within a TRU waste stream and the presence or absence of isotopes. The type and quantity of supporting documentation may vary by waste stream and shall be compiled in a written record that shall include a summary identifying all sources of information used to delineate the waste stream's isotopic distribution. The basis and rationale for the delineation shall be clearly summarized in an AK report and traceable to referenced documents. Assumptions made in this delineation shall be identified. The following information shall be included as part of the AK written record:

- Map of the site with the areas and facilities involved in TRU mixed waste generation, treatment, and storage identified

- Facility mission description as related to radionuclide-bearing materials and their management, e.g., routine weapons production, fuel research and development, and experimental processes

- Description of the specific site locations (such as the area or building) and operations relative to the isotopic composition of the TRU wastes they generated, e.g., plutonium recovery, weapons fabrication, pyrochemical operations and waste incineration

Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

- Waste identification or categorization schemes used at the facility relevant to the waste material's isotopic distribution, e.g., the use of codes that correlate to a specific isotopic distribution, and a description of the isotopic composition of each waste stream

- Information regarding the waste's physical and chemical composition that could affect the isotopic distribution, e.g., processes used to remove ingrown ^{241}Am or alter its expected contribution based solely on radioactive decay kinetics

- Statement of all numerical adjustments applied to derive the material's isotopic distribution, e.g., scaling factors, decay/ingrowth corrections and secular equilibrium considerations

- Specification of the isotopic ratios for the ten WIPP-tracked radionuclides (^{241}Am, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{242}Pu, ^{233}U, ^{234}U, ^{238}U, ^{90}Sr, and ^{137}Cs) and, if applicable, the radionuclides that comprise 95 percent of the radiological hazard on a waste stream, waste stream subpopulation, or container basis

A.2.2.2 Supplemental AK Information

Each generator site or measurement facility shall obtain supplemental AK information, dependent on availability. The amount and type of this information cannot be mandated, but sites shall collect information as appropriate to support their contention regarding the waste's isotopic distribution. This information will be used to compile the waste's AK written record. Supplemental AK documentation that may be used includes, but is not limited to, information from the following sources:

- Safeguards & Security, Materials Control & Accountability, and other nuclear materials control systems or programs and the data they generated

- Reports of nuclear safety or criticality, or accidents/excursions involving the use of special nuclear material (SNM) or nuclear material

- Waste packaging, waste disposal, building or nuclear material management area (NMMA) logs or inventory records, and site databases that provide information on SNM or nuclear materials

- Test plans, research project reports, or laboratory notebooks that describe the radionuclide content of materials used in experiments

- Information from site personnel (e.g., documented interviews)

- Historical analytical data relevant to the isotopic distribution of the waste stream

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

A.2.2.3 Discrepancy Resolution

If there is a discrepancy between AK information related to isotopic ratios or composition, the site will evaluate the sources of the discrepancy to determine if the discrepant information is credible. Information that is not credible or information that is limited in its applicability to WIPP characterization will be identified as such and the reasons for dismissing it will be justified in writing. Limitations concerning the information will be documented in the AK record and summarized in the AK Summary Report. In the event that the discrepancy cannot be resolved, the site will perform direct measurements for the impacted population of containers.

If discrepancies result in a change to the original determinations, the AK summary will be updated in accordance with procedure CCP-TP-005.

A.3 Data Quality Objectives (DQOs)

The DQOs for WIPP certifiable radiological characterization data are established in Section 3.3 of this Plan. They are summarized below in Table A-1, Data Quality Objectives (DQOs) for Radioassay, as they apply to individual payload containers.

Table A-1. Data Quality Objectives (DQOs) for Radioassay

Requirement	DQO	Confidence[a]
TRU α-activity concentration > 100 nCi/g[b]	A > LLD	N/A
Fissile mass ≤ FGE limit	$FGE + 2\sigma_{TMU}(FGE) \leq$ FGE limit	97.5%
Decay heat (DH) ≤ CH-TRAMPAC limit	$DH + 1\sigma_{TMU}(DH) \leq L_{CH\text{-}TRAMPAC}$[c]	84%

[a]Confidence means the statistical level of confidence that the limit is exceeded or not exceeded depending on the requirements of the individual data quality objectives (DQOs). The confidence is derived from the specified DQOs which assume contributions to TMU are normally distributed.
[b]TRU waste determinations shall be in accordance with the Policy for the Management of TRU Alpha Activity Concentration when overpacking waste containers (see Appendix 8).
[c]TRAMPAC includes both the CH-TRAMPAC and the TRUPACT-III TRAMPAC.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

There are no stipulated DQOs for PE-Ci or individual isotope activities (except as they impact the requirements listed above). However, at a minimum, radioassay programs must be capable of identifying, measuring, and reporting the presence or absence of:

- the ten radionuclides identified in Section 3.3.1 for tracking of the WIPP radionuclide inventory (see Section A.2.1),
- ^{235}U, in order to calculate FGE, as required in Section 3.3.2 for compliance with transportation requirements, and
- other radionuclides whose presence contribute to 95 percent of the radioactive hazard, as specified in Section 3.3.1, for compliance with transportation requirements.

In support of the above requirements, each site must evaluate, document and technically justify the following determinations:

Lower Limit of Detection (LLD): The LLD for each radioassay system must be determined. Instruments performing TRU/low-level waste discrimination measurements must have an LLD of 100 nCi/g or less. Site specific environmental background and container specific interferences must be factored into LLD determinations. The LLD is that level of radioactivity which, if present, yields a measured value greater than the critical level with a 95 percent probability, where the critical level is defined as that value which measurements of the background will exceed with 5 percent probability. Because the LLD is a measurement-based parameter, it is not feasible to calculate LLDs for radionuclides that are not determined primarily by measurement, e.g., ^{90}Sr. In such cases, the site shall derive the equivalent of an LLD, i.e., a reporting threshold for a radionuclide(s), when it is technically justified. This value may be based on decay kinetics, scaling factors or other scientifically based relationships and must be adequately documented in site records. For purposes of reporting radionuclide data in the WWIS/WDS, this value will be the equivalent of an LLD. References A3 and A4 provide information in developing the LLD.

Total Measurement Uncertainty (TMU): The method used to calculate the TMU for the quantities in Table A-1 must be documented and technically justified for each CBFO certified radioassay system. Compliance with this requirement will be evaluated in reviews of the TMU documentation package for each assay system by CBFO. General guidance for determining the TMU is provided in References A5 and A6.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

Calibration Procedures and Frequencies: Each radioassay measurement system shall be calibrated before initial use. During calibration or re-calibration, system correction factors shall be established and algorithms adjusted such that the value of percent recovery (%R) is set equal to 100 percent; i.e., the system is calibrated to 100%R. The range of applicability of system calibrations must be specified in site procedures. The matrix/source surrogate waste combination(s) used for calibration shall be representative of the:

- activity range(s) or gram loading(s), and
- relevant waste matrix characteristics (e.g., densities, moderator content, container size) planned for measurement by the system.

Calibration(s) shall be performed in accordance with consensus standards, when such standards exist. If consensus standards are not used, full documentation of the calibration technique must be provided to and approved by CBFO prior to performing WIPP-related assays. Primary calibration standards shall be obtained from suppliers maintaining a nationally accredited measurement program. When primary standards are not available, the standards used shall be correlated with primary standards obtained from a nationally accredited measurement program. For calorimetry, calibration shall be performed in accordance with Reference A9.

Calibration Verification: Notwithstanding the need to calibrate individual components for replacement, changes or adjustments (e.g., energy calibration of a detector), verification of the radioassay measurement system's calibration shall be performed after any one of the following occurs:

- major system repairs and/or modifications
- replacement of the measurement system's components, e.g., detector, neutron generator or supporting electronic components that have the capacity to affect data
- significant changes to the system's software
- relocation of the system

Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

Calibration verification shall consist of demonstrating that the system is within the range of acceptable operation. Secondary standards can be used for the calibration verification if their performance has been correlated with the calibration standard. If a verification of the measurement system's calibration or other test demonstrates that the system's response has significantly changed, a re-calibration of the system shall be performed.

Calibration Confirmation: In order to confirm that the calibration of the NDA system was correctly established, the accuracy and precision of the system are determined after each calibration or re-calibration by performing replicate measurements of a non-interfering matrix. Calibration confirmation replicate measurements shall be performed on containers of the same nominal size as those in which actual waste is assayed and according to approved waste assay procedures. The number of replicate measurements to be performed shall be documented and technically justified. The replicate measurements shall be performed using nationally recognized standards, or certified standards derived from nationally recognized standards that span the range of use. The standards used to calculate accuracy shall not be the same as those used for the system calibration. Accuracy is reported as percent recovery (%R). The applicable range for accuracy shall not exceed ± 30 percent on a non-interfering matrix. Precision is reported as percent relative standard deviation (%RSD). The %RSD shall not exceed the values listed in Table A-2, Upper Limits for %RSD vs. Number of Replicates, for the corresponding number of replicate measurements in a non-interfering matrix.

Table A-2. Upper Limits for %RSD vs. Number of Replicates

Number of Replicates	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Max %RSD	1.8	6.6	10.0	12.3	14.0	15.2	16.2	17.1	17.7	18.3	18.8	19.3	19.7	20.0

[a] The values listed are derived from the measured standard deviation of the replicate measurements using $\frac{s}{\mu} \bullet 100\% < \sqrt{\frac{(0.292) \bullet \chi^2_{0.05,n-1}}{n-1}} \bullet 100\%$ where s is the measured standard deviation, n is the number of replicates, Φ is the true value, $\chi^2_{0.05,n-1}$ is the critical value for the upper 5 percent tail of a one-sided chi-squared distribution with n-1 degrees of freedom, and 0.292 corresponds to a 95 percent upper confidence bound on the true system precision limit of 29.2 percent.

Measurement facilities may develop alternate limits for accuracy and precision subject to approval by CBFO prior to certification of waste.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

The CCP NDA standard operating procedures (Table A-2.1) demonstrate and justify that the radioassay techniques used are appropriate for specific waste streams.

Table A-2.1. NDA Procedures

Procedure Title	Procedure Number
CCP Waste Assay Gamma Spectrometer (WAGS) and SWEPP Gamma-Ray Spectrometer (SGRS) Calibration Procedure	CCP-TP-010
CCP Waste Assay Gamma Spectrometer (WAGS) Operating Procedure	CCP-TP-019
CCP Mobile IQ3 System Calibration Procedure	CCP-TP-046
CCP Mobile IQ3 Gamma Scanner Operation	CCP-TP-047
CCP Mobile IQ3 System Data Reviewing, Validating and Reporting Procedure	CCP-TP-048
CCP Operating the High Efficiency Neutron Counter Using NDA 2000	CCP-TP-063
CCP Calibrating the High Efficiency Neutron Counter Using NDA 2000	CCP-TP-064
CCP Gamma Energy Assay (GEA) Calibration, Confirmation, and Verification Procedure	CCP-TP-070
CCP Gamma Energy Assay (GEA) Operating Procedure	CCP-TP-071
CCP Gamma Energy Assay (GEA) Data Review, Validation, and Reporting Procedure	CCP-TP-072
CCP Off-Site Source Recovery Project Sealed Source Radiological Characterization	CCP-TP-101
CCP Data Reviewing, Validating and Reporting Procedure for the High Efficiency Neutron Counter Using NDA 2000	CCP-TP-103
Operating the CCP High Efficiency Neutron Counter Using NDA 2000	CCP-TP-107
Calibrating the CCP High Efficiency Neutron Counter Using NDA 2000	CCP-TP-108
CCP Data Reviewing, Validating and Reporting Procedure	CCP-TP-109
CCP SWEPP Gamma-Ray Spectrometer (SGRS) Operating Procedure	CCP-TP-115
CCP SuperHENC Operating Procedure	CCP-TP-146
CCP SuperHENC Data Reviewing, Validating and Reporting Procedure	CCP-TP-148
CCP Drum Waste Assay System Imaging Passive/Active Neutron Operations	CCP-TP-166
CCP Drum Waste Assay Imaging Passive/Active Neutron Calibration	CCP-TP-167
CCP Drum Waste Assay System Imaging Passive/Active Neutron/Segmented Gamma Scanner Data Generation Level Validation	CCP-TP-168
CCP Operating the Mobile Segmented Gamma Scanner	CCP-TP-169

Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

Table A-2.1. NDA Procedures (Continued)

CCP SuperHENC Calibration Procedure	CCP-TP-170
CCP Calibrating the Mobile Segmented Gamma Scanner	CCP-TP-172
CCP Box Segmented Gamma System (BSGS) Operating Procedure	CCP-TP-189
CCP Box Segmented Gamma System (BSGS) Calibration Procedure	CCP-TP-190
CCP Box Neutron Assay System (BNAS) Operating Procedure	CCP-TP-191
CCP Box Neutron Assay System (BNAS) Calibration Procedure	CCP-TP-192
CCP Data Reviewing, Validating, and Reporting Procedure for the Nondestructive Assay Box Counters	CCP-TP-193
Peer Review – Sealed Sources Peer Review Report	Record TWCP-18562

A.4 Quality Control (QC)

To ensure that data of known and documented quality are generated, each participating measurement facility shall implement a documented facility QA program. Any radioassay technique used for TRU waste must be performed in accordance with calibration and operating procedures that have been written, approved, and controlled by the site or testing facility. Laboratory procedures must contain applicable QCs. Facility QA programs shall specify qualitative and quantitative acceptance criteria for the QC checks of this program and corrective action measures to be taken when these criteria are not satisfied. NDA standard operating procedures address QC elements and are listed in Table A-2.1.

A.4.1 General Requirements

Radioassay Training: Only appropriately trained and qualified personnel shall be allowed to perform radioassay and data validation/review. Standardized Training requirements for radioassay personnel shall be based upon existing industry standardized training requirements (e.g., American Society for Testing and Materials [ASTM] C1490, *Standard Guide for Selection, Training and Qualification of Nondestructive Assay [NDA] Personnel* [Reference A8]; American National Standards Institute [ANSI] N15.54, *Radiometric Calorimeters - Measurement Control Program* [Reference A9]) and shall meet the specifications in the QAPD.

Requalification of radioassay personnel shall be based upon evidence of continued satisfactory performance and must be performed at least every two years. The training program is conducted in accordance with procedure CCP-QP-002, *CCP Training and Qualification Plan*.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

Software QC Requirements: All computer programs and revisions thereof used for radioassay shall meet the applicable requirements in Section 6.0 of the QAPD (Reference A2) and in accordance with procedure CCP-QP-022, *CCP Software Quality Assurance Plan*.

*Comparison Program*s: Sites using radioassay systems shall participate in any relevant measurement comparison program(s) sponsored or approved by the CBFO. Such programs may be conducted as part of the NDA PDP (References A7 and A10) or through other third parties (Reference: WIPP Compliance Recertification Application including Annual Reports to the EPA).

A.4.2 NDA QC Requirements

The assay procedures cited in various ASTM and ANSI standards (References A9, A11-A15) and NRC standard practices and guidelines (Reference A16) as referenced in this appendix are recommended for use at all testing facilities.

Background Measurements: Background measurements must be performed and recorded daily, unless otherwise approved by CBFO. Contributions to background due to radiation from nearby radiation producing equipment, standards or wastes must be carefully controlled or more frequent background checks must be performed. For calorimeters, basepower or baseline measurements shall be conducted at a frequency determined by each site and approved by CBFO.

Instrument Performance Measurements: Performance checks on calibrated and operable gamma and neutron NDA instruments must be performed and recorded once per operational day. Performance checks shall include efficiency checks (when applicable), matrix correction checks and, for spectrometric instruments, peak position and resolution checks.

Both radioactive sources and surrogate waste matrix containers (both non-interfering and interfering) are used. At least once per operational week an interfering matrix must be used to assess the long-term stability of the NDA instrument's matrix correction. Surrogate waste containers must reflect the type of waste, (e.g., debris, sludge) currently being assayed. To verify calibration, radioactivity standards must be selected such that, over a six-month period, the operating range of the assay system is tested in each applicable surrogate waste matrix. The use of interfering and non-interfering matrices provides a realistic assessment of the assay system's performance over time, and will assist measurement personnel in detecting potential problems relative to the matrices currently assayed by the measurement system.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

Interfering surrogate matrix containers must be constructed in such a way that the waste characteristics do not change over time.

Radioactive sources should be long-lived, easy to position relative to the detector(s), and of sufficient radioactivity to obtain good results with relatively short count times.

Performance checks for calorimetry shall be performed with electrical and/or heat standards traceable to a nationally accredited measurement program at a frequency determined by each site, consistent with Reference A17. This information is specified in site operating procedures and approved by CBFO.

Data Checks: Background (for calorimetry: baseline or base power) and performance measurements shall be reviewed and evaluated at least weekly to determine continued acceptability of the assay system and to monitor performance trends. If daily performance checks result in data that are outside the acceptable range, the required responses in Table A-3 shall be followed.

Table A-3. Range of Applicability

Category	Acceptability Range[a]	Required Response
Acceptable Range	∗Data∗[c] # 2σ[b]	No action required.
Warning Range	2σ[b] < ∗Data∗ # 3σ[b]	The performance check standard shall be rerun no more than two times. If the rerun performance check(s) result in data within ± 2σ, then the additional performance checks shall be documented and work may continue. If the system does not fall within ± 2σ after two rerun performance checks, then the required response for the Action Range shall be followed.
Action Range	∗Data∗> 3σ[b]	Work shall stop and the occurrence shall be documented and appropriately dispositioned (e.g., initiating a non-conformance report). The radioassay system shall be removed from service pending successful resolution of all necessary actions, and all assays performed since the last acceptable performance check are suspect, pending satisfactory resolution. Recalibration or calibration verification is required prior to returning the system back to service.

[a]Reference A15
[b]"σ" - the standard deviation is only based on the reproducibility of the data check measurements themselves. This is not TMU.
[c]Absolute Value

Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

A.5 Data Management

A.5.1 Data Review and Validation

All radioassay data must be reviewed and approved by qualified personnel prior to being reported. At a minimum, the data must be reviewed by a technical reviewer and approved by the SPM. The validation process includes verification that the applicable QCs specified in Section A.4 have been met. Radioassay data is reviewed at the data generation level in accordance with NDA operating procedures listed in Table A-2.1, while data validation and verification at the Project Office is performed in accordance with procedure CCP-TP-001, *CCP Project Level Data Validation and Verification*.

A.5.2 Data Reporting

Radioassay data must be reported to the Site Project Office on a testing batch basis. Batches are defined, for the purpose of the program, as a suite of waste containers undergoing radioassay using the same testing equipment. For NDA, the sites shall specify the size of the testing batch as needed, without regard to waste matrix.

Each radioassay testing facility is required to submit testing BDRs for each testing batch to the site project office on standard forms (either hard copy or electronic equivalent), as provided in approved site-specific documentation. Radioassay testing BDRs shall consist of the following:

- testing facility name, testing batch number, container numbers included in that testing batch, and signature release by the SPM
- table of contents
- background and performance data or control charts for the relevant time period
- data validation per the QAPD (Reference A2, Section 5.3.2) and as described in site procedures (Reference Table A-2.1)
- separate testing report sheet(s) for each container in the testing batch that includes:
  - title “Radioassay Data Sheet”
  - method used for radioassay (i.e., procedure identification)
  - date of radioassay

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

- activities and/or masses of individual radioisotopes present and their associated TMUs (curies and/or grams)
- operator signature/date
- reviewer signature/date

Other radiological properties to be documented for each container include:

- decay heat expressed in Watts (W) and its associated TMU
- total ^{239}Pu FGE expressed in grams (g) and its associated TMU
- TRU alpha activity concentration expressed in curies/gram (Ci/g) and its associated TMU, and
- total ^{239}Pu equivalent activity expressed in Ci

These calculated quantities shall be included in the radioassay BDR or other QA record or database.

When TMU is reported differently on the testing report sheet than in WWIS/WDS, the method of expressing TMU shall be specified on the testing report sheet or associated procedures/QAPjP.

Radioassay data reporting at the data generation level is performed in accordance with NDA operating procedures listed in Table A-2.1, while data validation and verification at the Project Office is performed in accordance with procedure CCP-TP-001. Data reporting in WWIS/WDS is performed in accordance with procedure CCP-TP-030.

A.5.3 Data and Records Retention

QA records are indexed, classified, controlled, and maintained by records management personnel as described in procedure CCP-QP-008, *CCP Records Management*, and the site Records System. Records management is addressed in Section 5.5 of this Plan.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

The following nonpermanent records shall be maintained at the radioassay-testing facilities or shall be forwarded to the Site Project Office for maintenance, and shall be documented and retrievable by testing batch number, in accordance with the QAPD:

- testing batch reports
- all raw data, including instrument readouts, calculation records, and radioassay QC results
- all instrument calibration reports, as applicable

A.6 Quality Characteristics Assessment

Per 40 CFR §194.22(c), there are five "quality characteristics" that must be assessed. These quality characteristics and the method by which they are assessed are described in the following sections.

A.6.1 Data Accuracy

Per 40 CFR §194.22(c)(1), *Data Accuracy* is defined as "the degree to which data agree with an acceptable reference or true value." For NDA methods, this quality characteristic is met and maintained as described in Section A.3.

A.6.2 Data Precision

Per 40 CFR §194.22(c)(2), *Data Precision* is defined as "a measure of the mutual agreement between comparable data gathered or developed under similar conditions expressed in terms of standard deviation." For NDA methods, this quality characteristic is met and maintained as described in Section A.3.

A.6.3 Data Representativeness

Per 40 CFR §194.22(c)(3), *Data Representativeness* is defined as "the degree to which data can accurately and precisely represent a characteristic of a population, a parameter, variations at a sampling point, or environmental conditions." For NDA methods, this quality characteristic for the waste stream is met and maintained through 100 percent measurement confirmation on a payload container basis. For NDA, since the entire waste container is subjected to measurement, representativeness pertaining to the actual measurement is not applicable.

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Appendix 1 – Radioassay Requirements for Contact-Handled Transuranic Waste (Continued)

A.6.4 Data Completeness

Per 40 CFR §194.22(c)(4), *Data Completeness* is defined as "a measure of the amount of valid data obtained compared to the amount that was expected." For NDA methods, this quality characteristic is met and maintained by requiring 100 percent valid results. Any results indicating the NDA measurement was invalid require re-measurement.

A.6.5 Data Comparability

Per 40 CFR §194.22(c)(5), *Data Comparability* is defined as "a measure of confidence with which one data set can be compared to another." For NDA and RC methods, this quality characteristic is addressed by ensuring that all data are produced under the same system of controls. These controls apply to all aspects of the data generation process, including: procurement of analytical instruments; calibration and operation of assay equipment according to industry standards; preparation and use of standardized instrument and data review procedures; and, training of equipment operators and technical/data review personnel to the QAPD, as specified in Section A.4.1. All NDA systems and methods are approved by CBFO prior to use in generating waste characterization data. Additionally, comparison of measured data with AK derived or based values, as applicable, provides a means to assess comparability on a waste stream basis. Although no specific confidence level is specified, these controls provide comparability among all data generated under this program. Sites using radioassay systems shall participate in measurement comparison programs as specified in Section A.4.1.

Appendix 2 – Appendix 1 References

A1 U.S. Nuclear Regulatory Commission. *Peer Review for High-Level Nuclear Waste Repositories,* NUREG-1297, Washington D.C., Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission

A2 U.S. Department of Energy. *Quality Assurance Program Document*. DOE/CBFO-94-1012. Carlsbad, New Mexico, Carlsbad Field Office, U.S. Department of Energy. (http://www.wipp.energy.gov/library/qapd/qapd.pdf)

A3 Currie, Lloyd A., 1968. *Limits for Qualitative Detection and Quantitative Determination*. *Anal.Chem.* 40: 586-93

A4 EPA, 1980. *Upgrading Environmental Radiation Data.* EPA 520/1-80-012, Washington D.C., Office of Radiation Programs, U. S. Environmental Protection Agency

A5 K. C. Smith, R. A. Stroud, K. L. Coop, and J. F. Bresson. 1998. *Total Measurement Uncertainty Assessment for Transuranic Waste Shipments to the Waste Isolation Pilot Plant*. Proceedings of the 6th Nondestructive Assay Waste Characterization Conference, Salt Lake City, Utah, Nov. 17-19, 1998, pp. 21-37

A6 K. L. Coop, J. F. Bresson, M. E. Doherty, B. M. Gillespie, and D. R. Davidson. *Standardized Total Measurement Uncertainty Reporting for WIPP*. Nondestructive Assay Interface Working Group, Salt Lake City, Utah, May 22, 2000

A7 U.S. Department of Energy. *Performance Demonstration Program Plan for Nondestructive Assay of Boxed Wastes for the TRU Waste Characterization Program*. DOE/CBFO-01-1006, Current Revision. Carlsbad, New Mexico, Carlsbad Field Office, U.S. Department of Energy. (http://www.wipp.energy.gov/Documents NTP.htm)

A8 American Society for Testing and Materials. *Standard Guide for Selection, Training and Qualification of Nondestructive Assay (NDA) Personne*l, ASTM C1490, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials

A9 American National Standards Institute. *Radiometric Calorimeters - Measurement Control Program*, ANSI N15.54, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018

Appendix 2 – Appendix 1 References (Continued)

A10 U.S. Department of Energy. *Performance Demonstration Program Plan for Nondestructive Assay of Drummed Wastes for the TRU Waste Characterization Program*. DOE/CBFO-01-1005, Current Revision. Carlsbad, New Mexico, Carlsbad Field Office, U.S. Department of Energy. (http://www.wipp.energy.gov/Documents_NTP.htm)

A11 American Society for Testing and Materials. *Standard Test Method for Determination of Plutonium Isotopic Composition by Gamma-Ray Spectrometry*. ASTM C1030, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials

A12 American Society for Testing and Materials. *Standard Test Method for Nondestructive Assay of Nuclear Material in Scrap and Waste by Passive-Active Neutron Counting Using a 252Cf Shuffler*. ASTM C1316, Philadelphia, Pennsylvania, American Society for Testing and Materials

A13 American Society for Testing and Materials. *Standard Test Method for Nondestructive Assay of Special Nuclear Material in Low Density Scrap and Waste by Segmented Passive Gamma-Ray Scanning*. ASTM C1133, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials

A14 American Society for Testing and Materials. *Standard Test Method for Nondestructive Assay of Plutonium, Tritium and 241 Am by Calorimetric Assay*. ASTM C1458, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials

A15 American National Standards Institute. *Nondestructive Assay Measurement Control and Assurance*, ANSI N15.36. American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018

A16 U.S. Nuclear Regulatory Commission. 1984. *Nondestructive Assay of Special* Nuclear *Material Contained in Scrap and Waste.* Regulatory Guide 5.11, Washington, DC, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission

A17 American National Standards Institute. *Plutonium-Bearing Solids Calibration Techniques for Calorimetric Assay.* ANSI N15.22, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018

Appendix 3 – Acronyms and Abbreviations

AK	Acceptable Knowledge
ALARA	as low as reasonably achievable
AMAD	activity mean aerodynamic diameter
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BDR	Batch Data Report
CBFO	Carlsbad Field Office
CAR	Corrective Action Report
CCP	Central Characterization Program
CFR	Code of Federal Regulations
CH	Contact-Handled
CH-TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control
CH-TRU	Contact-Handled Transuranic
Ci	curies
Ci/g	curies/gram
CIN	Container Identification Number
cm^2	Square centimeters
cm^3	Cubic centimeters
CPR	cellulose, plastic, and rubber
DA	Destructive assay
DSA	Documented Safety Analysis
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DPM	disintegrations per minute
DQO	Data Quality Objective
DSA	Documented Safety Analysis
EPA	U.S. Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FEM	fissile equivalent mass
FGE	fissile gram equivalent
g	gram
GGT	gas generation testing
hr	hour
HSG	Headspace Gas
HWFP	Hazardous Waste Facility Permit
ID	identification number
in.	inch
keV	Kiloelectron Volt
kg	kilogram(s)
L	Liter
LLD	lower limit of detection

Appendix 3 – Acronyms and Abbreviations (Continued)

LDR	Land Disposal Restriction
LWA	Land Withdrawal Act
M^3	cubic meter(s)
ml	milliliter(s)
mrem	milliroentogen equivalent man
M&TE	Measuring and Testing Equipment
nCi/g	nanocurie(s) per gram
NDA	nondestructive assay
NCR	Nonconformance Report
NDE	Nondestructive Examination
NEPA	National Environmental Policy Act
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMMA	nuclear material management area
NRC	U.S. Nuclear Regulatory Commission
NTP	National TRU Program
NWP	Nuclear Waste Partnership
OJT	on-the-job training
OPCTCD	Overpack Payload Container Transportation Certification Document
PATCD	Payload Assembly Transportation Certification Document
PCB	polychlorinated biphenyl
PCTCD	Payload Container Transportation Certification Document
PDP	Performance Demonstration Program
PE-Ci	^{239}Pu equivalent curie(s)
POC	point-of-contact
ppm	parts per million
QA	Quality Assurance
QAO	Quality Assurance Objective
QAPD	Quality Assurance Program Document
QAPjP	Quality Assurance Project Plan
QC	Quality Control
QSL	Qualified Suppliers List
%R	Percent Recovery
%RSD	percent relative standard deviation
RC	radiochemistry
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
rem	roentgen equivalent man
RH	Remote-Handled
RH-TRAMPAC	Remote-Handled Transuranic Waste Authorized Methods for Payload Control
RIDS	Records Inventory and Disposition Schedule

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Appendix 3 – Acronyms and Abbreviations (Continued)

RPD	relative percent difference
RSD	relative standard deviation
RTR	Real-Time Radiography
SAR	Safety Analysis Report
SEIS	Supplemental Environmental Impact Statement
SLB2	standard large box 2
SME	subject matter expert(s)
SNM	Special Nuclear Material
SOW	Statement of Work
SPM	Site Project Manager
SWB	Standard Waste Box
TCO	Transportation Certification Official
TDOP	ten-drum overpack
TMU	total measurement uncertainty
TRAMPAC	Transuranic Authorized Methods for Payload Control
TRU	Transuranic
TRUPACT-II	Transuranic Package Transporter-II
TRUPACT-III	Transuranic Package Transporter-III
TSDF	Treatment, Storage, and Disposal Facility
VE	visual examination
VOC	volatile organic compound
UHWM	Uniform Hazardous Waste Manifest
VEE	Visual Examination Expert(s)
WAC	Waste Acceptance Criteria
WCO	Waste Certification Official
WDS	Waste Data System
WCPIP	*Remote-Handled TRU Waste Characterization Program Implementation Plan*
WIPP	Waste Isolation Pilot Plant
WIPP WAP	Waste Isolation Pilot Plant Waste Analysis Plan
WSPF	Waste Stream Profile Form
WWIS	WIPP Waste Information System

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Appendix 4 – Procedure Tables

Table B-1. Container Management Procedures

Procedure Title	Procedure Number
CCP Container Management	CCP-TP-035
CCP Standardized Container Management	CCP-TP-068
CCP Container Management	CCP-TP-120

Table B-2. Radiography Procedures

Procedure Title	Procedure Number
CCP Standard Real-Time Radiography (RTR) Inspection Procedure	CCP-TP-053

Table B-3. VE Procedures

Procedure Title	Procedure Number
CCP Visual Examination Technique for Idaho National Laboratory (INL) Newly Generated TRU Waste	CCP-TP-006
CCP Sealed Source Visual Examination and Packaging	CCP-TP-069
CCP Standard Contact-Handled Waste Visual Examination	CCP-TP-113

Table B-4. GGT Procedures

Procedure Title	Procedure Number
CCP Gas Generation Testing	CCP-TP-083
CCP Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure	CCP-TP-138

Table B-5. Certification Procedures

Procedure Title	Procedure Number
CCP Transuranic Authorized Methods For Payload Control (CCP-CH-TRAMPAC)	CCP-PO-003
CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)	CCP-PO-505
CCP CH-TRU Waste Certification and WWIS/WDS Data Entry	CCP-TP-030
CCP RH-TRU Waste Certification and WWIS/WDS Data Entry	CCP-TP-530

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Appendix 4 – Procedure Tables (Continued)

Table B-6. Remote-Handled Procedures

Procedure Title	Procedure Number
CCP Remote-Handled Waste Visual Examination	CCP-TP-500
CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste	CCP-TP-504
CCP Removable Lid Canister Loading	CCP-TP-505
CCP Shipping of Remote-Handled Transuranic Waste	CCP-TP-507
CCP RH Standard Real-Time Radiography Inspection Procedure	CCP-TP-508
CCP Remote-Handled Waste Sampling	CCP-TP-512

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Appendix 5 – PE-Ci Activity

The concept of PE-Ci is intended to eliminate the dependency of radiological analyses on specific knowledge of the radionuclide composition of a TRU waste stream. A unique radionuclide composition and/or distribution are associated with most TRU waste streams at each site. By normalizing all radionuclides to a common radiotoxic hazard index, radiological analyses that are essentially independent of these variations can be conducted for the WIPP facility. ^{239}Pu, as a common component of most defense TRU wastes, was selected as the radionuclide to which the radiotoxic hazard of other TRU radionuclides could be indexed.

Modeled operational releases from the WIPP facility, including both routine and accident-related, are airborne. There are no known significant liquid release pathways during the operational phase of the facility. This, and the fact that TRU radionuclides primarily represent inhalation hazards, allows a valid relationship to be established, which normalizes the inhalation hazard of a TRU radionuclide to that of ^{239}Pu for the purpose of the WIPP radiological analyses. In effect, the radiological dose consequences of an airborne release of a quantity of TRU radioactivity with a known radionuclide distribution will be essentially identical to that of a release of that material expressed in terms of a quantity of ^{239}Pu. To obtain this correlation, the 50-year effective whole-body dose commitment or dose conversion factor for a unit intake of each radionuclide will be used.

For a known radioactivity quantity and radionuclide distribution, the ^{239}Pu equivalent activity is determined using radionuclide-specific weighting factors. The ^{239}Pu equivalent activity (AM) can be characterized by:

$$\mathrm{AM} = \sum_{i=1}^{K} A_i / WF_i$$

where K is the number of TRU[1] radionuclides, A_i is the activity of radionuclide i, and WF_i is the PE-Ci weighting factor for radionuclide i.

WF_i is further defined as the ratio

$$WF_i = E_o / E_i$$

where E_o (roentgen equivalent man [rem]/µCi) is the 50-year effective whole-body dose commitment due to the inhalation of ^{239}Pu particulates with a 1.0 µm activity median aerodynamic diameter (AMAD) and a weekly pulmonary clearance class, and E_i

[1]TRU as designated in this equation refers to any radionuclide with an atomic number greater than 92 and including ^{233}U.

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Appendix 5 – PE-Ci Activity (Continued)

(rem/µCi) is the 50-year effective whole-body dose commitment due to the inhalation of radionuclide (*i*) particulates with a 1.0 µm activity median aerodynamic diameter and the pulmonary clearance class resulting in the highest 50-year effective whole-body dose commitment.

Weighting factors calculated in this manner are presented in Table C-1 for radionuclides typically present in CH-TRU waste. If other TRU radionuclides are determined to be present in the payload container, their weighting factors can be obtained from the values of E_o and E_i contained in DOE/EH-0071 (Reference B1).

Table C-1. PE-Ci Weighting Factors for Selected Radionuclides

Radionuclide	Pulmonary Clearance Class[a]	Weighting Factor
^{233}U	Y	3.9
^{237}Np	W	1.0
^{236}Pu	W	3.2
^{238}Pu	W	1.1
^{239}Pu	W	1.0
^{240}Pu	W	1.0
^{241}Pu	W	51.0
^{242}Pu	W	1.1
^{241}Am	W	1.0
^{243}Am	W	1.0
^{242}Cm	W	30.0
^{244}Cm	W	1.9
^{252}Cf	Y	3.9

[a](W) Weekly, (Y) Yearly

Reference for Appendix 5

B1. U.S. Department of Energy. *Internal Dose Conversion Factors for Calculation of Dose to the Public.* DOE/EH-0071, July 1988.

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Appendix 6 – Glossary

10-160B Packaging – An NRC-certified Type B transportation packaging used for transportation of TRU wastes.

Acceptable knowledge (AK) – Any information about the process used to generate waste, material inputs to the process, and the time period during which the waste was generated, as well as data resulting from the analysis of waste, conducted prior to or separate from the waste certification process authorized by EPA's Certification Decision, to show compliance with Condition 3 of the certification decision (Appendix A of this part) (40 CFR §194.2 and 194.67).

Activity – A measure of the rate at which a material emits nuclear radiation, usually given in terms of the number of nuclear disintegrations occurring in a given length of time. The common unit of activity is the curie, which amounts to 37 billion (3.7×10^{10}) disintegrations per second. The International Standard unit of activity is the becquerel and is equal to one disintegration per second.

Administrative controls – Provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ensure the safe operation of the facility.

Atomic energy defense activities – Activities of the Secretary of Energy (and predecessor agencies) performed in whole or in part in carrying out any of the following functions: naval reactors development; weapons activities, including defense inertial confinement fusion; verification and control technology; defense nuclear material production; defense nuclear waste and materials by-product management; defense nuclear materials security investigations; and defense research and development.

Authorization basis – Those aspects of the facility design and operational requirements relied upon by DOE to authorize the operation of nuclear facilities and processes.

Characterization – Sampling, monitoring, and analysis - whether by review of AK, nondestructive examination, NDA, or RC - to identify and quantify the constituents of a waste material.

Chemical compatibility – Assessing the properties of chemicals in a payload container (>1 weight percent); there must be no adverse safety or health hazards produced as a result of any mixtures that occur.

Appendix 6 – Glossary (Continued)

Completeness – The percentage of measurements made that are judged to be valid measurements. The completeness goal is to generate a sufficient amount of valid data based on program needs. Valid results for radioassay, and radiography data are those that were obtained when the laboratory or testing facility demonstrated that the instrumentation and method were in control; that is, that all calibration, verification, interference, and zero matrix checks met acceptance criteria.

Compressed gas – Compressed gases are those materials defined as such by 49 CFR Part 173, Subpart G.

Contact-Handled transuranic waste – Transuranic waste with a surface radiation dose equivalent rate not greater than 200 mrem/h.

Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC) – The governing document for shipments in the TRUPACT-II and the HalfPACT packagings.

Content code – A uniform system applied to waste forms to group those with similar characteristics for purposes of shipment in the TRUPACT-II, TRUPACT-III, HalfPACT, and RH-TRU 72-B packagings.

Corrosive/Corrosivity – A solid waste exhibits corrosivity if a sample of the waste is either aqueous and has a pH ≤ 2 or ≥ 12.5, or it is a liquid and corrodes steel at a rate >6.35 millimeter (0.250 in.) per year at a test temperature of 55°Celsius (130°Fahrenheit) (40 CFR §261.22).

Curie – A unit of activity equal to 37 billion (3.7×10^{10}) disintegrations per second.

Disposal – Permanent isolation of TRU waste from the accessible environment with no intent of recovery, whether or not such isolation permits the recovery of such waste (Reference 2, Section 2[5]).

Dose conversion factor – A numerical factor used in converting radionuclide uptake (curies) in the body to the resultant radiation dose (rem).

Dose equivalent rate – The radiation dose equivalent delivered per unit time (e.g., rem per hour).

Drum – Includes 55-gallon, 85-gallon, and 100-gallon drums as described in the CH-TRAMPAC and HWFP.

Fissile gram equivalent – An isotopic mass of radionuclide normalized to ^{239}Pu.

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Appendix 6 – Glossary (Continued)

Fissile material – Any material consisting of or containing one or more radionuclides that can undergo neutron-induced fission with neutrons of essentially zero kinetic energy (e.g., thermal neutrons) such as ^{233}U, ^{235}U, and ^{239}Pu.

HalfPACT – An NRC-certified Type B transportation packaging used for transportation of CH-TRU wastes.

Hazardous waste – Those wastes which are designated hazardous by EPA (or state) regulations. For a detailed description, see 40 CFR § 261.3. Hazardous wastes are listed in 20.4.1 New Mexico Administrative Code (NMAC), subpart II (40 CFR Part 261) and/or exhibit one of the four characteristics in 20.4.1 NMAC, subpart II (40 CFR Part 261) (i.e., ignitability, corrosivity, reactivity, and toxicity).

Headspace – The total contained volume of a container minus the volume occupied by the waste material.

Headspace gas – The gas within the headspace of a container.

Internal container – A container inside the outermost container examined during radiography or VE. Drum liners, liner bags, plastic bags used for contamination control, capillary-type lab ware, and debris not designed to hold liquid at the time of original waste packaging are not internal containers (Reference 9, Part 1, Section 1.5.17).

Lower Limit of Detection – The level of radioactivity which, if present, will yield a measured value greater than the critical limit with a 95 percent probability. The critical limit is defined as that value which measurements of the background will exceed with a 5 percent probability.

Machine-Compacted Waste – Waste whose volume has been reduced using a mechanical process.

Observable liquid – Liquid that is observable using radiography or VE (Reference 9, Part 1, Section 1.5.18)

Overpack - A container put around another container.

Package – (1) A packaging plus its contents. (2) The reusable Type B shipping container (i.e., TRUPACT-II, TRUPACT-III, HalfPACT, RH-TRU 72-B, and 10-160B) loaded with TRU waste payload containers, which has been prepared for shipment in accordance with the package QA program. (3) In the regulations governing the transportation of radioactive materials, the packaging, together with its radioactive contents, as presented for transport.

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Appendix 6 – Glossary (Continued)

Packaging – The reusable Type B shipping container for transport of TRU waste payload containers (i.e., TRUPACT-II, TRUPACT-III, HalfPACT, RH-TRU 72-B, and 10-160B).

Packaging Quality Assurance Program – A site-specific document that defines the quality assurance and quality control activities applicable to usage of the NRC-approved packaging. This program shall meet the requirements of 10 CFR Part 71, Subpart H.

Payload container – The outermost container (i.e., a drum, shielded container, SLB2, SWB, TDOP, or canister) for TRU waste material that is placed in a reusable Type B shipping container (i.e., a TRUPACT-II, TRUPACT-III, HalfPACT, RH-TRU 72-B, and 10-160B) for transport.

Payload assembly – An assembly of payload containers qualified for transport in a TRUPACT-II, HalfPACT, or 10-160B.

Pipe overpack – A packaging configuration consisting of a vented cylindrical pipe component surrounded by dunnage within a vented 55-gallon drum with a rigid polyethylene liner and vented lid.

Plutonium-239 equivalent activity – An equivalent radiotoxic hazard of a radionuclide normalized to ^{239}Pu.

Precision – A measure of mutual agreement among individual measurements of the same property made under prescribed similar conditions; often expressed as a standard deviation or relative percent difference (RPD).

Pyrophoric – Materials that may ignite spontaneously in air or that emit sparks when scratched or struck, especially with materials such as steel. A flammable solid that, under transport conditions, might cause fires through friction or retained heat or that can be ignited readily and, when ignited, burns vigorously and persistently so as to create a serious transportation hazard. Included in the pyrophoric definition are spontaneously combustible materials, water reactive materials, and oxidizers. Examples of nonradioactive pyrophorics are organic peroxides, sodium metal, and chlorates.

Radioassay – Methods used to identify and quantify radionuclides in TRU waste. Radioassay includes NDA and RC.

Radiography – A nondestructive testing method that uses x-rays to inspect and determine the physical form of waste.

Radionuclide – A nuclide that emits radiation by spontaneous transformation.

Remote-Handled transuranic waste – Transuranic waste with a surface dose rate of 200 millirem per hour or greater (Reference 2, Section 2[12]).

Appendix 6 – Glossary (Continued)

Remote-Handled Transuranic Waste Authorized Methods for Payload Control (RH-TRAMPAC) – The governing document for shipments in the RH-TRU 72-B packaging (Reference 41).

RH-TRU Waste Canister – Container that is transported in the RH-TRU 72B Cask.

RH-TRU 72-B Packaging – An NRC-certified Type B transportation packaging used for transportation of RH TRU wastes.

Shielded container – A metal payload container authorized for use within the HalfPACT packaging, that has been tested by DOE to meet DOT Specification 7A Type A requirements. It is approximately the same size as a standard 55-gallon drum, contains one 30-gallon steel drum, and incorporates a nominal 1-inch layer of lead lining to shield waste forms with high gamma energies. Although the shielded container is managed during handling, shipment, storage, and disposal as a CH payload container, the waste contained in a shielded container is characterized and inventoried in the WWIS as RH waste.

Shipper – A TRU waste site that releases an NRC-approved packaging to a carrier for shipment.

Shipping category – A shipping category is defined by the following parameters: chemical composition of the waste (waste type), gas generation potential of the waste material type (quantified by the g-value for hydrogen), and gas release resistance (type of payload container and type and maximum number of confinement layers used).

Sites – Department of Energy TRU waste generator/storage sites.

Standard large box 2 – A specialized metal payload container with a top-loading and a bottom-loading option for use within the TRUPACT-III packaging, that has been tested by DOE to meet DOT Specification 7A Type A requirements.

Standard waste box – A metal payload container authorized for use within the TRUPACT-II or HalfPACT packaging, that has been tested by DOE to meet DOT Specification 7A Type A requirements.

Summary Category Group – Used to segregate TRU mixed wastes into broad groups having similar physical forms. The summary category groups include homogeneous solids (S3000) that are at least 50 percent by volume solid process residues, soil/gravel (S4000) that is at least 50 percent by volume soil/gravel, and debris (S5000) that is at least 50 percent by volume materials that meet the criteria specified in 20.4.1.800 New Mexico Administrative Code (incorporating 40 CFR §268.2[g]). Categorization is based on the Summary Category Group constituting the greatest volume of waste for a waste stream (Reference 9, Attachment C).

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Appendix 6 – Glossary (Continued)

Ten-drum overpack – A metal payload container authorized for use within the TRUPACT-II packaging, that has been tested by DOE to meet DOT Specification 7A Type A requirements.

Test Category – Payload containers that do not meet the analytical category decay heat limits or whose concentration of flammable volatile organic compounds (VOCs) in the headspace exceeds 500 ppm are classified as test category (References 23a and 23b, Section 5.2.2).

Trace chemicals/materials – Chemicals/materials that occur individually in the waste in quantities less than 1 weight percent. The total quantity of trace chemicals/materials not listed as allowed materials for a given waste material type in any payload container is restricted to less than 5 weight percent (References 23a and 23b, Section 4.3.1, Reference 41, Section 4.3.1).

TRU isotope – An isotope of any element having an atomic number greater than uranium (i.e., 92).

TRU waste – Waste containing more than 100 nCi of alpha-emitting TRU isotopes per gram of waste, with half-lives greater than 20 years, except for (1) high-level radioactive waste, (2) waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations, or (3) waste that the NRC has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61 (Reference 2, Section 2[18]).

TRU mixed waste – TRU waste that is also a hazardous waste as defined by the Hazardous Waste Act and 20.4.1.200 NMAC (incorporating 40 CFR § 261.3) (Reference 9, Part 1, Section 1.5.7).

TRUPACT-II – An NRC-certified Type B transportation packaging used for transportation of CH-TRU wastes.

TRUPACT-III – An NRC-certified Type B transportation packaging used for transportation of CH-TRU wastes in the SLB2 container.

TRUPACT-III Transuranic Waste Authorized Methods for Payload Control (TRUPACT-III TRAMPAC) – The governing document for shipments in the TRUPACT-III packaging (Reference 23b, Section 1).

Verification – The act of authenticating or formally asserting the truth that a process, item, data set, or service is, in fact, that which is claimed. Data verification is the process used to confirm that all review and validation procedures have been completed.

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Appendix 6 – Glossary (Continued)

Volatile organic compounds – For the purposes of the TRU waste program, those RCRA-regulated VOCs listed in the WIPP WAP and any additional compounds tentatively identified by VOC analytical procedures used to satisfy program requirements (i.e., any compound containing carbon and hydrogen with any other element that has a vapor pressure of 77.6 milliliters (ml) of mercury (1.5 psia) or greater under actual storage conditions).

Waste Acceptance Criteria – Constraints (limits) on the physical, chemical, and radiological properties of TRU waste and its packaging as determined by WIPP's authorization basis requirements. TRU waste will not be approved for shipment to and disposal at the WIPP until it has been certified as meeting these criteria. Waste Acceptance Criteria ensure that TRU waste is managed and disposed of in a manner that protects human health and safety and the environment.

Waste Analysis Plan – The waste analysis plan includes test methods, details of planned waste analysis for complying with the general waste analysis requirements of 20.4.1.500 NMAC (incorporating 40 CFR 264.13), a description of the waste shipment screening and verification process, and a description of the QA/QC program. Sites are required to implement the applicable requirements of the WIPP WAP.

Waste characterization – The process of determining that TRU waste meets the requirements of the WAC by the acceptable performance of the activities defined by CBFO-approved site-specific plans.

Waste certification – Formal and documented declaration by sites that waste has been characterized and meets the requirements of the WAC.

Waste matrix code – A DOE-developed coding system for grouping waste streams that have similar matrix constituents, especially for treatment objectives. This coding system allows waste streams within the DOE TRU waste system that have similar physical and chemical waste form properties to be categorized together (Transuranic Waste Baseline Inventory Report - 2004, DOE/TRU-2006-3344).

Waste stream – A waste stream is waste materials that have common physical form, that contain similar hazardous constituents and that are generated from a single process or activity (Reference 9, Appendix C).

WIPP Waste Information System – A computerized data management system used by WIPP to gather, store, and process information pertaining to CH and RH-TRU waste destined for or disposed of at WIPP. The WWIS database is a subsystem of the WDS.

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Appendix 7 – Payload Container Integrity Checklist

The Operator is to visually examine 100 percent of the payload container exterior to determine if the payload container meets the criteria of Section 3.2.1. At a minimum, sites shall incorporate the questions and criteria contained in the following checklist into applicable site procedures (see CCP-TP-033, *CCP Shipping of CH-TRU Waste*). This payload container inspection shall be performed and documented as a part of the TRUPACT-II, TRUPACT-III, or HalfPACT loading process. Any YES answer on the inspection checklist will result in the operator discontinuing the inspection, marking the payload container as unacceptable for shipment, and removal of the payload container from the shippable inventory. Before the rejected container can be shipped, it must undergo appropriate corrective actions (e.g., evaluation, repackaging, overpacking), as applicable. All containers must have an acceptable and complete inspection checklist documenting that it meets the DOT 7A criteria. Personnel complete the following payload container integrity checklist in accordance with procedure CCP-TP-033.

CONTAINER EXAMINATION		DISCUSSION OF CRITERIA	COMPLIANCE	
1.	Is the payload container obviously degraded?	Obviously degraded means clearly visible and potentially significant defects in the payload container or payload container surface.	YES	NO
2.	Is there evidence that the payload container is, or has been, pressurized?	Pressurization can be indicated by a fairly uniform expansion of the sidewalls, bottom or top. Past pressurization can be indicated by a notable outward deflection of the bottom or top. Verify that the payload container is not warped.	YES	NO

Appendix 7 – Payload Container Integrity Checklist (Continued)

CONTAINER EXAMINATION		DISCUSSION OF CRITERIA	COMPLIANCE	
3.	Is there any potentially significant rust or corrosion such that wall thinning, pin holes, or breaches are likely or the load bearing capacity is suspect?	Rust shall be assessed in terms of its type, extent, and location. Pitting, pocking, flaking, or dark coloration characterizes potentially significant rust or corrosion. This includes the extent of the payload container surface area covered, thickness, and, if it occurs in large flakes or built-up (caked) areas. Rusted payload containers may not be accepted if: A.1 Rust is present in caked layers or deposits A.2 Rust is present in the form of deep metal flaking, or built-up areas of corrosion products In addition, the location of rust should be noted; for example on a drum: top lid; filter region; locking chine; top one-third, above the second rolling hoop; middle one-third, between the first and second rolling hoops; bottom one-third, below the second rolling hoop; and on the bottom. Payload containers may still be considered acceptable if the signs of rust show up as: A.1 Some discoloration on the payload container A.2 If rubbed would produce fine grit or dust or minor flaking (such that wall thinning does not occur).	YES	NO
4.	Are any of the following apparent? A.1 wall thinning A.2 pin holes A.3 breaches	Wall thinning, pin holes, and breaches can be a result of rust/corrosion (see discussion for #3).	YES	NO
5.	Are there any split seams, tears, obvious holes, punctures (of any size), creases, broken welds, or cracks?	Payload containers with obvious leaks, holes or openings, cracks, deep crevices, creases, tears, broken welds, sharp edges or pits, are either breached or on the verge of being breached. Verify that there is no warpage that could cause the container to be unstable or prevent it from fitting properly in the applicable package.	YES	NO
6.	Is the load-bearing capacity suspect?	The load-bearing capacity could be reduced for excessive rust (see discussion for #3), wall thinning (see discussion for #4), breaches, cracks, creases, broken welds, etc. (see discussion for #5).	YES	NO

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Appendix 7 – Payload Container Integrity Checklist (Continued)

CONTAINER EXAMINATION		DISCUSSION OF CRITERIA	COMPLIANCE	
7.	Is the payload container improperly closed?	Inspect the fastener and fastener ring (chine) if applicable for damage or excessive corrosion. Check the alignment of the fastener to ensure that it is in firm contact around the entire lid and the payload container will not open during transportation.	YES	NO
8.	Are there any dents, scrapes, or scratches that make the payload container's structural integrity questionable or prevent the top and bottom surfaces from being parallel?	Deep gouges, scratches, or abrasions over wide areas are not acceptable. If top and bottom surfaces are not parallel, this would indicate that the container is warped. Dents should be less than 1/4 in. deep by 3-inches long and between ½ in. to 6-inches wide. All other dents must be examined to determine impact of structural integrity.	YES	NO
9.	Is there discoloration which would indicate leakage or other evidence of leakage of material from the payload container?	Examine the payload container regions near vents, top lid fittings, bottom fittings, welds, seams and intersections of one or more metal sheets or plates. Payload containers must be rejected if evidence of leakage is present.	YES	NO
10.	Is the payload container bulged?	For the purposes of this examination, bulging is indicated by: A.1 A fairly uniform expansion of the sidewalls, bottom, or top (e.g., in the case of a drum, either the top or bottom surface protrudes beyond the planar surface of the top or bottom ring. A.2 A protrusion of the side wall (e.g., in the case of a drum, beyond a line connecting the peaks of the surrounding rolling hoops or a line between a surrounding rolling hoop and the bottom or top ring), or A.3 Expansion of the sidewall (e.g., in the case of a drum, such that it deforms any portion of a rolling hoop).	YES	NO

Appendix 7 – Payload Container Integrity Checklist (Continued)

References to Appendix 7

1. INEEL Engineering Design File "*Waste Container Integrity Evaluation for Storage"*, EDF-RWMC-705, September 25, 1996. Idaho National Engineering and Environmental Laboratory, Idaho Falls, ID

2. Title 49 CFR Part 173, Subpart 475. *"Quality Control Requirements Prior to Each Shipment of Class 7 (Radioactive) Materials." Code of Federal Regulations,* Washington, D.C., Office of the Federal Register, National Archives and Records Administration. (http://www.ecfr.gov)

3. DOE/RL-96-57, Section 2.5.5. *"Test & Evaluation Document for the U. S. Department of Transportation Specification 7A type to Packaging"* (Formerly WHC-EP-0558) (http://rampac.energy.gov/certinfo/special/noncertified/dot7a/pdot7a.aspx)

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Appendix 8 – Payload Management of TRU Alpha Activity Concentration

1.0 Scope

The policies and methods for the management of TRU alpha activity concentration within each TRU waste payload container disposed of at the WIPP are set out in this appendix. They are based on the definition of TRU waste in the *WIPP LWA*, Public Law 102-579. The LWA defines TRU waste as:

"…waste containing more than 100 nanocuries of alpha emitting transuranic isotopes per gram of waste, with half lives greater than 20 years…" (Sec. 2[18]).

This appendix pertains specifically to the payload management of TRU alpha activity concentration of waste containers selected for overpacking.

2.0 Policies

The Office of National TRU Program has established the following policies for managing TRU alpha activity concentration in compliance with the LWA: (References 1, 2, and 3)

- The TRU alpha activity concentration limit for TRU waste (> 100 nCi/g) applies to the TRU waste stream as a whole.

- Waste containers belonging to a TRU waste stream may vary in their TRU alpha activity concentration, some containing > 100 nCi/g and some containing < 100 nCi/g. Using process knowledge in combination with radioassay measurements to determine the presence of TRU isotopes within the waste stream, generator sites define a TRU waste stream based on its potential to include waste containers with a TRU alpha activity concentration in excess of 100 nCi/g.

- Waste containers belonging to the same TRU waste stream may be overpacked into a payload container (e.g., SWB or TDOP) provided the TRU alpha activity concentration of the payload container exceeds 100 nCi/g.

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Appendix 8 – Payload Management of Transuranic (TRU) Alpha Activity Concentration (Continued)

3.0 Prerequisites for Implementation

- Each waste container selected for payload management must be part of the TRU waste stream identified in the AK Summary Report for that waste stream (References 2 and 3).

- Sites shall submit to the CBFO, for its review and approval, applicable plans and procedures for making TRU waste determinations based on payload management practices that involve the overpacking of waste containers (Reference 2).

- CBFO will notify the EPA of sites seeking such authorization prior to CBFO's approval of a site to manage TRU alpha activity concentration using payload management. The WIPP will not accept payload managed waste for disposal until EPA has received notice (Reference 3).

4.0 Implementation and Practice

- Each TRU waste stream selected for payload management must include in its AK Summary Report an estimate of the total waste volume and the percentage of the waste volume that is above and below 100 nCi/g (It should be noted that this information, although based on the best available AK information, is preliminary and subject to the performance of WIPP certified NDA measurements and cannot and will not be used as a measure of AK accuracy) (Reference 3).

- Each waste container selected for payload management must contain at least one TRU isotope (e.g., Pu-238, Pu-239, Pu-240, Pu-242) whose activity exceeds the LLD of the radioassay system used to characterize the waste (References 2 and 3). The applicability of LLD will vary from system to system and may be on a container basis. Sections 3.3.1 and A.3 of this document provide the applicable requirements for determining and reporting LLDs.

- Each waste container selected for payload management may only be overpacked into a payload container (e.g., SWB or TDOP) with other waste containers from the same TRU waste stream.

- The TRU alpha activity concentration of the payload container is determined according to Sections 3.3.3 and 4.3.3 of this document.

Appendix 8 – Payload Management of Transuranic (TRU) Alpha Activity Concentration (Continued)

5.0 References

1. Public Law 102-579, 106 Stat.4777, 1992 (as amended by Public Law 104-201, 1996). *Waste Isolation Pilot Plant Land Withdrawal Act* (http://www.wipp.energy.gov/library/cra/baselinetool/documents/regulatory%20tools/10%20WIPPLWA1996.pdf)

2. Letter to Mr. Frank Marcinowski (Director, Office of Radiation and Indoor Air, U.S. Environmental Protection Agency) from Dr. Ines R. Triay (Manager, Carlsbad Field Office, U.S. Department of Energy), August 4, 2003

3. Letter to Dr. Ines R. Triay (Manager, Carlsbad Field Office, U.S. Department of Energy) from Mr. Frank Marcinowski (Director, Office of Radiation and Indoor Air, U.S. Environmental Protection Agency), August 8, 2003

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Appendix 9 – Radiography Requirements for Contact-Handled Transuranic Waste

9.1 Radiography Requirements for Contact-Handled Waste

Radiography aids in the examination and identification of containerized waste. All activities required to achieve radiography objectives shall be described in site Program documents as identified in Appendix 4, Table B-2. These documents shall include instructions specific to the radiography systems used at the site. This appendix applies to radiography of CH waste; requirements for radiography of RH waste are found in the WCPIP.

A radiography system (e.g., real-time radiography or digital radiography/computed tomography), normally consists of an x-ray producing device, an imaging system, an enclosure for radiation protection, a waste container handling system, an audio/video recording system, and an operator control and data acquisition station. Although these six components are required, it is expected there will be some variation within a given component between sites. The radiography system shall have controls or an equivalent process which allow the operator to control image quality. On some radiography systems, it should be possible to vary the voltage between 150 and 400 kilovolts to provide an optimum degree of penetration through the waste.

To perform radiography, the waste container is scanned while the operator views the video monitor. An audio/video recording shall be made of the waste container scan and is maintained as a non-permanent record. A radiography data form shall also be used to document the Waste Matrix Code; verify there are no ignitable, reactive, or corrosive wastes present by verification that there is no observable liquid in excess of the waste acceptance criteria and there are no compressed gases; and estimated waste material parameter weights of the waste.

The estimated waste material parameter and weights for CH waste should be determined by compiling an inventory of waste items and packaging materials. The items on this inventory should be sorted by waste material parameter and combined with a standard weight look-up table to provide an estimate of waste material parameter weights.

Containers whose contents prevent full examination of the remaining contents shall be subject to visual examination unless the site certifies that visual examination would provide no additional relevant information for that container using acceptable knowledge for the waste stream.

For containers which contain classified shapes and undergo radiography, the radiography recording shall be considered classified information. The radiography data forms will not contain classified information.

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Appendix 9 – Radiography Requirements for Contact-Handled Waste (Continued)

9.2 Radiography Training

The radiography system involves qualitative and semi-quantitative evaluations of visual displays. Operator training and experience are the most important considerations for assuring quality controls in regard to the operation of the radiography system and for interpretation and disposition position of radiography results. Only trained and qualified radiography operators shall be allowed to operate radiography equipment.

Standardized training and qualification requirements for radiography operators shall be based upon existing industry standard training requirements and shall comply with the training and qualification requirements of this document and the QAPD.

The site shall develop a training program that provides radiography operators with both formal and OJT. Radiography operators shall be instructed in the specific waste generating practices, typical packaging configurations, and associated waste material parameters expected to be found in each Waste Matrix Code at the site.
The OJT and apprenticeship shall be conducted by an experienced, qualified radiography operator prior to qualification of the training candidate. The training programs shall be site-specific due to differences in equipment, waste configurations, and the level of waste characterization efforts. For example, certain sites use digital radiography equipment, which is more sensitive than real-time radiography equipment. In addition, the particular physical forms and packaging configurations at each site will vary; therefore, radiography operators shall be trained on the types of waste that are generated, stored, or characterized at that particular site.

The training program shall contain the following elements:

- Project Requirements
- State and Federal Regulations
- Basic Principles of Radiography
- Radiographic Image Quality
- Radiographic Scanning Techniques
- Application Techniques
- Radiography of Waste Forms
- Standards, Codes, and Procedures for Radiography
- Site-Specific Instruction

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Appendix 9 – Radiography Requirements for Contact-Handled Waste (Continued)

The training program shall also contain OJT which addresses:

- System Operation
- Identification of Packaging Configurations
- Identification of Waste Material Parameters
- Weight and Volume Estimation
- Identification of Prohibited Items

Radiography test drums shall contain items common to the waste streams to be generated and stored at the site. The test drums shall be divided into layers with varying packing densities or different drums may be used to represent different situations that may occur during radiography examination at the site. Test drums shall be representative of the waste matrix codes for which WSPF approval is sought. Test drums shall be examined and successfully identified prior to waste stream shipment. The following is a list of required elements of a radiography test drum:

- A punctured aerosol can
- Pigtails on polyliners (horsetail bag)
- Pair of coveralls
- Empty bottle
- Irregular shaped pieces of wood
- Empty one-gallon paint can
- Full container
- Aerosol can with fluid
- One-gallon bottle with three tablespoons of fluid
- One-gallon bottle with one cup of fluid (upside down)
- Leaded glove or leaded apron
- Wrench

These items shall be successfully identified by the operator as part of the qualification process. Qualifications of radiography operators shall, at a minimum, encompass the following requirements:

- Successfully pass a comprehensive exam based upon training enabling objectives. The comprehensive exam will address all of the radiography operations, documentation, characterization and procedural elements stipulated in this WAC.

- Perform a practical capability demonstration in the presence of appointed site radiography SME. The person will be an experienced radiography operator who is also qualified as an OJT trainer.

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Appendix 9 – Radiography Requirements for Contact-Handled Waste (Continued)

Re-qualifications of operators are based on evidence of continued satisfactory performance (primarily audio/video recording reviews), and shall be done at least every two years. Unsatisfactory performance will result in disqualification. Unsatisfactory performance is defined as the misidentification of a prohibited item in a training drum or a score of less than 80 percent on the comprehensive exam. Retraining and demonstration of satisfactory performance are required before a disqualified operator is again allowed to operate the radiography system.

A training drum with internal containers of various sizes shall be scanned semiannually by each operator. The audio/video recording shall then be reviewed by a supervisor to ensure that operator's interpretations remain consistent and accurate. Imaging system characteristic shall be verified on a routine basis.

9.3 Quality Control

Independent replicate scans and replicate observations of the video output of the radiography process shall be performed under uniform conditions and procedures. Independent replicate scans shall be performed on one waste container per day or once per testing batch, whichever is less frequent. Independent observation of one scan (not the replicate scan), shall be made once per day or once per testing batch, whichever is less frequent, by a qualified radiography operator other than the individual who performed the first examination. A testing batch is a suite of waste containers undergoing radiography using the same testing equipment. A testing batch can be up to 20 waste containers without regard to waste matrix.

Oversight functions include periodic audio/video recording reviews of accepted waste containers by a qualified radiography operator other than the operator who dispositioned the waste container. The results of this independent verification shall be made available to the radiography operator.

9.4 Data Review and Validation

A testing BDR for data validation and QA purposes is required when radiography is used to characterize waste. A testing BDR (or equivalent), includes data pertaining to radiography for up to 20 waste containers or samples.

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Appendix 9 – Radiography Requirements for Contact-Handled Waste (Continued)

All measurement data is reviewed and approved by qualified personnel prior to being reported. Reviews shall meet the requirements of the QAPD. At a minimum, the data is reviewed by an independent technical reviewer and approved by the SPM. This review is performed by an individual other than the data generator who is qualified to have performed the initial work. The independent technical reviewer shall verify, at a minimum, the following information:

- Data generation and reduction is conducted in a technically correct manner in accordance with the methods used (verification of procedure and revision).
- Data is reported in the proper units and correct number of significant figures.
- Calculations are verified by a valid calculation program, a spot check of verified calculation programs, and/or 100 percent check of all hand calculations.
- Values that are not verifiable to within rounding or significant difference discrepancies shall be rectified prior to completion of independent technical review.
- The data is reviewed for transcription errors.
- The testing QA documentation for BDRs is complete and includes, as applicable, raw data, calculation records, calibration records (or references to an available calibration package), list of containers in the batch, and QC sample results. Corrective action is taken to ensure that all BDRs are complete and include all necessary raw data prior to completion of the independent technical review.
- QC sample results are within established control limits and, if not, the data have been appropriately dispositioned using the nonconformance process. This includes complete summarized qualitative and quantitative data for all waste containers with data flags or qualifiers.
- Radiography tapes are reviewed (independent observation) on a waste container basis at a minimum of once per testing batch or once per day of operation, whichever is less frequent.
- The container contains no indication that there is liquid in excess of this waste acceptance criteria, no indication of compressed gas, no indication of incompatible wastes, and the physical form matches the Waste Matrix Code.
- The appropriate QAOs have been met.

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Appendix 9 – Radiography Requirements for Contact-Handled Waste (Continued)

All data must be approved by the SPM. The SPM shall verify, at a minimum, the following information:

- Data generation-level independent technical review, validation, and verification have been performed as evidenced by the completed review checklists and appropriate signature release. Batch data review checklists are complete.

- BDRs are complete and data are properly reported (e.g., data are reported in the correct units and with the correct number of significant figures).

- Data meet all applicable Quality Assurance Objectives.

The SPM shall provide a SPM Summary and a Data Validation Summary for each BDR. These reports may be combined and shall consist of a detailed checklist documenting that the batch has been adequately reviewed and that the data meet program objectives.

To ensure that data of known and documented quality are generated, each participating measurement facility shall implement a documented facility QA program. Facility QA programs shall specify qualitative and quantitative acceptance criteria for the QC checks of this program, and corrective actions to be taken when these criteria are not satisfied. Only appropriately trained and qualified personnel shall be allowed to perform data validation/review.

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Appendix 10 – Visual Examination Requirements for Contact-Handled Transuranic Waste

10.1 Visual Examination Requirements for Contact-Handled Waste

This appendix applies to visual examination requirements for CH waste; requirements for visual examination of RH waste are found in the WCPIP.

Contact handled waste container contents may be verified directly by performing VE on the waste container contents. Visual examination may also be performed during packaging or repackaging of waste. The CCP performs VE in accordance with the procedures found in Appendix 4, Table B-3.

VE does not require audio/video recordings of the examination; the examination is documented on a data form and certified with signatures from two qualified VE operators. If the second operator cannot verify the descriptions of the first operator, corrective actions will be taken in accordance with the established QA Program.

VE shall be conducted to describe all contents of a waste container and includes estimated or measured weights of the contents. The description shall clearly identify all discernible waste items, packaging materials, and waste material parameters in the waste container. VE activities are documented on VE data forms.

VE video/audio recordings of containers that contain classified shapes shall be considered classified information. Visual examination data forms will not contain classified information.

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Appendix 10 – Visual Examination Requirements for Contact-Handled Transuranic Waste (Continued)

10.2 Visual Examination Training

VE shall consist of a semi-quantitative and qualitative evaluation of the waste container contents and may be recorded on audio/video recording media. Standardized training for VE includes both formal classroom training and OJT. Personnel performing VE shall be instructed in the specific waste generating processes, typical packaging configurations, and the waste material parameters expected to be found in each Waste Matrix Code at the site. The OJT and apprenticeship shall be conducted by an operator experienced and qualified in VE prior to qualification of the candidate. The training shall be site-specific to include the various waste configurations at the site. For example, the particular physical forms and packaging configurations at each site will vary so operators shall be trained on types of waste that are generated, stored, or characterized at that particular site. VE operators need only be trained to the physical forms and packaging configurations used on the waste stream that they are examining and packaging. VE personnel shall be requalified once every two years.

Training shall address the following required elements:

- Project Requirements
- State and Federal Regulations
- Application Techniques
- Site-Specific Instruction

Training shall also include OJT that addresses:

- Identification of Packaging Configurations
- Identification of Waste Material Parameters
- Weight and Volume Estimation
- Identification of Prohibited Items

The SPM appoints each Visual Examination Expert (VEE) and ensures the appointment is facility-specific. The VEE shall be familiar with the waste generating processes that have taken place at the site and will also be familiar with all types of waste being characterized at that site. The VEE shall be responsible for the overall direction and implementation of the visual examination at that facility. The VEE shall receive training in the same elements as the visual examination personnel, including both formal training and OJT. Qualification of a VEE shall be based on familiarity with waste generating processes, familiarity with the types of waste being characterized, and meeting the training requirements discussed above. Consistent with other VE personnel, the VEE shall be requalified once every two years. CCP-QP-002 specifies the selection, qualification and training requirements for the VEE.

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Appendix 10 – Visual Examination Requirements for Contact-Handled Transuranic Waste (Continued)

10.3 Method

Visual examination recorded on video/audio media meet the following minimum requirements:

- The audio/video media shall record the waste packaging event for the container such that all waste items placed into the container are recorded in sufficient detail and shall contain an inventory of waste items in sufficient detail that another trained VE operator can identify the associated waste material parameters.

- The video/audio media shall capture the waste container identification number.

- The personnel loading the waste container shall be identified on the video/audio media or on packaging records traceable to the loading of the waste container.

- The date of loading of the waste container will be recorded on the video/audio media or on packaging records traceable to the loading of the waste container.

VE performed using two operators shall meet the following minimum requirements:

- At least two site personnel who witnessed the packaging of the waste shall approve the data forms or packaging records attesting to the contents of the waste container.

- The data forms or packaging records shall contain an inventory of waste items in sufficient detail that a trained VE operator can identify the associated waste material parameters.

- The container identification number shall be recorded on the data forms or packaging records.

A description of the waste container contents is recorded on a VE data form. The description clearly identifies all waste material parameters and provides enough information to estimate weights of waste material parameters. In cases where bags are not opened, a brief written description of the contents of the bags shall contain an estimate of the amount of each waste type in the bags. The written records of VE are supplemented with the audio/videotape recording, if applicable.

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Appendix 10 – Visual Examination Requirements for Contact-Handled Transuranic Waste (Continued)

10.4 Data Review and Validation

A testing BDR for data validation and QA purposes is required when VE is used to characterize waste. A BDR (or equivalent), includes data pertaining to VE for up to 20 waste containers or samples.

All measurement data is reviewed and approved by qualified personnel prior to being reported. Reviews meet the requirements of the QAPD. At a minimum, the data is reviewed by an independent technical reviewer and approved by the SPM. This review is performed by an individual other than the data generator who is qualified to have performed the initial work. The independent technical reviewer shall verify, at a minimum, the following information:

- Data generation and reduction were conducted in a technically correct manner in accordance with the methods used (verification of procedure and revision).
- Data were reported in the proper units and correct number of significant figures.
- Calculations have been verified by a valid calculation program, a spot check of verified calculation programs, and/or 100 percent check of all hand calculations.
- Values that are not verifiable to within rounding or significant difference discrepancies must be rectified prior to completion of independent technical review.
- The data have been reviewed for transcription errors.
- The testing QA documentation for BDRs is complete and includes, as applicable, raw data, calculation records and list of containers in the batch. Corrective action will be taken to ensure that all BDRs are complete and include all necessary raw data prior to completion of the independent technical review.
- The container contains no indication that there is liquid in excess of this waste acceptance criteria, no indication of compressed gas, no indication of incompatible wastes, and the physical form matches the Waste Matrix Code.
- The appropriate QAOs have been met.

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Appendix 10 – Visual Examination Requirements for Contact-Handled Transuranic Waste (Continued)

All data must be approved by the SPM. The SPM shall verify, at a minimum, the following information:

- Data generation-level independent technical review, validation, and verification were performed as evidenced by the completed review checklists and appropriate signature release. Batch data review checklists are complete.

- BDRs are complete and data are properly reported (e.g., data are reported in the correct units and with the correct number of significant figures).

- Data meet all applicable Quality Assurance Objectives.

The SPM shall provide a SPM Summary and a Data Validation Summary for each BDR. These reports may be combined and shall consist of a detailed checklist documenting that the batch has been adequately reviewed and that the data meet program objectives.

To ensure that data of known and documented quality are generated, each participating measurement facility shall implement a documented facility QA program. Facility QA programs shall specify qualitative and quantitative acceptance criteria for the QC checks of this program, and corrective actions to be taken when these criteria are not satisfied. Only appropriately trained and qualified personnel shall be allowed to perform data validation/review.

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CCP-PO-005

Revision 24

CCP
Conduct of Operations

EFFECTIVE DATE: 02/11/2014

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
3	02/14/2002	Revised Section 15, updated referencing procedures.
4	07/12/2002	Minor changes to Sections 4.7.1, 4.7.2, and 17.7; a complete rewrite of Section 15; a minor revision to Attachment 1; Added Attachment 2, 3, 4, 5, 6, and 7.
5	08/29/2002	Modified last sentence of step 4.1. Added step 6.2, Rewriting of Section 12.0; Clarification to step 15.2.4 and 17.7, Rewriting of step 15.2.5 and 15.3.4. Addition of Operational Logbooks to Section 20.0. Corrections to Attachment 3, 4, 6 and 7. Replaced Attachment 1.
6	09/12/2002	Revised the definition of a logbook in Section 12.1 based on comments from the ANLE Certification Audit.
7	09/30/2002	Addition to Attachment 2, 3, 4, 5, 6, & 7.
8	12/09/2002	Revised Attachment 3 and 7
9	03/26/2003	Added to Section 12.0, Changes to Attachment 5, 6 and 7
10	07/17/2003	Added Hanford, LANL and LLNL to required reading. Separated electronically fillable form and updated references in procedure.
11	12/08/2003	Updated Sections 2.0, 6.0, 12.0, 15.0, 16.0 and 18.0 for clarification. Deleted references to E-QA, Updated Attachment 8 and added additional records to 20.0.
12	02/25/2005	Change to Section 4.1 and 4.4. Changes to all Attachments. Incorporated changes per OSR Project.
13	03/07/2005	Minor revision to add signature line to Attachment 1. Signature line was inadvertently left out during last revision.
14	02/28/2006	Revised to include a new Section 6.3, Communication of Employee Concerns.
15	07/19/2006	Revised to incorporate the automation of the required reading program and to include the Remote-Handled Program.

RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
16	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR).
17	03/04/2008	Revised to updated title of Section 14 to match DOE Order 5480.19 and to address the Corrective Action Report, ORNL-CCP-CH-RTR-001CR resulting from the CCP Oak Ridge National Laboratories Project Environmental Protection Agency Inspection (EPA-ORNL-CCP-CH-11.07-8).
18	10/30/2008	Revised in response to Department of Energy (DOE) Carlsbad Field Office (CBFO) Corrective Action Report (CAR)-08-023. Also, revised Section 16.2 to separate the Required Reading matrices in Appendix A from CCP-PO-005. They will be maintained by CCP Training in conjunction with responsible management, and the current versions will be posted on the CCP ftp site.
19	10/30/2008	Minor revision to Section 13.0 to clarify that the CCP Transportation personnel perform the independent verification of loading instead of the CCP Transportation Certification Official.
20	07/08/2009	Revised in response to recommendation from the Expert Review Team assessment of Central Characterization Project (CCP) Idaho National Laboratory (INL) Operations.
21	05/26/2010	Revised in response to Corrective Action Report (CAR)-CCP-0012-09. Also moved the controls for Lessons Learned to Section 6.2, and changed the scope of Section 13.0 to address operational logbooks exclusively.
22	06/14/2011	Revised to add detail to Section 6.0 and Section 7.0, and make minor editorial corrections throughout

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
23	02/18/2013	Updated to reflect DOE Order 422.1 throughout. Added language in Sections 17.2 and 17.5 regarding pagination of printed Standing Orders and revised text regarding incorporating Standing Orders into procedures. Revised Section 17.5, and Attachments 5, 6, and 7 in response to CBFO CAR 13-006.
24	02/11/2014	Revised in response to Carlsbad Field Office (CBFO) CAR 14-006 and Standing Order CCP-SO-108. Section 4.1 was clarified regarding Vendor Project Managers (VPMs) responsibility to verify appointment of Visual Examination Experts (VEEs) and a bullet was added to Section 7.2 that describes qualified personnel countersigning characterization results prepared by a trainee.

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1.0 PURPOSE

The purpose of this document is to provide specific guidance for implementation of the Conduct of Operations into Central Characterization Program (CCP) activities. This document allows the user to reference implementing documents and procedures applicable to the CCP.

1.1 Scope

The scope of this document is to assemble the good operating practices by which personnel in CCP organizations, including subcontractors, are expected to perform. The practices in this document supplement other instructions provided in CCP documents.

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2.0 REQUIREMENTS

2.1 References

Referenced Documents

- U.S. Department of Energy (DOE) Order 422.1, *Conduct of Operations*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-QP-008, *CCP Records Management*
- CCP-QP-010, *CCP Document Preparation, Approval, and Control*
- CCP-QP-022, *CCP Software Quality Assurance Plan*
- CCP-TP-140, *CCP Equipment Maintenance*

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3.0 RESPONSIBILITIES

Overall responsibilities and organizational interfaces are described in CCP-PO-002, *CCP Transuranic Waste Certification Plan*.

Memorandum of Understanding (MOU)/Agreement, Statements of Work (SOW), and/or Site Interface Documents specify Host site responsibilities, plans, and procedures.

The SOW outlines Host site's responsibilities as they apply to the CCP activities conducted at the Host site.

4.0 SHIFT ROUTINES AND OPERATING PRACTICES

4.1 Status Practices

CCP operations will be in accordance with approved procedures and will be performed by qualified personnel. The Vendor Project Manager (VPM) will verify daily that personnel are qualified to perform their assigned duties by reviewing the current List of Qualified Individuals (LOQI). Whenever visual examination (VE) is to be performed, the VPM verification will include a check that a trained Visual Examination Expert (VEE) is listed on the LOQI to support the work and that the VEE has been appointed to the facility where the VE is to be performed. The Transportation Certification Official (TCO) will verify that mobile loading unit personnel are trained and qualified to perform transuranic (TRU) waste packaging and loading operations, by checking the current LOQI prior to commencement of work activities. The TCO will also verify that Host site personnel are trained and qualified for transportation-related activities by checking the current LOQI. When the TCO is not available, the LOQI will be checked by the VPM or a designated individual assigned by the operations manager.

The VPM shall conduct a pre-shift meeting, as required in the Site Interface Documents, if the generator site is not working multiple shifts. (Section 14.5 of this document shall be followed if working multiple shifts). This meeting may be held separately or in conjunction with Host site pre-shift meetings. Pre-shift meetings may be tailored to fit the operation, as required by the VPM, but should address the following as a minimum:

- Adherence to established safety requirements
- Plans and priorities for the shift
- Changes in facility conditions or site access requirements
- Status of equipment
- Maintenance activities and special evolutions
- Visitors (i.e., anyone requiring an escort) expected during the shift
- Waste stream(s) expected to be introduced for characterization
- New or revised procedures approved since the last day of operations

- New or revised Acceptable Knowledge (AK) Summary Reports approved since the last day of operations

The term Lead Operator (LO) is used to identify the person responsible to assist the VPM in completion of his duties associated with a specific piece or set of equipment. This individual will possess technical expertise for the specific equipment involved and will assist the VPM with duties such as ensuring assigned personnel are fit for duty, maintenance and review of equipment logbooks, preparation and review of standing orders, and preparation of operator aids. This position is assigned at the discretion of the VPM. The VPM shall notify affected personnel of any such assignments. This notification may be provided verbally during the daily Plan-of-the-Day (POD) meeting.

The VPM will be notified promptly of all changes in facility status, abnormalities, and difficulties or unexpected situations encountered when performing assigned tasks. The VPM shall promptly notify the CCP Project Manager of events impacting waste characterization activities.

When an unexpected event or series of events occurs or when the cause and consequences cannot be readily determined, the situation will be investigated and appropriate action taken before resuming operation.

An initial entry will be made in applicable logs stating the initiating event. Log entries will be clear, complete, and concise.

An on-shift assessment meeting will be held as soon as possible after an event to determine pertinent information relating to the event. If necessary, the shift will be held over to obtain this information.

Evidence regarding the cause of a problem will be safeguarded as sensitive information.

The LO and operators are responsible and accountable for the operations conducted during their shift. They will be cognizant of the status of all equipment and records of respective work areas.

All CCP personnel have the right and responsibility to STOP WORK. STOP WORK may be invoked any time anyone feels the safety, quality, or compliance of any CCP operation or maintenance activity has been or might be compromised. This is an individual right and responsibility and does not require the approval of supervision to invoke. STOP WORK is invoked without fear of reprisal in any form in the CCP program. The VPM will be immediately notified when STOP WORK authority has been invoked. The VPM will obtain the help of any resources necessary to respond to and correct the condition requiring the implementation of a STOP WORK order. Work may resume when the issue is resolved, the

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worker invoking STOP WORK is notified of the resolution, and authorization is given by the VPM to lift the STOP WORK.

STOP WORK shall **NOT** be ignored when invoked.

4.2 Safety Practices

Personnel assigned to CCP operations shall present and maintain themselves in a condition fit for duty.

The VPM or LO shall ensure that no employee is permitted to assume their duties and responsibilities, in support of CCP operations, if it is obvious that the person is not alert, coherent, or capable of performing the requirements of the position.

Pre-job briefings will be conducted by the VPM or Designee before evolutions that are new or complex in nature, or where proficiency at the task is questioned. This will ensure the evolutions will be conducted properly and safely.

In all situations, employees will place personnel safety, facility safety, and environmental safety above CCP production. Work that violates prescribed safe work practices must be stopped and the situation immediately reported to the Host site manager and the VPM.

Planning for safety is the responsibility of all employees. Strict compliance with applicable safety standards and/or precautions will be maintained at all times. Safety precautions may be posted or be described, or referenced in job-specific procedures or work instructions.

Personnel will not climb or walk on components because this could result in personnel injury or damage to equipment. Applicable site procedures shall discuss the proper use of man-lifts, temporary scaffolding, and ladders.

Personnel will exercise appropriate precautions when entering or working in or around energized panels or equipment. Applicable site procedures shall discuss specific requirements for working around energized equipment.

Doors that serve as fire protection, security, and ventilation barriers will not be propped open for the passage of energized electrical leads or pressurized hoses, or for any other reason without the Host site manager's approval.

4.3 Inspection Tours

Operators will conduct a thorough tour of all areas within their responsibility at least once per shift or more often if directed by CCP management. The initial tour will normally be made early in the shift before the operator attends to other duties. Equipment will be inspected during area tours to ensure that the equipment is operating properly and, for standby equipment, to verify that it is fully operable (i.e., able to perform its intended function). Operators will operate the facility in a safe and deliberate manner, to ensure the following items have been evaluated during their tours:

Housekeeping

Areas around the equipment, At-the-Controls, and egress routes are clear/free of:

- Slip, trip, fall hazards (i.e., electrical cords, ice, or water).
- Combustible materials or trash.
- Tools or materials lying adrift.
- Excessive dirt, dust, or debris.

General Safety

- Communication equipment is operational.
- Equipment guards, bumpers, external optical/limit switches, and signs are in place and not degraded/damaged.
- Operator Personal Protective Equipment (PPE) is available, worn, or in use (i.e., safety vests, safety shoes, leather gloves).
- Barriers are intact, in place, with applicable postings (i.e., at-the-controls).
- Dosimetry and security badges are properly worn and clearly visible.
- Operators have signed the current Radiological Work Permit (RWP) or work document and understand the applicable radiological postings in the area.
- Emergency equipment in the area is accessible and not damaged (i.e., eye wash stations, spill kits, portable extinguishers).

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- Chemicals and lubricants not in use are stored in the local chemical/flammable storage locker(s).

- Equipment safety interlocks are checked and documented appropriately.

CCP management will designate specific areas to be inspected more frequently due to such considerations as areas of high personnel activity, or where known problems exist (e.g., adverse weather conditions). They may also designate areas to be inspected less frequently due to existing personnel safety concerns. The CCP VPM will conduct a thorough tour of all areas within their responsibility to evaluate the attributes of the Operator's Inspection Tours and the following:

General Safety

- Status board(s) are current/up-to-date.

- Standing orders/operator aids are properly posted and clearly visible to the operator.

- Operators are alert and attentive at the equipment.

- Waste Handling Equipment/waste containers do not block or restrict egress routes.

- Radiological Warning Devices are operating.

Procedural Compliance

- Operating procedures are at the equipment, current, in good repair, and open to the step(s) being performed.

- Equipment logbooks are in use, entries are legible and adequate.

- Steps performed from the procedure were observed to have been performed in sequence, verbatim, and were documented appropriately, if required.

4.4 Personnel Protection

CCP personnel shall adhere to the requirements of the Host site Industrial Safety Program. Proper hearing, vision, head, foot, and respiratory protection shall be worn in designated areas to reduce the potential for injury. Clothing will not be so tight as to restrict movement or so loose as to get caught in moving machinery. This information is specified within CCP operations procedures and posted appropriately throughout the area(s) where CCP activities will occur.

Emphasis will be placed on determining the adverse factors that contribute to personnel exposures and minimizing those factors to keep exposures within as low as reasonably achievable (ALARA) specifications.

4.5 Response to Indications

A fundamental principle of safe facility operation is to believe your indications. CCP personnel will:

- Assume that the alarm condition, gauge reading, meter reading, analytical result, etc., is accurate, unless proven otherwise.
- Take appropriate response action.

The results of the action will be reported to the appropriate facility personnel.

4.6 Resetting Protective Devices

The VPM is the only person who can authorize resetting tripped devices associated with the CCP-provided equipment downstream of the Host site utility interfaces.

The Host site manager is the only person who can authorize resetting tripped devices supporting CCP upstream of the Host site utility interfaces.

When a protective device trips, a visual inspection of the device and associated equipment will be performed prior to resetting the device.

4.7 Authority to Operate Equipment

4.7.1 The following requirements apply to the Host site, its equipment, and the interface with CCP characterization activities:

- The Host site manager is in charge of plant operations 24-hours-a-day. This judgment may be overruled only by the Host site manager's chain-of-command.

- The Host site manager's operational judgment will be considered definitive. This judgment may be overruled only by the Host site manager's chain-of-command.

- The Host site manager is responsible for maintaining the plant in a safe configuration during normal and abnormal situations.

- The Host site manager approves of operations and/or maintenance of plant equipment and systems.

4.7.2 The following requirements apply to the operation of CCP characterization activities:

The VPM will obtain approval from the Host site manager before performance of operations and maintenance of CCP equipment and systems.

The VPM's operational judgment will be considered definitive for the safe operation of CCP characterization activities. This judgment can only be overruled by the following:

- The Host site manager in matters of overall safe operation of the Host site.

- The CCP Manager responsible for Operations.

- The CCP Manager.

- Nuclear Waste Partnership (NWP) Senior Management, or designees, directly responsible for CCP operations.

CCP operations will be performed only by properly trained and qualified personnel as verified from the LOQI by the VPM.

Upon discovery of an emergency or non-routine event, CCP personnel shall:

- Take immediate actions to ensure their own safety.

- If appropriate, warn other employees who may be affected.

- Report the event to the VPM and the Host site manager as soon as possible.

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Operators will establish plant safety conditions over facility production conditions for all off-normal and emergency facility situations.

4.8 Shift Operating Bases

Each operating base will be equipped with appropriate office equipment for the operator to maintain necessary procedures and references to conduct administrative duties.

Necessary communication equipment will be available at each operating base.

4.9 Potentially Distractive Written Material and Devices

Some devices, such as radios, are allowed in administrative work areas. Non-job-related written materials may be present in the administrative work areas, but personnel are not allowed to read these during work hours.

Written material that does not relate to operations and entertainment devices (e.g., radios, televisions, tape players, and computer games) are prohibited for use by on-duty operating personnel.

Non-work-related written materials and entertainment devices will not be brought to operator workstations.

Cell phones may be used by on-duty operating personnel to supplement other means of two-way communications as long as no Host site cell phone restrictions exist and no additional hazards are introduced by cell phone usage. On-duty operators shall not use text messaging for personal business or play games on cell phones. The VPM may authorize the use of text messaging as a means of communicating business related information within a project. Personal phone calls shall be minimized by on-duty operators.

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5.0 CONTROL AREA ACTIVITIES

5.1 Control Area Access

Control Areas, when required, shall be established by the VPM.

Access to Control Areas will be limited to persons who need to be in Control Areas on official business.

The Control Area Operator will grant access to Control Areas. The one exception to this requirement is the on-duty VPM. The on-duty VPM may enter a Control Area without permission. The VPM will clearly announce when entering and when leaving the Control Area.

The "at-the-controls" area of Control Areas will be clearly identified with a boundary understood by all persons who are granted access to the area.

Only those activities essential to supporting operations and activities authorized by management will be conducted in Control Areas.

5.2 Monitoring the Main Control Panels

The Control Area Operators will be alert and attentive to control panel indications and alarms.

The Control Area Operators will frequently and closely monitor control panel indications to detect problem situations early.

The Control Area Operators will take prompt action to determine the cause and to correct abnormalities.

5.3 Control Operator Ancillary Duties

Duties assigned to operators should not interfere with their ability to monitor parameters.

If an operator is involved in administrative tasks, other qualified operators will assume responsibility to monitor the process.

The administrative work load of operators responsible for monitoring and operating Control Areas will be minimized.

5.4 Operation of Control Area Equipment

Only persons specifically authorized by CCP qualification programs will operate Control Area equipment.

Trainees, when allowed to operate Control Area equipment, will be supervised and controlled properly by the operator who would normally perform the evolutions.

6.0 COMMUNICATIONS

6.1 Emergency Communications Systems

When personnel are working in areas where emergency notifications cannot be heard, alternate methods for alerting these persons will be used:

- The Host site manager and the VPM will provide the appropriate notification methods for their responsible areas.

- Operators will ask for clarification of any communication that is not understood. Repeat-backs are to be used when determined to be necessary by supervision.

6.2 Lessons Learned

Lessons Learned are developed based on CCP's operating experience, or operating experience information provided by the DOE or other external sources, to ensure ongoing improvement of safety and reliability. Cognizant CCP managers will review Lessons Learned materials or events and determine the necessity to issue a lessons learned. The cognizant manager or designee will develop CCP Lessons Learned.

Lessons Learned will be developed using Attachment 7, Lesson Learned Form. The number for the Lessons Learned will be obtained from the Lesson Learned Log maintained by CCP Training. Once Attachment 7 is complete, the preparer will sign and forward Attachment 7 to the cognizant manager for review and approval. The approved Attachment 7 may be routed to the target audience as supplemental required reading or be provided as a briefing to the target audience. The electronic read-and-sign process administered by CCP Training is the preferred method for distributing Lessons Learned as supplemental required reading.

The approved Attachment 7 will be posted to the Lessons Learned folder on the CCP file transfer protocol (sftp) site. The record copy will be submitted to the CCP Records program for retention. Lessons Learned obtained from other DOE facilities or the DOE National Lessons Learned Database may be issued by obtaining a Lessons Learned number from CCP Training and determining a target audience. A copy of all CCP Lessons Learned will be provided by the cognizant manager to the NWP Lessons Learned Coordinator.

The NWP Lessons Learned Coordinator will ensure that NWP Lessons Learned are posted on the WIPP Lessons Learned Alerts Database on the

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WIPPNet, making them available for review by CCP personnel as applicable.

6.3 Communication of Employee Concerns

6.3.1 When personnel wish to report an employee concern, they should follow existing processes (i.e., Open Door Policy, discussion with management). Documented employee concerns will be tracked in accordance with existing processes.

NOTE

This process DOES **NOT** take the place of STOP WORK for immediate safety issues. This process DOES **NOT** replace any other employee concern process.

6.3.2 When personnel identify an abnormal condition at CCP Host sites, formal notification should be made to the VPM:

- Notification can be made via telephone but will be followed with formal notification.
- Formal notification can be an e-mail, fax, or memorandum.
- Notification is to include the name of the person identifying the concern or abnormal condition and whether the issue is safety related.
- A copy of the notification shall be sent to the secretary for the CCP Project Manager by the VPM to allow tracking of issues in the NWP Commitment Tracking System (CTS).

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7.0 ON-SHIFT TRAINING

7.1 Adherence to Training Programs

Qualification training is based on training identified in CCP-QP-002, *CCP Training and Qualification Plan*, or CCP-QP-040, *Support Training,* depending on the position requiring qualification training.

7.2 Supervision and Control of Trainees

CCP personnel will receive indoctrination, training, and qualification necessary to achieve initial proficiency; maintain proficiency; and adapt to changes in technology, methods, job responsibilities, and quality implementing procedures, prior to performing operations.

CCP On-the-Job-Training (OJT) Instructors will be specifically designated in writing. Selection of OJT Instructors will take into account communication skills, technical knowledge, and ability to instruct trainees properly using hands-on experience.

Trainees will not be allowed to perform any tasks within their qualification areas unsupervised. The maximum number of trainees allowed during operations and the maximum number of trainees per Subject Matter Expert (SME)/qualified operator will be established by the VPM. The following requirements shall be met prior to allowing a trainee into the characterization activity to begin qualification:

- The LO shall provide the VPM with at least one week of advance notice prior to a trainee arriving at a Host site.

- The VPM shall verify that the trainee has the PPE required by the Health and Safety Plan, Automated Hazards Analysis (AHA), Job Hazard Analysis (JHA), or other requirements document prior to allowing the trainee to proceed to the characterization activity to begin qualifications. As a minimum, this will include steel-toed or composite-toed safety shoes/boots.

The trainee has the following responsibilities during the time it takes to complete the qualification program and is accountable for these responsibilities:

- The trainee shall ensure that the PPE required to work in and transit to/from the characterization activity is available and worn at all times when under instruction.

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- The trainee shall not leave the immediate supervised area of the OJT Instructor or other qualified operator while working on qualifications.

- The trainee shall not perform any task in the work area without the direct supervision of the OJT Instructor or a qualified operator until qualifications are complete and the trainee is listed on the LOQI.

The OJT Instructor or qualified operator has the following responsibilities any time a trainee is assigned to complete a qualification program and is accountable for these responsibilities.

- The OJT Instructor or qualified operator shall verify that the trainee has the required PPE to work in or around the characterization activity prior to transiting to the characterization activity.

- The OJT Instructor or qualified operator shall ensure that the trainee is supervised at all times. The OJT Instructor or qualified operator must be able to stop the trainee from performing tasks incorrectly or unsafely at all times.

- The qualified supervising person will countersign any characterization results that were prepared by a trainee as part of the trainee's qualification for the position, along with an explanation for the two signatures.

Any ongoing training activities involving trainees will be suspended during unanticipated or abnormal events.

The LO and the VPM will monitor the trainee qualification to ensure that the above requirements are met.

7.3 Operator Qualification Program Approval

The CCP Cognizant Manager (CM) will ensure that the requirements of the training program are implemented in accordance with CCP-QP-002 and CCP-QP-040.

7.4 Training Documentation

CCP-QP-002 provides documentation guidance for qualification programs.

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8.0 INVESTIGATION OF ABNORMAL EVENTS, CONDITIONS, AND TRENDS

All requirements of this section are covered by applicable Host site procedures.

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9.0 NOTIFICATIONS

CCP personnel shall immediately notify CCP Management (PM/VPM for field operations) of any abnormal event (e.g., emergency event, injury/illness, damage to equipment).

All Host site notification requirements are covered by applicable Host site procedures.

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10.0 CONTROL OF EQUIPMENT AND SYSTEM STATUS

The Host site manager is tasked with maintaining a broad overview of operations.

10.1 Status Change Authorization and Reporting

Responsibility for maintaining proper configuration and authorizing changes of Host site equipment and systems rests with the Host site manager.

Responsibility for maintaining proper configuration, and authorizing changes of CCP equipment, rests with the VPM, as modified by specific site interface documents.

All maintenance activities conducted on CCP equipment shall be authorized under the Host site work control program. The VPM shall be aware of and approve any maintenance activities conducted by Host site maintenance personnel on CCP equipment. The VPM shall evaluate the impacts of maintenance conducted by Host site maintenance personnel and provide a briefing to affected CCP personnel prior to the start of the maintenance activity.

A specific pre-job briefing shall be conducted by the VPM for any maintenance on CCP equipment conducted by CCP personnel or technical representatives from CCP subcontractors. The Host site prescribed pre-job briefing format will be followed where it is required by the work control system. In any case, the briefing shall include technical, radiological safety, and industrial safety aspects of the work and address the following as a minimum:

- The scope of the approved work document.
- The hazards identified in the approved work document, AHA, JHA, and RWP (or equivalent documentation).
- The actions taken to mitigate the hazards.
- The control of subcontractor technical personnel and limitations on their performance of work within the approved scope.
- Responsibilities of support personnel (i.e., Industrial Safety Engineer, Radiological Controls Technician, etc).
- Response to alarm or unexpected conditions.

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All CCP and support personnel involved in the maintenance activity, including vendor technical representatives, shall attend the pre-job briefing. The briefing, including a list of all personnel attending the briefing, shall be documented in the applicable Operational Logbook (OLB).

CCP personnel will monitor the equipment and systems of their assigned area frequently, especially after starting components, to assure proper operation.

When changing the operational status of equipment/systems and anticipated results are not received, the operator will:

- STOP WORK and inform the LO and the VPM.
- Take necessary action to restore the equipment/system to a proper operating status or place it in a safe operating condition.
- Place the equipment or system in a safe condition and obtain direction from the LO and the VPM before proceeding if an unexpected result occurs while performing an operating procedure.

10.2 Equipment Locking and Tagging

All requirements of this section are covered by applicable Host site procedures.

10.3 Operational Limits Compliance

Operational limits will be addressed in CCP Technical Procedures, as required.

10.4 Equipment Deficiency Identification and Documentation

All requirements of this section are covered by applicable Host site procedures.

10.5 Equipment Post-Maintenance Testing and Return to Service

Requirements of this section are addressed in CCP-TP-140, *CCP Equipment Maintenance*, where implemented, or are covered by applicable Host site procedures.

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11.0 LOCKOUT AND TAGOUTS

All requirements of this section are covered by applicable Host site procedures.

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12.0 INDEPENDENT VERIFICATION

All requirements of this section are covered by applicable Host site procedures.

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13.0 LOG KEEPING

OLBs shall be used at each CCP operation which operates complex equipment with nuclear material (e.g., Nondestructive Assay [NDA], Nondestructive Examination [NDE], Gas Generation Testing [GGT]). The OLB provides an accurate narrative log of the history and status of the facility operation. Log keeping will not take precedence over the safe operation of the facility. Completed OLBs will be managed in accordance with CCP-QP-008*, CCP Records Management.*

13.1 Logbook

The logbook shall be a hard bound book. The OLB is considered a Quality Assurance (QA) record. Control numbers are issued by the CCP Records Center. For record purposes, an OLB shall only be in service for one calendar year or until the logbook is full (if filled within calendar year timeframe). The primary users of the OLB will be the equipment operators. A new logbook shall be issued to characterization activities on the first working day following the first of January each year or the first working day after notified the current OLB is full. The full logbook or logbook from the previous year shall be closed out and turned in to the CCP Facility Records Custodian.

When not in use, the OLB shall be stored in a locked fire-rated cabinet.

13.2 Logbook Entries

Information will be recorded in a timely fashion to prevent incomplete or inaccurate entries. The first page shall identify the logbook as an OLB, control number, calendar year, description of the facility/equipment, including location (e.g., Idaho National Laboratory [INL], Savannah River Site [SRS]), and the printed name and initials of the personnel who will be making entries. Each page shall be dated (a new page for each date) and each entry shall include the person's initials and time of day.

Daily entries will be made in a manner that can be easily read and understood and contain as much significant information as possible to make event and history reconstruction possible. Log entries will be made in indelible, reproducible ink (black recommended). At the end of each calendar day, a single diagonal line will be drawn through the remaining blank lines on the page in use and the initials and date entered by the diagonal line to indicate no further entries for that day. At the end of the calendar year, a single diagonal line shall be drawn through the first blank page after the last page of OLB entries. No further entries this year, initial, and date shall be entered by the diagonal line.

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Minimum daily entries, when equipment is operational, shall include the following:

- Safety walk-down of facility
- Facility mode conditions (e.g., operational or shutdown), if applicable
- Safety or security issues, if any
- Verification that operating procedures are current
- Verification that software in use is approved and current
- Entries required by CCP technical procedures

Other daily entries could include information such as:

- Equipment startup and shut down times
- Equipment deficiencies
- Lockout/tagout information
- Visitors
- Production throughput
- Performed maintenance activities
- Reference to the approved procedure describing the work, including control number and revision
- When multiple procedures are associated with the work (e.g., documenting calibration data), a statement of the objectives and a description of the work to be performed may be added.

13.3 Logbook Corrections

NOTE

OLBs shall **NOT** be corrected with correction fluid or correction tape.

Corrections to logbook entries will be made by placing a single line through the incorrect entry without obliterating the prior entry and writing the correct entry in a nearby available space. Corrections will be initialed and dated.

13.4 Late Entries

Entries made in a logbook out of chronological sequence are designated as late entries. Late entries are made in the logbook by documenting the time the late entry is made, entering (late entry), documenting the time the entry should have been made, documenting the entry, and initialing the entry.

IF the day the entry should have been made has been closed out,
THEN document the time and the date the entry should have been made.

13.5 Logbook Reviews

The VPM will review, sign, and date the logbook each operational week at a minimum. The reviews validate the entries are accurate and adequate.

The Transportation Certification Official (TCO) will review, sign, and date the Mobile Loading Operational logbook each operational week at a minimum. Should the TCO not be available to review the Mobile Loading Operational Logbook, the VPM may perform and document the review.

For Small Quantity Sites, logbooks will be reviewed by the VPM or a person designated by the manager for operations within one week of the completion of the process or activity for which the logbook was used.

13.6 Annual Reconciliation of Operational Logbooks

CCP Records

13.6.1 At the end of each calendar year, reconcile assigned OLB numbers with the OLBs submitted to CCP Records, as follows:

[A] Verify that an OLB has been submitted for each OLB number assigned during the previous year.

[B] Resolve any discrepancies with the responsible VPM.

Following receipt of all required OLBs and resolution of discrepancies, file an Operational Logbook Annual Reconciliation Report documenting the reconciliation effort and listing the OLBs that were verified.

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14.0 TURNOVER AND ASSUMPTION OF RESPONSIBILITIES

NOTE

This section is not applicable to CCP operations working only a normal day shift schedule. Turnover checklists will not be utilized unless the CCP operations extend to multiple shifts. Turnover checklists are otherwise not applicable to CCP personnel.

14.1 Turnover Checklists

Supervisory positions routinely conducting shift turnovers will use a turnover checklist for the process. These checklists will provide vital information about the site operational status. The managerial checklists will also require documenting the review of the equipment logbook.

Equipment logbooks, or other formal documentation, will be used to provide on-coming operators with an understanding of the operating status of their equipment.

A review of logbooks will be performed by on-coming shift personnel. Initials by watch station personnel after review of logbooks will signify review completion.

14.2 Document Review

On-coming personnel and CCP management will review documents specified on their turnover checklists before assuming responsibility for their shift position.

This document review will be as intensive as necessary for the on-coming personnel to understand important history, present status of the facility, and planned events.

Logbook entries for the previous 24-hour period, or since the relieving operator's last shift, will be reviewed.

Logbooks will be reviewed so that personnel and their management are familiar with all active entries, which emphasize changes that have occurred since the last shift.

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14.3 Control Panel Walkdown

On-coming managers will walkdown main equipment areas during, or shortly after, shift turnover.

Control Area on-coming and off-going personnel will walkdown their main control panel(s) together.

14.4 Discussion and Exchange of Responsibility

The off-going manager or operator will explain all items noted on the turnover checklist at a time when facility conditions are stable.

When facility conditions are changing or unusually complicated conditions exist, watch relief will not occur until directed by the VPM.

Turnover communications will include the on-coming operator or management asking any pertinent questions.

Each unusual reading, significant log entry, or out-of-specification reading will be discussed, and reasons for any questionable entries resolved, before watch relief.

After reviewing the logs, the on-coming and off-going watch station personnel will discuss the current watch station status, using the turnover checklist (as applicable), noting the following (as appropriate):

- Work order/maintenance work in progress
- Work order/maintenance retest in progress or waiting retest
- Reason for equipment being out-of-commission
- Abnormal equipment conditions, system lineups, or alarm status
- Evolutions and tests in progress
- Potential problem areas.

On-coming operator or manager assumption of responsibility will be concluded with an entry into a logbook or operating log, as appropriate for the shift position.

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14.5 Shift Crew Briefing

A crew briefing will be conducted by the VPM.

The crew shift briefing will include a review of facility and equipment status, problems with equipment, and evolutions in progress or planned during the shift.

Shift operators and personnel from support groups will attend shift briefings when their activities can directly affect facility operations.

Shift briefings will result in operating and support personnel understanding shift priorities and objectives.

14.6 Relief Occurring During the Shift

Shift relief occurring during the shift will result in a turnover that ensures that the on-coming person is at least as knowledgeable of the conditions as would have occurred had a complete shift turnover process been conducted.

Shift positions will not leave their assigned work areas without a formal relief by another qualified person if equipment is in operation.

The LO in charge may secure shift positions manned on a part-time basis.

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15.0 CONTROL OF INTERRELATED PROCESSES

All requirements of this section are covered by applicable Host site procedures.

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16.0 REQUIRED READING

The Host site prescribed Conduct Operations required reading program will be followed where it is part of their Safety Basis (SB) or Safety Management Program (SMP), or when otherwise required by a work control system. Required reading includes need-to-know corporate information, safety bulletins, lessons learned, or information that will add value to the operations but are not a prerequisite for indoctrination or performing work.

Required reading for personnel will be assigned by the cognizant manager. The cognizant manager will provide the reading material to assigned personnel. The cognizant manager will issue Attachment 8, CCP Required Reading Documentation with the required reading.

The completed Attachment 8 will be returned to the cognizant manager. Once the cognizant manager verifies and validates completion of Attachment 8, it will be forwarded to CCP Training in accordance with CCP-QP-008.

As an alternative to the use of Attachment 8, the electronic read-and-sign process administered by CCP Training may be used to distribute and document required reading. Although either the Attachment 8 or the electronic process may be used, the electronic process is preferred.

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17.0 TIMELY INSTRUCTIONS/ORDERS

17.1 Purpose of Timely Instructions/Orders

Timely orders (normally technical or general information or direction), hereafter called standing orders, when used, provide a means to communicate direction to operators. This direction may be short-term or long-term depending on the situation as evaluated by the cognizant VPM or CCP Managers in Carlsbad. Information, such as special operations, data collection, plotting process parameters, special reviews, or other similar matters, may be included in standing orders. Standing orders shall not be used to deviate from approved procedures. However, standing orders may supplement approved procedures with new or additional requirements.

Standing orders may be technical or non-technical. Technical standing orders pertain to direction or clarification given to the physical operation of a characterization unit or activity. Non-technical standing orders pertain to direction or clarification given to data review, certification activities, or other non-operational reasons.

17.2 Writing Standing Orders

Standing orders will be written and issued at the appropriate level in the CCP Organization. Standing orders specific to field activity direction at a site or amplification of technical procedures at a specific site (i.e., amplification or change to a Host site technical safety requirement) shall be known as site-specific standing orders. Standing orders affecting Project Office documents or activities, QA documents, or CCP-wide review of characterization data at the data generation level, or waste certification shall be known as Project Office standing orders. The Project Office may request or direct that a site-specific standing order be written. Any VPM may request that a Project Office standing order be written.

Standing orders shall be written by the person having final approval authority or by a person designated by that authority. Site-specific standing orders shall be written using Attachment 5, Site-Specific Standing Order Format. Project Office standing orders shall be written using Attachment 6, Project Office Standing Order Format. Standing orders that when printed are more than one page will contain page X of XY at the bottom of each page and capture the standing order number and revision number at the top of each page.

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17.3 Review and Approval of Standing Orders

Site-specific standing orders will be approved by the lead VPM. Site-specific standing orders that provide additional technical requirements to a characterization activity or technical procedure or clarify the implementation of existing requirements will be reviewed by the affected LO(s). Site-specific standing orders that are written for the implementation of new technical safety requirements or industrial safety requirements, or change the implementation of existing requirements, will be reviewed by the Host site technical representative (STR) and Facility Safety Representative (FSR) as required in the site-specific Interface Document. Site-specific standing orders that provide direction or additional guidance concerning implementation of compliance requirements will be reviewed by a currently qualified SPM. The signature blocks on Attachment 5 may be modified as necessary to document appropriate reviewers. When the point of contact information is no longer current for a site specific standing order, the point of contact will be the site VPM, or CCP Operations Manager.

Project Office standing orders will be approved by the cognizant Project Office manager in Carlsbad. In specific cases, Project Office standing orders may be approved by a Field Project Manager if assigned the responsibility for a Project Office document. Project Office standing orders that augment or clarify existing procedures concerning the implementation of compliance requirements will be reviewed by a currently qualified SPM. The signature blocks on Attachment 6 may be modified as necessary to document appropriate reviewers. When the point of contact information is no longer current for a project office standing order, the point of contact will be the SPM, or CCP Certification Manager.

17.4 Controlling Standing Orders

Each approved standing order shall be assigned a unique number, including a designator for the issuing site (i.e., Oak Ridge National Laboratory [ORNL], SRS, Los Alamos National Laboratory [LANL], INL, etc.). Project Office standing orders will not have a site designator in the unique number. Standing orders shall have a revision number. Standing orders may be revised as conditions warrant. Standing orders shall be entered in Attachment 1, Standing Order Index, when approved. Each authority approving standing orders shall maintain a folder/binder listing all approved, superseded, or cancelled standing orders. This folder/binder shall be kept in an approved records safe when not in use. Standing orders DO **NOT** need to be revised due to a revision of CCP-PO-005, *CCP Conduct of Operations*.

Affected CCP personnel will be briefed on new or revised standing orders. This may be performed during the daily pre-operations briefing, turnover meeting, or at a briefing session for the affected operators. CCP operators will also be notified when any standing order is cancelled. All standing orders issued by CCP, site-specific or Project Office, shall be provided to CCP Training to post in the Standing Orders Folder on the CCP sftp site.

Site-specific standing orders containing technical direction or clarification shall be provided to the affected characterization activity LO for posting. The LO shall have the standing order posted in close proximity to the area in which the standing order will be used and securely fastened in a manner that will not obscure instruments, indicators, or alarms. LOs may choose to post other standing orders at their discretion.

Any data collected as instructed by a standing order will be dispositioned to records in accordance with CCP-QP-008.

17.5 Reviews of Standing Orders

Standing orders shall be reviewed on a quarterly basis to verify that the standing orders remain necessary and that the technical direction (the "Order" portion) in posted standing orders is still current. Standing orders that remain current and necessary shall not be revised. Standing orders that are not current but are necessary shall be revised and reissued. Standing orders that are no longer necessary shall be cancelled and removed from the field.

Standing orders that supplement existing procedures shall remain in effect for as long as they are needed, or until the language of the standing order has been incorporated into the existing procedure. The quarterly review shall be documented by the approving authority on Attachment 2, Quarterly Standing Order Review. Documentation of this review provides evidence that the remaining standing orders are necessary and that the posted standing orders are current. The completed Attachment 2 shall be filed in the controlled standing order folder/binder.

17.6 Submittal of Standing Order to Records

All site-specific standing orders, Standing Order Index forms, and Quarterly Standing Order Review forms will be submitted to CCP Records in accordance with CCP-QP-008 at the completion of characterization activities at the site.

Project Office standing orders and Quarterly Standing Order Review forms that have been superseded or cancelled will be submitted to CCP Records in accordance with CCP-QP-008. Project Office Standing Order Index forms will be maintained by the Project Office and submitted to CCP

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Records when all standing orders listed on a Standing Order Index form have been superseded or cancelled. They will be submitted in accordance with CCP-QP-008.

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18.0 TECHNICAL PROCEDURES

Technical (operating) procedures are developed, reviewed, and approved to provide appropriate direction to ensure that the facility is operated safely. Approved procedures should be effectively used to support safe operation of the facility.

18.1 Procedure Development

CCP procedures are required to meet the format guidance in CCP-QP-010, *CCP Document Preparation, Approval, and Control*.

18.2 Procedure Content

The uniformity of content is controlled in accordance with CCP-QP-010.

18.3 Procedure Changes and Revisions

Procedure revisions are controlled in accordance with CCP-QP-010.

18.4 Procedure Approval

New or revised procedures are approved in accordance with CCP-QP-010.

18.5 Procedure Review

New or revised procedures are reviewed in accordance with CCP-QP-010.

18.6 Procedure Availability

Procedures are made available to operators through compliance with CCP-QP-010.

18.7 Use of Procedures

Procedures will be adhered to at all times. As the sole exception to this requirement, operators may take whatever action is necessary during emergency conditions to place the facility in a safe condition and to protect equipment, personnel, and public safety without first initiating a procedure change.

Copies of operating procedures printed from the CCP sftp site, Controlled Documents folder, may be used to conduct operations.

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Procedures and fillable forms will be verified current at the beginning of each shift. Procedure revisions will be verified against the current revision of the procedure posted in the Controlled Documents folder on the CCP sftp site. When the CCP sftp site is not accessible, the document may be verified by calling CCP Document Control. An entry will be made in the logbook to document the document number, current revision, effective date, and person contacted when verifying documents with CCP Document Control. Documents verified at the beginning of the shift will be considered current through the remainder of that shift.

For continual shift work (i.e., more than one shift per day), if an evolution is stopped for more than one shift, the operator will re-verify the document is the current revision prior to restarting the evolution.

Numbered procedure steps will be performed in the order written unless specifically stated otherwise.

If, in the opinion of the operator, a procedure cannot be performed as written, the system or component will be placed in a safe condition and CCP management informed so the discrepancy can be corrected. Procedures have been prepared anticipating facility condition. In the event of a situation not covered by an approved procedure, personnel will:

- Minimize risk of personnel injury and personnel exposure to hazards.
- Minimize hazardous material release to the environment.
- Protect facility equipment.
- Protect experimental data.
- Notify the LO and the VPM.

All CCP operations will be conducted with the procedure open and followed step-by-step. The reader/performer method may be used as long as the reader has the procedure open and follows step-by-step, verifying that each action is performed as read. NO other methodology is acceptable for performing operations in CCP.

Only controlled or working (a copy of a controlled copy that has been verified correct) copies of procedures will be used by operators. This ensures that the procedures are up-to-date with all procedure change notices and revisions.

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The VPM will ensure operating staff are aware of revisions to technical procedures impacting applicable CCP equipment at their sites.

The CCP Transportation Manager will ensure that transportation personnel are aware of revisions to procedures impacting the operation of transportation equipment.

18.8 Fillable Forms

Fillable forms, when used properly, are a valuable tool for improving the quality of data. Fillable forms may be produced by CCP Document Services or the end user and must meet the following requirements.

A fillable form must contain a header with the procedure number, revision number, procedure title, effective date, and page number as displayed in the parent procedure.

The attachment number and title from the parent procedure attachment shall be documented immediately following the header.

All data fields from the parent procedure attachment shall be presented on the fillable form in the same order and identically worded.

The data fields should be made to expand to ensure that the data is appropriately captured, as necessary. Data fields should only be limited on expansion to prevent having additional pages created by the expansion of one or more of the fields. The LO or SPM should be contacted for direction when data will not fit onto a one page fillable form.

Signature blocks shall be included on the fillable form when included on the parent procedure attachment.

Fillable forms may include simple calculations (addition or subtraction). However, these calculations must be checked by hand during the review of the data. No complex calculations or operations may be imbedded within a fillable form without being approved in accordance with CCP-QP-022, *CCP Software Quality Assurance Plan*.

Fields in fillable forms must be blank each time the forms are opened. No pre-filled-in data, information, or checks may be present in any data field when these forms are opened.

Fillable forms must be verified current prior to use as discussed in Section 18.7.

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19.0 OPERATOR AIDS

Operator Aids, when used, provide information useful to operators in performing their duties. Operator Aids may be in many forms, such as the latest revision of pages out of procedures, handwritten notes, and information tags. Operator Aids shall be viewed as a convenience to the operator, not administrative/technical requirements and/or direction. Specifically, Operator Aids may supplement approved procedures, but shall not be used in lieu of approved procedures. Operator Aids may be proposed by any CCP personnel. The LO shall review all Operator Aids to verify they meet the criteria identified herein before they are approved by the VPM and posted. The LO will obtain concurrence for an Operator Aid that affects Host site equipment or personnel from the appropriate equipment and/or personnel manager/supervisor prior to VPM approval. The LO review, Host site concurrence, if required, and VPM approval shall be documented on the Operator Aid. The Operator Aids shall be posted in close proximity to the area in which they will be used and securely fastened in a manner that will not obscure instruments, indicators, or alarms. Operator Aids which detail characterization information shall be approved by the process Cognizant Engineer and the site SPM.

A Controlled Operator Aid folder/binder listing all currently approved, superseded, and canceled Operator Aids, including a copy of each, shall be maintained by the VPM. Each Operator Aid approved by the VPM shall be assigned a unique number and entered in Attachment 3, Operator Aid Index. The VPM shall review/verify, semi-annually, that the Operator Aids in use remain necessary and the posted Operator Aids are current. Operator Aids that are no longer applicable or outdated shall be promptly removed and canceled by the VPM. Those that are not current, but are still needed, will be revised and reissued. This review shall also be documented by the VPM on Attachment 4, VPM Semi-annual Operator Aid Review, and filed in the Controlled Operator Aid folder/binder. Operator Aids do not need to be revised due to a revision of CCP-PO-005.

All Operator Aids, Operator Aid Index forms, and VPM Semi-annual Operator Aid Review forms will be submitted to CCP Records, in accordance with CCP-QP-008, at the completion of characterization activities at the site.

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20.0 COMPONENT LABELING

Components are labeled per equipment vendor specification.

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21.0 RECORDS

Records generated during the performance of this document are maintained as QA records in accordance with CCP-QP-008. The records are the following:

21.1 QA/Nonpermanent

- Attachment 1, Standing Order Index
- Controlled standing orders

  - Site-specific

  - Project Office
- Attachment 2, Quarterly Standing Order Review
- Attachment 3, Operator Aid Index
- Controlled Operator Aids
- Attachment 4, VPM Semi-annual Operator Aid Review
- Formal Notification of Communication of Employee Reports of Abnormal Field Conditions (e-mail, fax, or memorandum)
- Turnover Checklists (when applicable)
- Attachment 5, Site-Specific Standing Order Format
- Attachment 6, Project Office Standing Order Format
- Briefing sheets (flows into CCP-QP-002)
- Attachment 7, Lessons Learned Form
- Lessons Learned Log
- Attachment 8, CCP Required Reading Documentation
- Training Module – Required Reading
- Operational Log Books
- Operational Logbook Annual Reconciliation Report

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Attachment 1 – Standing Order Index

Standing Order Number	Description	Date Approved	Date Cancelled	Superseded By	Date Superseded

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Attachment 2 – Quarterly Standing Order Review

1. Site:_____ 2. Date: _____

3. Standing orders in effect:

4. Standing orders cancelled as a result of this review:

5. Standing orders revised as a result of this review:

6. Comments:

Printed Name	**Signature**	**Date**

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Attachment 3 – Operator Aid Index

Operator Aid Number	Description	Date Approved	Date Cancelled	Superseded By	Date Superseded

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Attachment 4 – VPM Semi-annual Operator Aid Review

1. Site:_____ 2. Date:_____

3. Operator Aids in effect:

4. Operator Aids cancelled as a result of this review:

5. Operator Aids revised as a result of this review:

Comments:

VPM Printed Name	Signature	Date

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Attachment 5 – Site-Specific Standing Order Format

CCP Standing Order CCP-SO-____-___Rev. _____

Title:

Applicability

Order

This order will remain in effect until:

Background

Lead Operator **Printed Name/Signature/Date**	**SPM** (if applicable) **Printed Name/Signature/Date**
STR (if applicable) **Printed Name/Signature/Date**	**FSR** (if applicable) **Printed Name/Signature/Date**
VPM **Printed Name/Signature/Date**	

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Attachment 6 – Project Office Standing Order Format

CCP Standing Order CCP-SO-___Rev. _____

Title:

Applicability

Order

This order will remain in effect until:

Background

VPM (if applicable) **Printed Name/Signature/Date**	**VPM** (if applicable) **Printed Name/Signature/Date**
VPM (if applicable) **Printed Name/Signature/Date**	**VPM** (if applicable) **Printed Name/Signature/Date**
VPM (if applicable) **Printed Name/Signature/Date**	**Safety** (if applicable) **Printed Name/Signature/Date**
SPM (if applicable) **Printed Name/Signature/Date**	**CCP Manager** **Printed Name/Signature/Date**

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Attachment 7 – Lessons Learned Form

CCP Lessons Learned Number:	**Date:**
Title:	**Target Audience:**
Lessons Learned Statement:	
Background:	
Lessons Learned Discussion:	
Recommended follow-up actions:	
Prepared by:	**Management Approval:**

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Attachment 8 – CCP Required Reading Documentation

Document Title:	**Document Number:**	**Revision No.:**
Assigned Date:	**Due Date:**	

Instructions:

You are required to read this document as part of your CCP Required Reading. After you have read this document, sign, and date below.

Acknowledgement Statement:

My signature below indicates I have read the document listed above and understand the changes and impacts.

Employee Printed Name:	Employee Signature:	Date:

Cognizant Manager Validation:

Printed Name	Signature	Date

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CCP-QP-002

Revision 37

CCP
Training and Qualification Plan

EFFECTIVE DATE: 05/12/2014

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
9	02/20/2002	Major rewrite to streamline and create a more concise procedure. Document reduced from 57 pages to 16 pages.
10	06/05/2002	Added References. Changes to CCP Technical Supervisor responsibilities. Added Training Evaluations to Records section. Deleted 4.2.5 Audit Personnel Qualifications. Other changes for clarification and consistency.
11	09/12/2002	Deleted Sections 3.3.2 and 3.3.3.
12	10/24/2002	Added Steps 3.8.2 and 3.8.3 in response to SRS Recertification Audit.
13	06/30/2003	Added NDE RTR Section, revised qualification letter and other minor editorial changes. Separated electronically fillable forms and updated references in procedure.
14	12/02/2003	Revision initiated to address CAR# 04-002 identified during CBFO audit A-04-03 and CAR# CCP-0009-03. Added information about RTR audio/videotapes and Capability Demonstrations. Added paragraph 4.2.3[A.5] discussing qualification card addenda. Added section 4.2.4[C] discussing FQAO appointment requirements.
15	03/10/2004	Added Capability Demonstration Instructions (Attachment 2) and CCP Capability Demonstration Data Sheet (Attachment 3 or CCP-QP-002-A1).
16	12/07/2004	Deleted the Technical Supervisor responsibilities section and incorporated them into the Vendor Project Manager responsibilities. Added partial qualification section. Removed requirement for the Site Project Manager to appoint the Facility Quality Assurance Officer by letter.
17	06/06/2005	Addressed CAR 05-029 and CAR 05-033 identified during Carlsbad Field Office (CBFO) Audits A-05-09 and A-05-12. Areas modified were qualification requirements for Nondestructive Assay (NDA) Expert Analyst and examination requirements for Central Characterization Project (CCP) Helium Leak Detection (HLD) Level III.
18	12/13/2005	Clarified roles and responsibilities in reviewing Capability Demonstration training audio/video media and modified Attachment 3 – CCP Capability Demonstration Data Sheet.
19	12/15/2005	Clarification for Level of Qualification in step 4.2.2[B.1].

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
20	05/03/2006	Addressed CAR-RHINL-0001-06. Incorporated Remote-Handled waste training and position requirements. Restructured for improved flow.
21	06/13/2006	Updated step 4.2.5 to delete the word “training” from the requirements for VE Operator/ITR/TS/FQAO.
22	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR). Addressed Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
23	02/01/2007	Revised to address CCP Quality Assurance Surveillance Number SUR-CCP-0005-06.
24	02/27/2007	Revised to address concern raised during Surveillance #S-07-18.
25	05/08/2007	Revised to address Corrective Action Report (CAR) SRS-0002-07.
26	02/07/2008	Revised to address U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Corrective Action Report (CAR) 08-004.
27	09/30/2008	Revised to change nondestructive examination (NDE) to comply with Management Assessment MA-CCP-0023-08. Also revised Section 5.1.1[J] in response to Carlsbad Field Office (CBFO) Corrective Action Report (CAR) 08-036.
28	05/26/2010	Revised to address Corrective Action Report (CAR)-CCP-0012-09, to clarify Acceptable Knowledge (AK) briefings, training for solids lab, and approval process for training material. References to Central Characterization Project (CCP) Program Manager/Project Manager were removed and the responsibilities assigned to the Lead Site Project Manager and CCP Manager responsible for Training.
29	07/08/2010	Revised to incorporate changes into Attachment 4, CCP Test Drum Data Sheet for Contact-Handled Waste, and other minor editorial changes.
30	12/29/2010	Revised to bring into compliance with the revision of the Waste *Isolation Pilot Plant Hazardous Waste Facility Permit.*

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
31	04/21/2011	Revised based on Revision 2 of the DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*.
32	04/03/2012	Revised to simplify the process for tracking waste stream Summary Training in Section 4.2. Added full requalification as an option in Section 4.1.2 [I]. Added the Training Module in Integrated Data Center (IDC) as a source of Training information to the note in Section 4.1. Incorporated Standing Orders CCP-SO-051 in Section 4.4.1[C], CCP-SO-069 in Section 4.2, and CCP-SO-078 in Section 4.1.2[F]. Expanded Section 4.1.1 to add a documented analysis of positions requiring qualification, in response to Carlsbad Field Office (CBFO) Corrective Action Report (CAR) 12-010.
33	08/30/2012	As a corrective action in response to CBFO CAR 12-033, revised the document to remove references to Lead SPMs and Alternate SPMs, so that any qualified SPM may perform the actions in Section 3.1.
34	01/30/2013	Revised to incorporate Standing Order CCP-SO-086, *Clarification of the Time Period for Performance of the RTR Semiannual Training Container Required by CCP-QP-002*; incorporate changes to DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*; update the title of the organization, as appropriate; and minor editorial changes.
35	06/06/2013	Revised to implement the Permit Modification Request Class 2 approved by New Mexico Environment Department (NMED) dated March 13, 2013 and CAR-CCP-0003-13.
36	03/31/2014	Revised to incorporate changes in response to U.S. Environmental Protection Agency (EPA) Issue Tracking Form ORNL-CCP-CC-RTR-2014-02CR: adding a requirement for a written record for the Training Container, to be filled out by the operator for the review by the Cognizant Engineer (CE), and adding a place on the Training Container evaluation sheet for operator acknowledgement of counseling for any missed items. Also incorporated Standing Order CCP-SO-110.

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
37	05/12/2014	In response to Carlsbad Field Office of the Department of Energy (CBFO) corrective active report (CAR) 14-030, revised the NOTE in Section 3.4 to clarify that the preferred method for determining an Subject Matter Expert (SME)/On-the-Job Training (OJT) candidate's education and experience is by reviewing the individual's resume, but whatever method is used must be explicitly stated in the documentation provided to Training by the site project manager (SPM). Also added a new Attachment 7 as a template for appointment letters to be issued by the SPM, which may be customized as necessary.

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1.0 PURPOSE

NOTE

CCP-QP-040, *Support Training,* applies to those activities that do not fall under the scope of CCP-QP-002, *CCP Training and Qualification Plan* as defined herein. CCP-QP-040 applies to those positions which are not covered by the baseline documents listed in Section 2.1 of this document.

This plan describes the responsibilities of personnel involved in the Central Characterization Program (CCP) Qualification and Training Program. This plan also describes the process for identifying qualification and training requirements for all personnel and technical support personnel, who perform characterization, packaging, certification, and activities.

1.1 Scope

This plan applies to all personnel who conduct quality-affecting activities associated with transuranic (TRU) waste under the CCP, including characterization, packaging, certification, and transportation.

Personnel under this plan are qualified and trained to ensure suitable proficiency is achieved and maintained for assigned tasks. Training and qualification requirements are commensurate with the nature of the activities and level of responsibility.

Training will emphasize the correct performance of work, provide a description of why quality, safety, and TRU waste characterization and certification requirements exist, and describe the fundamentals of the work and its context.

Training will be subject to an on-going evaluation to determine instruction and training program effectiveness and will be upgraded whenever needed improvements or enhancements are identified.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- DOE/WIPP 02-3183, *CH Packaging Program Guidance*
- DOE/WIPP 02-3184, *CH Packaging Operations Manual*
- DOE/WIPP 02-3185, *CH Packaging Maintenance Manual*
- NRC Docket 71-9212, *RH-TRU 72-B Safety Analysis Report*, Rev. 3, November 2002
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-003, *CCP Transuranic Authorized Methods For Payload Control (CCP CH-TRAMPAC)*

Referenced Documents

- DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
- ASNT SNT-TC-1A, *Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing,* American Society for Nondestructive Testing (1980 Edition)
- ASTM C1490, *Standard Guide for the Selection, Training, and Qualification of Nondestructive Assay (NDA) Personnel*
- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*
- CCP-QP-030, *CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel*
- CCP-QP-032, *CCP Written Practice for the Qualification of CCP Pressure Change Leak Testing Personnel*
- CCP-QP-040*, Support Training*

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- CCP-TP-028, *CCP Radiographic Test Drum and Training Container Construction*

- WP 15-GM1002, *Issues Management Processing of WIPP Forms, Management Control Procedure*

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3.0 RESPONSIBILITIES

3.1 Site Project Manager (SPM)

3.1.1 Oversees planning, characterization, and certification activities.

3.1.2 Ensures personnel are qualified and trained to perform their assigned job functions.

3.1.3 Determines initial and continuing qualification and training requirements in cooperation with appropriate Cognizant Engineer (CE), Manager Responsible for Training, and Training to ensure job proficiency is maintained.

NOTE

Staffing changes includes situations where individuals are brought into or re-assigned in the program (these qualified positions can be either project level or operational level).

3.1.4 Notifies Training of staffing changes and candidates for job positions and provides supporting documentation (e.g., resumes, certificates, diplomas, training records).

3.1.5 Verifies education/experience requirements for Nondestructive Assay (NDA) Expert Analysts (EA).

NOTE

Attachment 7, SPM Appointment Letter, is a template to be used by the Site Project Manager (SPM) when appointing new personnel, NDA EA, Remote-Handled (RH) Technical Staff, Subject Matter Experts (SME), or Visual Examination Experts (VEE). As a template/outline, it may be customized by the SPM, as necessary.

3.1.6 Appoints VEE, NDA EA, and RH Technical Staff, using Attachment 7. The appointment will be based on education and experience, if applicable.

3.1.7 Reviews and approves Qualification Cards.

3.1.8 Ensures project personnel who are assigned to perform project activities that affect quality:

[A] Are cognizant of the qualification and training requirements of this plan.

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[B] Satisfy qualification and training requirements for the tasks associated with their assigned job classification(s).

3.1.9 Ensures the requirements of this plan are implemented, as follows:

[A] Personnel receive training and qualification, as necessary, to achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods, job responsibilities, and quality implementing procedures, prior to performing or verifying any waste characterization, certification, or transportation activities.

3.1.10 Appoints qualified personnel as using Attachment 7.

3.1.11 Ensures qualification and training documentation is complete and is submitted to Training.

3.1.12 Evaluates and documents personnel job performance at periodic intervals (as a minimum, during requalification).

3.1.13 Notifies the Manager Responsible for Training when full requalification is required (e.g., when an individual has been disqualified for unsatisfactory performance).

3.1.14 Analyzes positions to determine major job/task responsibilities as a basis for preparation of qualifications cards (shared responsibility).

3.2 Vendor Project Manager (VPM)

3.2.1 May administer the annual eye examination.

3.2.2 Notifies Training when qualified operations personnel leave the program (e.g., a subcontractor's employment has been terminated).

3.3 Training

3.3.1 Determines initial and continuing qualification and training requirements for positions in cooperation with an appropriate SME/OJT Instructor, the CE, a SPM, and the Manager Responsible for Training using a graded approach that is commensurate with scope, complexity, and nature of the work to include:

[A] Descriptions of the fundamentals of the work and the context in which the work is performed.

[B] Identification of the applicable quality and safety requirements related to job performance.

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[C] Emphasis on the correct performance of work in accordance with established procedures and/or other relevant technical documents.

[D] Inclusion of education in both principles and enhancement of skills.

3.3.2 Supports an SPM in evaluating training and qualification requirements of each position. This may be done by, but is not limited to, evaluating training requirements using a training analysis. The analysis will result in an approved task list from which tasks may or may not be selected for training. When completed, the analysis will be signed by participants, and the task list reviewed and approved by the designated SME/OJT, the CE (if applicable), an SPM, and the Manager Responsible for Training for completeness of training requirements.

3.3.3 Develops, implements, and monitors training required to maintain qualification of personnel.

3.3.4 Ensures project-required training effectiveness is reviewed when the need for improvements or enhancements is identified, and ensures the training program is updated.

3.3.5 Maintains documentation of current personnel training status.

3.3.6 Issues approved training materials and assists in the completion of qualifications and training activities.

3.3.7 Prepares Qualification Cards.

3.3.8 Returns incomplete/incorrect training materials to candidate's manager, as applicable.

3.3.9 Provides qualification cards to an SPM for review and approval.

3.3.10 Ensures qualification/training records and supporting documentation (including audio/video recorded media for test drums and training containers) are maintained, secured, and controlled in accordance with CCP-QP-008, *CCP Records Management*.

3.3.11 Prepares list of qualified individuals (LOQIs) delineating those individuals who have completed Qualification Cards, and distributes to the applicable site.

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3.3.12 Reviews, develops, and approves Comprehensive Examinations for thoroughness and adequacy.

3.3.13 Reviews real-time radiography (RTR) completed Attachment 3, Test Drum Data Sheet for Contact-Handled Waste, audio/video recorded media, in accordance with CCP-QP-008.

3.3.14 Reviews (RTR) completed Attachment 5, Training Container Data & Evaluation Sheet, audio/video recorded media, in accordance with CCP-QP-008.

3.4 SME/OJT Instructor

NOTE

Before any OJT can be performed, it is necessary to initially qualify one SME/OJT Instructor for each discipline based on education and experience. The basis for SME/OJT Instructor qualification will be provided by an SPM and documented in the applicable Training files. The normal and preferred method for determining an SME/OJT candidate's education and experience is by reviewing the individual's resume, but whatever the method, it must be explicitly stated on Attachment 7, which is provided to Training by the SPM. The qualification is by discipline and is non-site specific. The basis for qualification will be used to complete a qualification card for the candidate as an SME/OJT Instructor. The successful candidate will be added to the appropriate LOQI(s) once the qualification card is complete.

The SME/OJT Instructor will have adequate education and/or technical knowledge in the applicable discipline, communication skills, and ability to provide trainees with hands-on experience, as determined by an SPM. Technical knowledge may be based on experience with the applicable process or involvement in development of operational procedures or qualification requirements for the applicable process.

The Mobile Loading Unit (MLU) Field Operations Manager (or designee) will appoint SME/OJTs for Transportation activities.

All SME/OJT candidates must complete the SME/OJT briefing and pass the SME/OJT exam.

3.4.1 Provides supervised hands-on training in the work environment to accomplish performance objectives of the training tasks.

3.4.2 Determines initial and continuing qualification and training requirements for National TRU Program Certification (NTPC) positions in cooperation with an SPM, the CE, the Manager Responsible for Training, and Training.

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3.4.3 Ensures trainee(s) have satisfactory knowledge of and competence in skills requirements, as defined on the Qualification Card.

3.4.4 Verifies the correct revision of the qualification card is being used.

3.4.5 Signs and dates Qualification Card, indicating acceptable performance levels are met.

3.4.6 Provides all training documentation generated to Training in accordance with CCP-QP-008.

3.4.7 Analyzes positions to determine major job/task responsibilities as a basis for preparation of qualifications cards (shared responsibility).

3.5 Personnel

3.5.1 Provides copies of their qualification documents (e.g., resumes, education, and experience) to an SPM or Training, as applicable.

3.5.2 Completes initial training in accordance with this procedure, as stated on each individual's Qualification Card.

3.5.3 Ensures qualification requirements are completed and signed off before performing assigned tasks without supervision.

3.5.4 Maintains requisite qualifications throughout the duration of work.

3.5.5 Attends NTPC and site-specific training, as necessary.

3.6 Trainee

3.6.1 Completes Qualification Card(s) in a timely manner.

3.6.2 Works only under the supervision of a qualified operator or a SME/OJT Instructor.

3.7 Manager Responsible for Training

3.7.1 Reviews and approves all training material for applicability and technical content.

3.7.2 Determines when full requalification is required.

3.7.3 Analyzes positions to determine major job/task responsibilities as a basis for preparation of qualifications cards (shared responsibility).

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3.8 Cognizant Engineer (CE)

NOTE

A CE is not required for Transportation or Acceptable Knowledge (AK).

3.8.1 The CE is designated for each specific process by the NTPC Manager based on their education, knowledge, and experience for the characterization process.

3.8.2 The CE has overall responsibility for the implementation and quality of the characterization activity.

3.8.3 The CE reviews material developed by Training for applicability and technical content.

3.8.4 Analyzes positions to determine major job/task responsibilities as a basis for preparation of qualifications cards (shared responsibility).

3.8.5 Reviews and evaluates training containers for RTR personnel.

3.8.6 Evaluates the training documentation for RTR personnel and determines if they meet the requirements for certification.

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4.0 PROCEDURE

4.1 General Training Requirements

NOTE

The Training Module in the Integrated Data Center (IDC) provides information that may be used to update and maintain the information in documents provided by training, such as the LOQI. Such usage will be described in the applicable sections of this procedure.

4.1.1 Personnel selected to perform or verify NTPC activities will have the education, experience, and training commensurate with job position requirements. The need for job position Qualification Cards will be determined by an SPM, the CE, and the Manager Responsible for Training.

[A] Job position requirements will be analyzed and documented to determine the major duties and tasks associated with the position, as a basis for developing the Qualification Card for each activity requiring qualification. The analyses will be performed by an SPM, a SME/OJT Instructor, the CE (if applicable), and the Manager Responsible for Training.

[B] A separate analysis may not be required for new positions where the major duties and tasks are closely-related to those for an existing, already-analyzed position. This determination will be made and documented by the performers identified in [A], above.

4.1.2 All training candidates are required to complete a Qualification Card to verify that they possess the knowledge and skills necessary to competently perform specified tasks.

[A] Qualification Cards technical content will be determined by a SME/OJT Instructor, the CE, the Manager Responsible for Training, and an SPM based on project requirements and federal and state regulations.

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NOTE

The qualification cards for Helium Leak Detection Personnel are issued in accordance with CCP-QP-030, *CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel*. The qualification cards for Pressure Change Leak Testing (PCLT) personnel are issued in accordance with CCP-QP-032, *CCP Written Practice for the Qualification of CCP Pressure Change Leak Testing Personnel*.

[B] All Qualification Cards shall be issued by Training.

[C] The SME will verify current revision.

[D] Training will verify that prerequisites are met.

[E] Upon completion of the Qualification Card, candidates are considered qualified to perform their respective duties.

[F] The Qualification Cards will contain the following information:

[F.1] Name of job position.

[F.2] Revision number and effective date.

[F.3] Trainee's name.

[F.4] Signature spaces for approvals of format, technical content, and use by a SME/OJT, the CE, an SPM, and the Manager Responsible for Training, as applicable.

[G] The Qualification Card will be divided into the following parts, as applicable:

[G.1] Education/Experience.

[G.2] Job Specific Training (which may include):

- Indoctrination/Orientation
- Initial Reading
- Formal Training
- National Standards Certifications
- OJT
- Signature line and date for trainee
- Approval section for a SME/OJT
- Approval section for an SPM

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[G.3] If a Qualification Card requires changes, the following is performed:

(a) Training, prepare the revised Qualification Card, using the next sequential revision number.

(b) Training, route the revised Qualification Card to the following for review and approval: a SME/OJT, the CE (if applicable), an SPM, and the Manager Responsible for Training.

(c) Training, upon approval, place a new effective date on the Qualification Card and issue the Qualification Card.

[G.4] Other required formal training materials, such as the Waste Analysis Plan (WAP)/Quality Assurance Project Plan (QAPjP) Briefing or training determined by a training evaluation (i.e., classroom, OJT, or self-paced instruction) shall be approved for format, technical content, and use by an SPM and the Manager Responsible for Training.

(a) As initial and continuing qualification and training requirements change, these approved training materials shall be revised by Training.

(b) All approved training materials shall be maintained, secured, and controlled by Training.

[H] Operational Positions (e.g., RTR, NDA, etc.) require requalification every two (2) years. Exceptions are: Helium Leak Detection (HLD) Level III (Limited) has a three year requalification requirement. If necessary, additional training may be required by an SPM, or the Manager Responsible for Training. The sections of the qualification card that must be re-performed during each requalification are identified on the Qualification Cards.

NOTE

Requalifications are due by the end of the month in which the qualification period falls, unless a specific date is listed on the qualification card.

[I] Requalification of Project Office positions is not required.

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[J] Unsatisfactory performance will result in disqualification by the Manager Responsible for Training. The candidate must successfully complete a full requalification (i.e., repeat the entire Qualification Card) to re-establish qualification.

[K] Full requalification is also required when an SPM and the Manager Responsible for Training jointly determine that an individual has not been performing in the qualified function for a significant period of time, due to re-assignment and return, or extended absence from the position for other reasons. Typically, full requalification would apply after an absence from the position of more than one year; however, there may be extenuating circumstances and each occurrence is reviewed and documented on a case-by-case basis.

4.1.3 Completion of the Waste Isolation Pilot Plant (WIPP) WAP/QAPjP Briefing is a pre-requisite for all personnel before they perform *Waste Isolation Pilot Plan-Waste Analysis Plan* (WIPP-WAP) specific tasks.

NOTE

RTR and visual examination (VE) personnel shall be trained on newly developed and revised waste stream reports which change the waste generating processes, packaging, and expected waste material parameters (WMP) expected to be found in each Waste Matrix.

4.2 Waste Stream Summary Training

4.2.1 SPM forward the newly issued or revised AK to the Vender Project Manager (VPM) at the Host location where the AK applies.

4.2.2 An SPM, in conjunction with Acceptable Knowledge Expert (AKE), develop the AK training in the form of a briefing which identifies as a minimum the following:

- Specific waste generating processes
- Packaging
- WMP for the waste matrix code

4.2.3 SPM, provide the briefing to the required RTR and VE personnel.

4.2.4 SPM, submit the briefing materials and the completed briefing sheet(s) (or personnel can send individual e-mail acknowledgements) to Training.

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4.2.5 Training, update the LOQI for all personnel who received the briefing, showing that they are qualified to perform work on the identified waste stream.

[A] Remove the qualified status for the identified waste stream from the LOQI when either:

[A.1] The SPM so directs, because the waste stream is no longer active, or

[A.2] The Training Module in the IDC shows that the waste stream is no longer active.

4.3 Specific Qualification and Training Requirements

4.3.1 Acceptable Knowledge (AK) Personnel

[A] Personnel assigned to compile, evaluate, and resolve discrepancies associated with AK information, require the following:

[A.1] WIPP-WAP Briefing.

[A.2] Waste Acceptance Criteria (WAC) knowledge.

[A.3] DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* knowledge.

[A.4] Training on Federal and State Resource Conservation and Recovery Act (RCRA) regulations associated with solid and hazardous waste determinations. Training requirement will be satisfied by documented completion of a formal RCRA training program, (e.g., a commercially available RCRA Seminar, or an SPM's documented evaluation of adequate training and/or experience).

[A.5] Knowledge of procedures associated with:

(a) Waste characterization using AK.

(b) AK records development including AK discrepancy resolution.

(c) Nonconformance Report (NCR) process in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control* .

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(d) WIPP Form process, in accordance with WP 15-GM1002, *Issues Management Processing of WIPP Forms, Management Control Procedure*.

[A.6] Knowledge of resolving and managing prohibited items as noted in nonconformance reporting.

4.3.2 RTR Operator/Independent Technical Reviewer (ITR)

[A] Qualification Process

[A.1] An individual qualifying as an RTR Operator/Independent Technical Reviewer (ITR) is considered a trainee. A trainee will work only under the supervision of a qualified operator or SME/OJT Instructor.

[A.2] All RTR personnel will be trained to the guidance of American Society for Nondestructive Testing (ASNT) Recommended Practice Number SNT-TC-1A, *Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing,* modified to suit the RTR application/method.

[A.3] An RTR Operator/ITR will:

(a) Be able to set up and operate equipment, and be qualified to interpret and evaluate results with respect to applicable codes, standards, and specifications.

(b) Be thoroughly familiar with the scope and limitations of RTR.

(c) Exercise the responsibility for OJT and apprenticeship of trainees.

(d) Be able to prepare written instructions.

(e) Be able to organize Batch Data Reports (BDRs) with the results of RTR.

[B] Education, Training, and Experience Requirements for Initial Qualification

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[B.1] Personnel considered for qualification in RTR must have sufficient education, training, and experience to ensure understanding of the principles and procedures.

[B.2] Education requirements are listed in Attachment 1, Minimum Training, Education, and/or Experience. Personnel being considered for qualification as an RTR Operator/ITR will complete organized training to become familiar with the principles and practices of the applicable RTR method.

[B.3] A certificate from an approved vendor stating that the individual operator is a qualified RTR operator Level II (L) SNT-TC-1A.

[B.4] To be considered for qualification as an RTR Operator/ITR, the trainee must:

(a) Pass the required examinations in step 4.3.2[C].

(b) Complete the Qualification Card.

[B.5] Any previous training and experience gained in a position similar to the RTR Operator/ITR position may be considered in satisfying the qualification criteria of this procedure and shall be documented in the Training file (i.e., resume).

[C] Examinations

[C.1] Physical

(a) All trainees will pass an initial eye examination to ensure natural or corrected near-distance acuity in at least one eye. The trainee must be capable of reading Jaeger Number 2 at a distance of not less than twelve (12) inches on a standard Jaeger test chart.

(b) The eye examination will demonstrate the capability of distinguishing and differentiating contrast used in RTR.

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(c) The eye examination will be administered on an annual basis and the results maintained in the Training files. VPMs at each site may administer the eye examination.

[C.2] Comprehensive

(a) Pass a program-specific comprehensive exam with an 80 percent or better grade that addresses radiography operations, documentation, characterization, and procedural elements.

[C.3] Test Drum

NOTE

The requirement for completing the test drum defined in the Waste Characterization Program Implementation Plan (WCPIP) is met by successfully completing the Training Container.

Test Drums are due by the end of the month in which the qualification period falls.

(a) At initial qualification and subsequent requalification, successfully examine a test drum that includes items common to the waste streams and is representative of the waste matrix codes and WAC required items.

(b) Use Attachment 2, Test Drum Instructions for Contact-Handled Waste Drums.

(c) Documentation required for test drums is as follows:

(c.1) Attachment 1, CCP NDE Test Drum Inventory Sheet (from CCP-TP-028, *CCP Radiographic Test Drum and Training Container Construction*).

(c.2) Attachment 3, Test Drum Data Sheet for Contact-Handled Waste.

(c.3) Audio/video recorded media of the test drum.

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[C.4] Training Container

NOTE

A Training Container is required by CH and RH operators at initial qualification, requalification, and semi-annually. The nominal period for performance of the Training Container is every six months, due by the end of the month of the sixth month from the date the Training Container was successfully passed.

The Training Container will contain items which can be identified by RTR, are representative of the physical properties of the waste based on AK documentation reviewed, and prohibited items.

(a) At initial qualification, requalification, and semiannually, successfully examine a Training Container and identify 100 percent of the items required to meet the Data Quality Objectives (DQO's).

(b) Use Attachment 4, Training Container Instructions.

(c) Documentation required for Training Containers is as follows:

(c.1) Attachment 2, CCP NDE Training Container Inventory Sheet (from CCP-TP-028)

(c.2) Attachment 5, Training Container Data & Evaluation Sheet

(c.3) Audio/video recorded media of the Training Container

(d) The Nondestructive Examination (NDE) CE will review the audio/video recording to ensure the operator's interpretations remain consistent and accurate.

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(e) The NDE CE or an SPM may request an extension of the period between performances of the Training Container for up to one additional month (for a total of seven months between Training Containers, beginning with the date the examination was reviewed and approved by the CE).

(e.1) Upon receipt of a written request from the SPM or NDE CE, Training will extend the Training Container due date for the operator on the LOQI.

(e.2) The request will be retained by Training.

(e.3) When Training receives evidence the operator has satisfactorily completed the Training Container, Training will enter a due date for the next Training Container that takes into account the earlier extension (e.g., five month due date, not six month).

(e.4) If the operator exceeds the one month extension due date on the LOQI, Training will remove the individual from the LOQI until the Training Container has been successfully completed.

(e.5) Extension is not permitted at the time of requalification.

NOTE

Certification of RTR Operator/ITR personnel is documented on the completed qualification card.

[D] Qualification

[D.1] Successful qualification of the RTR Operator/ITR is documented by completing the Qualification Card.

[D.2] To maintain qualifications, the CH and RH RTR Operator/ITR must perform a Training Container semiannually, documented on Attachment 5.

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[D.3] Complete an annual eye examination.

[E] Requalification

[E.1] Requalification is based on evidence of satisfactory performance of a test drum, a training container, and passing a comprehensive exam with a grade of 80 percent or better once every two years. If necessary, additional training may be required by a SME/OJT, an SPM, the CE, or the Manager Responsible for Training.

4.3.3 Transportation personnel who require qualification in HLD are trained in accordance with CCP-QP-030 and documented on Attachment 1, CCP HLD Qualification Card of CCP-QP-030.

4.3.4 Transportation personnel who require qualification in PCLT are trained in accordance with CCP-QP-032 and documented on Attachment 1, CCP PCLT Qualification Card of CCP-QP-032.

4.3.5 NDA EA requires the completion of a EA Qualification Card.

4.3.6 VE Operator/ITR

[A] For the initial qualification and subsequent requalification, the Operator/ITR must:

[A.1] Pass comprehensive exam with an 80 percent or better grade that addresses VE operations, documentation, characterization, formal training elements, and procedural elements.

[A.2] VE Operators must demonstrate capability in the presence of the site VEE during OJT. However, the formal and OJT training is conducted by a qualified SME.

4.4 Appointments

4.4.1 For VEE candidate(s), an SPM performs the following:

[A] Review the training files for qualification/familiarity to waste stream, experience handling TRU waste, and VE Operator qualifications.

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[B] Provide written notification to Training delineating the candidate's qualifications and experience, using Attachment 7.

[C] Ensures that the appointments are facility–specific.

4.4.2 For NDA EA candidate(s), an SPM will perform the following:

[A] Review the training files for an undergraduate degree in physical science or engineering and five years NDA experience; or ten equivalent years of experience in the NDA field.

[B] Provide written notification to Training delineating the candidate's qualifications and experience, using Attachment 7.

4.4.3 For RH Technical Staff candidate(s), an SPM will perform the following:

[A] Review the training files for the minimum requirements identified in Attachment 1.

[B] Provide written notification to Training delineating the candidate's qualifications and experience, using Attachment 7.

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5.0 RECORDS

5.1 Records generated during the performance of this plan are maintained as quality assurance (QA) records in accordance with CCP-QP-008. The records are the following:

5.1.1 <u>QA/Nonpermanent Records</u>

[A] Attachment 7, SPM Appointment Letter

[B] Letters to Training

[C] Certificates of Completion

[D] Training Analysis

[E] Qualification and training records

[E.1] OJT records

[E.2] Completed exams

[E.3] Qualification Card

[F] Training materials (e.g., course presentation, exam)

[G] Completed attendance/briefing forms,

[H] Attachment 3, Test Drum Data Sheet for Contact-Handled Waste

[H.1] Audio/video recording media (primary and backup)

[I] Attachment 5, Training Container Evaluation Data Sheet

[I.1] Audio/video recording media (primary and backup)

[J] Resumes as applicable

[K] Comprehensive Examinations

[L] WAP Briefing

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[M] Eye Examination (Medical)

- Attachment 6, Annual Record of RTR Eye Examination, when applicable
- Independent Eye Examination (from medical facility), when applicable

[N] Training Module (Electronic)

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Attachment 1 – Minimum Training, Education, and/or Experience

Personnel	Education/Experience/Requirements
1. Radiography	
Radiography Operators	Site specific training based on waste matrix codes and waste material parameters; requalification every two years.
2. Nondestructive Assay (NDA)	
NDA Personnel	In accordance with ASTM C1490, *Standard Guide for Selection, Training, and Qualification of Nondestructive Assay (NDA) Personnel;* ANSI N15.54, *Radiometric Calorimeters - Measurement Control Program.*
3. Technical Staff	
RH Technical Staff	B.S. Nuclear Engineering or the equivalent knowledge and experience to perform assigned tasks, including: • Calculation of reactor neutron spectra • Generate ORIGEN format cross sections • Perform ORIGEN isotope generation and depletion calculations • Ensure that appropriate samples are collected and analyzed from waste • Perform shielding calculation of waste containers **OR** B.S. degree in statistics or the equivalent knowledge and experiences to problem assigned tasks, including: • Develop Sampling plan to obtain representative samples of waste. Propagate uncertainties to determine Total Measurement Uncertainty.
RH Technical Reviewer	• Equivalent qualifications necessary to have originally performed the task under review. At least five years experience in the technical area applicable to the review task.

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Attachment 2 – Test Drum Instructions for Contact-Handled Waste Drums

OPERATOR

1.0 In the presence of an RTR SME/OJT Instructor, perform the following:

1.1 Pre-start operations and audio/video recording media system setup of the RTR equipment per site approved radiography operating procedure.

1.2 Load the test drum into the RTR unit.

1.3 Ensure the audio/video recording identifies the following information:

[A] The identifying test drum container (e.g., NDE-TEST-01)
[B] Exam date
[C] Operator's name

1.4 Complete Blocks 1 through 4 of Attachment 3.

1.5 Perform scan of the test drum, identifying test drum container, and complete Block 5 of Attachment 3. Provide a detailed description (including content) of all items found within the container.

1.6 Complete Block 6 of Attachment 3.

1.7 Label the audio/video media with the following information:

[A] The identifying training container (e.g., NDE-TEST-01)
[B] Exam date
[C] Operator's name
[D] "A" for primary or "B" for backup

1.8 Provide the audio/video recording media and Attachment 3 to an RTR SME/OJT Instructor.

SME/OJT INSTRUCTOR

2.0 Observe the test drum and complete Attachment 3 as follows:

2.1 Complete Blocks 7 and 8 of Attachment 3.

2.2 **IF** the Operator has correctly identified the items within the test drum, **THEN** perform the following:

2.2.1 Enter N/A in Block 9 of Attachment 3.

2.2.2 Check PASS in Block 10 of Attachment 3.

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Attachment 2 – Test Drum Instructions for Contact-Handled Waste Drums (Continued)

2.2.3 Print name, sign, and date in Block 11 of Attachment 3.

2.2.4 Forward the audio/video recording media and Attachment 3 to Training in accordance with CCP-QP-008.

2.3 **IF** the Operator DOES **NOT** identify all WAC required items in Block 8 of Attachment 3 correctly,
THEN perform the following:

2.3.1 If applicable, document unidentified non-WAC required items in Block 9 of Attachment 3, **ELSE** enter N/A.

2.3.2 Check FAIL in Block 10 of Attachment 3.

2.3.3 Print name, sign, and date in Block 11 of Attachment 3.

2.3.4 Notify an SPM and Training.

2.3.5 Forward Attachment 3 and the audio/video recording media to Training in accordance with CCP-QP-008.

NOTE

RTR Personnel who fail the test drum will be requalified after meeting initial qualification requirements.

2.4 **IF** any items (other than WAC-required items) were not identified,
THEN discuss and document the noted discrepancies with the Operator.

2.4.1 Document unidentified items in Block 9 of Attachment 3, **AND** discuss with the Operator.

2.4.2 Check PASS in Block 10 of Attachment 3.

2.4.3 Print name, sign, and date in Block 11 of Attachment 3.

2.4.4 Forward Attachment 3 with the audio/video recording media to Training in accordance with CCP-QP-008.

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Attachment 2 – Test Drum Instructions for Contact-Handled Waste Drums (Continued)

TRAINING

3.0 Ensure receipt of all required test drum documentation.

4.0 **IF** notified by the RTR SME/OJT Instructor that a currently qualified Operator has failed the test drum,
THEN remove the Operator from the LOQI **AND** update the Training files.

5.0 **IF** Attachment 3 indicates PASS,
THEN update the LOQI and the Training files.

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Attachment 3 – Test Drum Data Sheet for Contact-Handled Waste

1. Operator Name:	
2. Test Drum #:	**3. Date of Demonstration:**
4. Audio/Video Recording Media Label:	
5. Container Inventory (Provide detailed description)	
6. Operator Signature:_____	**Date:**_____

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Attachment 3 – Test Drum Data Sheet for Contact-Handled Waste (Continued)

7. Operator Name:

8. WAC Required Items (SME check items identified by operator)

	Aerosol can with puncture		Full container
	Horsetail bag		Aerosol can with fluid
	Pair of coveralls		One gallon bottle with three tablespoons of fluid
	Empty bottle		One gallon bottle with one cup of fluid (upside down)
	Irregular shaped pieces of wood		Leaded glove or leaded apron
	Empty one gallon paint can		Wrench

9. Additional items not identified:

10. As SME/OJT Instructor, I observed the above demonstration and have discussed any missed items with the Operator. I have assigned a grade based on the review above.	**PASS**		**FAIL**	

11. SME Printed Name:_____

SME Signature:_____**Date:**_____

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Attachment 4 – Training Container Instructions

OPERATOR

1.0 Perform the following:

1.1 Complete Blocks 1 through 4 of Attachment 5.

1.2 Verify the RTR unit and audio/video system is configured to run the training container.

1.3 Load the training container into the RTR unit.

1.4 Ensure the audio/video recording identifies the following information:

[A] The identifying training container (e.g., NDE-TRAINING-01)
[B] Exam date
[C] Operator's name

1.5 Perform scan of the training container, identifying training container, detailed description of contents including container sizes and volumes of liquid.

1.6 Document the scan information in Block 5 of Attachment 5.

1.7 Complete Block 6 of Attachment 5.

1.8 Label the audio/video media with the following information:

[A] The identifying training container (e.g., NDE-TRAINING-01)
[B] Exam date
[C] Operator's name
[D] "A" for primary or "B" for backup

1.9 Make a copy of training audio/video for the NDE CE. (Labeled the same add "Copy".)

2.0 Forward the audio/video (primary and backup) recording media and Attachment 5 to Training, in accordance with CCP-QP-008.

3.0 Forward the copy of the training audio/video to the NDE CE.

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Attachment 4 – Training Container Instruction (Continued)

Training

4.0 Provide Attachment 5 to the NDE CE.

NDE CE

5.0 Review the Training Container scan and document discrepancies (accuracy and consistency) in Block 5 of Attachment 5.

6.0 Record in Block 8 of Attachment 5 if the operator passed or failed based on identification of the DQOs.

7.0 Print, Sign, and Date in Block 9, of Attachment 5.

8.0 If the Operator fails to identify an item that is not a DQO, counsel the operator on the item(s) missed.

8.1 If counseling was required, have the operator acknowledge receipt of the counseling in Block 10 of Attachment 5. The acknowledgement can be either with the operator signature, or via Telecon.

9.0 If additional actions are required in response to an operator's performance, the CE will coordinate with Manager Responsible for Training.

10.0 Forward Attachment 5 to Training in accordance with CCP-QP-008.

TRAINING

11.0 Ensure receipt of all required documentation,
THEN update the LOQI and the Training files.

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Attachment 5 – Training Container Data & Evaluation Sheet

1. Operator Name:		**2. Demonstration Date:**		
3. Training Container #:		☐ **Box**	☐ **Drum**	
4. Audio/Video Recording Media Label:				
5. Container Inventory (Provide detailed description)				
6. Operator Signature:_____**Date:**_____				
7. I have counseled the operator on the following interpretation issues:				
8. I have assigned a grade based on the review above.	**PASS**		**FAIL**	
9. NDE CE Printed Name: _____ **NDE CE Signature:**_____**Date:**_____				
10. Acknowledgement by the Operator of Counseling Received (if required): **Operator Printed Name:** _____ **Operator Signature:**_____**Date:**_____				

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Attachment 6 – Annual Record of Eye Examination

Employee Name:		
Examination Date:		
Examined by:		
	Printed Name and Title	
	Signature	
Examination Type:	**Jaeger-near acuity**	
Jaeger Level Tested:	**J-2**	
Results: **(circle one)**	**Pass**	**Fail**
Contrast Proficient: **(circle one)**	**Yes**	**No**

Note:

A visual acuity examination shall be administered to the candidate prior to the initial qualification and annually thereafter.

A professional optometrist, medical doctor, nurse, or personnel designee by procedure shall administer this examination.

The candidates shall have natural or corrected near distance acuity in at least one eye, capable of reading J-2 letters on a standard Jaeger test chart at a distance of not less then 30.5 centimeters (12 inches).

The candidate shall receive a contrast vision examination to verify the capability of distinguishing and differentiating contrast normally used.

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Attachment 7 – SPM Appointment Letter

Date:

Subject: Appointment letter for (candidate's name) for the position of (name of position)

Based on (candidate's name) resume and/or personal knowledge of (name's) work history, I have determined (he/she) has suitable education and experience in accordance with CCP-QP-002, *CCP Training and Qualification Plan*, for the position of:

- ☐ (Insert Operation) Operator/ITR at (name site[s]).
- ☐ Expert Analyst for (insert specific NDA equipment and location)
- ☐ RH Technical Staff
- ☐ (Initial) Subject Matter Expert (SME) for (insert operation or NDA unit).
- ☐ Visual Examination Expert (VEE) for the (name facility and site). This is a (CH or RH) function. I have reviewed (candidate's name) training file for qualification/familiarity to the applicable waste streams, experience handling TRU waste, and VE Operator qualifications.

For Initial SMEs: (Candidate's Name) will assist (assisted) with the set-up of (equipment name) at (site). As the initial SME, (Name) will assist (also assisted) with the development of procedures and a qualification card specific to the (unit/site).

Please initiate, as applicable, the CCP-specific training. (Candidate's name) will not be considered qualified for this(these) position(s) until all applicable/required training is complete, on file with CCP Training, and listed on the applicable LOQI(s).

If you have any questions, please contact me.

Thank you,

(SPM Name)
Site Project Manager

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CCP-QP-005

Revision 24

CCP
TRU Nonconforming
Item Reporting and Control

EFFECTIVE DATE: 04/29/2014

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
17	08/27/2008	Revised to include language describing the process the Central Characterization Project (CCP) personnel use when performing open Nonconformance Report (NCR) checks and whether the NCR is "resolved" for a particular container in conjunction with software changes to the Progress Tracking System (PT-S) (NCR status) portion of the CCP Datacenter. Also included additional language with respect to reconciliation of HOLD Tags once the NCR's are cleared for containers and incorporated the directive in Standing Order CCP-SO-30, Clarification of Rework and Reject. This is in response to U.S. Department of Energy-Carlsbad Field Office (DOE/CBFO) Corrective Action Report (CAR) CAR-08-025.
18	08/13/2009	Revised to incorporate freeze file editorial changes, clarify the ability to delete/remove containers from the Batch Data Report (BDR)/Container ID list when revising a nonconformance report (NCR) per CAR-LANL-0001-09, and incorporate Central Rev. Characterization Project (CCP) Standing Order (SO) CCP-SO-024, 1.
19	10/14/2010	Revised to: clarify hold tag application; Carlsbad Field Office (CBFO) notification requirements including responsibility, incorporate CCP-SO-054, 1 and CCP-SO-065, 0; revisions to Attachment 1, CCP Nonconformance Report (NCR); and other minor editorial changes.
20	04/26/2011	Revised to incorporate relevant steps from CCP-QP-004, *CCP Corrective Action Management,* and other editorial changes.
21	03/05/2012	Revised to incorporate clarification of K-trend code designees signature authority and other editorial changes and freeze file items.
22	09/27/2012	Revised to add definitions; to move 2.5.1 to 4.2.1 [F]; to clarify 4.4.15 and Attachment 1, 4.2.10, and Carlsbad Field Office (CBFO) notification in 4.3.1; to add new 4.9.3 to address removal of Hold Tags when voiding a Nonconformance Report (NCR); to incorporate freeze file changes; to modify Attachment 1; to correct some typos and editorial mistakes.

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RECORD OF REVISION (CONTINUED)

Revision Number	Date Approved	Description of Revision
23	06/25/2013	Revised to incorporate Nuclear Waste Partnership (NWP) transition changes; ensure chronological order; to change Notes that include action steps to action steps; to remove contradiction with CCP-PO-024, *CCP/INL Interface Document,* in 4.5.10 [A.2]; to add Attachment 2, Instructions for Completing Attachment 1, CCP Nonconformance Report, and Attachment 6, NCR Hold Tag Guidance, incorporating portions of Standing Order CCP-SO-036 and to implement the Permit Modification Request Class 2 approved by New Mexico Environment Department (NMED) dated March 13, 2013.
24	04/29/2014	Revised determination of recurring condition; deleted all references to CCP-QP-029 and internal Corrective Action Reports (CARs) which was obsoleted and replaced with WP 15-GM1002; replaced reference Carlsbad Field Office (CBFO) Quality Assurance Program Description (QAPD) with Nuclear Waste Partnership (NWP) QAPD; rearranged 4.1.6, 4.2.10 and 4.2.11 for better chronological order; revised definitions “Repair” and “Rework”; corrected various editorial mistakes.

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1.0 PURPOSE

This procedure establishes the requirements and responsibilities for identifying, documenting, reporting, and dispositioning items and services that do not meet established requirements.

1.1 Scope

1.1.1 This procedure applies to Central Characterization Program (CCP) waste characterization, certification, packaging, and transportation. It establishes the process for identifying, documenting, controlling, evaluating, dispositioning, and verifying completion of dispositioning of nonconforming conditions associated with items, equipment, and Batch Data Reports (BDRs).

1.1.2 Nonconforming items will be controlled to prevent any adverse impact on test, installation, use, waste certification, or waste shipment. Organizations affected by the nonconformance will be notified.

1.1.3 Personnel evaluating and determining the disposition of nonconforming items will have demonstrated competence in the specific area they evaluate, adequate understanding of the requirements, and access to pertinent background information.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- WP13-1, *Nuclear Waste Partnership, LLC, Quality Assurance Program Description* (QAPD)
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
- CCP-QP-010, *CCP Document Preparation, Approval, and Control*

Referenced Documents

- DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-QP-008, *CCP Records Management*
- CCP-QP-014, *CCP Quality Assurance Trend Analysis and Reporting*
- CCP-QP-019, *CCP Quality Assurance Reporting to Management*
- CCP-TP-001, *CCP Project Level Data Validation and Verification*
- CCP-TP-035, *CCP Container Management*
- CCP-TP-068, *CCP Standardized Container Management*
- CCP-TP-120, *CCP Container Management*
- WP-15-GM1002, *Issues Management Processing of WIPP Forms*
- 10 Code of Federal Regulations (CFR) Part 71, *Packaging and Transportation of Radioactive Material*

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2.2 Definitions

As Low As Reasonably Achievable (ALARA)	A principle of all work at the site in the use or handling of radioactive materials in which personnel radiation exposure, including the work force and public, is kept at a level as low as possible by reasonable means.
Condition Adverse to Quality (CAQ)	An all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, nonconformances, and technical inadequacies.
Data Quality Objective (DQO) Process	A strategic planning approach based on the scientific method used to prepare for data collection. The Data Quality Objective (DQO) process provides a systematic procedure for defining the criteria that a data collection design should satisfy, including when and where to collect samples, the tolerable level of decision errors for the study, and how many samples to collect.
Item	An all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, subsystem, system, unit, support system, or data.
NCRM (Nonconformance Report Module)	Nonconformance Report Module (NCRM), an electronic database that is part of the Integrated Data Center (IDC).
Nonconformance	A deficiency in a characteristic or record that renders the quality of an item or sample unacceptable or indeterminate.
Orphaned Hold Tag	A Hold Tag no longer attached to its associated nonconforming item.

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Price-Anderson Amendments Act (PAAA)	Law passed by Congress intended to minimize the risk to workers and the public by ensuring that U.S. Department of Energy (DOE) nuclear work is conducted so that human health and safety and the environment are protected adequately.
Repair	The process of restoring an item to a condition such that the capability of the item to function reliably and safely is unimpaired even though that item still does not conform to the original requirement. In container management, “repair” refers to nonconforming characteristics for which the container(s) must be rerun through characterization and the associated BDR that will be superseded by a new one.
Reject	A disposition for nonconforming items for which no resolution that meets the given requirements is possible, and the item cannot be accepted, requiring discarding, replacement, or recharacterization.
Rework	The process by which an item is restored to original specifications by completion or correction. In container management, “rework” refers to nonconforming characteristics that may be corrected without rerunning the container(s) through characterization and the BDR will be completed or corrected.
Scrap	A disposition for nonconforming items which requires discarding or return to supplier.
Supplier	Any individual or organization who furnishes items or services in accordance with a contract. An all-inclusive term used in place of any of the following: vendor, seller, source, participant, contractor, or subcontractor.

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Technical Change	Changes to container or BDR identifications, Interim or Final Dispositions, Actual Conditions, or Requirements.
Traceability	The ability to trace the history, application, and location of an item, data, or sample using documentation. As related to metrology, traceability means the ability to relate individual measurement results through an unbroken chain of calibrations to one or more of the following: • U.S. national standards maintained by National Institute of Standards and Technology (NIST) or the U.S. Naval Observatory • Fundamental or natural physical constants with values assigned or accepted by NIST • National standards of other countries which are correlated with NIST
Use-As-Is	A disposition permitted for a nonconforming item when it can be established that the item is satisfactory for its intended use.
Work	The process of completing a defined task. Examples include research and development, operations, maintenance and repair, administration, software development and use, inspection, safeguards and security, and data collection and analysis.

2.3 Nonconformance Report Module (NCRM)

2.3.1 The NCRM provides the capability for an accurate and timely assessment of the status of all Nonconformance Reports (NCRs).

2.3.2 The NCRM provides the capability to trend NCRs for conditions adverse to quality.

2.3.3 The NCRM provides, as a minimum, the following:

- NCR Number and Revision
- Initiation Date
- NCR Originator

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- Responsible Manager
- BDR/Container (as applicable)
- Actual Condition
- Final Disposition
- Trend Code
- Closure Date
- NCR Log

2.3.4 The NCRM is maintained in the CCP Project Office. The NCRM may also be updated by authorized QA personnel at specified Host sites.

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3.0 RESPONSIBILITIES

3.1 NCR Originator

3.1.1 CCP personnel who discover conditions adverse to quality are responsible for originating an NCR or ensuring an NCR is initiated.

3.1.2 Applies or ensures application of a CCP HOLD TAG or provides other segregation or control methods.

3.2 QA

3.2.1 Validates the NCR.

3.2.2 Evaluates NCRs in accordance with this procedure.

3.2.3 Approves interim and final dispositions.

3.2.4 Ensures that NCRs are entered into the NCRM.

3.2.5 Verifies interim and final disposition completion and closes NCRs.

3.2.6 Applies, removes, or ensures application or removal of CCP HOLD TAGS (as applicable).

3.2.7 Immediately notifies the SPM or Vendor Project Manager (VPM) when HOLD TAGS DO **NOT** reconcile or when orphaned HOLD TAGS are found in process areas.

3.2.8 Provides CCP Training with a notification of individuals who are designated to validate and approve dispositions for NCRs that are Trend Code K. These individuals will have been briefed and designated for this function by Quality Assurance (QA).

3.2.9 Assists the NCR Originator as needed to determine status of all affected containers associated with NCRs initiated at the Project level.

3.3 QA Designee

3.3.1 Validates Trend Code K NCRs.

3.3.2 Approves interim and final dispositions for Trend Code K NCRs.

3.3.3 Ensures that NCRs are forwarded to the Host site QA NCR Coordinator or the CCP Project Office NCR Coordinator for entry into the NCRM.

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3.3.4 Applies, removes, or ensures application or removal of CCP HOLD TAGS (if applicable) for Trend Code K NCRs and delivers removed HOLD TAGS to QA for confirmation of removal.

3.4 Responsible Manager

3.4.1 Provides interim and final dispositions to correct identified deficiencies.

3.4.2 Identifies resolutions to deficiencies and (when applicable) identifies actions to preclude recurrence.

3.4.3 Monitors progress of nonconformance resolution, including completion of dispositions in a timely manner.

3.4.4 Provides for the control of further processing, delivery, installation, or operation of nonconforming items or equipment.

3.5 CCP Site Project Manager (SPM)

3.5.1 Ensures NCR process is followed in accordance with this procedure and is accountable for the implementation of the nonconformance program.

3.5.2 Coordinates Carlsbad Field Office (CBFO) notification between the Certification Manager and the NCR Coordinator.

3.5.3 Prepares interim and final dispositions.

3.5.4 Verifies interim and final disposition completion.

3.5.5 Ensures forwarding of validated and in-process NCRs to the CCP Project Office for NCRM updates, as necessary.

3.5.6 Ensures distribution of completed NCRs as required by applicable interface documents.

3.5.7 Notifies CBFO of nonconformances as required by this procedure.

3.5.8 Monitors to ensure timely completion of NCRs in their area of responsibility, developing a plan to identify and track all nonconformances and reporting this information (approval of this procedure fulfills development of the plan).

3.5.9 Carries out responsibilities of the Responsible Manager, when an NCR so specifies.

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3.6 Vendor Project Manager (VPM)

3.6.1 Ensures site personnel evaluating and dispositioning NCRs have demonstrated competence in the specific area they evaluate, have an adequate understanding of the requirements, and have access to pertinent background information.

3.6.2 Monitors to ensure timely completion of NCRs in their area of responsibility.

3.6.3 Carries out responsibilities of the Responsible Manager, when an NCR so specifies.

3.6.4 Concurs with interim and final dispositions (as requested).

3.6.5 Ensures the application of CCP HOLD TAGS and, in coordination with QA, ensures their removal, as required, and will assure removed CCP HOLD TAGS are delivered to QA for verification of removal.

3.6.6 Notifies the Host site representative of drums that are inaccessible with a request to make them available as soon as possible so that the drums may be monitored and tagged as soon as they are available.

3.7 NCR Coordinator (Site QA serves as the NCR Coordinator for the assigned site)

3.7.1 Maintains the NCR Log.

3.7.2 Distributes NCRs in accordance with this procedure.

3.7.3 Submits closed NCRs to CCP Records.

3.7.4 Updates the NCRM.

3.8 CCP Training

3.8.1 Annotates each site-specific List of Qualified Individuals (LOQI) with a qualified statement for individuals who have been designated by QA.

3.8.2 Maintains designation notifications in each individual’s training file.

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3.9 Certification Manager

3.9.1 Ensures a consistent review for all NCRs that have the potential to require CBFO notification according to the seven (7) calendar days notification requirement.

3.10 Waste Certification Official (WCO)

3.10.1 Assists the NCR Originator as needed to determine status of all affected containers associated with NCRs initiated at the Project level.

3.11 Packaging Manager

3.11.1 Reviews NCRs whose description is Transportation for 10 CFR, Part 71, *Packaging and Transportation of Radioactive Material,* applicability.

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NOTE

Action steps need not be completed in the order given, unless otherwise directed.

4.0 PROCEDURE

4.1 NCR Initiation

QA

4.1.1 Maintain an NCR log (either manual or electronic at the Host site or CCP Project Office), identifying the following as a minimum:

- NCR number
- Initiation date
- NCR Originator

[A] Account for all NCRs issued during a calendar year, including voided NCRs. Number and log NCRs uniquely.

[B] The NCR number is composed of:

NCR-xxxxxx-yyyy-zz, where:

- "NCR" represents "Nonconformance Report"

- "xxxxxx" represents Site Designator (when applicable to remote-handled [RH] waste, include "RH" as a prefix to the site designator [e.g., Savannah River Site remote-handled waste = "RHSRS"])

- "yyyy" represents numerical digits beginning at 0001

- and "zz" represents the final two digits of the calendar year in which the NCR is initiated

Revision control applies.

[C] Examples of NCR Numbers:

- NCR-INL-0001-12, Rev. 0
- NCR-SRS-0361-12, Rev. 1
- NCR-LANL-2841-12, Rev. 2
- NCR-CCP-0015-12, Rev. 0
- NCR-RHLANL-0001-12, Rev. 0

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NCR Originator

4.1.2 CCP personnel who discover nonconforming items or processes are responsibile for initiating NCRs or to notify their managers for assistance in ensuring that an NCR is initiated. Personnel are encouraged to suggest improvements. Nonconformances are documented, evaluated, and dispositioned with a no-fault attitude fostered by management at all levels. On identifying a nonconforming item, obtain the current issued revision of Attachment 1, CCP Nonconformance Report (NCR), from the sftp site.

[A] Document nonconforming items by NCR, including those found by CCP personnel at a supplier's facility or during receipt inspection.

4.1.3 Obtain an NCR number from the NCR Coordinator or QA Designee, **AND** enter the number and revision on all pages of Attachment 1.

[A] Complete Blocks 1 through 7, as applicable, of the NCR (see Attachment 2, Instructions for Completing Attachment 1, Nonconformance Report [NCR]; see also 4.1.6 in regard to Block 7d).

[A.1] Enter "N/A" (Not Applicable) for those blocks **NOT** applicable to the NCR. Use Attachment 3, CCP Nonconformance Report (NCR) Continuation Sheet, whenever available space is inadequate.

[B] **IF** the NCR is documented against a container and a BDR, **THEN** ensure that Block 3 correctly identifies the container number and BDR number, matching exactly the identifications (IDs) identified in the BDR (see also 4.2.1[C.1]).

NCR Originator/Waste Certification Official (WCO)/QA

[C] Determine the status of all affected container(s) associated with NCRs initiated at the Project level as follows:

[C.1] **IF** the containers are not in a shipping lot, **THEN** go to 4.1.5.

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[C.2] **IF** the containers are in a shipping lot,
THEN it must be determined whether the container is in Waste Data System (WDS).

(a) **IF** the containers are in WDS **AND** the NCR is not data-affecting,
THEN go to 4.1.5.

(b) **IF** the containers are in WDS **AND** the NCR is data-affecting,
THEN the container(s) must be moved into assigned pre-sub certification **OR** removed from WDS before the NCR can be validated by QA.

CCP Training

4.1.4 Maintain a list of personnel designated to validate NCRs and approve Interim and Final Dispositions for Trend Code K NCRs.

[A] Designated CCP personnel may validate and approve Interim and Final Dispositions for these NCRs. Those steps in Section 4.0 that designated CCP personnel may carry out as described above identify the responsible individual as "QA Designee."

[B] However, QA must validate and approve NCRs which are not Trend Code K.

[C] QA SHALL verify disposition completion and closing of **ALL NCRs**.

NCR Originator or QA Designee

4.1.5 Select method(s) to be used to control nonconforming items, but they SHALL **NOT** be solely reliant on a single administrative control to differentiate waste containers that are acceptable for shipment to the Waste Isolation Pilot Plant (WIPP).

[A] DO **NOT** use NCRs as administrative holds (e.g., to stop a shipment when there is **NO** nonconformance). Refer to the container management procedures at the specific sites for more details on the proper use of administrative holds.

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4.1.6 Determine whether CCP HOLD TAGS will be applied **OR** whether other methods will be used to control the affected items that do not affect end use, **AND** document in Block 7d of the NCR as applicable. Verify CCP HOLD TAGS by physically placing or confirming tag placement on the container by VPM's or QA Designee's confirmation in writing. If NCRs are initiated at the Project Office, they may be issued with Block 7d incomplete. Once notification is received by QA that NCR Hold Tags have been applied, update the NCR by completing Block 7d. Completion of this block does not require NCR revision.

[A] Apply CCP HOLD TAGS (see Attachment 6, NCR Hold Tag Guidance) UNLESS one or more of the following conditions exist:

- **IF** containers are physically inaccessible, **THEN** inform the VPM to notify the Host site representative of drums that are inaccessible with a request to make them available as soon as possible so that the drums are monitored and tagged as soon as they are available
- Container is an RH container
- Other physical identification methods (i.e., Permanent Reject Labels Not Certifiable to WIPP)
- If Final Disposition is already specified, is "Use-As-Is" with no action pending, and is QA approved

[B] Enter the following minimum information on the CCP HOLD TAG:

- NCR number
- Container or Item number
- BDR number (if applicable)
- Brief description of nonconforming condition
- Name, date, and signature of individual who applies the CCP HOLD TAG
- Any limitations on further processing

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[C] When they are applied, the CCP HOLD TAGS SHALL remain on the containers until the nonconforming condition has been resolved and the disposition has been implemented and verified under the QA Program.

[D] Other methods used to control the affected items may include segregation or the use of dual, independent check systems (for noncompliant RH waste packages based on the ALARA principle), which use two separate and distinct processes and data sets for verifying waste packages are acceptable for shipment.

[E] **IF** marking or tagging of a nonconforming item is impractical, **OR** segregation is impractical or impossible because of physical conditions,
THEN employ other precautions to preclude inadvertent use or shipment.

[F] Control nonconforming items to prevent adverse impact on test, installation, use, waste certification, or waste shipment.

[G] Notify organizations affected by the nonconformance.

4.1.7 Complete Blocks 7a, 7b, and 7c of Attachment 1

[A] Check the Transportation box in Block 7a only when issues with TRUPACT-II *TRU Waste Authorized Methods for Payload Control*, TRUPACT-III *TRU Waste Authorized Methods for Payload* Control, TRAMPAC limits, and packaging materials or conditions for shipped containers are identified.

[B] Ensure the 7b Requirement(s) correctly includes the procedure, revision, section, and quoted text, and the 7c Actual Condition is accurate.

[C] Print name, sign, and date Block 8.

4.1.8 Forward the NCR to the QA Engineer or QA Designee (Trend Code K NCRs only).

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4.1.9 **IF** the NCR is initiated at the Host site, **AND** there is **NO** SPM, QA Engineer or QA Designee available,
THEN:

[A] Copy the NCR and forward it to the responsible individual at the Host site for NCR Log update, if needed.

[B] Forward the NCR to the NCR Coordinator in the CCP Project Office. The NCR Coordinator will initiate a review by a QA Engineer.

4.2 NCR Review

<u>QA Engineer or QA Designee</u>

4.2.1 Review the NCR for the following, at a minimum:

[A] Verify that the identified condition and requirement meet the criteria for an NCR (i.e., hardware items or BDRs, or both) and do **NOT** represent **a** programmatic or process failure, malfunction, or deficiency as specified in WP 15-GM1002, *Issues Management Processing of WIPP Forms*.

[B] **IF** the nonconformance is determined to meet the criteria for a WIPP Form,
THEN void the NCR in accordance with Section 4.10, **AND** instruct the NCR Originator to initiate a WIPP Form in accordance with WP 15-GM1002.

[B.1] When control of nonconforming items **AND** programmatic issues related to the nonconformance both apply, initiate both an NCR **AND** a WIPP Form.

[C] **IF** the NCR is documented against a container and a BDR, **THEN** verify that Block 3 correctly identifies the container number and BDR number, matching exactly the IDs identified in the BDR.

[C.1] **IF** the IDs do not match,
THEN ensure there is a valid reason for the difference, such as WDS number prefixes, historical ID number differences, etc., OR ensure the numbers in question are captured on the acceptable knowledge (AK) Tracking spreadsheet and show a clear correlation between the two.

[D] Verify that the current revision of Attachment 1 has been used, the NCR number and revision are on all pages of the NCR, **AND** the form is filled out correctly.

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[E] Verify that the identified requirement (procedure no., revision no., section, and quoted text) is correct and applies to the actual condition requiring disposition.

[F] Verify the disposition, if already documented in Block 19, was not completed prior to the date of NCR validation.

4.2.2 Resolve any inconsistencies, clarifications, or other concerns identified, with the NCR Originator, who returns to 4.1.2[A] **AND** repeat the process in accordance with Section 4.1.1.

4.2.3 **IF** the NCR is determined to be invalid,
THEN void the NCR in accordance with Section 4.10.

4.2.4 Determine whether the identified condition has the potential to impact AK (i.e., related to waste stream variance, waste matrix code, etc.), and, if so, enter Trend Code L in Block 10. Examples of possible changes to the AK of a waste stream include:

- Incorrect assignment of a waste container to a waste stream (e.g., sludge matrix in a debris container)
- Identification of unanticipated waste material parameters (WMPs) in a container (e.g., metal in a combustibles-only debris container)

4.2.5 Identify the Trend Code using NCR Trend Codes in Attachment 5, **AND** enter the Trend Code in Block 10, if not previously identified in 4.2.4.

4.2.6 Forward NCRs that identify possible changes to the AK of a waste stream (Trend Code L) to the SPM as the Responsible Manager.

[A] **IF** reevaluation is warranted as a result of:

- Inconsistencies noted during the process of comparing AK information to characterization results, **OR**
- The initiation of an NCR identifies potential changes to the AK of a waste stream,

THEN the SPM notifies the AK Expert.

4.2.7 Verify that the Hold Tags have been applied as needed, **AND** complete Block 7d, if not addressed by NCR Originator or QA Designee (see 4.1.6).

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4.2.8 Except for Trend Code K and L NCRs, determine whether a Significant Condition Adverse to Quality exists by comparing with the following criteria:

[A] Does the noncompliance adversely impact the capability to characterize, certify, or ship waste?

[B] Is the noncompliance a violation of the Hazardous Waste Facility Permit (HWFP)?

[C] Could the noncompliance have a serious effect on health and safety of employees, the public, or the environment?

4.2.9 Except for Trend Code K and L NCRs, search the NCRM in IDC to determine whether there are previous violations of the same requirement and the Actual Condition is the same or similar, that is, one that involves the same process (nondestructive assay [NDA],real-time radiography [RTR], visual examination [VE], etc.), the same organization or personnel (Operations, AK Support, Transportation, Packaging & Logistics, etc.), elements of the QA Program (measuring and test equipment, inspection, document control, etc.), or individual vendors within a length of time that infers a potential connection.

4.2.10 **IF** a recurring condition is identified,
THEN discuss with the Assurance Programs Manager, who will determine whether the recurring nature of the conditions represents a Significant Condition Adverse to Quality. If directed, initiate a WIPP Form in accordance with WP 15-GM1002, *Issues Management Processing of WIPP Forms,* control as a Significant Condition, cite the NCR number and revision in the WIPP Form, **AND** document the determination in an email to the NCR Coordinator, who will include it as part of the NCR QA record file.

[A] If the determination of a Significant Condition Adverse to Quality is affirmed, check “yes” in NCR Block 12, and enter in the NCRM.

4.2.11 The recurring conditions will be cited in the Semiannual Report required by CCP-QP-019, *CCP Quality Assurance Reporting to Management,* and include any corrective and preventive actions taken as a result.

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NOTE

The Responsible Manager determination is based on agreements between the SPM, QA Engineer, and applicable Responsible Managers.

4.2.12 Determine the manager responsible for resolution.

4.2.13 Enter the Responsible Manager's name in Block 11.

4.3 NCR Validation

4.3.1 Before validation (Block 14), line through incorrect technical information and enter correct information, initial, and date.

4.3.2 Correct editorial mistakes (grammar or spelling, renumbering sections, attachments or pagination; transcription errors and date) that DO **NOT** affect technical content by lining through, entering correct data, initialing, and dating at any time during the life cycle of the NCR.

4.4 NCR Process

NCR Coordinator

4.4.1 At receipt of the NCR:

[A] Verify the information in the NCR log matches that on the NCR.

[B] Enter the NCR information in the NCRM.

[C] **IF** the NCR Description in Block 7a is Transportation, **THEN** forward a copy of the NCR to the Packaging Manager or designee for consideration of 10 CFR, Part 71, applicability and request the results of the review.

Packaging Manager

[C.1] Review NCRs whose description is Transportation (in Block 7a) for 10 CFR, Part 71, applicability and email the NCR Coordinator the results of the review.

NCR Coordinator

[D] File a copy of the email from the Packaging Manager with the NCR.

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[D.1] **IF** the NCR was generated at or after the SPM signature level,
THEN forward a copy of the project-level NCR to the Certification Manager for review.

Certification Manager

[D.2] Review the project-level NCR to determine whether any nonconformance first identified at or after the SPM signature release level (e.g., CCP-TP-001) does not meet applicable requirements of CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* or DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* (i.e., a failure to meet a DQO), and if so,
THEN inform in writing or by email the NCR Coordinator and SPM, the latter of whom notifies the CBFO as required.

SPM

[D.3] Notify the CBFO in accordance with Attachment 4, Additional CBFO Notification Details, and as follows:

- **IF** the Certification Manager determined that the project-level NCR is reportable,
  THEN notify CBFO within seven (7) calendar days of identification of the deficiency.

- Copy the NCR Coordinator on the CBFO notification.

[D.4] **IF** the NCR was unready for submittal when the notification was made,
THEN submit the NCR to DOE CBFO within thirty (30) calendar days of identification of the deficiency.

Certification Manager

[D.5] **IF** the project-level NCR is determined not to be reportable,
THEN the NCR Coordinator receives an IDC notification that the NCR is not reportable.

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NCR Coordinator

[D.6] The NCRM is updated automatically. File a copy of the CBFO notification and related e-mails with the NCR.

[E] Forward the NCR to the Responsible Manager.

4.5 Disposition Determination

Responsible Manager

4.5.1 Determine the need for interim disposition, **AND**, if applicable, identify any additional approval requirements.

[A] Use Interim Dispositions only when necessary to determine the Final Disposition.

4.5.2 **IF** Interim Disposition is required,
THEN complete Block 15a and 15b of the NCR, **AND** print name, sign, and date Block 16a.

4.5.3 **IF** interim disposition is **NOT** required,
THEN check “N/A” in Block 15a.

4.5.4 Evaluate the nonconforming condition, **AND** provide a final disposition to correct the identified deficiency(ies).

4.5.5 For Final Dispositions, address all items and deficiencies identified in Block 7c of the NCR. Final Dispositions are limited to Use-As-Is, Reject, Repair, Rework, and Scrap. DO NOT close validated NCRs until completion and verification of the Final Disposition. Limit further processing, delivery, installation, or use of a nonconforming item, pending evaluation and approval of the disposition.

4.5.6 Check the Final Disposition Type in the appropriate box in Block 19. Limit Interim or Final Dispositions to only one type in each NCR.

4.5.7 For Use-as-is dispositions, provide Technical Justification in Block 19a.

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4.5.8 For Repair dispositions, provide Technical Justification in Block 19a and instructions for completion in Block 19b.

[A] Items that do not meet original design requirements that are dispositioned Use-As-Is or Repair are subject to design control measures commensurate with those applied to the original design.

4.5.9 For Reject or Scrap dispositions, provide instructions for completion in Block 19b.

[A] **IF** containers that have been characterized are identified on an NCR, and the disposition specifies that the containers are to be returned to the Host site for correction of the nonconforming condition,
THEN the Final Disposition SHALL BE Reject, and include Instructions for Completion "Return to Host site for remediation or repackaging, or both," or similar.

[A.1] DO NOT **CLOSE** the NCR in such a case. The container is returned to the Host site with the CCP HOLD TAG attached to the container (e.g., a container has a prohibited item and requires remediation to bring it into compliance with CCP-PO-001 acceptance criteria). For such containers, DO NOT **REMOVE** CCP HOLD TAGS until nonconforming conditions have been corrected **AND** verified by CCP under the QA Program.

[A.2] There may be circumstances when a nonconforming container is returned to the Host site for remediation or repackaging under the Host site's management system. When the container is removed from the AK tracking spreadsheet for return to the Host site, CCP will follow the Host site Interface Agreement in regard to application and removal of CCP Hold tags. Close the associated NCR(s) and update the NCRM according to this procedure.

4.5.10 Any orphaned tags found SHALL BE presented to QA for action to be taken in accordance with 4.8.5 [A].

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4.5.11 **IF** the nonconforming condition is data which requires that the container be rerun through that characterization (e.g., NDA, RTR or VE, Flammable Gas Analysis [FGA], Gas Generation Testing [GGT]),
THEN the NCR will disposition the container Reject.

4.5.12 **IF** the nonconforming condition is data for the container that will be corrected without rerunning the container through characterization,
THEN the NCR will disposition the container Rework.

4.5.13 For Rework dispositions, provide instructions for completion in Block 19b.

[A] In the disposition of an item to be reworked or repaired, include requirements to reexamine, reinspect, retest, or conduct nondestructive examination (NDE) to verify acceptability. Reexamine repaired or reworked items using the original process and acceptance criteria, unless alternative acceptance criteria or methods have been established and approved as part of the nonconforming item disposition.

4.5.14 **IF** changes to the specifying document are required to agree with the as-built condition,
THEN ensure the disposition requires action to change the specifying document to agree with the as-built condition.

4.5.15 **IF** a document or QA record change is required by the disposition,
THEN specify the change in the disposition **AND** ensure that the document or record cites the NCR number.

4.5.16 Evaluate the need for Actions to Prevent Recurrence (Repair or Rework), **AND** document corrective action(s) or “N/A” in Block 19c.

4.5.17 For Reject Dispositions, include instructions for the disposal of the item(s), such as “scrap,” or “return to vendor,” according to applicable procedures.

4.5.18 Identify any additional approval requirement, if applicable, **AND** document in appropriate block(s).

4.5.19 Print name, sign, and date Block 20, **AND** forward the NCR to the QA Engineer or QA Designee.

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QA Engineer or QA Designee

4.5.20 Review the NCR and determine the following:

[A] The disposition (Interim or Final) adequately addresses measures to be taken to correct the identified deficiency.

[B] The disposition (Interim or Final) has been completed in accordance with this Section.

[C] Actions to prevent recurrence (as applicable) address adequate measures to control recurrence.

[D] Assure any attachments have been completed as required by Section 4.11.

4.5.21 **IF** disposition is deemed appropriate,
THEN approve by completing Block 16b (Interim) or Block 21 (Final), **AND** GO TO step 4.5.23.

4.5.22 **IF** disposition is deemed to be deficient,
THEN recommend changes, resolve with the Responsible Manager, **AND** reprocess according to Section 4.5.

4.5.23 **IF** the NCR is initiated by the Data Generation Level (DGL) against a container or BDR,
THEN copy the validated and dispositioned NCR, **AND** submit it to the appropriate DGL process to be included in the BDR, **OR,** if an NCR revision, to be submitted with the corrected data as an update to the BDR.

4.5.24 **IF** the NCR is initiated by the CCP Project Office against a container or BDR during CCP-TP-001 review,
THEN copy the validated and dispositioned NCR, **OR,** if an NCR revision, forward a copy to the SPM to be included in the BDR.

4.5.25 **IF** the NCR is initiated by the CCP Project Office against a container or BDR, **AND** the disposition is required to be completed at DGL that corrects data in an existing BDR,
THEN, at DGL, include a copy of the validated and dispositioned NCR, **OR,** if an NCR revision, with the corrected data as an update to the BDR.

4.5.26 Verify the acceptable resolution of the disposition for individual containers and release them for shipment to WIPP by using the “Resolve” or “Return” dispositioning in the NCRM.

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4.5.27 Forward the NCR to the NCR Coordinator.

4.6 NCRM Update

NCR Coordinator

4.6.1 At receipt of the NCR:

[A] Enter the NCR in NCRM.

[B] Retain the NCR and any attachments in a working file until NCR closure.

4.7 Disposition Completion

Responsible Manager/VPM/SPM

4.7.1 Monitor disposition completion to assure timely completion.

Responsible Manager

4.7.2 At completion of the required dispositions (Interim or Final), request the original (if necessary) from the NCR Coordinator.

4.7.3 Provide objective evidence of completion of disposition (Interim, Final, and Actions to Prevent Recurrence as applicable) by one or more of the following:

[A] Prepare attachments as required by Section 4.10.

[B] Cite traceable documentation that substantiates completion of dispositions and actions to prevent recurrence.

[C] Sign and date statement(s) of fact or include as attachment.

[D] If desired, discuss with SPM and/or Originator, reviewing the documentation that substantiates completion of dispositions prior to formal submittal to ensure adequacy.

4.7.4 Document in an attachment prepared as required by Section 4.11 that substantiates completion of dispositions (as applicable).

4.7.5 Print name, sign, and date Block 17 (Interim) or Block 22 (Final), or both, **AND** submit original NCR with attachments (as applicable) to the QA Engineer.

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4.8 Completion Verification and Closeout

QA Engineer

4.8.1 If desired, allow nonconforming items to continue through the normal process under certain controlled circumstances while their NCR is open, but always implement and verify the approved disposition(s) prior to NCR's closing.

4.8.2 Review the NCR and verify the following:

- Attachments provide traceability to objective evidence substantiating completion of disposition.
- Documentation provides adequate objective evidence of completion of disposition.
- Attachments (if applicable) have been completed as required by Section 4.11.
- Review the NCR and all attachments (if applicable) to assure conformance to applicable requirements.

4.8.3 Document the Attachment number(s) in Block 23 as needed. If no attachments, enter "N/A."

4.8.4 **IF** Interim disposition **AND** other requirements in accordance with 4.8.2 are satisfactorily completed,
THEN print name, sign, and date in Block 18, **OR** continue to 4.8.5 for Final Disposition.

4.8.5 **IF** Final Disposition,
THEN ensure removal of all CCP HOLD TAGS as required, either by removing them personally or in coordination with the VPM or QA Designee. Verification will be so noted by checking the box in Block 24 of Attachment 1 prior to closing the NCR.

[A] **IF** verification identifies missing tags,
THEN immediately notify the SPM or VPM.

4.8.6 Print name, sign, and date Block 25.

4.8.7 **IF** disposition (Interim **OR** Final) **AND** other requirements in accordance with 4.8.2 are **NOT** satisfactorily completed,
THEN return to Responsible Manager (with detailed reasons for return) for correction and resubmittal.

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4.8.8 Determine any distribution requirements as identified in applicable interface documents.

4.8.9 Forward the closed NCR and applicable attachments to the NCR Coordinator.

4.9 Closeout

NCR Coordinator

4.9.1 At receipt of the closed NCR:

[A] Update the NCR in the NCRM.

[B] Distribute as required.

[C] Submit the completed NCR with attachments, if applicable, to CCP Records in accordance with CCP-QP-008, *CCP Records Management*.

4.10 Voiding the NCR

NCR Originator or QA Engineer

4.10.1 **IF** an NCR is determined to be invalid during the review in accordance with Section 4.2 (prior to NCR validation), **THEN**:

[A] On the open NCR, document the detailed justification for voiding. Write anywhere on the NCR as long as it does not obliterate existing information, OR use Attachment 3, or create an attachment according to CCP-QP-008.

Ensure that the NCR Originator and the QA Engineer print name, sign, and date.

[B] Forward the NCR to the NCR Coordinator.

[C] GO TO step 4.10.3.

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Responsible Manager, SPM, QA Engineer, or NCR Originator

4.10.2 **IF**, after NCR validation when the NCR is still open, the NCR Originator, the SPM, the Responsible Manager, and the QA Engineer agree that it is appropriate to void a validated NCR, **THEN**:

[A] On the NCR, document the technical justification for voiding, **AND** ensure that the NCR Originator, the SPM, the Responsible Manager, and the QA Engineer print name, sign, and date.

[B] Stamp or write “void” on the first page of the NCR, initial, and date.

[C] Forward the NCR to the NCR Coordinator AND copy the SPM.

NCR Coordinator

4.10.3 Verify Block 24 of Attachment 1 (NCR) has been completed.

4.10.4 Update the NCR Log that the NCR is voided, if needed.

4.10.5 Input the NCR into NCRM.

4.10.6 Submit voided NCR to CCP Records in accordance with CCP-QP-008.

4.10.7 Ensure a copy of the NCR is submitted to the appropriate DGL personnel as required by CCP-TP-001.

4.11 Attachments

NCR Originator/SPM/QA Engineer/Responsible Manager

4.11.1 When using attachments to an NCR:

[A] Identify the NCR number and revision number on each page of the attachment.

[B] Identify the attachment number.

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[C] Paginate each page of the attachment.

EXAMPLE:
NCR-LANL-0700-12, Rev 0, Attachment 1,
Page 1 of 1

NCR-SRS-0800-12, Rev 1, Attachment 3, Page 1 of 6,
2 of 6, etc.

4.12 Revisions

NCR Originator/SPM/Responsible Manager

4.12.1 After validation of the NCR, change technical content by revising the NCR as follows:

[A] Obtain a blank copy of the current revision of the NCR from the sftp site.

[B] Apply next sequential revision number to all pages of the NCR and all attachments.

[C] Document the reason for revision in Block 7c.

NCR Originator, SPM, Responsible Manager, or NCR Coordinator

[D] Supersede the previous revision by drawing a diagonal line across the first page of the NCR, **AND** adding a statement, "Superseded by Revision # (next sequential revision #)," **AND** initial and date.

[E] Attach the superseded revision to the new revision.

[F] Submit new revision for review and approval in accordance with Section 4.2.

4.13 NCR Log Reconciliation - CCP Project Office and Host Site

NCR Coordinators/QA Engineer

4.13.1 At the end of the calendar year, reconcile NCR numbers issued with NCR logs maintained at Host sites (where applicable), the NCR Log, and the NCRM, as follows:

QA Engineer:

[A] Verify that all NCR numbers issued and that appear in the Host Site Log, are accounted for in the NCRM.

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[B] Resolve all discrepancies identified with the NCR Coordinator.

[C] Prepare and submit a report to the CCP Project Office NCR Coordinator that documents the reconciliation effort.

CCP Project Office NCR Coordinator

4.13.2 Reconcile NCR numbers issued to the QA Engineer at Host sites with the NCR Log, based on the report submitted by the QA Engineer.

4.13.3 Note any NCR numbers **NOT** used during the year as "Number Not Used" in the Report.

4.13.4 Submit the NCR Reconciliation Report to CCP Records in accordance with CCP-QP-008.

4.14 Work Suspension and CBFO Stop Work Orders

Personnel Working

4.14.1 During Normal Work

[A] All CCP employees shall be responsible and authorized to suspend work if concerned with employee safety, the safety of the environment, or the quality of the work.

[B] **IF** work CAN **NOT** be carried out as specified in a procedure **OR** continuing work would result in an undesirable situation, a condition adverse to quality or the environment, or an unacceptable safety risk,
THEN suspend work in a safe configuration **AND**, inform the Lead Operator (LO) or VPM.

Lead Operator or Vendor Project Manager

[C] Resolve the concerns of the employee or inform the SPM of the work suspension and the reason it is suspended.

CCP Management

[D] Resolve the concerns prior to resuming operation **OR** initiate actions to correct the condition using existing procedures. In either event, keep the employee who raised the concern informed of actions taken in response.

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[E] Initiate the appropriate documentation in accordance with *WP 15-GM1002,* and CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control* as applicable to the situation.

SPM

[F] **WHEN** all corrective actions have been completed and verified,
THEN direct restart of suspended work.

4.14.2 CBFO Stop Work Orders

CCP Personnel

[A] Immediately comply with the terms of any Stop Work Order issued by the CBFO, which is authorized to issue Stop Work Orders for the protection of the environment and health and safety of CCP employees and the public.

CCP Management

[B] Accept direction set forth in CBFO Stop Work Orders and carry out such directives in a safe and responsible manner in accordance with established procedures.

[C] Submit Stop Work Orders and related documentation to CCP Records according to CCP-QP-008.

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5.0 RECORDS

5.1 Records generated during implementation of this procedure are maintained and controlled as QA records in accordance with CCP-QP-008. The records are the following:

5.1.1 <u>QA/Nonpermanent Records</u>

- Attachment 1, CCP Nonconformance Report (NCR) (including related emails and supporting documentation [if applicable])
  - Attachment 3, CCP Nonconformance Report (NCR) Continuation Sheet (if applicable)
  - CBFO Notifications (if applicable)
- NCR Reconciliation Report
- CCP NCRM Database
- Written Directive to suspend work (e.g., memo, email [if applicable])

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Attachment 1 – CCP Nonconformance Report (NCR)

CCP NONCONFORMANCE REPORT (NCR)

(Use NCR Continuation, Attachment 3, if necessary)

NCR No. NCR-	Revision	
1. Lot No., Heat No., or Serial No. (if applicable):	2. Process (e.g., NDA, NDE, VE, Other):	3. Batch Data Report #(s):
4. Order/Work Order/Job Control Number (if applicable):	5. PO # (if applicable):	Container #(s):
	6. Supplier (if applicable):	

DESCRIPTION OF NONCONFORMANCE

7a. NCR Description: ☐ < 100 nCi/g ☐ Prohibited Item ☐ E-Flag ☐ Receipt Inspection ☐ Transportation ☐ WWIS/WDS ☐ Other

7b. Requirement(s) (Enter Implementing Procedure No., Revision, Section No., & Quoted Text):

7c. Actual Condition:

7d. Have the CCP HOLD TAGS associated with this NCR been applied? ☐ YES ☐ NO If no is checked, explain:

8. NCR Originator:

printed name _____ signature _____ date _____

9. Does the identified condition have the potential to impact AK? If YES or INDETERMINATE, enter Trend Code L in Block 10. ☐ YES ☐ NO ☐ INDETERMINATE

10. Trend Code:	11. Responsible Manager:
12. Significant Condition? ☐ YES ☐ NO (If Yes, enter WIPP Form No.):	13. Recurring Condition? ☐ YES ☐ NO (If Yes, list NCRs and WIPP Forms):

14. QA Engineer or QA Designee validation:

printed name _____ signature _____ date _____

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Attachment 1 – CCP Nonconformance Report (NCR) (Continued)

NCR No. NCR- Revision

INTERIM DISPOSITION

15a. Interim Disposition (Check Only One):

☐ N/A (See Final Disposition) ☐ Hold ☐ Conditionally Accept ☐ Conditionally Use

☐ Sort ☐ Reinspect or Retest ☐ Remediate

15b. Instructions for Completion of the Interim Disposition:

INTERIM DISPOSITION APPROVALS

16a. Responsible Manager or Individual:

printed name signature date

16b. QA Engineer or QA Designee:

printed name signature date

Additional Approval:

printed name signature date

Additional Approval:

printed name signature date

COMPLETION OF INTERIM DISPOSITION

17. Interim Disposition Complete – Responsible Manager or Individual:

printed name signature date

18. Interim Disposition Verified – QA Engineer:

printed name signature date

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Attachment 1 – CCP Nonconformance Report (NCR) (Continued)

NCR No. NCR- Revision

FINAL DISPOSITION

19. Final Disposition (Check Only One: Use-As-Is, Repair, Reject, Rework, or Scrap):
☐ Use-As-Is ☐ Repair

19a. Technical Justification – Required for Use-As-Is or Repair dispositions. [☐ N/A for Reject, Rework, or Scrap]

☐ Reject ☐ Rework ☐ Scrap

19b. Instructions for Completion – Required for Reject, Repair, Rework, or Scrap [☐ N/A for Use-As-Is]

19c. Corrective Actions (Actions to Prevent Recurrence – For Repair or Rework, if applicable.
[☐ N/A if not applicable, and for Use-As-Is, Reject, and Scrap]

FINAL DISPOSITION APPROVALS

20. Responsible Manager or Individual:

printed name signature date

21. QA Engineer or QA Designee:

printed name signature date

Additional Approval:

printed name signature date

Additional Approval:

printed name signature date

CLOSURE

22. Final Disposition Complete - Responsible Manager or Individual:

printed name signature date

23. Attachments:

24a. HOLD TAG removal has been verified and reconciled for all nonconforming items on the NCR: ☐
24b. If HOLD TAG is not applicable, check: ☐ and explain:

25. Final Disposition Verified – NCR Closed QA Engineer:

printed name signature date

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Attachment 2 – Instructions for Completing Attachment 1, Nonconformance Report (NCR)

Block	Responsible Individual(s)	Instructions
1	NCR Originator	Enter Heat no., Lot no., or Serial no. (as applicable) of material or item, measuring or test equipment, or item purchased from a supplier. If not applicable, enter "N/A."
2	NCR Originator	Enter kind of process. Choose one or a combination from the following: AK, CRMU Project, DA, Exterior Surface Radiological Survey, FGA, GGTP, HE-RTR, Lot Evaluation, MOVER, NDA, NDE, OSRP, Radiochemistry, Receipt Inspection, RH-DTC, RH-NDE, RH-RTR, RH-Sampling, RH-VE, Solids Analysis, Surface Finish, Testing, Transportation, VE, WCO, WWIS/WDS, Other. If not applicable, enter "N/A."
3	NCR Originator	Enter Batch Data Report number(s) if applicable. If not applicable, enter "N/A." Enter Container number(s) if applicable. If not applicable, enter "N/A."
4	NCR Originator	Enter Order, Work Order, or Job Control Number if applicable. If not applicable, enter "N/A."
5	NCR Originator	Enter Purchase Order number if applicable. If not applicable, enter "N/A."
6	NCR Originator	Enter Supplier if applicable. A Host site is not a supplier. If not applicable, enter "N/A."
7a	NCR Originator	Check applicable box to match NCR Description.
7b	NCR Originator	Enter the requirement that applies to the nonconforming condition. Include implementing procedure number, its revision, the applicable section or paragraph number, and quote the text.
7c	NCR Originator	Enter the actual, nonconforming condition. Provide enough detail so that a disposition can be developed to correct it.
7d	NCR Originator or QA or QA Designee	Check "Yes" if Hold Tags have been applied or "No" if another method has been selected to control the item(s). If Hold Tags were not applied because of the Remote-Handled ALARA principle, enter the following: "Hold Tags will not be applied to items identified on this NCR because of ALARA consideration. Container management will apply through administrative control. In addition, these containers have been identified on the CCP sftp site. Container information from this NCR has been included in the list, which is to alert Mobile Loading Unit personnel as a second method of control of non-tagged containers." If NCR was originated at the Project Office, the site will be advised to apply Hold Tags and confirm when done. At that time, QA or QA Designee may check Block 7d "Yes." The NCR does not require revision as a result.

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Attachment 2 – Instructions for Completing Attachment 1, Nonconformance Report (NCR) (Continued)

Block	Responsible Individual(s)	Instructions
8	NCR Originator	Print name, sign, and date.
9	QA or QA Designee	Determine whether the Block 7c Actual Condition impacts or may impact AK. If so, check Block 9 "Yes." If it cannot be determined whether AK is impacted, check "Indeterminate." If not, check "No." If "Yes" or "Indeterminate" was checked, enter Trend Code 'L' in Block 10.
10	QA or QA Designee	If no Trend Code is entered in Block 10, determine the applicable code and enter it.
11	QA or QA Designee	Determine the Responsible Manager and enter (see Note before 4.2.12).
12	QA or QA Designee	After discussion with Assurance Manager, determine whether a Significant Condition Adverse to Quality exists (see 4.2.6) and check box accordingly. If "Yes" is checked, enter applicable WIPP Form number.
13	QA or QA Designee	Determine whether a recurring condition exists (see 4.2.9) and check box accordingly. If "Yes" is checked, enter applicable NCR or WIPP Form numbers.
14	QA or QA Designee	If NCR is determined valid, print name, sign, and date.
15a	Responsible Manager	If Interim Disposition is needed, check one box: "Hold," "Conditionally Accept," "Conditionally Use," "Sort," "Reinspect or Retest," or "Remediate." Proceed to Block 15b. If Interim Disposition is not needed, check "N/A" and proceed to Block 19.
15b	Responsible Manager	Enter instructions for completion of the Interim Disposition.
16a	Responsible Manager or Individual	Print name, sign, and date.
16b	QA Engineer or QA Designee	Print name, sign, and date.
17	Responsible Manager or Individual	When Interim Disposition is to be closed, print name, sign, and date.
18	QA Engineer or QA Designee	If verified adequate, print name, sign, and date.
19 or 19b	Responsible Manager or Individual	Check only one box: "Use-as-is," "Repair," "Reject," "Rework," or "Scrap."
19a	Responsible Manager or Individual	Enter Technical Justification if Disposition is "Use-as-is" or "Repair." If not, enter "N/A," and proceed to 19b.

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Attachment 2 – Instructions for Completing Attachment 1, Nonconformance Report (NCR) (Continued)

Block	Responsible Individual(s)	Instructions
19b	Responsible Manager or Individual	Enter Instructions for Completion if Disposition is “Reject,” “Repair,” “Rework,” or “Scrap.”
19c	Responsible Manager or Individual	Enter Action(s) to prevent recurrence, if applicable. Enter “N/A” if not applicable, or for “Use-as-is,” “Reject,” and “Scrap” dispositions.
20	Responsible Manager or Individual	Print name, sign, and date.
21	QA or QA Designee	If Final Disposition is acceptable, print name, sign, and date.
22	Responsible Manager or Individual	When Final Disposition is completed, print name, sign, and date.
23	QA or QA Designee	If there are any Attachments, enter number and title or description of each.
24a	QA or QA Designee	If Hold Tag removal was verified for all nonconforming items on the NCR, check box.
24b	QA or QA Designee	If Hold Tags are not applicable, check box and enter explanation.
25	QA Engineer	When Final Disposition is verified, print name, sign, and date for closure of NCR.

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Attachment 3 – CCP Nonconformance Report (NCR) Continuation Sheet

NCR No. NCR-	Revision	Attachment #	Page	of
Continuation from Section Number:				

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Attachment 4 – Additional CBFO Notification Details

This attachment details reporting notification requirements for CCP-generated Nonconformance Reports (NCRs) which meet the condition identified in CCP-PO-001, Section C3-13, and 4.4.1[D.5] of this procedure.

WIPP e-mail Address: wipp.notify@wipp.ws

Electronic notification is strongly encouraged. If electronic notification is used, the following criteria are required:

On the subject line, preceding the subject, [ncr]. The term “ncr” in brackets [ ] allows the automatic transfer into the proper folder of the receiving system.

Include the NCR number, description of the deficiency, and the date identified.

CCP must email an NCR containing CCP’s procedurally required information thirty (30) days after the nonconformance was identified.

CCP may choose to transmit the NCR within the required seven (7) days, and satisfy both notification requirements, provided the following information is submitted:

- Site NCR #
- Responsible Organization
- Date initiated
- Individual who identified the NCR
- Deficiency
- Requirement violated
- Actions
- Date closed, if applicable

General Notification

If CCP does not have the capability of transmitting documents by e-mail, or elects not to, hard-copy transmittal may be used instead. Correspondence must be sent to the following address:

[Assigned CBFO Contact]
Carlsbad Field Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, NM 88221-3090

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Attachment 5 – Trend Codes

Trend Codes	Descriptions	Definitions and Examples
A*	Personnel Error and Failure to Follow Procedure	Personnel wrongly entered data or transposed figures or letters; inattention to detail; lack of understanding; use of superseded or incorrect version of specifying document; used procedure, but before required approval(s); required review missed problem(s); failed to follow procedure(s); deliberate violation.
C	Engineering Deficiency	Inadequate or erroneous engineering design, design input, or design output.
D	Procedure Less Than Adequate	Procedure erred or was vague in specifying requirements; failure to revise procedure when work processes change; no procedure to control QA work.
E	Software Deficiency	Software error resulted in deficient data; unqualified software used to obtain QA data; failure to initiate software qualification process; failure to verify software following software or operating system upgrade.
F	Vendor Deficiency	Deficiencies related to a vendor (i.e., procured item including hardware does not meet a requirement prescribed in the purchase order); wrong or less than adequate vendor documentation.
H	Material or Equipment Control Deficiency	Failure of material, equipment, or items because of damage, failure of a component, inadequate maintenance, etc.

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Attachment 5 – Trend Codes (Continued)

Trend Codes	Descriptions	Definitions and Examples
I	Calibration Deficiency	Calibration was inadequate, resulting in nonconforming or indeterminate data; use of out-of-calibration M&TE.
J	Inadequate Documentation	Record is nonconforming: does not include required data; required data are incorrect; record(s) improperly stored.
K	WAP/WAC Deficiency	Noncompliance with a WAP or WAC requirement **(Exempt from trending)**.
L	Acceptable Knowledge Deficiency	Possible changes to the AK of a waste stream (e.g., assignment of waste container to wrong waste stream; identification (ID) of unanticipated waste material parameters in a waste container) **(Exempt from trending)**.
M	Inadequate Communication	Personnel were given ambiguous or incorrect information or instructions to do their work; inadequate or lack of planning.
O	Ineffective Control of Corrective Action	Actions intended to correct deficiencies or preclude recurrence proved ineffective; identification of nonconforming item(s) less than adequate.
P	Inadequate Training	Condition Adverse to Quality resulted from lack of or inadequate indoctrination, training, or qualification; work done before indoctrination, training, or qualification or after qualification expired.
Q	Deficiency Caused by Others	The deficiency was caused by non NWP personnel working to non NWP QA program or none at all.
R	Control of Electronic Data Less Than Adequate	Inadequate security access control; inadequate protection of data; failure to backup data; inadequate traceability of data; failure to verify transferred data.

* Former Trend Code B was combined with A.

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Attachment 6 – NCR Hold Tags Guidance

Applicability

This Attachment applies to all CCP personnel applying or removing CCP Nonconformance Report (NCR) Hold Tags.

Vendor Project Manager (VPM) Administrative Hold Tags are addressed in Container Management procedures CCP-TP-035, CCP-TP-068, and CCP-TP-120.

When PLACING an NCR Hold Tag on waste container:

- Use only CCP-provided NCR Hold Tag
- When applying the NCR Hold Tag, enter the information using a Sharpie permanent marker or equivalent
- The NCR Hold Tag when possible should be applied so that the drum number, BDR number, etc. face out
- Place the NCR Hold Tag on the waste container locking ring bolt or lifting handle, using the cable tie in accordance with the following:
    - Use a separate cable tie for each Hold Tag placed on a waste container
    - Ensure the the cable tie locks and does not protrude past the bottom of the device
    - If the wire protrudes past the bottom of the device, wrap the exposed wire with tape

When REMOVING an NCR Hold Tag from a waste container:

- Wrap the area where the cable is to be cut with tape prior to cutting to prevent the cable wires from splaying. Cut the cable tie holding the NCR Hold Tag to the container using CCP-approved cable cutters.
- DO NOT cut or pull the tag off the cable tie
- Return the NCR Hold Tag to the VPM or SPM directing removal of the tag. The VPM or SPM will then turn the tags over to the QA Engineer for tracking with the corresponding NCR.
- DO NOT remove Host site tags or tamper-indicating devices (TID). Immediately report accidental removal of these to the VPM.

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Attachment 6 – NCR Hold Tags Guidance (Continued)

When a cable or wire is found on a waste container without an NCR Hold Tag attached, or when an NCR Hold Tag is damaged or faded:

- Treat the container as though it has an NCR Hold Tag applied.
- If the NCR Hold Tag is found damaged or faded, document the container number and any information from the remaining Tag and notify the VPM or SPM.
- If a loose tag is found on a waste container or on the ground, turn the tag over to the VPM or SPM.
- Replace loose, damaged, faded, or missing NCR Hold Tags as directed by the VPM or SPM.

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CCP-QP-008

Revision 22

CCP
Records Management

EFFECTIVE DATE: 03/24/2014

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
6	03/11/2002	Additions for use of e-QA system
7	06/07/2002	Incorporation of instructions for pagination and removal of text in Attachments.
8	09/04/2002	Added the definition of magnetic tape and incorporated text to clarify the requirements of computer generated electronic records (clarified steps 2.3.7 and 4.8.3). Updated Attachment 2 to reflect new fax machine number. Added new steps regarding duties for the CCP Site Project Manager and the release of records (steps 3.1 and 4.7).
9	08/27/2003	Updated to reflect issuance of Revision 5 of the QAPD. Made other editorial changes. Separated electronically fillable forms and updated references in the procedure.
10	10/15/2004	Clarified CCP Personnel and Facility Records Custodian responsibilities. Editorial changes throughout.
11	08/22/2005	Reorganized sections for improved flow and added clarifications. Deleted Attachments 3 through 6.
12	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR).
13	04/24/2007	Revised to change title in responsibilities and body of procedure and to add statement (Note) from QAPD and remove verbiage about in-process records.
14	09/19/2007	Revised to address finding from U.S. Department of Energy, Carlsbad Field Office, Corrective Action Report 07-016, Audit A-07-24. Also revised to provide some clarifications within the procedure, added a step to address superseding and voiding of documents (i.e., Batch Data Reports, Nonconformance Reports), and added a note at the beginning of section 4.9 to address computer modeling results methods.
15	10/28/2009	Revised to make personnel title changes and name changes to organizations. Added section 4.7.1[G] for lost records as well as a section for receipt and handling of Official Use Only (OUO) and Unclassified Controlled Nuclear (UCN) documents.
16	07/06/2010	Revised to clarify and address the submittal of historical source documents.

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
17	11/02/2010	Revised to change the submittal process for Acceptable Knowledge (AK) documentation and section on historical source documents.
18	03/30/2011	Revised to support corrective action report (CAR)-LANL-0004-10.
19	08/02/2011	Revised to change the number of the form in the definition of retention period. Change to Section 4.8 for clarification.
20	08/10/2012	Revised to clarify editorial changes, transmitting of records, and destruction of QA records.
21	02/28/2013	Revised to incorporate Nuclear Waste Partnership (NWP) transition changes.
22	03/24/2014	Revised to include steps for the Record Index Module, addresses editorial guidelines for records, and to update records section.

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1.0 PURPOSE

This document outlines the Central Characterization Program (CCP) Records Management Program. The records program involves CCP Records and interaction with the Waste Isolation Pilot Plant (WIPP) and Records Management Services (WRMS) as outlined in this procedure.

1.1 Scope

This procedure applies to the creation, maintenance, use, and disposition of records generated by the CCP.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document* (QAPD)

Referenced Documents

- *National Archives and Records Administration (NARA) Approved Record Schedules*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-028, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning*
- DOE M 471.1-1, *Identification and Protection of Unclassified Controlled Nuclear Information Manual*.
- DOE M 471.3-1, *Manual for Identifying and Protecting Official Use Only Information*.

2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan,* prior to performing this procedure.

2.3 Definitions

2.3.1 **Authentication** - Synonymous with validation.

2.3.2 **Computer System** - A configuration, or working combination, of hardware, software, and data communication devices.

2.3.3 **Destruction** - The physical destruction of records by shredding, incinerating, or other permanent means.

2.3.4 **Disposition** - The action taken regarding records no longer needed for current government business. Actions may include transfer to the Carlsbad Field Office (CBFO) Records Holding Facility or Federal Records Center, transfer from one federal agency to another, transfer of permanent records to the National Archives and

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Records Administration (NARA), or destruction of nonpermanent records.

2.3.5 **Electronic Record** - A record in a form that is readable only by a computer. Electronic records are most frequently recorded on media such as disk, diskette, tape, and tape cartridges.

2.3.6 **External Records** - Records generated by the waste generating sites (e.g., procurement records, procedures, radiological surveys, facility operating logs, container packaging records, historical source documents, etc.). These records are not subject to the requirements of this procedure concerning legibility, pagination, accuracy, completeness, or revision.

2.3.7 **Inactive Record** - A record no longer required to conduct government business and therefore dispositioned in accordance with approved records schedules and stored for authorized retention periods.

2.3.8 **Index** - A listing of records and cross-reference information. At a minimum, an index will indicate record location within the record filing and storage system.

2.3.9 **Internal Use Only (IUO)** - A document that has been identified as Internal Use Only (IUO) and is considered proprietary, which is not to be disseminated beyond the organization.

2.3.10 **Legible** - For the purpose of this document, legible means that the characters, letters, and numbers making up data or information contained in a record can be read without difficulty or magnification.

2.3.11 **Lifetime Quality Assurance (QA) Records** - Records that are required to be retained and preserved in an acceptable condition for the operating life of the repository (i.e., until termination of the repository permit). Prior to destruction of any lifetime record, it shall be evaluated for upgrade to a post-closure record.

2.3.12 **Magnetic Tape** - A tape with a magnetizable surface on which data can be stored and retrieved. A tape or ribbon of any material impregnated or coated with magnetic or other material on which information may be placed in the form of magnetically polarized spots.

2.3.13 **Medium** - Refers to the physical form of recorded information such as paper, film, disk, magnetic tape, or other materials on which information can be recorded.

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2.3.14 **Microfilming** - A photographic process used to record images of records on a fine-grain, high-resolution film in sizes greatly reduced from the original. Formats in general use are rolls of 16 millimeter (mm) images, pages of 16 mm images called microfiche, and 35 mm images mounted in aperture cards. Microform is a generic term for all microfilm formats.

2.3.15 **Migrate** - In electronic records, the process of moving from one computer system to another.

2.3.16 **National Archives and Records Administration (NARA)** - An independent government agency responsible for establishing policies and procedures for managing the records of the federal government. NARA exercises final authority for approving the disposition of government records.

2.3.17 **Nonpermanent Records** - Records having value for a specific, limited time and authorized by NARA (via approved disposition schedules) to be destroyed after that time. Nonpermanent records are sometimes referred to as temporary records.

2.3.18 **No Foreign National (NOFORN)** - No Foreign National (NOFORN) is a marking that identifies a document is not to be given to a person who is a foreign national – not a United States citizen.

2.3.19 **Nonrecord Material** - Those classes of documentary or other material that fail to meet the general definition of a record or fall under one of the following categories: (a) library or museum material made or acquired for reference or exhibition purposes; (b) extra copies of documents preserved only for convenience of reference on which no action is recorded or taken; (c) stocks of publications or other processed documents that require no action and are not part of a case on which action is taken; (d) routing slips and transmittal sheets adding no information to that contained in the transmitted material (i.e., concurrences or direction on how to proceed or implement); and (e) papers of a private or nonofficial character that pertain to an individual's private affairs.

2.3.20 **Official Use Only (OUO) Information** - Certain unclassified information that may be exempt from public release under the Freedom of Information Act and has the potential to damage governmental, commercial, or private interests if disseminated to persons who do not need to know the information to perform their jobs or other U.S. Department of Energy (DOE) authorized activities.

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2.3.21 **Personal Papers** - Materials of a private nature maintained by personnel at their work place that DO **NOT** relate to, or have an effect on, the conduct of business or activities related to the CCP. Personal papers maintained in desks and file drawers in the work place must at all times be segregated and stored separately from records.

2.3.22 **Post-closure Records**

- Records that assist in preventing action that could impair the long-term isolation of the waste.
- Records preserving information that would prevent inadvertent human intrusion, such as the nature and hazard of the waste and locations of the geologic repository operation area, the underground facility, bore holes, shafts, and boundaries of the controlled area.
- Records providing information relevant to post-closure monitoring and assessment of performance of the repository system.
- Records preserving, for future generations, information regarding the geologic setting relevant to mitigation of releases of radioactive materials.
- Records which would be of significant value after decommissioning and closure of the repository.

2.3.23 **Privacy Record** - Any item, collection, or grouping of information about an individual that contains his or her name or other personal identifier.

2.3.24 **Project Participant** - Any DOE site, generator site, or contractor organization that participates in a CBFO program. Subcontractor's records are the responsibility of the participant.

2.3.25 **Project Records** - Records created or received in support of the CCP.

2.3.26 **QA Record** - An authenticated record that provides objective evidence of the quality of items or activities.

2.3.27 **Record Medium** - Refers to the physical form of recorded information such as paper, film, disk, magnetic tape, or other materials on which information can be recorded.

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2.3.28 **Records** - Those classes of documentary materials which may be disposed of only after the archival authority is obtained. The statutory definition of records (44 United States Code §3301, Definition of Records), "...includes all books, papers, maps, photographs, machine-readable materials or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the United States government under federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations or other activities of the government or because of the informational value of the data in them." This definition applies to all departmental records including those created, received, and maintained by contractors pursuant to their contracts. Virtually all recorded information in the custody of the government (including information held by contractors which is considered by contract to be government information) regardless of its' media (hard copy, machine-readable, microform), is considered "government records." For the CCP, information meeting the above criteria is considered to be a record, unless it can be clearly identified as a nonrecord.

2.3.29 **Records Custodian** - An individual identified within an organization who is assigned the responsibility of, and trained for, assisting record originators regarding records management issues.

2.3.30 **WIPP Records Archive (WRA)** - A facility that meets the regulatory requirements for the storage of noncurrent records pending their destruction or transfer to a Federal Records Center or the NARA. The WIPP Records Archive (WRA) is located in Carlsbad, New Mexico.

2.3.31 **Records Inventory and Disposition Schedule (RIDS)** - The DOE form used to indicate the appropriate disposition of records. The purpose and content of the form may be placed in electronic media as long as all the requirements of the form are met.

2.3.32 **Record Series** - File units or documents arranged according to a filing system or kept together because they relate to a particular subject or function; result from the same activity; document a specific kind of transaction; take a particular physical form; or have some other relationship arising out of their creation, receipt, or use, such as restrictions on access and use. A record series may also include related elements physically separated from it such as finding indexes or large documents (also sometimes called a file series). These records are generally handled as a unit for disposition purposes.

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2.3.33 **Software Generated** - A form that is generated by controlled software that performs approved calculations.

2.3.34 **Unclassified Controlled Nuclear Information (UCNI)** - Certain unclassified but sensitive Government information concerning nuclear material, weapons, and components whose dissemination is controlled under section 148 of the Atomic Energy Act.

2.3.35 **Record Systems** - A common, integrated set of manual and/or automated activities for creating and identifying; collecting and controlling; processing and organizing; distributing; microfilming; storing and preserving; retrieving; and disposing of records applicable to preparation for storage, as well as the storage of machine readable records such as magnetic tapes, floppy disks, etc.

2.3.36 **Retention Period** - The period of time approved by NARA for records to be retained, whether in the originating office, Records Storage Facility or a Federal Records Center. The retention period is indicated on EA15RM300Z-2-0, *Records Inventory and Disposition Schedules (RIDS)*.

2.3.37 **Uniform File Code (UFC)** - A standard filing system for correspondence records required by the DOE.

2.3.38 **Unscheduled Records** - Records for which no disposition authority has been identified on an approved disposition schedule.

2.3.39 **Validation/Authentication** - An activity that certifies the content of a document as being authentic and complete. This certification is documented by signing (or initialing) and dating the document unless otherwise authenticated. Validation/authentication may be made by the author, assigned reviewers, or individual(s) specifically assigned to review and validate documents.

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3.0 RESPONSIBILITIES

3.1 CCP Manager or Designee

3.1.1 CCP Manager has the overall responsibility and authority for the content of records generated.

3.1.2 Verifies that the organization has a current approved RIDS.

3.1.3 Verifies that records are retained in accordance with retention requirements and not inadvertently or prematurely destroyed.

3.1.4 Verifies the timely disposition of records through in-house destruction.

3.1.5 Verifies that personnel are aware of the requirements to retain records according to approved retention requirements.

3.1.6 Provides adequate records management resources in the form of staff, equipment, and dedicated time to verify good record keeping practices.

3.1.7 Obtains written concurrence to destroy records exceeding their retention periods.

3.2 Cognizant Manager

3.2.1 Identifies those documents that become records.

3.2.2 Determines if the work activities are quality-affecting.

3.2.3 Identifies records in the implementing procedures.

3.3 Lead Records Custodian

3.3.1 Acts as the liaison between the CCP and WRMS for records management.

3.3.2 Carries out the records management duties in accordance with approved implementing procedures.

3.3.3 Determines which nonpermanent records series are eligible for destruction.

3.3.4 Informs the CCP Manager or designee of the records that have expired retention periods.

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3.3.5 After receiving approved written concurrence, dispositions the Quality Assurance (QA) and/or non-QA records.

3.3.6 Prepares and revises the RIDS in accordance with CCP-QP-028, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning,* and verifies the RIDS remain current.

3.3.7 Identifies records that are eligible for in-house destruction.

3.3.8 Assists personnel with record retrieval from CCP Records as required.

3.3.9 Assists in obtaining approved disposition authorities for unscheduled records from NARA.

3.4 Records Custodian

3.4.1 Carries out the records management duties in accordance with approved implementing procedures.

3.4.2 Transmits completed QA records to the Host (generator/storage) site records centers or WIPP Records Archives (if applicable).

3.4.3 Assists personnel with record retrieval from CCP Records, as required.

3.4.4 Verifies that Records are complete. This includes verifying that there are no missing signatures, the page count is correct, and that the Batch Data Reports (BDRs) contents match their Table of Contents.

3.4.5 Ensure that the Attachment 2, Records Transmittal/Receiving Form, is in agreement with the transmitted record and that it is legible.

3.4.6 Enter all QA records into the Records Index Module.

3.5 Facility Records Custodian

3.5.1 Coordinates the compilation and the transfer of records generated at the Host (generator/storage) sites.

3.5.2 Verifies that records are complete. This includes verifying that there are no missing signatures, the page count is correct, and that the BDRs contents match their Table of Contents.

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3.5.3 Ensure that the Attachment 2 is in agreement with the transmitted record and that it is legible.

3.5.4 Enter all QA records into the Records Index Module.

3.5.5 Manages the transfer of completed and in-process records to CCP Records.

3.5.6 Assists personnel with record retrieval from CCP Records where applicable.

3.5.7 Carries out the records management duties in accordance with approved implementing procedures.

3.6 WIPP Records Management Services (WRMS)

3.6.1 Assists in the development and management of the records management system.

3.6.2 Assists with the review and approval of the CCP RIDS.

3.6.3 Assists in obtaining approved disposition authorities for unscheduled records to NARA.

3.7 Personnel

3.7.1 Generates the necessary records that document the activities assigned to them. Each individual who creates records must verify the record(s) are legible, accurate, and complete, appropriate to the work accomplished.

3.7.2 Are aware of, and provide reasonable protection during the generation and processing of records intended to become QA Records.

3.7.3 Ensures that records are legible, accurate and complete, appropriate to the work accomplished, when generating, reviewing and validating records.

3.7.4 Ensures that records are not inadvertently or prematurely destroyed.

3.7.5 Coordinates records issues with the respective Records Custodian(s)/Facility Records Custodian(s).

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4.0 PROCEDURE

4.1 Generation of Records

Cognizant Managers

4.1.1 Prior to conducting a work activity:

[A] Identify those documents that become records.

[B] Determine if the work activities are quality-affecting.

[C] Identify records in the implementing procedures.

NOTE
Records may be originals **OR** reproducible copies; however, original documents are preferred.

4.2 Legibility

Personnel

NOTE
Reproducible ink should be used whenever possible to verify maximum contrast on printed records. Records created in black ink typically produce better quality copies than do records printed in other color inks.

NOTE
Highlighter marking pens SHALL **NOT** be used on records. Bolding or underlining text are preferred alternatives to highlighting.

4.2.1 Verify that the records generated are legible and reproducible. If there is doubt, copy the record and then recopy the copied record (copy-a-copy test) to check the copied copy for legibility.

4.3 Accuracy

4.3.1 Verify that records are accurate to the work accomplished.

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4.4 Completeness

4.4.1 Verify that records are complete per the following:

[A] Blank spaces are filled in where information is required to be entered making the document complete.

[B] Not Applicable (N/A) is entered in spaces where information is not applicable or as otherwise indicated.

[C] Blank spaces are acceptable when a record is a software generated page/form which performs calculations.

[D] The document's intent is clear, even with some blanks not filled in. If so, the record is acceptable as is. A blank space in a record does not, in itself, make the record incomplete. For example:

Is the indicator light illuminated?
___✓___ YES _____ NO

This is an acceptable method of recording information, even when the NO space is blank.

NOTE

Individuals handling documents intended to become QA Records shall provide reasonable protection for the records from damage or loss until the records are submitted to the records system (this includes documents generated during field operations).

4.5 Storage, Maintenance, Control, and Protection of QA Records

4.5.1 Store, maintain, and protect completed QA records as follows:

[A] In an Underwriter Laboratories-listed one-hour fire rated (or equivalent) container, or a container certified by a person competent in the technical field of fire protection,

OR

[B] Retain a copy in a location sufficiently remote from the original to preclude destruction as a result of a single event such as fire or natural disaster,

ALSO

[C] Provide adequate protection of the QA records within the storage location to minimize the risk of damage or loss from

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humidity, natural disasters, adverse weather conditions, mold or infestations of insects or rodents.

[D] DO **NOT** store QA records where they may be exposed to water or heat sources, **OR** where food is kept.

4.5.2 Access

[A] Prevent access to QA records by unauthorized personnel as follows:

NOTE

Authorization must be documented either by signature and date on posted list, **OR** by letter on file. Authorization will be done by the CCP Manager or designee. The authorization list must be kept current.

[A.1] Generate, post, and maintain a list designating the personnel who are authorized and permitted access to the QA records.

NOTE

Provisions for installation of locking mechanisms will be made for storage areas requiring controlled access. Authorized personnel allowed access to the storage areas will be given the lock code **OR** controlled location of the keys.

[A.2] Protect locking mechanisms for storage cabinets/areas that require controlled access.

[A.3] Store all records not currently being used in appropriate storage equipment (e.g., file cabinets, shelving, desks).

[A.4] Lock file cabinets and offices as appropriate when leaving controlled access areas.

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4.6 Records Separation and Availability

NOTE
Records will be separated from non-records and personal papers.

4.6.1 Provide a means to retrieve records by indexing with one of the following methods:

[A] Numerically (such as audit case files):

OR

[B] By subject, with guides dividing different subjects.

4.7 Corrections, Additions, Revisions, Supplements, and Lost Records

NOTE
When in-process record/records intended to become QA Records are being generated they shall be maintained (do not remove or destroy) and if corrections are required, then perform this by proper correction, superseding, or voiding as directed in the following sections of this procedure.

4.7.1 Make necessary changes, additions, revisions and supplements in accordance with the following guidelines:

[A] Corrections

[A.1] Correct errors by drawing a single line through the incorrect information (leaving the original text readable), entering the correct information, **AND** initialing and dating each correction made.

[A.2] DO **NOT** use correction fluid (white-out) or correction tape on records.

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NOTE

Editorial changes may be made to records without the same level of review and approval as the original record. Editorial changes include ONLY the following:

- Clarification statements that do not affect the purpose of the record;
- Correcting grammar or spelling (the meaning has not changed);
- Renumbering sections, attachments or pagination;
- Date(s) that do **NOT** impact final disposition;
- Transcription errors;
- Sections that require N/A, but were left blank.

[A.3] Provide corrected or changed records (except for editorial changes) that have been validated back to the originating organization for review and revalidation.

NOTE

Original records may not be available for remote personnel to make necessary changes; therefore a printed copy of the scanned image from CCP Records may be used to make the changes. Changes will be transmitted in accordance with step 4.10.1.

[A.4] **IF** the original document is unavailable to the individual making a change to a record,
THEN use a printed copy of the scanned image from CCP Records and make the change. This will then become the original.

[B] Additional Notations

[B.1] **IF** any additional information needs to be added to a record after validation,
THEN enter the notation, **AND** initial and date each notation(s) made.

[C] Revisions, Regeneration, and Supplements

[C.1] **IF** a record needs to be revised due to illegibility or damage,
THEN transcribe **OR** enhance the illegible, or damaged, portion of the record **AND** initial and date each part enhanced or transcribed.

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[C.2] **IF** a record must be regenerated due to damage, **THEN** regenerate the record and place a notation at the bottom of the regenerated page, "This record has been regenerated because of damage," sign, and date. Place the regenerated record in front or on top of the original damaged record.

[C.3] **IF** a record has already been sent to CCP Records, **AND** needs a supplement or revision, **THEN** contact CCP Records.

NOTE

The following is a standard way to add new pages to a document, to supersede a page, and to add a corrected page.

[D] Adding Pages to Documents

[D.1] When adding pages to a document, place new pages behind the page within the document that they will follow.

Example: The new pages are to be added right after page 35 within the document. Place the new pages behind page 35, **AND** number the new pages 35A, 35B, 35C.

[D.2] **IF** the pages are added to the end of the document, **THEN** number them in sequential order.

Example: The last page of the document is page 40. Place the new pages after page 40, **AND** number the new pages as 41, 42, 43.

[E] Superseding Pages

[E.1] When superseding a page with a new, corrected page, draw a single, diagonal line through the entire page to be superseded **AND** initial and date.

[E.2] Place the new, corrected page to the front of the superseded page. Using the page number on the now superseded page, number the new, corrected page with the same number, then renumber the superseded page with the same number and an additional character (i.e., A, B, C).

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Example: Superseded page was numbered 35. The new, corrected page will now be numbered 35, **AND** the superseded page will change to 35A.

[F] Superseding or Voiding of Whole Documents

[F.1] When superseding or voiding a whole document (not just pages within a document [i.e., BDRs, Nonconformance Reports]) stamp or write "superseded" or "void" on the first page of the document **AND** initial and date.

[G] Lost Records

[G.1] **IF** replacement or restoration of the record is **NOT** practical,
THEN action should be taken to ensure the quality of the items or activities affecting quality, by using re-examination, investigation, or by other means.

4.8 QA Record Authentication/Validation

NOTE

Records become QA records when they are completed and authenticated/validated. Authentication/validation may be by the author, assigned reviewer, individual specifically assigned to review and validate documents, or otherwise authenticated/validated.

NOTE

Individuals who review and authenticate/validate records are responsible for the completeness and accuracy of those records.

[A] Authenticate/validate QA records through one of the following methods:

[A.1] Initial **OR** sign and date hard copy records, unless otherwise authenticated/validated.

[A.2] **IF** the nature of the record precludes signing,
THEN validate the QA record using any reasonable form which clearly indicates that an authorized individual believes the record to be complete and accurate.

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4.9 Protection, and Preservation of Computer Generated Electronic Records

NOTE

There are two types of electronic records:

- Electronic records that can be printed in a hard copy format.
- Electronic records that cannot be printed in a hard copy format.

Regardless of type, all electronic records must be managed in accordance with the guidelines contained in this section. Properly performing these steps will ensure that electronic records are in compliance with the applicable requirements.

NOTE

Computer modeling results (e.g., Monte Carlo N Particle [MCNP], Origen2.2) that perform statistical and random computer runs of radionuclide distributions will not be maintained but summarized in the hardcopy calculation packages. The calculation packages document these computer runs and shall define the range of possible values, the methodology for randomly selecting from this range, and a representative example of the input values and output result.

NOTE

Electronic media for historical source documents transmitting Adobe portable document format (PDF) files or electronic databases may be compact discs (CDs) or digital video discs (DVDs).

4.9.1 Protection

[A] To minimize the risk of unauthorized additions, deletions, or alterations to electronic files, use power-on, file passwords, or control lists to control any unauthorized access.

[A.1] Place electronic records, when complete to read/write protection.

[B] Provide access of electronic records to authorized staff.

[C] Provide access in the work area of electronic file index printouts, logs, disk labeling, **OR** other means to facilitate retrieval of active records by authorized users. Indicate the method used (including the directory path, if applicable) to transfer the information, the date compressed (if applicable), and file encryption information.

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4.9.2 Preservation

[A] Preserve records for the duration of their authorized retention period to verify their availability and provide verification of work performed by the facility and its supporting agencies.

4.9.3 Storage

[A] Label all electronic media (computer generated) used to store records properly with the following: originating organization, filename, retention period (obtain from Lead Records Custodian), original software used, and the version of the software.

4.9.4 Media Backup

[A] Back up electronic records on a regular basis to safeguard against the loss of information due to equipment malfunctions or human error.

4.9.5 Hardware/Software Changes

[A] Protect records media **AND** migrate information before the media is no longer useful.

[A.1] As software programs change, transfer existing records to the newer software program.

[A.2] As hardware is phased out or upgraded, verify that all existing records can be read utilizing the new hardware.

(a) **IF** new software and hardware will **NOT** read the current electronic record(s),
THEN migrate the records to a more accessible media.

(b) **IF** migration is **NOT** possible,
THEN retain either the old software and hardware **OR** make a printout of the data **AND** file the hard copy.

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4.10 Transmitting Records

NOTE
Transmitting completed QA records is for records going from one location or site to another.

NOTE
Records being forwarded within a Host site location or between Project-Office personnel DOES NOT need an Attachment 2. Completed QA Records being sent from one location or site to another will be sent using Attachment 2.

4.10.1 Transmitting Complete QA Records

[A] Send completed QA records (e.g., BDRs) via Attachment 2 to the Records Custodians/Facility Records Custodians.

[B] Before the completed QA record is transmitted, make a copy of Attachment 2 and the record, **AND** retain until receipt acknowledgement is received from the recipient.

NOTE
Transmittal of completed characterization records to the Host (generator/storage) site (when available) is performed according to the site-specific procedure regarding the submittal of characterization records to their records center. These characterization records will be maintained in accordance with their site-specific records procedures.

NOTE
Records that are designated as lifetime records shall be maintained for the life of the waste characterization program at a participating generator/storage site plus six years, or transferred to the WIPP Records Archive facility. Records designated as non-permanent records shall be maintained for 10 years from the date of record/generation at the participating generator/storage site, or at the WIPP Records Archive facility.

<u>Records Custodian</u>

4.10.2 Transmitting of Completed Characterization Records to the Host (generator/storage) Site or WIPP Records Archive (as applicable)

[A] Return characterization records to the Host (generator/storage) site location or WIPP Records Archive (as applicable) either at pre-determined intervals **OR** at that end of the waste characterization process in accordance with approved RIDS.

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[B] **IF** the Host (generator/storage) site is closed and will no longer be in operation,
THEN submit the documentation pertaining to that site to CBFO for permanent archiving, **OR** the WIPP Records Archive at the end of the waste characterization process in accordance with approved RIDS.

NOTE

The Waste Confirmation Organization represents the permittees and is required to confirm that waste shipments comply with permit requirements prior to shipment.

4.10.3 Transmitting of Waste Confirmation Video and Audio Media Recording

[A] Transmit one copy of the video and audio recording media to the Waste Confirmation Organization.

4.11 Unclassified Controlled Nuclear Information (UCNI) and Official Use Only (OUO) Documentation

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NOTE

Transmission of UCNI or OUO documents must be by means that preclude unauthorized disclosure or dissemination.

NOTE

UCNI documentation must include the required release and markings identified in DOE M 471.1-1, *Identification and Protection of Unclassified Controlled Nuclear Information Manual*. OUO documentation must include the required release and markings identified in DOE M 471.3-1, *Manual for Identifying and Protecting Official Use Only Information*.

4.11.1 Transmitting of UCNI and OUO Documents

[A] Documents identified as UCNI must be transmitted to CCP Records with an Attachment 2 and the transmittal must have the following statement placed in the comment section:

Matter transmitted contains Unclassified Controlled Nuclear Information. When separated from enclosures, this transmittal document does not contain UCNI.

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[B] Documents identified as OUO must be transmitted to CCP Records with an Attachment 2 and the transmittal must have the following statement placed in the comment section: Document transmitted contains OUO information.

[C] When transmitting externally:

[C.1] The UCNI or OUO matter must be contained in a single opaque envelope or wrapping with the recipient's address, a return address, and the words "To Be Opened by Addressee Only."

[C.2] Must be sent by the following U.S. mail methods: First Class, Express, Certified, or Registered Mail,

OR

[C.3] Any commercial carrier, FedEx is preferred.

[D] When transmitting internally the documents may be hand carried as long as the transmitter can maintain control over access to the document being transmitted.

4.11.2 Access and Protection of UCNI and OUO Documents

NOTE

When giving an authorized individual a copy of an UCNI or OUO document, the requirements they will be expected to perform while the document is in their possession must be made clear to the individual, see requirements below.

NOTE

Only authorized individuals may have access to UCNI or OUO documents (e.g., an individual with an official need to know in connection with the performance of official DOE-authorized activities).

[A] Disseminate UCNI or OUO documentation to only authorized individuals.

[B] Must maintain physical control of UCNI or OUO documentation to preclude unauthorized disclosure; store in locked receptacles, such as file cabinets, desks, or bookcases.

[C] Reproduce only to the minimum extent necessary.

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[D] When a copy machine malfunctions during the copying of an UCNI or OUO document the copier must be cleared and all paper paths checked to verify that no UCNI or OUO material remains in the machine.

[E] After its necessary use by an authorized individual, all copies of UCNI or OUO documentation must be destroyed by using strip cut shredders that result in particles of no more than ¼- inch wide strips or if on a CD the shredding of the disc.

[F] Electronic UCNI or OUO documentation (e.g., PDF) maintained by CCP Records will be stored on a protected server and the files will be properly marked as UCNI or OUO.

4.12 Internal Use Only (IUO) and No Foreign National (NOFORN)

4.12.1 Transmitting of IUO and NOFORN Documents

[A] Documents identified as IUO or NOFORN must be transmitted to CCP with an Attachment 2 and the transmittal must have it clearly identified in the Comments section that the document being transmitted is IUO or NOFORN.

4.12.2 Access and Protection of IUO and NOFORN

NOTE

Only individuals within the project may have access to IUO documents. Dissemination outside of the project will not be permitted.

[A] Disseminate IUO to internal project participants only. NOFORN is not to be disseminated to any Foreign National.

[B] Must maintain physical control of IUO or NOFORN to preclude unauthorized disclosure; store in locked receptacles, such as file cabinets, desks, or bookcases.

[C] Reproduce only to the minimum extent necessary.

[D] After its necessary use by an authorized individual, all copies of IUO and NOFORN must be destroyed by a paper shredder or if on a CD the shredding of the disc.

[E] Electronic IUO or NOFORN documentation (e.g., PDF) maintained by the CCP Records will be stored on a protected server and the files will be properly marked as IUO or NOFORN.

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4.13 Receiving QA Records

4.13.1 Receipt process provides the following:

[A] Provisions to permit a current and accurate assessment of the status of QA records.

[B] A method for identifying the records required to be included in the records system.

[C] A method for identifying the records that have been received.

[D] Procedures for receipt and inspection of incoming records, including verification that the QA records are received in agreement with the transmittal document and that the records are legible.

[E] Provisions to control and protect the records from damage or loss during the receiving processes.

[F] A method for submittal of completed records to the storage facility without unnecessary delay.

4.13.2 Each Host (generator/storage) site or organization responsible for receipt of QA records, designate the person or organization responsible for receiving records.

4.13.3 Ensure that the Attachment 2 is in agreement with the transmitted record and that it is legible and complete.

[A] **IF NOT**,
THEN notify the sender and perform the following:

[A.1] Work to resolve the issues with the sender.

[A.2] **IF** unable to resolve the issues,
THEN identify the record was rejected on Attachment 2 and return Attachment 2 and record to the sender.

4.13.4 Enter all QA records into the Records Index Module.

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NOTE

Once QA records have been received in CCP Records, original records will **NOT** be removed without a specific need for the original record to be released. If an original record is removed from CCP Records, it is to be returned within fourteen (14) calendar days.

4.14 Retrieval of Original Records from CCP Records at the Project Office

4.14.1 Requests for retrieval of **ORIGINAL** records are handled as follows:

[A] Requestor, provide a written request to CCP Records providing the reason for the request and when the record will be returned.

Records Custodian/Facility Records Custodian

4.14.2 Process requests for retrieval of records already placed into CCP Records as follows:

[A] Pull the requested record.

[B] Make a copy of the record or assure that there is a PDF copy of the record.

[C] **IF** there is not a PDF scanned copy of the record, **THEN** place a copy of record into the records file.

[D] Place a completed Check Out Card in the record file.

[E] Notify requestor of availability of the requested record for pick-up **OR** deliver the **ORIGINAL** requested record to the person who made the request.

4.15 Destruction of QA and Non-QA Records

4.15.1 Destruction of QA Records

[A] DO **NOT** destroy QA records until each of the following conditions are met:

[A.1] Expiration of the NARA approved retention, as noted in the CCP RIDS, has occurred.

[A.2] Evaluation of lifetime records for the potential need to upgrade them to post-closure records has been performed by the CCP Manager or designee.

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[A.3] CCP Manager or designee determines if regulatory requirements are satisfied, operational status permits the disposal of such records, and the related contractual requirements have been satisfied.

[A.4] In cases of conflicting requirements concerning records retention requirements, the most stringent requirements shall be used in determining the final disposition.

AND

[A.5] CCP Manager or designee determines that there are no enforcement actions against the CCP.

NOTE

QA records that may be relevant to an enforcement action, regardless of disposition, will be maintained until the New Mexico Environment Department (NMED) determines they are no longer needed for enforcement action, and then the records may be dispositioned as directed in step 4.15.2.

[B] **IF** all of the listed conditions are **NOT** met,
THEN DO **NOT** destroy the affected records series, **AND** CCP Manager or designee, follow step 4.15.3.

[C] **IF** all of the listed conditions are met,
THEN CCP Manager or designee complete the Written Request for Records Destruction, (See Attachment 1, Written Request for Records Destruction), for an example **AND** submit to the WRMS Manager before destroying QA records.

[D] Upon receipt of the approved written concurrence, CCP Manager or designee forward the approval to the Lead Records Custodian.

<u>Lead Records Custodian</u>

[E] Receive the approved written concurrence and disposition the QA records.

4.15.2 Destruction of Nonpermanent, Non-QA Records

<u>Lead Records Custodian</u>

[A] Determine which nonpermanent records series are eligible for destruction by reviewing the RIDS to determine the length of time the records series is to be retained.

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[B] Inform the CCP Manager or designee of the records which have expired retention periods.

CCP Manager or Designee

[C] **IF** in agreement,
THEN the CCP Manager or designee, completes and forwards Written Request for Records Destruction, including a reference to the current RIDS, to the WRMS Manager before destroying the nonpermanent, non-QA records.

Lead Records Custodian

[D] After receiving the approved written concurrence, disposition identified non-permanent or non-QA records.

4.15.3 Requesting an Extension of the Record Retention Period

[A] **IF** the CCP Manager or designee determines that the approved record retention period needs to be extended, **THEN** CCP Manager or designee, perform the following:

[A.1] Send a memorandum to the WRMS Manager with a request and justification of an extension.

[A.2] Maintain the memorandum with the respective RIDS.

[A.3] Take the appropriate action, depending on the response to the memorandum.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as QA records in accordance with the requirements of this procedure. The records are the following:

5.1.1 Non-QA

[A] Written Request for Records Destruction

[B] Written Request for Retrieval of Original Record

[C] Request for Extension Memorandum

5.1.2 QA/Nonpermanent

[A] Attachment 2 – CCP Records Transmittal/Receiving Form

[B] Records Index Module

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Attachment 1 – Written Request for Records Destruction (Example)

TRU SOLUTIONS

John Smith
S.M. Stoller Corporation
2101A South Canal
Carlsbad, NM 88220

SUBJECT: REQUEST FOR CONCURRENCE TO DISPOSE OF RECORDS

Dear Mr. Smith:

This is a request for concurrence to dispose of the following record series according to our current Records Inventory and Disposition Schedule dated April 10, 2004.

RECORD SERIES	RETENTION PERIOD	INCLUSIVE DATES
Landlord Housekeeping Pre-checklists - Item #24	1 year	January, 2003 through July, 2003
Key Inventory Logs - Item #17	2 years	January, 2002 through June, 2002

If you have any questions, please contact Ms. Jane Smith, of my staff, at (575)628- 5810.

Sincerely,

David Doe
Characterization Project Manager

CONCURRENCE:

_____
John Smith, Manager
WIPP Records Management Services (WRMS)

SP: ab

cc: J. Smith, S.M. Stoller Corporation

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Attachment 2 – CCP Records Transmittal/Receiving Form

CCP Records / Records Custodian, 4021 National Parks Highway - MS: GSA 212, Carlsbad, New Mexico 88220

Telephone Number: 575-234-7523, 575-234-7431, or 575-234-7095

Fax Number: 575-234-7033

☐ Original Record ☐ Copy
☐ Fax Record
☐ Electronic Record

Attn: _____ From: _____

Ship to: _____ Site: _____

_____ Company: _____

_____ Telephone Number: _____

_____ Date Sent: _____

Telephone Number: _____

Document Number	Title / Description	Record Date	Total Pages

Comments

(When the Record accepted line has been completed, the rest of the page below may be left blank.)
Acceptance/Rejection Signature and Date

Records Accepted ☐ _____ _____ _____
Signature Printed Name Date

Records Rejected ☐ _____ _____ _____
Signature Printed Name Date

Reason for Rejection:

Re-submittal: _____ _____ _____
Signature Printed Name Date

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CCP-QP-010

Revision 24

CCP
Document Preparation, Approval, and Control

EFFECTIVE DATE: 07/19/2013

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
15	03/14/2007	Revised note in Section 2.3, clarifying the format for documents previously used in a certified program.
16	08/02/2007	Revised to create consistency in wording pertaining to submitting data quality and performance criteria affecting changes to U.S. Department of Energy – Carlsbad Field Office (DOE/CBFO) for review and approval. Relocated section pertaining to validator review.
17	01/16/2008	Revised to allow additional unit of designation for acceptable knowledge (AK) documents. Also, revised to address concern raised during Quality Assurance (QA) audit A-08-07.
18	05/28/2009	Revised to move the site technical representative (STR) after the Site Project Manager (SPM) in order to reorganize the document review cycle. Added step 2.2.3[F] clarifying the process for obtaining CBFO signature approvals on cover sheets of certain CCP documents. Added a NOTE in step 3.6 and step 4.1.20 clarifying the validation process for technical operating procedures. Incorporated a number of editorial corrections throughout the procedure.
19	03/12/2010	Revised based on conditions identified in CAR-CCP-0001-10. Removed requirement to identify Corrective action Report (CARs) and Nonconformance Reports (NCRs) in revision history and clarified notes in Attachment 1, Technical Procedure Writer's Guide.
20	06/30/2010	Revised to bring this procedure in line with the new revision of CCP-TP-005, *CCP Acceptable Knowledge Documentation*, and to update the records section.
21	10/06/2010	Revised to update references to the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*.
22	03/29/2011	Revised to update figure/table formatting and referencing, records requirements, and other editorial changes.
23	04/11/2012	Revised Section 5.1.1 to identify the content of document record packages in response to CBFO CAR 12-011, added RH document designators in Section 2.3.1, and clarified the use of "example" forms in Section 4.6 of Attachment 1.
24	07/19/2013	Revised to incorporate the Nuclear Waste Partnership (NWP) transition changes.

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1.0 PURPOSE

This procedure describes the process for preparing, reviewing, approving, issuing, and controlling the distribution of Central Characterization Program (CCP) documents controlled by CCP Document Services.

1.1 Scope

This procedure applies to waste characterization and certification documents, including transportation, certification, and waste packaging. Documents can include instructions, procedures, plans, drawings, test plans, management plans, technical reports, performance reports, and test reports.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- CCP-PO-002, *CCP Transuranic Waste Certification Plan*

Referenced Documents

- DOE-STD-1029-92, *DOE Standard Writer's Guide for Technical Procedures*
- DOE/WIPP 01-3187, *Quality Assurance Program Plan for TRUPACT-II Gas Generation Test Program*
- DOE/WIPP-02-3122*, Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
- DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
- *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan*
- DOE-CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document*
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
- CCP-PO-006, *CCP Conduct of Operations Matrix*
- CCP-PO-016, *CCP Gas Generation Testing Program Quality Assurance Project Plan*
- CCP-PO-401, *CCP Contact-Handled Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC) For Intersite Shipments*
- CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*

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- CCP-QP-001, *CCP Graded Approach*
- CCP-QP-008, *CCP Records Management*
- CCP-TP-005, *CCP Acceptable Knowledge Documentation*
- WP 09-10, *WIPP Preparation Guide for System Design Description Documents*

2.2 Quality Assurance (QA) Requirements

2.2.1 This procedure implements specific quality assurance (QA) requirements for preparing documents used in the characterization, certification, and packaging of transuranic (TRU) waste. This includes waste characterization and certification documents, including transportation, certification, and waste packaging. Documents can include instructions, procedures, plans, drawings, test plans, management plans, technical reports, performance reports, and test reports.

2.2.2 Documents are reviewed for adequacy, correctness, and completeness prior to approval and issuance.

2.2.3 The following requirements apply to new documents and revisions to documents and are followed when preparing or processing a document.

[A] New documents are denoted as “Revision 0,” and subsequent revisions are denoted by the next sequential revision number. The revision number is placed on the front page of the document, and in the header on each page of the document.

NOTE

The CCP reissues an entire document electronically rather than only changed pages. Deleted text is not displayed in the issued document.

[B] Revision bars, indicating a change to the text, are included along the left-hand margin of the page. Revision bars will only show the changes made to a new revision.

[C] Requests for a document revision identify the changes required. Document reviews consider technical adequacy and completeness, and assure that the revised contents continue to satisfy the requirements of CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (QAPjP), CCP-PO-002, CCP *Transuranic*

Waste Certification Plan, CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*, CCP-PO-401, *CCP Contact-Handled Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC) For Intersite Shipments,* or CCP-PO-505, *CCP Remote-Handled Transuranic Authorized Methods for Payload Control (CCP RH-TRAMPAC),* DOE/WIPP 01-3187, *Quality Assurance Program Plan for TRUPACT-II Gas Generation Test Program* (QAPP), DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan,* and DOE-CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document* (QAPD).

[D] Changes to documents, other than those defined as editorial changes or minor changes, shall be reviewed and approved by the same functional organizations that performed the original review and approval unless other organizations are specifically designated by the Site Project Manager (SPM). Section 4.5 discusses reviews required for minor changes.

[E] Document changes are evaluated and approved by the SPM and CCP QA before implementation. Documents requiring U.S. Department of Energy - Carlsbad Field Office (DOE/CBFO) approval are: CCP-QP-001, *CCP Graded Approach;* CCP-PO-001; CCP-PO-002; CCP-PO-003; CCP-PO-006, *CCP Conduct of Operations Matrix;* CCP-PO-016, *CCP Gas Generation Testing Program Quality Assurance Project Plan;* CCP-PO-401, and CCP-PO-505*.* DOE/CBFO also approves new documents and changes to documents that could impact data quality or performance criteria as defined in CCP-PO-001 and CCP-PO-002.

[F] Documents that require DOE/CBFO signature approval on the cover sheet are assigned Effective Dates using one of the following two options:

- The Effective Date is left blank until after all approval signatures have been obtained, including those of DOE/CBFO. The Effective Date is stamped on the original document once all the required approvals are complete. For this option, the Effective Date is the date that the document is actually issued in Q&MIS®.

- A pre-selected Effective Date is assigned that is several days later than the date the document and cover sheet are circulated for signature approval.

This option allows for the time it takes to obtain CCP Management and DOE/CBFO signature approvals. If all required approvals are complete before the pre-selected Effective Date, the document must be held until the pre-selected Effective Date before it can be issued in Q&MIS®.

2.3 Document Format Requirements

NOTE

CCP-PO-001 follows the document format of the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan* (WAP); CCP-PO-002 follows the format of DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC), CCP-PO-003, CCP-PO-401, and CCP-PO-505 follow the format of the *CH-TRAMPAC* and the *RH-TRAMPAC*, CCP-PO-016 follows the format of DOE/WIPP 01-3187, and CCP-PO-006 is a matrix.

The format for CCP acceptable knowledge (AK) summary reports is defined in CCP-TP-005, *CCP Acceptable Knowledge Documentation*.

The format for technical procedures developed jointly with Host sites is defined in the Host site-specific interface document. These procedures are approved by both the Host site and CCP. As a minimum, technical procedures developed jointly with Host sites contain the sections shown in Table 1, Procedure Format (Example) (not necessarily in the order shown in Table 1, but the sections must be included somewhere in each jointly-developed technical procedure).

The format for configuration management (CM) procedures will contain, as a minimum, the sections shown in Table 1 (not necessarily in the order shown in Table 1, but the sections must be included somewhere in each document).

The format for CM documents designated as equipment descriptions will follow the format designated in WP 09-10, *WIPP Preparation Guide for System Design Description Documents.*

The format for documents that are from a previously certified program DO **NOT** have to follow Table 1. The documents may be used in their current format as long as they are modified to reference CCP quality procedures for quality program activities such as preparation of Nonconformance Reports (NCRs) and processing and control of records. The extent of modification will be sufficient to ensure that no quality documents from the previously certified program are required in order to perform the activities described in the documents, and that all quality program activities in the procedure are linked to CCP quality procedures.

2.3.1 CCP documents will include a unique document number. For example, CCP Project Office (PO) documents are designated as CCP-PO-XXX. Health and Safety Plans (HSP) are designated as CCP-HSP-XXX. QA procedures (i.e., Quality Procedures [QP]) are designated as CCP-QP-XXX. Technical Procedures (TP) are designated as CCP-TP-XXX. CM documents are designated as CCP-CM-XXX, and new AK documents are designated as

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CCP-AK-Site-XXX, where “site” indicates the associated Host site (e.g., Idaho National Laboratory [INL], Savannah River Site [SRS], Los Alamos National Laboratory [LANL]). Process Knowledge (PK) documents are designated as CCP-PK-Site-XXX. The “XXX” is a unique sequential identifier. CCP-RC-site-5x1 – Radiological Characterization Technical Report, CCP-CP-site-5x2 – Certification Plan, CCP-EP-site-5x3 – QA Equivalency Plan, CCP-SA-site-5x5 – Sampling Analysis Plan, CCP-CN-site-5x6 – Confirmatory testing, CCP-CR-site-5x7 – Corroborating data. Procedures use the subsections/format shown in Table 1. Additional subsections may be included for procedure clarification and readability.
Attachment 1, Technical Procedure Writer’s Guide, is provided as a guide for calibration, maintenance, and operating procedures, and provides an example of a technical procedure in
Appendix 1, Sample Procedure.

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Table 1. Procedure Format (Example)

CCP-XX-XXX, Rev. X **CCP Document Title**	**Effective Date: xx/xx/20XX** **Page X of X**

COVER SHEET

RECORD OF REVISION

TABLE OF CONTENTS

1.0 PURPOSE

The purpose section explains why the document was written (e.g., to establish or describe a process).

1.1 Scope

The scope describes what activities or processes are included and/or addressed in the procedure.

2.0 REQUIREMENTS

Project upper-tier document requirements (baseline and referenced) are referenced in this section, in addition to project-specific requirements, if applicable. This section defines specific terms used in the procedure, when appropriate. This section defines training requirements. This section may also identify software used in fulfilling requirements of a procedure. For TPs, this section also includes the equipment list, precautions and limitations, and prerequisite actions, as necessary.

3.0 RESPONSIBILITIES

The responsibilities section identifies specific responsibilities for personnel of facilities/organizations performing functions under the procedure.

4.0 PROCEDURE

This section identifies the steps to be completed in performing the procedure. Except for TP documents, this section may be plans, interface requirements, and not action steps per se.

5.0 RECORDS

Records generated, as a function of performing the procedure, are identified as lifetime, nonpermanent, or non-QA records.

Attachments (as needed)

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2.3.2 The Document Writer provides a cover sheet for procedures that includes an authorization for use line. The Document Writer also provides a header that is placed on the individual pages, excluding the cover page of a document, which includes the following information:

- Unique number identifier
- Current revision number
- CCP Document Title
- Effective date
- Page number

2.3.3 Implementing QPs, TPs, and CM procedures include the following information as appropriate to the work to be performed:

[A] Responsibilities and interfaces of the organizations affected by the document.

[B] Technical, regulatory, QA, or other project requirements.

[C] Sequential description of the work to be performed, including any allowance for out-of-sequence processing.

[D] Quantitative or qualitative acceptance criteria sufficient for determining that activities were satisfactorily accomplished.

[E] Prerequisites, limits, precautions, process parameters, and environmental conditions.

[F] Special qualification and training requirements or reference to special qualification and training requirements.

[G] Methods for demonstrating that the work was performed as required (such as provisions for recording inspection and test results, checklists, or sign-off blocks).

[H] Identification and classification of QA records generated by the implementing procedure.

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2.4 Document Distribution and Control

NOTE

Document preparation, issuance, and changes that specify requirements or prescribe actions affecting quality are controlled by CCP Document Services to ensure current and correct documents are used and referenced.

2.4.1 Controlled documents are distributed and used in accordance with the following criteria:

[A] With the exception of AK and PK documents, controlled documents are available electronically to CCP personnel for use via the common shared area (secure file transfer protocol [sftp] site). All controlled documents are available through the electronic document control system (Q&MIS®).

[B] Effective dates are established and identified on the approved documents.

[C] Obsolete, void, or superseded documents are removed from the applicable shared areas and replaced, when applicable, with revised documents on the effective date of change.

[D] Controls are established and maintained to identify the current status or revision of controlled documents.

[E] Documents on the sftp site and in Q&MIS® cannot be altered without appropriate approval.

2.5 Additional Plan-Specific Requirements

2.5.1 The review of CCP-PO-001 includes review for technical adequacy, completeness, correctness, and the inclusion of and compliance with the requirements established by the WAP.

2.5.2 The review of CCP-PO-002 includes review for technical adequacy, completeness, correctness, and the inclusion of and compliance with the requirements established by the WAC.

2.5.3 The review of CCP-PO-003, CCP-PO-401, and CCP-PO-505 includes review for technical adequacy, completeness, correctness, and the inclusion of and compliance with the requirements established by the *CH-TRAMPAC*, *CCP CH-TRAMPAC*, and the *CCP RH-TRAMPAC*.

2.5.4 The review of CCP-PO-016 includes review for technical adequacy, completeness, correctness, and the inclusion of and compliance with the requirements established by the QAPP.

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3.0 RESPONSIBILITIES

NOTE

Reviewers of implementing procedures shall review document change proposals for compliance with the following driver documents, as applicable:

- CCP-PO-001
- CCP-PO-002
- CCP-PO-003 or CCP-PO-505
- CCP-PO-016
- CCP-PO-401
- DOE/WIPP-02-3214
- DOE/CBFO-94-1012

3.1 All CCP Personnel

NOTE

The revision of the document that is current at the beginning of the shift shall be used throughout the shift unless a STOP WORK order is issued.

3.1.1 Confirms at the beginning of each shift that the current revision of the document is being used by checking the sftp site or contacting CCP Document Services.

3.1.2 Reports any obsolete or superseded information to the SPM.

3.1.3 Proposes creation of a new document or changes to an existing CCP document to the SPM, as needed.

NOTE

The Document Originator can be anyone who wants to develop a new document or revise/delete an existing document.

3.2 Document Originator

3.2.1 Proposes creation of a new document or changes to an existing CCP document to the SPM.

3.2.2 Researches regulatory, administrative, and operational requirements to justify the proposal.

3.2.3 Performs initial walkthrough of the proposed change or new document to verify functionality with the responsible reviewer prior to submittal to the SPM.

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3.2.4 Drafts new documents and document revisions in conjunction with the Document Writer.

3.2.5 In conjunction with the SPM or the Technical Reviewer, ensures that reviewer comments are resolved with the responsible reviewer and determines if the document requires re-review by assigned reviewers.

3.2.6 Provides technical comments/information to the Document Writer when revising documents.

3.2.7 Reviews and verifies document for adequacy, correctness, and technical content.

3.2.8 Ensures document complies with driver documents, as applicable.

3.3 Technical Reviewer

3.3.1 Provides technical comments to the Document Writer.

3.3.2 Reviews and verifies document for adequacy, correctness, and technical content.

3.3.3 Ensures document complies with driver documents, as applicable.

3.4 Subcontract Technical Representative (STR)

3.4.1 Reviews all changes to applicable documents (defined in the Host site-specific interface document) prior to implementation.

3.4.2 Provides comments to the Document Writer.

3.5 Facility Safety Representative (FSR)

3.5.1 Reviews all changes to applicable documents (defined in the Host site-specific interface document) prior to implementation, to maintain the facility within the safe operating boundaries.

3.5.2 Provides comments to the Document Writer.

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3.6 Validator

3.6.1 Verifies and validates technical operating procedures by using step-by-step walkthroughs or similar methods.

3.6.2 Ensures the document's instructions are clear, correct, and concise.

3.6.3 Provides comments to the Document Writer.

3.7 Site Project Manager (SPM)

NOTE

SPM approval to create or revise a CCP document, and assignment of designated reviewers, is documented by approval of the document by the SPM.

3.7.1 Concurs with the need to write new document or make changes to an existing CCP document prior to development.

3.7.2 Determines and assigns the appropriate technical reviewers to provide review for the document.

3.7.3 Provides permission to the Document Writer for concurrent and/or expedited review.

3.7.4 Reviews document for accuracy of content.

3.7.5 Verifies compliance with driver documents, as applicable.

3.7.6 Reviews all changes to all CCP documents to evaluate whether those changes could positively or negatively impact Data Quality Objectives (DQOs) for the purpose of reporting those changes to DOE/CBFO.

3.7.7 Approves all CCP documents.

3.7.8 Provides comments to the Document Writer.

3.7.9 Concurs with the resolution of any DOE/CBFO comments.

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3.8 CCP Quality Assurance (QA)

3.8.1 Provides QA oversight for the preparation, review, and approval process and reviews DOE/WIPP 94-1012, CCP-PO-001, CCP-PO-002, CCP-PO-016, CCP-PO-003, CCP-PO-401, or CCP-PO-505 for requirements compliance.

3.8.2 Provides comments to the Document Writer.

3.8.3 Approves all CCP documents.

3.9 Document Writer

3.9.1 Coordinates preparation, review, approval, and issuance of controlled documents.

3.9.2 Coordinates and tracks document activity.

3.9.3 Assigns new document numbers and titles.

3.9.4 Prepares cover sheet, as necessary.

3.9.5 Performs editing on draft document prior to review.

3.9.6 Distributes the document through Q&MIS® to the review/approval personnel.

3.9.7 Forwards review comments to the document originator for comment resolution and disposition.

3.9.8 Updates the sftp site and Q&MIS®, and checks that these document locations are current.

3.9.9 Maintains the electronic and hard copy approvals generated by this procedure for each document processed.

3.10 Review and approval of CCP Documents

NOTE

Pertinent background information or data shall be made available by the organization requesting the review if the information is not readily available to the reviewer.

NOTE

CCP documents are developed for activities that affect the quality of the waste characterization and certification process and are reviewed before approval by qualified and independent individuals. This review and approval process is accomplished before implementation of CCP activities.

Reviews will be performed by individuals, other than the document originator, who are technically competent in the subject area being reviewed.

3.10.1 All CCP documents are, at a minimum, reviewed and approved by the technical reviewer, CCP QA, and the SPM, except for minor changes as explained in Section 4.5.

3.10.2 The SPM may assign other personnel to review documents and will inform CCP Document Services of other reviewers.

3.10.3 Host site STRs and FSRs will review documents as designated in their respective Host site-specific interface document.

3.10.4 In addition to the requirements above, CCP-PO-001, CCP-PO-002, CCP-PO-003, CCP-PO-006, CCP-PO-016, CCP-PO-401, CCP-PO-505, and CCP-QP-001 are also reviewed and approved by CCP Management and DOE/CBFO as follows:

[A] The SPM, CCP QA, CCP Manager, and DOE/CBFO Manager reviews and approves CCP-PO-006. The DOE/CBFO Manager signs the cover sheet.

[B] The SPM, CCP QA, CCP Manager, DOE/CBFO QA Manager, and DOE/CBFO Office Director, Office of National TRU Program, reviews and approves CCP-PO-001, CCP-PO-002, CCP-PO-003, CCP-PO-401, CCP-PO-016, and signs the cover sheet.

[C] The SPM, CCP QA, RH Manager, DOE/CBFO QA Manager, and DOE/CBFO Office Director, Office of National TRU Program, reviews and approves CCP-PO-505 and signs the cover sheet.

[D] The SPM, CCP QA, and DOE/CBFO QA Manager reviews and approves CCP-QP-001, and documents approval within Q&MIS®, or via email.

3.10.5 The documents listed in step 3.10.4 are forwarded to DOE/CBFO via e-mail with a full justification of changes and changes that could impact data quality or performance criteria as defined in CCP-PO-001 and CCP-PO-002 in the text of the e-mail at: site.documents@wipp.ws.

3.10.6 All proposed new documents and revisions to documents that could impact data quality or performance criteria as defined in CCP-PO-001 and CCP-PO-002 must be submitted to DOE/CBFO via e-mail with a full justification of changes in the text of the e-mail. All changes that could impact data quality or performance criteria as defined in CCP-PO-001 and CCP-PO-002 must be listed and described in the text of the e-mail. Document submittal e-mails are provided to DOE/CBFO via the DOE/CBFO e-mail site at: site.documents@wipp.ws.

4.0 PROCEDURE

NOTE

Upon resolution of comments, the Document Originator will determine if the nature and extent of the changes warrants a re-review of the draft document.

NOTE

An interactive, concurrent, expedited, or non-sequential review may be performed in lieu of a sequential review, with permission from the SPM.

4.1 Processing Documents

NOTE

The Document Originator can be anyone who wants to develop a new document or revise/delete an existing document.

Document Originator

4.1.1 Develop proposed changes, with a justification for the change, and a summary of the change for the Record of Revision.

4.1.2 Perform an initial walkthrough of the document to verify functionality.

4.1.3 Submit proposed changes to CCP Document Services.

Document Writer

4.1.4 Forward proposed changes to the SPM.

SPM

NOTE

Changes to documents, other than those defined as editorial changes or minor changes, shall be reviewed and approved by the same functional organizations that performed the original review and approval, unless other organizations are specifically designated by the SPM.

NOTE

SPM approval to create or revise a CCP document, and assignment of designated reviewers, is documented by approval of the document by the SPM.

4.1.5 Concur with or deny the proposal to develop a new document or changes to existing documents.

4.1.6 Determine the organizations that are affected and/or the organizations that have responsibilities as a result of implementing the document.

4.1.7 Identify/designate the validator, if applicable, and other document reviewers, ensuring compliance with the applicable Host site-specific interface documents.

4.1.8 Inform the Document Writer of the validator, if applicable, and other reviewers.

Document Writer

4.1.9 **IF** new document,
THEN assign a document number to track the draft preparation, review comments, comment resolution, final document preparation, and distribution.

4.1.10 Format and edit draft document, **AND** make an entry in the Record of Revision briefly describing the purpose of the revision or new document.

4.1.11 **IF** the revision is for a minor change as defined in Section 4.5,
THEN confirm the words “Minor Change” appear in the Record of Revision.

4.1.12 Distribute the draft document for review through Q&MIS® to the reviewers, as designated by the SPM.

4.1.13 Place an Adobe® Portable Document File (pdf) copy of the draft document on the sftp site in the Draft Documents folder, via a standard windows-based operation, for viewing by external reviewers.

Technical Reviewers

4.1.14 Perform the review using the criteria established in Section 3.3.

4.1.15 Transmit comments to the Document Writer via e-mail, within Q&MIS®, or hard copy (e.g., fax copy, hand written copy).

Document Writer

4.1.16 Forward comments to the Document Originator for resolution.

4.1.17 Upon resolution of comments from the Document Originator, incorporate comments, **AND** distribute draft document for review through Q&MIS®.

4.1.18 Place a copy of the draft document on the sftp site in the Draft Documents folder, via a standard windows-based operation, for viewing by external reviewers.

NOTE

Validation reviews will be performed by individuals other than the Document Originator. The Validator shall be technically competent in the subject area being validated.

Validation is required for all new technical operating procedures. The SPM will determine if validation is required to revisions of existing technical operating procedures. Validation must be performed by using step-by-step walkthroughs or similar methods.

Validator (if applicable)

NOTE

Validation of technical operating procedures is to be performed by a two-person team. One person reads the operating steps aloud while the other person verifies that they can be performed just as written.

4.1.19 **IF** the document requires validation per SPM direction, **THEN** perform the following:

[A] Perform the document exactly as written using step-by-step walkthroughs or similar methods.

[B] Perform the review using the criteria established in Section 3.6.

[C] Transmit comments to the Document Writer via email, within Q&MIS®, or hard copy (e.g., fax copy, hand written copy).

Document Writer

4.1.20 Forward comments to the Document Originator for resolution.

4.1.21 Upon resolution of comments from the Document Originator, incorporate comments, **AND** distribute draft document for review through Q&MIS®.

4.1.22 Place a copy of the draft document on the sftp site in the Draft Documents Folder, via a standard windows-based operation, for viewing by external reviewers.

SPM/CCP QA Review

4.1.23 Perform the review using the criteria established in Sections 3.7 and 3.8.

4.1.24 Transmit comments to the Document Writer via e-mail, within Q&MIS®, or hard copy (e.g., fax copy, hand written copy).

Document Writer

4.1.25 Forward comments to the Document Originator for resolution.

4.1.26 Upon resolution of comments from the Document Originator, incorporate comments, **AND** distribute draft document for review through Q&MIS®.

4.1.27 Place a copy of the draft document on the sftp site in the Draft Documents Folder, via a standard windows-based operation, for viewing by external reviewers.

FSR and/or STR (if applicable)

4.1.28 **IF** the document requires review per the Host site-specific interface document,
THEN perform the following:

[A] Review the document.

[B] FSR, review the document to ensure the facility is maintained within safe operating boundaries, **AND** is in compliance with site authorization basis and the Host site-specific interface document.

[C] Transmit comments to the Document Writer via email, within Q&MIS®, or hard copy (e.g., fax copy, hand written copy).

Document Writer

4.1.29 Forward comments to the Document Originator for resolution.

4.1.30 Upon resolution of the comments by the Document Originator, incorporate comments, **AND** distribute draft document for review through Q&MIS®.

4.1.31 Place a copy of the draft document on the sftp site in the Draft Documents Folder, via a standard windows-based operation, for viewing by external reviewers.

SPM

4.1.32 **IF** the new document or changes to the existing document could impact data quality or performance criteria as defined in CCP-PO-001 or CCP-PO-002,
THEN provide the Document Writer, via e-mail or Q&MIS®, a full justification for document changes and any changes that could impact data quality or performance criteria as defined in CCP-PO-001 and CCP-PO-002, **AND** direct the Document Writer to send the document to DOE/CBFO within five days of project level review.

Document Writer

4.1.33 **IF** directed by the SPM,
THEN submit document to DOE/CBFO for review/approval with a full justification for document changes and any changes that could impact data quality or performance criteria as defined in CCP-PO-001 and CCP-PO-002 via e-mail at: site.documents@wipp.ws.

NOTE

DOE/CBFO comments are formally documented on a DOE/CBFO Document Review Record (DRR) which is transmitted to CCP Document Services via e-mail from DOE/CBFO.

4.1.34 **IF** DOE/CBFO provides comments,
THEN forward comments to the SPM for resolution.

SPM

4.1.35 Resolves DOE/CBFO comments, **AND** transmits the dispositioned DRR to the Document Writer.

Document Writer

4.1.36 Incorporate changes provided by the SPM or designee, **AND** transmit the DRR and revised document to DOE/CBFO via e-mail at site.documents@wipp.ws, **OR** make arrangements for an interactive review as directed by the SPM and/or DOE/CBFO.

NOTE

Finalizing a document includes, but is not limited to, verifying correct format, spelling, and references.

4.1.37 Upon DOE/CBFO approval, finalize document.

4.1.38 Perform the following to the document:

[A] Remove all Draft indicators on the cover page and in document header(s), **AND** mark as Controlled Copy.

[B] On the cover page, insert the effective date and the name of the person who approved the procedure.

[C] Place effective date in document header(s).

[D] Place effective date in the Record of Revision.

4.1.39 Issue the controlled copy of the document through Q&MIS®, with read-only access to users.

4.1.40 Perform the following activities:

[A] Place a pdf copy of the approved document on the sftp site in the Controlled Documents folder, via a standard windows-based operation, for viewing by external users.

[B] Delete the draft document from the Draft Documents folder on the sftp site.

4.2 Document Use

CCP Personnel

NOTE

Approved documents must be used to ensure that tasks are performed in a consistent manner that results in achieving the quality required.

At the beginning of each shift, CCP personnel will confirm the current revision of the document is being used. This revision of the document will be used throughout the shift unless a STOP WORK order is issued.

4.2.1 Check that the current revision of an approved document is being used by performing one of the following activities:

NOTE

Any hard copies of documents kept at facilities are considered to be working copies requiring verification that they are **NOT** out-of-date prior to use.
If the sftp site is unavailable, Document Services may be telephoned to determine which revision is current.

[A] Verify that the existing working copy is current by comparing the revision number of the working copy to the revision number of the controlled copy of the document on the sftp site in the Controlled Documents folder,

OR

[B] Print a new working copy of the document on the day of use from the sftp site.

4.3 Process Steps Specific to CCP-PO-001

4.3.1 The SPM and CCP QA ensures CCP-PO-001 meets the requirements listed in Section 2.2 of this procedure and includes:

[A] The qualitative or quantitative criteria for determining whether the CCP activities are being satisfactorily performed.

[B] The identity of the CCP organization(s) and positions responsible for the implementation of CCP-PO-001.

[C] References to CCP-specific documentation that details how each of the required elements of the characterization project are performed.

[D] A description of the organization, format, content, and designation of the document.

[E] An approval and date page indicating the document has been reviewed and approved.

4.4 Canceling a Document

<u>CCP Personnel</u>

4.4.1 Notify the SPM and Document Writer that a document needs to be cancelled.

Document Writer

4.4.2 Obtain approval for document cancellation from the SPM.

4.4.3 Upon receiving approval from the SPM, remove the document from use as follows:

[A] Remove all "Controlled Copy" indicators on the cover page and in document header(s), **AND** mark as "OBSOLETE."

[B] Make the document obsolete in Q&MIS®.

[C] Remove the document from the sftp site Controlled Documents folder.

4.4.4 Notify CCP Training and CCP Records of the document cancellation via email.

NOTE

The SPM decides if notification to other personnel, such as Document Originator, CCP QA, etc., is required.

4.4.5 **IF** directed by the SPM,
THEN notify other personnel of the document cancellation.

4.5 Minor Changes to CCP Documents

4.5.1 Editorial or minor changes may be made to all CCP documents **except** CCP-PO-001, CCP-PO-002, CCP-PO-003, CCP-PO-016, CCP-PO-401, CCP-PO-505, and CCP-QP-001 without the same level of review and approval as the original document. The following items are considered editorial or minor changes:

[A] Correcting grammar or spelling (the meaning has not changed).

[B] Renumbering sections or attachments.

[C] Updating organization titles.

[D] Changes to non-quality affecting schedules.

[E] Revising or reformatting forms, providing the original intent of the form has not been altered.

[F] Attachments marked "Example," "Sample," or exhibits that are clearly intended to be representative only.

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4.5.2 A change in an organizational title accompanied by a change in responsibilities is not considered an editorial change.

4.5.3 Minor changes to the text shall be clearly indicated in the document.

4.5.4 All minor Host site-specific changes shall be evaluated and approved by the SPM and CCP QA before implementation.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as QA records in accordance with CCP-QP-008, *CCP Records Management*. The records are the following:

5.1.1 <u>QA/Nonpermanent</u>

[A] Document record packages (include as applicable but are not limited to the following):

[A.1] Documentation that demonstrates approval by designated individuals.

[A.2] Comments and comment resolutions (include attachments, DRRs, emails, letters, etc.), as applicable.

[A.3] Document revision request (i.e., initial markup).

[A.4] DOE/CBFO submittal email within five days of project level review.

Attachment 1 – Technical Procedure Writer's Guide

1.0 INTRODUCTION

The purpose of this writer's guide is to establish the style to be used in writing technical procedures. A technical procedure is required when a defined task or activity is to be performed that meets one of the following criteria: (1) provides specific direction for operating equipment and/or systems included in the CM process, and (2) provides specific direction for physical activities that require repeatability and documented results. For example:

- Environmental sampling operations
- Hazardous waste packaging/handling
- Maintenance of equipment

Technical Procedures - prescribe precisely how to accomplish the various technical tasks associated with startup, testing, operation, and maintenance of CCP equipment and systems. Technical procedures specify fixed tasks and define activities in a way that ensures operations are safe, efficient, and practiced within the appropriate margins of safety.

NOTE

The basic steps for developing a procedure can be found in DOE-STD-1029-92, *DOE Standard Writer's Guide for Technical Procedures*.

NOTE

A sample CCP procedure (Appendix 1) has been added to this guide to provide a visual sample.

NOTE

This guide is intended to be used for assistance in procedure development and formatting.

2.0 FORMAT

2.1 Procedure Titles

Write procedure titles that are short, concise, clear, and descriptive of the system, equipment, process, or activity. Avoid using acronyms in procedure titles.

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2.2 Section Headings

Break the text of the procedure into sections by grouping related action steps or related functions. Headings perform the following functions:

- Help users locate information in the procedure.
- Break up long series of actions into manageable segments.
- Track progress through the procedure, especially when branching to other sections.
- Give each major activity in the main body of the procedure a unique and descriptive heading.

Major sections have all letters uppercase (e.g., INTRODUCTION, PERFORMANCE).

Secondary sections are initial caps (e.g., Develop Schedule). Secondary sections organize action steps.

2.3 Letter Font and Style

The font and style to be used in the body of the procedure is normally Arial 12.

2.4 Page Margins

Portrait-oriented page margins are normally as follows:

- 1.0 inch top margin
- 1.0 inch bottom margin
- 1.0 inch left margin
- 1.0 inch right margin

Landscape-oriented page margins are normally as follows:

- 1.0 inch top margin
- 0.5 inch bottom margin
- 0.5 inch left margin
- 0.5 inch right margin

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2.5 Tab Settings

Tab Settings are normally as follows:

1.0 inch 1.5 inch 2.0 inch 2.5 inch 3.0 inch 3.5 inch 4.0 inch

2.6 Step Numbering

Step numbering is normally as follows:

1.0 Primary section or first-level action step

1.1 Secondary section or second-level action step

1.1.1 Third-level action step

[A] Fourth-level action step

2.7 Emphasis

Emphasize information that, if overlooked or misinterpreted, could result in user error. Use upper case and/or bolding to emphasize important information, unless directed otherwise in this document (e.g., STOP WORK, GO TO, **NOT**, **IF**, **THEN**, **OR**, and **AND**).

2.8 Title Page

The title page is the first page of a procedure and contains the following information about the procedure:

- Type of procedure
- Document number
- Revision number
- Title
- Effective date
- Approved for use line

2.9 Second Page Header

A two or three-line header will be printed on the second page of a procedure and all subsequent pages, containing the following information:

- (Flush left/first row) procedure number, revision number and (right justified) effective date.

- (Flush left/second row) procedure title and (right justified) page numbering (e.g., Page 1 of 1).

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2.10 Record of Revision Page

The Record of Revision page is the second page of a procedure. The table on the page contains a condensed history of the procedure. Data in the table normally are revision number, date of revision, and a short description of what the revision entailed and why the revision was required. If the revision is for a minor change, then the words, “Minor Change” must appear in the Record of Revision.

2.11 Table of Contents

The Table of Contents helps users locate the portions of the procedure they need for a specific operation. The use of a Table of Contents should be done on a graded approach based on the following criteria:

- The number of subsections in the performance section that can be performed independently
- The length of the procedure

Required entries in the Table of Contents are:

- Section headings
- Subsection headings in the Performance Section
- Attachments, if applicable
- Tables, if applicable
- Figures, if applicable
- Appendixes, if applicable

2.12 Grammar

The Gregg Reference Manual is the standard to be used for capitalization, punctuation, and hyphenation (do not use hyphens to break words at the end of a line). Spell out acronyms, abbreviations, symbols, units, and terms not found in Webster's Dictionary or not normally used by the action performer during first usage in the performance section of the procedure.

2.13 Attachment Format

Locate the attachment number and title one line below the page header on the left margin.

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Place the attachment title on the same line as the attachment number separated by a space, a long hyphen, and a space (e.g., Attachment 1 – Electronic Symbols).

Locate the attachment page number on the first line of the page, flush right to the margin with the word "Page" followed by the page number of the attachment (not the procedure page number) and the total number of pages of the attachment (e.g., Page 1 of 1).

2.14 Warnings, Cautions, and Notes

NOTE
Action statements SHOULD **NOT** be placed in Warnings, Cautions, or Notes.

WARNINGS attract attention to specific personnel hazards and contain information that is essential to safe performance. Warnings may include conditions, design limitations, practices, and procedures to be complied with to avoid loss of life, personal injury, or health hazards.

Outline warning statements in a single thick-lined box (single row, single column table). Extend the warning box from left margin to right margin.

Leave one blank line above and below the warning box.

Boldface, capitalize, and center the word “warning” inside the box above the text.

Separate the word “warning” from the warning text with one blank line.

Left indent the text of the warning.

Place warnings immediately before and on the same page as the related step (regardless of page length).

Place warnings prior to cautions and notes when a step has both warnings and cautions or notes.

Warning example:

WARNING

DO **NOT** stand between the container and the High Efficiency Particulate Air (HEPA) inlet when removing drum filter.

CAUTIONS attract attention to specific equipment or environmental hazards.

Outline caution statements in a double-lined box (single row, single column table). Extend the caution box from left to right margin.

Boldface, capitalize, and center the word “caution” inside the box above the text.

Separate the word “caution” from the caution text with one blank line.

Left indent the text of the caution.

Place cautions immediately before and on the same page as the related step (regardless of page length).

Place cautions prior to notes when a step has both cautions and notes.

Leave one blank line above and below the caution box.

Caution example:

CAUTION

The DSA1000 units and detectors must warm up and stabilize for at least one hour after the power is applied and HV is turned on prior to drum examination and data acquisition.

NOTES call attention to important supplemental information. The information may be a reminder of preparatory information needed to perform the activities of a step.

Outline notes in a single-lined box (single row, single column table) with no right or left lines. Extend the box from left to right margin. Boldface, capitalize, and center the word “note” inside the box above the text. Indent the text of the note.

Place the note either before or after the applicable step, depending on when the user needs the information.

Note example:

NOTE

A background check is performed at least once per day at the beginning of the operational day prior to assaying.

2.15 Figures and Tables

Figures and Tables may be used in the body of the procedure at the applicable step, or may be grouped in an attachment. The determination for use is based on complexity of the procedure or to increase user friendliness. Number and title a figure/table as follows:

- Use initial caps for the figure/table number and title.
- Left justify the figure/table number and title on a line or lines as needed above the top of the figure/table.
- Single space between the last line of the title and the top line of the figure/table.
- Separate the word “Figure/Table” and the title of the figure/table with a period at the end of the figure number followed by two spaces (e.g., Figure 1. Designated Parking Areas).

3.0 WRITING ACTION STEPS

NOTE

Action steps in CCP procedures use imperative sentences (commands) instead of declarative sentences (for example, "Manager, approve completed work order" or "Provide approved storage for classified documents").

3.1 Standard Action Steps

The basic element of an action step is an imperative sentence, a command to perform a specific action. An action step answers the question, "What is to be done?" Write each action step to direct the user to perform a single action.

Start the step with a singular present-tense action verb.

Describe the direct object of the verb.
Initially refer to instruments and components using both the equipment name and number. After the initial reference, write equipment names exactly as the equipment is labeled.

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If the equipment is not labeled within the facility, use equipment nomenclature precisely as it appears in the documentation.

Complete the step with supportive information about the verb and the direct object. Supportive information includes further description of the object or the recipient of the object.

Write steps using words that are easily understood by the intended users.

Break one subsection into two or more subsections to simplify the step structure if necessary. Use main steps to allow users to quickly comprehend the purpose of the step. Use substeps to provide specific details for performance. Both main steps and substeps use the same basic format.

If someone other than the cognizant user is responsible for performing a step, identify the person (by position) to perform the step.

Include articles (a, an, the) when referring to a general item; omit articles when referring to specific items (for example, change "Open <u>the</u> door," to "Open door SB-9").

Present action steps, including associated action substeps and lists, with a minimum of interruption (for example, page breaks).

3.2 Writing Conditional Action Steps

Two types of conditional steps are generally needed in a procedure:

- A step where the action depends on an unexpected but possible condition (if clause).
- A step where the action depends on an expected condition (when clause).

Describe the condition first (**IF** or **WHEN** clause) and then the action to be taken. The **IF** or **WHEN** clause is followed by a comma. Conditional action steps that are not critical are written as follows:

4.1 If stock tank is full, close valve.

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Conditional action steps that are critical are written with the action introduced with the word **THEN** on the next line emphasized. Critical action steps are written as follows:

4.1 **IF** RAD tank is full,
THEN close valve.

3.3 Writing Logic Steps

When multiple conditions are required to be evaluated, these are considered logic steps. The logic terms **AND** and **OR** are used in conjunction with a conditional step to indicate a choice needs to be made.

If two conditions are required, and both of these conditions must be met, place the logic term **AND** between the conditions. Begin a new line with **THEN** followed by the action.

If two conditions are involved, and one of the conditions must be met before the action is taken, place the logic term **OR** between the conditions. Begin a new line with **THEN** followed by the action.

If three or more conditions are described, use a list format as follows:

4.1 **IF** Rad tank meets TWO of the following conditions:

- 3/4 full
- Alarming
- Isolated

THEN perform, ONE of the following:

- Close Valve A
- Close Valve B
- Secure Pump PMP-1

Avoid using the logic term **AND** with the logic term **OR** on the same line of a conditional statement. Write the conditional statement using only one logic term on a line. Start a new line for each additional logic term used.

4.1 **IF** Rad tank is 3/4 full **AND** isolated,
OR alarming,
THEN open Valve A.

Use only **AND** and **OR** to join conditions that include both a subject and a predicate. If two subjects apply to the same predicate (e.g., "**IF** temperature and pressure are stable, ... ") or one subject takes two predicates (e.g., "**IF** level is stable or falling, ... ") use the unemphasized conjunctions and or rather than the emphasized logic terms.

Avoid using **NOT** if a single word can be used and the condition can be stated in a positive manner.

3.4 Non-sequential Action Steps

Identify that a series of steps may be performed non-sequentially by placing a note before the sequence of steps that can be performed non-sequentially, or bullets may also be used to indicate non-sequential steps.

3.5 Alternative Action Steps

Alternative action steps are used when it is beneficial for users to be provided with more than one option. It is important to ensure that only one alternative is performed.

Present alternative actions as items in a list within a single step.

Use the word "one" to introduce the list of alternatives (e.g., "Perform ONE of the following actions").

3.6 Continuous Action Steps

Continuous action steps are conditional steps where the conditions they describe must be monitored throughout a procedure or a portion of a procedure. For example, a user may need to monitor a gauge and take a specific action if the gauge, at any point during the procedure, indicates a reading above or below a specific level.

Place continuous action steps in the procedure at the point at which they first apply. Repeat the steps periodically, as appropriate, in the body of the procedure.

Format continuous steps as conditional steps and state the portion of the procedure during which they are applicable.

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3.7 Repeated Action Steps

Repeated action steps are simple steps that must be performed more than once during the execution of a procedure.

If a step must be repeated an indefinite number of times to achieve an objective, specify that the step is to be repeated until the expected results are achieved.

If a large group of repetitive actions is required and becomes cumbersome, address the actions in steps that reference an attachment (an example of a large group of repetitive actions is a series of valve alignments).

Notify the performer when repeated action steps are to be discontinued.

3.8 Action Steps Containing Verifications

Verification of steps provides assurance that a required condition exists. If the condition does not exist, the user takes appropriate action to obtain the required condition before proceeding.

Specify the type of verification, who is to verify, how to verify, and when to verify the step.

3.9 Action Steps to Branch or Reference Elsewhere

Referencing and branching increase the potential for error, with attendant safety and administrative consequences. Therefore, branching and referencing are highly discouraged. Use referencing and branching only when it is necessary to direct the user to information that is vital to the performance of the activity and when it is not appropriate to incorporate that information into the base procedure.

Branching routes the procedure user to other subsections within the procedure or to other procedures when the user does not return to the original position.

Referencing routes the procedure user to other subsections within the procedure or to other procedures and then back to the original position in the base procedure.

Evaluate the following criteria to determine if referencing or branching is appropriate:

- Can steps be readily incorporated rather than referenced?

- Will branching and referencing reduce user comprehension and ease of use?

- Will users be directed to small isolated subsections, rather than whole procedures or attachments?

- Will branching and referencing cause users to bypass prerequisites that affect the section to which they are being directed?

- Will branching and referencing cause users to bypass precautions and limitations that affect the section to which they are being directed?

If the answer to all of the above questions is NO, referencing or branching may be appropriate. If referencing or branching is appropriate, use the following methods:

- Indicate a branch step by using the words “GO TO" as applicable.

- Specify the location where the user is to go. If the user is being sent to another procedure, identify the procedure number and title. If the user is being sent to another location in the base procedure, identify the specific section/step in the procedure.

- Indicate referencing, by using the terms “GO TO” and “RETURN TO” in the same step to indicate the reentry point into the base procedure.

Ensure that a reference or branch directs the user to all material needed as a prerequisite to the identified material. For example, ensure that the user does not bypass an applicable caution or prerequisite step.

Emphasize “GO TO” and “RETURN TO” in branching or referencing steps.

3.10 Action Steps with Acceptance Criteria

Acceptance criteria provides a basis for determining the success or failure of an activity. Acceptance criteria may be qualitative (specify a given event that does or does not occur) or quantitative (specify a value or value range).

Determine where specific acceptance criteria are to be presented in the procedure; either or both of the following methods can be used.

State the location of acceptance criteria, whether located at individual action steps (used when criteria are satisfied at the time of performance), or located in data sheets or other procedures. When acceptance criteria

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are located in other procedures, link procedures together using referencing techniques if the information cannot be included in the procedure.

Provide a summary of the acceptance criteria in a table, or a list as an attachment.

Include instructions for notifications to be made or actions to be taken immediately by the user in the event that specified acceptance criteria are not met using the standard notification step stated earlier. Place these instructions or actions in the body of the procedure. Ensure that these actions are consistent with administrative instructions.

Use acceptance criteria that consist of nominal values, and allowable ranges.

4.0 SECTIONS

4.1 Purpose

Address the purpose of the procedure. The purpose provides a clear description why the document was written (e.g., to describe the goals to be achieved by performing the procedure).

4.1.1 Scope

The scope describes what activities or processes are included in the procedure. The scope also discusses the limitations of the procedure or what the procedure does not cover.

4.2 Requirements

One subsection of the Requirements Section defines reference documents. Other subsections define, as appropriate, specific terms used in the procedures (definitions), training requirements, equipments list, precautions and limitations, and prerequisite actions.

4.2.1 References

There are two types of reference documents:

- Baseline Documents
- Referenced Documents

Baseline Documents is a list of specific documents used to develop and maintain the procedure.

Referenced Documents is a list of documents called out in the body of the procedure.

Group Baseline Documents by originating organization (i.e., *Code of Federal Regulations* [CFR], DOE Orders) in the reference section, to allow easy location of materials.

4.2.2 Training Requirements

This subsection lists all special training required for personnel to perform the procedure.

4.2.3 Equipment List

This subsection lists all equipment to be used during the performance of a procedure that is not ordinary craft tools, including special software. The following is a guidance to be used when listing tools:

- Identify specific equipment necessary to perform a procedure.
- Specify alternative tools and equipment.
- If the procedure has a generic application, do not include instrument-specific information (e.g., serial number or calibration date). This information is included in application-specific procedures.
- Provide clear specifications for defining test equipment parameters applicable to the procedure. Specifications include ranges, accuracies, and compliance with calibration standards.
- Ensure that range and accuracy of measuring equipment is consistent with the expected values to be measured.

The Equipment List section may be divided into subsections listing the following:

- Measuring and Test Equipment - Calibrated tools and equipment required to perform or verify performance of the procedure.
- Special Test Equipment - Items not commonly used that are required for the procedure.

4.2.4 Precautions and Limitations

The precautions and limitations subsection delineates information that affects the entire procedure, or that occur at multiple points in the procedure. Failure to include precautions and limitations within the procedure can cause severe injury to, or the death of personnel, serious damage to equipment, and/or invalidation of the parameters required of the procedure.

Precautions alert procedure users to actions and conditions that represent potential hazards to personnel, possible damage to equipment, or establish abnormal conditions. Identify and address potential hazards such as the following:

- Radiation or contamination
- High temperature or high pressure fluids
- Hazardous substances
- Electrical shocks
- Excessive noise levels
- Confined space hazards
- Falls
- Moving equipment or parts of equipment
- Fire hazards

Limitations define boundaries that are not to be exceeded. Identify special qualification and training requirements as a limitation of performance of the procedure. Limitations may also state system or equipment capacities or conditions.

Do not present user actions in the Precautions and Limitations Section.

Avoid generic precautions that are part of a job description or inherent in the task.

4.2.5 Prerequisite Actions

The prerequisite actions subsection identifies actions that must be completed by the user and/or requirements that must be met before the user continues with the procedure.

4.2.6 Definitions

The definitions subsection list definitions of special terms used in the procedure.

4.3 Responsibilities

Identify specific responsibilities for personnel performing the procedure.

4.4 Procedure

The performance section contains the action steps that prescribe the principal tasks and sub-tasks.

Organize activities in the order of performance. Divide the Performance Section into subsections that logically group all related activities. Use titles for each subsection that reflect the activity rather than a generic title (e.g., Removing the Actuator rather than Actuator).

4.5 Records

Identify records generated by the procedure. Classify the records as lifetime, nonpermanent, or non-QA records as applicable.

4.6 Attachments

Provide attachments when the material and function of the procedure requires them. Attachments are part of the procedure. Examples of items that may be placed in an attachment are data sheets, tables, figures, graphs, and checklists.

Reference attachments within the text of the procedure.

- Include information in attachments that is more conveniently located outside the main body of a procedure.

If the form (report) is generated by software (e.g., NDA2000), the report generated will be labeled in the actual attachment as follows:

- Attachment 1 – QA Last Results Report (Example)

A picture (or example) of the form will be placed in the procedure.

When the form is generated by software (e.g., NDA2000), within the body of the procedure, call out the first use as in the following example:

Example: 1.1 Print the QA Last Results Report (see Attachment 1, QA Last Results Report for an example), **AND** print name, sign, and date the QA Last Results Report.

Then, as you refer to the form within the text of the procedure (after first callout), use the title (e.g., QA Last Results Report).

When the form is generated by software, use the title of the form as in the following example:

Example: 5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as Quality Assurance (QA) records in accordance with CCP-QP-008, *CCP Records Management.* The records are the following:

5.1.1 <u>QA/Lifetime</u>

[A] QA Last Results Report(s)

[B] NDA Radioassay Data Sheet(s)

Completed forms based on forms that are labeled as examples in CCP documents must contain all the information in the example, preferably in the order listed in the example, and must contain header information identifying the document number, revision, title, and effective date so that the form is traceable back to the governing document on which it is based. Additional information may be included in forms that are designated as examples.

If the form is a fillable form (e.g., TP-001 forms), the word “example” will not be added to the attachment name. The actual form is created in the procedure so that it can be completed either by the user printing and completing by hand or electronically by accessing the posted form on the sftp site in the Forms Folder. The form is posted on the sftp site by Document Services.

In this case, within the body of the procedure, call out the first use as in the following example:

Example: 1.1 Enter the BDR number on Attachment 1, Independent Technical Reviewer Checklist.

Then as you refer to the form, within the text of the procedure (after first callout), use Attachment and # (e.g., Attachment 1). Refer to the fillable form as in the following example:

Example: 5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as Quality Assurance (QA) records in accordance with CCP-QP-008, *CCP Records Management.* The records are the following:

5.1.1 <u>QA/Lifetime</u>

[A] Attachment 1 [Title]

[B] Attachment 2 [Title]

[C] Attachment 3 [Title]

[D] NDA Radioassay Data Sheet

4.7 Figures and Tables

Reference figures and tables within the text of the procedure. Call out the first use of the figure or table in the following example:

Example: 1.1 As a minimum, technical procedures will contain the sections shown in Table 1, Procedure Format.

Then as you refer to the figure/table, within the text of the procedure (after first callout), use Figure/Table and # (e.g., Table 1). Refer to the following example:

Example: 1.2 The format for configuration management (CM) procedures will contain, as a minimum, the sections shown in Table 1 (not necessarily in the order shown in Table 1, but the sections must be included somewhere in each document).

Appendix 1. Sample Procedure

CCP-TP-XXX

Revision X

CCP
Title

EFFECTIVE DATE: _____

_____
PRINTED NAME

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	mm/dd/yyyy	Initial issue.
1	mm/dd/yyyy	Revised to rewrite Section 4.1 due to changes in requirements.

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1.0 PURPOSE

This procedure provides the required instructions for opening radiologically clean TRUPACT-IIs at the Waste Isolation Pilot Plant (WIPP).

1.1 Scope

This procedure applies to opening radiologically clean TRUPACT-IIs at the WIPP only.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*

Referenced Documents

- CCP-QP-002, *CCP Training and Qualification Plan*

2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan* prior to performing this procedure.

2.3 Equipment List

2.3.1 Crane Load Cell

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2.4 Precautions and Limitations

2.4.1 Workers who will be working in a radiation area must have read and signed that they understand the applicable Radiological Work Permit (RWP).

2.5 Prerequisite Actions

2.5.1 Verify the Waste Handling Building Exhaust Filtration System is operating.

2.5.2 Verify that the TRUPACT-II is radiologically clean by reviewing receipt report.

2.6 Definitions

2.6.1 None

3.0 RESPONSIBILITIES

3.1 Nondestructive Assay (NDA) Operator

3.1.1 Performs routine startup, normal operations, and shutdown of the system.

3.1.2 Notifies the NDA Lead Operator (LO) of abnormal or nonconforming conditions.

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4.0 PROCEDURE

4.1 Outer Containment Vessel (OCV) Upper Assembly Removal

4.1.1 Prepare the TRUPACT-II Outer Containment Vessel (OCV) Lid for removal by removing the following:

- Lift Pocket Covers
- Locking Ring Bolts (six)
- Outer Containment Assembly (OCA) Test Port Access Plug
- OCV Vent Port Access Plug
- OCV Vent Port Cover

4.1.2 Install the following in the OCV:

- Vent Port Tool
- T-Handles

4.1.3 Retrieve the Vent Port Plug into the Vent Port Tool.

4.1.4 **IF** the Locking Ring will **NOT** rotate,
THEN perform the following:

[A] Verify the Vacuum Valve is in OFF position.

[B] Connect the Vacuum Line to the Vent Port Tool.

[C] Start the Vent Hood Fan.

[D] Start the Vacuum Pump.

[E] Place the Vacuum Valve in VACUUM position.

[F] Rotate the OCV Locking Ring to the UNLOCKED position.

[G] Place the Vacuum Valve in OFF position.

[H] Stop the Vacuum Pump.

[I] Stop the Vent Hood Fan.

[J] Disconnect the Vacuum Line from the Vent Port Tool.

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4.1.5 **IF** the Locking Ring will rotate,
THEN rotate the Locking Ring to the UNLOCK position.

4.1.6 Remove the T-Handles from the OCV Locking Ring.

4.1.7 Break vacuum on the OCV.

4.1.8 Connect the Adjustable Center of Gravity Lift Fixture (ACGLF) to the OCV Lid.

WARNING

Personnel may be injured if the TRUPACT-II OCV Lid begins to swing due to excessive misalignment.

CAUTION

Exceeding a crane load cell indication of 8,000 pounds may damage the TRUPACT-II OCV Lid lift points.

NOTE

Force may be applied to either side of the OCV lid by rotating the ACGLF counterweights to help prevent binding.

4.1.9 Release the ACGLF.

4.1.10 Remove the Vent Port Tool.

4.2 Inner Containment Vessel (ICV) Lid Removal

4.2.1 Prepare the TRUPACT-II Inner Containment Vessel (ICV) Lid for removal by removing the following:

- Locking Ring bolts (three)
- ICV Vent Port Cover

4.2.2 Install the following in the ICV:

- Vent Port Tool
- T-Handles

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4.2.3 Verify the Vacuum Valve is in OFF position.

4.2.4 Retrieve the Vent Port Inner Plug into the Vent Port Tool.

4.2.5 Connect the Vacuum Line to the Vent Port Tool.

4.2.6 Start the Vent Hood Fan.

4.2.7 Start the Vacuum Pump.

4.2.8 Place the Vacuum Valve in VACUUM position.

4.2.9 Rotate the ICV Locking Ring to the UNLOCKED position.

4.2.10 Place the Vacuum Valve in OFF position.

4.2.11 STOP the Vacuum Pump.

4.2.12 STOP the Vent Hood Fan.

4.2.13 Disconnect the Vacuum Line from the Vent Port Tool.

4.2.14 Perform the following:

- Break ICV vacuum
- Remove Vent Port Tool
- T-Handles

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4.2.15 Connect the ACGLF to the ICV Lid.

CAUTION

Exceeding a crane load cell indication of 5000 pounds may damage the TRUPACT-II ICV Lid lift points.

NOTE

Force may be applied to either side of the ICV lid by rotating the ACGLF counterweights to help prevent binding.

4.2.16 Remove the ICV Lid.

4.2.17 Place the ICV Lid on the storage stand.

4.2.18 Release the ACGLF.

5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as Quality Assurance (QA) records in accordance with CCP-QP-008, *CCP Records Management*. The records are the following:

5.1.1 <u>QA Nonpermanent</u>

[A] Attachment 1, Sign-Off Sheet

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Attachment 1 – Sign-Off Sheet

Step No.	Action	Initial
4.1.7	Break vacuum on the OCV.	

Printed Name	Signature	Date	Initials

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Attachment 2 – Verb Usage

This list is not all inclusive. It contains the verbs generally used by the CCP.

Actuate	To put into action or use. When possible, use "START."
Adjust	Alter (parts of a device) for proper functioning.
Align	Arrange components into a desired condition.
Assess	Make a judgment as to the status or extent of change.
Attempt	To make an effort to do.
Bleed	Cause to escape from a system or container in a regulated manner.
Block	To prohibit an automatic action or motion, to isolate a system.
Bypass	Circumvent some operational mode of a system or component.
Calculate	Perform a mathematical process to produce a value.
Calibrate	The set of operations which establish, under specified conditions, the relationship between values indicated by a measuring instrument or measuring system, and the corresponding standard or known values derived from the standard.
Call-up	Summon information.
Certify	To attest as being true or to represent as meeting a standard.
Charge	Add fluid, gas, or energy.
Check	Inspect for satisfactory condition, if condition is not satisfactory, report the condition to the immediate responsible management.
Close	Mechanically: to change the position of a mechanical device so that physical access of fluid or gas flow is prevented. Electrically: to position a circuit breaker or relay so that electrical current flow is permitted.
Collect	Cause the assembly of something in a fixed location or container.
Comply	Follow a requirement.
Confirm	Assure that an action or task has been performed/completed.

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Attachment 2 – Verb Usage (Continued)

Connect	Fasten or join together.
Cool	Lower the temperature of equipment or an environment.
Creep	A very slow, usually continuous time-dependent movement.
Cycle	Cause repetition of an action or activity, change of a valve from one position to another, then back.
Decrease	DO NOT use. Use lower.
De-energize	To disconnect equipment from its electrical power supply.
Depressurize	DO NOT use. Use lower the pressure.
Dilute	Reduce in concentration.
Dispatch	Send by a predefined method.
Don	To put on.
Drain	Remove liquid from an enclosure or part of an enclosure to a predetermined level.
Drive	Move equipment to a prescribed position.
Emplace	To put into position.
Energize	To apply energy (electrical, pneumatic).
Ensure	Confirm that an activity or condition has occurred in conformance with specified requirements (by action if necessary).
Equalize	Make a value or parameter the same as that of another.
Evaluate	Assess a condition based on observation, experience, or external input.
Execute	Perform an instruction or step.
Feed	Add fluid or gas to a system or equipment.
Fill	Add fluid, gas, or a material to a system, equipment, or container to a prescribed point.
Ground	Provide an electrical path to a system at zero potential.

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Attachment 2 – Verb Usage (Continued)

Hold	A continued action that maintains a device or a spring returned switch in a required position.
Increase	DO NOT use. Use raise.
Initiate	Begin or start an activity.
Inspect	Evaluate for comparison with a pre-defined limit or standard.
Isolate	Mechanically: to change the position of a valve so that physical access of fluid or gas flow is prevented. Electrically: to remove or open an electrical circuit breaker so that passage of electrical current is not permitted.
Jog	A momentary start/stop action of a motor (to check rotation).
Land	The re-connection of electrical leads temporarily disconnected for maintenance, tests, or calibration purposes.
Latch	To make fast.
Lift	To temporarily disconnect electrical leads for maintenance, tests, or calibration purposes.
Limit	Restrict or impose bounds.
Load	The amount of torque being supplied or the electrical current that a component is using.
Lock	Securely fasten.
Lower	To decrease (e.g., elevation, pressure, temperature, voltage).
Maintain	Continue an action or condition without interruption.
Notify	Inform a specified person.
Open	Mechanically: to change the position of a mechanical device (valve) so that physical access of fluid or gas flow is permitted. Electrically: to position an electrical circuit breaker so that electrical current flow is prevented.
Operate	To cause to function.

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Attachment 2 – Verb Usage (Continued)

Overpack	To repackage a Waste Container into a larger package.
Override	To bypass a normal function and allow operation in a condition other than normal.
Pack	Fill with packing material; usually applies to lubricate and seal.
Perform	Carry out an action or series of procedure steps as written.
Position	To "place" a component in a specified condition.
Pressurize	DO NOT use. Use raise.
Press	Inward motion of a push button.
Rack-in	Physically connecting an electrical circuit breaker to its associated power source.
Rack-out	Physically disconnecting an electrical circuit breaker from its associated power source.
Rack-to-test	Physical placement of an electrical circuit breaker so that control functions are operable while the supply and load sides are disconnected.
Raise	To increase (e.g., elevation, pressure, temperature, voltage).
Recirculate	Cause repetitive motion of a fluid or gas in a system.
Reduce	DO NOT use. Use lower.
Regenerate	Restore towards original properties or capabilities.
Reset	Placement of an automatic system or component to its normal condition or pre-action state.
Retract	Withdraw or take back.
Sample	A representative portion taken for examination.
Secure	Take appropriate actions to remove from service or to prevent a return to service.
Set	Adjust as necessary to obtain a specified value (set Diesel Generator loading to 300 Kv).
Shut	DO NOT use. Use close.

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Attachment 2 – Verb Usage (Continued)

Shut down	Terminate operation or remove from service.
Start	Initiate equipment operation or begin a process.
Stop	Discontinue.
Terminate	Form an end connection.
Throttle	Physical adjustment of a valve to obtain a specified position or flow rate.
Torque	The measurement of a turning or twisting force that produces tension.
Transfer	Movement of a fluid, gas, or electrical current from one source to another.
Trip	An automatic or manual operation which removes an electrical breaker or device from service.
Vent	Removal of a liquid or gas to allow system filling, draining, or equalization.
Verify	Check that the required condition exists. If the condition does not exist, take appropriate action to obtain the required condition before proceeding.

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CCP-QP-016

Revision 19

CCP
Control of Measuring and Testing Equipment

EFFECTIVE DATE: 03/12/2014

Mike Ramirez

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
4	02/25/2002	Added requirements for M&TE items controlled under the e-QA® system. Added a new Section 4.9 for entering data into the e-QA® database.
5	05/14/2002	Made changes to 4.1.4 and 4.1.7. Updated references in 2.6.1, 4.1.1 and 4.8.1.
6	05/14/2003	Change to 3.3.3 and NOTE before 4.1.2.
7	08/05/2003	Revised to address shipment of M&TE from the generator sites directly to/from suppliers of calibration services (instead of being calibrated at the WIPP site). Revised in response to CAR-SRS-0002-03, to clarify M&TE related activities performed at the project office versus those performed at the generator sites.
8	11/18/2003	Revised to address that e-QA® system is being eliminated for use by the CCP Program. Deleted Section 4.9 from procedure.
9	03/14/2005	Revised to address the concerns of Surveillance Report SUR-SRS-0003-04 and Savannah River Site Audit Report 2004-AR-26-0005, Finding #2. Addressed CBFO comments.
10	03/09/2006	Revised to correct reference in Section 2.6 and added CCP Vendor Project Manager to Responsibilities Section.
11	09/26/2006	Revised Attachment 1 to require that 'CCP' be included as part of the unique calibration identifier in response to CAR-RHANL-001-06.
12	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR). This revision includes changing SPQAO to CCP QA and TS to Lead Operator. Other editorial changes are also included.
13	03/30/2007	Revised to clarify the unique identifiers and to remove nonconformance report (NCR) requirement for out-of-calibration equipment.

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
14	02/07/2008	Revised to address the assignment of responsibilities, disconnects between the Quality Credit Card process and Central Characterization Project (CCP)-driven requirements, and proper usage of “out-of-calibration” versus “out-of-tolerance” terminology in response to Corrective Action Report (CAR), CAR-CCP-0006-07.
15	05/18/2010	Revised to clarify responsibilities for providing calibration documentation to the measuring and test equipment (M&TE) Custodian.
16	01/05/2012	Revised to clarify the scope of Central Characterization Project’s (CCP’s) measuring and test equipment (M&TE) program and the responsibilities associated with Host site provided M&TE.
17	10/23/2012	Revised to clearly flow down items from the *Quality Assurance Program Document* (QAPD) as described in MA-CCP-0003-12, to incorporate Corrective Action Plan (CAP) items from CAR-LANL-0003-12 and to improve clarity.
18	06/24/2013	Revised to clarify actions of each entity defined in this procedure. Incorporate Corrective Action Plan (CAP) items from CAR-CCP-001-13-0. Added Section 4.9 for process of shipping M&TE to calibration lab.
19	03/12/2014	Revised Section 4 to clarify what each of the sections in Integrated Data Center (IDC) measuring and test equipment (M&TE) Module is used for. Revised all Attachments to make more user friendly.

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1.0 PURPOSE

This procedure implements the requirements and processes for properly controlling and maintaining measuring and test equipment (M&TE).

1.1 Scope

This procedure describes the processes to ensure equipment used for measuring and testing are properly controlled, calibrated, and maintained.

This procedure is applicable to M&TE that is used by the Central Characterization Program (CCP). This includes M&TE procured and controlled by CCP as well as Host site provided M&TE that is controlled under the Host site M&TE program.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- WP 13-1 *Nuclear Waste Partnership LLC, Quality Assurance Program Description*

Referenced Documents

- CCP-QP-008, *CCP Records Management*
- WP 15-PC3044, *Quality Credit Card Purchases*
- WP 15-PM3525, *Preparation and Processing of Shipping Authorizations*
- EA 15-PM3525-1-0, *Shipping Authorization*

2.2 Training Requirements

2.2.1 None.

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3.0 RESPONSIBILITIES

3.1 CCP M&TE User

3.1.1 Verifies M&TE is on the current approved M&TE list on secure file transfer protocol (SFTP) web site (searchable by equipment number) and checks current cal sticker with information on approved list for accuracy.

3.1.2 Handles M&TE in a manner that will not adversely affect its accuracy to ensure M&TE integrity.

3.1.3 Promptly reports any M&TE conditions that could invalidate measurements to the Vendor Project Manager (VPM)/designee.

3.1.4 Coordinates equipment location, recall, and calibration with the VPM/Designee.

3.2 CCP M&TE Custodian

3.2.1 Maintains a database that includes a recall system to track and control M&TE needed to support CCP characterization and packaging activities.

3.2.2 Responsible for overall CCP M&TE program administration.

3.2.3 Submit all records identified in Section 5.1.1 [B] and [C] to CCP Records in accordance with CCP-QP-008, *CCP Records Management.*

3.3 Cognizant Engineer

3.3.1 Provides technical support of M&TE program including recommendations on calibration intervals, set-points, tolerances, exemptions, and extensions.

3.4 CCP Vendor Project Manager (VPM) or Designee

3.4.1 Primary interface with Host site for CCP use of Host site provided M&TE.

3.4.2 Interfaces with the M&TE Custodian for calibration and maintenance activities, forwards copies of Host site provided calibration records to the M&TE Custodian, and ensures M&TE database reflects M&TE used.

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3.4.3 Ensures M&TE is used for CCP operations in compliance with this procedure and other applicable requirements, including:

[A] Only M&TE approved for CCP use is used for CCP operations.

[B] Host site M&TE documentation is transmitted to the CCP M&TE Custodian.

3.4.4 Performs and documents M&TE evaluations as required by this procedure.

3.5 Host Site

3.5.1 See the applicable Host site Interface Agreement (they provide documents required by the interface agreement and this procedure).

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4.0 PROCEDURE FOR CCP OWNED M&TE

NOTE

Section 4.0 pertains to CCP controlled M&TE. Section 4.11.2 applies to Host site owned M&TE used in CCP's program. Sections in this procedure may be performed in any order as necessary.

4.1 Procurement of M&TE

VPM or Designee

NOTE

If equipment is not procured as QL1 or equivalent, the M&TE will need to be calibrated before use.

4.1.1 Initiate request for needed equipment, **AND** procure the equipment in accordance with applicable procedures. The procurement request should address the following:

[A] The required function ranges and tolerance in the procurement specifications.

[B] The appropriate documentation including operation and maintenance manuals.

[C] Adequate provisions for packaging, handling, storage and shipping requirements.

CCP M&TE Custodian

NOTE

Identification (ID) numbers are serialized and not duplicated or reissued. They are attached to equipment using an appropriate label. References to equipment are typically by means of these ID numbers.

4.1.2 Inspect newly procured M&TE to verify correct serial number and equipment ID number, as applicable.

4.1.3 Tag, segregate, or otherwise control newly-procured M&TE to prevent its use until it is calibrated.

4.1.4 Ensure that a unique M&TE ID number is assigned by checking Integrated Data Center (IDC) for that equipment number (see Section 4.3 for Labeling).

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4.2 M&TE Entry into IDC Database

NOTE
The Note section in the IDC M&TE Module can be used to describe abnormal events not covered under this procedure, (i.e., M&TE listed as disposed of but later is recalibrated and put back in service).

4.2.1 To enter new calibration dates complete the following:

[A] Verify new M&TE has an ID number assigned and an M&TE ID label.

[B] Log into M&TE database.

[C] Click on M&TE Edit.

[D] Type in equipment ID number in “Search Equipment ID” field.

[E] **IF** equipment ID does not come up,
THEN GO TO Section 4.2.5.

[F] Click on “Edit Cal Data” button.

[G] To enter new calibration dates click on the “+” button.

[H] Enter calibration date, expiration date, vendor, as found condition, and as left condition in appropriate fields.

[I] Click the “Update” button.

[J] Click the “Close” button.

[K] Click the “Update” button below the “Comment” field on main page to update the record.

4.2.2 At a minimum, the following data for all M&TE is required in the database:

[A] M&TE ID number

[B] Description

[C] Cal interval

[D] Cal Date

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4.2.3 An independent verification of data entry in IDC shall be performed by a qualified M&TE Custodian prior to filing records.

4.2.4 IDC maintains a recall system to notify users when due for calibration.

[A] Equipment shall also be recalled for calibration or other disposition if:

[A.1] It has exceeded its calibration interval.

[A.2] It has broken calibration seals.

[A.3] It has been repaired, modified, or had any components replaced.

[A.4] It is suspected to be malfunctioning because of mishandling, misuse, or unusual results.

NOTE

This notification should be 60 days in advance for items that must be sent off site for calibration and upon calibration expiration.

[B] IDC notifies VPM or Designee and Quality Assurance (QA) upon expiration of M&TE calibration for recall using the recall notification e-mails.

4.2.5 For entering new M&TE into IDC perform the following:

[A] On the main M&TE Edit screen fill in all of the white boxes.

[B] Before clicking the insert button, make sure all of the boxes with white background are filled out (including the ID number).

[C] Click insert.

[D] If the M&TE is owned by CCP, open the Equipment ID Checkout tab to get the new XC0XXX number.

[E] Click on “Get Next ID.”

[F] Use the XC0XXX number it generates as the “Equipment ID Number.”

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[G] **GO TO** Section 4.2.1 and complete the new calibration information for new M&TE.

4.3 Controlling CCP M&TE

NOTE

M&TE will be transported, stored, and calibrated in an environment that will not adversely affect its accuracy. When practical, M&TE is shipped directly from the generator site to the calibrating agency and then returned to the generator site. Returned instruments are checked by a person designated by the VPM or project manager.

NOTE

M&TE labeling (or verification of labeling) can be done either by VPM or Designee at generator site for equipment owned/used by generator site or by M&TE Custodian for equipment handled through Skeen-Whitlock Building (SWB).

CCP M&TE Custodian or VPM/Designee

4.3.1 If practical, ensure the M&TE is labeled with the unique ID number assigned in Section 4.1 as indicated in Attachment 1, Identification Labels and Calibration Tags.

4.3.2 **IF** labeling or tagging is not practical,
THEN:

[A] Determine an acceptable means of ensuring control of M&TE.

[B] Document any alternative control methods that are established.

[C] File documentation of control methods with the equipment records per CCP-QP-008.

4.3.3 Calibrate M&TE in accordance with Section 4.5.

4.3.4 Inspect M&TE received from calibration to verify correct serial number and equipment ID number, as applicable.

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4.3.5 Tag, segregate, or otherwise control damaged, suspect, out-of-tolerance (OOT), and out-of-calibration M&TE to prevent use until the condition has been resolved. If an evaluation of previous measurements is needed (for an OOT or other condition), perform in accordance with Section 4.7.

4.3.6 Store M&TE in an environment that will not adversely affect its accuracy to ensure M&TE integrity.

4.4 Determining and Adjusting Calibration Parameters

NOTE

Manufacturer's recommended calibration intervals or standardized CCP calibration intervals are normally used, as are manufacturer's recommended ranges and tolerances. The calibration intervals are recorded in the M&TE database.

Calibration exemptions are based on what the item is used for.

Calibration and control measures are not applied to rulers, tape measures, levels, and other such devices, if normal commercial equipment provides adequate accuracy.

4.4.1 Establish and maintain the calibration interval to ensure acceptable reliability. The calibration interval should be set so the M&TE is expected to remain in tolerance throughout the interval, as applicable.

4.4.2 Consider any or all of the following:

[A] Calibration range, tolerance, and job requirements.

[B] Review of the manufacturer's tolerance, wear allowance, and recommended calibration interval.

[C] Comparison of calibration intervals for similar instruments or M&TE.

[D] Consultation with calibration organization for historical data on similar instruments.

[E] Intended use and frequency of the instrument.

[F] Environment in which the device will be subject.

[G] Results of previous calibration.

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4.4.3 To adjust calibration parameters initiate and process Attachment 4, Calibration Interval/Tolerance Adjustment Evaluation or Attachment 5, Exemption/Temporary Extension Evaluation, as applicable to document changes to calibration parameters.

NOTE

The reliability target for CCP M&TE is a minimum of 85 percent. Data will be collected and evaluated to aid in adjustment to calibration intervals, decisions on retirement of equipment, and the need for additional equipment. The analysis shall consider the as-found calibration data.

NOTE

When justified, M&TE assigned a periodic calibration interval may have its due date extended an additional 25 percent of the assigned interval. The M&TE that has had its calibration interval temporarily extended will not be used after the extension expires until it is recalibrated. If the reason for the extension becomes no longer valid, it will also be removed from service.

4.4.4 Ensure the follow-up actions are completed, as applicable:

[A] M&TE calibration tag (and/or limited calibration tag) reflects the adjusted parameter.

[B] Procurement documents reflect the adjusted parameter.

[C] Submit Attachment 4 or 5 to M&TE Custodian.

CCP M&TE Custodian

4.4.5 Update IDC with submitted information.

4.4.6 Submit the completed Attachment 4 or 5 to CCP records in accordance with CCP-QP-008.

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4.5 Calibration of M&TE

NOTE

VPM/Designee will coordinate with designated calibration lab for all user site owned M&TE for all calibration services.

VPM or Designee

4.5.1 Coordinate the calibration activities with the M&TE Custodian for CCP owned M&TE.

CCP M&TE Custodian

4.5.2 Procure calibration services from approved calibration suppliers following WP 15-PC3044, *Quality Credit Card Purchases*, or send to a user site calibration lab (i.e., INL Cal Lab) using a Shipping Authorization. Specify in the procurement documentation that calibration standards are traceable to National Institute of Standards and Technology (NIST) **OR** if nationally recognized standards do not exist, the basis for calibration is documented **AND** maintain records documenting that established M&TE schedules and procedures have been followed. These records shall include an individual record of calibration, or other means of control, providing the following:

[A] A description or identification of the item

NOTE

Calibration interval is defined as the delta (in days or months) between the actual date the calibration was performed and the next expiration date as documented on the calibration records for the applicable piece of M&TE. This cal interval can be set at a lesser rate as applicable to limitations in IDC. The cal interval is being tracked by IDC.

[B] Calibration interval or Calibration Expiration Date

[C] Date calibrated

[D] Identification of the calibration source

[E] Calibration results (data and status)

[F] Calibration action taken (e.g. adjusted, repaired, new value assigned, derated)

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[G] Evaluation and corrective action taken in response to out of calibration or out-of-tolerance conditions

4.5.3 Verify Certificates of Calibration comply with procurement requirements and are complete.

4.5.4 Inspect all CCP owned M&TE received from calibration at SWB and verify:

[A] Correct serial number as applicable

[B] Equipment ID label with correct number

[C] Correct calibration tag – prepare and apply a calibration tag as needed

[D] If found OOT, go to Section 4.7

4.5.5 Update M&TE Database following Section 4.2.

4.5.6 Submit Certificates of Calibration for M&TE to records in accordance with CCP-QP-008.

4.6 Use of M&TE

CCP M&TE User

NOTE

While M&TE is in use, the user will be responsible for maintaining the M&TE in a manner that will not adversely affect its accuracy. Definitions for “in use” and “storage” are included in Attachment 2, Glossary.

4.6.1 Handle, store, and transport M&TE in a manner that will not adversely affect its accuracy (e.g., give due consideration to temperature, humidity, lighting, vibration, dust control, cleanliness, electromagnetic interference, and any other factors affecting the results of measurements).

4.6.2 Prior to use, confirm M&TE for the following:

[A] M&TE is on the Approved M&TE List and information on tag matches list, as applicable,

[B] Calibration tags are not expired,

[C] Calibration seals are intact, if applicable,

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[D] M&TE shows no evidence of mishandling, misuse, or unusual results.

4.6.3 Notify the VPM/Designee of any exceptions identified in step 4.6.2.

4.6.4 Notify the VPM/Designee when M&TE is transferred to a different location.

4.6.5 Coordinate equipment recall and calibration with the VPM/Designee.

VPM or Designee

4.6.6 Notify M&TE Custodian of any conditions found above.

4.6.7 Notify M&TE Custodian if M&TE is transferred to a different location.

4.6.8 Tag, segregate or otherwise control M&TE with expired calibration to prevent use.

4.6.9 Coordinate with site calibration lab to calibrate any M&TE that is user site owned, as applicable.

4.6.10 Coordinate with M&TE Custodian to calibrate any CCP owned M&TE, as applicable.

4.7 Out-of-Tolerance, Defective, or Lost M&TE

M&TE User

4.7.1 **IF** M&TE is identified as lost, OOT , or defective,
THEN notify the VPM/designee.

VPM or Designee

4.7.2 **IF** notified M&TE is lost, OOT, or defective,
THEN notify M&TE Custodian, and QA.

4.7.3 **IF** the M&TE is lost, OOT, or defective,
THEN initiate an evaluation of measurements made by the M&TE since its last calibration. Document results using site generated evaluation documentation or document results on Attachment 3, Out-of-Tolerance (OOT)/Defective or Lost Evaluation.

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NOTE

An evaluation of the impact of OOT M&TE includes finding out if M&TE was used since the last calibration, when it was used, what it was used on and if the OOT condition affected the operations it was used on. If it did affect the operations it was used on, list how many items it did affect.

4.7.4 Submit site generated evaluation documentation or Attachment 3 to M&TE Custodian.

4.7.5 Initiate appropriate action based on the results of the evaluation.

4.7.6 Arrange for disposition of the M&TE according to recommendation and further technical evaluation, including Nonconformance Report (NCR) disposition.

CCP M&TE Custodian

4.7.7 Enter information needed from site generated evaluation documentation or Attachment 3 into IDC (M&TE will not be placed in service until documentation is received from VPM or Designee).

4.7.8 Submit site generated evaluation documentation or Attachment 3 to Records in accordance with CCP-QP-008.

4.8 Closing/Exit Calibrations

NOTE

If CCP pulls out from a site before the exit calibrations can be made, an e-mail from the VPM is acceptable as a Closing/Exit calibration notification.

VPM/Designee

4.8.1 When notified that CCP has completed work at a site and is exiting the site, arrange for a closing or exit calibration/evaluation of all CCP owned M&TE.

4.8.2 Document results on Attachment 6, Closing/Exit Calibration.

4.8.3 Tag, segregate, or otherwise control the M&TE to prevent use.

4.8.4 Submit Attachment 6 to the CCP M&TE Custodian, as applicable.

4.8.5 **IF** results of calibration/evaluation indicate M&TE OOT, **THEN** initiate an evaluation in accordance with Section 4.7.

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4.8.6 **IF** an exit calibration was performed,
THEN arrange for the M&TE to be excessed.

4.8.7 **IF** a closing calibration was performed,
THEN remove the M&TE from service.

CCP M&TE Custodian

4.8.8 **IF** notified by VPM that M&TE is being taken out of service,
THEN instruct VPM to complete steps 4.8.1 through 4.8.7 above.

4.8.9 Update the M&TE database.

4.8.10 **IF** M&TE is CCP owned,
THEN arrange for M&TE to be shipped back to SWB, as applicable after evaluation has been completed by VPM following applicable steps above.

4.8.11 Arrange for CCP owned M&TE to be excessed or disposed of, as applicable.

4.8.12 Submit Attachment 6 to records in accordance with CCP-QP-008.

4.9 Shipping M&TE to Calibration Lab

4.9.1 Follow Waste Isolation Pilot Plant (WIPP) procedure WP 15-PC3044*, Quality Credit Card Purchases* for coordinating with a calibration lab to get M&TE (re)calibrated including filling out the Inspection Plan from Q-Card Database, does not apply to user site cal labs.

4.9.2 Fill out Attachment 1 to EA 15-PM3525-1-0, *Shipping Authorization* following requirements in WP 15-PM3525, *Preparation and Processing of Shipping Authorizations* for each vendor being used.

4.9.3 Fill out Attachment 1, Quality Credit Card Purchase Log in WP 15-PC3044.

4.9.4 Get management approval for calibration services (can be done by e-mail or by form).

4.9.5 Print a copy of the purchasing requirements for all vendors.

4.9.6 Print a copy of line item spreadsheet for all M&TE being shipped from IDC.

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4.9.7 Print a copy of the approved Inspection Plan for Q-Card database.

4.9.8 Scan all signed documents prior to making shipment.

4.9.9 Box all M&TE into shipping boxes (use separate boxes for different vendors) as appropriate.

4.9.10 Record which boxes contain M&TE on Shipping Authorization.

4.9.11 Include in each box the original Inspection Plan with initials and date (each item is assigned its own inspection plan), line item spreadsheet from IDC and the requirements sheet for all vendors, does not apply to user site cal labs.

4.9.12 Tape all boxes closed and weigh them.

4.9.13 Record the weight of each box onto Shipping Authorization.

4.9.14 Turn original Shipping Authorization into United States Department of Energy (DOE) Mailroom and coordinate the shipment of the boxed M&TE with mailroom.

4.9.15 File all procurement records for calibration services together for each shipment and submit to Records in accordance with CCP-QP-008.

4.10 Receiving M&TE at SWB

4.10.1 Follow receipt requirements listed in “Receipt of Goods” in WP 15-PC3044.

4.10.2 Inspect each M&TE for ID tag that is intact and readable and for calibration tag being intact, readable and updated date.

4.10.3 Once all requirements in WP 15-PC3044 for Receipt of Goods is complete, contact mobile loading unit (MLU) contact for pick up of M&TE, or arrange for the M&TE to be shipped back to user site.

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4.11 Procedure for Host site M&TE

NOTE
Labeling of Host site provided M&TE will be in accordance with the Host site requirements and defined labels. The steps provided in Section 4.9 define how CCP ensures compliance of Host site M&TE used in the CCP program.

4.11.1 Procurement of Host site M&TE

[A] Performed by the Host site.

4.11.2 Host Site M&TE in the CCP M&TE Database

M&TE User

[A] Provide M&TE records, including calibration records to the CCP VPM/Designee.

VPM Designee

[B] When additional Host site M&TE is requested for use, ensure it is on the CCP Approved M&TE List. Where Certificates of Calibration are not immediately available, verify a current calibration tag is available on the M&TE Item and send an e-mail with applicable calibration information from the tag to the M&TE Custodian.

CCP M&TE Custodian

[C] Enter updated information in IDC following Section 4.2 and update the Approved M&TE List online.

VPM or Designee

[D] Obtain Certificates of Calibration from Host site for all M&TE used in CCP operations and transmit them to M&TE Custodian.

[E] For M&TE calibrations performed by work package, verify the M&TE has a current calibration sticker and transmit the calibration record to the M&TE Custodian. If Certificates of Calibration is in review, provide written notification to M&TE Custodian with M&TE ID number, Calibration Date, and Calibration Due Date. When Certificates of Calibration is available, transmit to M&TE Custodian.

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CCP M&TE Custodian

[F] Update M&TE Database with new M&TE calibration dates following Section 4.2 and update the Approved M&TE List.

[G] Submit Certificates of Calibration to CCP records in accordance with CCP-QP-008.

NOTE

Host site provided equipment that has been entered into the M&TE database is included in the CCP recall system for notification that M&TE calibrations are coming due (60 days prior and upon calibration expiration).

[H] Recall actions are the responsibility of the Host site.

4.11.3 Control of Host site M&TE used in the CCP Program

VPM or Designee

[A] Verify Host site M&TE is adequately labeled with a unique Host site provided ID number.

[B] Coordinate monthly with the M&TE Custodian to verify the CCP M&TE database is updated to reflect the current records of calibration.

[C] Notify M&TE Custodian of any conditions that could merit recall of M&TE.

[D] Notify the M&TE Custodian when M&TE is transferred to a different location.

[E] Coordinate equipment recall and calibration with the Host site.

CCP M&TE Custodian

[F] Enter Host site ID number in M&TE database along with calibration data per Section 4.2.

[G] Notify the Host site of any conditions that could merit recall.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as QA records in accordance with CCP-QP-008. The records are the following:

5.1.1 <u>QA/Nonpermanent</u>

[A] M&TE Database

[A.1] CCP Approved M&TE List

[A.2] Calibration Recall System

[B] Records of Calibration

[B.1] Certificates of Calibration

[B.2] Attachment 3 – Out-of-Tolerance (OOT) Evaluation/Defective or Lost Evaluation or site generated evaluation, as applicable.

[B.3] Attachment 4 – Calibration Interval/Tolerance Adjustment Evaluation

[B.4] Attachment 5 – Exemption/Temporary Extension Evaluation

[B.5] Attachment 6 – Closing/Exit Calibration

[B.6] E-mails from Host site documenting verification of current M&TE calibration and e-mails authorizing use of the M&TE for CCP processes (as applicable).

[C] Procurement Documentation

[C.1] EA15-PM3525-1-0, Preparation and Processing of Shipping Authorizations (generated by WP-15-PM3525)

[C.2] Quality Credit Card Purchase Log (generated by WP 15-PC3044).

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Attachment 1 – Identification Labels and Calibration Tags

This attachment describes the labels and tags used to indicate the status of M&TE.

M&TE Identification Label

The M&TE identification label bears a unique ID number that may be alpha numeric or any combination of numbers or symbols as long as it is unique to that piece of equipment. CCP unique ID numbers, typically start with an XC (e.g., XC0410). However, equipment with both CCP and Host site ID numbers are used for CCP operations.

Calibration Tag

A calibration tag that identifies the calibration status shall include, as a minimum, a unique ID number for the equipment, and next calibration due date. CCP ID numbers will be the same on the M&TE Identification Label as described above and on the Calibration Tag.

Limited Calibration Tag

When all ranges and/or functions of an item calibrated by CCP have not (or cannot) be calibrated, a Limited Calibration Tag will be used. The limitations will be noted on the item's record of calibration and may be included as part of the calibration tag or on a separate tag applied in addition to the calibration tag. If the limitation/restrictions are too lengthy to include on the tag, the tag will direct the user to see the record of calibration which will be required to be retained with the item at all times.

Out of Calibration Tag

A tag that identifies a piece of M&TE as being overdue for calibration or suspended, suspected to be, or actually out-of-calibration. The label will include the date when the label was affixed and the name (initial or stamp) of the individual affixing the label.

Below are examples of calibration, limited calibration, and out-of-calibration tags that may be used to label CCP M&TE.

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Attachment 1 – Identification Labels and Calibration Tags (Continued)

CALIBRATION*

CALIBRATION

I.D. No. _____

By _____ Date _____

Due _____

LIMITED CALIBRATION*

LIMITED CALIBRATION

_____

By _____ Date _____

DO NOT USE, OUT OF CALIBRATION*

OUT OF CALIBRATION

By _____ Date _____

DO NOT USE

*Sample of tag and may not reflect the color of tag the calibration vendor uses.

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Attachment 2 – Glossary

Accuracy – Measure of the degree by which the actual output of a device approximates the output of an ideal device nominally performing the same function.

As-found – Measurements made during calibration before any adjustments are made that could affect the accuracy and acceptability of the data collected with the M&TE since its last calibration.

As-left – Final measurements made during calibration, after any required adjustments to the M&TE being calibrated have been made. These data may be the same as "as-found" when no adjustments are required.

Calibration – Set of operations that establish, under specified conditions, the relationship between values indicated by a measuring instrument or measuring systems, and the corresponding standard, or known values derived from the standard.

Calibration interval – The delta (in days or months) between the actual date the calibration was performed and the next expiration date as documented on the calibration records for the applicable piece of M&TE.

Calibration organization/approved supplier – Ensures proper calibration and repair of M&TE. Performs calibration/work to physical and electrical standards traceable to NIST, or nationally recognized physical constants, necessary to perform required calibration services. Ensures the performance of field calibration services traceable to NIST upon request. External organizations providing calibration services must be on the Nuclear Waste Partnership (NWP) Qualified Suppliers List (QSL). The CCP QSL can include suppliers previously qualified by mobile vendors or generator sites.

Closing calibration – A calibration prior to removing M&TE from service with the intent of maintaining equipment as a spare.

Exit calibration – A calibration prior to removing M&TE from service with the intent to excess.

In use – M&TE being used while CCP operators are present.

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Attachment 2 – Glossary (Continued)

Measuring and test equipment (M&TE) – Devices or systems used to calibrate, measure, gauge, test, inspect, or control to acquire research, development, test, or operational data or to determine compliance with design, specifications, or other technical requirements. M&TE is normally used when a precision measurement with known tolerance and calibration traceability to NIST or other recognized standards is required.

M&TE history – Data that provides a calibration reliability profile for a piece of M&TE. Data may include as-found values for calibration cycles, any notes on repair, adjustments, restriction on use, next calibration due date, and other appropriate data.

M&TE usage history – Collection of data consisting of M&TE unique ID number, date M&TE was used, what M&TE was used on (e.g., tag, part number), and work control document (e.g., work packages, engineering maintenance standards, procedures, etc.).

National Institute of Standards and Technology (NIST) – U.S. Government organization that has responsibility for nationally recognized M&TE standards (formerly National Bureau of Standards).

Nondata M&TE – Portable test equipment used for preliminary checks, troubleshooting, or other nonprecision measurements where the data obtained will not be used to determine acceptability or verify conformance to established criteria.

Notice of deficiency – A notification that the equipment is lost, OOT, or defective.

Out-of-calibration – A condition in which the calibration for M&TE has expired or is otherwise indeterminate.

Out-of-tolerance (OOT) – A condition in which the readings, results, or function of M&TE are beyond the limits of permissible error.

Precision – The closeness of agreement between randomly selected individual measurements or test results under specified conditions. Precision can be viewed as repeatability.

Record of calibration – document that demonstrates the M&TE identified has been calibrated, using approved procedures, by comparisons to a known standard traceable to the NIST or other nationally accepted standard for those disciplines where no NIST standard exists.

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Attachment 2 – Glossary (Continued)

Reference standard – Standards (that is, primary, secondary, and working standards, where appropriate) used in a calibration program. These standards establish the basic accuracy limits for that program.

Reverse traceability – The ability to determine what work or equipment a piece of M&TE was used on, for purposes of impact analysis in response to a notice of deficiency.

Storage – M&TE will be stored at the end of each work shift or if CCP operators are not present. M&TE must be stored in an environment that will not adversely affect its accuracy (i.e., toolbox/storage cabinet).

Tolerance – The allowable deviation from a specified or true value.

Traceability – The ability to demonstrate, by means of recorded identification, a valid relationship between M&TE and nationally recognized standards (such as NIST), industry recognized standards, or accepted values of national constants.

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Attachment 3 – Out-of-Tolerance (OOT)/Defective or Lost Evaluation

1. M&TE ID Number:	**2. Calibration Date:**	**3. Page ____ of ____**
4. M&TE item, description:		
5. M&TE manufacturer and model number:		
6. CCP location (Site ID), process and operations the M&TE item is used for:		
7. Was M&TE found OOT, broken, defective or lost (explain)?		
8. Evaluation of M&TE: ☐ **WAS used in OOT condition** ☐ **WAS NOT used in OOT condition (Explain)**		
9. Based on data found, was the operating range violated? If YES, fill out NCR (Explain what range was violated).		
10. Associated NCR number, (if Applicable):		
11. Evaluator (Date indicates that evaluation was completed):		
Evaluator Print Name/Sign	Date	

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Attachment 4 – Calibration Interval/Tolerance Adjustment Evaluation

1. M&TE ID Number:	**2. Calibration Date:**	**3. Page ____ of ____**

4. M&TE item description:

5. M&TE manufacturer and model number:

6. CCP location (Site ID), process and operations the M&TE is used for?

7. Calibration parameter being evaluated: Interval ☐ Tolerance ☐ Range ☐

8. What is the current calibration interval, tolerance or range for the M&TE item being adjusted?

9. Range (or tolerance) required for CCP process and operations M&TE item is being used for?

10. Basis for changing M&TE calibration interval, tolerance, or range?

11. Recommended change to MT&E calibration interval, tolerance of range?

_____ _____
Cognizant Engineer Print Name/Sign **Date**

12. CCP M&TE Custodian disposition of change? Accept ☐ Reject ☐

13. Follow-up Actions to Implement the Change:

☐ Calibration Interval:
Update IDC, Revise Calibration Procurement Documents, Revise Operations Procedures (if Required)

☐ Calibration Tolerance:
Add "COMMENT" In IDC, Revise Calibration Procurement Documents, Revise Ops Procedure (if Required)

☐ Calibration Range:
Apply "LIMITED CALIBRATION" Tag, Add "COMMENT" In IDC, , Revise Calibration Procurement Documents, Revise Ops Procedure (if Required)

_____ _____
CCP M&TE Custodian Print Name/Sign **Date**

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Attachment 5 – Exemption/Temporary Extension Evaluation

1. ID Number:	**2. Calibration Date:**	**3. Page ____ of ____**
4. M&TE item description:		
5. M&TE manufacturer and model number:		
6. CCP location (Site ID), process and operations the M&TE item is used for:		
7. Evaluation is for: ☐ **Exemption** ☐ **Temporary Extension**		
8. Is calibration required by procedure or regulatory requirement? ☐ Yes ☐ No		
9. Basis for calibration exemption and how procedure or regulatory requirement will be met:		
10. Temporary extension requested for _____(days) (Not to exceed 25% of calibration interval)		
Extension Approved: _____ _____ **Cognizant Engineer Print Name/Sign** **Date**		
11. Exemption/Temporary Extension Disposition **Accept Recommendation?** ☐ Yes ☐ No **Exemption Granted?** ☐ Yes ☐ No **Temporary Extension for_____ (days) (Not to exceed 25% of Calibration Interval)** **Follow-up Actions to Implement the Change:** ☐ **Calibration Exemption:** **Update IDC** ☐ **Calibration Extension:** **Issue Revised Cal. Tag, Update IDC & Add "EXTENSION JUSTIFICATION" in IDC** _____ _____ **CCP M&TE Custodian Print Name/Sign** **Date**		

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Attachment 6 – Closing/Exit Calibration

1. ID Number:	2. Calibration Date:	3. Page ____ of ____

4. M&TE item description:

5. M&TE manufacturer and model number:

6. CCP location (Site ID), process and operations the M&TE item is used for:

7. Method used to verify measurement data since previous calibration:

☐ **Re-calibration in accordance with Section 4.5.**

☐ **Field verification with known source:**

ID Number:
Calibration Date:
Calibration Due Date:

☐ **Other – Explain (e.g., M&TE Item was contaminated and had to be disposed):**

8. Associated NCR(s), (If Applicable):

9. Evaluator (Date Indicates that evaluation was completed):

_____ _____
Evaluator Print Name/Sign **Date**

M&TE Follow-up Actions:

☐ **Closing Calibration:**
"ARCHIVE" file & Add "COMMENT" in IDC

☐ **Exit Calibration:**
"ARCHIVE" file & Add "COMMENT" in IDC

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CCP-QP-017

Revision 4

CCP
Identification and Control of Items

EFFECTIVE DATE: 08/14/2013

Mike Ramirez

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
3	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR).
4	08/14/2013	Revised to incorporate the Nuclear Waste Partnership (NWP) transition changes and other Quality Assurance (QA) related changes.

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1.0 PURPOSE

This procedure describes the responsibilities, interfaces, and requirements for the identification and control of quality-affecting items or systems related to the Central Characterization Program (CCP) waste characterization and certification activities.

1.1 Scope

This procedure applies to identification and control of items or systems requiring status indicators that are related to the CCP activities associated with waste characterization, certification, packaging, and transportation. Status indicators are used for identification and control of items and systems.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description*
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*

Referenced Documents

- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-026, *CCP Inspection Control*
- CCP-QP-027, *CCP Test Control*

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2.2 General

2.2.1 Traceability requirements will be specified in design documents or implementing procedures. Processes will be established and implemented to control consumables and items with limited operating or shelf life and to prevent the use of incorrect or defective items. If codes, standards, or specifications include specific identification or traceability requirements (such as identification or traceability of the item to applicable specification or grade of material; heat, batch, lot, part or serial number; or specified inspection, test, or other records), identification and traceability methods will be implemented to ensure meeting the special requirements.

2.2.2 Status indicators identify the inspection, test, and operating status of items or systems procured or fabricated in support of CCP activities. Status indicators ensure that:

[A] Items are identified, controlled, and maintained in a manner that ensures traceability from time of receipt through installation or end use.

[B] Records are maintained to ensure that the item can be traced at all times from its source through installation or end use.

[C] Required inspections and tests are performed, acceptability of the item is known, and items that have not passed the required inspections and tests are not inadvertently installed, used, or operated.

2.2.3 The status indicator will:

[A] Be applied using materials and methods that provide a clear, permanent, and legible identification. These materials and methods may include physical markings, physical separation, or labels and tags.

[B] Not be detrimental to the function or service life of the item.

[C] Be transferred to each part of an identified item when the item is subdivided.

[D] Not be obliterated or hidden by surface treatments, coatings, or installation unless other means of identification are substituted.

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[E] Requirements for inspections of items supporting CCP activities are addressed in CCP-QP-026, *CCP Inspection Control*.

[F] Requirements for testing of CCP-related items are addressed in CCP-QP-027, *CCP Test Control*.

[G] Status indicators for nonconforming items will be controlled in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control.*

2.3 Application and Removal of Status Indicators

2.3.1 Status indicator tags will be initiated, applied, and removed by personnel performing the verification of status.

2.4 Status of Items

2.4.1 Item identification methods include physical markings.

2.4.2 When physical markings are impractical or insufficient, status shall be maintained through indicators such as physical location, tags, markings, shop travelers, stamps, inspection records, operator aids, equipment labeling, or other suitable means. Status indicators will be used to:

[A] Provide identification and control of items

[B] Provide status of systems and components (e.g., tagging valves and switches) to prevent inadvertent operation

2.4.3 When the status of the item changes, the original status indicator will be removed by authorized personnel.

2.4.4 Status indicator tags will be legible, with all sections completed. Non-applicable sections will have "NA" entered.

2.4.5 Status indicators for nonconforming items will be controlled in accordance with CCP-QP-005.

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3.0 RESPONSIBILITIES

3.1 Quality Assurance (QA)

3.1.1 Performs surveillance of the noted activities.

3.2 Operator

3.2.1 Applies a status indicator tag to the item or system when another status indicator process is not used.

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4.0 PROCEDURE

NCR Originator

4.1 Nonconformance Status

4.1.1 When a nonconforming condition is discovered, initiate or ensure initiation of a nonconformance report (NCR) in accordance with CCP-QP-005.

4.1.2 Apply a HOLD TAG to the item.

4.2 Application of Status Indicators

NOTE

Item identification and control system records will provide the operating status of items. The identification methods will preclude the inadvertent installation, use, or operation of items that have not passed required inspections and tests.

Operator

4.2.1 Identify condition or action that would change the status of an item or system.

4.2.2 When a nonconforming condition is discovered, initiate or ensure initiation of an NCR in accordance with CCP-QP-005.

NOTE

HOLD TAGS will be used to identify nonconforming items. The HOLD TAG will remain attached to the nonconforming item until disposition has been completed. The NCR will describe extent of the hold (e.g., a description of action(s) required prior to release of hold) and the NCR number will be included on the tag.

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5.0 RECORDS

5.1 There are no records generated during the performance of this procedure.

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CCP-QP-021

Revision 10

CCP
Surveillance Program

EFFECTIVE DATE: 04/28/2014

Mike Ramirez

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
3	06/03/2002	Section 2.0, Requirements (page 2): Change the first paragraph after the bullets to read as follows: "Planned and periodic surveillance will be conducted to measure item and service quality, process effectiveness, and promote improvement. The organization performing the assessments will have sufficient authority and freedom from the activities being assessed to carry out its responsibilities. Persons conducting surveillances will be qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan*, and knowledgeable of the items and activities being assessed."
4	05/24/2004	Revised Sections 1.1, 2.0, 2.3, 2.4, 4.0, 5.0 and Figure 2.
5	11/16/2006	Reengineered Surveillance Program to make it more comprehensive, to ensure findings are identified and tracked, and to ensure consistency amongst CCP Quality Assurance (QA) personnel, and to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit-requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR). Addressed Carlsbad Field Office (CBFO) Document Review Record (DRR) comment.
6	12/10/2008	Revised to delete reference to “assessments” incorporate conditions Corrected During Surveillance (CDS) and clarify training and qualification of surveillance personnel.
7	05/07/2010	General revision to clarify follow-up to observations and provide clarity of text.
8	01/16/2013	Revised to incorporate Nuclear Waste Partnership (NWP) transition changes.

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
9	10/23/2013	General revision: changed notes to action steps, rearranged action steps in chronological order, added definitions, deleted Surveillance Log Attachment Example, added action step for Surveillance Log detail, added Surveillance Checklist Example Attachment, updated titles, improved Surveillance Report format, improved Surveillance Plan format, deleted CCP-QP- 029, *CCP Corrective Action Management,* and CARs, replaced CARs with WIPP Forms, renumbered sections and paragraphs more logically, replaced CCP-QP-002, *CCP Training and Qualification Plan,* with CCP-QP-040, *Support Training,* clarified when notification is required, deleted Surveillance Checklist from Records, made editorial corrections.
10	04/28/2014	Revised to address Carlsbad Field Office (CBFO) Corrective Action Reports (CARs) 14-034 and 14-035. Also added WP 13-QA.04, *Quality Assurance Department Administrative Program*, as an acceptable procedure for qualification of surveillance personnel.

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1.0 PURPOSE

This procedure specifies the steps for independent quality assurance (QA) surveillances, and establishes the process and responsibilities for planning, conducting, documenting, reporting, and following up surveillances of the Central Characterization Program (CCP).

1.1 Scope

This procedure applies to CCP organizations, facilities, and personnel conducting surveillances of TRU waste characterization. Planned and periodic surveillances will be conducted to measure item and service quality, process effectiveness, and to promote improvement. The organization conducting the surveillance will have sufficient authority and freedom to carry out its responsibilities. Persons conducting surveillances will complete a Quality Assurance Surveillance Personnel Qualification Card prepared and approved in accordance with CCP-QP-040, *Support Training,* or WP 13-QA.04, *Quality Assurance Department Administrative Program,* and be knowledgeable of the items and work assessed.

1.2 Definitions

Corrected During the Surveillance	An isolated condition adverse to quality which can be corrected and verified by review of objective evidence before the surveillance concludes.
Finding	A violation of a quality assurance requirement requiring documentation by Nonconformance Report or Waste Isolation Pilot Plan (WIPP) Form.
Objective Evidence	Any documented statement of fact, other information, or record, either quantitative or qualitative, pertaining to the quality of an item or process, based on observation, measurement, or test which can be verified.
Observation	A condition that, if not addressed, may deteriorate into a finding.
Other Condition Requiring Resolution (OCRR)	A violation of a non-quality assurance requirement that requires documentation and followup by entry in the Commitment Tracking system (CTS).
Recommendation	A suggestion that, if implemented, might improve compliance with the quality assurance program.
Surveillance	Monitoring or observing to verify whether an item or process conforms to specified requirements.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description*

Referenced Documents

- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*
- CCP-QP-040, *Support Training*
- WP 13-QA.04, *Quality Assurance Department Administrative Program*
- WP 15-GM1002, *Issues Management Processing of WIPP Forms*

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3.0 RESPONSIBILITIES

3.1 Assurance Programs Manager

3.1.1 Ensures implementation of the surveillance program as specified in this procedure.

3.1.2 Approves the surveillance schedule.

3.1.3 Ensures that surveillance personnel have successfully completed a Quality Assurance Surveillance Personnel Qualification Card.

3.1.4 Ensures surveillance personnel have sufficient authority and organizational freedom to carry out their assigned responsibilities.

3.1.5 Assigns Surveillance Lead.

3.1.6 Informs the Nonconformance Report (NCR) Coordinator, CTS Coordinator, and Nuclear and Worker Safety Compliance Coordinator about findings.

3.2 Surveillance Lead

3.2.1 Selects the Surveillance Team Members and ensures they meet qualification requirements.

3.2.2 Informs the surveillance team regarding the Plan, assignments, etc.

3.2.3 Notifies affected organizations of surveillances, when applicable.

3.2.4 Develops the surveillance plan.

3.2.5 Approves surveillance checklists, when used.

3.2.6 Organizes and directs the surveillance.

3.2.7 Reports the surveillance results.

3.2.8 Follows up on observations and findings identified in previous surveillances or other assessments, or NCR or WIPP Form dispositions.

3.3 Surveillance Team Members

3.3.1 Identifies the criteria to be used during the surveillance.

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3.3.2 Develops the surveillance checklist(s), when applicable, under the direction of the Surveillance Lead.

3.3.3 Periodically informs the Surveillance Lead of progress and problems with assigned tasks during the surveillance.

3.3.4 Notifies the Responsible Manager and Surveillance Lead when potentially unsafe conditions are identified.

3.4 Surveillance Coordinator

3.4.1 Develops and maintains a surveillance schedule.

3.4.2 Develops and maintains a Surveillance Log.

3.4.3 Develops at least annually and maintains surveillance schedules that document planned surveillances.

3.5 Responsible Manager of Area Assessed

3.5.1 Corrects conditions adverse to quality and tracks and follows up on Observations, and OCRRs identified during the surveillance.

3.6 CTS Coordinator

3.6.1 Enters CTS data into the WIPP CTS for tracking and follow-up when applicable.

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4.0 PROCEDURE

4.1 Schedule the Surveillance

Assurance Programs Manager

4.1.1 In coordination with Management, identify work to be assessed by surveillance.

Surveillance Coordinator

4.1.2 Prepare and maintain the surveillance schedule based on QA and Management input.

4.1.3 Assign a unique Surveillance number to each surveillance and document the following in a Surveillance Log:

- Surveillance number
- Item, process, organization, or procedure to be assessed
- Date the surveillance is planned to begin.

[A] The Surveillance number is represented by:

- SUR-xxxxxx-yy-zz, where:
- “SUR” represents the designator for surveillance
- “xxxxxx” represents the facility (CCP, INL, LANL, ORNL, RL, SRS, RHANL, etc.) (when applicable to remote-handled waste, include “RH” as a prefix to the site designator [e.g., Los Alamos National Laboratory remote-handled waste = “RHLANL”])
- “yy” represents a sequential number, beginning “-01-” each calendar year
- and “zz” represents the final two digits of the calendar year in which the surveillance is initiated.

[B] Examples of surveillance numbers:

- SUR-RHINL-01-13
- SUR-SRS-94-13
- SUR-CCP-15-13

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4.1.4 Obtain Assurance Programs Manager approval of the schedule.

Assurance Programs Manager

4.1.5 Assign a Surveillance Lead for each scheduled surveillance.

[A] Select personnel who have no direct responsibility for the work to be assessed.

4.1.6 Approve the surveillance schedule.

4.2 Plan and Conduct the Surveillance

Surveillance Lead

4.2.1 Obtain a Surveillance Number from the Surveillance Coordinator.

4.2.2 Select Surveillance Team Members as needed, based on expertise, availability, experience, objectivity, and the scope, complexity, or special nature of the work to be assessed, with the following in mind:

- Surveillance Team Members shall be qualified to conduct surveillances in accordance with CCP-QP-040 or WP 13-QA.04
- Personnel having direct responsibility for work to be assessed shall NOT be involved in the selection of the team
- Surveillance Team Members shall have the authority to conduct surveillances, and shall be independent from the organization to be assessed
- During surveillance, technical specialists may be used to assist with assessment of the adequacy of technical attributes
- The Surveillance Lead will ensure technical specialists are knowledgeable of the technical attributes to be assessed, and that they receive the same instructions as other team members.

4.2.3 Prepare the Surveillance Plan (See Attachment 1, Surveillance Plan Example) to address the following priorities:

- Monitor work in progress

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- Document compliance or noncompliance with established requirements and procedures
- Identify actual and potential conditions adverse to quality
- Obtain timely corrective action commitment from responsible managers for identified conditions adverse to quality
- Notify responsible managers of the quality status of work
- Verify effective implementation of corrective action.

4.2.4 Review the Plan with Surveillance Team members, including pertinent background information, previous surveillance or oversight results, applicable procedures, and applicable technical documents to familiarize Surveillance Team members with the work under assessment.

4.2.5 When the organization to be assessed is outside the area of responsibility of the organization conducting the surveillance, notify the organization(s) to be assessed of the surveillance date(s) and its purpose by memorandum, letter, or email.

Surveillance Team Members

4.2.6 When electing to use surveillance checklists, prepare them including the criteria to be assessed. See Attachment 3, Surveillance Checklist Example, for guidance.

4.2.7 Examine objective evidence, work in progress, items (including components, specimens, or equipment, etc.), and interviewing responsible personnel as applicable. Include technical evaluations of the applicable procedures, instructions, work, and items, as applicable.

4.2.8 Review previous corrective actions, when applicable, to assess implementation and effectiveness.

4.2.9 Review applicable documents, standards, and criteria pertaining to the process to be assessed.

4.2.10 Document the results of the surveillance as input to the surveillance report in sufficient detail, including but not limited to objective evidence examined and personnel interviewed to ensure retrieval of records examined is possible.

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4.2.11 Inform the Surveillance Lead of progress and problems with assigned tasks during the surveillance.

4.2.12 Notify the Responsible Manager and Surveillance Lead of potentially unsafe conditions.

Surveillance Lead

4.2.13 Notify the Assurance Programs Manager and the management of the assessed organization as soon as practicable if conditions are discovered that could impact prior work, affect work in progress significantly, or if conditions require prompt attention.

4.2.14 If applicable, prepare NCRs in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control* and WIPP Forms in accordance with WP 15-GM1002, *Issues Management Processing of WIPP Forms*.

4.2.15 Brief management of the assessed organization.

4.3 Report the Surveillance

4.3.1 Prepare the surveillance report using Surveillance Report (Example provided as Attachment 2, Surveillance Report) and include the following elements, as applicable:

- Identify conditions adverse to quality in sufficient detail to enable corrective actions to be taken by the assessed organization. Document nonconforming item(s) (i.e., hardware or data) using an NCR and programmatic conditions using a WIPP Form. Cite the requirement(s) applicable to these deficiencies.

- If Observations were identified, state that conditions observed, if not addressed, could deteriorate into a finding.

- If Other Conditions Requiring Resolution were identified, describe them and what requirements were violated.

- When applicable, provide recommendations that could strengthen the existing program or process.

- Include in the report descriptions of all actions taken to resolve conditions adverse to quality, and identify those conditions adverse to quality as corrected during the surveillance (CDS).

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- Document each CDS item by WIPP Form solely for trending purposes.

4.3.2 Sign and date and submit the report to the Assurance Programs Manager for review and approval.

Assurance Programs Manager

4.3.3 Review the surveillance report, resolve any issues with the Surveillance Lead, and approve the report.

4.3.4 Issue the surveillance reports to management, Nuclear and Worker Safety Compliance Coordinator, NCR Coordinator, Surveillance Coordinator, National TRU Program Certification (NTPC) Records, the applicable Host Site Subcontract Technical Representative, and the applicable Site Project Manager.

4.3.5 Consider the surveillance closed when issued. The conditions adverse to quality are documented by NCR, WIPP Form, or CTS item, all of which are self-contained systems in which the deficiency documents or items are closed independently.

4.4 Follow Up the Surveillance

CTS Coordinator

4.4.1 Make a separate entry for each finding (NCR or WIPP Form) identified in the report into the Integrated Data Center or the WIPP CTS.

Responsible Manager of Assessed Organization

4.4.2 Ensure timely and effective corrective actions in response to NCRs, WIPP Forms, or Other Conditions Requiring Resolution resulting from the surveillance.

4.4.3 Work with the Surveillance Lead and the Assurance Programs Manager to resolve issues regarding necessary corrective actions.

4.4.4 After completion of corrective actions associated with surveillance, inform the CTS Coordinator.

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5.0 RECORDS

5.1 Records generated as a result of implementing this procedure are controlled, maintained, and submitted as QA records in accordance with CCP-QP-008, *CCP Records Management*. The records are the following:

5.1.1 <u>QA/Nonpermanent</u>

[A] Surveillance File, including:

- Surveillance Notification, when applicable
- Surveillance Plan
- Surveillance Report

[B] Surveillance Schedule

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Attachment 1 – Surveillance Plan Example

SURVEILLANCE PLAN

[SUBJECT or Organization to be assessed]

Surveillance Number:	[SUR-SRS-01-13]
Organization to be Evaluated:	[CCP Nondestructive Examination]
Location:	[Savannah River Site]
Surveillance Initiation Date:	[1 October 2013]
Surveillance Team Lead:	
Surveillance Team Member(s):	
Scope:	[What will the surveillance team look at?]
Planned Contact(s):	
Objective(s):	[How the surveillance will be done: examine documents, interview personnel, or observe work in progress, etc.]
Applicable Requirements and Documents:	[Procedures, DOE documents, corrective action commitments, recurrence of previous findings, etc.]

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Attachment 2 – Surveillance Report Example

SURVEILLANCE REPORT

SUR-xxxxxx-yy-zz

Central Characterization Program

[Nondestructive Assay at (Host site)]

Surveillance Team Lead:	_____	_____	_____
	print name	**signature**	**date**
Assurance Programs Manager:	_____	_____	_____
	print name	**signature**	**date**

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Attachment 2 – Surveillance Report Example (continued)

SUMMARY
[a brief sentence or two on surveillance results: when and where the surveillance was conducted, how many WIPP Forms, Observations, OCRRs, Recommendations, etc., and a summary statement on whether the implementation of the QA Program for what was examined was satisfactory]

SCOPE
[e.g., what the surveillance personnel examined]

CRITERIA
[e.g., what requirements the surveillance was based on: such as CCP-QP-002, *CCP Training and Qualification Plan,* revision 35]

PERSONNEL
[surveillance team lead and members; personnel whom the surveillance team contacted or interviewed]

DETAILS
[how the surveillance was conducted: e.g., what objective evidence was reviewed; what work was observed; and the results]

FINDINGS (NCRs and WIPP Forms)

OTHER CONDITIONS REQUIRING RESOLUTION (include CTS nos.)

CORRECTED DURING THE SURVEILLANCE

STATUS OF CONCERNS PREVIOUSLY IDENTIFIED

OBSERVATIONS

RECOMMENDATIONS

NOTEWORTHY PRACTICE

ATTACHMENTS [if applicable]

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Attachment 3 – Surveillance Checklist Example

SURVEILLANCE CHECKLIST

Surveillance number: SUR- **Checklist approved by:** **Date:** **Page 1 of 1**

No.	Reference	Criterion	Notes (NCR = Nonconformance Report; WF = WIPP Form; CDS = Corrected During the Surveillance; OBS = Observation; OCRR = Other Condition Requiring Resolution)	SATIS-FACTORY (S); UNSATIS-FACTORY (U); or N/A
1.				
2.				
3.				
4.				
5.				
[etc.]				

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CCP-QP-022

Revision 14

CCP
Software Quality
Assurance Plan

EFFECTIVE DATE: 06/02/2014

Mike Ramirez

PRINTED NAME

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
3	09/26/2002	Made numerous changes to section and made changes to all attachments. Added step 4.9.1[K]. Added a Record of Revision. Updated Procedure Titles.
4	07/28/2005	Revision in response to Carlsbad Field Office (CBFO) Corrective Action Reports (CARs) # 05-031 and # 05-032 from the Idaho National Laboratory (INL) Certification Audit.
5	08/09/2005	Revised to change wording in Scope to align with the Site Project Manager (SPM) responsibilities.
6	01/25/2006	Revised to add new Section 4.7, language regarding proprietary software, steps to Section 4.5 and minor clarifications. This revision is in response to CBFO CAR 06-007.
7	05/30/2006	Removed the responsibility of the Software Configuration Management Coordinator (SCMC) to issue Software Change Order (SCO), SCO Addendum and SPER numbers and to maintain the associated logs.
8	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR).
9	10/15/2007	Revised in response to Central Characterization Project (CCP) Corrective Action Report (CAR) CAR-INL-0009-06 and in response to comments from the user community. The procedure was completely revised to provide separate sections addressing each type of software. The forms were adjusted to accommodate the newly-created sections, but the overall process was not significantly changed. A new section was added, addressing the control and use of Library Data Files.
10	10/16/2008	Revised to include Software Configuration Change Report (SCCR) for Central Characterization Project (CCP) software. Added the role of Records Custodian. CCP software end user testing is now required.

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RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
11	12/08/2009	Revised to include unique identifier information on all applications within commercial off the shelf software (COTS) spreadsheets (software change order [SCO] #, Addendum #, Software name and version, and tested operating environment). Annual review of the Software Inventory Listing (SIL) will be performed incrementally on a quartery basis. Minor software changes were also incorporated.
12	11/18/2010	Revised to add steps for the Software Configuration Management Coordinator (SCMC) to issue software change order (SCO) numbers through the data center. This is in reference to the CAR-CCP-0010-10.
13	02/25/2013	Revised to include Safety Software per Department of Energy (DOE) Order 414.1D, and to remove repetition and streamline procedure.
14	06/02/2014	Revised steps for software retirement to ensure that retired software is removed from all computers and workstations including the sftp site. This is in reference to Corrective Action Report (CAR) 14-031.

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1.0 PURPOSE

This Central Characterization Program (CCP) Software Quality Assurance (QA) Plan (SQAP) addresses the procurement, development, maintenance, configuration management, and use of computer software, as applied to waste characterization, waste certification, and waste transportation activities.

1.1 Scope

This SQAP applies to all computer software including applications developed within Commercial-Off-The-Shelf (COTS) or System Software, used by the Nuclear Waste Partnership (NWP) Limited Liability Corporation (LLC), CCP, or any CCP subcontractor that produces data used to process, gather, or generate information used to make design, analytical, operational, or compliance-related decisions about transuranic (TRU) waste characterization, waste certification, waste transportation, or waste acceptance.

1.2 Applicable Software

1.2.1 System Software

System Software includes operating systems such as Windows, Linux, and system utilities such as compilers, assemblers, translators, interpreters, query languages, word processing programs, spreadsheet programs, database managers, and graphing programs. System Software is exempt from the requirements of this SQAP.

1.2.2 Library (Data) Files

Library files (e.g., nuclide library files used for Nondestructive Assay [NDA]) containing vendor-supplied data shall be controlled by the qualified supplier. A Software Change Order (SCO) is required for the initial library files when they are introduced into the CCP program for installation, and when they are updated with qualified supplier changes.

Data files that do not affect accuracy or precision, or the quality and correctness of the information, are exempt.

1.2.3 Supplier Software

Software that’s initial design, programming, and testing is performed by a third party. Supplier Software can be categorized as COTS, System Software, or Firmware and could be supplied by either a Qualified or Non-qualified Supplier.

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[A] COTS Software

COTS are software products that are general purpose, ready-made and available for sale to the general public. COTS products are mass-produced, and are designed to be implemented easily into existing systems without the need for customization by the vendor. COTS software that meets the requirements of Section 1.1 are not exempt from this SQAP.

[B] Applications within COTS

Specific Applications developed for use that fall under the applicability of this SQAP, based on COTS or System Software (e.g., Microsoft (MS) Excel spreadsheets, MS Access databases, detailed formulas, or macros) are not exempt from the requirements of this SQAP.

[C] Qualified Supplier Software

Qualified Supplier software is software that is developed for CCP to perform a specific end-user function. Only software that is provided from vendors that are on the NWP Qualified Supplier list (QSL) may be considered as Qualified Supplier software.

[D] Non-Qualified Supplier Software

Non-Qualified Supplier software is also developed for CCP to perform a specific end-user function. Non-Qualified Supplier software is provided by vendors that are not on the NWP QSL. Additional requirements are necessary for Non-Qualified Supplier software to ensure that it meets CCP criteria, before it can be used.

1.2.4 Safety Software

Safety software includes the following:

Safety System Software – Software that performs a safety function as part of a structure, system, or component and is cited in either a) a Documented Safety Analysis, or b) an approved hazard analysis.

Safety and Hazard Analysis Software and Design Software – Software that is used to classify, design, or analyze nuclear facilities. This software is not part of a structure, system, or component (SSC), but helps to ensure the proper accident or

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hazards analysis of nuclear facilities or a SSC that performs a safety function.

Safety Management and Administrative Controls Software – Software that performs a hazard control function in support of nuclear facility or radiological safety management programs or technical safety requirements or other software that performs a control function necessary to provide adequate protection from nuclear facility or radiological hazards. This software supports eliminating, limiting, or mitigating nuclear hazards to workers, the public, or the environment.

1.2.5 CCP Software

CCP Software is in-house custom software developed for CCP Personnel to perform specific end user tasks.

1.2.6 Firmware

Vendor supplied software that is included as an integral part of an instrument (e.g., programmed in a read-only memory [ROM] chip) and cannot be modified by another party. Firmware that cannot be removed or updated is exempt from the requirements of this SQAP. Firmware that is removable or updatable will be treated as software in accordance with this SQAP.

1.3 Software Evaluation

Software used by CCP will be evaluated to determine the applicable sections of this SQAP. Attachment 1, Software Evaluation Checklist, will be used for this evaluation.

1.4 Configuration Management

Configuration of software shall be maintained as follows:

Software shall be placed under configuration control as each configuration item is approved during the software development life cycle or as Qualified Supplier software is brought into the CCP program. A software baseline shall define the most recent approved software configuration. The configuration items and their associated documentation shall be traceable to one another.

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1.4.1 Labeling System

A labeling system for configuration items shall be implemented that:

- Uniquely identifies each configuration item.
- Identifies changes to configuration items by revision or version identifier.
- Provides the ability to uniquely identify each approved configuration of the revised software that is available for use.

1.5 Software Change Orders (SCO)

All software applications used to process, gather, or generate information used to make design, analytical, operational, or compliance-related decisions about TRU waste characterization, waste certification, waste transportation, or waste acceptance must have an Attachment 2, Software Change Order, completed when initially brought under software configuration management. Each application will be assigned an SCO number (see Section 1.5.1) that will act as a unique identifier in order to track future modifications to the software, new installations, retirements, etc.

An addendum to an SCO is indicated by Block 2 on Attachment 2. An addendum to an SCO is used for additional installations, removals, and modifications to software. A modification may be considered a minor change. The degree of software validation shall be commensurate with the nature and scope of the change. A minor change is any change that cannot affect the data quality of the application. Examples of this would be changing screen colors, adding a corporate logo, correcting grammar, etc.

NOTE

The Software Configuration Management Engineer (SCME) works with the Software Developer (SD), Site Project Manager (SPM), and other appropriate individuals to determine if a change is considered a minor change.

Each revision must have an addendum to the corresponding SCO completed.

1.5.1 SCO Numbering System

All software, when brought under the software configuration management program, will be assigned a unique SCO number by the SCME (example: 851, 852, etc.). The SCME will obtain the unique SCO number from the Integrated Data Center (IDC).

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1.6 Software Inventory Listing

The Software Inventory Listing (SIL) is a list that details all active, superseded, exempt, and retired software controlled by this SQAP. The SIL will be updated and maintained by the SCME.

The SIL will contain the following information, at a minimum:

- SCO number
- SCO Addendum number, if applicable
- Software name and version
- Host site location
- Classification (including the purpose of the software relative to its use in engineering, scientific, testing, data collection, design, analysis and operations activities)
- Exemption status
- The operating system on the computer in which the software is installed
- The COTS or System software in which the application was developed, if applicable
- The date the Application within COTS or System Software was developed, if applicable
- Computer model and serial number upon which the software is installed, if applicable
- Name of the SPM (that approved the software) of the site at which the software is installed

The SIL will be evaluated periodically, at least once annually, to ensure the data is accurate, current and complete. The process is administered by the SCME and utilizes management assessments, completed by the responsible area managers with the results compiled by the SCME. To facilitate a more manageable process the SCME may divide the SIL into four sections with one section completed each quarter.

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NOTE

The SCO number in Block 1 of Attachment 3, Software Problem Reporting and Change Request (SPRCR), is the SCO number for the software that the problem or change is being reported against. The report number in Block 2 is issued by the SCME.

1.7 Software Problem Reporting and Change Request (SPRCR)

Attachment 3 is used either to report problems with software, the potential impact of the problem, and the corrective action(s) taken, or to request a modification to the software, unrelated to a problem with the software.

1.8 Software Removal and Retirement

The removal of software applications is performed using Attachment 2, and retirement of software applications is performed using Attachment 3.

1.9 Secure File Transfer Protocol Site (sftp)

Controlled versions of software applications developed within COTS are posted to a Secure File Transfer Protocol (sftp) site. The site address is: https://sftp.wipp.energy.gov.

Applications will be tested in one or more operating environments prior to sftp site upload.

NOTE

Information for legacy applications posted to the sftp site will be added when the software is modified.

Applications developed within COTS that are posted to the sftp site shall contain the following information:

- SCO number and addendum, if applicable
- Software name and version
- Operating environment(s) in which the application was tested (e.g., operating system and platform)
- The unique identifier information will be included on every printed page of the spreadsheet.
- The unique identifier information must be locked and/or password protected to prevent inadvertent modification.

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- Software File posted to the sftp site will be named to be consistent with the name of the software on Attachment 2.

Applications that are considered proprietary by the original software vendor are not required to be uploaded to the ftp site. This software will be identified on the SIL as Proprietary and will identify the software vendor.

The SIL will be posted to the sftp site after every modification.

1.10 Software from Qualified Suppliers Working as Subcontractors to CCP

Software and associated documentation obtained by CCP from active QSL suppliers, who are also subcontractors to CCP for other services, will be controlled under the supplier's approved Software QA Program.

1.11 Software Quality Assurance Plan (SQAP)

An SQAP shall be developed for software to assure that a quality product is supplied. This is the SQAP for all software except Non-Qualified Supplier software, and Safety Software. A separate SQAP is required for Non-Qualified Supplier software, and Safety Software. For all software (this SQAP or the separate SQAPs for Non-Qualified Supplier software or Safety Software), the SQAP shall include:

- Software name
- Responsible person and organization
- Development standards and techniques to be used and methods of verifying compliance with them.
- Required activities, responsibilities, and documentation
- Required reviews and methods of verifying implementation of requirements
- Items that need to be base lined and methods for controlling the baseline configuration
- Provisions for error reporting, evaluation, and corrective action
- The procedure(s) used for establishing and maintaining the integrity of data, embodied mathematical models, and output files
- A plan to develop and document the Requirements, Verification and Validation (V&V) documents, Design, Tests, and User documents

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For safety software, the following shall be identified, as applicable:

- Risk management-potential software risks, likelihood, consequences, and methods of controlling the risk
- Design authority involvement in identifying requirements specifications, acquisition, design, development, V&V (including inspection and testing), configuration management, maintenance, and retirement
- Required training in design, development, and evaluation of safety software

1.12 Requirements Documentation

Software requirements documentation shall outline the requirements that the proposed software must satisfy. The software requirements shall, as applicable, address the following:

- Software name and version
- System the software supports
- Name of the person who developed the requirements
- Functions that the software is to perform
- Time-related issues of software operations such as speed, recovery time, or response time
- Design constraints
- Non-time related issues of software operation such as portability, acceptance criteria, access criteria and maintainability identified
- Required interactions with people, hardware, and other software identified
- Requirements verification
- Requirements consistency
- Requirements technical feasibility that results in useable code

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1.13 Design Documentation

The software design shall be based on the software requirements and shall be documented and reviewed. The design shall specify the overall structure (control and data flow) and the reduction of the overall structure into physical solutions (algorithms, equations, control logic, and data structures). The design may necessitate the modification of the requirements documentation and the verification and validation plans. The software design shall, as applicable, address the following:

- A description of the major components of the software design as they relate to the software requirements
- A technical description of the software with respect to the theoretical basis, mathematical model, control flow, data flow, control logic, and data structure
- Completeness and technical adequacy of the design
- A description of the allowable or prescribed ranges for inputs and outputs
- The design described in a manner that can be translated into code
- Traceability to the requirements

1.14 User Documentation

User documentation should be sufficient to allow any qualified user (i.e., one having adequate technical background) to install and run the software and properly respond to errors. User documentation, at a minimum, shall include:

- Software name and version
- User instructions that contain an introduction, a description of the user's interaction with the software, and a description of any required training necessary to use the software
- Input and output specifications and formats
- A description of functional requirements and system limitations, including hardware
- An explanation of the mathematical models and derivation of the numerical methods used in the software design (physical and

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mathematical assumptions on which the software is based shall be included, along with an explanation of the capabilities and limitations inherent in the software), as applicable

- A description of the anticipated errors and how a user can respond
- Information for obtaining user and maintenance support

1.15 Testing

Installation, Integration, Regression, and Functionality are different types of tests that may be performed on software to ensure that it is working correctly prior to operational use. Installation testing will always be required prior to use for certification in the CCP program to ensure that the software was installed correctly. Integration testing is required if the software product interacts with other software products. Functionality testing is required if new features are added to the software or existing features have been modified. Regression testing is required if there is a concern that modifications to certain functions of the software could adversely affect other functions of the software that were not modified.

Testing will include methods of V&V, including the responsibilities of the organization(s) involved, resources needed, and the methods employed to ensure traceability of the requirements to final validation of software.

All modifications shall be formally evaluated and approved by the organization responsible for the original design, unless an alternate organization has been given the authority to approve the changes by the SCME. The SCME will identify other affected groups or organizations, as needed, to allow for additional evaluation.

The degree of software validation shall be commensurate with the nature and scope of the change.

V&V activities SHALL be performed by any independent individual(s) or group(s) other than those who performed the software design and implementation. The individuals may be from the same organization and may include the designer's supervisor, provided the supervisor:

- Did not specify a singular design approach
- Did not rule out certain design considerations
- Did not establish the design inputs used
- Is the only individual in the organization competent to perform the V&V

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Acceptable test methods may include:

- Hand calculations
- Calculations using comparable proven programs
- Empirical data and information from technical literature
- Comparison with other validated software of similar purpose
- Manual inspections or qualitative checks not involving numerical manipulation
- Visual inspection of empirical data or data results based on the acceptable knowledge within the organization responsible for the original design

Test Plans shall identify or address the following:

- Software name and version
- System software supports
- Name of the person who developed the test plan
- Required tests and test sequences
- Required ranges of input parameters
- Identification of stages at which testing is required
- Criteria for establishing test cases
- Acceptance criteria
- Requirements for testing logic branches
- Requirements for hardware integration
- Anticipated output values
- Type of test (Installation, Integration, Functionality, Regression, etc.)
- For CCP software, identification of tests to be performed by the End User.

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Test Reports/Results shall identify or address the following, as applicable:

- Computer program tested
- Computer hardware used
- Operating system(s) and version(s) used during test performance
- Test equipment and calibrations
- Date of test
- Tester or data recorder
- Simulation models used
- Test problems
- Results and acceptability
- Action taken in connection with any deviations noted
- Person evaluating test results
- Alternate test methods(s) used
- Type of test (Installation, Integration, Functionality, Regression, etc.).

1.16 Required Documentation

The documentation required for each software type is listed in Section 5.0.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- DOE/CBFO-94-1012, U.S. Department of Energy Carlsbad Field Office, *Quality Assurance Program Document*
- DOE/WIPP-07-3361 *Cyber Security Risk: Assessment and Mitigation*
- Office of Environmental Management (EM) – Program Security Plan (PSP)

Referenced Documents

- CCP-QP-008, *CCP Records Management*

2.2 Definitions

2.2.1 See Attachment 5, Definitions

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3.0 RESPONSIBILITIES

NOTE

The Initiator can be the same person as the SD or Tester but the SD and Tester cannot be the same person.

3.1 Initiator

3.1.1 Brings issues regarding software and requests to develop, modify, or procure software to the attention of the SCME and the appropriate SPM.

3.1.2 Coordinates with the SD and SCME to initiate software development/modification activities in accordance with this procedure.

3.1.3 Develops SQAP in conjunction with the SD, SCME, and appropriate SPM for Non-Qualified Supplier and Safety Software per Section 1.11.

3.2 Software Developer (SD)

NOTE

The SD can be anyone knowledgeable on the software's application and the process in which the software is used.

3.2.1 Develops documentation required during various software life cycle phases in accordance with the requirements of this SQAP.

3.2.2 Develops and modifies software, as required.

3.2.3 Develops Test Plans and Test Cases, as required.

3.2.4 Coordinates with the SCME and appropriate SPM to document the development/modification of software in accordance with this procedure.

3.2.5 Participates in document reviews of requirements, design, code, and test documentation.

3.2.6 Develops/modifies user documentation.

3.2.7 Ensures all software packages are submitted to a Tester for testing.

3.2.8 Reviews and approves test plans and test results.

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3.2.9 Troubleshoots problems with software.

3.2.10 Ensures obsolete versions of software are deleted or disabled so production use is prevented.

3.3 Tester

NOTE

The Tester can be anyone knowledgeable on the software's application and the process in which the software is used.

3.3.1 Performs software testing.

3.3.2 Documents the software test results.

3.3.3 Identifies and documents software errors during testing.

3.3.4 Works with the SD to resolve problems identified during testing.

3.4 Software Configuration Management Engineer (SCME)

3.4.1 Maintains the CCP Software Configuration Management Program and a database that includes a system to track and control software used to support CCP activities.

3.4.2 Responsible for overall CCP software QA program administration.

3.4.3 Primary interface for CCP Software QA evaluations and approvals.

3.4.4 Ensures that the SIL for the specific site location has been updated when software is procured, developed, modified, or installed.

3.5 Site Project Manager (SPM)

3.5.1 Approves operational use and documents validation of software in conjunction with the SD and SCME.

3.5.2 Reviews software posted on the sftp site.

3.5.3 Reviews the SIL for completeness.

3.5.4 Notifies the appropriate SD, SCME, and the involved Expert Analysts (EAs)/SMEs that the SIL has been updated.

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3.6 CCP Records Custodian

3.6.1 Receives, processes, and maintains all records generated by this procedure in accordance with CCP-QP-008, *CCP Records Management*.

3.7 End User (Only for CCP Software)

3.7.1 Performs the testing.

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4.0 PROCEDURE

4.1 Software Evaluation

NOTE

A software evaluation must be done for initial software development or modification that may change the software baseline.

NOTE

Any personnel involved with developing, maintaining, using, or installing software used by CCP will follow the requirements of this SQAP, including verification that the software in use is listed on the SIL. The SPM will make notifications upon operational use approval and changes to the SIL.

Initiator

4.1.1 **IF** software has been previously categorized proceed to the applicable section of the SQAP. **IF NOT**,
THEN GO TO section 4.1.2.

4.1.2 Evaluate the software in accordance with Attachment 1, print name, sign, and date Attachment 1, **AND** obtain the SCME's printed name, signature, and date.

4.1.3 **IF** the software is **NOT** exempt,
THEN maintain the completed Attachment 1 with applicable software documentation, **AND** GO TO the applicable Section of this SQAP.

4.1.4 **IF** the software is exempt (Category 6),
THEN document basis for exemption in Block 7 of Attachment 1.

4.1.5 **IF** the software is exempt (Category 6),
THEN transmit the completed Attachment 1 to the SCME in accordance with CCP-QP-008.

NOTE

Some Firmware is exempt from the requirements of this SQAP (see Section 1.2.6).

SCME

4.1.6 Update the IDC to reflect the addition of the new exempt software.

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4.1.7 Notify the appropriate Initiator/SPM the evaluation has been completed and the software was determined to be exempt.

4.1.8 Place the completed Attachment 1 into the CCP SCM Records file.

4.1.9 Ensure the SIL has been updated.

SPM

4.1.10 Review the SIL for completeness.

4.2 Software

Initiator

4.2.1 Evaluate software in accordance with Section 4.1.

4.2.2 **IF** the request is for a modification to an existing Software,
THEN GO TO Section 4.2.43.

4.2.3 **IF** the software is for new Non-Qualified Supplier or Safety Software,
THEN GO TO Section 4.2.4. **IF NOT,**
THEN GO TO Section 4.2.8.

4.2.4 Develop a project-Specific SQAP that addresses the elements in Section 1.11, and that establishes how the documentation requirements in Section 5.1.1[E] and 5.1.1[F] will be completed,
AND forward to SCME for review.

SCME

4.2.5 Review and approve the project-specific SQAP to verify that it meets the requirements of CCP-QP-022, *CCP Software Quality Assurance Plan*.

4.2.6 **IF** there are Software Review Action Items that need to be resolved as a result of the project-specific SQAP review,
THEN initiate and complete Attachment 4, Software Review Action Item (see Section 4.5).

4.2.7 **IF** there are NO Software Review Action Items that need to be resolved as a result of the SQAP review,
THEN forward the SQAP to the initiator.

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Initiator

4.2.8 Initiate Attachment 2 by obtaining an SCO number or SCO addendum number, as applicable, from the SCME, **AND** complete Blocks 1 through 11.

SCME

[A] Obtain SCO number or SCO addendum from the IDC.

4.2.9 **IF** COTS, Applications within COTS, or Qualified Supplier Software, record N/A for blocks 12a through 12c on Attachment 2 and forward to the SD,
THEN GO TO step 4.2.11. **IF NOT,**
THEN Go TO step 4.2.10.

SD

4.2.10 **IF** Non-Qualified Supplier, Safety, or CCP Software,
THEN develop software Requirements Document (Section 1.12), software Design Document (Section 1.13), and code, as applicable, **AND** complete blocks 12a through 12c on Attachment 2.

[A] For each review, document the review by obtaining participant's printed name, signature, and date of review.

[B] **IF** there are Software Review Action Items that require resolution as a result of the Requirement, Design, or Code review,
THEN check YES in the appropriate block, and for each review complete an Attachment 4 **AND** attach it to Attachment 2.
IF NO Software Review Action Items are needed,
THEN check NO in the appropriate block for each review that did not need an Attachment 4.

4.2.11 Upon receipt or development of user documentation, evaluate to determine if it is suitable for the intended use of user documentation (see Section 1.14).

4.2.12 Print name, sign, and date Block 13 of Attachment 2 after completing the user documentation evaluation.

4.2.13 Develop Test Plan in accordance with Section 1.15,using the user documentation, functional description of software, and appropriate knowledgeable personnel.

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4.2.14 Forward, as applicable, Attachment 1, Attachment 2, SQAP, Requirements document, Design document, code, user documentation, and test plan to the SCME for adequacy and completeness review.

SCME

4.2.15 Review and approve Test Plan in conjunction with SD, Tester, and appropriate SPM, **AND** complete Block 14 of Attachment 2.

4.2.16 **IF** there are Software Review Action Items that require a resolution as a result of the Test Plan review,
THEN check YES in Block 14 of Attachment 2, initiate and complete Attachment 4, **AND** attach to Attachment 2.
IF there are no Software Review Action Items,
THEN check NO.

4.2.17 Forward all documentation to SD.

SD

4.2.18 Arrange for installation of the software for testing, as applicable.

4.2.19 Identify the testing to be performed by marking the appropriate boxes in Block 15 of Attachment 2.

4.2.20 Verify that all associated documentation is attached to Attachment 2; print name, sign and date Block 15 of Attachment 2; **AND** forward the data package to the Tester.

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NOTE

Installation/integration tests are performed per each installation/integration of the software with hardware, data, or other components. Multiple operating systems and work stations may be listed in Block 16 of Attachment 2 for the same software and version at specific sites. An additional sheet may be attached if there is not enough room in Block 16.

NOTE

For CCP software applications there should be at least one tester that will be the End User for that software. Tests performed by the End User may be a subset of all tests identified in the test plan. The test plan SHALL identify which tests are to be performed by the End User.

Tester

4.2.21 Perform Test as outlined in the Test Plan.

4.2.22 Determine if the results of the test are satisfactory.

4.2.23 **IF** the test results are satisfactory,
THEN document the test results, attach the Test Report, sign and date Block 15 of Attachment 2, **AND** proceed to step 4.2.25.

4.2.24 **IF** the test results are **NOT** satisfactory,
THEN document the test results, including errors and resolutions, **AND** determine if integration of the hardware, data, and other components need to be redone **OR** if hardware, data, and other components need to be replaced.

4.2.25 Upon determination of the issue complete a Software Review Action Item (Attachment 4), check YES in Block 15 of Attachment 2, **AND** repeat steps 4.2.13 through 4.2.21.

4.2.26 Print name, sign, and date Block 15 of Attachment 2.

4.2.27 Verify that all associated Test documentation is attached, **AND** forward the data package to the SD.

SD

4.2.28 Complete Block 16 of Attachment 2, as applicable.

4.2.29 Review the data package, **AND** verify that all of the required documentation is accurate and complete.

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4.2.30 Print name, sign, and date on Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to SCME.

SCME

4.2.31 Review the data package, **AND** verify that all of the required documentation is accurate and complete.

4.2.32 Print name, sign, and date on Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** forward data package to the appropriate SPM.

SPM

4.2.33 Review the data package, complete Block 17 of Attachment 2 documenting operational use approval and document validation, **AND** notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs of operational use approval.

4.2.34 Submit the data package to SCME in accordance with CCP-QP-008.

SCME

4.2.35 Update the IDC.

4.2.36 Update or verify that the SIL has been updated.

4.2.37 Post software, as applicable, on the sftp site unless it has been determined to be proprietary (see Section 1.9).

4.2.38 Notify the appropriate SPM when the SIL has been updated.

4.2.39 Submit the data package to the Records Custodian in accordance with CCP-QP-008.

Records Custodian

4.2.40 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

4.2.41 Review the SIL for completeness.

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4.2.42 Review the software posted on the sftp site, if applicable.

[A] Notify the appropriate SD and SCME in Block 17 of Attachment 2, as well as the involved EAs/SMEs that the SIL has been updated and is accurate.

4.2.43 Modification to Existing Software

Initiator

4.2.44 Initiate Attachment 3 by obtaining an SPRCR number from the SCME, **AND** complete Blocks 1 through 9 in conjunction with the SD to document reason for modification.

SCME

[A] Obtain new SPRCR number from the IDC.

4.2.45 Determine if the modification is considered a minor change in conjunction with the SD, Tester, SCME, and SPM.

4.2.46 Document decision and basis for minor change in Block 10.

4.2.47 **IF** the change is considered a minor change,
THEN document the SCME's acceptance by obtaining their printed name, signature, and date in Block 10.

4.2.48 Document corrective action taken by completing Block 11 **AND** record N/A for Block 12.

4.2.49 **IF** a modification is **NOT** considered a minor change,
THEN document approval in Block 13 by obtaining the SCME's and SPM's printed name, signature and date, and complete steps 4.2.8 through 4.2.42, as applicable.

4.2.50 **IF** a modification is considered a minor change,
THEN perform the change as outlined on Attachment 3 and notify the SCME that the change has been made, forward Attachment 3 for approval.

4.2.51 **IF** software is Applications within COTS,
THEN forward corrected software to SCME to post to sftp site.

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SCME

4.2.52 Review the data package and verify that all required documentation is accurate and complete.

4.2.53 Update the IDC to reflect the minor change.

4.2.54 Ensure the SIL has been updated, if applicable.

4.2.55 **IF** software is Application within COTS,
THEN post corrected software to the appropriate folder on the sftp site.

4.2.56 Approve the minor change by printing name and signing Block 13 of Attachment 3.

4.2.57 Forward the data package and Attachment 3 to the SPM for approval.

SPM

4.2.58 Verify the minor change has been implemented and the SIL and sftp site have been updated, as applicable.

4.2.59 Approve the minor change by printing name and signing Block 13 of Attachment 3.

4.2.60 Submit data package to Records Custodian.

Records Custodian

4.2.61 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

4.3 Additional Software Installations

Initiator

4.3.1 Initiate Attachment 2 by obtaining an SCO addendum number from the SCME, **AND** complete Blocks 1 through 11.

SCME

[A] Obtain SCO Addendum number from the IDC.

4.3.2 Complete steps 4.2.9 through 4.2.42, as applicable.

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4.4 Software Review Action Items

NOTE

This section explains Attachment 4. Attachment 4 is used to report Software Review Action Items.

SCME, Tester, OR SD

4.4.1 Initiate a Software Review Action Item when an issue arises while creating, using, or reviewing the requirements document, design document, code, test plan, or test report by completing Blocks 1 through 6 on Attachment 4.

4.4.2 Determine and document the recommended action in Block 7 of Attachment 4.

4.4.3 Document final resolution by completing Block 8 of Attachment 4.

4.4.4 To indicate approval, obtain the appropriate signatures by printing name, signing, and dating Block 9 of Attachment 4 upon resolution of the Software Review Action Items as follows:

- Minimum approval signatures required for Software Review Action Items regarding the SQAP review: Initiator, SD, and SPM.
- Minimum approval signatures required for Software Review Action Items regarding the requirements review: Initiator, SD, and SPM.
- Minimum approval signatures required for Software Review Action Items regarding the Design review: SD and at least one other technical reviewer.
- Minimum approval signatures required for Software Review Action Items regarding the Code review: SD and at least one other technical reviewer.
- Minimum approval signatures required for Software Review Action Items regarding the Test Plan review: SD, Tester, and at least one other technical reviewer.
- Minimum approval signatures required for Software Review Action Items regarding the Testing review: SD, Tester, and at least one other technical reviewer.

4.5 Retirement

Initiator

4.5.1 Determine if the software:

- No longer provides a function used or required by CCP
- Will be replaced by different software
- Is obsolete and will **NOT** be replaced

4.5.2 **IF** none of the criteria in step 4.5.1 are met,
THEN the software CAN **NOT** be retired.

4.5.3 **IF** any of the criteria in step 4.5.1 are met,
THEN initiate Attachment 3 by obtaining an SPRCR number from the SCME, **AND** complete Blocks 1 through 6, record N/A in Blocks 7 through 11.

SCME

[A] Obtain SPRCR number from the IDC.

4.5.4 Document the justification for the retirement of the software in Block 12 of Attachment 3, **AND** print name, sign, and date Block 12 and forward to the SPM.

SPM

4.5.5 Print name, sign and date Block 12 of Attachment 3 to indicate approval to retire the software.

Initiator

4.5.6 Ensure all copies of the software are removed from the field including the sftp site, **AND** are deleted from all computers and workstations.

SCME

[A] Remove application within COTS software from sftp site.

SCME

4.5.7 Verify all copies of the software have been removed from all computers and workstations including the sftp site.

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4.5.8 Update the IDC.

4.5.9 Ensure the SIL has been updated.

4.5.10 Notify the appropriate SPM that the SIL has been updated and the software has been removed from all computers and workstations including the sftp site.

4.5.11 Print name, sign and date Block 13 of Attachment 3 indicating final approval of software retirement.

SPM

4.5.12 Verify the software has been removed from all computers and workstations including the sftp site.

4.5.13 Review the SIL for completeness.

4.5.14 Notify the appropriate SD and Initiator as well as any appropriate personnel that the software has been retired and the SIL has been updated to reflect the change.

4.5.15 Print name, sign and date Block 13 of Attachment 3 indicating final approval of software retirement.

4.5.16 Submit Attachment 3 to Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

4.5.17 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

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4.6 Software Removal

NOTE

Software removal is not retirement. Removal consists of taking software off of a specific workstation(s), but software will still be used and supported at a specific site. Software removal may be documented on the same SCO used for new software development, provided the software name and version are the same.

Attachment 2, using the original SCO number, is completed for software removal of the same software and version and hardware model number, serial number and operating system as the original SCO. Workstations from which software has been removed will be superseded on the SIL, based on the information in Attachment 2, but removal history is not required to be documented on the SIL.

Initiator

4.6.1 Determine if the software needs to be removed from a workstation.

4.6.2 Initiate Attachment 2 by obtaining an SCO Addendum number from the SCME, completing Blocks 1 through 11, **AND** record N/A for Blocks 12a through14.

SCME

[A] Obtain SCO Addendum number from the IDC.

4.6.3 Check NO in Block 15.

4.6.4 Document workstations in which software will be removed in Block 16.

Initiator, SD, SPM

4.6.5 Complete Block 17, and print name, sign, and date; obtain other signatures, as required; **AND** record N/A for any remaining signature blocks of Attachment 2.

4.6.6 Ensure the software is removed from the appropriate workstation(s).

4.6.7 Transmit Attachment 2 to the SCME in accordance with CCP-QP-008.

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SCME

4.6.8 Update the IDC.

4.6.9 Ensure the SIL has been updated.

4.6.10 Notify the appropriate SPM that the SIL has been updated.

4.6.11 Submit data package to Records Custodian in accordance with CCP-QP-008.

CCP Records Custodian

4.6.12 Receive, process, and maintain all records generated by this procedure in accordance with CCP-QP-008.

SPM

4.6.13 Review the SIL for completeness.

4.6.14 Notify the appropriate SD and SCME as well as the involved EAs/SMEs that the SIL has been updated.

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5.0 RECORDS

5.1 Records generated during the performance of this SQAP are maintained as QA records in accordance with CCP-QP-008. The records are the following:

NOTE

Software and associated documentation procured by CCP from active QSL suppliers, who are also subcontractors to CCP for other services, will be controlled and maintained under the supplier's approved Software QA Program.

5.1.1 <u>QA/Non-Permanent</u>

[A] Exempt Software (Category 6)

[A.1] Attachment 1, Software Evaluation Checklist

[B] COTS Software (Category 1)

[B.1] Attachment 1, Software Evaluation Checklist

[B.2] Attachment 2, Software Change Order

[B.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[B.4] Attachment 4, Software Review Action Item, if applicable

[B.5] User Documentation

[B.6] Test Documentation

[B.7] Associated Supporting Documentation, if applicable

[C] Application within COTS (Category 2)

[C.1] Attachment 1, Software Evaluation Checklist

[C.2] Attachment 2, Software Change Order

[C.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[C.4] Attachment 4, Software Review Action Item, if applicable

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[C.5] Test Documentation

[C.6] A listing of the software code (i.e., details of formulas, file/table/cell references, and/or macros)

[C.7] Documentation to demonstrate by hand or other independent calculations that the specific application provides the correct results for the specified range of input parameters

[C.8] Associated Supporting Documentation, if applicable

[D] Qualified Supplier Software (Category 3)

[D.1] Attachment 1, Software Evaluation Checklist

[D.2] Attachment 2, Software Change Order

[D.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[D.4] Attachment 4, Software Review Action Item, if applicable

[D.5] User Documentation

[D.6] Test Documentation

[D.7] Associated Supporting Documentation, if applicable

[E] Non-Qualified Supplier Software (Category 4)

[E.1] Attachment 1, Software Evaluation Checklist

[E.2] Attachment 2, Software Change Order

[E.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[E.4] Attachment 4, Software Review Action Item, if applicable

[E.5] Software Quality Assurance Plan

[E.6] Requirements Documents, per SQAP, if applicable

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[E.7] Validation and Verification Documents, per SQAP, if applicable

[E.8] Design Documents, per SQAP, if applicable

[E.9] User Documentation

[E.10] Test Documentation

[E.11] Associated Supporting Documentation, if applicable

[F] Safety Software (Category 7)

[F.1] Attachment 1, Software Evaluation Checklist

[F.2] Attachment 2, Software Change Order

[F.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[F.4] Attachment 4, Software Review Action Item, if applicable

[F.5] Software Quality Assurance Plan

[F.6] Requirements Documents, per SQAP, if applicable

[F.7] Validation and Verification Documents, per SQAP, if applicable

[F.8] Design Documents, per SQAP, if applicable

[F.9] User Documentation

[F.10] Test Documentation

[F.11] Associated Supporting Documentation, if applicable

[G] CCP Software (Category 5)

[G.1] Attachment 1, Software Evaluation Checklist

[G.2] Attachment 2, Software Change Order

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[G.3] Attachment 3, Software Problem Reporting and Change Request (SPRCR), if applicable

[G.4] Attachment 4, Software Review Action Item, if applicable

[G.5] Requirements Documents

[G.6] Validation and Verification Documents

[G.7] Design Documents

[G.8] User Documentation

[G.9] Test Documentation

[G.10] Associated Supporting Documentation, if applicable

[H] Integrated Data Center (IDC)

[H.1] Software Change Order Log

[H.2] Software Problem Reporting and Change Request Log

[H.3] Addendum Log

[H.4] Exempt Software Log

[H.5] Software Inventory List

Attachment 1 – Software Evaluation Checklist

1. Initiator: (Print Name)	**2. Date:**	**3. Site:**
4. Software Name:	**5. Software Version:**	**6. Process Affected:**

7. Purpose/function of software (including whether software is used for data collection, design, analysis or scientific reasons):

8. If any of the answers to **c** through **h** are "YES", then Section 4.3 of this SQAP is applicable.

a. Is this System Software as defined in Section 1.2.1?	☐ Yes ☐ No
b. Can the software output adversely impact certification? **If YES**, continue to Block 8**c**. **If NO**, this software is exempt from the requirements of this SQAP. N/A Blocks **c** through **g** and complete Block 9.	☐ Yes ☐ No ☐ N/A
c. Is this COTS Software as defined in Section 1.2.3 [A]? **If YES,** N/A Blocks **d** through **h**, and complete Block 9. **If NO**, continue to Block 8**d**.	☐ Yes ☐ No ☐ N/A
d. Is this an application developed within COTS or System Software as defined in Section 1.2.3 [B]? **If YES,** N/A Blocks **e** through **h,** and complete Block 9. **If NO**, continue to Block 8**e**.	☐ Yes ☐ No ☐ N/A
e. Is this Qualified Supplier Software as defined in Section 1.2.3 [C]? **If YES,** N/A Block **f** through **h** and complete Block 9. **If NO**, continue to Block 8**f**.	☐ Yes ☐ No ☐ N/A
f. Is this Non-Qualified Supplier Software as defined in Section 1.2.3 [D]? **If YES,** N/A Block **g** through **h** and complete Block 9. **If NO**, continue to Block 8**g**	☐ Yes ☐ No ☐ N/A
g. Is this Safety Software as defined in Section 1.2.4? **If YES,** N/A Block **g** and complete Block 9. **If NO**, continue to Block 8**h**.	☐ Yes ☐ No ☐ N/A
h. Is this CCP Software as defined below? (Defined in Section 1.2.5). **If YES,** complete Block 9.	☐ Yes ☐ No ☐ N/A

9. Evaluation performed by: **Approved by:**

Initiator Print Name/Sign	Date	SCME Print Name/Sign	Date

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Attachment 2 – Software Change Order

1. SCO #:	**2. Addendum #:** ☐ N/A	**3. Page ___ of ____**
4. Initiator _____ Print Name	**5. Request Date** _____	
6. Software Name	**7. Version**	
8. Description of software or modification to be performed:		
9. Process Affected _____	**10. Site** _____	
11. New Development ☐ Yes ☐ No **Modification** ☐ Yes ☐ No	**Additional Installation** ☐ Yes ☐ No **Removal** ☐ Yes ☐ No	

12a. Requirements Review ☐ N/A		**Software Review Action Items** ☐ Yes ☐ No	
SD Print Name/Sign	Date	Requirements Reviewer Print Name/Sign	Date
Requirements Reviewer Print Name/Sign	Date	Requirements Reviewer Print Name/Sign	Date
12b. Design Review ☐ N/A		**Software Review Action Items** ☐ Yes ☐ No	
SD Print Name/Sign	Date	Design Reviewer Print Name/Sign	Date
Design Reviewer Print Name/Sign	Date	Design Reviewer Print Name/Sign	Date
12c. Code Review ☐ N/A		**Software Review Action Items** ☐ Yes ☐ No	
SD Print Name/Sign	Date	Code Reviewer Print Name/Sign	Date
13. User Documentation Evaluation ☐ N/A			
SD Print Name/Sign	Date		
14. Test Plan Review ☐ N/A		**Software Review Action Items** ☐ Yes ☐ No	
SCME Print Name/Sign	Date		

Attachment 2 – Software Change Order (Continued)

SCO #: **Addendum #:** Page ___ of ____

15. Testing ☐ Yes ☐ No **Software Review Action Items** ☐ Yes ☐ No

Installation Test	☐ Yes	☐ No	Regression Test	☐ Yes	☐ No
Alternate Test Method	☐ Yes	☐ No	Integration Test	☐ Yes	☐ No
Functionality Test	☐ Yes	☐ No	Hand Calculations	☐ Yes	☐ No

Any modification to development documentation as a result of testing activities must be identified by an SCO addendum.

SD Print Name/Sign	Date	Tester Print Name/Sign	Date
Tester Print Name/Sign	Date	Tester Print Name/Sign	Date

If used for additional installation of the same software and version as on an original SCO, list the software name, version; operating system, version; and hardware manufacture, model number and serial number.

16. Installation/Removal

Software	Software Version	Software Development Date (Applications within COTS only) ☐ N/A
Application	Application Version	
Database	Database Version	
Operating System (OS)	OS Version	
Hardware Mfr	Hardware Model #	Hardware Serial #

SD Print Name/Sign	Date

17. Operational Use Approvals and Document Validation

SD Print Name/Sign	Date	SPM Print Name/Sign	Date
SCME Print Name/Sign	Date		

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Attachment 3 – Software Problem Reporting and Change Request (SPRCR)

1. SCO #:	**2. SCO Addendum #**	**3. Report #:**	**4. Report Date:**
5.Software Name:	**6. Software Version:**		

7. Problem/Suggestion:

8. Research Analysis:

9. Description of System Impact:

10. Minor Change: ☐ Yes ☐ No

Reason: SCME Print Name/Sign Date

11. Corrective Action (Obtain SCO # or SCO Addendum, identify the SCO # in this block, and complete the SCO #):

12. Software Retirement ☐ N/A

Justification for Retirement:

Initiator Print Name/Sign Date SPM Print Name/Sign Date

13. Approvals (Date Indicates that resolutions were completed):

SCME Print Name/Sign Date SPM Print Name/Sign Date

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Attachment 4 – Software Review Action Item

1. SCO #:	**2. Addendum #:**	**3. Initiation Date:**	**4. Page ____ of ____**

5. ☐ **SQAP** ☐ **Requirements** ☐ **Design** ☐ **Code** ☐ **Test Plan** ☐ **Testing**

6. Statement of Issue:

7. Recommended Action:

8. Final Resolution to Action Item:

9. Approvals (Date Indicates that resolutions were completed):

Initiator Print Name/Sign	Date	SPM Print Name/Sign	Date
SD Print Name/Sign	Date	Reviewer Print Name/Sign	Date

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Attachment 5 – Definitions

Acceptance Criteria	The criteria that a system or component must satisfy in order to be accepted by a user, customer, or other authorized entity.
Acceptance Testing	Formal testing conducted to determine whether or not a system satisfies its acceptance criteria and to enable the customer to determine whether or not to accept the system, or formal testing conducted to enable a user, customer, or other authorized entity to determine whether to accept a system or component.
Baseline	Software that has been formally reviewed and agreed upon, and that can only be changed through formal change control procedures.
Change Control Board	The Change Control Board is a collection of technical, management, and administrative experts assigned the authority and responsibility to review and authorize developments and change request to CCP Software.
Code	One or more computer programs, or part of a computer program, expressing in programming language.
Code Review	A review during which software code is reviewed by another software developer for comment or approval.
Commercial Off the Shelf (COTS)	Software products that are general purpose, ready-made and available for sale to the general public.
Computer Program	A sequence of instructions and data definitions that enable computer hardware to perform computational or control functions.
Configuration Item	A collection of hardware or software elements treated as a unit for the purpose of configuration control.
Configuration Control	The process of identifying and defining the configuration items in a system, controlling the release and change of these items throughout the system life cycle, and the recording and reporting of the status of configuration items and change requests.
Configuration Identification	An element of configuration management, consisting of selecting the configuration items for a system and recording their functional physical characteristics in technical documentation.
Configuration Management	A discipline applying technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a configuration item, control changes to those characteristics, record and report change processing and implementation status, and verify compliance with specified requirements.
Design	The process of defining the architecture, components, interfaces and other characteristics of a system.
Design Review	A documented evaluation of design output during the design process to determine the design adequacy and the conformance to specified acceptance criteria.
Error	A discrepancy between a computed, observed or measured value or condition and the true, specified or theoretically correct value or condition.
Firmware	Vendor supplied software that is included as an integral part of an instrument (e.g., programmed in a ROM chip) and cannot be modified by another party.
Implementation	When a software product is created with program language from design documentation and debugged.
Installation and Checkout	When a software product is integrated into its operational environment and tested in this environment to ensure that it performs as required.

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Attachment 5 – Definitions (Continued)

Library Files	Electronic data files used by computer software as sources of information required for the software to perform its intended function. They are primarily associated with software for the NDA characterization method (e.g., nuclide library files). Library files are created and maintained by the supplier of the software, under the qualified supplier's program. They are controlled under this SQAP when they are distributed for field installation on production equipment.
Minor Change	A minor change is any change that cannot affect the data quality of the application. Examples of this would be changing screen colors, adding a corporate logo, correcting grammar, changing a control property, search criteria change, etc. This will be determined by consultation between the SCME, SD, and/or SPM.
Portability	The ease with which software can be transferred from one computer system or environment to another.
Requirement	A condition or capability needed by a user to solve a problem or achieve an objective that must be met or processed by a system or system component.
Requirements review	A review during which the requirements for a system, hardware item or software item are presented to project personnel, managers, users, customers or other interested parties for comment or approval.
Software	Computer programs, procedures, rules, and associated documentation and data pertaining to the operation of a computer system.
Software Life Cycle	The period of time that starts when a software product is conceived and ends when the software product is no longer available for routine use. The software life cycle typically includes a requirements phase, a design phase, an implementation phase, a test phase, an installation and checkout phase, an operation and maintenance phase and sometimes a retirements phase.
Software Quality Assurance Plan	A plan for the development of software products necessary to provide adequate confidence that software conforms to established requirements.
Software Validation	The process of test and evaluation of the completed software to ensure compliance with software requirements.
Software Verification	The process of determining whether or not the product of a given phase of the software development cycle fulfills the requirements imposed by the previous phase.
System Software	Software which is used exclusively in the preparation, installation, or operation of executable software applications.
Test, Alternate Method	A test method, which differs from the original test, which is performed to verify the correctness of the original test.
Testing	The process of exercising or evaluating a system or system component by manual or automated means to verify that it satisfies specified requirements or to identify differences between expected and actual results.
Testing, Functional	Testing that ignores the internal mechanism of a system or component and focuses solely on the outputs generated in response to selected inputs and execution conditions. Testing that is employed to determine if software meets the intended specifications and functional requirements laid out in your requirements and design documentation. Testing that is not concerned with the internal workings of the system, but concentrates on the outputs generated from the system. This type of testing cannot be performed unless you have the requirements and design documentation for the software.

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Attachment 5 – Definitions (Continued)

Testing, Initial	The first group or individual to test the system performs the initial test. For vendor-supplied software, the vendor will always be the entity to perform the initial test.
Testing, Integration	Testing in which software components, hardware components or both are combined and tested to evaluate the interaction between them.
Testing, Regression	Selective retesting of a system or component to verify that modifications have not caused unintended effects and that the system or component still complies with its specified requirements. This type of testing ensures that no other previously working functions have failed as a result of the reparations and that newly added features have not created any problems. Regression testing is initiated after a programmer has attempted to fix a recognized problem or has added source code to a program that may have inadvertently introduced errors. It is a quality control measure to ensure that the newly modified code still complies with its specified requirements and that unmodified code has not been affected by the maintenance activity.
Testing, Unit	Testing of individual hardware or software units or groups of related units.
Test Case	A specific set of test data and associated procedures developed for a particular objective such as to exercise a particular program path or to verify compliance with a specific requirement.
Test Plan	A document describing the approach to be taken for intended testing activities. The plan typically identifies the items to be tested, the testing to be performed, test sequences, personnel requirements, and evaluation criteria.
Traceability	The ability to trace the history, application and location of an item, data or sample using recorded documentation. The degree to which a relationship can be established between two or more products of the development process, especially products having a predecessor-successor or master-subordinate relationship to one another; for example, the degree to which the requirements and design of a given software match.
User Documentation	Documentation describing the way in which a system or component is to be used to obtain desired results. User documentation should be sufficient to allow any qualified user to install and run the software and properly respond to errors.
User Manual	A document that presents the information necessary to employ a system or component to obtain desired results.
Verification and Validation	The process of determining whether the requirements for as system or component are complete and correct, the products of each development phase fulfill the requirements or conditions imposed by the previous phase and the final system or component complies with specified requirements.

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CCP-QP-028

Revision 15

CCP
Records Filing, Inventorying, Scheduling, and Dispositioning

EFFECTIVE DATE: 01/22/2013

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
3	08/20/2002	Added steps 4.3.3 through 4.3.6. Added a Table of Contents. Added a Record of Revision. Other editorial changes.
4	10/24/2002	Added new Step 3.1.2 and revised Step 4.2.4.[B] making the Project Manager responsible for signing RIDS; added as result of a comment during the SRS Recertification Audit.
5	09/25/2003	Separated electronically fillable forms and updated references in procedure. Added responsibilities for CCP personnel. Other editorial changes.
6	07/25/2006	Revised to change the CCP Project Manager's responsibility to the CCP Project Support Manager.
7	04/18/2007	Revised to change CCP Project Support Manager responsibilities to the CCP Program Development Manager.
8	09/11/2007	Revised to make minor editorial changes and to replace Attachment 1, Records Inventory and Disposition Schedule with new DOE form, DOE F 1324.10 (06-96).
9	02/24/2009	Revised to incorporate changes to titles of personnel and names for organizations. Also, a step was added to Section 4.2 (step 4.2.5) to complete the process performed. Section 4.4 was deleted since the requirements are not applicable to the CCP scope of work (they are implemented at the RCT level).
10	04/08/2010	Revised to incorporate changes to Attachment 2, Instructions for Filling Out the Records Inventory and Disposition Schedule.
11	05/19/2010	Revised to bring instructions regarding location in Attachment 4, Instructions for Filling Out the Records Inventory and Disposition Schedule, in line with current practice.
12	11/09/2010	Revised to remove examples form and re-number remaining attachments and update Attachment 2.
13	09/09/2011	Revised to correct reference section of the procedure and remove a reference that is no longer active.

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
14	01/16/2012	Revised to bring into line with the Waste Isolation Pilot Plant (WIPP) Inventory Worksheets and general editing of the procedure.
15	01/22/2013	Revised to incorporate Nuclear Waste Partnership (NWP) transition changes.

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1.0 PURPOSE

This procedure provides direction and instruction for generating, issuing, and using a Records Inventory and Disposition Schedule (RIDS).

1.1 Scope

The procedure applies to Central Characterization Program (CCP), CCP Manager, and Records Custodians responsible for inventory, scheduling, and disposing of CCP records under their cognizance, regardless of media, in order to document the activities related to the CCP.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- 44 USC 3301, *Definition of Records*
- DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office* (CBFO) *Quality Assurance Program Document* (QAPD)

Referenced Documents

- EA15RM3002-1, *WIPP Records Inventory Work Sheet*
- EA15RM3002-2, *Records Inventory and Disposition Schedule (RIDS)*
- WP 15-RM3002, *Records Filing, Inventorying, Scheduling, and Dispositioning*
- CCP-QP-008, *CCP Records Management*

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3.0 RESPONSIBILITIES

3.1 CCP Manager or Designee

3.1.1 Approves the Records Inventory and Disposition Schedule (RIDS).

3.2 Lead Records Custodian

3.2.1 Develops new RIDS.

3.2.2 Performs annual review and revision of RIDS.

3.3 WIPP Records Management Services (WRMS)

3.3.1 Reviews the RIDS and associated WIPP Records Inventory Worksheets.

3.3.2 Provides final approval signature for the RIDS.

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4.0 PROCEDURE

4.1 Developing a New Inventory and RIDS

Lead Records Custodian

NOTE

The Lead Records Custodian may request assistance from WIPP Records Management Services (WRMS) for performance of steps 4.1.1 and 4.1.2.

4.1.1 Complete EA15RM3002-1, *WIPP Records Inventory Work Sheet* for each record and non-record series, using the instructions contained in WP 15-RM3002, *Records Filing, Inventorying, Scheduling, and Dispositioning*.

4.1.2 Complete the RIDS on form EA15RM3002-2, *Records Inventory and Disposition Schedule (RIDS),* using the instructions contained in WP 15-RM3002.

4.2 RIDS Review and Approval

Lead Records Custodian

4.2.1 Forward the draft RIDS and all EA15RM3002-1 to WRMS for review and comments.

4.2.2 **IF** WRMS returns the RIDS with comments,
THEN resolve the comments.

4.2.3 **IF** notified by WRMS that the RIDS is acceptable,
THEN print out a final copy of the RIDS for signatures.

4.2.4 Obtain the required signatures in Block 5, RIDS, as follows:

[A] Prepared by - Signature of the designated trained Lead Records Custodian who prepared the RIDS

[B] Approved by - Signature of the CCP Manager or Designee

[C] Record Liaison Officer - Enter “N/A”

4.2.5 Submit signed RIDS to WRMS for final approval by obtaining WRMS signature.

4.3 Revising and Reviewing the RIDS

Lead Records Custodian

4.3.1 Review files annually, at a minimum.

NOTE
Take into consideration organization changes that may affect record series custodianship, location, or when new record series are created.

4.3.2 Check all record and non-record material on the current RIDS.

4.3.3 **IF** a new series is added,
THEN complete an EA15RM3002-1, with the instructions in WP 15-RM3002, **AND** add the new record series to a draft CCP RIDS.

4.3.4 **IF** a record series is no longer generated and maintained,
THEN complete an EA15RM3002-1, with the instructions in WP 15-RM3002, **AND** delete the item on a draft RIDS.

4.3.5 Forward the draft RIDS, **AND** any new EA15RM3002-1 to the WRMS annually at a minimum.

4.3.6 Follow steps 4.2.2 through 4.2.5.

4.3.7 **IF** an interim RIDS change is needed to make an immediate change of information on the RIDS,
THEN complete an EA15RM3002-1, with the instructions in WP 15-RM3002.

4.3.8 Send copy to WRMS and add changes to a draft RIDS to be submitted in the next RIDS review.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained in accordance with CCP-QP-008, *CCP Records Management.* The records are the following:

Non-Quality Assurance

5.1.1 Records Inventory and Disposition Schedule

5.1.2 WIPP Records Inventory Worksheet

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CCP-TP-001

Revision 21

CCP
Project Level
Data Validation and Verification

EFFECTIVE DATE: 06/06/2013

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
4	12/14/2001	Revised to reflect the use of an electronic data management system at some sites. A new Section 4.4 was created; minor changes to Section 4.7; references and records updated, and Attachments 1 through 4 revised.
5	03/08/2002	Minor editorial changes; added a new Section 4.8, and a new Attachments 7 through 11.
6	05/15/2002	Description of Revision: Changes made due to the Revision of DOE/WIPP-02-3122, *Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (CH-WAC) and changes to the Permit Modification to be implemented June 1, 2002. Plus planned changes due to process improvement. Multiple section changes as well as Attachment changes.
7	01/13/2003	Updated title of CCP-PO-005. Updated attachments 1 through 12.
8	02/03/2003	Additions to Attachment 4 and Attachment 5, DAC requirements. Resolved CBFO comments.
9	07/10/2003	Text and attachments to include Homogeneous Solid/Soil Waste Sampling and Checklists. Added steps to validate BDRs through P-TS. Separated electronically fillable forms and updated references in procedure.
10	08/28/2003	Revised sections 2.1, 2.6, 3.2, 4.3, and 5.1.
11	03/23/2005	Revised to incorporate LANL Off-Site Source Recovery Project (OSRP) requirements. Deleted Section 4.5, e-QA forms, Attachments 1 through 4 due to closure of Argonne National Laboratory (ANL)-East. Revised CCP Records Custodian and Facility Records Custodian responsibilities and actions.
12	05/25/2006	Revised to address Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
13	07/21/2006	Revised Attachments 10, 11, 13, 14, and 15 in response to Corrective Action Report (CAR) Number CAR-LANL-0006-06.
14	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR). Addressed Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
15	11/22/2006	Minor revision to correct header in Attachment 12.

RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
16	04/26/2007	Clarification of note in Section 4.3 for quarterly reports.
17	09/24/2007	Revised to clarify the references in the attachments and to remove the 25%RPD limit for solids/soils co-located cores/samples from Attachments 6, 7, 8 and 9. Revised to remove Visual Examination (VE) Expert decisions and signature and date. Modifications were made to Sections 4.4, 4.5, and Attachments 6 through 9 to discuss the F-test and control charts.
18	08/09/2010	Revised to address Hazardous Waste Facility Permit modification, and other editorial and freeze file changes.
19	12/29/2010	Revised to clarify independent technical reviewer (ITR) Independence and to update references to the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit.*
20	09/27/2012	Revised to remove references to P-TS. Also revised due to CAR-LANL-0005-12 and CBFO CAR 12-033.
21	06/06/2013	Revised to address Class 2 Hazardous Waste Facility Permit Modification, which was approved by New Mexico Environmental Department (NMED) on March 13, 2013.

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1.0 PURPOSE

Waste characterization data generated by characterization activities are validated and verified in compliance with CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (QAPjP) and CCP-PO-002, *CCP Transuranic Waste Certification Plan*. The format of CCP-PO-001 parallels that of the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit,* NM 4890139088 TSDF, Attachment C, *Waste Analysis Plan* (WAP). Characterization data requiring review, validation and verification includes Nondestructive Examination (NDE), Nondestructive Assay (NDA), Sealed Sources Radiological Characterization Data, and Visual Examination (VE).

1.1 Scope

NOTE

Remote-handled data review and validation is addressed in the appropriate TP-500 series procedure.

Gas Generation Testing (GGT) data review and validation are not addressed in this procedure. Refer to CCP-PO-016, *CCP Gas Generation Testing Program Quality Assurance Project Plan* for guidance.

This procedure defines the activities required to perform data validation and verification at the Central Characterization Program (CCP) Project Office. This procedure is applicable to all personnel performing data validation and verification. The Site Project Manager (SPM) is responsible for conducting the data validation and verification activities described in this procedure. Compliance with this procedure ensures that each batch data report (BDR) complies with the requirements of the CCP-PO-001 and CCP-PO-002.

2.0 REQUIREMENTS

2.1 References

Referenced Documents

- *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*, NM 4890139088-TSDF, Attachment C, *Waste Analysis Plan*
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
- CCP-PO-016, *CCP Gas Generation Testing Program Quality Assurance Project Plan*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*
- CCP-QP-029, *CCP Corrective Action Management*

2.2 Training Requirements

Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan* prior to performing this procedure.

2.3 Equipment List

2.3.1 None.

2.4 Precautions and Limitations

2.4.1 None.

2.5 Prerequisite Actions

2.5.1 None.

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2.6 Definitions

2.6.1 None.

2.7 Project Office Integrated Data Center (IDC) (where available)

2.7.1 The IDC provides the capability of tracking BDRs for review.

2.7.2 The IDC provides, as a minimum, the following:

[A] Link to a scanned copy of the BDR.

[B] Status of the BDR.

[C] HOLD status of the BDR.

[D] Status of Nonconformance Reports (NCRs).

3.0 RESPONSIBILITIES

NOTE

Implementation of this procedure requires the following positions: Data Generation Level (DGL) Personnel, SPM, CCP Records Custodian, and Facility Records Custodian.

3.1 SPM

3.1.1 Reviews 100 percent of the BDRs generated as a result of waste characterization activities prior to any of the waste associated with the data reviewed being shipped to the Waste Isolation Pilot Plant (WIPP).

3.1.2 Ensures the DGL Independent Technical Reviewer (ITR) reviews, validations, and verifications have been performed by verifying completed review checklists and appropriate signatures.

3.1.3 Ensures BDR review checklists are complete.

3.1.4 Ensures data are within established data assessment criteria and meet all applicable Quality Assurance Objectives (QAOs) as defined by CCP-PO-001.

3.1.5 Ensures BDRs are complete and data are properly reported (e.g., data are reported in the correct units, and correct significant figures).

3.1.6 Prepares the applicable CCP SPM Project Level Data Validation Summary.

3.1.7 Releases, by signature and date, the BDR upon completion of the SPM review.

3.1.8 Generates NCRs in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control* and Corrective Action Reports (CARs) in accordance with CCP-QP-029, *CCP Corrective Action Management* as required.

3.1.9 Reviews NCRs and verifies corrective actions, as needed.

3.1.10 Determines if U.S. Department of Energy (DOE)/Carlsbad Field Office (CBFO) reporting is required for NCRs/CARs generated at the SPM level.

[A] Makes notifications to DOE/CBFO, and ensures actions are completed as required.

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3.2 CCP Records Custodian

3.2.1 Receives corrected BDR or BDR pages from the Facility Records Custodian, as necessary, in accordance with CCP-QP-008, *CCP Records Management*.

3.3 Facility Records Custodian

3.3.1 Enters BDR into the IDC.

3.3.2 Receives, processes, and transmits corrected BDR or BDR pages to CCP Records Custodian, when applicable, in accordance with CCP-QP-008.

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4.0 PROCEDURE

4.1 BDR Receipt

Facility Records Custodian

4.1.1 Enter BDR into the IDC.

NOTE
Steps in Section 4.2 may be performed in any order.

4.2 SPM BDR Review

NOTE
Section 4.2 must be completed for 100 percent of the BDRs transmitted to the SPM.

The SPM must perform a comprehensive review of the data (e.g., correct units, significant figures, as well as ensuring that data assessment criteria are met).

SPM

4.2.1 Initiate BDR review in the IDC as follows:

[A] Log into the IDC.

[B] Select BDR to review (e.g., the IDC Daily Hot Lists).

[C] Click on START SPM REVIEW.

[D] Compare Container Identifications (IDs) in the BDR to the Container IDs included in the IDC.

[E] **IF** any Container IDs from the BDR are missing from the IDC **OR** DO **NOT** match those entered into the IDC, **THEN** contact the CCP Records Custodian/Facility Records Custodian, **AND** resolve the problem.

[E.1] Place BDR on HOLD by selecting, PLACE BDR ON HOLD, if necessary, **AND** enter reason for HOLD in the Comments/Qualifiers Section by selecting ADD/EDIT COMMENTS.

[E.2] **WHEN** the problem is resolved,
THEN select REMOVE HOLD FROM BDR in the IDC.

[E.3] Compare NCRs included in the BDR to the NCRs in the IDC, if applicable.

[E.4] **IF** any NCRs are missing from the IDC **OR** DO **NOT** match those entered into the IDC for the BDR,
THEN contact the NCR Coordinator, **AND** resolve the problem.

[E.5] Place BDR on HOLD by selecting, PLACE BDR ON HOLD, if necessary, **AND** enter reason for HOLD in the Comments/Qualifiers Section by selecting ADD/EDIT COMMENTS.

[E.6] **WHEN** the problem is resolved,
THEN select REMOVE HOLD FROM BDR in the IDC.

NOTE

Containers for Newly Generated Waste will **NOT** appear in the Acceptable Knowledge (AK) Tracking Spreadsheet on the CCP secure file transfer protocol (sftp) site for VE Technique BDRs. All Newly Generated Waste containers should be listed in the AK Tracking Spreadsheet at the time of validation for all other BDR types.

NOTE

Reports derived from the IDC Search function use the AK Tracking Spreadsheets and can be used to verify Container IDs.

[F] Compare Container IDs in the BDR to the approved AK Tracking Spreadsheet on the CCP sftp site.

[G] **IF** any Container IDs are included in the BDR that are **NOT** on the approved and posted AK Tracking Spreadsheet,
THEN contact the AK Expert.

[G.1] Place BDR on HOLD by selecting, PLACE BDR ON HOLD, if necessary, **AND** enter reason for HOLD in the Comments/Qualifiers Section by selecting ADD/EDIT COMMENTS.

[G.2] **WHEN** the problem is resolved,
THEN select REMOVE HOLD FROM BDR in the IDC.

4.2.2 Select the appropriate SPM checklist for the BDR being reviewed.

4.2.3 Record the BDR Number at the top of the appropriate SPM checklist.

4.2.4 Record the Examination Date(s) at the top of the appropriate SPM checklist.

4.2.5 Verify that the DGL ITR reviews, validations, and verifications have been performed as evidenced by the completed review checklist and appropriate signature release.

4.2.6 Verify the BDR is complete.

4.2.7 Verify that data are within established data assessment criteria and meet all applicable QAOs: Precision, Accuracy, Completeness, Comparability, and Representativeness.

NOTE

To answer questions regarding specific criteria being met, (i.e., QAOs, QCs), the SPM must ensure that the information presented in the BDR meets the requirements identified in CCP-PO-001, CCP-PO-002, and CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*.

4.2.8 Answer each question on the appropriate SPM checklist after verifying that the specific criteria have been met.

NOTE

All containers listed in the BDR will be listed on the SPM checklist.

4.2.9 **IF** any question is answered NO,
THEN evaluate the impact, **AND** perform steps 4.2.11 and 4.2.14, as appropriate.

4.2.10 **IF** any question is answered NA or NO,
THEN provide justification in the Comments/Qualifiers Section of the appropriate SPM checklist, as applicable. If a question includes criteria for “NA,” a comment is not required.

NOTE

Editorial corrections may be made to the BDR by the Operator, ITR, SPM or a Designee as directed by these personnel. The extent of editorial corrections permitted by a Designee is identified in CCP-QP-008. Data affecting changes are ONLY made by DGL personnel. Any data affecting changes made by DGL personnel will require a re-review by the Operator, ITR, and SPM.

4.2.11 **IF** editorial inconsistencies, mistakes, omissions, etc., are noted during the SPM review, that DO **NOT** change the characterization data,
THEN notify DGL personnel of required corrections, **AND** edit the BDR in accordance with CCP-QP-008.

[A] Place BDR on HOLD by selecting, PLACE BDR ON HOLD, if necessary, **AND** enter reason for HOLD in the Comments/Qualifiers Section by selecting ADD/EDIT COMMENTS.

DGL Personnel

[B] Perform editorial corrections, as needed.

[C] Resubmit corrected BDR or BDR pages to the Facility Records Custodian in accordance with CCP-QP-008.

Facility Records Custodian

[D] Receive, process, and transmit or maintain corrected BDR or BDR pages in accordance with CCP-QP-008.

[E] Notify SPM to continue review.

4.2.12 **IF** required changes CAN **NOT** be adequately documented on the SPM checklist,
THEN include additional information on an additional sheet of paper as needed.

4.2.13 **IF** additional information is placed after an SPM checklist,
THEN indicate, on the appropriate SPM checklist, that additional information is being provided, **AND** paginate the inserted documentation to show which checklist it is associated with (e.g., SPM-1).

NOTE

Corrections to BDRs mandated by Project Office NCRs will not proceed until DGL has been provided a copy of the validated and dispositioned Project Office NCR.

4.2.14 **IF** data affecting inconsistencies, mistakes, omissions, etc., are noted during the SPM review, that impact or change the characterization data,
THEN Initiate an NCR in accordance with CCP-QP-005:

[A] Ensure copy of approved Project Office NCR is provided to DGL documenting required changes in the NCR disposition.

DGL Personnel

[B] Correct the deficiency.

[C] ITR Re-review in accordance with the applicable procedure, **AND** resubmit corrected BDR or BDR pages, and copy of the NCR, to CCP Records for processing in accordance with CCP-QP-008.

4.2.15 Record comments in the box at the end of the appropriate SPM checklist or record NA.

4.2.16 Print name, sign, and date the appropriate SPM checklist.

4.2.17 End SPM review in IDC.

4.2.18 Submit completed SPM checklist to CCP Records for processing in accordance with CCP-QP-008.

4.2.19 If SPM re-review is required,

[A] Insert corrections.

[A.1] **IF** revised page contains correction or additional information,
THEN replace the BDR record page with the corrected page.

OR

[A.2] **IF** additional corrected pages are inserted in the numbered section of the BDR,
THEN supercede pages, **AND** properly paginate the inserted documentation in accordance with CCP-QP-008.

[B] Select RE-REVIEW button in the IDC, if necessary.

[C] Perform a re-review of the corrected BDR.

[D] Verify that all criteria have been met and the review is complete.

[E] Select REMOVE HOLD ON BDR in the IDC, if necessary, **AND** complete review in the IDC.

4.2.20 Print name, sign name, enter reason for re-review, and enter date completed on the appropriate SPM checklist in the re-review signature area.

4.2.21 **WHEN** all criteria have been verified, **AND** the review is complete, **THEN** select END SPM BDR REVIEW in the IDC.

NOTE

Additional information is information that is added to the back of the SPM checklist after receipt at the Project Level. Additional information can be in the form of e-mail authorizations for administrative changes, letters or e-mails of clarification to posed questions (This list is not all inclusive).

4.2.22 **IF** additional information is placed after an SPM checklist, **THEN** indicate, on the appropriate SPM checklist, that additional information is being provided, **AND** paginate the inserted documentation to show which checklist it is associated with (e.g., SPM-1).

4.2.23 Forward the completed SPM checklist, and any additional information, to the CCP Records Custodian/Facility Records Custodian.

<u>CCP Records Custodian/Facility Records Custodian</u>

4.2.24 Receive, process, and transmit or maintain in accordance with CCP-QP-008.

4.3 Quarterly Repeat of DGL Data Review, Validation, and Verification

NOTE

The SPM shall ensure that a repeat of the DGL data review, validation, and verification of data generated to meet the requirements of CCP-PO-001 is performed quarterly for a minimum of one randomly chosen waste container. The SPM uses this exercise to document that the DGL data review, validation, and verification is being performed in accordance with applicable procedures.

SPM

4.3.1 Randomly select one waste container for a repeat of the DGL data review, validation, and verification for one RTR and VE BDR generated in the last quarter.

NOTE

The following documents will be included in the quarterly DGL data review, validation, and verification: the original data reported, any nonconformances generated prior to ITR, reviews, and QC Data Sheets. The BDR Batch Narrative will **NOT** be included.

4.3.2 Retrieve a copy of the BDR from CCP Records.

NOTE

When possible, a different ITR will be used for the quarterly DGL data review, validation, and verification of the selected waste container.

4.3.3 Assemble the mini-container package.

4.3.4 Document the container selection and the assignment of the DGL ITR by interoffice memorandum.

4.3.5 Submit a copy of the mini-container package to the Host site for re-review.

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NOTE

DGL Personnel will review submitted data and generate new Tables of Contents, BDR Batch Narratives and DGL Checklists. Any discrepancies will be noted in the BDR Batch Narrative.

SPM

4.3.6 Perform a review of the re-submitted data in accordance with Section 4.2.

4.3.7 Compare the original BDR submitted for the selected container with the re-submitted data.

4.3.8 Document the comparison, by interoffice memorandum, to CCP Records.

4.3.9 **IF** discrepancies or problems that affect data quality are noted during the review,
THEN perform the following:

[A] Initiate an NCR in accordance with CCP-QP-005.

[B] Notify the appropriate facility personnel.

4.3.10 Submit the re-reviewed package, associated information, and copy of interoffice memorandum to CCP Records.

Facility Records Custodian/CCP Records Custodian

4.3.11 Receive, process, and transmit the reviewed package, associated information, and copy of interoffice memoradum in accordance with CCP-QP-008.

5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as Quality Assurance (QA) records in accordance with CCP-QP-008. The records are the following:

5.1.1 QA/Lifetime

[A] Attachment 1, CCP SPM Visual Examination Project Level Validation Checklist and Summary

[B] Attachment 2, CCP SPM Radiography Project Level Validation Checklist and Summary

[C] Attachment 3, CCP SPM Nondestructive Assay Project Level Validation Checklist and Summary

[D] Attachment 4, CCP SPM Off-Site Source Recovery Sealed Source Radiological Characterization Project Level Validation Checklist and Summary

[E] Interoffice memorandum for the Quarterly Repeat of DGL Data Review BDR

[F] Container selection and the assignment of the DGL ITR interoffice memoramdum

5.1.2 QA/Nonpermanent

[A] Project Office Integrated Data Center (IDC)

Attachment 1 – CCP SPM Visual Examination Project Level Validation Checklist and Summary

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
1. Is the completed, signed and dated Independent Technical Reviewer Checklist included in the BDR, and the independent technical reviewer was not involved in the generation or recording of the data under review? **Reference Source: CCP-PO-001, C3-4**				
2. Does the BDR contain all items addressed in the BDR Table of Contents? **Reference Source: CCP-PO-001, C3-4**				
3. Does the BDR include a listing of all container numbers in the batch? **Reference Source: CCP-PO-001, C3-4**				
4. List all containers that have met QAOs. **Reference Source: CCP-PO-001, C3-4**				Container Numbers:
5. Is the current implementing procedure and revision number included in the BDR? **Reference Source: CCP-PO-001, Table C3-3**				
6. Is the BDR date included? **Reference Source: CCP-PO-001, Table C3-3**				
7. Is there a reference to or copy of any associated NCRs (if any) in the BDR? **Reference Source: CCP-PO-001, Table C3-3**				
8. Are there 20 or fewer containers in the batch? **Reference Source: CCP-PO-001 C3-4**				
9. Are the data properly reported (i.e., data are reported in correct units and with correct significant figures). **Reference Source: CCP-PO-001 C3-4**				
10. Is there evidence of verification that the physical form matches the Waste Matrix Code? **Reference Source: CCP-PO-001, Table C3-3**				
11. Is there evidence of verification that the physical form matches the waste stream description? **Reference Source: CCP-PO-001, Table C3-3**				
12. Are prohibited items absent? **Reference Source: CCP-PO-001, Table C3-3**				

Attachment 1 – CCP SPM Visual Examination Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
13. Does observable liquid, if present, meet the criteria of the TSDF-WAC? **Reference Source: CCP-PO-001, C-1**				
14. Were discrepancies between the Visual Examination operator and the ITR with regards to identification of waste matrix code, liquids in excess of the TSDF-WAC, or compressed gases reconciled? NA if no discrepancies. **Reference Source: CCP-PO-001, C3-2**				
15. Are the training requirements met for the VE Expert and VE Operators who have signed the data forms? **Reference Source: CCP-PO-001, C3-8**				
16. Is evidence of a satisfactory audio/video test included in the BDR? NA [not applicable] for VE Method for Newly Generated Waste. **Reference Source: CCP-PO-001, C1-2**				
17. If the VE was not recorded using audio/video media, does the data sheet contain the signature of two qualified operators who observed for themselves the waste being placed into the container? NA if audio/video used. **Reference Source: CCP-PO-001, C1-2**				
18. Are the weights/estimated weights for the 12 waste material parameters reported in kilograms (kg)? **Reference Source: CCP Technical Procedures**				
19. Are the descriptions for each waste material parameter included in the BDR? **Reference Source: CCP-PO-001, C1-2**				
20. Is the gross weight reported (in kg) for each container included in the BDR? **Reference Source: CCP Technical Procedures**				
21. Is the number of layers of confinement recorded? **Reference Source: CCP-PO-001, C1-2**				
22. Is sufficient information included in the BDR to determine the packaging configuration? **Reference Source: CCP-PO-001, C1-2**				

Attachment 1 – CCP SPM Visual Examination Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
23. Is the type and number of filters recorded? **Reference Source: CCP-PO-001, CCP Technical Procedures**				
24. Is the size of the rigid liner vent hole recorded? NA if no liner lid. **Reference Source: CCP-PO-001, CCP Technical Procedures**				
25. For Los Alamos National Laboratory (LANL) Sealed Sources, does the characterized waste container meet the definition of sealed sources per Title 10 Code of Federal Regulations (CFR) 30.4 and Title 10 CFR 835.2 (effective January 1, 2004) evidence of which is assembled as part of AK documentation? **Reference Source: CCP Technical Procedures**				
26. For LANL Sealed Sources, are sealed sources the only non-packaging items in the waste container? **Reference Source: CCP-TP-069, 4.1.4**				
27. For LANL Sealed Sources, are the sealed sources a U.S. Department of Transportation (DOT) Special Form Class 7 (Radioactive Material) per Title 49 CFR 34.27 (effective January 1, 2004) and the certification of which is assembled as part of the AK documentation? **Reference Source: CCP Technical Procedures**				
28. For LANL Sealed Sources, is the integrity of each sealed source validated by documented contamination survey results to meet the requirements of Title 10 CFR 34.27 (effective January 1, 2004), and assembled as part of AK documentation? **Reference Source: CCP Technical Procedures**				

Attachment 1 – CCP SPM Visual Examination Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
29. For LANL Sealed Sources, is each sealed source a rigid sealed container less than or equal to 4 L in size or in a rigid sealed container less than or equal to 4 L? **Reference Source: CCP Technical Procedures**				
30. For LANL Sealed Sources, AK documentation does not indicate the use of volatile organic compounds (VOCs) or VOC-bearing materials as constituents of sealed sources? **Reference Source: CCP Technical Procedures**				
31. For LANL Sealed Sources, the outer casing of each sealed source is of a non VOC-bearing material which is verified using the VE technique at the time of packaging? **Reference Source: CCP Technical Procedures**				

Comments:

The container QC checks were properly performed and meet the Quality Assurance Objectives (QAOs). Proper procedures were followed during data reduction and analysis. The batch is complete, acceptable, and includes all supporting data and documentation required by the QAPjP.

SPM Printed Name Signature Date

Checklist is to be re-signed only when a re-review is performed.

SPM Printed Name	Signature	Reason	Date
SPM Printed Name	Signature	Reason	Date

Attachment 2 – CCP SPM Radiography Project Level Validation Checklist and Summary

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
1. Is the completed, signed, and dated Independent Technical Reviewer Checklist included in the BDR, and the independent technical reviewer was not involved in the generation or recording of the data under review? **Reference Source: CCP-PO-001, C3-4**				
2. Does the BDR contain all items addressed in the BDR Table of Contents? **Reference Source: CCP-PO-001, C3-4**				
3. Does the BDR include a listing of all the container numbers in the batch? **Reference Source: CCP-PO-001, C3-4**				
4. List all containers that have met QAOs. **Reference Source: CCP-PO-001, C3-4**				Container Numbers:
5. Does the BDR identify the current implementing procedure and revision number? **Reference Source: CCP-PO-001, Table C3-3**				
6. Is there a reference to or copy of any associated NCRs (if any) in the BDR? NA if no NCRs. **Reference Source: CCP-PO-001, Table C3-3**				
7. Are there 20 or fewer containers in the batch? **Reference Source: CCP-PO-001, C3-4**				
8. Are the data properly reported (i.e., data are reported in correct units and with correct significant figures)? **Reference Source: CCP-PO-001, C3-4**				
9. Is there evidence of verification that the physical form matches the Waste Matrix Code? **Reference Source: CCP-PO-001, Table C3-3**				

Attachment 2 – CCP SPM Radiography Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
10. Is there evidence of verification that the physical form matches the waste stream description? **Reference Source: CCP-PO-001, Table C3-3**				
11. Are prohibited items absent? **Reference Source: CCP-PO-001, Table C3-3**				
12. Does observable liquid, if present, meet the criteria of the TSDF-WAC? **Reference Source: CCP-PO-001, C-1**				
13. Were discrepancies between two operators with regard to identification of waste matrix code, liquids in excess of the TSDF-WAC, or compressed gases through replicate scans and independent observations reconciled? NA if no discrepancies. **Reference Source: CCP-PO-001, C3-2**				
14. Are the training qualifications for all radiography personnel acceptable? **Reference Source: CCP-PO-001, C3-8**				
15. Was evidence of the video/audio check included in the BDR? **Reference Source: CCP-PO-001, C1-1**				
16. Was the Lines-Pair Resolution Test or Sieve Test Check included in the BDR? **Reference Source: CCP Technical Procedures**				
17. Was a replicate scan performed once per day, or once per batch, whichever is LESS frequent? **Reference Source: CCP-PO-001, C1-1**				
18. Was an independent observation performed once per day, or once per batch, whichever is LESS frequent? **Reference Source: CCP-PO-001, C1-1**				

Attachment 2 – CCP SPM Radiography Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
19. Were the replicate scan and independent observation performed on different waste containers? **Reference Source: CCP-PO-001, C1-1**				
20. Were the personnel performing the replicate scan and independent observation different from the individual who performed the original? **Reference Source: CCP-PO-001, C1-1**				
21. Does the BDR include an estimate of each material parameter weight in kg for each container? **Reference Source: CCP Technical Procedures**				
22. Does the BDR include a description of each material parameter for each container? **Reference Source: CCP Technical Procedures**				
23. Is the container gross weight recorded in kilograms (kg) for each container in the BDR? **Reference Source: CCP Technical Procedures**				
24. Was the Scale Weight Calibration Check included in the BDR? **Reference Source: CCP Technical Procedures**				
25. Was the Scale Weight Check included in the BDR? **Reference Source: CCP Technical Procedures**				

Comments:

The container QC checks were properly performed and meet the Quality Assurance Objectives (QAOs). Proper procedures were followed during data reduction and analysis. The batch is complete, acceptable, and includes all supporting data and documentation required by the QAPjP.

SPM Printed Name	Signature	Date

Checklist is to be re-signed only when a re-review is performed.

SPM Printed Name	Signature	Reason	Date
SPM Printed Name	Signature	Reason	Date

Attachment 3 – CCP SPM Nondestructive Assay Project Level Validation Checklist and Summary

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
1. Are the background measurements performed and recorded daily and included in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.4.2**				
2. Is the efficiency/energy calibration and resolution check performed and recorded daily and included in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.4.2**				
3. Were the performance checks and backgrounds done prior to the analysis of the samples? **Reference Source: CCP-PO-002, Attachment 1, A.4.2**				
4. Are the required QC checks specified on the ITR checklist within acceptable limits? **Reference Source: CCP-PO-002, Attachment 1, A.4.2**				
5. Is the matrix drum performed at least once per operational week? **Reference Source: CCP-PO-002, Attachment 1, A.4.2**				
6. List all containers that have met all QC criteria thresholds. **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				Container Numbers:
7. Is there evidence of participation in the PDP program or any relevant approved comparison program? **Reference Source: CCP-PO-002, Attachment 1, A.4.1**				
8. Are the personnel training records acceptable? **Reference Source: CCP-PO-002, Attachment 1, A.4.1**				
9. Is a standard cover sheet included in the BDR? **Reference Source: CCP Technical Procedures**				
10. Is there reference to or copy of associated NCRs included in the BDR? NA if no NCRs associated with BDR. **Reference Source: CCP-QP-005**				

Attachment 3 – CCP SPM Nondestructive Assay Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
11. Is the method used for radioassay identified by the implementing procedure(s) and revision number(s) referenced for each container in the BDR? **Reference Source: CCP Technical Procedures**				
12. Is the current software revision number correct for each container in the BDR? **Reference Source: CCP-QP-022**				
13. Is the completed, signed, and dated Independent Technical Reviewer Checklist included in the BDR, and the independent technical reviewer was not involved in the generation or recording of the data under review? **Reference Source: CCP-PO-002, Attachment 1, A.5.1**				
14. Is the correct Waste Matrix Code referenced in the BDR? **Reference Source: CCP Technical Procedures**				
15. Is the method of expressing TMU specified in the BDR? **Reference Source: CCP-PO-002, 3.3.1**				
16. Does the instrument performing TRU/low-level waste measurement have an LLD of 100 nCi/g or less? **Reference Source: CCP-PO-002, Attachment 1, A.3**				
17. Are the ten WIPP tracked radionuclides of 241Am, 238Pu, 239Pu, 240Pu, 242Pu, 233U, 234U, 238U, 90Sr, 137Cs estimated activities and masses, including their associated TMU reported on each radioassay data sheet? **Reference Source: CCP-PO-002, 3.3.1**				
18. Is 235U (in order to calculate FGE) reported as present or absent on each radioassay data sheet? **Reference Source: CCP-PO-002, Attachment 1, A.3**				
19. If 235U is reported as present, is 234U reported as present? NA, if 235U is not present. **Reference Source: CCP Technical Procedures**				
20. Is the TRU alpha activity concentration and associated TMU reported for each container in the BDR? **Reference Source: CCP-PO-002, 3.3.1**				

Attachment 3 – CCP SPM Nondestructive Assay Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
21. Is the TRU alpha activity concentration limit of >100 nCi/g met for containers in the BDR? **Reference Source: CCP-PO-002, 3.3.3**				
22. Is the Total Pu239 FGE (g) and associated TMU reported for each container in the BDR? **Reference Source: CCP-PO-002, 3.3.1**				
23. Is the FGE plus two times the TMU less than or equal to the limits for containers in this BDR? 200 FGE for 55-gal drums/325 FGE for SWBs. Note: TMU equals one standard deviation. **Reference Source: CCP-PO-002, Table A-3**				
24. Is the decay heat reported for each container in the BDR? **Reference Source: CCP-PO-002, 3.3.1**				
25. Are all the appropriate QC forms (background, efficiency checks, control charts, and matrix drum) included in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
26. Is the name of the testing facility included in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
27. Is the batch number included in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
28. Is a listing of all container numbers in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
29. Does the BDR contain a BDR Table of Contents? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
30. Are the testing report data sheets including the waste container number for each container included in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
31. Is the title “Radioassay Data Sheet” included for each container in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				

Attachment 3 – CCP SPM Nondestructive Assay Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
32. Is the date of radioassay included for each container in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
33. Is the operator and reviewer signature release and date included for each container in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
34. Is the total Pu239 equivalent activity (Ci) reported for each container in the BDR? **Reference Source: CCP-PO-002, Attachment 1, A.5.2**				
35. Are the NDA net weights within 5% of the NDE net weight or the VE net weight, whichever is applicable, for each container in the BDR? **Reference Source: CCP Technical Procedures**				

Comments:

The container QC checks were properly performed and meet the Quality Assurance Objectives (QAOs). Proper procedures were followed during data reduction and analysis. The batch is complete, acceptable, and includes all supporting data and documentation required by CCP-PO-002.

SPM Printed Name	Signature	Date

Checklist is to be re-signed only when a re-review is performed.

SPM Printed Name	Signature	Reason	Date
SPM Printed Name	Signature	Reason	Date

Attachment 4 – CCP SPM Off-Site Source Recovery Sealed Source Radiological Characterization Project Level Validation Checklist and Summary

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
1. Are the personnel training records acceptable? **Reference Source: Site applicable LOQI**				
2. Does the Batch Data Report (BDR) include the name of the facility? **Reference Source: CCP-PO-002**				
3. Does the BDR include a standard cover sheet? **Reference Source: CCP-PO-002**				
4. Does the BDR include a Table of Contents? **Reference Source: CCP-PO-002**				
5. Does the BDR include a batch number? **Reference Source: CCP-PO-002**				
6. Does the BDR include a listing of all waste container numbers in the batch? **Reference Source: CCP-PO-002**				
7. List all containers. **Reference Source: CCP-PO-002**				Container Numbers:
8. Does the BDR include a Container Characterization Report sheet(s) for each container in the batch? **Reference Source: CCP-PO-002**				
9. Is there a reference to or copy of associated NCRs (if any) in the BDR? NA if no NCRs associated with the BDR. **Reference Source: CCP-PO-002**				
10. Does the BDR include the implementing procedure and revision numbers? **Reference Source: CCP-PO-002**				
11. Does the BDR include a completed, signed, and dated Independent Technical Review Checklist, and the independent technical reviewer was not involved in the generation or recording of the data under review? **Reference Source: CCP-PO-002**				
12. Does the waste meet the definition of sealed sources per 10 CFR 30.4 and 10 CFR 835.2 (effective January 1, 2004) and documentation included with the AK information? **Reference Source: CCP-PO-001, C4-2**				

Attachment 4 – CCP SPM Off-Site Source Recovery Sealed Source Radiological Characterization Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
13. Is the sealed source a US DOT Special Form Class 7 (Radioactive Material) per 49 CFR 34.27 (effective January 1, 2004) and is this documented in the AK information? **Reference Source: CCP-PO-001, C4-2**				
14. Is the integrity of each sealed source validated by documented contamination survey results to meet the requirements of 10 CFR 34.27 (effective January 1, 2004), and is assembled as part of AK documentation? **Reference Source: CCP-PO-001, C4-2**				
15. Does the AK information document that no VOC or VOC-bearing material are constituents of the waste? **Reference Source: CCP-PO-001, C4-2**				
16. Does the AK information document that the outer casing of the sealed source is a non-VOC bearing material and is this verified during VE? **Reference Source: CCP-PO-001, C4-2**				
17. Is the Title "Characterization Data Sheet" included on each data sheet? **Reference Source: CCP-PO-002**				
18. Is the waste container number included on each data sheet? **Reference Source: CCP-PO-002**				
19. Is the run date included on each data sheet? **Reference Source: CCP-PO-002**				
20. Is the TRU alpha activity concentration (Ci/g) included on each data sheet? **Reference Source: CCP-PO-002**				
21. Is the Total Pu-239 equivalent activity (PE-Ci) included on each data sheet? **Reference Source: CCP-PO-002**				
22. Is the Total FGE (g) and associated TMU included on each data sheet? **Reference Source: CCP-PO-002**				
23. Is the Decay Heat (W) and associated TMU included on each data sheet? **Reference Source: CCP-PO-002**				
24. Are the activities and/or masses of individual radioisotopes and associated TMUs (curies and/or grams) included on each data sheet? **Reference Source: CCP-PO-002**				

Attachment 4 – CCP SPM Off-Site Source Recovery Sealed Source Radiological Characterization Project Level Validation Checklist and Summary (Continued)

BDR Number: _____ **Examination Date(s):** _____

Description of Criteria Reviewed	Criteria Met?			Comments/Qualifiers
	YES	NO	NA	
25. Is the method of expressing TMU specified? **Reference Source: CCP-PO-002**				
26. Are the ten WIPP tracked radionuclides of 241Am, 238Pu, 239Pu, 240Pu, 242Pu, 233U, 234U, 238U, 90Sr, 137Cs identified and reported as present or absent? **Reference Source: CCP-PO-002**				
27. Is 235U (in order to calculate FGE) reported as present or absent? **Reference Source: CCP-PO-002**				
28. Is the TRU Alpha activity concentration >100 nCi/g? **Reference Source: CCP-PO-002**				
29. Is the Fissile Mass ≤ FGE limit? **Reference Source: CCP-PO-002**				
30. If 235U is reported as present, is 234U reported as present? NA if 235U is not present. **Reference Source: CCP-PO-002**				

Comments:

The container QC checks were properly performed and meet the Quality Assurance Objectives (QAOs). Proper procedures were followed during data reduction and analysis. The batch is complete, acceptable, and includes all supporting data and documentation required by CCP-PO-002.

SPM Printed Name	Signature	Date

Checklist is to be re-signed only when a re-review is performed.

SPM Printed Name	Signature	Reason	Date
SPM Printed Name	Signature	Reason	Date

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CCP-TP-002

Revision 26

CCP
Reconciliation of DQOs and Reporting Characterization Data

EFFECTIVE DATE: 06/19/2013

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
18	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR). Addressed Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
19	12/22/2006	Revised to clarify Waste Stream Profile Form contents.
20	08/18/2008	Revised Section 4.2.1 to incorporate Central Characterization Project (CCP) Standing Order CCP-SO-32. Updated several document/procedure titles. Minor changes to Section 5.0.
21	08/04/2009	Revised to answer Waste Isolation Pilot Plant (WIPP) Form 09-050, and add changes to Sections 3 and 4 and make any other editorial changes needed.
22	06/30/2010	Revised for Class 2 Modification Request WIPP Hazardous Waste Facility Permit EPA I.D. Number NM4890139088.
23	12/29/2010	Revised to implement the revision of the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*.
24	12/28/2011	Revised to make editorial changes. Replacing Waste Stream Profile Form (WSPF) change notice with revision to WSPF. Revising instructions for completing WSPF package.
25	02/11/2013	Revised to include timeframe for transmitting the waste stream profile form package to records. Also revised to make editorial changes needed.
26	06/19/2013	Revised to implement the Permit Modification Request Class 2 approved by New Mexico Environment Department (NMED) dated March 13, 2013.

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1.0 PURPOSE

Upon completion of waste characterization activities, and prior to shipment of waste, the Central Characterization Program (CCP) is required to reconcile the data in accordance with the requirements of CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (QAPjP). Data reconciliation is required in order for the CCP Site Project Manager (SPM) to complete and submit a Waste Stream Profile Form (WSPF)
(see Attachment 2, CCP Waste Stream Profile Form, for an example).

1.1 Scope

This procedure provides data reconciliation with the data quality objectives (DQOs) following data validation and verification at the CCP Project Office. This reconciliation is performed at the waste stream or waste stream lot level. This procedure provides the instructions for the completion of the WSPF Package for submittal to the U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) for permittee review and CBFO approval prior to shipment.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- DOE/WIPP 01-3194, *CH-TRU Waste Content Codes* (*CH-TRUCON*)
- DOE/WIPP 90-045, *RH-TRU Waste Content Codes* (*RH-TRUCON*)
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-003, *CCP Transuranic Authorized Methods For Payload Control* (*CCP CH-TRAMPAC*)
- CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control* (*CCP RH-TRAMPAC*)

Referenced Documents

- *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan*
- DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria For The Waste Isolation Pilot Plan*
- 40 CFR 261, *Identification and Listing of Hazardous Waste,* Subpart C, *Characteristics of Hazardous Waste.*
- 40 CFR 261, *Identification and Listing of Hazardous Waste,* Subpart D, *Lists of Hazardous Wastes*
- DOE/TRU-11-3425, *Annual Transuranic Waste Inventory Report – 2011*
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*
- CCP-TP-005, *CCP Acceptable Knowledge Documentation*

2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan*, prior to performing this procedure.

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3.0 RESPONSIBILITIES

3.1 Site Project Manager (SPM)

3.1.1 Ensures that all data generated and used in decision making meet the DQOs

[A] Assesses whether data of sufficient type, quality, and quantity have been collected.

NOTE

The WSPF Package consists of the WSPF, the Characterization Information Summary (CIS) and the Summation of Aspects of the Acceptable Knowledge (AK) Summary.

3.1.2 Completes and submits the WSPF package and required revisions.

3.1.3 Prepares the Waste Stream Characterization Package per CCP-PO-001, Section C3-6b(3) upon request from the DOE CBFO.

3.2 Acceptable Knowledge Expert (AKE)

NOTE

As the waste stream is characterized, the Acceptable Knowledge Expert (AKE) is responsible for corroborating the AK information with the characterization data collected. For the final data reconciliation (conducted in accordance with this procedure), the AKE provides assistance to the SPM.

3.2.1 Compiles the AK information for the waste stream being characterized.

3.2.2 Creates the AK summary which is used to create the Summation of Aspects of the AK summary.

3.2.3 Assigns a unique waste stream number for each waste stream based on information in the DOE/TRU-11-3425, *Annual Transuranic Waste Inventory Report* (ATWIR) and/or information from the Host site.

3.2.4 Reviews and concurs with the WSPF Package and subsequent revisions.

3.3 Host Site Subcontract Technical Representative (STR)

3.3.1 If required by the site-specific interface document, reviews, and concurs with the WSPF Package.

4.0 PROCEDURE

NOTE

The attachments in this document are examples of the requirements. The examples identify the minimum information required in the final approved report.

NOTE

Steps DO **NOT** need to be followed in sequence.

SPM

4.1 Assigning the WSPF Number

NOTE

The unique number will be limited to a maximum of 20 alpha-numeric characters. The first two characters will be the two letter site designator, and the remaining characters should coincide, to the maximum extent possible, with the title page of the AK Summary Report.

4.1.1 Assign the Waste Stream Number to the WSPF per the AK Summary Report.

NOTE

The Waste Stream Number is recorded on all applicable attachments.

4.2 Compilation and Evaluation of DQO Parameters

4.2.1 For the lot to be processed, select an appropriate number of containers that have completed CCP Project Office verification and validation from the waste stream population.

[A] Ensure that all of the containers selected are from the same waste stream by comparing the container numbers/waste stream identification numbers with the AK Tracking Spreadsheet for the subject site.

[B] Ensure all containers from any waste stream that requires Gas Generation Testing (GGT) meet one of the following requirements:

[B.1] The container is on an approved GGT Batch Data Report (BDR) and that the BDR is the most recent.

[B.2] The container is included in an approved Long Term Objective population.

[C] Ensure all containers from any waste stream that require Flammable Gas Analysis (FGA) for Transportation Sampling are on an approved FGA for transportation BDR and that the BDR is the most recent:

[D] Ensure all data to be used for certification was generated using certified equipment.

[E] Ensure that each of the BDRs chosen to certify the containers is the most recent BDR available for that characterization process (i.e., real-time radiography [RTR] or visual examination [VE], nondestructive assay [NDA], FGA, Dose-to-Curie [DTC]), Radiological Characterization.

4.2.2 Obtain copies of the following documents from CCP Records, as applicable:

- Documentation of Radiological Properties (e.g., NDA BDR), VE, RTR, FGA **AND/OR** an AK Sufficiency Determination
- Previous records of data completion and reconciliation with DQOs (see Attachment 1, CCP Reconciliation with Data Quality Objectives for an example)
- Previously completed CIS submitted to records on interoffice memo

4.2.3 Determine if sufficient data have been collected to determine if program-required waste parameters have been met, by completing the CCP Reconciliation with Data Quality Objective Attachment 1, using the attached instructions.

4.2.4 **IF** sufficient data has been collected,
THEN enter the Waste Stream Number and Lot Number on the CCP Reconciliation with Data Quality Objective.

4.2.5 **IF** data DOES **NOT** meet the criteria on the CCP Reconciliation with Data Quality Objective,
THEN sufficient data has **NOT** been collected to fully characterize the waste stream, therefore, determine the additional waste characterization that needs to be performed **AND** direct the appropriate site facility to collect the additional data.

NOTE

The CCP Reconciliation with Data Quality Objective contains multiple questions for each entry. If there are discrepancies between questions or if entries are Not Applicable (N/A), comments will be added to the form explaining how criteria are met.

4.2.6 Complete the CCP Reconciliation with Data Quality Objective, using the attached questions.

4.2.7 Print name, sign, and date the CCP Reconciliation with Data Quality Objective.

4.2.8 Place the CCP Reconciliation with Data Quality Objective in the holding file.

4.3 Preparing Waste Stream Profile Form (WSPF)

NOTE

The current approved revision of the waste stream AK Summary should be used in preparing or revising the WSPF.

4.3.1 **IF** a WSPF exists for the waste characterization data being reconciled,
THEN GO TO Section 4.7.

4.3.2 Ensure all characterization data obtained from CCP Records for the waste stream in question have gone through project level validation (i.e., signed SPM checklists).

4.3.3 Prepare a CCP WSPF (see CCP Waste Stream Profile Form, for an example) using the instructions included in Attachment 2.

4.3.4 Review, print name, sign, and date the WSPF.

4.4 Completing the Characterization Information Summary (CIS)

4.4.1 Record the Waste Stream Number and Lot Number, including the list of site specific/CCP procedures, revisions, and dates used in characterizing the containers in the lot, on the CCP Characterization Information Summary Cover Page (see Attachment 3, CCP Characterization Information Summary Cover Page for an example).

4.4.2 Complete the cross-reference listing the container numbers to each BDR (see Attachment 4, CCP Correlation of Container Identification Numbers to Batch Data Report Numbers for an example).

[A] For items **NOT** analyzed enter N/A.

[B] Print name, sign, and date the CCP Correlation of Container Identification Numbers to Batch Data Report Numbers.

4.4.3 **IF** the AK Summary for the waste stream identified the U.S. Environmental Protection Agency (EPA) Hazardous Waste Number (HWN) U134 (hydrofluoric acid), **THEN** address in CCP RTR/VE Summary of Prohibited Items (see Attachment 5, CCP RTR/VE Summary of Prohibited Items for an example) that any liquid identified is a prohibited item per the applicable operating procedure and is **NOT** acceptable by the Treatment, Storage, and Disposal Facility (TSDF).

4.4.4 Complete the CCP RTR/VE Summary of Prohibited Items to document that prohibited items are **NOT** present in the waste stream or waste stream lot and to verify the physical form of the waste matches the waste stream description as determined by AK.

NOTE

If CBFO approves, VE may be performed on S3000 and S4000 when the material is not removed from the characterized container.

4.4.5 Complete the justification for the selection of radiography and/or VE as the appropriate method for characterizing the waste.

4.4.6 Print name, sign, and date CCP RTR/VE Summary of Prohibited Items.

4.5 Summation of Aspects of the AK Summary

4.5.1 Obtain an approved copy of the AK Summary for the subject waste stream in order to create a summary level version of the AK Summary, entitled the Summation of Aspects of the AK Summary (Summation).

4.5.2 Create the Summation and include the following information: waste stream name and number, point of generation, waste stream volume (current and projected), generation dates, TRUCON codes, Summary Category Group, Waste Matrix Code(s) (WMC) and Waste Matrix Code Group, other ATWIR information, waste stream description, areas of operation, generating processes, Resource Conservation and Recovery Act (RCRA) determinations, radionuclide information, method for determining Waste Material Parameter (WMP) weights per unit of waste contact-handled ([CH] only), all references used to generate the Summation, and any other information required by CCP-PO-001.

4.5.3 Include a list of any approved AK Sufficiency Determinations for the waste stream.

4.6 Submitting the WSPF Package to DOE CBFO

4.6.1 Compile the WSPF Package consisting of the following:

- WSPF
- CIS
- Summation

4.6.2 Forward a copy to the AKE for review and concurrence.

4.6.3 **IF** required by the appropriate site-specific Interface Document, **THEN** forward a copy to the STR for review and concurrence.

4.6.4 **IF** comments are received from the AKE **AND/OR** STR, **THEN** resolve the comments, **AND** forward a copy of the resolution to the reviewer(s) for concurrence.

4.6.5 **AFTER** concurrence(s) is/are received, **THEN** continue with this section.

4.6.6 Transmit the WSPF Package via e-mail to the DOE CBFO electronic mail (email) site at site.documents@wipp.ws for permittee review and CBFO approval.

4.6.7 **IF** comments are received from the permittees, **THEN** repeat steps 4.6.2 through 4.6.6 until comments have been resolved.

4.6.8 Submit approved WSPF Package to CCP Records in accordance with CCP-QP-008, *CCP Records Management,* with an interoffice memo within 30 calendar days of WSPF approval.

4.7 Subsequent Data Reconciliation

4.7.1 Obtain a copy of the WSPF Package from CCP Records.

4.7.2 Perform applicable steps of Sections 4.2 and 4.4.

NOTE

A revision required to the WSPF package that results in the addition of EPA HWNs will require the waste stream to be suspended until DOE approves the revised WSPF.

4.7.3 **IF** the waste DOES **NOT** meet the WSPF Package description, **THEN** revise the WSPF Package, **OR** assign the waste to a new waste stream.

[A] **IF** subsequent data collection reveals discrepancies that identify different EPA HWNs,
THEN the Waste Stream Profile will be revised.

[B] **IF** subsequent data collection reveals discrepancies that indicate the waste belongs to a different waste stream,
THEN initiate a nonconformance report (NCR) in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*.

NOTE

A revision required to the WSPF Package that DOES **NOT** result in addition of EPA HWNs (application of additional TRUCON Content codes, or addition of material parameter weight estimates per unit of waste) will not require the waste stream to be suspended.

[C] **IF** the WSPF Package requires a revision,
THEN make the appropriate changes in accordance with guidance provided in the CCPWSPF, **AND** submit the WSPF revision to CCP Records and DOE CBFO in accordance with the applicable steps in Section 4.6.

[D] **IF** the waste DOES **NOT** match the subject WSPF Package (i.e., have common physical form, contain similar hazardous constituents, and were generated from a single process or activity discrepancies are noted that identify different EPA HWNs or indicate that the waste belongs to a different waste stream),
THEN perform the following:

[D.1] Notify the AKE that the subject waste must be redefined to a separate waste stream in accordance with the applicable steps of CCP-TP-005, *CCP Acceptable Knowledge Documentation*, Section 4.8.

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[D.2] Generate a new WSPF Package in accordance with Sections 4.2 through 4.6.

4.7.4 Provide documentation of the waste stream lot data reconciliation to CCP Records that includes the CCP CIS and CCP Reconciliation with Data Quality Objective.

4.8 Completing the Waste Stream Characterization Package

4.8.1 When requested by DOE CBFO, prepare the Waste Stream Characterization Package for the requested waste stream.

4.8.2 Obtain a copy of the subject WSPF Package from CCP Records.

4.8.3 Obtain copies of the subject CISs for each of the waste stream lots associated with the subject waste stream from CCP Records.

4.8.4 Obtain a complete copy of the AK Summary for the subject waste stream from CCP Records.

4.8.5 Obtain copies of the BDRs as requested by DOE CBFO from CCP Records.

4.8.6 Obtain copies of other data requested by DOE CBFO from CCP Records.

4.8.7 Assemble the information, **AND** transmit to DOE CBFO.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as quality assurance (QA) Records in accordance with CCP-QP-008. The records are the following:

<u>QA/Lifetime</u>

[A] Characterization Information Summary with attached interoffice memorandum

[A.1] Attachment 1 – CCP Reconciliation with Data Quality Objective

[A.2] Attachment 3 – CCP Characterization Information Summary Cover Page

[A.3] Attachment 4 – CCP Correlation of Container Identification Number to Batch Data Report Numbers

[A.4] Attachment 5 – CCP RTR/VE Summary of Prohibited Items

[B] Waste Stream Profile Form Package

[B.1] Attachment 2 – CCP Waste Stream Profile Form – includes Interoffice Memorandum of Submittal from the SPM

[B.2] CIS for the lot addressing the applicable analysis data

[B.3] Summation of Aspects of the AK Summary, if applicable

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Attachment 1 – CCP Reconciliation with Data Quality Objective (Example)

Sampling Completeness

RTR:
Number of valid samples: _____Number of total samples analyzed: _____
Percent Complete: _____(QAO is 100%)

NDA:
Number of valid samples: _____Number of total samples analyzed: _____
Percent Complete: _____(QAO is 100%)

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Attachment 1 – CCP Reconciliation with Data Quality Objective (Example) (Continued)

Waste Stream#: _____ Lot #: _____

	Y/N/NA	Reconciliation Parameter			
1.		Waste Matrix Code.			
2.		Waste Material Parameter Weights.			
3.		The transuranic (TRU) activity reported in the BDRs for each container demonstrates with a 95 percent probability that the container of waste contains TRU radioactive waste.			
4.		AK Sufficiency. Is there an approved AK sufficiency Determination for this waste stream?			
5.		The data demonstrates whether the waste stream exhibits a toxicity characteristic under Title 40 *Code of Federal Regulations* (CFR), Part 261, *Identification and Listing of Hazardous Waste,* Subpart C, *Characteristics of Hazardous Waste*.			
6.		Does the waste stream contain listed waste found in 20.4.1.200 NMAC incorporating 40 CFR Part 261, Subpart D, *Lists of Hazardous Wastes*?			
7.		Waste stream can be classified as hazardous or nonhazardous.			
8.		The overall completeness, comparability, and representativeness quality assurance objectives (QAOs) were met for each of the testing procedures as specified in CCP-PO-001Sections C3-1 through C3-2 prior to submittal of a WSPF for a waste steam or waste stream lot.			
			Completeness	**Comparability**	**Representativeness**
		Radiography			
		VE			
Comments					

SPM Printed Name _____ Signature _____ Date _____

Attachment 1 – CCP Reconciliation with Data Quality Objective (Example) (Continued)

Instructions for completing form:

Prior to completing Blocks 1 through 13, the SPM or Designee shall complete the Sampling Completeness portion of Attachment 1.

For each waste container and process, verify that:

- The waste container, by serial number, is included in the BDR shown for each characterization methodology listed in Attachment 4, CCP Correlation of Container Identification Numbers to Batch Data Report Number.
- The BDR has gone through project level validation and verification and has received SPM approval.
- The waste container was not removed from the BDR via NCR.

This information is recorded on Attachment 1 under the Sampling Completeness.

This process confirms that the samples are valid and that there is analysis data in the BDRs to support the determination, by the SPM, of program-required waste parameters for the total number of samples collected.

1. Waste Matrix Code. Is the waste matrix code assigned to the waste stream in the AK Summary Report supported by the radiography and/or VE testing BDRs?

2. Waste Material Parameter Weights. Are the waste material parameters listed in the AK Summary reported in kilograms for each of the waste material parameters identified in the waste stream?

3. TRU Radioactive Waste. Does the TRU activity reported in the BDR for each container demonstrate compliance with CCP-PO-002, *CCP Transuranic Waste Certification Plan*?

4. AK Sufficiency Determinations requested for the waste stream? If the answer is Yes, record request in comments field and document the use of the AK Sufficiency Determination as objective evidence for answering Yes to other DQOs.

5. Toxicity Characteristic. Does the waste exhibit a toxicity characteristic under 40 CFR Part 261, Subpart C?

6. Listed Waste. Does the waste stream contain listed waste found in 20.4.1.200 NMAC incorporating 40 CFR Part 261, Subpart D?

7. Hazardous Waste Determination. Can the waste stream be classified as hazardous or nonhazardous?

Attachment 1 – CCP Reconciliation with Data Quality Objective (Example) (Continued)

8. Completeness, Comparability, and Representativeness. Have the overall completeness, comparability, and representativeness quality assurance objective (QAOs) for each of the testing, processes been met for the waste stream or waste stream lot by answering each of the following questions:

- Completeness:
  - RTR: Is there an audio/videotape (or equivalent media) of the radiography examination and a validated radiography data form for 100 percent of the containers subject to radiography?
  - VE: A validated VE data form will be obtained for 100 percent of the waste containers subject to VE.
- Comparability: RTR and VE:
  - Was the correct approved version of the procedure used by qualified operators to acquire, verify, and validate the data?
- Representativeness: Was the correct approved version of the procedure used to control:
  - RTR: Viewing test image, resolving discrepancies between two operators
  - VE: Reconciling any discrepancies between the operator and the Independent Technical Reviewer

Attachment 2 – CCP Waste Stream Profile Form (Example)

(1) Waste Stream Profile Number:						
(2) Generator site name:					(3) Generator site EPA ID:	
(4) Technical contact:					(5) Technical contact phone number:	
(6) Date of audit report approval by New Mexico Environment Department (NMED):						
(7) Title, version number, and date of documents used for WIPP-WAP Certification:						
(8) Did your facility generate this waste?	YES		NO			
(9) If no, provide the name and EPA ID of the original generator:						
Waste Stream Information						
(10) WIPP ID:					(11) Summary Category Group:	
(12) Waste Matrix Code Group:					(13) Waste Stream Name:	
(14) Description from the ATWIR:						
(15) Defense TRU Waste:	YES		NO			
(16) Check One:	CH		RH			
(17) Number of SWBs (17a) Number of SLB2	(18) Number of Drums				(19) Number of Canisters	
(20) Batch Data Report numbers supporting this waste stream characterization:						
(21) List applicable EPA Hazardous Waste Numbers:						
(22) Applicable TRUCON Content Numbers:						
(23)**Acceptable Knowledge Information**						
(For the following, enter the supporting documentation used [i.e., references and dates])						
Required Program Information						
(23A) Map of site:						
(23B) Facility mission description:						
(23C) Description of operations that generate waste:						
(23D) Waste identification/categorization schemes:						
(23E) Types and quantities of waste generated:						
(23F) Correlation of waste streams generated from the same building and process, as applicable:						
(24) Waste certification procedures:						
(25) Required Waste Stream Information						
(25A) Area(s) and building(s) from which the waste stream was generated:						
(25B) Waste stream volume and time period of generation:						
(25C) Waste generating process description for each building:						
(25D) Waste Process flow diagrams:						
(25E) Material inputs or other information identifying chemical/radionuclide content and physical waste form:						
(25F) Waste Material Parameter Weight Estimates per unit of waste						
(26) Which Defense Activity generated the waste:						
	Weapons activities including defense inertial confinement fusion				Naval Reactors development	
	Verification and control technology				Defense research and development	
	Defense nuclear waste and material by products management				Defense nuclear material production	
	Defense nuclear waste and materials security and safeguards and security investigations					

Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

(27) Supplemental Documentation:	
(27A) Process design documents:	
(27B) Standard operating procedures:	
(27C) Safety Analysis Reports:	
(27D) Waste packaging logs:	
(27E) Test plans/research project reports:	
(27F) Site databases:	
(27G) Information from site personnel:	
(27H) Standard industry documents:	
(27I) Previous analytical data:	
(27J) Material safety data sheets:	
(27K) Sampling and analysis data from comparable/surrogate Waste:	
(27L) Laboratory notebooks:	
Confirmation Information	
For the following, when applicable, enter procedure title(s), number(s) and date(s)	
(28)	Radiography:
	Visual Examination:
(29) Comments: For a list of the waste characterization procedures used and date of respective procedures see the list of procedures on the attached CIS.	

Reviewed by AK Expert: **YES** ☐ **Date:**_____

Reviewed by STR (if necessary): **YES** ☐ **N/A** ☐ **Date:**_____

Waste Stream Profile Form Certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature of Site Project Manager	Printed Name	Date

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

CCP WASTE STREAM PROFILE PACKAGE

A WSPF Package should be completed as early as possible (once sufficient data has been obtained [e.g., at least one lot]) and submitted to DOE CBFO for approval.

The SPM, in completing the WSPF, should seek the assistance and participation of the AKE in the preparation of the form and attachments.

The WSPF package submitted to DOE CBFO for approval contains three parts. The first part is the WSPF itself. The second part is the CIS Report for the waste stream or waste stream lot used to support the WSPF. The last part is the *Summation of Aspects of the AK Summary Report*, to support the WSPF. The completion of the first and third parts of the package is addressed in these instructions. Completion of the CIS is addressed in CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data*, and associated forms.

Instructions for completing the Waste Steam Profile Form:

Obtain an approved copy of the current WSPF Package from CCP Records; for new WSPFs, it will be blank.

Line numbers indicated below refer to the number in the parenthesis on the CCP WSPF.

The brackets [ ] indicate the primary source of the information requested if not otherwise referred to within the instruction.

Line 1:

Assign a site-specific waste stream profile number to each form generated. The number should normally coincide, to the extent possible, as it appears on the title page of the AK Summary Report. The SPM is responsible for selecting the number after referring to the AK Summary Report. The number should start with the applicable two-digit site designator. The number should be limited to 20 alpha-numeric characters maximum. Indicate waste stream lots with a period and sequentially numbered digits added to the waste stream profile number.

Line 2:

Enter the name of the site where the waste is currently stored. [AK Summary Report]

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

Line 3:

Enter the EPA Identification (ID) Number of the site listed in Line 2. The ID number, if not included in the AK Summary Report, can be obtained from the EPA Regional office in which the site is located. The AKE should assist in the acquisition of this information.

Line 4:

Enter the name of the technical contact for this site. This is the individual to be contacted if there are questions concerning the data reported on the form, usually the SPM.

Line 5:

Provide the telephone number of the person identified in Line 4.

Line 6:

Enter the date of the most recently approved audit report approval by NMED. If the site has been audited but an audit report has not yet been approved by DOE CBFO, contact the CCP Project Manager. If DOE CBFO has approved the audit report and is awaiting approval by New Mexico Environmental Department (NMED), submit the WSPF package to DOE CBFO for distribution to the Waste Isolation Pilot Plant (WIPP) Review Team.

Line 7:

List the site-specific waste program documents (such as CCP-PO-001, the CCP-PO-003, Interface, etc.) listing the current revision.

Line 8:

Check the appropriate box. [AK Summary Report]

Line 9:

If the site where the waste is currently stored is not the site where the waste was generated, then provide the name and EPA identification number of the site where the waste was generated. [The AK Summary Report should provide the information as to where the waste was generated. The ID number, if not included in the AK Summary Report, can be obtained from the EPA Regional Office in which the site is located. The AKE should assist in the acquisition of this information.]

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

If the waste was generated at the site where it is currently stored, place an N/A in this box.

Line 10:

Enter the WIPP identification number from the current revision of the Annual Transuranic Waste Inventory Report (ATWIR) that best describes the waste stream being certified. CCP may split or combine ATWIR waste streams for the purposes of defining waste sampling populations. If CCP has split or combined ATWIR waste streams, all contributing ATWIR waste streams listed on the WSPF should also be indicated on the Summation of Aspects of AK Summary Report.

If there is no corresponding WIPP ID number listed in the ATWIR or if the ATWIR information is in error or no longer applies, enter None Available. If there is no corresponding WIPP ID number listed in the ATWIR, contact the AKE for assistance. (A copy of the ATWIR may be found in the WIPP Technical Library in the Skeen Whitlock Building.)

Line 11:

Enter the Summary Category Group identified in the AK Summary Report as representing this waste stream.

Line 12:

Enter the Waste Matrix Code (WMC) Group identified in the AK Summary Report as representing this waste stream. Use only WMC Groups identified in the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan* (WIPP-WAP).

Line 13:

Enter the name of the waste stream from the AK Summary Report.

Line 14:

Enter the waste stream description from the ATWIR (preferred) or AK Summary Report.

Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

Line 15:

Check the appropriate box. [AK Summary Report]

If the answer to this question is NO, stop work and notify the CCP Program Manager immediately. This waste can not be disposed of at the WIPP Site.

Line 16:

Check the appropriate box.

CH=contact-handled TRU waste
RH=remote-handled TRU waste

[AK Summary Report for the waste stream identified above.]

Line 17:

Enter the number of standard waste boxes in this waste stream (current and projected). [AK Summary Report] If there are no standard waste boxes in the waste stream, N/A should be entered.

Line 17a:

Enter the number of standard large box 2s (SLB2s) in this waste stream (current and projected). [AK Summary Report] If there are no SLB2s in the waste stream, N/A should be entered.

Line 18:

Enter the total number of drums in the waste stream (current and projected). Enter the number of Ten-Drum Overpacks (TDOPs), 85-gallon drums and 100-gallon drums if applicable (current and projected). [AK Summary Report]

If there are no drums (e.g., only SWBs, SLB2s, or Canisters) in the waste stream, N/A should be entered.

Line 19:

Enter the number of canisters in this waste stream (current and projected). [AK Summary Report]

If there are no canisters in the waste stream, N/A should be entered.

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

Line 20:

List the TRU Waste BDR numbers used to support the completion of this WSPF. This list shall include every container and the associated BDRs from each process in the waste stream OR every container in the waste stream lot and the associated BDRs from each process used in that characterization (for example NDA, RTR, HSG, VE, etc). Reference may be made to the CIS (Attachment 3 and contents) (The CIS for the waste stream, or waste stream lot associated with the WSPF, is submitted as part of the WSPF package to DOE CBFO for approval).

Line 21:

List each EPA HWN that is present in the waste stream. Each EPA HWN must be listed in the WIPP Hazardous Waste Facility Permit, Attachment C, Table C-9, Hazardous Waste Permit Application, Part A. Each EPA HWN must be justified in the Waste stream specific AK Summary Report. The AKE should assist in this determination.

Line 22:

Enter all of the TRUCON Content Numbers, from the current revision of the content codes document applicable to this waste stream. [AK Summary Report]

Line 23: A-F

Reference all of the appropriate sections, figures, or pages in the current revision of the AK Summary Document (including the document title, number, revision number, and effective date) for this waste stream where the listed information can be found in the AK document.

Line 24:

List all of the waste stream certification procedures applicable to this waste stream. Include procedure numbers, revision numbers, titles, and effective date. This list should contain all revisions of a document that were used during the characterization of the waste. References may be made to the CIS, Attachment 3.

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

Line 25 A-F:

Reference all of the appropriate sections, figures, or pages in the current revision of the AK Summary Document (including the document title, number, revision number, and effective date) for this waste stream where information listed can be found in the AK document.

Line 26:

Check all that apply that describes the defense activities that generated the waste.
[AK Summary Report]

Line 27 A-L:

Sites must provide the appropriate references to the site-specific documents that contain documentation that is used to support the use of AK for TRU waste characterization. Items in this section must be given the same level of consideration as the items in the Required Program Information and Required Waste Stream Information sections. This information may either be inserted into the block or referenced as listed on a continuation sheet. The AKE should provide appropriate lists of documents for use in completing Line 27. Only those documents referenced in the AK Source Documents List in the Summation of Aspects should be included in these lists.

Using information from the AK Record or from a document that is traceable to the AK record, provide a reference for the following parameters:

(A) Process design document (e.g., Title II Design).

(B) Standard operating procedures, including procedure date and reference number, that may include a list of raw materials or reagents, a description of the process or experiment generating the waste, and a description of the process or experiment generating the waste, and a description of waste generated and how the wastes are managed at the point of generation.

(C) Preliminary and final safety analysis reports and technical safety requirements.

(D) Waste packaging records.

(E) Test plans or research project reports that describe reagents and other raw materials used in experiments.

(F) Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements).

(G) Information from site personnel (e.g., documented interviews).

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

(H) Standard industry documents (e.g., vendor information).

(I) Analytical data relevant to the waste stream, including results from fingerprint analyses, spot checks, routine verification sampling, or other processes that collect information pertinent to the waste stream. This may also include new information acquired apart from the confirmatory process, which supplements required information (e.g., visual examination not performed in compliance with the WIPP-WAP, radiography screening for prohibited items).

(J) MSDSs, product labels, or other product package information.

(K) Sampling and analysis data from comparable or surrogate waste streams (e.g., equivalent nonradioactive materials).

(L) Laboratory notebooks that detail the research processes and raw materials used in an experiment.

Line 28:

List the most current revisions of the approved applicable procedure(s) by the title, number, revision number, and effective date in the appropriate block.

Line 29:

For a list of the waste characterization procedures used and date of respective procedures, see the list of procedures on the attached CIS.

Instructions for completing the Summation of Aspects of the AK Summary Report:

This summation should be as succinct as possible and consistent with the AK Summary Report.

Example:

SUMMATION OF ASPECTS OF AK SUMMARY REPORT: WASTE STREAM NTXXXXXXX

Overview

The overview is an executive summary of the summation. It should contain general information about where the waste was generated, where it is stored, reference to the WSPF number and the AK Summary Report from which the information is compiled, etc. In addition, the overview should contain summary level information that the waste stream is derived from defense related activities.

Waste Stream Identification Summary

This section should contain, as a table, the information identified below, if applicable.

Waste Stream Name
Waste Stream Number

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

Dates of Waste Generation
Waste Stream Volume (current and projected by container)
Summary Category Group
Waste Matrix Code Group
Waste Matrix Code
TRUPACT-II Content code (TRUCON)
TRUPACT-III Content Code
ATWIR ID Number

Waste Stream Description and Physical Form

This section should contain information regarding what the waste consists of generally. For instance: the source of the waste - nonline laboratory trash that is heterogeneous debris and includes plastics, rubber, paper, glass, etc.

Point of Generation

Location

Specifically where the waste was generated:
Facility, description of the site, state, area designation, building number, production line, etc.

Area and/or Buildings of Generation

Short summary regarding the buildings or areas or productions lines, etc. that generated the waste.

Generating Processes

Description of Waste Generating Processes

This section should be a more detailed description of where and how the waste is generated. It can be building by building, process line by process line, or any other grouping that makes sense. These descriptions should be complete enough for understanding yet still striving for brevity.

Waste Stream Material and Chemical Inputs

A Table of Chemicals, for which an EPA HWN has been assigned. Include at least one identified use for each chemical.

Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

RCRA Determinations

Historical Waste Management

The Historical Waste Management section is used to explain site policies or previous RCRA designation of the waste and how CCP uses those determinations. Explanations of how the site physically managed the waste and discussion of waste tracking or other management programs are optional. Include a discussion of duplicated CBFO approved waste streams generated under other certified programs.

Hazardous Waste Determinations

The AKE should assist in the hazardous waste determination. Include discussions in appropriate section below for instances where EPA HWNs are added as a result of confirmation activities.

The following text should be used to begin the discussions of ignitable, corrosive, and reactive characteristics.

Ignitability, Corrosivity, Reactivity

The waste material in this waste stream does not meet the definition of ignitable, corrosive, and reactive as defined in 40 CFR 261.21.

The waste in this waste stream is not liquid and does not contain unreacted corrosive chemicals; therefore, it does not meet the definition of corrosivity found in 40 CFR 261.22.

The waste material in the waste stream does not meet the definition of reactivity in 40 CFR 261.23. The materials are stable and will not undergo violent chemical change without detonating. The materials will not react violently with water, form potentially explosive mixtures with water, nor generate toxic gases, vapors, or fumes when mixed with water. Include other text such as the absence of sulfides and cyanides as appropriate.

Provide adequate detail to describe the absence of ignitable, corrosive, or reactive waste in the waste stream. Ensure the discussion closes with a statement such as, “The containers in the waste stream will be evaluated in accordance with the WIPP-WAP using radiography (and/or VE) prior to shipment to ensure the waste is not ignitable, reactive, or corrosive.

Ignitable (D001) wastes are prohibited from disposal at WIPP. Any potential D001 wastes in the waste stream must be evaluated and a determination of whether or not to apply the D001 number must be made.

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

Special care must be taken to address items such as metal powders which are not normally thought of as ignitable.

Some chemicals, to which the D001 EPA HWN is applied, may be identified in the AK. The D001 number is applied due to ignitability. The SPM must be able to address the ignitability of these wastes and determine that the characteristic of ignitability does not apply.

If the SPM can not positively state at the conclusion of this section that "The waste number for ignitability (D001) does not apply to this waste stream," contact the CCP Project Manager.

Corrosive (D002) wastes are prohibited from disposal at WIPP. Any potential D002 wastes in the waste stream must be evaluated and a determination of whether or not to apply the D002 number must be made.

If the SPM can not positively state at the conclusion of this section that "The waste number for Corrosivity (D002) does not apply to this waste stream," contact the CCP Project Manager.

Reactive (D003) wastes are prohibited from disposal at WIPP. Any potential D003 wastes in the waste stream must be evaluated and a determination of where or not to apply the D003 number must be made.

If the SPM can not positively state at the conclusion of this section that "The waste number for Reactivity (D003) does not apply to this waste stream," contact the CCP Project Manager.

Toxicity Characteristic

Determine if the waste in this waste stream meets the definition of toxicity as defined in 40 CFR 261.24. For each chemical listed in CFR 261.24, determine if the EPA HWN should be applied to the waste stream.

If it is not possible to identify a specific source of the chemical, but the determination is made to apply the number, state that the number is being applied based on the information available.

Listed Waste

F-Listed Waste

Determine if the waste in this waste stream meets the requirements for listing as an F-Listed (Hazardous Waste from Non-Specific Sources) as defined in 40 CFR 261.31. For each chemical listed in CFR 261.31, determine if the EPA HWN should be applied to the waste stream.

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Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

If it is not possible to identify a specific reason to apply the number for a chemical, but never the less the determination is made to apply the number, state that the number is being applied based on the information available.

K-Listed Waste

K-Listed wastes (Hazardous Waste from Specific Sources) are unlikely in waste to be shipped to WIPP. If K wastes are included, document as below for P- and U-Listed wastes.

P- and U-Listed Wastes

P- and U-Listed wastes are lists of chemicals that if present in the waste as pure un-used commercial chemical products would require the application of the EPA HWN.

Determine if the waste in this waste stream meets the requirements for listing as a P- or U-Listed as defined in 40 CFR 261.33. For each chemical listed in CFR 261.33, determine if the EPA HWN should be applied to the waste stream.

If it is not possible to identify a specific reason to apply the number for a chemical, but never the less the determination is made to apply the number, state that the number is being applied based on the information available.

Hydrofluoric acid (U134) and Beryllium (P015) are of special interest and must be addressed in every WSPF.

Polychlorinated Biphenyls

Evaluate the presence of Polychlorinated Biphenyls (PCBs) in the waste.

Prohibited Items

Include the appropriate prohibited items discussion from the AK Summary Report including a discussion as to how the prohibited items will be identified and remediated prior to shipment (such as radiography or VE).

Method for Determining Waste Material Parameter Weights per Unit of Waste

Describe the method used for determining waste material parameter weight estimates per unit of waste and include the WMP estimates table.

List of Any AK Sufficiency Determinations Requested for the Waste Stream

List applicable AK sufficiency determinations.

Attachment 2 – CCP Waste Stream Profile Form (Example) (Continued)

Transportation

Briefly discuss DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria For The Waste Isolation Pilot Plant* (WIPP-WAC) transportation requirements as they pertain to identified TRUCON codes as dictated by the waste stream.

Beryllium

Address the WIPP-WAC requirements for beryllium.

Radionuclide Information

Present the two most prevalent isotopes expected from the waste stream (CH only). Insert radionuclide table from the AK Summary Report.

Include a brief discussion on payload management per the WIPP-WAC, Appendix E.

Source Documents

Insert reference list from AK Summary Report.

Revision to the Waste Stream Profile Form Package

If a revision to the WSPF Package is needed, a revised WSPF is created. Reasons for revising the WSPF Package include:

- Addition of EPA HWNs
- Application of additional TRUCON Content codes
- Addition of material parameter weight estimates per unit of waste

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Attachment 3 – CCP Characterization Information Summary Cover Page (Example)

Waste Stream: #: _____ Lot #: _____

AK Expert Review: _____ Date: _____

SPM Review: _____ Date: _____

SPM signature certifies that through Acceptable Knowledge testing and/or analysis that the waste identified in this summary is not corrosive, ignitable, reactive, or incompatible with the TSDF.

A summary of the Acceptable Knowledge regarding this waste stream containing specific information about the corrosivity, reactivity, and ignitability of the waste stream is included as an attachment to the Waste Stream Profile Form. By reference, that information is included in this lot.

List of procedures used:

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Attachment 4 – CCP Correlation of Container Identification Number to Batch Data Report Numbers (Example)

Waste Stream #: ______________________________ Lot #: __________

Container ID Number	NDA BDR	RTR BDR	VE BDR	Payload Management/ Overpack Yes

Signature of Site Project Manager Printed Name Date

Attachment 5 – CCP RTR/VE Summary of Prohibited Items (Example)

CCP RTR/VE Summary of Prohibited Items

Waste Stream Number: _____ Lot(s)#: _____

Container Number	RTR Prohibited Items [a,b]	Visual Examination Prohibited Items [a,b]	Does the Physical Form of the Waste Match the Waste Stream Description as Determined by AK
a. See Batch Data Reports b. If AK has assigned U134 to this waste stream, then any liquids in these containers are prohibited items (not acceptable by the TSDF)			
Justification for the selection of RTR and/or VE:			

Site Project Manager Signature Printed Name Date

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CCP-TP-005

Revision 26

CCP
Acceptable Knowledge Documentation

EFFECTIVE DATE: 08/12/2013

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
4	01/17/2002	Revised to delete the requirement for signing the AK Summary and other minor changes. Added cis & trans-1,2-Dichloroethylene, Attachment 5.
5	01/24/2002	Minor change to Attachment 14 due to the following: Signature lines were struck and approved by all levels of review in previous revision. When preparing document to be issued signature lines were inadvertently left in and must now be removed. Printed name and "approved for use" are being inserted to reflect the CCP Procedure format.
6	07/23/2002	Revised document to: • Comments based on CH-WAC revision • Accommodate comments from an assessment at SRS Document Review Record for Technical and Quality Assurance • Comments from a Program Evaluation at ANL-E
7	09/06/2002	Revised document to: • Minor editorial changes to 2.1, 4.2, 4.3, and 4.4 Changes to 4.4.17 to comply with WAP requirements and Program Evaluation Changes to 4.4.26 to comply with Program Evaluations for NTS.
8	09/19/2002	Revised document based on comments from the ANLE Certification Audit and a CBFO Adequacy Review; revised Sections 3.1, 4.2, 4.3, 4.4, 4.5 and Attachments 7, 10, and 11.
9	09/26/2002	Revised document based on comments from the NTS Certification Audit; revised Sections 4.3, 4.4, 4.5, and 4.6.
10	10/24/2002	Revised step 3.2.13; added Section 3.6 and steps 4.7.18 and 4.7.19; and revised Attachment 10 based on comments from the SRS Recertification Audit.
11	02/05/2003	Revised document to address CAR #02-087 and CAR # 02-088 from the ANL-E Certification Audit. Revised steps 4.4.1 and added NOTE. Revised steps 4.4.17, 4.4.20, 4.4.24, 4.4.26, and 4.5.1 [D.2]

RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
12	03/26/2003	Revised step 4.4.8 and preceding NOTE.
13	11/18/2003	Revised document to: - Perform minor editorial changes throughout document. Clarify that Attachments are example forms. Remove Attachments 11 and 12 to create electronically fillable forms of these attachments. Add Section 3.7 to include responsibility of Nondestructive Assay (NDA) Subject Matter Expert (SME) to perform assessment with the Acceptable Knowledge Expert. Update steps 4.4.17 and 4.4.18 to require that the uses and limitations of the radionuclide Acceptable Knowledge information is reviewed by the NDA SME. Add Section 4.9 to address CAR-SRS-006-03 for the process used to document the addition of containers to existing waste streams. Added a new Section 4.3.3 identifying the use of Memorandum to CCP Central Records. Added a new Section 4.6.3 to incorporate preparation of a letter/memorandum to Site Project Manager summarizing AK information; revision of Sections 4.6.4 and 5.1.1[J] to incorporate the addition of 4.6.3. Deleted Section 4.1.3 Process Equipment Description from the AK Summary Report Content Guide. - Modified Attachment 5.
14	11/19/2004	Revised document to: - Perform minor editorial changes and technical clarifications throughout document. - Revised procedure to address WIPP WAC Revision 1 and 2 changes relating to beryllium, payload container management, high plutonium content waste/material, and PCB requirements (Sections 1.0 and 4.4.24). - Revised Section 4.8.1 to allow for resolution of discrepancies within the AK Summary Report. - Deleted redundant records management requirement to attach copies of the AK Source Document Discrepancy reports to all affected sources. - Deleted step 4.4.8[B].

RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
15	03/31/2005	Revised document to incorporate WIPP WAP AK requirements for LANL sealed sources. Addressed CBFO comments.
16	02/27/2006	Revised document to: Incorporate minor editorial changes and technical clarifications throughout the document. Add Sections 4.10 and 4.11 to address creation and maintenance of the Container Tracking Spreadsheet on the FTP (CAR-INL-0003-05). Replace revised Attachments 5 and 10 based on recent audit discussions.
17	06/05/2006	Revised to allow the use of attachments to this procedure during the management of Remote-Handled (RH) Acceptable Knowledge (AK) in accordance with DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* (WCPIP). Revised Attachment 6, Waste Form, Waste Material Parameters, Prohibited Items, and Packaging – Example Form per Los Alamos National Laboratory (LANL) Certification Audit A-06-11.
18	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR). Addressed Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
19	07/06/2010	Revised document to address the Waste Isolation Pilot Plant (WIPP) Form WF09-171 from an internal Central Characterization Project (CCP) audit and to incorporate minor editorial changes and technical clarifications noted as a result of various Acceptable Knowledge audits.
20	11/01/2010	Revised to allow new and updated attachments and source documents to be submitted anytime after the initial submittal.
21	12/29/2010	Revised to implement the revision of the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*.
22	04/21/2011	Revised to address changes in Revision 2 of the *Remote-Handled Tru Waste Characterization Program Implementation Plan* (WCPIP). Incorporated editorial changes and technical clarifications throughout procedure.
23	06/30/2011	Revised to clarify what constitutes a record as part of the resolution to resolve CBFO CAR11-043.

RECORD OF REVISION (Continued)

Revision Number	Date Approved	Description of Revision
24	11/28/2011	Revised to address comments from inspectors during U.S. Environmental Protection Agency (EPA) Baseline Inspection EPA-SNL-CCP-RH-06.11-8 (June 6/8, 2011). Also revised to incorporated lessons learned from Carlsbad Field Office (CBFO) records surveillance.
25	06/19/2013	Revised to incorporate Nuclear Waste Partnership (NWP) transition changes and to implement the Permit Modification Request Class 2 approved by New Mexico Environment Department (NMED) dated March 13, 2013.
26	08/12/2013	To clarify the evaluation of nondestructive assay (NDA) results by the site project manager (SPM) and acceptable knowledge expert (AKE). Also, to incorporate changes as a result of CAR-LANL-0003-13.

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1.0 PURPOSE

The *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan* (WIPP-WAP), authorizes the use of acceptable knowledge (AK) in appropriate circumstances to delineate waste streams and to characterize hazardous waste. WIPP WAP AK requirements are addressed in CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*, and implemented through this procedure. DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WIPP-WAC), AK requirements are addressed in CCP-PO-002, *CCP Transuranic Waste Certification Plan*. Additionally, implementation of this procedure will generate information required by CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control* (*CCP CH-TRAMPAC*) and CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control* (*CCP RH-TRAMPAC*). This procedure applies to Central Characterization Program (CCP) personnel who perform AK activities for retrievably stored and newly generated transuranic (TRU) waste streams that may be eligible for disposal at Waste Isolation Pilot Plant (WIPP).

1.1 Scope

This procedure describes the processes the CCP uses to compile, review, evaluate, update, and report AK documentation. The procedure also describes how the CCP determines AK Sufficiency, AK accuracy; re-evaluates AK documentation when necessary; resolves AK documentation discrepancies, and uses AK to delineate waste streams and determine whether the waste is hazardous. A waste stream is defined as waste materials that have common physical form, that contain similar hazardous constituents (similar radiological properties for DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* [WCPIP] compliance), and that are generated from a single process or activity.

Only CCP personnel trained in accordance with CCP-QP-002, *CCP Training and Qualification Plan,* will compile, evaluate, and document AK information in accordance with this procedure. Sites hosting the CCP may assist CCP personnel in the collection of AK information; however, this procedure will be used by the CCP to generate the required AK in accordance with CCP-PO-001, CCP-PO-002, CCP-PO-003, and CCP-PO-505.

AK includes any documentation that describes or verifies site history, mission, and operations, in addition to waste stream-specific information used to define the generating process, waste matrix, waste quantities and contaminants (radiological and chemical).

The information acquired in the performance of this procedure is used to prepare an AK Summary Report or an AK Sufficiency Determination.

This information is provided in the following attachments:

- Attachment 1 – Acceptable Knowledge Documentation Checklist – Example Form
- Attachment 2 – Record of Communication – Example Form
- Attachment 3 – Acceptable Knowledge Source Document Summary – Example Form
- Attachment 4 – Acceptable Knowledge Information List – Example Form
- Attachment 5 – Hazardous Constituents – Example Form
- Attachment 6 – Waste Form, Waste Material Parameters, Prohibited Items, and Packaging
- Attachment 7 – Radionuclides – Example Form (CH only)
- Attachment 8 – Waste Containers List – Example Form
- Attachment 9 – Attachment 9 is no longer required and Attachment number is reserved for future use.
- Attachment 10 – Acceptable Knowledge Re-evaluation Checklist – Example Form
- Attachment 11 – Acceptable Knowledge Source Document Discrepancy Resolution – Example Form
- Attachment 12 – Example Form and Content Guide for AK Summary Reports
- Attachment 13 – CCP Waste Stream Characterization Checklist – Example Form
- Attachment 14 – CCP Acceptable Knowledge Accuracy Report – Example Form
- Attachment 15 – CCP TRU Waste Correlation and Surrogate Summary Form – Example Form

The attached forms are provided as examples for the required AK information to be prepared for CCP Records. The forms identify the minimum information that will be prepared to document the AK collection and review process described in this procedure. Attachment 4, Acceptable Knowledge Information List – Example Form, lists all of the information that was collected and considered during the preparation of an AK Summary Report. Only those sources of information that are referenced in the AK Summary Report are considered source documents and submitted to CCP Records.

Remote-Handled (RH) TRU AK management will be performed in accordance with WCPIP to address U.S. Environmental Protection Agency (EPA) requirements; and CCP-PO-001 to address WIPP-WAP requirements. The attachments for AK management in this procedure were reviewed and determined to meet or exceed the information requirements described for AK management in the WCPIP, and will be used, as appropriate, during the compilation, review, evaluation, and reporting associated with RH AK information.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- DOE/WIPP 89-004, *TRUPACT-II Content Codes* (TRUCON)

Referenced Documents

- DOE/LLW-217, *DOE Waste Treatability Group Guidance. Idaho Falls*, Idaho, INEL-Lockheed Idaho Technologies
- DOE/TRU-12-3425, *Annual Transuranic Waste Inventory Report – 2012,* (or current revision), Carlsbad, New Mexico, U.S. DOE Carlsbad Field Office
- DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria For the Waste Isolation Pilot Plant*
- DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
- 20 NMAC 4.1, New Mexico Administrative Code
- 40 CFR Part 261, *Identification and Listing of Hazardous Waste*
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control* (*CCP CH-TRAMPAC*)
- CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control* (*CCP RH-TRAMPAC*)
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*
- CCP-QP-010, *CCP Document Preparation, Approval, and Control*
- CCP-QP-029, *CCP Corrective Action Management*

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- CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data*
- CCP-TP-069, *CCP Sealed Source Visual Examination and Packaging*
- CCP-TP-101, *CCP Off-Site Source Recovery Project Sealed Source Radiological Characterization*
- 42 U.S.C. 10101, *Nuclear Waste Policy Act of 1982*, U.S. Congress
- 40 CFR part 761*, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions,* U.S. EPA

2.2 Training Requirements

2.2.1 All personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, prior to performing this procedure.

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3.0 RESPONSIBILITIES

3.1 Site Project Manager (SPM)

3.1.1 Ensures that trained AK Experts (AKE) are available to implement this procedure in coordination with the Host site.

3.1.2 Approves, resolves, and requests re-evaluation of AK as necessary.

3.1.3 Makes final waste stream determinations, EPA Hazardous Waste Number assignments, and compares, confirms, and approves the AK documentation.

3.1.4 Prepares the AK Accuracy Report.

3.1.5 Confirms the chemical compatibility to the assigned TRUCON code and reviews the characterization data for each waste stream.

3.2 CCP Inventory and AK Support Manager

3.2.1 Manage and direct AKEs to ensure qualified individuals are performing tasks specified.

3.2.2 Coordinate between AKE and SPM for development of AK Summary Reports and Waste Stream Profile Forms.

3.2.3 Provide site-by-site tracking of AK development to allocate AK resources as needed.

3.3 AK Expert (AKE)

3.3.1 Identifies, locates, compiles, documents, summarizes, and evaluates required AK information.

3.3.2 Delineates waste streams and assigns waste stream numbers.

3.3.3 Recommends hazardous waste determinations to the SPM.

3.3.4 Prepares and revises AK Summary Reports.

3.3.5 Collects, reviews, prepares, and submits source documents as necessary.

3.3.6 Prepares and revises the AK Sufficiency Determination Request.

3.3.7 Documents and resolves discrepancies with AK information.

3.3.8 Records meetings, telecommunications, interviews and other communications.

3.3.9 Completes and maintains document summaries and information lists.

3.3.10 Reviews and verifies AK information.

3.3.11 Develops waste stream descriptions.

3.3.12 Assigns Summary Category Groups and Waste Matrix Codes, and estimates waste material parameter (WMP) weights.

3.3.13 Prepares auditable file of AK information.

3.3.14 Re-evaluates and updates AK as needed.

3.3.15 Reviews and concurs on the Waste Stream Profile Form (WSPF).

3.3.16 Supports the development of the AK qualification method(s) and compliance with the applicable Data Quality Objectives (DQOs) for RH wastes streams in accordance with the WCPIP.

3.4 Off-Site Source Recovery (OSR) Program

3.4.1 For Los Alamos National Laboratory (LANL) sealed sources, assists the AKE in preparing the Nondestructive Assay (NDA) Memorandum discussed in step 4.4.24.

3.5 Nondestructive Assay (NDA) Expert Analyst (EA)

3.5.1 Performs the assessment for the NDA Memorandum discussed in step 4.4.24 with the AKE.

4.0 PROCEDURE

NOTE

The data collection, documentation, and AK preparation steps can be performed in any sequence as long as the AK data collection requirements found in CCP-PO-001 are met.

NOTE

The attached forms referenced in this section are provided as examples for the required AK information to be prepared for CCP Records. The forms identify the minimum information that will be prepared to document the AK collection and review process described in this procedure. All attachments submitted must contain a header with the procedure number, revision number, procedure title, effective date, and page number as displayed in the Example Attachments. Attachments must also contain the Attachment number and title immediately following the header, as shown on the Example Attachments.

4.1 AK Documentation Management

AKE

4.1.1 As they are collected, maintain the compiled AK documents with reasonable care (protection from damage or loss).

4.1.2 Assign a unique tracking number to each document collected as AK information using the Acceptable Knowledge Information List (see Attachment 4 for an example), for each waste stream. Describe the specific convention used to assign the unique identifiers to the source documents in the AK Summary Report. Examples of source document categories are as follows:

(EXAMPLE)

C – Correspondence
D – Documents
M – Miscellaneous
P – Procedures and Published Documents
DR – Discrepancy Resolution
U – Unpublished Documents

4.2 Compiling AK Documentation

AKE

4.2.1 Locate and obtain source documents with assistance of the Host site for documents with reference sections, as applicable.

4.2.2 Compile (i.e., gather) source documents that identify TRU waste management program information in the Acceptable Knowledge Documentation Checklist , AK #s PR1-PR8 (see Attachment 1, Acceptable Knowledge Documentation Checklist - Example Form, for facilities that generated the waste stream.

NOTE

Information collected must be sufficient to accurately characterize the waste stream.

NOTE

Source documents may include published or unpublished documents, correspondence, databases, quality assurance (QA) protocols, operating procedures, work instructions, waste storage/disposal records, waste certification summaries, process flow diagrams, analytical and testing data packages from previous waste characterization activities, and other sources of information descriptive of elements on the Checklist.

4.2.3 Apply a unique waste stream number based on the information in DOE/TRU-12-3425, *Annual Transuranic Waste Inventory Report* (ATWIR), and/or information from the Host site for each waste stream (Refer to CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data*, for appropriate numbering format).

4.2.4 Compile and record source documents that identify TRU waste stream-specific information specified in the Acceptable Knowledge Documentation Checklist, AK #s WS1-WS12 for each waste stream.

4.2.5 Compile and record source documents that identify additional AK documentation specified in the Acceptable Knowledge Documentation Checklist, AK #s S1-S16.

[A] Obtain additional AK information as appropriate to augment required information and provide any other information obtained to further characterize the waste stream.

[B] All additional specific, relevant AK documentation assembled and used in the AK process, whether it supports or contradicts any required AK documentation, shall be identified and an explanation provided for its use (e.g., identification of a toxicity characteristic).

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[C] Additional documentation may be used to further document the rationale for the hazardous characterization results. If discrepancies exist between additional information and the required information, assess and evaluate the information to determine the appropriate hazardous waste numbers consistent with RCRA requirements. Document the resolution of RCRA hazardous waste number assignment discrepancies on an Acceptable Knowledge Source Document Discrepancy Resolution (see Attachment 11, Acceptable Knowledge Source Document Discrepancy Resolution - Example Form), or in the AK Summary Report.

4.2.6 For LANL sealed sources, compile source documents that identify OSR-specific documentation specified in the Acceptable Knowledge Documentation Checklist, AK #s O1-O16.

[A] If source markings are needed to support radiological characterization, the SPM must verify that they have been documented in accordance with CCP-TP-069, *CCP Sealed Source Visual Examination and Packaging.*

NOTE

For RH waste streams, the documentation collected and compiled in Sections 4.1 and 4.2 may not be sufficient to meet the DQOs established for the selected parameters in accordance with the WCPIP. If there is insufficient AK information to address each of the DQOs, then either additional AK will be collected and/or the characterization methods described in the WCPIP will be initiated. A combination of AK and other characterization methods may be used to meet the WCPIP DQO requirements.

4.2.7 For RH waste, review the documentation compiled and determine which of the WCPIP DQOs that can be met using the AK information collected.

4.2.8 Collect additional AK documentation and/or identify the characterization method(s) recommended to meet the DQO in accordance with the WCPIP (see step 4.4.33[O]).

4.3 Recording AK Documentation

AKE

NOTE

There are two categories of source documents used to document AK for a waste stream. Documentation generated by CCP and documents and/or other media supplied by the generator site. Generator site provided documents and/or other media are external records created by the waste generator sites and are identified in this procedure as "historical source documents."

4.3.1 Copy the document or the pertinent information from the document that defines source document contents, including cover sheets, executive summaries, introductions, and table of contents, if available **AND** maintain this information in the working files.

NOTE

Classified material CAN **NOT** be copied. If source documents are classified, an unclassified summary will need to be provided by the Host site or the document will be developed and summarized on an Acceptable Knowledge Source Document Summary (see Attachment 3, Acceptable Knowledge Source Document Summary - Example Form), by the AKE **AND** reviewed by the Site's Authorized Derivative Classifier for release.

4.3.2 Record meetings, telecommunications, interviews, and other communication on a Record of Communication (see Attachment 2, Record of Communication - Example Form), including a detailed summary of the content of the communication and data limitations.

NOTE

To avoid redundancy, a Record of Communication form may **NOT** be required if the information is already provided on an interview-related source document.

4.3.3 As necessary, prepare a memorandum or letter to CCP Records and Record of Communication, as appropriate, documenting the method used by the AKE to review AK sources for the purpose of evaluating required AK parameters such as radionuclides, Waste Matrix Codes, assignment of EPA Hazardous Waste Numbers, estimating waste material parameter weights, etc. The memorandum must identify the sources of AK used during the evaluation and clearly document the AKE assumptions and conclusions.

NOTE

Collection and review of AK source documents is an ongoing activity. It is conducted initially during the development of the AK Summary Report and continues as additional information becomes available during subsequent waste stream characterization and management activities. Completion of the Acceptable Knowledge Source Document Summary (see Attachment 3 for an example), for the source documents is an iterative process performed during these activities.

If the source document is a collection of information (i.e., container data sheets, material safety data sheets [MSDS] sheets, etc.) provide a description in the Title field of the Attachment 3 and ensure that it matches the Title field in the AK Source Document section of the AK Summary Report.

Information documents collected but not referenced in the AK Summary Report are not required to be summarized on an Attachment 3.

4.3.4 Initiate an Acceptable Knowledge Source Document Summary for each source document that includes detail sufficient to justify the use of the information. The Acceptable Knowledge Source Document Summary must be completed by the time the associated AK Summary Report is finalized for all AK source documents referenced within the report. Identify the specific waste stream or streams that correspond to the source document in the Waste Stream Number field on Attachment 3. If a comprehensive library is used for all streams at the site, note this in this field.

[A] Source documents referenced in the AK Summary Report and their applicable attachments must be submitted to CCP Records on or before the date of issuance of the AK Summary Report as final.

4.3.5 **IF** the summary consists of multiple pages,
THEN provide the unique source document tracking number on each page **AND** paginate the number of pages (e.g., 2 of 6 pages).

4.3.6 Print name, sign, and date the Acceptable Knowledge Source Document Summary before submitting to CCP Records.

4.3.7 For source documents that CAN **NOT** be reproduced or removed from the source (e.g., classified documents or databases), indicate on the Acceptable Knowledge Source Document Summary that a copy of the source document is **NOT** available, and state the reason.

4.3.8 Include a note on the limitations of the information (e.g., if a document covers a specific period of time) on the Acceptable Knowledge Source Document Summary.

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NOTE

Attachment 4 is a listing of relevant documents collected during the investigative process. Documents collected must be categorized in accordance with Step 4.1.2.

4.3.9 Create and maintain an Acceptable Knowledge Information List that includes the following:

- Site, waste stream number, and waste stream description
- Source document tracking number
- Source document title or description
- Name of author
- Original document number, or publisher's document number (if available)
- Revision number and document date (if applicable)

4.3.10 Print name, sign, and date the Acceptable Knowledge Information List before submitting to CCP Records.

4.4 Review and Submittal of AK Documentation

AKE

4.4.1 Evaluate the waste stream to verify that the waste materials do not meet the definition of spent nuclear fuel or high-level waste as defined in the in Section 10101(3) of the *Nuclear Waste Policy Act of 1982.*

4.4.2 Evaluate the waste stream to verify that the waste materials meet the definition of defense waste defined in CCP-PO-002.

NOTE

According to CCP-PO-002, a TRU waste is eligible for disposal at WIPP if it has been generated in whole or in part by one or more of the following functions:

- Naval reactors development
- Weapons activities including defense inertial confinement fusion
- Verification and control technology
- Defense nuclear materials production
- Defense nuclear waste and materials by-products management
- Defense nuclear materials security and safeguards and security investigations
- Defense research and development

4.4.3 **IF** there is no information linking the waste stream to defense related activities or commingled with defense materials, **OR** if the waste contains spent nuclear fuel or high-level waste,
THEN notify the SPM.

4.4.4 Document the defense determination, high-level waste and spent nuclear fuel assessments in the AK Summary Report.

4.4.5 Verify that 100 percent of the information specified in Acceptable Knowledge Documentation Checklist from AK #s PR1 through PR8 and WS1 through WS12 has been compiled.

4.4.6 **IF** 100 percent of this information is **NOT** available for a particular waste stream,
THEN notify the SPM that waste is **NOT** eligible for disposal at WIPP without the collection of additional information to augment the existing AK.

4.4.7 For LANL sealed sources waste containers, verify that the information on Acceptable Knowledge Documentation Checklist, AK #s O1-O16 has been compiled.

4.4.8 Review all AK information compiled in Section 4.2 of this procedure.

4.4.9 Document and resolve discrepancies regarding AK information among AK source documents as described in Section 4.9 of this procedure.

4.4.10 Print name, sign, and date the Acceptable Knowledge Documentation Checklist once the collection and review of the required AK information has been completed.

NOTE

A waste stream is defined as waste materials that have common physical form, that contain similar hazardous constituents (similar radiological properties for WCPIP compliance), and that are generated from a single process or activity. This definition will be used to obtain information for the waste stream specific description to be written in step 4.4.34.

4.4.11 Using the definition of a waste stream from above, the waste stream-specific documentation from the Acceptable Knowledge Documentation Checklist, and, if applicable, the description from the ATWIR, define the waste stream represented by the compiled AK information, **AND** provide this description in the AK Summary Report (see Attachment 12, Example Form and Content Guide for AK Summary Reports, for a format and content guide to be used when preparing the AK Summary Report). Provide a discussion to justify combining previously identified (i.e., ATWIR or site designations), TRU mixed waste and TRU non-mixed waste streams.

NOTE

A Waste Matrix Code will be assigned based on the physical form of the waste. DOE/LLW-217, *DOE Waste Treatability Group Guidance*, describes the convention for assignment of Waste Matrix Codes for low-level waste treatability groups, and can be used as the basis for the assignment of Waste Matrix Codes that bound the waste stream.

4.4.12 Assign and describe the Waste Matrix Code assigned to each waste stream identified.

NOTE

The Waste Matrix Code Groups identified in CCP-PO-001 are:

- Solidified inorganics
- Solidified organics
- Salt waste
- Soils
- Lead/cadmium metal
- Inorganic nonmetal waste
- Combustive waste
- Graphite
- Filters
- Heterogeneous debris waste
- Uncategorized metals

4.4.13 Assign the waste stream to the appropriate Waste Matrix Code Group.

4.4.14 Assign the waste stream to the appropriate Summary Category Group as defined below:

- S3000 Homogeneous Solids – Homogeneous solids are defined as solid material, excluding soil, that does not meet the New Mexico Environment Department (NMED) criteria for classification as debris (20.4.1.800 New Mexico Administrative Code [NMAC] [incorporating 40 CFR §268.2(g) and (h)]). Included in the series of homogeneous solids are inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste. Other waste streams are included in this Summary Category Group based on the specific waste stream types and final waste form. This Summary Category Group is expected to contain toxic metal and spent solvents. This category includes wastes that are at least 50 percent by volume homogeneous solids.

- S4000 Soil/Gravel – This Summary Category Group includes S4000 waste streams that are at least 50 percent by volume soil/gravel. This Summary Category Group is expected to contain toxic metals.

- S5000 Debris Wastes – This Summary Category Group includes heterogeneous waste that is at least 50 percent by volume material that meets the criteria specified in 20.4.1.800 NMAC (incorporating 40 CFR §268.2[g]). Debris means solid material exceeding a 2.36 inch (60 millimeter) particle size that is intended for disposal and that is a manufactured object, plant or animal matter, or natural geologic material. Particles smaller than 2.36 inches in size may be considered debris if the debris

is a manufactured object and if it is **NOT** a particle of S3000 or S4000 material.

4.4.15 **IF** waste DOES **NOT** include at least 50 percent of any given Summary Category Group by volume,
THEN assign the Summary Category Group constituting the greatest volume of waste for that waste stream.

4.4.16 Review the AK information to determine if the waste is listed under 20 NMAC 4.1.200 (incorporating 40 CFR 261.30), Subpart D. If so, assign the appropriate HWNs.

4.4.17 Review the AK information to determine if a toxicity characteristic 20 NMAC 4.1.200 (incorporating 40 CFR 261.20), Subpart C contaminant is identified and has **NOT** been assigned a listed HWN from step 4.4.16. Evaluate the available data and assign the toxicity characteristic HWN consistent with RCRA requirements.

4.4.18 Compare the HWNs assigned from steps 4.4.16 and 4.4.17 to the HWNs listed in CCP-PO-001, Table C-9.

4.4.19 **IF** any HWNs are **NOT** included in CCP-PO-001, Table C-9,
THEN notify the SPM.

4.4.20 Include the justification and basis for steps 4.4.16 and 4.4.17 in the TRU waste stream-specific description of AK Summary Report,
AND complete the Attachment 5.

4.4.21 Print name, sign, and date Hazardous Constituents form.

4.4.22 Assess available AK radionuclide data.

NOTE

For LANL sealed sources, the SPM must confirm sufficient radionuclide data is available in accordance with CCP-TP-101, *CCP Off-Site Source Recovery Project Sealed Source Radiological Characterization.*

4.4.23 For contact-handled (CH) waste streams and RH waste streams characterized using NDA techniques, review all source documents to determine the two most prevalent radionuclides for the waste stream, and estimated isotopic ratios for the following 10 WIPP-required radionuclides: Sr-90; Cs-137; U-233; U-234; U-238; Pu-238; Pu-239; Pu-240; Pu-242; and Am-241.

4.4.24 Prepare an NDA Memorandum to CCP Records (CH waste only), evaluating the radionuclide characterization of the waste stream. The NDA Memorandum must include a section for an assessment written with the NDA EA determining how the AK will be applied

during assay. For LANL sealed sources waste, the NDA Memorandum must be written with input from the OSR group. This assessment should include a discussion of the limitations of the radiological characterization in the AK document and a description of the required assay methods, if any. Any NDA issues for both measured and calculated radionuclides should be discussed and resolved.

4.4.25 **IF** AK is intended as the sole basis for meeting the radiological characterization requirements in CCP-PO-002,
THEN state so in the AK Summary Report.

4.4.26 Prepare a Waste Material Parameter Evaluation Memorandum to CCP Records that estimates the waste material parameter weights for the waste stream. The expected weight percent for each waste material parameter will be calculated using historical waste generator information for the materials in the waste stream or industry documentation for similar waste inventories. This evaluation should include the technical assumptions, justification, and limitations for the estimated weight percentages.

NOTE

The WIPP-WAP allows the generator to utilize visual examination (VE) and real-time radiography (RTR), if there is insufficient AK to estimate for the waste material parameter weight percentages.

4.4.27 Complete the following forms as appropriate:

[A] See Attachment 6, Waste Form, Waste Material Parameters, Prohibited Items, and Packaging - Example Form for an example. Include the Waste Material Parameter Evaluation Memorandum described in step 4.4.26 as an addendum to Waste Form, Waste Material Parameters, Prohibited Items, and Packaging.

[B] See Attachment 7, Radionuclides - Example Form (CH only), for an example. Include the NDA Memorandum (signed by the AKE and NDA EA) described in step 4.4.24 as an addendum to Radionuclides.

[C] See Attachment 8, Waste Containers List – Example Form, (or an equivalent form, e.g., spreadsheet). Prepare or update the Container Tracking Spreadsheet as described in Section 4.11 for the containers identified in Waste Containers List and corresponding Waste Stream Container Evaluation Memorandum prepared in steps 4.10.3 and 4.10.4.

4.4.28 Print name, sign, and date all forms generated in step 4.4.27.

4.4.29 Review the waste management program AK documentation specified on the Acceptable Knowledge Documentation Checklist, **AND** write a TRU Waste Management Program Description that addresses AK #s PR1-PR8 in Acceptable Knowledge Documentation Checklist. Include the following:

- Correlation to the waste stream identification and description found in the ATWIR or indication that the waste stream was not included in the ATWIR.

- Determination of whether the TRU waste materials were generated as a result of, or mixed with materials from, defense-related activities as specified in CCP-PO-002.

4.4.30 **IF** prohibited items or incompatible materials are listed on the Waste Form, Waste Material Parameters, Prohibited Items, and Packaging,
THEN perform the following:

[A] Notify the SPM.

SPM

[B] Notify the Host site as directed in the Interface Document between CCP and that site.

AKE

4.4.31 Correlate TRU waste management program information (AK #s PR1 - PR8) and TRU waste stream-specific information (AK #s WS1 - WS12) with regard to the time of generation, waste generation processes, rate and quantity of newly generated waste (when appropriate), and areas and building or facility where the waste stream was generated (Acceptable Knowledge Documentation Checklist).

4.4.32 Identify AK source document tracking numbers, as applicable, in the TRU waste management program description and TRU waste stream-specific description.

4.4.33 Review the waste stream-specific AK documentation specified on the Acceptable Knowledge Documentation Checklist and information developed in steps 4.4.11 through 4.4.32), **AND** describe the waste stream in the AK Summary Report, including the following:

[A] Waste stream description and waste stream number. The waste stream number is limited to 20 alpha-numeric characters.

[B] Explain the selection of the Waste Matrix Code in the TRU waste stream-specific description of the AK Summary Report.

[C] Ensure the description of the waste stream is sufficient to allow the radiography and VE Operators to determine whether the waste in individual containers is included in the waste stream and the physical form of the waste matches the waste stream description.

[D] Include the justification and basis for determination of waste material parameters weights expected in the waste stream.

[E] Include the justification and basis for the method by which the radionuclide AK has been compiled.

[F] For waste streams characterized using NDA, state the method for determination of the (2) most prevalent radionuclides (see CCP-PO-002).

[G] Include the following assessment information:

- Waste identification and categorization schemes relevant to the isotopic composition of the waste
- Description of the isotopic composition of waste streams
- Physical/chemical composition that could affect isotopic distributions
- Numerical adjustments (e.g., scaling factors, decay/ingrowth corrections and secular equilibrium consideration) applied to derive isotopic compositions
- Specification of the isotopic ratios for the 10 WIPP - tracked radionuclides

- Radionuclides other than the ten WIPP-tracked radionuclides that contribute to 95 percent of the radioactive hazard for a payload container

[H] Provide justification for the assumption that the waste stream is TRU waste (i.e., it contains more than 100 nanocuries [nCi] of alpha-emitting radionuclides with half-lives greater than 20 years per gram of waste), as specified in CCP-PO-002.

[I] For waste streams with containers selected for payload management, include an assessment estimating the percentage of the TRU waste stream volume above and below 100 nanocuries per gram (nCi/g) in accordance with CCP-PO-002. The AK Summary Report must demonstrate that the waste stream has been historically managed as TRU waste, as applicable for payload management.

[J] Provide justification for determining the estimated concentration (less than or equal to 1 percent or greater than 1 percent by weight) of beryllium (metal and oxides) for each payload container within the waste stream as required in CCP-PO-002.

[K] Provide justification for determining that prohibited items are not present in the waste stream or describe the potential prohibited items and how they will be identified and remediated. Identify process controls associated with the management of prohibited items, physical form, and hazardous waste content.

[L] Provide justification for determining if any waste in the waste stream contains polychlorinated biphenyls (PCBs) in concentrations equal to or greater than 50 parts per million (ppm). Identify the type of waste containing PCB contamination (e.g., remediation, bulk product), **AND** provide justification for determining that the waste stream will **NOT** contain residual PCB liquids as defined in CCP-PO-002.

[M] For waste streams assigned the EPA Hazardous Waste Number U134 for hydrofluoric acid, provide information demonstrating neutralization of this acid, if available, as required by CCP-PO-001.

[N] **IF** correlating or surrogate information from similar materials or waste streams generated at the same site or other sites is used to support the characterization of the waste stream, **THEN** complete the CCP TRU Waste Correlation and

Surrogate Summary Form (see Attachment 15, CCP TRU Waste Correlation and Surrogate Summary Form – Example Form) **AND** describe the use of the information in the AK Summary Report.

[O] For RH waste streams, identify the AK and/or characterization methods to be used to meet the DQOs. Identify how each DQO will be met and describe the qualification method(s) selected for AK used solely to meet a specific DQO in the AK Summary Report.

4.4.34 Summarize the waste stream-specific description in Section 2.0 of the AK Summary Report. Provide a physical, chemical, and radiological description of the waste stream in Section 5.0 of the AK Summary Report (see Attachment 12 for an example format and content guide to be used when preparing the AK Summary Report). This description may be abbreviated for use on attachments as needed.

NOTE

Use the Example Form and Content Guide for AK Summary Reports in Attachment 12 to prepare the AK Summary Report. This guide provides the recommended format for preparation of the reports. However, the format of the report and content of the sections may vary, as long as the required AK elements are presented.

4.4.35 Prepare the AK Summary Report by combining the TRU waste management program description and each of the completed TRU waste stream-specific descriptions, as well as the information from forms 1-8 and Acceptable Knowledge Source Document Discrepancy Resolution (see Attachment 11 for an example), if applicable.

4.4.36 Submit the AK Summary Report to Document Services to initiate the review and approval process in accordance to CCP-QP-010, *CCP Document Preparation, Approval, and Control.*

NOTE

Electronic media for historical source documents shall be managed in accordance with CCP-QP-008, *CCP Records Management*.

4.4.37 Submit records identified in Section 5.0 to CCP Records in accordance with CCP-QP-008.

NOTE

As the AK Summary Report is revised, resubmit report to CCP Document Services.

4.5 Waste Stream Characterization

NOTE

The following comparison may be performed for a waste stream or a waste stream lot.

SPM

4.5.1 Ensure that audit and other internal and external surveillance reports relating to CCP characterization programs are available.

4.5.2 **IF** any AK Sufficiency Determination Request has been approved by Carlsbad Field Office (CBFO) for any characterization parameter (see Section 4.7),
THEN note the approval for that parameter on the CCP Waste Stream Characterization Checklist (see Attachment 13, CCP Waste Stream Characterization Checklist - Example Form).

4.5.3 Compare the testing results from VE and Radiography, and NDA characterization activities to the waste stream AK by completing a CCP Waste Stream Characterization Checklist, to certify a waste stream (or lot) for disposal at WIPP.

[A] Radiography and VE Data

[A.1] Compare Radiography and VE results (obtained from CCP Records) in VE Data Forms, and Radiography Data Sheets to AK information in Waste Form, Waste Material Parameters, Prohibited Items, and Packaging of this procedure to verify the physical form of the waste stream and absence of prohibited items.

[A.2] **IF** AK information CAN **NOT** be resolved upon completion of these comparisons,
THEN note any inconsistencies on CCP Waste Stream Characterization Checklist, **AND** proceed with Section 4.8 of this procedure.

[B] NDA Data – CH Waste

[B.1] Compare radionuclides reported on Attachment 7 by Weight percent, Activity, or other parameters justified in the AK Summary Report with NDA Radioassay results.

[B.2] Compare the two most prevalent radionuclides in AK with those identified in the NDA results for the waste stream and waste stream lot.

[B.3] Compare the radionuclides identified by the AK as expected to be present with those reported in the NDA results.

[B.4] Report the differences between NDA results and those expected from AK in the Comments section of the CCP Waste Stream Characterization Checklist.

[B.5] Provide rationale in the Comment section of CCP Waste Stream Characterization Checklist, if any of these conditions were anticipated based on AK.

[B.6] Attach applicable data and description to CCP Waste Stream Characterization Checklist.

[B.7] **IF** AK information CAN **NOT** be resolved upon completion of these comparisons,
THEN note any inconsistencies on CCP Waste Stream Characterization Checklist, **AND** proceed with Section 4.8 of this procedure.

[C] Radiological Characterization – RH Waste

[C.1] Identify the characterization method (e.g., Dose-to-Curie) on the CCP Waste Characterization Checklist.

[C.2] Identify the drums in which the radiological characterization differ from that expected; provide rationale in the Comments section of the CCP Waste Stream Characterization Checklist, if this condition was anticipate, otherwise notify the AKE to perform a re-evaluation as described in Section 4.8 of this procedure.

[C.3] Attach data and applicable description to CCP Waste Stream Characterization Checklist.

4.5.4 **IF** AK information can be resolved upon completion of the comparisons with the testing results,
THEN print name, sign, and date CCP Waste Stream Characterization Checklist, **AND** forward it to the AKE for signature **AND** submit to CCP Records.

4.6 Determining AK Documentation Accuracy

NOTE

The quality assurance objectives (QAOs) and their applicability to AK are discussed in CCP-PO-001. Calculation of the accuracy of AK documentation is required and is performed as follows.

SPM

4.6.1 Obtain a copy of the completed CCP Waste Stream Characterization Checklist, **AND** any Acceptable Knowledge Re-evaluation Checklists (see Attachment 10, CCP Waste Stream Characterization Checklist), applicable to the waste stream or waste stream lot, and any necessary supporting documentation from CCP Records.

NOTE

The Acceptable Knowledge Accuracy Report is used to determine the percentage of containers reassigned to a new Waste Matrix Code, designated with a hazardous waste number assignment different from AK, or inconsistent with anticipated radionuclide composition determined from AK.

NOTE

For AK Accuracy Reports that are prepared for waste stream lots within a waste stream, updates to AK accuracy shall be issued periodically. Although there is no specified timeframe for AK accuracy updates, they should typically be issued annually.

4.6.2 Complete the CCP Acceptable Knowledge Accuracy Report (see Attachment 14, CCP Acceptable Knowledge Accuracy Report - Example Form), after characterization has been completed for a subset of containers in the subject waste stream or waste stream lot.

4.6.3 Prepare an AK Accuracy Memorandum summarizing the following AK accuracy information:

[A] Purpose

[B] Methodology

[C] Results of accuracy determination

[D] Other considerations, if applicable

[E] Summary

4.6.4 For RH waste, **IF** the AK accuracy falls below 90 percent for assigning containers to a Summary Category Group, **THEN** CBFO shall be notified of this significant condition adverse to quality, **AND** appropriate corrective actions implemented before proceeding with further characterization activities on the affected waste stream, in accordance with CCP-QP-029, *CCP Corrective Action Management*.

NOTE

For RH waste, significant discrepancies between the radionuclide information in the AK record and measured values will be assessed during preparation of the Acceptable Knowledge Accuracy Report. What constitutes a significant discrepancy will depend on site- and waste stream-specific considerations for each waste stream.

4.6.5 For RH waste, describe any significant discrepancies between the radionuclide information in the AK record and measured values in the Acceptable Knowledge Accuracy Report.

4.6.6 Review, print name, sign, and date **AND** submit CCP Acceptable Knowledge Accuracy Report to CCP Records. At the option of the SPM, CCP Acceptable Knowledge Accuracy Report may list only the containers with accuracy issues, as long as the complete list of containers represented by the accuracy report is included by attachment to, or referenced in, the cover memorandum or letter.

4.7 AK Sufficiency Determination

SPM/AKE

NOTE

An AK Sufficiency Determination Request to meet all or part of the waste characterization requirements may be used if AK information available for a waste stream permits.

4.7.1 Evaluate the AK information available for a waste stream to determine if an AK Sufficiency Determination is possible or desirable.

4.7.2 Prepare an AK Sufficiency Determination Request that includes the following information:

[A] An introduction that briefly describes the waste stream, the type of AK Information available, whether AK alone can be used to meet the characterization requirements.

[B] Identification of any mandatory requirements supported only by upper tier documents (i.e., there is insufficient supporting data).

[C] Description demonstrating that the AK process described in CCP-PO-001 was followed (for example, AK personnel were appropriately trained; discrepancies were documented, etc.).

[D] Information demonstrating that CCP has assessed the AK process (e.g., internal audits).

4.7.3 Obtain copies of the following information from CCP Records and attach to the AK Sufficiency Determination Request:

[A] AK Summary Report for the waste stream;

[B] Acceptable Knowledge Documentation Checklist providing an AK roadmap and cross reference between mandatory programmatic and waste stream information with references supporting these requirements.

[C] Acceptable Knowledge Information List, providing a complete reference list including all mandatory and additional AK documentation.

[D] Current revision of this procedure to demonstrate that CCP has developed a written procedure for compiling AK information and assigning hazardous waste numbers.

[E] Relevant additional information for the required programmatic and waste stream data addressed in the AK Summary Report, as applicable or if requested by CBFO.

4.7.4 Submit the AK Sufficiency Determination Request and attachments to the SPM for approval and submittal to CBFO.

4.7.5 **IF** comments are received from CBFO,
THEN address the comments and resubmit the AK Sufficiency Determination Request.

4.8 Re-evaluating AK Documentation

NOTE

Differences in Waste Matrix Codes, state and EPA Hazardous Waste Numbers, and NDA results may exist between those previously assigned in the AK documentation and those indicated as a result of waste characterization activities performed to certify waste for disposal at the WIPP or during the confirmation performed by the Permittee. Under these circumstances, the AK information is re-evaluated and the required AK information associated with the new designation is documented. Characterization data associated with the waste is re-evaluated and changes in AK resulting from the re-evaluation are documented.

SPM

4.8.1 **IF** re-evaluation is warranted as a result of 1) inconsistencies noted during the process of comparing AK information to characterization results **OR** 2) the initiation of an nonconformance report (NCRs) that identifies potential changes to the AK of a waste stream (including NCRs generated as a result of discrepancies identified during confirmation performed by the Permittee),
THEN notify the AKE.

AKE

4.8.2 Retrieve copies of applicable characterization data and AK information from CCP Records.

4.8.3 **IF** a waste must be assigned to a different Waste Matrix Code (i.e., different waste stream or waste stream lot) based on Radiography or VE,
THEN perform the following:

[A] Review existing information based on the waste container identification number and document all differences in EPA HWN assignments. Consider all generator specific waste streams and hazardous waste number assignments; original site-specific permit requirements; and other state-enforced agreements in this analysis.

[B] **IF** differences exist in the EPA Hazardous Waste Numbers that were assigned,
THEN reassess **AND** document required applicable AK information associated with the new designation.

[C] Reassess **AND** document applicable testing data associated with the waste.

[D] Verify **AND** document that waste with a reassigned Waste Matrix Code was generated within the specified time period, area buildings and waste generating process; and that the process material inputs are consistent with the waste material parameters identified during Radiography or VE.

[E] Record all changes to the AK records on the appropriate forms and resubmit to CCP Records.

[F] **IF** unresolved discrepancies exist in the AK information for the reassigned Waste Matrix Code, EPA Hazardous Waste Numbers, or radionuclides,
THEN document the segregation of this container, **AND** define the actions necessary to fully characterize the waste.

4.8.4 **IF** testing results indicate that additional or different EPA Hazardous Waste Numbers may apply to the waste,
THEN review the existing AK and characterization information,
AND perform the following:

[A] **IF** a hazardous waste, not originally identified by AK, has been identified during testing (lead items, circuit boards, etc.),
THEN assign the applicable state and EPA Hazardous Waste Numbers unless an alternative assignment can be justified or representative quantitative data are available to preclude the assignment.

4.8.5 **IF** NDA results indicate the presence of additional radionuclides or different prevalent radionuclides in the waste,
THEN review existing AK and characterization information.

4.8.6 **IF** changes are required,
THEN document the need for changes in the appropriate comment section of the Acceptable Knowledge Re-evaluation Checklist.

4.8.7 Resolve all AK documentation discrepancies, if applicable, as described in Section 4.9 of this procedure.

4.8.8 Modify the AK Summary Report as appropriate.

4.8.9 Forward the completed Acceptable Knowledge Re-evaluation Checklist **AND** the revised AK Summary Report to the SPM for review and approval.

4.8.10 Submit changes to the Document Writers for distribution and approval.

SPM

4.8.11 Review the Acceptable Knowledge Re-evaluation Checklist and the revised AK Summary Report.

4.8.12 **IF** the AK Summary Report requires correction,
THEN return to AKE.

4.8.13 **IF** no correction is required,
THEN approve the Acceptable Knowledge Re-evaluation Checklist by printing name, signing, and dating the checklist.

4.8.14 Approve the revised AK Summary Report.

4.8.15 Review the WSPF to see if the change to the AK Summary Report affects the WSPF.

4.8.16 **IF** the WSPF requires change,
THEN revise the WSPF in accordance with CCP-TP-002.

4.8.17 Submit the Acceptable Knowledge Re-evaluation Checklist and revised AK Summary Report to CCP Records.

[A] Any new source documents referenced in the revised AK Summary Report and the applicable attachments must be submitted to CCP Records on or before the date of issuance of the revised AK Summary Report as final.

4.8.18 Once the re-evaluation is approved, complete the CCP Waste Stream Characterization Checklist, as described in step 4.5.3.

4.9 Resolving AK Discrepancies

NOTE

AK discrepancies may be identified during AK source document compilation, review, characterization, confirmation, and re-evaluation activities.

AKE

4.9.1 Document the nature of the discrepancy **AND** identify the documents involved for the particular waste stream or waste container on the Acceptable Knowledge Source Document Discrepancy Resolution or in the appropriate section of the AK Summary Report.

4.9.2 Use information from interviews, telephone contacts, or other correspondence or other supporting information to resolve the discrepancy.

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4.9.3 Record interviews, telephone conversations, and correspondence needed to resolve discrepancy issues on a Record of Communication.

4.9.4 Print name, sign, and date a Record of Communication.

4.9.5 Complete an Acceptable Knowledge Source Document Summary for each Record of Communication form.

4.9.6 Print name, sign, and date Acceptable Knowledge Source Document Summary, attach to the Record of Communication form, **AND** submit to CCP Records.

4.9.7 Verify that process inputs (hazardous constituents and waste material parameters) are consistent with waste material parameters identified during Radiography and VE.

4.9.8 Assign **OR** revise the AK identified waste material parameters, as necessary, and document the change and the assumptions made on the Acceptable Knowledge Source Document Discrepancy Resolution.

4.9.9 Assign **OR** reassign Waste Matrix Codes, as necessary, using guidance specified in the DOE/LLW-217, **AND** document the assignment and assumptions made on the Acceptable Knowledge Source Document Discrepancy Resolution.

4.9.10 Evaluate the sources of discrepancies among sources of isotopic distribution data to determine whether the sources are credible. Identify limitations of data **AND**, if the data is **NOT** used, provide a justification on the Acceptable Knowledge Source Document Discrepancy Resolution. Otherwise, describe data limitations in the AK Summary Report, as applicable.

4.9.11 Assign or revise the identified radionuclides present, as necessary, **AND** document the change and the assumptions made on the Acceptable Knowledge Source Document Discrepancy Resolution.

4.9.12 Assign or revise state and EPA Hazardous Waste Number, as necessary. Assign the Hazardous Waste Numbers consistent with RCRA requirements. Document the assignment and the assumptions and justifications made on the Acceptable Knowledge Source Document Discrepancy Resolution.

4.9.13 Obtain the affected AK source documentation, as necessary.

4.9.14 Make necessary changes to Acceptable Knowledge Source Document Summary, as appropriate.

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4.9.15 Complete, print name, sign, and date the Acceptable Knowledge Source Document Discrepancy Resolution documenting final disposition of the discrepancy.

4.9.16 Complete, print name, sign, and date an Acceptable Knowledge Source Document Summary for each Acceptable Knowledge Source Document Discrepancy Resolution.

4.9.17 Attach the Acceptable Knowledge Source Document Summary to the Acceptable Knowledge Source Document Discrepancy Resolution.

4.9.18 **IF** the form consists of multiple pages,
THEN add a footer identifying the page number and total number of pages.

4.9.19 Forward the form and supporting documentation (if requested) to the SPM for review and concurrence.

SPM

4.9.20 Review the Acceptable Knowledge Source Document Discrepancy Resolution and supporting documentation, as applicable, print name, sign, and date the form if the discrepancy has been resolved, **AND** forward the completed form to the AKE.

AKE

4.9.21 Confirm that the Acceptable Knowledge Source Document Discrepancy Resolution is signed and dated by the SPM.

4.9.22 Submit the original Acceptable Knowledge Source Document Discrepancy Resolution and supporting documentation, as applicable, to CCP Records.

4.9.23 Revise the AK Summary Report as needed.

NOTE

Discrepancies which CAN **NOT** be resolved by CCP will result in the container being returned to the Host site. If the discrepancy is **NOT** container-specific, containers from the subject waste stream will **NOT** be shipped to WIPP until such time as the discrepancy has been resolved. If the discrepancy is related to radiological characterization, notify the SPM that direct measurements of the impacted waste population may be required.

SPM

4.9.24 **IF** the discrepancy CAN **NOT** be resolved,
THEN issue an NCR (if not already identified in an NCR) and manage corrective actions in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*, CCP-QP-029, *CCP Corrective Action Management*, and the CCP/site interface document.

4.9.25 Record the NCR number on the Acceptable Knowledge Source Document Discrepancy Resolution.

4.9.26 Coordinate with the Host site to place a hold tag on, **AND** segregate waste containers associated with the NCR, if applicable, in accordance with applicable procedures.

4.9.27 Assess the potential timeframe of the noncompliance, the potentially affected waste populations, and the reassessment and recertification of the waste, if applicable.

4.9.28 Coordinate resolution of the nonconforming condition with the AKE.

4.9.29 Document information identified during the corrective action process as described in CCP-QP-005.

4.9.30 Once the discrepancy is resolved, applicable NCR(s) closed, and corrective action is completed, sign and date the Acceptable Knowledge Source Document Discrepancy Resolution **AND** forward the form to the AKE.

AKE

4.9.31 **WHEN** discrepancies are resolved, applicable NCRs are closed, **AND** corrective actions completed,
THEN review the discrepancy form, document any supporting AK information generated, assign the appropriate waste material parameters, Waste Matrix Code, radionuclides or hazardous waste numbers as applicable, **OR** justify the use of alternates and confirm that it has been signed.

4.9.32 Submit the original Acceptable Knowledge Source Document Discrepancy Resolution to CCP Records.

4.10 Updating AK for Additional Waste Stream Containers

NOTE

The following process is followed when the SPM identifies additional containers to be included in a waste stream defined in an existing AK Summary Report. The Waste Containers List identifies the AK source document number(s) designated for the Waste Stream Container Evaluation Memorandum, adding containers, if applicable.

SPM

4.10.1 Provide the AKE with a list of containers to be assessed for inclusion in an existing waste stream.

AKE

4.10.2 Collect container-specific documentation and evaluate the following information for each container:

- Waste generation location and process
- Time period of generation
- Physical form compared to the assigned Waste Material Parameters and Waste Matrix Code
- Chemical content
- Prohibited items
- Radionuclides

4.10.3 **IF** the containers are bounded by the existing AK Summary Report for the waste stream,
THEN notify the SPM **AND** submit a Waste Stream Container Evaluation Memorandum documenting the evaluation to CCP Records.

4.10.4 **IF** the containers are **NOT** bounded by the existing AK Summary Report, but should be included in the waste stream,
THEN revise the AK Summary Report; update the Waste Containers List; notify the SPM, **AND** revise and submit the updated Waste Containers List and Waste Stream Container Evaluation Memorandum documenting the evaluation to CCP Records.

4.11 Container Tracking Spreadsheet Development

AKE or Designee

4.11.1 Develop a spreadsheet which identifies the following minimum criterion for each container listed on Waste Containers List:

- Container I.D.
- Waste Stream I.D.
- Generation Date
- Vent Date
- Associated Defense Determination (required for OSRP containers only)
- Change Reason
- New Closure Date
- New Vent Date
- Container Type

4.11.2 Post the copy of the Container Tracking Spreadsheet to the secure file transfer protocol (sftp) site.

4.12 Container Tracking Spreadsheet Maintenance

AKE or Designee

4.12.1 **WHEN** notified of a change to the status of a container(s) identified by the SPM, CCP personnel, Host site personnel, or during the addition of containers to the waste stream inventory,
THEN evaluate the change based on the data provided.

[A] **IF** the change is routine and DOES **NOT** adversely affect data,
THEN GO TO step 4.12.2.

[B] **IF** the change is non-routine or adversely affects data,
THEN notify the SPM to take the appropriate actions prior to proceeding to step 4.12.2.

4.12.2 Update the Container Tracking Spreadsheet and post the change to the sftp site.

4.12.3 Notify the SPM of the change.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure in Section 5.1.1 are maintained as QA records. The following records will be maintained in accordance with CCP-QP-008. The records are the following:

5.1.1 <u>QA/Lifetime Records</u>

[A] Acceptable Knowledge Documentation Checklist

[B] Records of Communication

[C] Acceptable Knowledge Source Document Summary forms, and when applicable attached CCP generated source documents

[D] Acceptable Knowledge Information List

[E] Hazardous Constituents forms

[F] Waste Form, Waste Material Parameters, Prohibited Items, and Packaging forms

- Waste Material Parameter Evaluation Memorandum

[G] Radionuclides forms

- NDA Memorandum

[H] Waste Containers List

[I] Acceptable Knowledge Re-evaluation Checklist

[J] Acceptable Knowledge Source Document Discrepancy Resolution, which include Acceptable Knowledge Source Document Summary forms as attachments

[K] CCP Waste Stream Characterization Checklist

[L] CCP Acceptable Knowledge Accuracy Report, including cover memorandum or letter

- AK Accuracy Memorandum

[M] CCP TRU Waste Correlation and Surrogate Summary Form

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[N] AK Summary Reports

[O] AK Sufficiency Determination Request

[P] SPM Notifications (emails, letters, memorandums, etc.), as applicable

[Q] AK Container Tracking Spreadsheet (submitted to CCP Records after notification by the site SPM that waste shipments to WIPP have been completed)

5.1.2 Non-QA

[A] Historical Source Documents

Attachment 1 – Acceptable Knowledge Documentation Checklist - Example Form

Site(s): _____

Waste Stream Description:_____

Waste Stream Number(s): _____

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Mandatory generator site TRU waste program (PR) information:			
Map of the generator site that identifies TRU waste generation, treatment, and storage areas.	PR1		
Generator site mission descriptions related to TRU waste generation and management identifying defense and non-defense operations.	PR2		
Overview of the generator site and generator site TRU waste management operations in the context of the facility's mission.	PR3		
Descriptions of historical and current TRU waste generating operations, including how waste is tracked and managed and/or how operations relative to isotopic composition were tracked.	PR4		
Waste identification and/or categorization schemes and terminology used at the generator site, including codes correlating to specific isotopic distributions.	PR5		
Types and quantities of TRU waste generated, including historical generation through future projections.	PR6		
Correlation of waste streams and description of time of generation, waste generating processes, and area and building/facility where each waste stream was generated.	PR7		
Certification procedures for waste to be sent to the WIPP facility (i.e., procedures to ensure that prohibited items are documented and managed in accordance with site-specific certification plans).	PR8		
Mandatory generator site TRU waste stream (WS)-specific information:			
Waste stream designation	WS1		
Area(s) and building(s) from which the waste stream was or is generated.	WS2		
Waste stream volume and time period of generation	WS3		
Waste generating process (describe for each building) including processes associated with U134 waste generation, if applicable.	WS4		

Attachment 1 – Acceptable Knowledge Documentation Checklist - Example Form (Continued)

Waste Stream Number(s): _____

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Process flow diagrams. For research/development, analytical laboratory waste, or other similar processes where process flow diagrams cannot be created, a description of the waste generating processes, rather than a formal process flow diagram, may be included, if justified.	WS5		
Summary of basis and rationale for delineating each waste stream including justification for combining waste historically managed separately as TRU mixed and TRU non-mixed waste streams into a single waste stream, that is traceable to referenced documents.	WS6		
Generator site mission descriptions related to TRU waste generation and management identifying defense and non-defense operations.	WS7		
Material inputs or other information that identified the chemical contents of the waste and the stream. Includes events or processes that may have modified the chemical properties of the waste stream after generation.	WS8		
Physical waste form (e.g., glovebox materials and chemicals handled during glovebox operations, if applicable), assigned Summary Category Group, Waste Matrix Code and materials inputs, including waste material parameters present in the waste stream. Includes events or processes that may have modified the physical properties of the waste stream after generation.	WS9		
Waste identifiers assigned by the generator site (e.g., item description code, packaging identification numbers).	WS10		
Specification of the isotopic ratios for the ten WIPP-tracked radionuclides and all radionuclides other than the ten WIPP-tracked radionuclides that contribute to 95 percent of the radioactive hazard for a payload container. Chemical and physical information that could affect the waste isotopic distribution, as well as calculations used to derive the isotopic distribution.	WS11		

Attachment 1 – Acceptable Knowledge Documentation Checklist - Example Form (Continued)

Waste Stream Number(s): _____

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number	
State and EPA hazardous waste constituents in the waste stream and state and EPA Hazardous Waste Numbers assigned, including documentation regarding how the site has historically managed the waste, including the historical regulatory status of the waste (i.e., TRU mixed versus TRU non-mixed waste).	WS12			
Additional acceptable knowledge documentation (briefly describe):				
Process design documents (e.g., Title II Design)	S1			
Standard operating procedures that may include a list of raw materials or reagents, a description of the process or experiment generating the waste, and a description of the waste generated and how the wastes are managed at the point of generation	S2			
Preliminary and Final Safety Analysis Reports and technical safety requirements	S3			
Waste Packaging records	S4			
Test plans or research project reports that describe the reagents, radionuclides, and other raw materials used in experiments	S5			
Site databases (e.g., chemical inventory database for SARA Title III requirements, SNM or nuclear material databases)	S6			
Information from site personnel (e.g., documented interviews)	S7			
Standard industry documents (e.g., industry specification sheets, handbooks, reference materials, or other vendor information)	S8			
Analytical data relevant to the waste stream, including results from fingerprint analyses, spot checks, routine verification sampling or other processes that collected information pertinent to the waste stream. This may include new information (or previously collected data) which augments required information (e.g., visual examination not performed in compliance with CCP-PO-001, radiography screening for prohibited items).	S9			
Material Safety Data Sheets, product labels, or other product information	S10			
Laboratory notebooks that detail the research processes and raw materials used in an experiment	S11			
Comparable or surrogate sampling and analysis data	S12			
Other (describe)	S13			

Attachment 1 – Acceptable Knowledge Documentation Checklist - Example Form (Continued)

Waste Stream Number(s): _____

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number	
Safeguards and security, Materials Control and Accountability, and other nuclear material control system data Reports of nuclear safety or criticality accidents involving special nuclear materials (SNM)	S14			
NMMA logs or inventory records or waste disposal logs providing SNM or nuclear material information	S15			
Packaging	S16			
OSR-Specific Information (Applies only to sealed sources)				
Evidence that the waste meets the definition of a sealed source reference 10CFR30.4 and 10CFR835.2	O1			
Documentation that sources are Special Form, such as certificates DOT Special Form Class 7 per 49CFR173.403	O2			
Contamination survey results for each source reference requirements of 10CFR34.27	O3			
Source manufacturer's sales catalogues	O4			
Source purchase records	O5			
Manufacturer fabrication documents	O6			
Manufacturer drawings	O7			
Fuel capsule assembly reports	O8			
Manufacturer's operational procedures for meeting cleanliness requirements	O9			
Manufacturer's shipping documents or records	O10			
Manufacturer welding records	O11			
TRU batch material records	O12			
National database radiological information (e.g., NMMSS, NRC Device Registry)	O13			
NRC or agreement state regulatory licensing information	O14			
Documentation of physical markings on the outer source casing or labels attached to devices housing sources	O15			
Unique physical description attributed to specific source models	O16			

Attachment 1 – Acceptable Knowledge Documentation Checklist - Example Form (Continued)

Waste Stream Number(s): _____

Acceptable Knowledge Information	(1)AK#	Compiled? (Y/N)	Source Document Tracking Number
Acceptable knowledge information regarding waste generated off-site or from similar process:			
(1) AK#s are used as identifiers for program, waste stream-specific and supporting elements. The identifiers are to be used in the Acceptable Knowledge Source Document Summary and Acceptable Knowledge Information List to aid in the page location of program and waste stream-specific elements within a given document. N/A means that item is not applicable.			

Additional comments:

_____
_____
_____
_____
_____

All required AK information has been compiled and source document tracking numbers assigned.

Acceptable Knowledge Expert:_____/_____ Date: _____
Print Sign

Attachment 2 – Record of Communication – Example Form

Corresponding Source Document Tracking No:		
Interviewer:	Date:	Time:
Interviewee:	Group/Organization: Job Title:	Phone: E-mail:
Subject:		
Summary:		
Data Limitations:		

Acceptable Knowledge Expert:_____/_____Date:_____
Print Sign

Attachment 3 – Acceptable Knowledge Source Document Summary – Example Form

Page 1 of 1

Site(s):	Source Document Tracking Number:
Waste Stream Number: (Applicable only when site library is not in use)	
Acceptable Knowledge Documentation Type: ☐ TRU Waste Management Program Information ☐ Waste Stream-Specific Information ☐ Additional Information	Category: ☐ C - Correspondence ☐ D - Documents ☐ M - Miscellaneous ☐ P - Procedure ☐ DR - Discrepancy Resolution ☐ U - Unpublished Documents
Title or Description of Source Document [a]:	
Source Document Reference Information (author(s), document and revision number, date, publisher):	

AK #[b]	Source Doc. Page #[c]	AK Information Summary

Source Document Data Limitations (if any):

Acceptable Knowledge Expert:

_____ / _____ Date: _____

Print Sign

[a] Provide description for non-titled information (i.e., container paperwork, MSDS sheets, etc)
[b] Obtain from Acceptable Knowledge Documentation Checklist
[c] For microfilm or microfiche, identify box, tape, reel number and location.

Attachment 4 – Acceptable Knowledge Information List – Example Form

Page 1 of 1

Site(s): _____

Waste Stream Number(s): _____

Waste Stream Description: _____

Source Document Tracking Number[a/c]	Title or Description [a]	Author	Document #[b]	Document Revision # and Date

[a] From Acceptable Knowledge Source Document Summaries (Attachments 3)
[b] Or publisher's document number if available
[c] In the case where an AK Summary Report has been revised based on information in Attachment 11 - Acceptable Knowledge Source Document Discrepancy Resolution form, identify the tracking number.

Acceptable Knowledge Expert: _____ / _____ Date: _____
Print Sign

Attachment 5 – Hazardous Constituents – Example Form

Site(s): _____

Waste Stream Description: _____

Compound	Suspected Present? (Y/N)	Used as a solvent? [a] (Y/N/NA)	TC constituent concentration less than regulatory level? [a] (Y/N/NA)	TC Hazardous Waste Number [a]	F-Listed Hazardous Waste Number [a]	U- or P-Listed Hazardous Waste Number [a]	EPA Hazardous Waste Number Assigned (N/Specify HWN)	State Hazardous Waste Number [b]
Toxicity Characteristic Metal Compounds (40 CFR Part 261)								
Arsenic		N/A		D004	N/A	N/A		
Barium		N/A		D005	N/A	N/A		
Cadmium		N/A		D006	N/A	N/A		
Chromium		N/A		D007	N/A	N/A		
Lead		N/A		D008	N/A	N/A		
Mercury		N/A		D009	N/A	U151		
Selenium		N/A		D010	N/A	N/A		
Silver		N/A		D011	N/A	N/A		
Volatile Organic Compounds (40 CFR Part 261)								
1,1,1-Trichloroethane			N/A	N/A	F001/F002	U226		
1,1,2,2-Tetrachloroethane		N/A	N/A	N/A	N/A	U209		
1,1,2-Trichloro-1,2,2-trifluoroethane			N/A	N/A	F001/F002	N/A		
1,1,2-Trichloroethane			N/A	N/A	F002	U227 [c]		
1,1-Dichloroethylene		N/A		D029	N/A	U078		
1,2-Dichlorobenzene			N/A	N/A	F002	U070		
1,2-Dichloroethane		N/A		D028	N/A	U077 [c]		
1,4-Dichlorobenzene		N/A		D027	N/A	U072		
1, 4-Dioxane		N/A	N/A	N/A	N/A	U108		
2-Ethoxyethanol			N/A	N/A	F005	U359 [c]		
2-Nitropropane			N/A	N/A	F005	U171 [c]		
Acetone			N/A	N/A	F003	U002		

Attachment 5 – Hazardous Constituents – Example Form (Continued)

Compound	Suspected Present? (Y/N)	Used as a solvent? [a] (Y/N/NA)	TC constituent concentration less than regulatory level? [a] (Y/N/NA)	TC Hazardous Waste Number [a]	F-Listed Hazardous Waste Number [a]	U- or P-Listed Hazardous Waste Number [a]	EPA Hazardous Waste Number Assigned (N/Specify HWN)	State Hazardous Waste Number [b]
Volatile Organic Compounds (continued)								
Acetonitrile		N/A	N/A	N/A	N/A	U003		
Benzene				D018	F005	U019		
Butanol (n-Butyl alcohol)			N/A	N/A	F003	U031 [c]		
Carbon disulfide			N/A	N/A	F005	P022 [c]		
Carbon tetrachloride				D019	F001	U211 [c]		
Chlorobenzene				D021	F002	U037		
Chloroform		N/A		D022	N/A	U044		
Cyclohexanone			N/A	N/A	F003	U057 [c]		
Ethyl acetate			N/A	N/A	F003	U112 [c]		
Ethyl benzene			N/A	N/A	F003	N/A		
Ethyl ether			N/A	N/A	F003	U117 [c]		
Formaldehyde		N/A	N/A	N/A	N/A	U122		
Hydrazine		N/A	N/A	N/A	N/A	U133		
Isobutanol			N/A	N/A	F005	U140 [c]		
Methanol			N/A	N/A	F003	U154		
Methyl ethyl ketone				D035	F005	U159		
Methyl isobutyl ketone			N/A	N/A	F003	U161 [c]		
Methylene chloride			N/A	N/A	F001/F002	U080 [c]		
Pyridine				D038	F005	U196		
Tetrachloroethylene				D039	F001/F002	U210		
Toluene			N/A	N/A	F005	U220		
trans-1,2-Dichloroethylene		N/A	N/A	N/A	N/A	U079		
Trichloroethylene				D040	F001/F002	U228		
Trichlorofluoromethane			N/A	N/A	F001/F002	U121 [c]		
Vinyl Chloride		N/A		D043	N/A	U043		
Xylenes			N/A	N/A	F003	U239		

Attachment 5 – Hazardous Constituents – Example Form (Continued)

Compound	Suspected Present? (Y/N)	Used as a solvent? [a] (Y/N/NA)	TC constituent concentration less than regulatory level? [a] (Y/N/NA)	TC Hazardous Waste Number [a]	F-Listed Hazardous Waste Number [a]	U- or P-Listed Hazardous Waste Number [a]	EPA Hazardous Waste Number Assigned (N/Specify HWN)	State Hazardous Waste Number [b]
Semivolatile Organic Compound (40 CFR Part 261)								
2,4-Dinitrotoluene		N/A		D030	N/A	U105		
Cresols				D026	F004	U052		
Dimethyl sulfate		N/A	N/A	N/A	N/A	U103		
Hexachlorobenzene		N/A		D032	N/A	U127 [c]		
Hexachlorobutadiene		N/A		D033	N/A	U128 [c]		
Hexachloroethane		N/A		D034	N/A	U131 [c]		
Nitrobenzene				D036	F004	U169 [c]		
Pentachlorophenol		N/A		D037	F027 [c]	N/A		

Attachment 5 – Hazardous Constituents – Example Form (Continued)

Compound	Suspected Present? (Y/N)	Used as a solvent? [a] (Y/N/NA)	TC constituent concentration less than regulatory level? [a] (Y/N/NA)	TC Hazardous Waste Number [a]	F-Listed Hazardous Waste Number [a]	U- or P-Listed Hazardous Waste Number [a]	EPA Hazardous Waste Number Assigned (N/Specify HWN)	State Hazardous Waste Number [b]
Other Constituents								
Wastewater treatment sludges from electroplating operations		N/A	N/A	N/A	F006	N/A		
Spent cyanide plating bath solutions from electroplating operations		N/A	N/A	N/A	F007	N/A		
Spent cyanides stripping and cleaning bath solutions from electroplating operations		N/A	N/A	N/A	F009	N/A		
Beryllium powder		N/A	N/A	N/A	N/A	P015		
Cyanide (soluble cyanide salts)		N/A	N/A	N/A	N/A	P030		
Potassium cyanide		N/A	N/A	N/A	N/A	P098		
Potassium silver cyanide		N/A	N/A	N/A	N/A	P099		
Sodium cyanide		N/A	N/A	N/A	N/A	P106		
Vanadium pentoxide		N/A	N/A	N/A	N/A	P120		
Hydrofluoric acid		N/A	N/A	N/A	N/A	U134		
Total PCB Concentration [d]		N/A	N/A	N/A	N/A	N/A	N/A	
Additional EPA Hazardous Constituents (List)								
Additional State Hazardous Constituents [b] (List) [e]								
Potentially Flammable VOCs (List) [e,f]		N/A						

Attachment 5 – Hazardous Constituents – Example Form (Continued)

a. Source: Title 40 Code of Federal Regulations Part 261, Identification and Listing of Hazardous Waste
b. Source: Cite applicable state regulation
c. This EPA Hazardous Waste Number is not permitted for WIPP disposal.
d. Source: Title 40 Code of Federal Regulation Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.
e. Add rows or attach additional sheets as necessary
f. Flammable VOCs included in the CH-TRAMPAC

NOTE: If any of the information requested on this form is not available or not applicable, enter N/A in the appropriate box.

Acceptable Knowledge Expert: _____ / _____ Date: _____
Print Sign

Attachment 6 – Waste Form, Waste Material Parameters, Prohibited Items, and Packaging – Example Form

Site(s): _____

Waste Stream Description: _____

Container ID Numbers: _____

Waste Stream Number:	
Physical Waste Form (e.g., debris, solidified waste)	
Summary Category Group[a]	
Waste Matrix Code Group[a]	
Waste Matrix Code[b]	
Waste Material Parameter Weights[c]	Estimated Waste Stream Weight Percent Average (attach evaluation justifying percentages)
Iron-based metals/alloys	
Aluminum-based metals/alloys	
Other metals	
Other inorganic materials	
Cellulosics	
Rubber	
Plastics (waste materials)	
Organic matrix	
Inorganic matrix	
Soils/Gravels	
Packaging materials	Present (Y/N)?
Steel	
Plastics	
Prohibited Wastes[d, e, f, g]	Present (Y/N)?
Observable liquid shall be no more than 1 percent by volume of the outermost container at the time of RTR or VE. Observable liquid shall be no more than 60 milliliters or 3 percent by volume, whichever is greater, in an internal container. Observable liquid shall not be present in a container with EPA HWN U134 assigned.	
Non-radionuclide pyrophoric materials	

Attachment 6 – Waste Form, Waste Material Parameters, Prohibited Items, and Packaging – Example Form (Continued)

Sealed containers > 4 liters	
Hazardous waste not occurring as co-contaminants with TRU mixed waste (non-mixed hazardous waste)	

Waste Stream Number: _____

Explosives	
Compressed gases	
Residual hydrofluoric acid (if U134 assigned to stream)	
Residual PCB liquids[j]	
Ignitables (EPA Hazardous Waste Number D001)	
Corrosives (EPA Hazardous Waste Number D002)	
Reactives (EPA Hazardous Waste Number D003)	
Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes[h]	
Spent Nuclear fuel or high-level waste[i]	
Any unvented plastic bags > 4 liters that have been heat-sealed	
Additional Information (if available)	
Packaging	
Waste container type?	
Liner type?	
Is liner punctured?	
Is filter vent installed?	
Maximum number of confinement layers	

a. Source: *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (CCP-PO-001) Introduction.
b. Source: *Transuranic Waste Baseline Inventory Report* (DOE/CAO-95-1121) or DOE Waste Treatability Group Guidance (DOE/LLW-217). Note: the Waste Matrix Code should not be assigned at the Summary Category Group level.
c. Source: CCP-PO-001 - Table C3-1. Attach the Waste Material Parameter Evaluation Memorandum used to estimate values include in this Table (see Section 4.4.26).
d. Source: CCP-PO-001 - Section C-1c.
e. Source: *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC)(DOE/WIPP-02-3122), Section 3
f. Source: *TRUPACT-II Content Codes* (TRUCON) (DOE/WIPP 89-004)
g. Source: *TRUPACT-II Authorized Methods for Payload Control (TRAMPAC),* Nuclear Waste Partnership, LLC
h. This waste has been approved for disposal at the WIPP by the Permittee as documented by Appendix C1 of the WIPP RCRA Part B Permit Application and the Permittee's approval and assignment of the applicable TRUCON Codes for this waste stream.
i. Source: *Nuclear Waste Policy Act of 1982* (42 U.S.C. 10101)
j. Source: Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution and Commerce, and Use Prohibitions (40 CFR Part 761)

Acceptable Knowledge Expert:_____/_____ Date: _____
Print Sign

Attachment 7 – Radionuclides – Example Form

Page 1 of 1

*Attach current Radiological Characterization or NDA Memorandum

Site(s): _____

Waste Stream Number(s):_____

Waste Stream Description:_____

Radionuclide	Wt %[b]	Ci[b]	Suspected Present (Yes/No)
From CCP-PO-002			
Sr-90			
Cs-137			
U-233			
U-234			
U-238			
Pu-238			
Pu-239			
Pu-240			
Pu-242			
Am-241			
Other Radionuclides (List)			
[a]Source: *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC) (DOE/WIPP-02-3122), Section 3 [b]If available			

Acceptable Knowledge Expert:_____/_____ Date: _____
Print Sign

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Attachment 8 – Waste Containers List – Example Form

(This attachment may be provided in a different format)

Site(s): _____

Waste Stream Number(s): _____

Waste Stream Description: _____

Number of Waste Containers in Waste Stream: _____

Total Existing Volume (m^3): _____

Is waste expected to be generated in the future?: _____

If yes, Estimated Future Volume (m^3): _____

Assumptions: _____

Waste Stream Container Evaluation Memo(s) for Added Containers: _____

Container Identification Number	Generation Date	Generation Point

Acceptable Knowledge Expert: _____ / _____ Date: _____
Print Sign

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Attachment 9 – Attachment 9 is no longer required and Attachment number is reserved for future use

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Attachment 10 – Acceptable Knowledge Re-evaluation Checklist – Example Form

Site(s): _____
Waste Stream Number(s): _____
Waste Stream Description: _____
NCR numbers(s) if applicable: _____
Inconsistency between waste characterization and acceptable knowledge information (describe): _____
_____

Requirements	Completed? Yes/No	Additional Documentation [a]
Review existing information based on the container identification number and document all differences in EPA Hazardous Waste Number assignments. [c]		
If differences exist in the EPA Hazardous Waste Numbers that were assigned, reassess and document all required AK information associated with the new designation. [b,c]		
Reassess and document all testing data associated with the waste. [c]		
Verify and document that the reassigned Waste Matrix Code was generated within the specified time period, area and buildings, waste generating process, and that the process material inputs are consistent with the waste material parameters identified during RTR or VE.		
If NDA results indicate the presence of additional or different radionuclides in the waste, reassess and document AK and characterization information associated with the new information. [c]		
Record all changes to the AK records on the appropriate Attachments and resubmit to the CCP Facility Records Custodian.		
If unresolved discrepancies exist in the AK information for the reassigned Waste Matrix Code, EPA Hazardous Waste Numbers, or radionuclides, document the segregation of this container, and define the actions necessary to fully characterize the waste.		

a. Cite the source document, nonconformance report number, attachment, or other documentation used to support a change or no change.
b. If a toxicity characteristic contaminant is identified, it is not included as a listed waste, and analytical data regarding the concentration are not available, the corresponding EPA Hazardous Waste Number is applied.
c. Not applicable for LANL sealed source waste stream.

Acceptable Knowledge Expert:

_____ Date: _____
Print Sign

Site Project Manager:

_____ Date: _____
Print Sign

Attachment 11 – Acceptable Knowledge Source Document Discrepancy Resolution – Example Form

Page 1 of 1

Waste Stream Number(s): _____

Waste Stream Description: _____

AK Source Document Discrepancy Form Tracking Number:							
Tracking #		Title	Document/Rev#	Author	Date		Page #

Nature of Discrepancy:

Resolution:

Discrepancy Resolved: [ ] Yes [ ] No

Acceptable Knowledge Expert: _____ / _____ Date: _____
Print Sign

Site Project Manager: _____ / _____ Date: _____
Print Sign

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Attachment 12 – Example Form and Content Guide for AK Summary Reports

CCP-AK-SITE-XXX

Central Characterization Program
Acceptable Knowledge Summary Report
For

NAME OF THE SITE
NAME OF THE PROCESS

REVISION NUMBER
DATE

Printed Name

APPROVED FOR USE

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

TABLE OF CONTENTS
LIST OF TABLES
LIST OF FIGURES
LIST OF ATTACHMENTS
LIST OF ACRONYMS AND ABBREVIATIONS

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

1.0 EXECUTIVE SUMMARY

This Acceptable Knowledge (AK) Summary Report has been prepared for the Central Characterization Program (CCP) for Contact-Handled (CH) (Remote-Handled [RH]) Transuranic (TRU) waste generated and managed by *(NAME THE SITE[s])*. The waste described in this report was generated by (Building/Facility), (and the waste will be repackaged in [Building/Facility]). This report was prepared in accordance with CCP-TP-005, *CCP Acceptable Knowledge Documentation* (Reference 1), to implement the AK requirements of (**RH only** -DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* [WCPIP] [Reference __]); *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan* (WIPP-WAP) (Reference __); and DOE/WIPP-02-3122, Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WIPP-WAC) (References __).

The WIPP WAP AK requirements are addressed in CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (Reference __). The WIPP-WAC AK requirements are addressed in CCP-PO-002, *CCP Transuranic Waste Certification Plan* (Reference __). Additionally, this report provides the AK information required by (**CH only** - CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control [*CCP CH-TRAMPAC] [Reference __]) **OR** (**RH only -** CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control* [CCP RH-TRAMPAC] [Reference __]).

The CCP is tasked with certification of TRU waste for transportation to and disposal at the Waste Isolation Pilot Plant (WIPP). This report was developed in accordance with CCP-TP-005 (Reference 1) and describes how AK is collected, reviewed, and managed by the CCP. The CCP is responsible for collection, review, and management of AK documentation in accordance CCP-TP-005 and reviews and approves this AK Summary Report. CCP maintains responsibility for this AK Summary Report and all CCP-TP-005 generated forms and records as quality assurance (QA) records. In addition, CCP maintains a copy of the “historical source documents” as non-QA records.

(Brief description of the waste stream, facility[ies], and generating process/activity).

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

This AK Summary Report, along with referenced supporting documents, provides a defensible and auditable record of AK for designated waste streams from the *NAME THE (FACILITY/PROCESS/ACTIVITY)*. The references and AK source documents used to prepare this report are listed in Sections 7.0 (8.0 for RH) and 8.0 (9.0 for RH). The source documents cited throughout this report are identified by alphanumeric designations corresponding to a unique Source Document Tracking Number (i.e., C001, D001, DR001, M001, P001, and U001 (as applicable to match Section 3).

This AK report includes information relating to the facility's history, mission, process operations, waste identification, characterization, and waste management practices. Information contained in this report was obtained from numerous sources, including facility safety basis documentation, historical document archives, generator and storage facility waste records and documents, and interviews with cognizant personnel.

This report and supporting source documentation provide the mandatory waste program and waste stream-specific information required by the WIPP-WAP (Reference 3). (**RH only -** This report also compiles data relevant to the applicable U.S. Environmental Protection Agency [EPA] requirements and presents the documentation necessary to satisfy each WCPIP data quality objective [DQO] and quality assurance objective [QAO] for RH TRU waste streams [Reference 2]).

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

2.0 WASTE STREAM IDENTIFICATION SUMMARY

Site Where TRU Waste Was Generated and Stored: *SITE ADDRESS and EPA ID*

Facility Where TRU Waste Was Generated: *NAME OF FACILITY*

Facility Mission: *DESCRIBE THE MISSION AND HOW THE WASTE WAS GENERATED*

2.1 Waste Stream #1 (Identifier and Name)

2.2 Waste Stream #2 (Identifier and Name) (repeat following for each waste stream)

Summary Category Group: (Assign per Section 4.4.11)

Waste Matrix Code Group: (Assign per Section 4.4.10)

Waste Matrix Code: (Assign per section 4.4.9)

TRUPACT-II Content Code (TRUCON): (Obtain TRUCON Code(s) from SPM

TRUPACT-III Content Code (TRUCON): (Obtain TRUCON Code(s) from SPM

Waste Stream Description:

As described in Section 5.4.1, waste stream (number) is comprised primarily of (describe type of waste).

(Describe any other specific waste items in the waste stream, equipment, items not included above, secondary waste/chemicals introduced during packaging/repackaging.)

This waste stream was determined to contain Resource Conservation and Recovery Act (RCRA)-regulated constituents and is assigned the following EPA hazardous waste numbers (HWNs): (list HWNs) (Refer to Section 5.4.3).

(Identify the two predominant radionuclides by mass and activity for waste characterized using NDA techniques) (Refer to Section 5.4.2)

(Identify potential prohibited items and characterization method[s] selected to ensure the absence of these items in the final packaging) (Refer to Section 5.4.5).

(Describe waste packaging/repackaging and final waste container configuration) (Refer to Section 5.5).

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

For CH - Waste Stream (number) meets the WIPP-WAP waste stream definition. The waste stream consists of waste materials that have common physical form, that contain similar hazardous constituents, and that are generated from a single process or activity.

For RH - Waste Stream (number) meets the WIPP-WAP and the WCPIP waste stream definitions. The waste is similar in material, physical form, hazardous constituents, and radiological properties and generated from a single process or activity.

3.0 ACCEPTABLE KNOWLEDGE DATA and INFORMATION

TRU waste destined for disposal at the WIPP must be characterized prior to shipment. Development of knowledge of the waste materials and processes that generate and control the waste is required to provide a clear and convincing argument about the characteristics of each waste stream. The AK characterization documented herein complies with the requirements of the WIPP-WAP (Reference__) (**RH only** - and the WCPIP [Reference 1]) and was developed in accordance with of CCP-PO-001, (Reference ___), and CCP-TP-005 (Reference 1).

RH only - The WCPIP identifies waste characterization requirements and methods to satisfy requirements in:

- 40 Code of Federal Regulations (CFR) Part 191, *Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes* (Reference __).

- 40 CFR Part 194, *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR 191 Disposal Regulations* (Reference __).

- *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations: Certification Decision* (Reference __).

Public Law 102-579, *The WIPP Land Withdrawal Act (LWA)* (Reference __).

[Include a summary of the types and sources of AK information used].

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Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

The references and AK sources used to prepare this report are listed in Sections 7.0 (8.0 for RH) and 8.0 (9.0 for RH), respectively. The AK sources referenced within this report by alphanumeric designations (e.g., C001, D001, DR001, M001, P001, and U001) correspond to the Source Document Tracking Number using the following convention: (include as applicable)

- C – Correspondence
- D – Documents
- DR – Discrepancy resolution
- M – Miscellaneous
- P – Procedures and Published documents
- U – Unpublished documents

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

4.0 REQUIRED PROGRAM INFORMATION

This section presents the mandatory TRU waste program information required by the WIPP-WAP and the WCPIP for waste stream (number)(References __ and __). This section provides a description of the facility and operations associated with the generation of (facility/building/operation) TRU waste. Included is a description of the (facility/building/operation), summary of the mission, defense determination, and descriptions of (other operations including D&D, maintenance, repackaging, etc.) operations associated with the generation of waste stream (number) are provided.

4.1 Facility Location
4.2 Facility Description
4.3 Facility Mission
4.4 Defense Waste Assessment
4.5 High-Level Waste and Spent Nuclear Fuel Assessment
4.6 TRU Waste Management
4.6.1 Types and Quantity of TRU Waste Generated
4.6.2 Correlation of Waste Streams Generated from the Same Building and Process
4.6.3 Waste Stream Identification, Categorization, and Delineation
4.7 Description of Waste Generating Process

4.8 Waste Certification Procedures

5.0 REQUIRED WASTE STREAM INFORMATION
(Repeat the following information in additional waste stream sections, as needed)

This section presents the mandatory TRU waste stream specific information required by the WIPP-WAP (**RH only -** and the WCPIP) for waste stream (number) (References __ and __). The area of generation, waste stream volume, period of generation, prohibited items, waste packaging, and the physical, chemical, and radiological composition of the waste stream are described.

5.1 Area and Building of Generation

5.2 Waste Stream Volume and Period of Generation

5.3 Waste Generating Activities

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

5.4 Type of Waste Generated
5.4.1 Materials Related to Physical Form
5.4.1.1 Waste Matrix Code
5.4.1.2 Waste Material Parameters
5.4.2 Radiological Characterization
5.4.3 Chemical Content Identification - Hazardous Constituents
5.4.3.1 F-Listed Constituents
5.4.3.2 Toxicity Characteristic Constituents
5.4.3.3 U- and P-Listed Constituents
5.4.3.4 K-Listed Constituents
5.4.3.5 Ignitables, Reactives, and Corrosives
5.4.3.6 State Hazardous Waste Code or Number Assignment (if applicable)
5.4.4 Polychlorinated Biphenyls
5.4.5 Prohibited Items
5.5 Waste Packaging

6.0 QUALIFICATION OF AK – (**RH Only)**

As stated in CCP-PO-002, *CCP Waste Certification Plan,* (Reference __), this AK Summary Report provides a description of the characterization of this RH waste stream. CCP-AK-ORNL-XXX, *CCP RH TRU Waste Certification Plan for 40 CFR 194 Compliance and Confirmation Test Plan for Waste Stream (number)* (Reference __), describes how each DQO and QAO is met along with the rationale for selection of the AK qualification methods used. As required by the WCPIP (Reference __), the description of waste stream (number) is provided in Sections 4.0 and 5.0. The description of the confirmatory testing process, the percentage of containers that are subjected to the process, a discussion of why the process is considered representative of the waste stream, and quantitative acceptance criteria is presented in CCP-AK-ORNL-XXX (Reference __).

The CCP intends to use a combination of methods to qualify the AK information associated with the [site/facility/building] waste stream because this will make the best use of the information available (such as existing sampling and analytical data). Table XX, Waste Stream (number) Determination Summary, lists the DQOs to be addressed using AK associated with waste stream [number] relating to the defense waste, radiological, and physical waste stream determinations. The location (page number, section, etc.) of the relevant information is identified in the AK source identified in Table XX.

Table XX. Waste Stream (number) DQO Determination Summary
(Provide a summary of the AK and identify the AK sources and the characterization method for each WCPIP DQO).

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

6.0 CONTAINER-SPECIFIC INFORMATION **(Section 7.0 for RH)**

(Provide a summary of the AK documentation reviewed, including a list of the container-specific information).

In accordance with procedure CCP-TP-005 (Reference 1), a CCP Waste Containers List (Attachment 8 of the procedure) is completed and maintained as a quality record for waste tracking purposes. Information tracked includes container identification number, waste stream number, and the closure date for each container.

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

7.0 REFERENCE INFORMATION **[Section 8.0 for RH]**

1. CCP-TP-005, *CCP Acceptable Knowledge Documentation,* Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

2. DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*, Carlsbad, New Mexico, U.S. DOE Carlsbad Field Office

3. *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Waste Analysis Plan,* New Mexico Environment Department, Santa Fe, New Mexico

4. DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria For the Waste Isolation Pilot Plant,* Carlsbad, New Mexico, U.S. DOE Carlsbad Field Office

5. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan,* Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

6. CCP-PO-002, *CCP Transuranic Waste Certification Plan,* Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

7. CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC),* Carlsbad, New Mexico, Nuclear Waste Partnership, LLC.

8. CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC),* Carlsbad, New Mexico, Nuclear Waste Partnerhsip, LLC.

10. DOE/LLW-217, *DOE Waste Treatability Group Guidance*, Idaho Falls, Idaho, INEL-Lockheed Idaho Technologies

11. 40 CFR Part 191, *Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes*, Washington, D.C., U.S. EPA

12. 40 CFR Part 194, *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations*, Washington, D.C., U.S. EPA

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

13. *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations: Certification Decision*, Washington, D.C., U.S. EPA

14. Public Law 102-579, *The Waste Isolation Pilot Plant Land Withdrawal Act*, October 30, 1992 as amended by Public Law 104-201

15. 42 U.S.C 10101, *Nuclear Waste Policy Act of 1982*, U.S. Congress

Attachment 12 – Example Form and Content Guide for AK Summary Reports (Continued)

8.0 AK SOURCE DOCUMENTS **[Section 9.0 for RH]**

Document Number	Title

[INSERT ALL REFERENCED FIGURES]

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Attachment 13 – CCP Waste Stream Characterization Checklist – Example Form

CCP Waste Stream Characterization Checklist

Site(s):

Waste Stream Number: Lot # (if applicable)

Waste Stream Description:

Acceptable Knowledge Information or other data points[a]	Characterization Method(s)	Acceptable Knowledge Re-evaluation Required? Yes/No[b]?	Comments[c]
Physical waste form/description			
Waste material parameters weights			
Waste percent volume consistent with nondestructive examination or visual examination data and audio/video tapes or equivalent media			
Summary Category Group assignment			
Waste Matrix Code assignment			
Absence of prohibited items			
EPA Hazardous Waste Number assignment[d]			
Toxicity characteristic code assignment			
VOCs from packaging materials or radiolysis present			
State Hazardous Waste Number assignment			
Radionuclides present			
Other radiological parameters: (specify)			

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Attachment 13 – CCP Waste Stream Characterization Checklist – Example Form (Continued)

CCP Waste Stream Characterization Checklist

Additional Comments:_____

_____

_____

_____

a. Identified in the AK Summary Report or included in the in-process record documentation (e.g., BDR's)
b. If "yes," AKE completes an *Acceptable Knowledge Re-evaluation Checklist.*
c. Identify the source of the waste testing information (e.g., VE or RTR batch data reports). Note if an AK Sufficiency Determination has been approved to meet any characterization parameter.
d. Ensure that, if a toxicity characteristic contaminant is identified, it is not included as a listed waste, and if analytical data regarding the concentration are not available, the corresponding EPA Hazardous Waste Number is applied.

Site Project Manager:

Date:

Print Sign

Acceptable Knowledge Expert:

Date:

Print Sign

Attachment 14 – CCP Acceptable Knowledge Accuracy Report – Example Form

CCP Acceptable Knowledge Accuracy Report

Site(s):_____

Waste Stream Number(s):_____

Waste Stream Description:_____

Waste Containers:	Waste Matrix Code Reassigned? (Y/N)	EPA Hazardous Waste Number Reassigned? (Y/N)	Radiological Data Consistent with AK? (Y/N)

Total containers in this report:_____
Total containers consistent with AK: _____
Percent containers consistent with AK:_____

Site Project Manager:
_____/_____ Date:_____
Print Sign

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Attachment 15 – CCP TRU Waste Correlation and Surrogate Summary Form – Example Form

CCP TRU Waste Correlation and Surrogate Summary Form

Generator/Storage Site(s):_____

Waste Stream(s):_____

Waste Used to Correlate:_____

Waste Used as Surrogate:_____

Information	Y/N	Source of Information
Is physical form identified?		
Are chemicals identified?		
Is the absence of prohibited items confirmed?		
Are radiological data described?		

Explain/Justify the Use of Correlating/Surrogate Waste Stream Information:
(Attach additional supporting information, as applicable)

_____
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CCP-TP-163

Revision 4

CCP
Evaluation of Waste Packaging Records for Visual Examination of Records

EFFECTIVE DATE: 06/18/2013

Mike Ramirez

PRINTED NAME

APPROVED FOR USE

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	11/16/2006	Initial issue.
1	11/12/2008	Revised to incorporate concurrent use with CCP-TP-113, *CCP Standard Contact-Handled Waste Visual Examination*.
2	03/11/2009	Response to U.S. Environmental Protection Agency (EPA) inspection number (EPA-INL-CCP-VE-TI, Issue number INL-CCP-RH-VE-TI-002CR).
3	04/24/2012	Revised to incorporate Standing Order CCP-SO-ANLE-002.
4	06/18/2013	Revised to incorporate the Nuclear Waste Partnership (NWP) transition changes.

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1.0 PURPOSE

This procedure provides the actions to evaluate waste packaging records intended for use in visual examination (VE), for the documentation required by CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*.

1.1 Scope

This procedure establishes the process for evaluation of waste packaging records generated by organizations external to Central Characterization Program (CCP) prior to the certification program. This procedure also provides direction to VE personnel for review of waste packaging records that will be accepted for performing VE in accordance with CCP-TP-113, *CCP Standard Contact-Handled Waste Visual Examination*, and CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*.

2.0 REQUIREMENTS

2.1 References

Referenced Documents

- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-TP-113, *CCP Standard Contact-Handled Waste Visual Examination*
- CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*

2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan*, prior to performing this procedure.

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2.3 Equipment List

2.3.1 None.

2.4 Precautions and Limitations

2.4.1 None.

2.5 Prerequisite Actions

2.5.1 None.

2.6 Definitions

2.6.1 None.

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3.0 RESPONSIBILITIES

3.1 Visual Examination Operator (VEO)

3.1.1 Evaluates the waste packaging record to ensure the requirements are met as defined in this procedure.

3.2 Site Project Manager (SPM)

3.2.1 Evaluates waste packaging records determined by the VEO not to meet the requirements.

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4.0 PROCEDURE

VEO

4.1 Obtain the waste packaging records to be used for characterization of transuranic (TRU) mixed waste.

4.2 Ensure the waste packaging records meet the following minimum requirements for the type of record.

4.2.1 Waste packaging recorded on video/audio media

[A] The video/audio media recorded the waste packaging event for the container such that all waste items placed into the container are recorded in sufficient detail that another trained VEO can determine what the waste items are and their associated waste material parameter.

[B] The video/audio media captured the waste container identification number.

[C] The personnel loading the waste container are identified on the video/audio media or on packaging records traceable to the loading of the waste container.

[D] The date of loading of the waste container is recorded on the video/audio media or on packaging records traceable to the loading of the waste container.

NOTE

The use of waste packaging written records generated using two operators requires the prior approval of the Carlsbad Field Office (CBFO).

4.2.2 Waste packaging performed using two generator site personnel

[A] At least two generator site personnel approved the data forms or packaging records attesting to the contents of the waste container.

[B] The data forms or packaging records contain an inventory of waste items in sufficient detail that another trained VE Operator can identify the associated waste material parameters.

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[C] The waste container identification number is recorded on the data forms or packaging records.

4.3 **IF** the waste packaging record DOES **NOT** meet the requirements listed above, **THEN** contact the SPM for further direction.

4.4 **IF** the waste packaging record meets the requirements listed above, **THEN** perform VE in accordance with CCP-TP-500 for remote-handled (RH) waste, or CCP-TP-113 for contact-handled (CH) waste.

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5.0 RECORDS

5.1 There are no records generated by the performance of this procedure.

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CCP-TP-500

Revision 13

CCP
Remote-Handled Waste Visual Examination

EFFECTIVE DATE: 09/23/2013

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	02/15/2006	Initial issue.
1	04/27/2006	Revised in response to CBFO comments.
2	06/19/2006	Revised to address concerns raised during the Idaho National Laboratory (INL) Remote-Handled (RH) Audit A-06-21.
3	10/12/2006	Revised to resolve issue identified in EPA Concern ANL-CCP-RH-VE-06-001CR.
4	11/16/2006	Revised to incorporate Visual Examination Expert (VEE) decisions and signature.
5	06/01/2007	Revised to incorporate February 27, 2007, modification of the Waste Isolation Pilot Plant Hazardous Waste Facility Permit (HWFP), Attachment B-B6, Waste Analysis Plan (WAP).
6	10/25/2007	Revised in response to Central Characterization Project (CCP) Corrective Action Report (CAR) CAR-RHBCL-00002-07, to clarify questions 11 and 12 on Attachment 2, Visual Examination Independent Technical Review Checklist.
7	02/27/2008	Revised to address Carlsbad Field Office (CBFO) Corrective Action Report (CAR) 08-005.
8	07/24/2008	Clarification changes for ease of operations.
9	06/30/2010	Revised to make changes for a two shift operation and two different sets of qualified operators to be able to work on the same Remote-Handled (RH)-Visual Examination (VE). Added Table 1, Prohibited Items List, and updated language to reflect the permit modification.
10	12/29/2010	Revised to incorporate Permit Modification Independent Technical Review (ITR) language.
11	04/21/2011	Implement Revision 2 of Remote-Handled Transuranic (TRU) Waste Characterization Program Implementation Plan DOE/WIPP-02-3214.
12	07/18/2013	Revised to incorporate Nuclear Waste Partnership (NWP) transition changes.
13	09/23/2013	Revised to include the allowable closure methods Table 2.5-1 from the remote-handled (RH) transuranic (TRU) Payload Appendices.

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1.0 PURPOSE

This procedure establishes how to perform the visual examination (VE) for remote-handled (RH) transuranic (TRU) waste. This procedure also describes how to prepare and review batch data reports (BDRs) generated by VE.

This procedure provides the actions for collection of VE data and information required by CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan;* CCP-PO-002, *CCP Transuranic Waste Certification Plan;* and DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* (WCPIP).

1.1 Scope

VE verifies the physical waste form, confirms the Waste Stream Description and Waste Matrix Codes provided by Acceptable Knowledge (AK), and confirms that no prohibited items are present. VE is performed by two qualified operators, which is documented on the attachments to this procedure.

VE cannot identify prohibited items imbedded in forms, such as soils and solids, when the material is not removed from the characterized container.

VE may be performed on S3000 or S4000 when the material is not removed from the characterized container if Carlsbad Field Office (CBFO) approves the method for the specific waste form, typically from a surveillance.

VE may be performed in two phases. In the first phase, VE is performed by two qualified operators at the point of generation where the waste is visually inspected, identified, and placed into small containers. At this point (after waste has been placed in small containers), the waste may no longer be visible in its packaging. The packaging could be the small containers that will eventually be packaged into a larger container or a final container. In the second phase, VE is performed when small packages are placed in a larger container or the final container, documented, and then closed rendering VE of the waste no longer possible.

In addition to being used to perform VE at the time waste is actually being placed into the waste container, this procedure may also be used to perform VE of video media of waste being placed into waste containers. In the case of VE being performed for video tapes of waste contents, the VE operators are not in direct control of the waste examination and packaging process. Consequently, the video recordings must be

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adequate and complete to identify waste materials and verify the absence of prohibited items as required in the execution of this procedure. Attachment 1, Visual Examination Data Form, for the individual containers, is completed based on the review of the video media.

All site-specific requirements for health, safety, and operations in the work place will be addressed in a site-specific operating procedure.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- *Safety Analysis Report for the RH-TRU 72-B Waste Shipping Package,* U.S. Department of Energy Carlsbad Field Office
- CCP-PO-505, CCP *Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*
- DOE/WIPP 90-045, *Remote-Handled-Transuranic Waste Content Codes (RH-TRUCON)*

Referenced Documents

- DOE/WIPP-02-3214*, Remote-Handled TRU Waste Characterization Program Implementation Plan*
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*

2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan,* prior to performing this procedure.

2.3 Equipment List

2.3.1 None.

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2.4 Precautions and Limitations

2.4.1 Facility Requirements

[A] This procedure augments, but DOES **NOT** supersede, applicable requirements of the facilities in which the activities are conducted.

[B] This procedure DOES **NOT** address radiological protection requirements. All activities described SHALL be conducted in accordance with work plans, procedures, or other process controls generated by the facility where the work is performed.

[C] Prior to performing work, personnel will comply with all facility requirements for visitors, as established by each Host site.

2.4.2 Conditions Adverse to Quality

[A] If a condition adverse to quality is identified, the individual(s) identifying the condition SHALL initiate a nonconformance report (NCR) in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*.

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3.0 RESPONSIBILITIES

3.1 Visual Examination Operator (VEO)

3.1.1 Performs the VE.

3.1.2 Assembles the BDR.

3.1.3 Completes Attachment 1(s).

3.1.4 Paginates the BDR.

3.1.5 Completes Attachment 4, Visual Examination Batch Data Report Cover Sheet.

3.1.6 Completes Attachment 5, Visual Examination Batch Data Report Table of Contents.

NOTE

The Independent Technical Reviewer (ITR) will be someone, other than the visual examination operator (VEO), who is qualified to have performed the work. ITRs shall not be involved in the generation or recording of the data.

3.2 Independent Technical Reviewer (ITR)

3.2.1 Reviews the BDR.

3.2.2 Completes Attachment 2(s), Visual Examination Independent Technical Reviewer Checklist.

3.3 Visual Examination Expert (VEE)

3.3.1 Responsible for overall direction and implementation of the VE at that facility.

3.4 Site Project Manager (SPM)

3.4.1 Reviews and approves the BDR.

3.4.2 Completes Attachment 3, Visual Examination Site Project Manager Checklist.

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4.0 PROCEDURE

NOTE

A separate Attachment 1 will be used for each small container or package used to contain waste, **AND** an Attachment 1 will be used when combining several smaller packages into a larger container.

A Testing Batch includes all data pertaining to VE for up to 20 containers without regard to waste matrix.

A separate Attachment 1 will be used if the original operators that started the VE could not complete the container (e.g., end of the shift), **AND** two different qualified operators had to resume or finish VE of the container.

Two VEOs, who are equally trained in accordance with CCP-QP-002, will confirm the contents of the waste whether video recording is used or not used.

VEO

4.1 VE for Single Packages (small packages or final containers)

4.1.1 Preparations

[A] Record the following information on Attachment 1:

[A.1] Site Identification (ID) (e.g., RHANL)

[A.2] Examination Date

[A.3] Batch Number if known, otherwise mark as N/A

[A.4] Procedure and Revision Number

[B] Prepare the recording equipment as follows (optional):

[B.1] **IF** recording equipment is to be used,
THEN operate the recording equipment in accordance with site procedures.

[B.2] Verify the recording media is labeled with the container number and date, **AND** annotate the video number on Attachment 1.

[B.3] To verify the recording equipment is operating satisfactorily, record a short segment, **AND** review segment for clarity of image and audio, if applicable.

[B.4] Check SAT (Satisfactory), UNSAT (Unsatisfactory), or N/A on Attachment 1 to record the result of the Recording Equipment Check.

NOTE

If using video/audio media, record the waste packaging event for the container such that the waste placed into the containers are recorded in sufficient detail that a trained VEO can determine what the waste is and its associated waste material parameter.

[B.5] **IF** recording the VE,
THEN enter the Recording Start time on Attachment 1, **AND** begin recording.

4.1.2 Visual Examination (VE)

[A] **IF** a single container will be used for all of the waste to be packaged,
THEN check the Initial Container field N/A, **AND** use the Final Container fields to record steps 4.1.2[B.1] through 4.1.2[J.2].

[B] **IF** the waste will be packaged in small containers and later combined in a final container,
THEN check the Final Container field N/A, **AND** record the following in the Initial Container fields on a separate Attachment 1 for each small container:

NOTE

The Container or Package ID Number is user defined (must be unique to the package or container) but shall be such that the small containers in a final container can be distinguished from each other.

[B.1] Container or Package ID Number

[B.2] Container Type (e.g., less than 4-liter plastic bottle, plastic bag, filtered plastic bag, unsealed 5-gallon pail, 55-gallon drum)

[B.3] Waste Matrix Code as identified from AK

[B.4] Waste Stream as listed in the AK Summary Report

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[C] **IF** combining smaller containers into a larger container,
THEN GO TO Section 4.2.

NOTE

The description of the material to be placed in the package shall be sufficiently detailed to allow a reviewer to evaluate the Waste Material Parameters (e.g., crescent wrench Iron-based Metals/Alloys [IM]). The material parameters are listed in Table 2, Waste Material Parameters.

[D] Examine the waste, **AND** record the description of the material to be placed in the package in the Waste Description field on Attachment 1.

[E] Ensure the waste is placed into the package.

[F] **IF** VE of the container can **NOT** be completed by the original qualified operators that started the waste container for any reason,
THEN STOP and notify the VE Expert.

[G] Complete comment section of on Attachment 1, initial and date comments. New qualified operators SHALL initial and date comments for acceptance of waste previously placed into the waste container.

[H] **IF** different qualified operators resume or complete the VE **THEN** the operators will start a separate Attachment 1 at step 4.1.2[D], complete Attachment 1 per CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*.

[I] **WHEN** the waste package is full,
OR the bag has met the packaging limit,
THEN perform the following and document on Attachment 1:

[I.1] **IF** recording,
THEN STOP the recording device, **AND** enter the Recording Stop time.

[I.2] **IF** packaging waste in smaller containers that will be combined into a larger container,
THEN GO TO step 4.1.2[I.6].

[I.3] Check Y (Yes) or N (No) to record use of Rigid Liner and enter type (i.e., rigid liner thickness).

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[I.4] Check Y or N to record use of Rigid Liner Lid.

[I.5] **IF** liner lid is used,
THEN record hole size in Rigid Liner Lid.

NOTE

The fill percent of the container is based on the highest level of the bulk of the waste. Items (e.g., pipe, plastic bags) that protrude above the bulk of the waste are **NOT** to be included in the fill percent determination. The fill percent is to be recorded in five percent increments (e.g., 35%, 40%, and 45%).

[I.6] Estimate, **AND** record the fill percent.

[I.7] Determine and record the amount of organic waste in 10 percent increments by volume.

[I.8] Ensure the bag liner is closed by either VE or AK record, if applicable.

[I.9] Enter the number of Layers of Confinement for the package.

[I.10] Enter the Closure Method(s) for the individual Layers of Confinement (use the Comments field on Attachment 1 if additional room is needed). N/A if there are no Layers of Confinement.

[I.11] Ensure the lid of the waste container is installed in accordance with Host site procedures, if applicable.

[I.12] **IF** the waste stream is S3000 **OR** S4000 waste that also contains debris,
THEN visually estimate the total weight of debris in the container of waste, **AND** record the debris weight in the Comments field of Attachment 1.

[I.13] Answer the Prohibited Item/RH 72B Criteria questions on Attachment 1.

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NOTE

Packaging material applies to the final container only.

[J] Certify the contents of the package by performing the following:

VEO 1

[J.1] Print name, sign, **AND** date Attachment 1 to annotate that the VE has been completed.

VEO 2

[J.2] Print name, sign, **AND** date Attachment 1 to annotate that the VE has been completed.

VEO

[K] Ensure the waste package is stored with reasonable protection from tampering.

4.2 VE for Final Packaging

NOTE

VE for Final Packaging applies when waste package(s) are to be placed into a larger container. For packages VE'd by tape review, the applicable steps in Section 4.2 are completed using AK information.

VEO

4.2.1 Prepare packages for loading as follows:

[A] Identify the packages to be placed in the larger container, **AND** obtain the Attachment 1 for those containers.

[B] Ensure all of the Attachment 1s show that the waste belongs to the same waste stream, there are NO prohibited items present, **AND** there are NO NCRs open that would require additional handling of the waste.

4.2.2 Verify each Package ID Number against the Attachment 1 prior to loading into the larger container.

4.2.3 For each package to be loaded into the larger container, perform the following:

[A] Record the Package ID Number(s) in the Waste Description field on Attachment 1.

[B] Ensure the package is placed into the larger container.

[C] Repeat steps 4.2.3[A] and 4.2.3[B] for each package to be loaded.

[D] **IF** waste container can NOT be completed by the original qualified Operators that started the waste container for any reason,
THEN STOP AND Notify the VE Expert.

[E] Complete comment section of Attachment 1, initial and date comments. New qualified operators SHALL initial and date comments for acceptance of waste previously placed into the waste container.

[F] **IF** different qualified operators resume or complete the VE,
THEN the operators will start with a separate Attachment 1 at step 4.1.2[D] and complete Attachment 1 per CCP-TP-500.

4.2.4 **WHEN** the waste container is FULL,
OR the waste container has met the packaging limit as defined in the AK Summary Report,
THEN perform the following:

[A] **IF** recording,
THEN STOP the recording device,
AND enter the Recording Stop time on Attachment 1.

[B] Check Y or N to record use of Rigid Liner, **AND** enter type.

[C] Check Y or N to record use of Rigid Liner Lid.

[D] **IF** liner lid is used,
THEN record hole size in Rigid Liner Lid.

NOTE

The fill percent of the container is based on the highest level of the bulk of the waste. Items (e.g., pipe, plastic bags) that protrude above the bulk of the waste are **NOT** to be included in the fill percent determination. The fill percent is to be recorded in five percent increments (e.g., 35%, 40%, and 45%).

[E] Estimate, **AND** record the fill percent.

[F] Determine and record the amount of organic waste in 10 percent increments by volume.

[G] Ensure the bag liner is closed by either VE or AK record, if applicable.

[H] Enter the number of Layers of Confinement for the package.

[I] Record the Closure Methods(s) for the individual Layers of Confinement. Use the Comments field on Attachment 1 if additional room is needed. N/A if there are no Layers of Confinement.

[J] Ensure the lid of the waste container is installed in accordance with Host site procedures, if applicable.

[K] **IF** the waste stream is S3000 OR S4000 waste that also contains debris,
THEN visually estimate the total weight of debris in the container of waste and record the debris weight in the comment field of Attachment 1.

[L] Answer the Prohibited Item/RH 72B questions on Attachment 1.

NOTE

Potential hazardous wastes identified by visual examination include:

- Batteries
- Circuit Boards (may be contained in electrical equipment)
- Cathode Ray Tube (CRT)-based computer monitors or televisions
- Lead
- Mercury, mercury containing equipment (e.g., barometers, switches, thermometers, thermostats)
- Light Bulbs (both incandescent and fluorescent)

4.2.5 Certify the contents of the package by performing the following:

VEO 1

[A] Print name, sign, **AND** date Attachment 1 to annotate that the VE has been completed.

VEO 2

[B] Print name, sign, **AND** date Attachment 1 to annotate that the VE has been completed.

VEO

[C] Ensure the waste package is stored with reasonable protection from tampering.

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4.3 Batch Data Report Preparation

NOTE

The Testing BDR will contain Attachment 1s for no more than 20 containers. Each container may hold several smaller packages, and each of those may potentially also hold smaller packages, resulting in a number of Attachment 1s for each container.

BDR numbering will be as follows: Site ID, process, year, next sequential number to start back at one at the beginning of the new year (e.g., ANLRHVE05001).

VEO

NOTE

For packages VE'd by tape review, the original packaging data sheet, if available (obtained from AK), is included in the BDR and placed behind the corresponding Attachment 1 (See Attachment 6, Waste Package Data Sheet, for an example).

4.3.1 Complete Attachment 4.

4.3.2 Assemble the following data for the BDR:

[A] Attachment 5, Visual Examination Batch Data Report Table of Contents.

[B] Attachment 1 for each container, original packaging data sheet (if applicable), and the associated Attachment 1s for the internal containers.

[C] Attachment 2, Visual Examination Independent Technical Reviewer Checklist.

[D] Copy of NCRs, if applicable.

4.3.3 Prepare the BDR as follows:

[A] Assemble and organize the BDR.

[B] Place the Internal Container Attachment 1s and original packaging data sheet if applicable, behind the Final Container Attachment 1 in which it resides.

[C] Paginate the BDR.

[D] Complete Attachment 5.

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4.3.4 Submit the in process BDR to the VE Expert. The VE Expert will designate ITR.

NOTE

The independent technical review is conducted by an individual who is qualified to have performed the initial work, but who is **NOT** directly responsible for performing the work. The ITR shall not be involved in the generation or recording of the data.

ITR

4.3.5 Enter the BDR Number on Attachment 2.

4.3.6 Review the BDR to the criteria in Attachment 2, **AND** document on Attachment 2.

4.3.7 Print name, sign, and date Attachment 2.

4.3.8 Submit the completed BDR and audio/video media, when applicable, in accordance with CCP-QP-008, *CCP Records Management*.

NOTE

The historical audio/media records from generation sites may be pre-submitted to CCP Records.

4.4 Site Project Manager (SPM) Review

SPM

4.4.1 Obtain copy of BDR.

4.4.2 Enter the BDR Number on Attachment 3.

4.4.3 Review the BDR to the criteria in Attachment 3, **AND** document on Attachment 3.

4.4.4 Print name, sign, and date Attachment 3.

4.4.5 Submit the completed Attachment 3 to CCP Records in accordance with CCP-QP-008.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as Quality Assurance (QA) records in accordance with CCP-QP-008. The records are the following:

5.1.1 <u>QA/Lifetime</u>

[A] Batch Data Report (BDR):

[A.1] Attachment 1, Visual Examination Data Form(s) (There will be multiple Attachment 1s to each BDR package.)

[A.2] Attachment 2, Visual Examination Independent Technical Reviewer Checklist

[A.3] Attachment 3, Visual Examination Site Project Manager Checklist

[A.4] Attachment 4, Visual Examination Batch Data Report Cover Sheet

[A.5] Attachment 5, Visual Examination Batch Data Report Table of Contents

[A.6] Copy of NCRs, if applicable

5.1.2 <u>QA/Nonpermanent</u>

[A] VHS Tape or DVD, as applicable (primary and backup)

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Table 1. Prohibited Items List

LIST OF PROHIBITED ITEMS
Liquid Wastes Observable liquid shall be less than 1 percent by volume of the outermost container at the time of RTR or VE. Observable liquid shall be no more than 60 milliliters or 3 percent by volume, whichever is greater, in an internal container. Observable liquid shall not be present in a container with EPA HWN U134 assigned.
Non-Radionuclide Pyrophorics
Non-mixed hazardous waste
Incompatible wastes (Wastes that are incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, and/or other wastes).
Explosives
Compressed Gases/Pressurized containers (e.g., aerosol cans)
Observable liquid containing Polychlorinated Biphenyls
Ignitables
Corrosives
Reactive waste
Sealed containers greater than 4 liters
Heat-sealed bags not defined in the applicable RH-TRU Payload Appendices, Table 2.5.1
Sharp or heavy objects not adequately blocked, braced, or packaged
Waste that has ever been managed as high-level waste and waste from tanks specified in Table C-8 of CCP-PO-001.

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Table 2. Waste Material Parameters

Waste Material Parameter	Description
Iron-based Metals/Alloys (IM)	Iron and steel alloys in the waste; does not include the waste container materials
Aluminum-based Metals/Alloys (AM)	Aluminum or aluminum-based alloys in the waste materials
Other Metals (OM)	All other metals found in the waste materials
Other Inorganic Materials (OIM)	Nonmetallic inorganic waste including concrete, glass, firebrick, ceramics, sand, and inorganic sorbents
Cellulosics (C)	Materials generally derived from high-polymer plant carbohydrates; (e.g., paper, cardboard, wood, and cloth)
Rubber (R)	Natural or man-made elastic rubber gloves, latex materials; (e.g., surgeons' gloves, and leaded rubber gloves)
Plastics (waste materials) (P)	Generally man-made materials, often derived from petroleum feedstock; (e.g., polyethylene and polyvinylchloride)
Organic Matrix (OGM)	Cemented organic resins, solidified organic liquids and sludges
Inorganic Matrix (IGM)	Any homogeneous materials consisting of sludge or aqueous-based liquids that are solidified with cement, calcium silicate, or other solidification agents; (e.g., wastewater treatment sludge, cemented aqueous liquids, and inorganic particulates)
Soils/gravel (S)	Generally consists of naturally occurring soils that have been contaminated with inorganic waste materials

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Table 3. Allowable Closure Methods

Confinement Layer	Release Rate (mole/sec/mol fraction) at 298 K (25°C)
Breather vent on can	5.18E-6
Filtered bag	1.075E-5
Fold-and-tape or twist-and-tape liner bag	4.67E-6[Φ]
Heat-sealed bag	$RR = \frac{\rho A_p P_g}{x_p} \frac{mole}{22{,}400\, cm^3 (STP)}$ where, RR = Release rate of hydrogen, mole/sec/mol fraction H_2 ρ = Hydrogen permeability, cm^3 (STP) cm^{-1} $(cm\ Hg)^{-1}$ s^{-1} [3.6E-10 for polyvinylchloride and 8.6E-10 for polyethylene] A_p = Permeable surface area, cm^2 P_g = Gas pressure, 76 cm Hg x_p = Bag thickness, cm
Inner drum liner filter	3.70E-6
Drum filter	3.70E-6
Fixed lid canister filter (high diffusivity)[Φ]	9.34E-5
Fixed lid canister filter[Φ]	1.48E-5
Removable lid canister filter[Φ]	1.48E-5
NS15 neutron shielded canister open-cell urethane foam gaskets (2 ea. – combined)	7.38E-4[Ⓓ]
NS30 neutron shielded canister open-cell urethane foam gaskets (2 ea. – combined)	7.96E-4[Ⓓ]
NS15 neutron shielded canister filter[Φ]	1.48E-5
NS30 neutron shielded canister filter[Φ]	1.48E-5

[Φ] Release rate meets the minimum filter specifications of Section 2.4 of the RH-TRAMPAC.

[Φ] Release rate is valid for all temperatures.

[Ⓓ] Shaw Environmental, Inc., "Diffusivity and Flow Rates of PORON® Gaskets in RH-TRU Neutron Shielded Canisters," Shaw Environmental, Inc., December 2009.

Attachment 1 – Visual Examination Data Form

	Site ID:				
	Examination Date:		Batch Number:		
	Procedure #:		Revision #:		Video Number:
	Recording Equipment Check: ☐SAT ☐UNSAT ☐N/A		Recording Start:		Recording Stop:
Initial Container ☐ N/A			Final Container ☐ N/A		
	Container or Package ID Number:			Container or Package ID Number:	
	Container Type:			Container Type:	
	Waste Matrix Code:			Waste Matrix Code:	
	Waste Stream:			Waste Stream:	
				Rigid Liner: ☐Y ☐N Type:	Rigid Liner Lid: ☐ Y ☐N
				Rigid Liner Vented or Hole Size:	
	Percent Fill:	Percent Organic Waste:		Percent Fill:	Percent Organic Waste:
	Layers of Confinement:	Closure Method:		Layers of Confinement:	Closure Method:
	Comments (e.g., filter information, NCRs):				

Waste Description:

Attachment 1 – Visual Examination Data Form (continued)

Container or Package ID Number _____

Prohibited Item(s) Summary			
	YES	NO	N/A
Does the container have observable liquid equal to or greater than 1 percent by volume of the outermost container at the time of RTR or VE?	☐	☐	
Does the container have observable liquid more than 60 milliliters or 3 percent by volume, whichever is greater in an internal container?	☐	☐	
Does the container have observable liquid with an EPA hazardous waste number (HWN) U134 assigned?	☐	☐	
Does the container have observable liquid containing PCBs?	☐	☐	
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☐	
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☐	
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does **NOT** match Table of Allowable Materials for RH-TRU Waste in the RH-TRAMPAC)?	☐	☐	
Is there an indication of wastes containing explosives or compressed gases?	☐	☐	
Is there an indication of polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization?	☐	☐	
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)?	☐	☐	
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☐	
RH 72B Criteria			
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☐	
Are there sealed containers GREATER than 4 liters or heat sealed bags **NOT** defined in the applicable TRUCON Code?	☐	☐	
Are there indications of inadequate protection (blocked or braced) for heavy and/or sharp objects?	☐	☐	
Is the waste consistent with the TRUCON Code?	☐	☐	
Comments:			
Visual Examination Operator 1: Print Name _____ Signature _____ Date _____			
Visual Examination Operator 2: Print Name _____ Signature _____ Date _____			

Attachment 2 – Visual Examination Independent Technical Reviewer Checklist

Batch Data Report No.: _____

1. Were data generation and reduction conducted in a technically correct manner in accordance with the methods (procedure) used?	☐ NO	☐ YES	☐ N/A
2. Was the correct revision of the operating procedure used?	☐ NO	☐ YES	☐ N/A
3. Were all the transcription errors corrected?	☐ NO	☐ YES	☐ N/A
4. Are BDR contents complete and match the Visual Examination Batch Data report Table of Contents?	☐ NO	☐ YES	☐ N/A
5. Does the BDR include VE for no more than 20 containers?	☐ NO	☐ YES	☐ N/A
6. Is all data recorded signed and dated in reproducible ink?	☐ NO	☐ YES	☐ N/A
7. Is all raw data recorded clearly, legibly, and accurately?	☐ NO	☐ YES	☐ N/A
8. Are all changes to original data lined out, initialed and dated by the individual making the changes or an individual authorized to make the change?	☐ NO	☐ YES	☐ N/A
9. Is there an adequate written description of the contents?	☐ NO	☐ YES	☐ N/A
10. Were the recording equipment checks satisfactory?	☐ NO	☐ YES	☐ N/A
11. Has each container in this BDR been evaluated for the presence of prohibited wastes?	☐ NO	☐ YES	☐ N/A
12. Has the physical waste form in each container in this BDR been evaluated against the Waste Stream Description and the Waste Matrix Code?	☐ NO	☐ YES	☐ N/A
13. Have the RH Quality Assurance Objectives (QAOs) for VE been met?	☐ NO	☐ YES	☐ N/A
Precision – reconciled discrepancies between operators or between the operator and ITR.	☐	☐	☐
Accuracy – trained operators	☐	☐	☐
Representativeness – description of container contents	☐	☐	☐
Completeness – completed data form and/or recording	☐	☐	☐
Comparability – proper training and adequate AK source documents are available for unopened containers.	☐	☐	☐
14. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☐ N/A
Comments:			

Independent Technical Reviewer:

_____	_____	_____
Printed Name	Signature	Date

Attachment 3 – Visual Examination Site Project Manager Checklist

Batch Data Report No.: _____

1. Has all the data received an independent technical review as evidenced by a completed checklist (Attachment 2) and the appropriate ITR signature?		☐ NO	☐ YES
2. Are BDR contents complete and match the Visual Examination Batch Data Report Table of Contents?		☐ NO	☐ YES
3. Is the BDR complete (appropriately filled in forms for each container)?		☐ NO	☐ YES
4. Have the RH Quality Assurance Objectives (QAOs) for VE been met? Precision – reconciled discrepancies between operators Accuracy – trained operators Representativeness – description of container contents Completeness – completed data form and/or recording Comparability – proper training and adequate AK for unopened containers		☐ NO ☐ NO ☐ NO ☐ NO ☐ NO ☐ NO	☐ YES ☐ YES ☐ YES ☐ YES ☐ YES ☐ YES
5. Were NCRs generated included in the BDR?	☐ NO	☐ YES	☐ N/A
Comments:			

SPM:

_____ _____ _____
Printed Name Signature Date

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Attachment 4 – Visual Examination Batch Data Report Cover Sheet

Batch Data Report No.: _____ Date: _____

Waste Container ID Number:	
1	
2	
3	
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20	

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Attachment 5 – Visual Examination Batch Data Report Table of Contents

Batch Data Report No.: _____ Date: _____

Item	Description	Page No.
1	Visual Examination Batch Data Report Cover Sheet (Attachment 4)	
2	Visual Examination Batch Data Report Table of Contents (Attachment 5)	
3	Visual Examination Data Forms (Attachment 1)	
4	Visual Examination Independent Technical Reviewer Checklist (Attachment 2)	
5	Copy of NCRs (N/A [if not applicable])	

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Attachment 6 – Waste Package Data Sheet (Example)

RH-TRU (30 Gallon Drum)
Waste Package Data Sheet

RW 81798
AGHCF Drum #: 849

Date Loaded: 6/4/02
Seal No.: 00849
Drum Vent No.: ANL-176

Combustible: (check)
Noncombustible: ✓ (check)
Loaded By: DPM

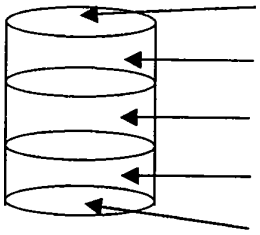
Top Waste Can No.: 324
Bottom Waste Can No.: 323
Drum packaging materials inspected by: JP
Total Weight of Loaded Drum: 115 lbs

Inner Pouch Vent No.: A-31-94
Outer Pouch Vent No.: A-56-94

Acceptable Smearable Levels: <20 dpm/100cm^2 alpha and 1000 dpm/100 cm^2 beta-gamma:

Inner Pouch Primary Seal (dpm/100 cm^2)	NCD	alpha	NCD	beta-gamma
Outer Pouch Secondary Seal (dpm/100 cm^2)	NCD	alpha	NCD	beta-gamma
Exterior of 30-gal Drum (dpm/900 cm^2) (large area smear)	NCD	alpha	NCD	beta-gamma

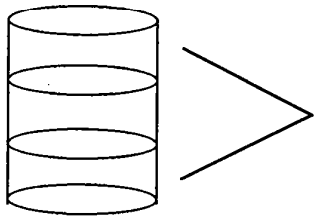
Radiation Levels from 30-gal Drum at 6 cm, R/hr, gamma:



top	~~0.75~~ 1.5
top third	4.4
middle third	4.4
bottom third	5.3
bottom	12

Survey meter used: RMS3
Serial Number: 263
Last Calibration: 3/02

Radiation Levels at Various Distances from Drum:



Distance from Drum:	1 m (3 ft)	.78 m (6 ft)
Gamma Rad. Level (mR/hr)	600	300
Survey Meter Used:	RMS3	RMS3
Serial No.:	263	263
Last Calibration:	3/02	3/02

Surveyed at the AGHCF by: S. Yan Location: AGHCF Date: 6-4-02

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CCP-TP-506

Revision 5

CCP
Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report

EFFECTIVE DATE: 07/10/2014

Irene Joo

PRINTED NAME

APPROVED FOR USE

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	04/28/2006	Initial issue.
1	05/05/2006	Revised to address Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
2	06/08/2006	Revised to reference the correct line numbers for completing the attachments.
3	08/05/2013	Revised to incorporate the Nuclear Waste Partnership (NWP) transition changes.
4	11/21/2013	Revised to include administrative control limits prompting further evaluation of the container for shipping acceptability based on Cs-137 and Co-60 curie content and contact dose rate of 100 R/hr.
5	07/10/2014	Revised to streamline the procedure and forms and to eliminate redundancies.

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1.0 PURPOSE

Prior to shipment of remote-handled (RH) transuranic (TRU) waste, the Central Characterization Program (CCP) will reconcile the data in accordance with the requirements of DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan* (WCPIP). Data reconciliation is required in order for the Site Project Manager (SPM) to complete the Acceptable Knowledge (AK) Characterization Reconciliation Report (CRR).

1.1 Scope

This procedure provides the methodology for data reconciliation with the Data Quality Objectives (DQOs) provided in the WCPIP, following data validation and verification by the SPM. This reconciliation is performed at the waste stream or waste stream lot level. This procedure provides instructions for the completion of the CRR. The CRR for an RH TRU waste stream shall be submitted to the U.S. Department of Energy (DOE)/Carlsbad Field Office (CBFO) for approval prior to shipment of that RH TRU waste stream to the Waste Isolation Pilot Plant (WIPP).

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- *Waste Isolation Pilot Plant Land Withdrawal Act* (Public Law 102-579)

Referenced Documents

- DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*
- DOE/WIPP 94-1012, *Quality Assurance Program Document*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*
- CCP-TP-005, *CCP Acceptable Knowledge Documentation*

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2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan*, prior to performing this procedure.

2.3 Equipment List

2.3.1 None.

2.4 Precautions and Limitations

2.4.1 None.

2.5 Prerequisite Actions

2.5.1 Ensure the AK Summary Report for the subject waste stream of the CRR is approved.

2.6 Definitions

2.6.1 None.

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3.0 RESPONSIBILITIES

3.1 Site Project Manager (SPM)

3.1.1 Ensures that all data generated and used in decision making meet the DQOs provided in the WCPIP.

[A] Assesses whether data of sufficient type, quality, and quantity have been collected.

[B] Determines that all DQOs and Quality Assurance Objectives (QAOs) have been met.

[C] Documents DQO and QAO compliance in the CRR and provides the CRR to DOE/CBFO prior to shipment of the waste to the WIPP.

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4.0 PROCEDURE

4.1 Establishing CRR Scope

SPM

NOTE

The CRR scope is an objective determination based on the size of the waste stream and the number of containers for which characterization has been completed and which are available to be included in the CRR.

4.1.1 Determine which containers will be included in the CRR.

4.1.2 Identify the data necessary to complete the CRR (e.g., AK Summary Report, Confirmatory Test Plan applicable to the waste stream, Batch Data Reports [BDRs], source documents), **AND** request any necessary documents from the CCP Records Custodian in accordance with CCP-QP-008.

SPM

NOTE

The CRR number is a unique sequential number that will identify the CRR, site, waste stream, and sequential four-digit lot number (e.g., CRR-ANLE-AERHDM-0001).

4.2 Summary of Characterization by Container Number (Attachment 1)

4.2.1 Waste Stream Lot Information

[A] Record the following waste stream lot information in the associated fields:

- CRR Number,
- Waste Stream,
- Radiological Characterization Method, and
- Acceptable Knowledge Qualification

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NOTE
An Integrated Data Center (IDC) reference table will populate the Waste Matrix Code (WMC) and Waste Characterization Site.

4.2.2 Container Information

[A] Obtain the following information from IDC for each container in the waste stream lot and record it in the associated fields:

- Container ID Number,
- Radiological BDR Number,
- Nondestructive examination (NDE) BDR Number,
- TRU Alpha Activity Concentration (TAAC) reported in nanocuries per gram (nCi/g),
- Volume Activity and one-sigma (1σ) standard deviation reported in curies per liter (Ci/l), and
- Surface Dose Rates reported in rem per hour (rem/hr).

NOTE
Logic statements within the Attachment 1 will evaluate the TAAC, Volume Activity, and RH Waste Determination.

4.2.3 SPM Approval

[A] The SPM will document any additional information related to the waste stream lot or to the container(s) in the Comments section. Otherwise, the SPM will document as not applicable.

[B] When all applicable waste stream lot information and container data have been recorded completely and accurately, the SPM will approve by printing their name, signing, and dating the Attachment 1.

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4.3 Remote-Handled Characterization Reconciliation Report Data Quality Objectives (DQOs) and Quality Assurance Objectives (QAOs) (Attachment 2).

4.3.1 Data Quality Objectives (DQOs)

NOTE

The AK Summary is previously submitted and is addressed in CCP-TP-005, *CCP Acceptable Knowledge Documentation.*

[A] Evaluate and document the results for each DQO by completing the DQO section of Attachment 2 by performing the following steps.

[A.1] Record Yes or NO.

[A.2] Record the AK source document or reference to the AK source document in the SOURCE DOCUMENT column for each DQO.

[A.3] If applicable, record the AK record discrepancy resolution for each DQO.

[A.4] **IF** the DQO for any category has **NOT** been met, **THEN** generate a nonconformance report (NCR) in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*.

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4.3.2 Quality Assurance Objectives (QAOs)

[A] Verify if the QAO have been met by completing the QAO sections of Attachment 2 by performing the following steps:

NOTE
A summary of applicable QAOs is listed in Table 4.1 Summary of Applicable QAOs by Characterization Method.

NOTE
Radiochemistry QAO criteria are listed Table 4.2, 4.3, and 4.4. However, laboratories may use QC criteria specified in an approved QA program for evaluation of the radiochemistry QAOs.

NOTE
If multiple characterization methods are used, such as RTR and VE, all the applicable DQOs and QAOs for each characterization method will be evaluated and documented on the Attachment 2.

[A.1] Record YES, NO, OR NA as applicable.

[A.2] **IF** any QAO has **NOT** been met,
THEN generate a nonconformance report (NCR) in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*.

4.3.3 **AFTER** the QA Engineer or QA designee has approved the DESCRIPTION OF NONCONFORMANCE section of any applicable DQO or QAO NCR,
THEN print name, sign, and date Attachment 2.

Table 4.1. Summary of Applicable QAOs by Characterization Method

Characterization Method	WCPIP Section	Precision	Accuracy	Representativeness	Completeness	Comparability
Acceptable Knowledge (AK)	4.1	N/A				
Visual Examination (VE)	4.2.1					
Real-Time Radiography (RTR)	4.2.2					
Dose-to-Curie (DTC)	4.3.2	N/A				N/A
Dose Rate Measurements associated with DTC	4.3.2			N/A	N/A	N/A
Nondestructive Assay (NDA)	4.3.3					
Sampling	4.3.4.1	N/A				N/A
Sample Collection	4.3.4.2	N/A		N/A	N/A	N/A
Radiochemistry Analysis	4.3.4.3			N/A	N/A	N/A
Modeling to Confirm or Derive Radionuclide Distributions	4.3.5	N/A			N/A	N/A
Surface Dose Rate	4.3.7					N/A
Gravimetric *or* Dimensional Measurements	4.3.8			N/A		N/A
Gravimetric *and* Dimensional Measurements	4.3.8	N/A				N/A

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Table 4.2. Upper Limits for %RSD vs. Number of Replicates

Number of Replicates	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Max %RSD	1.8	6.6	10.0	12.3	14.0	15.2	16.2	17.1	17.7	18.3	18.8	19.3	19.7	20.0

Table 4.3. Quality Control Requirements for Radiochemistry

QC Sample	Minimum Frequency	Acceptance Criteria	Corrective Action
Laboratory control samples (LCS)	One per analytical batch	75% to 125%R	See Laboratory Control Sample[a]
Method blank	One per analytical batch	Site-specific statistical control limits	See Method Blanks[b]
Laboratory duplicate	One per analytical batch	RPD 40	See Laboratory Duplicate[c]
Matrix spike (MS)	One per analytical batch for ICP-MS, as required by the test performed	50 to 150%R	See Matrix Spike and Matrix Spike Duplicate[d]
Matrix spike duplicate (MSD)	One per analytical batch, as required by the test performed	50 to 150%R RPD 40	See Matrix Spike and Matrix Spike Duplicate[d]
Radioisotopic tracers	Every sample	Site-specific statistical control limits	See Radioisotopic Tracer[e]

[a]**Laboratory Control Sample (LCS)**: An LCS is analyzed at least once per analytical batch. If a solid matrix with established control limits is used as the LCS, the established limits may be used for the acceptance criteria. The control limits will meet the criteria in Table 4-4.

[b]**Method Blanks**: A method blank is analyzed at least once per analytical batch. It contains all reagents in proportions equal to those in the samples and is carried through the analytical procedure to identify if contamination is present. Each site establishes the acceptance criteria for method blanks; if they are expressed as statistical control limits they shall meet the requirements in Table 4-4. Criteria may be absolute values, multiples of background variation, fractions of activity concentrations observed in samples, or other appropriate units.

[c]**Laboratory Duplicates**: A laboratory duplicate is analyzed at least once per analytical batch. A laboratory duplicate is a separate aliquot from the same field sample carried through the entire analytical procedure. The RPD between duplicate results is compared with the criteria.

[d]**Matrix Spike and Matrix Spike Duplicate**: Duplicate MSs on individual field samples are performed for inductively couple plasma-mass spectrometry (ICP-MS) analysis at a minimum frequency of one pair (MS plus MSD) per analytical batch. The MSDs are preferred for any analytical procedure not using radioactive tracers. The MS and MSD results are acceptable if the criteria given above for percent recovery and RPD are met.

[e]**Radioisotopic Tracer**: Some methods require that all samples, blanks, LCSs, and laboratory duplicates be spiked with radioisotopic tracers to determine chemical recoveries, counting efficiencies, or a combination thereof. Each site establishes the acceptance criteria for method blanks; if they are expressed as statistical control limits they shall meet the requirements in Table 4-4.

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Table 4.4. Statistical Control Limits

	Acceptability Range	**Required Response**
Acceptable Range	Data[b] $2\sigma^a$	No action required.
Warning Range	$2\sigma^a$ < Data $3\sigma^a$	The QC measurement shall be run no more than twice. If the rerun QC measurement results in data within $\pm$ 2σ, then the QC measurements shall be documented and work may continue. If the system does not fall within $\pm$ 2σ after two QC measurements, then the required response for the Action Range shall be followed.
Action Range	Data > $3\sigma^a$	Work shall stop and the occurrence shall be documented and appropriately dispositioned (e.g., initiating an NCR). The measurement system shall be removed from service pending successful resolution of all necessary actions, and all assays performed since the last acceptable QC measurement are suspect, pending satisfactory resolution.

[a]σ – The standard deviation is only based on the reproducibility of the data check measurements themselves. This is not TMU.

[b] – Absolute Value

4.4 Sum of Fractions Evaluation (Attachment 3)

4.4.1 On Attachment 3, *Sum of Fractions Evaluation* (Example), record the drum identification number for each drum.

4.4.2 Obtain the Cs-137 activity from a radiological characterization method.

4.4.3 **IF** Co-60 and/or Eu-154 activities are contributors, **THEN** obtain their activity from a radiological characterization method, **ELSE** enter zero in the equation for these radionuclides.

4.4.4 Calculate and record on Attachment 3 the sum of the fractions (fs) for each drum.

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4.4.5 Mark as “NA” any blank boxes on Attachment 3.

4.4.6 **IF** the fs> 1,
THEN perform an evaluation of the drum(s) to determine if shippable.

4.4.7 **IF** the evaluation determines the drum(s) is un-shippable,
THEN initiate an NCR.

4.5 Submittal of Records

4.5.1 SPM

[A] Ensure all attachments are complete and accurate. Ensure Attachment 1, Summary of Characterization by Container Number, has printed name, is signed, and dated.

[B] Compile Attachments 1, 2, and 3 and submit to CCP Records in accordance with CCP-QP-008.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as quality assurance (QA) records in accordance with CCP-QP-008. The records are the following:

5.1.1 <u>QA/Lifetime</u>

[A] CRR:

[A.1] Attachment 1, Summary of Characterization by Container Number.

[A.2] Attachment 2, Remote-Handled Characterization Reconciliation Report Data Quality Objectives (DQOs) and Quality Assurance Objectives (QAOs).

[A.3] Attachment 3, Sum of Fractions Evaluation.

Attachment 1 – Summary of Characterization by Container Number EXAMPLE

CRR Number:
Waste Stream:
Summary Category Group (SCG):
Waste Matrix Code (WMC):
Waste Characterization Site:

Radiological Characterization Method:
(e.g. AK, DTC, DA, NDA, D&G)

Acceptable Knowledge Qualification:
(e.g. Peer Review, Corroborating data, Confirmatory testing, as applicable)

			TRU Alpha Activity Concentration (TAAC)		Volume Acitivity (Ci/L)			RH Waste Determination: Surface Dose (SD) Rate Measurements	
Container ID Number	Radiological BDR Number	NDE BDR Number	TAAC (nCi/g)	TAAC (≥ 100 nCi/g)	Value	1σ Unc.	Evaluation (≤ 23 Ci/L)	SD Rate (rem / hr)	SD rate >200 mrem/hr and ≤ 1,000 rem/hr

Comments:

Example

SPM Name (*print*) SPM Signature (*sign*) Date

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Attachment 2 – Remote-Handled Characterization Reconciliation Report Data Quality Objectives (DQOs) and Quality Assurance Objectives (QAOs) EXAMPLE

EXAMPLE

CRR Number: CRR-ID-ANLE-S5000-0039
Waste Stream: ID-ANLE-S5000
Site: INL

Data Quality Objectives (DQOs)	Yes	No	N/A	Source Document(s) (List BDRs, reports, AK documents, etc.)
Defense Waste, High Level, and Spent Nuclear Fuel Determination - WCPIP Section				
Was the waste generated by, or comingled with, atomic energy defense activities? Is the waste verified not to be high-level waste or spent nuclear fuel?	X			CCP-AK-INL-500, Rev. 11, Sections 4.1.4 and 5.4.5 & Source Documents C001, C036, C125, C381, C1031, U001, U013, U1003, P001, P002 and P025
TRU Waste Determination - WCPIP Section 2.1.2.1				
Does the waste contain more than 100 nCi of TRU isotopes per gram of waste?	X			INLRHDTC13010 Waste container Dose-to-Curie conversion record sheets
RH Waste Determination - WCPIP Section 2.1.2.2				
Is the surface dose rate equal to or greater than 200 mrem/hr and less than 1000 rem/hr?	X			Radiological survey report provided by INL
Activity Determination - WCPIP Section 2.1.2.3				
Is the volume activity of the container less than 23 Ci/L per canister? (SPM evaluation is on container basis)	X			INLRHDTC13010 Waste container Dose-to-Curie conversion record sheets
Liquids - WCPIP Section 2.1.3.1				
Is the amount of liquids in the container less than one percent by volume?	X			INLRHRTR13009 RTR examination data sheets
Physical Form - WCPIP Section 2.1.3.2				
Does the physical form of the waste accurately delineate the waste stream?	X			INLRHRTR13009 RTR examination data sheets

Quality Assurance Objectives (QAOs)	Yes	No	N/A
Acceptable Knowledge (AK) - WCPIP Section 4.1			
Precision - Not applicable QAO for this method			X
Accuracy - AK accuracy assesses the percentage of waste containers that require reassignment to a new Summary Category Group or new waste stream based on the reevaluation of AK or on obtaining testing, sampling and/or analysis data. Is the percentage of waste containers that confirm the physical and radiological properties greater than or equal to 90%?	X		
Representativeness - Does the process of obtaining, evaluating, and documenting the AK information ensure it was performed in accordance with the minimum standards established in AK procedure CCP-TP-005?	X		
Completeness - Does the AK record contain 100% of the information required for each container in the waste stream? (Usability of the AK information will be assessed for completeness during audits.)	X		
Comparability – Was the AK compiled in compliance with AK procedure(s) and associated training requirements?	X		

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Attachment 2 –Remote-Handled Characterization Reconciliation Report Data Quality Objectives (DQOs) and Quality Assurance Objectives (QAOs) EXAMPLE, (Continued)

Physical Characterization Methods

Quality Assurance Objectives (QAOs)	Yes	No	N/A
Visual Examination (VE) - WCPIP Section 4.2.1			
Was VE used in the physical characterization?		X	
Precision - Were discrepancies, if any, regarding important waste characteristics (i.e., physical form of the waste and absence of prohibited liquids) within a single container reconciled between two operators?			X
Accuracy - Have VE operators passed a comprehensive examination with a score of 80% and demonstrated satisfactory performance in the presence of the VE expert during initial qualification and requalification?			X
Representativeness – Are the waste contents placed in the waste containers described on the data forms?			X
Completeness – Has the relevant waste information been collected and documented?			X
Comparability – Was the VE information compiled in compliance with VE procedure(s) and associated training requirements?			X

Real-Time Radiography (RTR) - WCPIP Section 4.2.2			
Was RTR used in the physical characterization?	X		
Precision - Were discrepancies, if any, regarding important waste characteristics (i.e., physical form of the waste and absence of prohibited liquids) within a single container reconciled between two operators (during independent observations and replicate scans)?	X		
Accuracy – Was a target used to tune the image for maximum sharpness and were operators required to identify prohibited liquid in a training container during qualification and requalification?	X		
Representativeness – Were all the relevant waste contents in each container described?	X		
Completeness – Was relevant waste information assembled to show that each of the containers in the waste stream belongs to the waste stream? This information must be documented on videotape or other equivalent media and data form.	X		
Comparability – Was the RTR information compiled in compliance with RTR procedure(s) and associated training requirements?	X		

EXAMPLE

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Attachment 2 –Remote-Handled Characterization Reconciliation Report Data Quality Objectives (DQOs) and Quality Assurance Objectives (QAOs) EXAMPLE, (Continued)

Radiological Characterization Methods

Quality Assurance Objectives (QAOs)	Yes	No	N/A
Dose-to-Curie (DTC) - WCPIP Section 4.3.2			
Was DTC used for radiological characterization?	X		
Precision - Not applicable QAO for this method			X
Accuracy – Were standardized and benchmarked radiation transport computer codes used?	X		
Representativeness – Was an appropriate model of the actual physical drum dose rate configuration used and documented by an independent review of the DTC correlation?	X		
Completeness – Were calculations used that span the full range of important parameter values (such as density) which are expected to be encountered with the actual RH TRU containers?	X		
Comparability - Not applicable QAO for this method			X
Dose Rate Measurements associated with DTC - WCPIP Section 4.3.2			
Precision – Was the reported relative percent difference (RPD) less than or equal to 40%?	X		
Accuracy – Has a calibration for the dose-rate instrument used been established, maintained, and documented within the recommendations of the manufacturer?	X		
Representativeness - Not applicable QAO for this method			X
Completeness - Not applicable QAO for this method			X
Comparability - Not applicable QAO for this method			X

Nondestructive Assay (NDA) - WCPIP Section 4.3.3			
Was NDA used for radiological characterization?		X	
Precision – Does the reported %RSD comply with CCP-TP-506, Table 4.2?			X
Accuracy – Is the reported %R less than or equal to ± 30% on non-interfering matrix?			X
Representativeness – Has each waste container been assayed?			X
Completeness – Is 100% of the NDA data valid and usable?			X
Comparability – Was the NDA process implemented in accordance to NDA standards and were associated training requirements met?			X

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Attachment 2 –Remote-Handled Characterization Reconciliation Report Data Quality Objectives (DQOs) and Quality Assurance Objectives (QAOs) EXAMPLE, (Continued)

Radiological Characterization Methods, continued

Quality Assurance Objectives (QAOs)	Yes	No	N/A
Sampling - WCPIP Section 4.3.4.1			
Was sampling used for radiological characterization?		X	
Precision - Not applicable QAO for this method			X
Accuracy – Was an appropriate sample design developed and approved by CBFO for collecting an adequate number of samples such that the one-sigma uncertainty in the mean value of the sample-generated scaling factor is within a factor of two?			X
Representativeness – Was representativeness described in the associated sampling plan?			X
Completeness – Was the QAO for a minimum set of radionuclides specified in the sampling plan?			X
Comparability - Not applicable QAO for this method			X
Sample Collection - WCPIP Section 4.3.4.2			
Accuracy – Was sampling equipment verified as clean by the use of standard radiological control survey methods?			X
Radiochemistry Analysis - WCPIP Section 4.3.4.3			
Precision – Was the RPD less than or equal to 40% or laboratory acceptable precision criteria?			X
Accuracy – Was the reported %R LCS within ±25%; Was the reported MS ±50%?			X
Representativeness - Not applicable QAO for this method			X
Completeness -Not applicable QAO for this method			X
Comparability: Not applicable QAO for this method			X

Modeling to Confirm or Derive Radionuclide Distributions - WCPIP Section 4.3.5			
Was modeling used for radiological characterization?	X		
Precision - Not applicable QAO for this method			X
Accuracy – Do the modeling results compare to sample results within a factor of two?	X		
Representativeness – Was the composition and burnup information for a minimum of 50% of the radioactive materials identified in the AK record involved in the generation of the waste included in the modeling?	X		
Completeness - Not applicable QAO for this method			X
Comparability - Not applicable QAO for this method			X

EXAMPLE

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Attachment 2 –Remote-Handled Characterization Reconciliation Report Data Quality Objectives (DQOs) and Quality Assurance Objectives (QAOs) EXAMPLE, (Continued)

Radiological Characterization Methods, continued

Quality Assurance Objectives (QAOs)	Yes	No	N/A
Surface Dose Rate - WCPIP Section 4.3.7			
Were surface dose rates used for radiological characterization?	X		
Precision – Was the reported RPD equal or less than 40%?	X		
Accuracy - Manufacturer typically specifies a flat energy response of 10 to 20% across the applicable energy range. Was the repeatability of the measurement within about 10% at the higher gamma dose rates?	X		
Representativeness – Was the measurement is applied to the entire waste container?	X		
Completeness – Were 100% of the measurements, needed to determine surface dose rate, performed and useable?	X		
Comparability - Not applicable QAO for this method			X

Gravimetric *or* Dimensional Measurements - WCPIP Section 4.3.8			
Was Gravimetric or Dimensional measurement used?		X	
Precision – Was the measurement equipment maintained according to manufacturer's recommendation?			X
Accuracy – Was the balance readout within 2% of the check weight. Was the length measurement within 0.1 of an inch as verified by a second operator?			X
Representativeness - Not applicable QAO for this method			X
Completeness – Was every quantity of fuel test specimen loaded into container is measured?			X
Comparability - Not applicable QAO for this method			X

Gravimetric *and* Dimensional Method - WCPIP Section 4.3.8			
Was Gravimetric and Dimensional method used?		X	
Precision - Not applicable QAO for this method			X
Accuracy - Fuel test specimen design and irradiated information is used for individual fuel test specimen pins in combination of the length and gravimetric measurement. Were scaling factors developed from isotope depletion			X
Representativeness – Is the design information representative for each specific fuel test specimen quantity loaded into container?			X
Completeness – Was every quantity of fuel test specimen loaded into container is measured?			X
Comparability - Not applicable QAO for this method			X

EXAMPLE

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Attachment 3 – Sum of Fractions Evaluation (EXAMPLE)

Drum Identification Number	f_s value

EXAMPLE

$$fs = \frac{A_{Cs}}{288} + \frac{A_{Eu}}{3.52} + \frac{A_{Co}}{4.26}$$

Where fs is the sum fractions, A_{Cs} is the Cs-137 activity in the drum, A_{Eu} is the Eu-154 activity, and A_{Co} is the Co-60 activity.

If fs <1 then the drum is shippable. If fs >1 then the drum needs further evaluation to determine if it is shippable.

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CCP-TP-530

Revision 11

CCP
RH TRU Waste Certification and WWIS/WDS Data Entry

EFFECTIVE DATE: 06/19/2013

Irene Joo

APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	04/25/2006	Initial issue.
1	05/05/2006	Revised to address CBFO comments.
2	06/15/2006	Revised to address concerns raised during the Idaho National Laboratory (INL) Remote-Handled (RH) Audit A-06-21.
3	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR) and to remove Transportation Certification Official (TCO) activities.
4	04/20/2007	Revised to incorporate guidance for assignment of packaging material weight for RH canister assembly and to perform miscellaneous editing.
5	07/23/2007	Revised to include the CNS 10-160B information.
6	06/25/2008	Revised to include the process for submitting transportation data only for the Battelle Columbus Laboratory (BCL) waste at Savannah River Site (SRS) using the CNS 10-160B.
7	07/11/2008	Revised to address comments from the Remote-Handled (RH)-Oak Ridge National Laboratory (ORNL) Audit as well as remove any reference to the Characterization Data System (CDS) Waste Certification Official (WCO) Review Form.
8	09/09/2009	Revised to remove Section 4.4.24 in response to CAR-RHLANL-0001-09 as well as minor editorial changes.
9	12/11/2009	Revised to allow use of the Waste Data System (WDS) as well as include steps for canisters measuring <200 millirem (mRem) per Central Characterization Project (CCP)-Standing Order (SO)-042.
10	04/25/2011	Revised Table 1, Data Sources for the RH WDS Master Template, to include a new source for Gross Weight and a new field label and source for remote-handled (RH) nondestructive assay (NDA).
11	06/19/2013	Revised to implement new Permit Modification Request Class 2 approved by New Mexico Environment Department (NMED) dated March 13, 2013 and *Contact-Handled Transuranic Waste Authorized Methods for Payload Control* (CH-TRAMPAC) changes.

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1.0 PURPOSE

The purpose of this procedure is to describe the steps the Central Characterization Program (CCP) uses for certifying remote-handled (RH) transuranic (TRU) waste for disposal at the Waste Isolation Pilot Plant (WIPP). This procedure also describes the process for entering data into the WIPP Waste Information System (WWIS)/ Waste Data System (WDS) and reporting data on containers and payload assemblies in the RH TRU 72-B and the 10-160B transportation casks that are intended for disposal at the WIPP.

In addition, this procedure may be used to enter data into the WWIS/WDS for site-to-site waste shipments using the RH TRU 72-B and/or the 10-160B transportation casks. Site-to-site waste shipments are defined as shipments with destinations to sites other than the WIPP for storage, characterization, or treatment and are distinct from site-to-WIPP waste shipments for disposal.

1.1 Scope

This procedure defines the parameters necessary for certification of RH TRU waste for disposal at the WIPP. This procedure includes the records that are generated to document that the CCP Waste Certification Official (WCO) has performed the necessary verifications and has certified the waste for disposal.

This procedure also describes how to obtain access and enter data into the WWIS/WDS for containers to be certified.

This procedure also describes the steps for entering data into the WWIS/WDS for site-to-site waste shipments.

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2.0 REQUIREMENTS

2.1 References

Baseline Documents

- CCP-QP-022, *CCP Software Quality Assurance Plan*

Referenced Documents

- DOE/WIPP-09-3427, *Waste Data System User's Manual*
- DOE/WIPP 90-045, *RH-TRU Waste Content Codes* (*RH-TRUCON*)
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control* (CCP RH-TRAMPAC)
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*
- CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data*
- CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*
- CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*
- Safety Analysis Report for Model 10-160B Type B Radwaste Shipping Cask, Appendix 4.10.2.1, *Compliance Methodology for TRU Waste from Battelle Columbus Laboratories.* Duratek, Inc.

2.2 Training Requirements

2.2.1 Personnel who use this procedure to certify waste will be trained and qualified to the requirements for the WCO in accordance with CCP-QP-002, *CCP Training and Qualification Plan*.

2.2.2 Personnel who use this procedure to enter data will be trained and qualified to the requirements for the Waste Certification Assistant (WCA) in accordance with CCP-QP-002.

2.2.3 Personnel who use this procedure to enter data into the WWIS/WDS will refer to DOE/WIPP-09-3427, *Waste Data System User's Manual*.

2.3 Equipment List

2.3.1 None.

2.4 Software

NOTE

An "*" is a wild card used to indicate the version number included in a software name.

2.4.1 RH WDS Master Template*.xls

2.4.2 concat_WDS_files.bat

2.4.3 clean_container_files.bat

2.5 Precautions and Limitations

2.5.1 None.

2.6 Prerequisite Actions

2.6.1 None.

2.7 Definitions

2.7.1 None.

NOTE

The Data Administrator (DA) in this document refers to the WWIS/WDS Data Administrator.

3.0 RESPONSIBILITIES

3.1 Site Project Manager (SPM) or Designee

3.1.1 Confirms that personnel performing this procedure are trained and qualified in accordance with applicable requirements in CCP-QP-002.

3.1.2 Prepares a list of candidate containers for certification and transportation, as applicable, and submits to the WCO and WCA.

3.1.3 Provides the DA with a list of Waste Stream Profile Form (WSPF) Numbers.

3.1.4 Submits the WSPF to the DA for review and approval in accordance with CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data,* and CCP-TP-506, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*.

3.1.5 Notifies the WCO and/or WCA of approved WSPF.

3.1.6 Notifies the WCO and/or WCA of completed Characterization Information Summary (CIS).

3.1.7 Serves as focal point for resolution of data issues.

3.2 Quality Assurance (QA)

3.2.1 Provides assistance in verifying data, completing documentation, and reviewing requirements and provides status of applicable Nonconformance Reports (NCRs) and Corrective Action Requests (CARs).

3.2.2 Confirms that there are no unresolved NCRs or CARs for containers to be certified when requested by the WCA or WCO.

3.3 Waste Certification Official (WCO) or Designee

3.3.1 Confirms that the WCOs and WCAs are granted access to the WWIS/WDS.

3.3.2 Obtains a copy of the approved WSPF for applicable containers to be certified.

3.3.3 Certifies the data for the container to be certified as identified on the CCP RH WDS Master Template.

3.3.4 Reviews the data for the container as identified on the RH WDS Master Template to be submitted for transportation purposes only.

3.3.5 Notifies Transportation Certification Official (TCO) of the WWIS/WDS Certification Module approval, if necessary.

3.3.6 Notifies the TCO of containers that are approved for Controlled Shipment, if necessary.

3.4 Acceptable Knowledge (AK) Expert

3.4.1 Extracts the necessary information for site-to-site waste shipments.

3.4.2 Works with the WCA, WCO, and DA for WWIS/WDS data input for site-to-site waste shipments.

3.5 Waste Certification Assistant (WCA)

3.5.1 Works with the WCO to obtain access to the WWIS/WDS.

3.5.2 Obtains copies of data for the RH WDS Master Template for each container from CCP Records or the Site Project Manager (SPM).

3.5.3 Generates the RH WDS Master Template and has a second WCA confirm the data is transferred correctly to the RH WDS Master Template. The second data entry person verifies the information prior to certification by the WCO.

3.5.4 Forwards the RH WDS Master Template to the WCO for certification.

3.5.5 Requests that quality assurance (QA) confirm that NCRs and CARs associated with containers to be certified have been resolved as appropriate, via electronic mail (e-mail).

3.5.6 Submits the container data from the RH WDS Master Template to the WWIS/WDS Characterization and/or Certification Modules, as applicable.

3.5.7 Submits data package to CCP Records Custodian in accordance with CCP-QP-008, *CCP Records Management*.

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3.6 CCP Records Custodian

3.6.1 When applicable, receives and processes all records generated by this procedure in accordance with CCP-QP-008.

4.0 PROCEDURE

4.1 Obtaining and Changing Access to the WWIS/WDS

WCO

4.1.1 Determine which personnel need access to the WWIS/WDS (see Section 4.0 of DOE/WIPP-09-3427).

4.1.2 Request WWIS/WDS access for each person by requesting the WDS access form from the Data Administrator with a copy provided to the SPM.

4.1.3 Notify the DA when personnel who have received WWIS/WDS access:

[A] Leave the project;

[B] No longer need WWIS/WDS access; **OR**

[C] Need to change the type of WWIS/WDS access.

CCP Personnel

4.1.4 Once the DA has been notified by the WCO that personnel are to be granted access, those personnel will contact the DA to receive WWIS/WDS training and a WWIS/WDS username in accordance with the DOE/WIPP-09-3427.

NOTE

Section 4.2 is **NOT** required for site-to-site waste shipments.

4.2 Submitting the WSPF Number to the DA

SPM

4.2.1 Obtain the WSPF Number in accordance with CCP-TP-002.

4.2.2 Request the DA to establish the WSPF Number in the WWIS/WDS.

4.2.3 Confirm that the WSPF Number is correct in the WWIS/WDS Reference Table upon notification that the DA has added the WSPF Number to the WWIS/WDS.

4.2.4 Notify the WCO and WCA of the WSPF.

4.2.5 Develop a list of containers for Characterization, **AND** submit the list to the WCO and WCA for WSPF approval.

4.2.6 Develop a list of containers from an approved WSPF for certification, **AND** submit the list to the WCO and WCA when the CIS is complete.

NOTE

For site-to-site waste shipments, the required information may be obtained from the acceptable knowledge (AK) Expert. This Data will come from the process knowledge documentation. For site-to-site shipments not qualified under CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control* (CCP RH-TRAMPAC), the data will be recorded from the approved shipping plan. The source data column in Table 1, Data Sources for the RH WDS Master Template, DOES **NOT** apply to site-to-site waste shipments. CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*, and CCP-PO-002, *CCP Transuranic Waste Certification Plan*, information is **NOT** required to be entered.

4.3 Entering and Verifying Characterization Data Using the RH WDS Master Template

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NOTE

For site-to-site waste shipments, verification may be from data received from the AK Expert.

WCA

4.3.1 Obtain from CCP Records or the SPM, a copy of the appropriate WSPF, Batch Data Reports (BDRs), Packaging Records, AK Summary Report, AK Tracking Spreadsheet, and radiological survey data for the list of candidate containers for certification, as applicable.

4.3.2 Request via email that QA confirm that each container being certified and entered into the RH WDS Master Template has NO unresolved NCRs and CARs.

4.3.3 Use the copies of the appropriate BDR or other data source, from CCP Records or the SPM, as listed in Table 1, to enter characterization data into the appropriate site-specific RH WDS Master Template, for each container record used to support the WSPF.

NOTE

The designator "H" must be added to the end of the Container Identification (ID) Number for all waste containers overpacked into a 55-gallon drum as identified on the applicable AK Tracking Spread Sheet if applicable. This will be the new Container ID Number.

4.3.4 Enter RH TRU Waste Content Codes (Content Codes) as described in Attachment 1, Entering of Content Codes into WWIS/WDS, as required.

4.3.5 **IF** a 30-gallon container is packaged into a 55-gallon container, **AND** the Dose-to-Curie (DTC) was performed on the 30-gallon container,
THEN add the tare weight of the 55-gallon container to the gross weight of the 30-gallon container to obtain the new gross weight.

4.3.6 Forward the completed RH WDS Master Template to a second WCA for verification.

WCA (Verifier)

NOTE

Step 4.3.7 is for a direct load canister only when a rollup of the DTC is required.

4.3.7 **IF** rollup of DTC data is required,
THEN the weight of the plastic will be the total of the gross weights of the inner containers.

4.3.8 Confirm the data entered into the RH WDS Master Template for each container record by checking the data to confirm the accuracy and completeness of the data.

4.3.9 **IF** data is accurate **AND** complete,
THEN enter initials and the date verified on the RH WDS Master Template.

4.3.10 **IF** there are any discrepancies,
THEN resolve the discrepancies with original WCA, if applicable, **AND** return to step 4.3.9.

NOTE

For site-to-site shipments, contact the WCO/AK Expert if discrepancies CAN **NOT** be resolved.

4.3.11 **IF** the discrepancies CAN **NOT** be resolved,
THEN provide the RH WDS Master Template to the WCO or SPM for resolution.

NOTE

For site-to-site waste shipments, the WCO or the AK Expert will review the data prior to submittal to the WWIS/WDS.

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4.3.12 **WHEN** the RH WDS Master Template is complete **AND** verified,
THEN forward to the WCO.

Table 1. Data Sources for the RH WDS Master Template

Field Label	Source
Characterization, Certification and Shipping Data	
Shipper Site ID or Site ID	AK Summary Report
Location ID Destination Program ID Shipping Purpose	AK Summary Report
Waste Stream Profile	AK Summary Report; WSPF
Container ID Number or Container Number	Completed CIS (Ensure payload container has a unique site-identifier prefix). For all waste containers overpacked into a 55-gallon drum as identified on the applicable AK Tracking Spread Sheet, include an "H" at the end of the drum number.
Container Type	Packaging records; visual inspection; AK Summary Report; Associated BDRs
WAC Rev #	DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
WAC Ex #	Executive Order Letter from the U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) in CCP Records
Cert Site or Certified Site	WSPF or AK Summary Report
Cert Date or Certification Date	Date WCO certifies payload container
Waste Handling Code or Handling Code	RH from Dose to Curie BDR; Radiological Characterization Report; WSPF; AK Summary Report
Waste Type Number or Waste Type	WSPF or AK Summary Report (If no hazardous waste numbers, enter TRU) If hazardous number(s) apply, enter "MTRU."
Waste Stream Baseline Inventory Report (BIR) ID Waste Stream Mixed Waste Inventory Report (MWIR) ID	WSPF or AK Summary Report (If not applicable, enter NONE)
Generator Site ID or Generator Site Item Description Code (IDC) Code or IDC Waste Matrix (parameter) Code or Matrix Code	WSPF or AK Summary Report (NONE if no IDC available)

Table 1. Data Sources for the RH WDS Master Template (Continued)

Field Label	Source
Content Code or TRUCON Code	Remote-Handled Transuranic Content Codes, AK Summary Report, WSPF, Characterization Info. Summary. See Attachment 1.
TRU Alpha Act TRU Alpha Act Uncertainty TRU Alpha Act Concentration (conc.) TRU Alpha Act Conc. Uncertainty Pu239 fissile Gram Equivalent Pu-239 Fissile Gram Equivalent Uncertainty Pu-239 eq. act. Decay Heat Decay Heat Uncertainty	Waste Container Dose-to-Curie Conversion Record (DTC BDR), Radiological Characterization Report, Waste Container Radiological Characterization Record AK record for BCL waste
Layers of Packaging	Visual Examination (VE) BDR; Radiography BDR; AK Summary Report; WSPF
Fill Factor	Dose-to-Curie BDR, Radiological Characterization Report, VE BDR
Liner Type or Liner Exists	VE BDR. Radiography BDR; AK Summary Report; RH Content Code Document
Field Label	Source
Liner Punctured or Liner Hole Size Liner Lid Present	VE BDR. Radiography BDR or AK Summary Report. No liner lid indicates liner is vented with default hole size of 457.2 mm for 30-gallon drum and 478 mm for 55-gallon drum.
Polychlorinated Biphenyl (PCB) Waste, PCB Concentration, PCB Mass PCB Out-Of-Service Date	WSPF or AK Summary Report. If yes, then PCB mass = net weight and PCB out-of-service = Closure date unless otherwise stated in other documentation.
Aqueous Material Beryllium Present Beryllium less than or equal to 100 kg Beryllium less than or equal to 1% Machine Compacted Beryllium chemically/mechanically bound	AK Tracking Spreadsheet or AK Summary Report
Closure Date	AK Tracking Spreadsheet, Remediated Drum Spreadsheet, or AK Summary Report, Canister Loading Data Sheet
Vent Date	AK Tracking Spreadsheet, Remediated Drum Spreadsheet, or AK Summary Report, Canister Loading Data Sheet
Filter Install Date Filter Model Number of filters installed	Flammable Gas Analysis BDR, VE BDR, RTR BDR, AK Tracking Spreadsheet or Remediated Drum Sheet, Canister Loading Data Sheet, AK Summary Report
Aspiration Method ID	AK Tracking Spreadsheet, Remediated Drum Spreadsheet, AK Summary Report, Flammable Gas Analysis BDR, Project AK Summary Report
Gross Weight	Waste Container Dose-to-Curie Conversion Record (DTC BDR) or Scale Certification Data, Canister Loading Data Sheet, Radiological Characterization Report, Waste Container Radiological Characterization Record
Gross Weight Uncertainty	VE BDR, Radiography BDR, or Scale Certification Data, Canister Loading Data Sheet, Bounding Case for drums loaded in canisters (2.3 kg)
Alpha Surf Cont Beta/Gamma Surf Cont Neutron Dose Rate Beta/Gamma Dose Rate	RCT Report RCT Report RCT Report RCT Report

Table 1. Data Sources for the RH WDS Master Template (Continued)

Field Label	Source
Radionuclide Data	
Radionuclide	Waste Container Dose-to-Curie Conversion Record(DTC BDR), Canister loading data sheet, Radioassay BDR, Radiological Characterization BDR/Radiological Characterization Report, Waste Container Radiological Characterization Record
Activity (Ci)	
Activity Uncertainty (Ci)	
Assay Method Data	
Radioassay Method	WWIS/WDS Reference Tables/Library; Certification Letters
Data Package Number	Dose-to-Curie BDR, Radiological Characterization Report, Waste Container Radiological Characterization Record, Radioassay BDR
Assay Date (actual assay date)	Dose-to-Curie BDR, Radiological Characterization Report, Waste Container Radiological Characterization Record, Radioassay BDR
Material Parameter Data	
Waste Material Parameter	VE BDR or Real-Time Radiography (RTR) BDR
Waste Weight	Waste Container Dose-to-Curie Conversion Record (DTC BDR), Radiological Characterization Report, Waste Container Radiological Characterization Record
Characterization Method Data	
Charz Method ID	WWIS/WDS Reference Table/Library; Certification Letters
Data Package Number	VE or RTR BDR
Charz Method Date	VE or RTR BDR
Hazardous Waste Numbers Data	
Hazardous Waste Numbers	WSPF or AK Summary Report
Date Sampled	Flammable Gas Analysis BDR, N/A for canister, AK Sufficiency
Method ID	WWIS/WDS Reference Table/Library; Certification Letters
Data Package #	Flammable Gas Analysis BDR, AK Sufficiency
Analyte	
Sample ID	
Sample Type	
Layer Sampled	
Units (% vol., mg/kg, ppm) Concentration Date Analyzed	Flammable Gas Analysis BDR, AK Sufficiency
Cas #	Flammable Gas Analysis BDR
Reporting Flag D	
Reporting Flag U	
Reporting Flag N/A	
Flammable VOCs < 500 ppm	AK Summary Report, Content Code, Process Knowledge Summary Report

NOTE

Section 4.4 is **NOT** required for site-to-site waste shipments.

4.4 Waste Certification (By Container of Waste)

WCO

4.4.1 Verify the appropriate WWIS/WDS Data Entry RH WDS Master Template is being used.

4.4.2 Confirm that the TRU alpha activity concentration is greater than 100 nanocuries per gram (nCi/g) for each container.

4.4.3 Confirm that the RH WDS Master Template contains accurate, and complete information for the container by checking that the WCA has completed their input and review.

4.4.4 **IF** there are any open NCRs/CARs,
THEN confirm that, for the container you are certifying, all issues associated with the open NCRs/CARs have been resolved.

4.4.5 Review the waste stream information against the applicable Content Code and data sources to confirm the waste is **NOT** an incompatible waste.

4.4.6 Verify that the RH WDS Master Template contains the correct WSPF Number for that container as listed in the AK Tracking Spreadsheet.

4.4.7 Verify at least one TRU isotope is greater than lower limit of detection (LLD).

4.4.8 Ensure that each payload container has a site-specific identifier as a prefix to the Container ID Number.

NOTE

For debris waste (S5000), the WCO will assess the data for the container to assign the material parameter weights. In steps 4.4.9 and 4.4.10, the WCO will compare the material parameter data (waste weights in kg) to the number obtained by multiplying the volume of the waste container by the maximum loading density of plastic (620 kg/m^3).

4.4.9 **IF** the calculated weight of the plastic is greater than or equal to the waste weight (kg) of the container,
THEN enter the waste weight of the container as “Plastic” in the RH WDS Master Template.

4.4.10 **IF** the calculated weight of the plastic is less than the waste weight (kg) of the container,
THEN enter the calculated weight as "Plastic" in the RH WDS Master Template, **AND** assign in the RH WDS Master Template the remaining waste weight to the waste material per the percentages as identified in the applicable waste stream AK Summary Report.

NOTE

For soil/gravel waste (S4000), the WCO will assess the data for the container to determine the estimated weight of cellulose, plastics, and rubber (CPR) for any reported debris material. In steps 4.4.11 and 4.4.12, the WCO will review the data and confirm that the derived weight entered into RH WDS Master Template for any debris material reported will have a waste material parameter type of "Plastic."

4.4.11 **IF** the container (S4000) DOES **NOT** contain any debris material,
THEN assign the net weight of the container as waste material parameters of "Soil" in the RH WDS Master Template.

4.4.12 **IF** the container (S4000) does contain any debris material,
THEN enter the estimated weight of the debris as "Plastic" and the remaining net weight of the container as "Soil" in the RH WDS Master Template.

NOTE

For homogeneous solid waste (S3000), the WCO will assess the data for the container to determine the estimated weight of CPR for any reported debris material. In steps 4.4.13 and 4.4.14, the WCO will review the data and confirm that the derived weight entered into RH WDS Master Template for any debris material reported will have a waste material parameter type of "Plastic."

4.4.13 **IF** the container (S3000) DOES **NOT** contain any debris material,
THEN assign the net weight of the container as waste material parameter type appropriate to the waste (e.g., solidified inorganic material, solidified organic material, cement) in the RH WDS Master Template.

4.4.14 **IF** the container (S3000) does contain debris material,
THEN enter the estimated weight of the debris as "Plastic" and the remaining net weight of the container as the waste material parameter type appropriate to the waste (e.g., solidified inorganic material, solidified organic material, and cement) in the RH WDS Master Template.

4.4.15 **IF** the container is certifiable,
THEN sign and date the RH WDS Master Template **AND** forward to WCA for submittal to WWIS/WDS.

4.4.16 **IF** container is **NOT** certifiable,
THEN proceed to step 4.4.20.

WCA

4.4.17 Request, via e-mail, that QA confirm that each container being certified and entered into the WWIS/WDS has NO unresolved NCRs and CARs, if applicable.

QA

4.4.18 Prepare report verifying that each container being certified has NO unresolved NCRs and CARs.

4.4.19 Forward report to WCA.

WCO

NOTE
To remove the HOLD on a Container Data Folder, a WCO must confirm deficiencies NO longer exist.

NOTE
Prior to submittal to the WWIS/WDS, WCO/WCA and QA must perform step 4.4.17 through 4.4.19, as applicable.

4.4.20 **IF** there is an issue with data,
THEN attempt to resolve issue with SPM.

[A] **IF** resolved,
THEN proceed to Step 4.5.

4.4.21 **IF** a deficiency in data is identified after a Container Data Folder is created and before submittal to the WWIS/WDS and CAN **NOT** be resolved with SPM,
THEN perform the following:

[A] Initiate an NCR in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*, as directed by the SPM.

[B] Place the Container Data Folder in the WCO Hold Drawer until disposition is met.

NOTE

Data entry for site-to-site waste shipments shall be submitted into the Intersite Shipping Module within the WWIS/WDS.

NOTE

The WCO or WCA uses a macro (CreateTmpTables) and ancillary worksheets that are part of the RH WDS Master Template.

NOTE

If required, for filtered waste containers or containers requiring inner can data, the data required by WWIS/WDS for the inner cans will be entered as applicable based on an individual container basis (inner can ID, decay heat, decay heat uncertainty, closure date, vent date, filter diffusivity, flammable gas generation rate or hydrogen concentration, and sample date) after the waste containers are entered into the WWIS/WDS.

4.5 Waste Certification WWIS/WDS Submittal

WCO or WCA

4.5.1 Generate tab-delimited files from the electronic WWIS/WDS DATA RH WDS Master Template corresponding to the WWIS/WDS Temporary Database Tables by selecting the CREATE TMP TABLES.

4.5.2 OPEN TempTables Folder to run batch programs, **AND** OPEN concat_WDS_files.bat to copy all containers into upload files readable by WWIS/WDS.

4.5.3 Log on to WWIS/WDS.

[A] Select DATA UPLOAD FUNCTION.

[B] Select BROWSE to open the Temptables folder.

[C] Select the text file to be uploaded.

[D] Select CERTIFICATION or CHARACTERIZATION based on whether or not the waste stream is approved.

[E] Select PERFORM EVALUATIONS if applicable.

[F] Select UPLOAD CONTAINERS.

[G] **IF** container upload is successful,
THEN GO TO step 4.5.4 if inner can data is required or GO TO step 4.5.5 if complete.

[H] **IF** container upload fails,
THEN select VIEW EXIT CODES **OR** print error messages on screen as applicable.

[I] **IF** container upload error(s) can be fixed,
THEN fix errors, **AND** repeat steps 4.5.1 through 4.5.3[H] until successful **OR** container CAN **NOT** be fixed.

[J] **IF** container transfer CAN **NOT** be fixed,
RETURN Container Data Folder to WCO.

NOTE

For containers with inner can data and/or data for a 30-gallon container overpacked into a 55-gallon container, follow steps 4.5.4 through 4.5.5. Once complete proceed to step 4.5.7.

NOTE

A unique Inner Container ID must be entered using the 55-gallon number with an H suffix when a 30-gallon container is overpacked into a 55-gallon container in the Inner Can Data in WWIS/WDS.

4.5.4 Select CONTAINER CERTIFICATION DATA SUBMITTAL/CONTAINER CHARACTERIZATION DATA SUBMITTAL based on whether or not the waste stream is approved.

[A] Select SEARCH and enter the container number and select SEARCH.

[B] Select applicable container.

[C] Select INNER LAYER and enter the applicable data.

[D] Select SUBMIT for approval.

4.5.5 **WHEN** complete,
THEN exit the system AND open the temptables folder and RUN clean_container_files.bat to clear the temptables folder of all upload file data.

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4.5.6 **IF** a deficiency is identified after the container data is submitted to the WWIS/WDS,
THEN:

[A] Request in writing (e.g., e-mail), with CCP Management approval, that the Data Administrator reject the container from the WWIS/WDS, if applicable, **AND**

[B] Obtain confirmation (e.g., email) from the Data Administrator that the container is rejected, if applicable.

[C] Initiate an NCR in accordance with CCP-QP-005, as necessary.

4.5.7 Compile the following items used in the submission of data to the WWIS/WDS, **AND** submit to the CCP Records Custodian:

[A] The completed RH WDS Master Template for each container submitted to and approved by the WWIS/WDS

[B] The completed WWIS/WDS Transportation Only RH WDS Master Template for each Packaging Container submitted to and approved by the WWIS/WDS

[C] NCR/CAR check from QA e-mail (not applicable for BCL transportation data)

[D] Any correspondence (e.g., memorandum/e-mail notifications) associated.

<u>CCP Records Custodian</u>

4.5.8 When applicable, receives and processes all records generated by this procedure in accordance with CCP-QP-008.

NOTE

The WWIS/WDS Canister Planning and Completion Module utilizes edit and limit checks when data is entered and selected. The WWIS/WDS steps in the following section may be repeated until overpack compliance is satisfied. Default data may be used to generate the build list for the TCOs.

NOTE

The recommended container selection for the canister can either be provided by the Host site, based on As Low As Reasonably Achievable (ALARA) needs for movement of the drums and container retrievability, or determined by the WCO.

WCO

4.6 Container Selection and certification for RH TRU 72-B waste canister using the WWIS/WDS.

4.6.1 LOGON to the WWIS/WDS.

4.6.2 Select CANISTER PLANNING and COMPLETION.

4.6.3 Select NEW.

4.6.4 Enter applicable data in the Canister Information Section as follows, then select SEARCH.

[A] Canister Configuration Type
[B] Certification Program ID
[C] Current Location
[D] Destination Site ID
[E] Shipping Program ID
[F] Waste Stream Profile Code

4.6.5 Select the appropriate containers from the Candidate Containers Section.

4.6.6 Select ACCEPT.

4.6.7 Enter the Canister number in the Enter Container Number field and select ACCEPT.

4.6.8 **ONCE** the Canister Plan is accepted,
THEN enter the remaining applicable canister information for Certification.

4.6.9 Generate the Build List and provide to TCO as applicable.

4.6.10 **IF** the canister requires a controlled shipping period,
THEN the WCO will indicate on the Build List.

NOTE

Some 55-gallon containers loaded into the Removable Lid Canister use an RH TRU Drum Handling Bag (lift bag). The lift bag weighs 1.42 kg and is made of polyester fabric. The lift bag can not be retrieved from the canister after loading.

4.6.11 Receive the Loading Form from the TCO and enter the required certification data including the lift bag data if applicable.

4.6.12 **IF** the canister dose rate from the TCOs is < 200 mRem **AND** all inner containers are > 200 mRem,
THEN use the highest dose rate from the inner containers.

4.6.13 SUBMIT the canister for approval.

4.6.14 After successful submittal for approval, print the Canister Data Report, date and sign with title.

4.6.15 Compile the following items used in the submission of data to the WWIS/WDS, **AND** submit to the CCP Records Custodian:

[A] Copies of the data containing the RH TRU waste canister, radiological survey, and filter information used to enter data above

[B] The completed Canister Data Report for the data submitted

[C] Correspondence (e.g., memorandum/e-mail notifications).

CCP Records Custodian

4.6.16 When applicable, receives and processes all records generated by this procedure in accordance with CCP-QP-008.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as QA records in accordance with CCP-QP-008. The records are the following:

5.1.1 <u>QA/Lifetime Records</u>

[A] Container Certification:

[A.1] RH WDS Master Template

[A.2] Correspondence (memorandum/e-mail notifications)

[A.3] Radiological Survey Information, if applicable

[B] Canister Certification:

[B.1] RH WDS Master Template

[B.2] Waste Canister Data Report

[B.3] Waste Canister Loading Sheet, if applicable

[B.4] Radiological Survey Information, if applicable

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Attachment 1 – Entering of Content Codes into WWIS/WDS

NOTE

The Content Code may be assigned by the WWIS/WDS based on the information submitted on the RH WDS Master Template.

1. INTRODUCTION

This appendix describes the steps used to enter assigned RH Content Codes into the RH WDS Master Template using various sources of characterization data. Entering the Content Code is performed by the waste certification staff based on the waste material contents and the layers of packaging used for each container. Content Code assignment is reviewed and approved by the WCO during container certification unless the Content Code is assigned by the WWIS/WDS.

2. ASSIGNING THE NUMERIC VALUE

Assign the Content Code based on the container waste stream assignment. The Content Code identified in AK may be confirmed by RTR or VE. Enter the Content Code in RH WDS Master Template.

3. ASSIGNING A LETTER DESIGNATOR

The letter designator of the Content Code is assigned using packaging information from the following sources, which are listed in order of priority of usage:

- VE BDRs, if available
- If RTR information is undetermined, use the default assignment given in (or determined from) the AK Summary Report for the applicable waste stream.

4. OTHER

For waste packaged under a U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) audited and approved certification program (newly generated waste exempted from RTR), use the Content Code assigned in the packaging documents.

Working Copy

WP 15-GM1002

Revision 2

Issues Management Processing of WIPP Forms

Management Control Procedure

EFFECTIVE DATE: 04/03/14

R.L. McQuinn
APPROVED FOR USE

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CHANGE HISTORY SUMMARY

REVISION NUMBER	DATE ISSUED	DESCRIPTION OF CHANGES
0	07/29/13	• This document replaces WP 04-IM1000.
1	09/30/13	• Removed all references to CCP-QP-029 from document. • Added to the Introduction: — Statement that CARs issued by CBFO will be processed in accordance with WP 13-QA3007. — Issues with equipment or material condition of structures or systems will not normally be processed using IMPS. — The WIPP Form Screening Committee Chairperson may screen WIPP Forms identifying issues that cannot use IMPS. • Added to the Note above step 2.1 that a subordinate WIPP Form may address issues identified multiple times. • Added the WIPP Form Screening Committee Chairperson to step 3.1. • Added the Note above step 4.1 on Cause Codes not needing to be assigned to a CAP that are identified as process improvements. • Added to step 2.0 of attachment 1 a statement on No cause-Process Improvement is entered for WIPP Forms identified as process improvement.
2	04/03/14	• Added Note above substep 3.3.10 regarding the IMPS. • Revised substep 3.3.10[B] for instructions if an issue is determined to be a SCAQ. • Added substep 3.3.10[C] regarding if an issue is NTS reportable. • Deleted susbsteps 4.1.2[B], 4.1.3, 4.1.4[B]. 4.1.6, and 4.1.7 regarding instructions to obtain signatures. • Changed in Note above step 4.2, “CARs” to “WIPP Forms.” • Revised step 5.1.3 to correct the method of providing objective evidence for CAP closure. • Minor editorial changes throughout.

INTRODUCTION [1, 2]

This procedure prescribes the process for initiation, tracking, resolution, and closure of issues or process improvements identified on Waste Isolation Pilot Plant (WIPP) Forms.

WIPP Forms may be submitted for any issue and may address issues of both high and low significance, including safety issues, conditions adverse to quality (CAQs), and process improvements. CAQs may require reporting by the quality assurance (QA) program, Price-Anderson Amendments Act (PAAA), Worker Safety and Health Plan (10 *Code of Federal Regulations* [CFR] 851), or other reporting entities (e.g., U.S. Environmental Protection Agency, U.S. Department of Energy [DOE]). Issues identified through the External Oversight Activities per WIPP Procedure (WP) 13-QA3007, *External Oversight Activities*, will be processed through the Issues Management Processing System (IMPS) with the exception of Carlsbad Field Office (CBFO) Corrective Action Requests (CARs). CARs issued by CBFO will be processed in accordance with WP 13-QA3007. CAQs that are corrected during internal assessments (CDAs) (e.g., Management Assessments, Independent Assessments [audits or surveillances], Monitored Operational Evolutions, Accident Investigations, External Oversight issues) will be identified on WIPP Forms for trending purposes.

Draft reports received from external sources through the External Oversight Activities for factual accuracy will not be entered into the Issues Management Program until the final reports are received.

The WIPP Form does not take the place of the following:

- Notification of the Central Monitoring Room of the stop work process, when immediate safety issues occur
- Human Resources employee concerns process
- Grievances
- Action Requests (ARs) and Work Orders (WOs)
- Routine landlord issues process
- Routine communications or the open door policy
- Nonconformance Reports (NCRs)
- Engineering Change Orders (ECOs)

Issues with equipment or material condition of WIPP structures or systems will not normally be processed using IMPS. Equipment and material condition issues are typically addressed through WOs, ECOs, and NCRs.

Managers should foster a "no-fault" attitude and encourage their staff to report issues and suggest improvements. Prompt notification of issues allows management to prioritize and focus resources in a manner to best address the issues having the greatest potential for:

- Posing adverse risks to human health or the environment.
- Adversely impacting the quality, safety, and reliability of WIPP operations.
- Affecting the ability to meet quality requirements.
- Committee members are identified in accordance with Management Charter 1.7, *WIPP Form Screening Committee*, and will screen WIPP Form(s) to ensure that the issue is assigned to the appropriate manager(s) for resolution, that the proposed corrective actions appropriately address the issue, and that closure documentation provides objective evidence that the corrective actions have been completed.

The WIPP Form Screening Committee typically meets weekly or as deemed necessary by the WIPP Form Screening Committee Chairperson.

The WIPP Form Screening Committee Chairperson may screen WIPP Forms that identify issues that cannot be addressed using IMPS (Human Resource issues, equipment issues) and document the determination and disposition on the WIPP Forms. The WIPP Form Screening Committee Chairperson will report these actions to the WIPP Form Screening Committee.

Performance of this procedure generates the following record(s), as applicable. Any records generated are handled in accordance with departmental Records Inventory and Disposition Schedules.

- EA15GM1002-1-0, *WIPP Form*
- EA15GM1002-2-0, *WIPP Form Continuation Sheet*
- Supporting documentation

REFERENCES			
DOCUMENT NUMBER AND TITLE	BASELINE DOCUMENT	REFERENCED DOCUMENT	KEY STEP
10 CFR Part 21, "Reporting of Defects and Noncompliance"		✓	
10 CFR Part 71, "Packaging and Transportation of Radioactive Material"		✓	
10 CFR Part 851, "Worker Safety and Health Program"		✓	
DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*	✓		
DOE/WIPP-07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*	✓		
Hazardous Waste Facility Permit, EPA Identification Number NM4890139088-TSDF		✓	
MC 1.7, *WIPP Form Screening Committee*		✓	
MP 1.2, *Stop-Work Policy*		✓	
WP 04-AD3027, *TSR Violation Response and Recovery*	✓	✓	
WP 10-2, *Maintenance Operations Instruction Manual*		✓	
WP 10-WC3011, *Work Control Process*		✓	
WP 12-ES3918, *Reporting Occurrences in Accordance with DOE Order 232.2*		✓	
WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description*	✓		**1**
WP 13-QA.03, *Quality Assurance Independent Assessment Program*	✓		
WP 13-QA3004, *Nonconformance Report*		✓	
WP 13-QA3007, *External Oversight Activities*		✓	
WP 15-GM.02, *Worker Safety & Health Program Description*	✓		**2**
WP 15-GM1001, *Root Cause Analysis*		✓	
WP 15-MD3102, *Event Investigation*		✓	
WP 15-PA.02, *Causal Analysis Guidance*		✓	
WP 15-RA.01, *Nuclear Safety & Worker Safety and Health Compliance Program*		✓	
EA15GM1002-1-0, *WIPP Form*		✓	
EA15GM1002-2-0, *WIPP Form Continuation Sheet*		✓	

DEFINITIONS

Compensatory Actions – Those controls put in place to ensure the issue is controlled and does not recur while programmatic or procedural changes are being developed and implemented.

Condition(s) Adverse to Quality (CAQs) – Noncompliance with QA program requirements.

Corrected during the Assessment (CDA) – CAQs that are corrected during the course of an assessment and are documented on WIPP Forms for trending purposes.

Equipment malfunction/maintenance issues – Maintenance issues that are resolved in accordance with WP 10-2.

Extent of Condition – The extent to which an identified issue has the potential to impact other items or processes or has done so in the past (e.g., is of a repetitive nature). This will be determined by the assigned Responsible Manager.

Human Resources (HR) Issues – Issues that are related to potentially proprietary employee information. The HR issues are typically routed to the HR department for resolution through their program(s).

HWFP-noncompliant – Noncompliance with the Hazardous Waste Facility Permit (HWFP). If the issue requires immediate notification of regulatory entities it is a Significant Condition Adverse to Quality (SCAQ).

Impact – The significance or effect of the issue to the program or operation.

Issue – Generic term used to refer to any item documented on a WIPP Form. This includes, but is not limited to, a failure, defect, deviation, malfunction, deficiency, nonconformance of plant equipment, materials, procedures, personnel safety concerns or events which have or could have an effect on the safe, reliable, or efficient operation of the plant, or which involve a failure to be in compliance with requirements or management expectations. In addition, it may be a question, request for evaluation, suggestion for improvement, or management or department initiative.

Nonconformance – A deficiency in characteristic, documentation, or record which renders the quality of an item unacceptable or indeterminate. These issues are controlled by procedure WP 13-QA3004.

Potential SCAQ – Issues of a severity that would require additional review by QA Manager to determine if a SCAQ exists and/or Work Suspension is required.

Program Enhancement – Issues developed during the conduct of Management Assessments, opportunities for program enhancement submitted by plant staff.

Quality Assurance Assessment – Issues (CAQs) identified during the performance of a QA Audit/Surveillance.

Safety Issue – Issues relevant to the WIPP Safety Program.

Significant Condition Adverse to Quality (SCAQ) – A significant condition adverse to quality is one that:

- If uncorrected, could lead to a serious effect on safety/operability, the ability to isolate waste, TRU waste site certification, regulatory compliance demonstration, or effective implementation of the QA program; or
- Is noncompliant with the Compliance Recertification Application; or
- Requires immediate notification of regulatory entities (e.g., 10 CFR Part 21, HWFP Module I.E.13); or
- Indicates a significant failure or breakdown in the implementation of QA program requirements; or
- Has not been resolved after repeated attempts; or
- Is identified in items or activities important to safety or waste isolation and compromises the ability to prevent or mitigate the consequences of an accident, thereby presenting a significant hazard to safety and health of workers and/or the public; or
- Constitutes an adverse trend or inclination, as determined by formal performance evaluation and trend analysis.

Trend Only – Issues where no activities are required for closure. These may include issues generated as a result of work performed at generator sites, issues that are outside the scope of the WIPP QA program, or CAQs corrected during an assessment.

PREREQUISITE ACTIONS

1.0 Personnel responsible for preparing a CAP, complete Apparent Cause Analysis Training (e.g., QAP-104, *Apparent Cause Analysis and Corrective Action Planning*) or formal Root Cause Training (e.g. Phoenix Method, TapRoot®) prior to preparing the CAP.

PERFORMANCE

1.0 WIPP FORM AVAILABILITY

1.1 WIPP Form Coordinator, perform the following:

- Ensure electronic WIPP Form is maintained on the WIPPnet.
- Ensure electronic WIPP Form database is maintained on the WIPPnet.
- Provide paper copies of blank WIPP Forms at designated locations throughout the WIPP site and Skeen-Whitlock Building.

2.0 WIPP FORM INITIATION

NOTE

Any WIPP employee who works under the NWP Quality Assurance Program can generate a WIPP Form, either electronically or by hand. Paper copies are available at designated locations to employees without access to computer terminals. Issues associated with abnormal events and personnel injuries should be documented on a WIPP Form as soon as possible, although the generation of the WIPP Form does not take precedence over any immediate actions to stabilize a situation or notify the Central Monitoring Room Operator. While the concurrence of the originator's manager is not mandatory, employees are encouraged to discuss issues with their manager prior to submitting a WIPP Form.

NOTE

A “master” WIPP Form should be generated by a coordinator, responsible manager, or champion to address audits or assessments which identify multiple, differing issues (e.g., external audit findings, management assessments, etc.). Individual issues that are identified in such audits or assessments should be entered on separate WIPP Forms with the help of the WIPP Form Coordinator. These “subordinate” WIPP Forms will be linked to the master WIPP Form by the WIPP Form Coordinator so that all issues related to an audit or assessment may be better grouped and tracked. A Subordinate WIPP Form may address an issue identified multiple times, even when the issue crosses Section/Department line of responsibility. The Corrective Action Plan will address the actions to correct the issues identified within each Section/Department.

2.1 Originator, record the following on either a paper copy of EA15GM1002-1-0 (including EA15GM1002-2-0 if necessary), or electronically:

- Date of issue identification
- Location (if applicable)
- Description of the issue/condition – If the issue/condition is the violation of a procedural or regulatory requirement, identify the procedure number and step or regulatory identifier and the nature of the violation. If the issue/condition is a process improvement, identify the condition as such. Describe the condition in sufficient detail to allow later confirmation that the issue has been resolved. Use job titles and not personal names of involved individuals.
- References may include debriefs or critiques, procedure numbers, WO numbers, engineering document numbers, or regulatory document numbers, as applicable to the issue. If the issue resulted from External Oversight Activities, a CCP CAR, or any numbered assessment, include the applicable assessment or CAR number.
- WP 15-MD3102 requires that the debrief or critique be provided to the WIPP Form Coordinator with the WIPP Form. For CDAs, include the assessment number, if applicable, from which the deficiency was identified and corrected, or a copy of the assessment.
- Equipment identification, if applicable
- Immediate actions taken (if any) or recommended corrective action. If the immediate actions taken have corrected the problem, include as much information as possible such as WO number, NCR number, ECO number, and procedure number and revision.
- Originator information (name, department)

2.2 Originator, submit WIPP Form either electronically to the WIPP Form Coordinator or by placing the WIPP Form in a box provided at selected locations at the Skeen-Whitlock Building/WIPP site, or take it to the WIPP Form Coordinator.

3.0 WIPP FORM SCREENING

3.1 WIPP Form Coordinator/WIPP Form Screening Committee Chairperson, perform the following:

3.1.1 Collect paper copy WIPP Forms from drop boxes.

3.1.2 Prescreen WIPP Forms with other screening committee members as necessary to ensure that personal information and inappropriate language do not appear on WIPP Forms.

3.1.3 Ensure that a unique tracking number is assigned to the WIPP Form and that the WIPP Form database contains sufficient information to describe the issue while at the same time protecting personal information.

3.1.4 If a WIPP Form is a Subordinate WIPP Form to a Master WIPP Form, ensure that the tracking number for the Subordinate WIPP Form references the Master WIPP Form.

3.1.5 Notify the remaining WIPP Form Screening Committee members, the Facility Shift Manager (FSM), the QA Manager, the Facility Manager Designee (FMD), and the Compliance Coordinator of newly generated WIPP Forms.

3.1.6 Notify the WIPP Form originator that the WIPP Form has been accepted for processing.

3.1.7 Prepare copies of new WIPP Forms (either hard copy or electronically) for review by the screening committee.

NOTE

Occurrence Reporting and Processing System (ORPS) and PAAA/10CFR851 screenings can be concurrent and be completed prior to review by the WIPP Form Screening Committee.

3.2 Perform screenings as follows:

3.2.1 If the issue documented on the WIPP Form is reportable, FMD report the occurrence in accordance with WP 12-ES3918.

3.2.2 Make the appropriate entries onto the WIPP Form to indicate whether the issue is reportable, the ORPS number, the ORPS reported discovery date, and target dates for completion of the critique, root cause analysis or causal analysis to ensure that a Corrective Action Plan (CAP) can be developed and approved to meet the 45-day time frame for corrective actions to be entered into ORPS in accordance with WP 12-ES3918.

3.2.3 If the issue is Noncompliance Tracking System (NTS) reportable, Compliance Coordinator report the occurrence in accordance with WP 15-RA.01.

3.2.4 Make the appropriate entries onto the WIPP Form to indicate whether or not the issue is NTS reportable.

NOTE

The Screening Committee should request clarification or more information from the WIPP Form originator if the issue to be addressed is not clear to ensure that appropriate actions can be taken.

NOTE

The WIPP Form Screening Committee Chairperson may screen WIPP Forms that identify issues that cannot be addressed using IMPS (Human Resource issues, equipment issues) and document the determination and disposition the WIPP Forms. The WIPP Form Screening Committee Chairperson will report these actions to the WIPP Form Screening Committee.

3.3 WIPP Form Screening Committee, disposition the issue based on the following:

3.3.1 If the issue has been already identified on an earlier WIPP Form, annotate the earlier WIPP Form number on the new WIPP Form and close the new WIPP Form with no further action by the WIPP Form Screening Committee.

3.3.2 If the issue is already being addressed through other processes such as WOs, NCRs, or ECOs and the issue does not appear to be programmatic, identify the WO, NCR, and/or ECO number and close the WIPP Form with no further action by the WIPP Form Screening Committee.

3.3.3 If the issue is unclear or requires additional information, request more information from the originator or a Responsible Manager to establish a clear understanding of the issue prior to determining the issue type.

3.3.4 If the issue involves employee behaviors or interactions best addressed by Human Resources (HR) or the responsible manager, indicate that the issue is being routed to HR and/or the responsible manager and close the WIPP Form with no further action by the WIPP Form Screening Committee.

3.3.5 Determine the issue type (e.g., Process Improvement; CAQ; potential SCAQ; potential PAAA or ORPS reportable if not already determined; HR issue) using attachment 2. More than one type may be applicable to an issue.

NOTE

CDAs may be identified for trend only if the issue does not appear to be programmatic and the action sufficiently addresses the issue.

3.3.6 If a CDA is identified for trend only, identify a cause code in accordance with attachment 3.

3.3.7 Identify the trend codes using attachment 2.

3.3.8 For a CAQ that is NOT a CDA, assign the appropriate Responsible Manager to develop a CAP. The assigned Responsible Manager should be one who can integrate corrective actions across group, section, or department lines.

3.3.9 For process improvements, assign a CAP to the appropriate Responsible Manager. In some cases a CAP is not necessary based on the actions that may already be in progress when the WIPP Form is generated.

NOTE

IMPS is an electronic system designed to process WIPP Forms through all aspects of this procedure with the exception of closure signatures. An individual assigned the responsibility for an action in a CAP is added as a reviewer by the system. Any other reviewers required by this procedure or requested by the WIPP Form Committee are added by the WIPP Form Coordinator. Reviews are completed by electronic approval or rejection of the CAP in IMPS.

3.3.10 Determine required CAP reviewers.

[A] If the issue is related to QA assessment findings, add appropriate QA personnel (Lead Assessor and/or QA management) as a required CAP reviewer.

[B] If the issue is determined to be an SCAQ, add the Cognizant Department Manager and the QA Manager as required reviewers.

[C] If the issue is NTS reportable, add the Compliance Coordinator as a required reviewer.

3.4 WIPP Form Coordinator, perform the following:

3.4.1 Ensure the following is recorded on the WIPP Form:

- WIPP Form Screening Committee determinations, dispositions, and trend codes, the Responsible Manager and CAP reviewers

- Any special or additional information or conditions regarding pertinent decisions made by the WIPP Form Screening Committee

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NOTE

The QA Manager is allowed 10 working days to complete the SCAQ determination. If additional time is required, the QA Manager can request an extension from the Screening Committee Chairperson. Extension requests and approvals/rejections will be attached to the WIPP Form file.

3.4.2 Route potential SCAQ issues to the QA Manager for determination prior to routing the issue to the Responsible Manager to develop the CAP.

3.4.3 Notify affected organizations.

3.5 If the issue is a potential SCAQ issue, QA Manager perform the following:

3.5.1 Determine if the issue meets the criteria for SCAQ and apply appropriate compensatory actions including work stoppage, if applicable.

3.5.2 Notify the affected organization(s).

3.5.3 If work is suspended, ensure that applicable corrective actions have been completed prior to lifting the work suspension and document the lifting of work suspension and justification on an attachment to the WIPP Form.

3.6 WIPP Form Coordinator, perform the following:

3.6.1 Ensure the FMD and Compliance Coordinator have marked the WIPP Form appropriately, if not already completed.

3.6.2 Notify the assigned Responsible Manager and other affected individuals according to the WIPP Form disposition.

NOTE

Due dates for CAPs are typically assigned to CAP managers to allow 10 working days from the date of Committee approval for preparation and submittal. Due dates for complex or serious issues (e.g., those requiring SCAQ determination or requiring a Root Cause Analysis [RCA]) will not be entered until after the predecessor actions are complete. The length of time allowed for evaluation may be limited when external reporting is necessary (45 days for submittal of corrective actions associated with events reported in accordance with WP 12-ES3918; 60 days maximum for events reportable to the U.S. Nuclear Regulatory Commission under 10 CFR Part 21).

NOTE

If additional time is required, the Responsible Manager can request an initial extension from the Screening Committee Chairperson. Additional extensions that may be needed must be pre-approved by the Department Manager responsible for the issue. Extension requests and approvals/rejections will be attached to the WIPP Form file.

3.6.3 If a CAP is required, ensure the CAP submittal due date (typically 10 working days from the date of Committee approval) is entered into the electronic tracking system.

3.6.4 If a CAP is required, notify the WIPP Form originator when the WIPP Form has been screened by the committee and a CAP has been assigned.

3.6.5 If no further action is required, or the actions previously taken, or information provided have effectively addressed the issue, **GO TO** section 5.0 for closure.

4.0 RESOLUTION AND CORRECTIVE ACTION

NOTE

Responsible Managers should request clarification or more information from the WIPP Form originator if the issue to be addressed is not clear to ensure that appropriate corrective actions are taken.

NOTE

WP 15-PA.02 provides useful information for preparing a CAP and associated corrective actions.

NOTE

Cause codes do not need to be assigned to a CAP identified as a process improvement. "No cause – process improvement" should be entered on the CAP in the attachment 1 format. Cause codes are required to be assigned for a CAP identified as the CAQ or SCAQ.

4.1 Responsible Manager, perform the following:

4.1.1 Provide information when requested by the WIPP Form Screening Committee.

4.1.2 If the issue is a CAQ, but not a CDA, or if a CAP is requested by the WIPP Form Screening Committee, perform the following:

[A] Develop a CAP using the format in attachment 1 and ensure that the CAP adequately addresses the issue(s) identified in the WIPP Form.

4.1.3 Submit the CAP electronically by the required due date unless otherwise specified (approved extension).

4.1.4 If the issue is an SCAQ or NTS reportable, perform the following:

[A] Develop a CAP by incorporating the recommended corrective actions from root cause or causal analysis, and by using the format in attachment 1.

4.1.5 Submit the approved CAP electronically as soon as possible but no later than 10 working days following completion of the RCA or causal analysis, unless otherwise specified (approved extension). For example, issues that are reportable in ORPS require corrective actions to be identified within 45 calendar days of the reported event, in accordance with WP 12-ES3918. Issues identified from External Oversight Activities or CCP CARs may also require schedules.

NOTE

CAPs written in response to External Oversight or CCP WIPP Forms may require submittal to the governing agency or authority in an acceptable alternate format in addition to the format utilized by this procedure.

4.2 WIPP Form Screening Committee, perform the following:

4.2.1 Review the furnished CAP to ensure that the CAP adequately addresses the issue(s) identified on the WIPP Form.

4.2.2 Resolve issues with the CAP with the Responsible Manager. (If the CAP is rejected, assign a new date for resubmittal but not later than 10 working days following Committee rejection.)

4.2.3 Accept the CAP.

NOTE

If additional time is required for specific actions, the Responsible Manager can request an initial extension from the Screening Committee Chairperson. Additional extensions that may be needed must be pre-approved by the Department Manager responsible for the issue. Extension requests and approvals/rejections will be attached to the WIPP Form file. Extensions for External Oversight Activities or CCP CARs may require additional approvals.

4.3 WIPP Form Coordinator, ensure that the actions, action party, and due dates are entered into the electronic tracking system and notify the WIPP Form originator that the WIPP Form CAP has been accepted by the committee.

5.0 WIPP FORM CLOSURE

5.1 Assigned Responsible Manager or Action Party, perform the following:

5.1.1 Complete assigned corrective actions and assemble objective evidence of completion.

5.1.2 Ensure that objective evidence of completion is free of personal information. While copies of safety meeting attendance sheets are considered acceptable, training records are considered private.

5.1.3 Attach Adobe Acrobat files containing objective evidence of the completed commitments or actions in IMPS.

5.2 WIPP Form Coordinator, review the issue package to ensure objective evidence for required commitments is on file and that required signatures (QA Manager, Compliance Coordinator, Cognizant Department Manager, and Lead Assessor and/or QA management, as appropriate) are in place.

5.3 WIPP Form Coordinator, submit the WIPP Form and associated documentation (either hard copy or electronically) to the WIPP Form Screening Committee for closure.

5.4 WIPP Form Screening Committee, review the closure documentation and determine if the documentation is sufficient for WIPP Form Closure.

5.5 Chairperson (or designee), ensure any open issues have been resolved prior to signing and dating the WIPP Form, signifying the consensus of the committee for closure.

5.6 WIPP Form Coordinator, perform the following:

5.6.1 For SCAQ and/or NTS reportable issues, assign an action in the electronic tracking system for QA to perform an independent audit or surveillance within 3 to 12 months after the WIPP Form closure to determine the effectiveness of the corrective actions.

5.6.2 Notify the WIPP Form originator that actions are complete and the issue is closed.

5.6.3 For WIPP Forms which identified multiple issues (e.g., external audit findings), notify the appropriate coordinator, responsible manager, or champion that actions are complete and the issues are closed. For example, for External Oversight Activities notify the External Oversight Activities Coordinator, for CCP CARs notify the National TRU Program Certification Manager, and for management assessments notify the responsible manager.

5.6.4 Route electronic notification of closure to the Lessons Learned Coordinator.

5.6.5 File the completed WIPP Form Package.

Attachment 1 – Corrective Action Plan (CAP) Content

General

SCAQ/NTS reportable WIPP Forms require performance of a formal root cause analysis in accordance with WP 15-GM1001. Some items reportable in ORPS require causal analysis, but not necessarily a RCA. The CAP should incorporate the recommendations from the RCA or causal analysis. Recommended corrective actions from debriefs and critiques should also be considered for inclusion in the CAP unless the corrective actions identified in the RCA or causal analysis are more comprehensive than those identified early in an investigation.

The CAP shall address the following:

1.0 Describe the issue being addressed

Summarize the problem. This wording is derived from the WIPP Form issue description.

2.0 Cause of the issue:

Determine/document the cause(s) of the issue, using the three-tiered (i.e., AxBxCxx) cause codes listed in attachment 3. If more than one cause code applies, identify each of the applicable codes. No cause – process improvement is entered for WIPP Forms identified as process improvements requiring a CAP.

3.0 Extent and Impact:

Describe the extent and impact of the issue being addressed. To adequately identify the extent and impact it may be necessary to review other WIPP Forms, NCRs, WOs, ECOs, past assessments, etc. The extent and impact may be identified in the debrief, critique, causal analysis, and/or RCA for issues that were investigated in accordance with WP 15-MD3102 and WP 15-GM1001. The extent of condition should specifically identify if the issue is a recurring condition. While a specific issue may be new to a particular group or individual, the issue may have been previously identified such that the past corrective actions did not cross organizational lines and were not adequate to prevent recurrence.

4.0 Corrective/Preventive Actions Planned or Taken:

Document planned or completed actions to resolve the issue and prevent its reoccurrence. Corrective actions can include immediate, compensatory, short term and long term actions, depending on the nature of the issue being addressed. If the issue is a recurring condition, the corrective actions may need to be more comprehensive than previous actions taken. If the issue was investigated through a debrief, critique or RCA, include recommended corrective actions from the debrief and/or critique, causal analysis (WP 15-MD3102); and/or RCA (WP 15-GM1001), as appropriate, including any compensatory actions that

were taken immediately following the incident. Additionally, corrective actions should be sufficiently comprehensive to address each cause code identified for the issue.

Action parties and target completion dates are required for CAPs. If the corrective actions extend beyond the assigned Responsible Manager's organization, the assigned Responsible Manager should coordinate with the other manager(s)/action parties to establish expected completion dates.

If no corrective/preventive actions are planned or required, provide a justification. If an action has been completed at the time the CAP is generated, objective evidence of the completed action should be submitted with the CAP to avoid the action being past due.

Attachment 2 – Determination and Trend Codes

Determination

CAQ – To be assigned to a Responsible Manager, who will be responsible for development of a corrective action plan and tracking the completion of any actions required to resolve the issue.

Nonconformance – Equipment issues that require processing in accordance with WP 13-QA3004, *Nonconformance Reports*.

Potential SCAQ – As determined by the Manager QA.

Potential PAAA/10CFR851 Reportable – As determined by the Compliance Coordinator.

Safety issue – Injuries, potential for injuries, vehicle incidents, damage to equipment by mobile equipment, etc. A safety review of the CAP is prudent.

Equipment Malfunction/Maintenance – Issues that are resolved in accordance with WP 10-WC3011, *Work Control Process*.

HR Issue – Issues specific to personnel, labor contract, management guidance, etc.

Process Improvement – Should be assigned to a Responsible Manager for development of a CAP if a procedure or design needs to be generated or revised or if multiple organizations are involved to implement the improvement.

Trend Only – Issues where no activities are required for closure.

Training – Issues that identify deficiencies or improvements applicable to training.

Security – Issues that identify deficiencies or improvements applicable to security.

HWFP Noncompliance – Issues resulting in a noncompliance with the permit.

Nuclear Safety – Issues that involve violations of the Technical Safety Requirement (TSRs), corrections to the TSRs or Documented Safety Analysis (DSA) or supporting documents (Examples include Fire Hazards Analysis, Criticality Reports, Hazard Identification or Analysis applicable to the DSA), Potential Inadequate Safety Analysis (PISAs), etc.

QA Assessment – Issues that are identified through QA oversight.

Self-Identified – Issues or process improvement.

Work Control – Issues specific to roles and responsibilities that include screening, scheduling, planning, execution, and closure of work documents.

Other – Issues other than those listed.

Attachment 2 – Determination and Trend Codes

Trend Codes

RH

CH

Underground

Surface

Electrical

Mechanical

Environmental

Mobile Equipment

Transportation

Safety Management Program (SMP) - Criticality Safety

SMP - Radiation Protection

SMP - Hazardous Material Protection

SMP - Radioactive and Hazardous Waste Management

SMP - Testing, Surveillance, Maintenance

SMP - Operational Safety (Conduct of Operations/Fire Protection)

SMP - Procedures and Training

SMP - Human Factors

SMP - Quality Assurance

SMP - Emergency Preparedness

SMP - Decon and Decommissioning

SMP - Mgmt, Org, Institutional Safety

Other

TSR Violation

Attachment 3 – Cause Codes

Category A1			**Design/Engineering Problem**	An event or condition that can be traced to a defect in design or other factors related to configuration.
A1	**Subc B1**		**Design input Less Than Adequate (LTA)**	Input to a design was lacking adequate information that was necessary for the design.
A1	B1	C01	Design input cannot be met	The criteria and other requirements were so stringent that they could not be met. There were conflicting criteria. Not all of the necessary references were included.
A1	B1	C02	Design input obsolete	The criteria were out-of-date. An old version of a requirement or specification was used. Process requirements/conditions changed and the changes were omitted from the input.
A1	B1	C03	Design input not correct	The wrong standards or requirements were used. The requirements were transcribed in error.
A1	B1	C04	Necessary design input not available	The necessary requirements, codes, standards, etc., were not available to the designer.
A1	**Subc B2**		**Design output LTA**	Inadequate design output that did not meet the customer's expectations or design requirements.
A1	B2	C01	Design output scope LTA	The design did not consider all the possible scenarios. All the operating conditions, normal and emergency were not included in the design.
A1	B2	C02	Design output not clear	The drawings were difficult to read. The specifications were difficult to understand. The specification could be interpreted in more than one way.
A1	B2	C03	Design output not correct	The drawings and other specifications were incorrect. The final design output did not include all changes.
A1	B2	C04	Inconsistent design output	There were differences between different output documents. The drawings and other design documents did not agree.
A1	B2	C05	Design output not addressed in design output	The specifications did not include all the requirements. Some criteria were left out of the design output.
A1	B2	C06	Drawing, specification or data error	The latest drawing revision was not referenced. The latest vendor information was not included in the design documentation. The correct data was not noted on the design documentation request.
A1	B2	C07	Error in equipment or material selection	The correct vendor identification number was not used for procurement of equipment. For example, the correct grade of stainless steel was not specified for the material.
A1	B2	C08	Errors not detectable	Personnel were unable to detect errors by way of alarms or instrument readings during or after the occurrence. A serious error went unnoticed because there was no way to monitor system status.
A1	B2	C09	Errors not recoverable	The system was designed such that personnel were unable to recover from error discovered before a failure occurred.

Attachment 3 – Cause Codes

A1	**Subc B3**		**Design/Documentation LTA**	Design or documentation that did not include all of the required information and did not comply with document control and records requirements.
A1	B3	C01	Design/Documentation not complete	The designs and other documentation for equipment were incomplete. Items were missing from the documentation. A complete baseline did not exist.
A1	B3	C02	Design/Documentation not up to date	Drawings and documents were not updated when changes were made. Documents/drawings did not reflect the current status.
A1	B3	C03	Design/Documentation not controlled	The design documentation was not controlled per site requirements for document control and records.
A1	**Subc B4**		**Design Verification/Installation Verification LTA**	Design reviews, testing, independent inspections, and acceptance were not in compliance with customer expectations and/or site requirements.
A1	B4	C01	Independent review of design/documentation LTA	A required review was not performed on the design. The review was not performed by an independent reviewer.
A1	B4	C02	Testing of design/documentation LTA	Testing was not included as part of the design acceptance process. The testing did not verify the operability of the design. Design parameters did not successfully pass all testing criteria.
A1	B4	C03	Independent inspection of design/documentation LTA	Independent Inspection attributes were not included in the design installation. Required hold/witness points were not verified by QA. Hold/Witness points did not pass the acceptance criteria. Commercial grade material was not adequately dedicated or documented.
A1	B4	C04	Acceptance of design/documentation LTA	The customer had problems with acceptance of the design, testing, and/or verification.
A1	**Subc B5**		**Operability of Design/Environment LTA**	Personnel or environmental factors were not considered as part of the design.
A1	B5	C01	Ergonomics LTA	Inadequate ergonomic design contributed to the occurrence. The operator was physically incapable of performing the required task. The operator had to go too far to respond to the alarm. Personnel mobility or vision was restricted. An individual had difficulty reaching the equipment or assumed an awkward position to complete a task. The event was caused because illumination levels were not sufficient for task performance.
A1	B5	C02	Physical environment LTA	Inadequate equipment controls or control systems [e.g., push-buttons, rotary controls, j-handles, key-operated controls] contributed to the occurrence. The control failed to provide an adequate range of control for the function it performs. The control was inadequately protected from accidental activation. Similar controls were indistinguishable from on e another. Controls were in too close proximity of each other. Operating conditions affected performance of the task. Lighting was inadequate. Noise was a factor.
A1	B5	C03	Natural environment LTA	Exposure to heat, cold, wind, and rain was not included in the design. Earthquake tested devices were not included in the design. System was not designed to withstand flooding, freezing, or high wind conditions. Lightning suppressing devices were not included in the design. The event was caused by excessive exposure of personnel to a hot or cold environment.

Attachment 3 – Cause Codes

Category A2			**Equipment/Material Problem**	Is defined as an event or condition resulting from the failure, malfunction, or deterioration of equipment or parts, including instruments or material.
A2	**Subc B1**		**Calibration for Instruments LTA**	Calibrations did not include all the essential elements. Equipment as-found condition was less than adequate.
A2	B1	C01	Calibration LTA	The equipment involved in the incident was not included in a routine calibration program. Calibrations were performed too infrequently. The calibration did not include all the essential elements.
A2	B1	C02	Equipment found outside acceptance criteria	An event occurred as a result of equipment that was found outside of the specified acceptance criteria. The instrument calibration drift was outside of the acceptable range. Process instrumentation was outside of acceptable range criteria due to a standard that was out of calibration.
A2	**Subc B2**		**Periodic/Corrective Maintenance LTA**	Periodic maintenance was not established for the equipment or component. The periodic or corrective maintenance was inadequate. Equipment history did not exist or was incomplete for the instrument or component.
A2	B2	C01	Preventive maintenance for equipment LTA	An equipment malfunction was caused by a failure to carry out scheduled preventive maintenance. Preventive maintenance was not established for the equipment or component that failed. Preventive maintenance was scheduled too infrequently. The preventive maintenance was incomplete. Preventive maintenance was performed on some of the components but not on others.
A2	B2	C02	Predictive maintenance LTA	Predictive maintenance was not established for the equipment. The established frequency was inadequate to prevent or detect equipment degradation. The established method used to prevent or detect equipment degradations was inadequate.
A2	B2	C03	Corrective maintenance LTA	Corrective maintenance was performed but failed to correct the originating problem. The equipment or component was reassembled improperly during corrective maintenance. Other problems were noted during maintenance activities that were not corrected. The actual job of performing a maintenance activity was complete, but was not performed correctly.
A2	B2	C04	Equipment history LTA	Equipment history/records did not exist for the equipment that malfunctioned. The history for the equipment that malfunctioned was incomplete/inadequate. The history did not contain all the information necessary to assure equipment reliability. Knowledge of equipment history would have prevented the incident or lessened its severity.
A2	**Subc B3**		**Inspection/Testing LTA**	Scheduled inspection/testing did not exist for the equipment or component. The inspection/testing was inadequate or not performed as required or did not include all the essential elements. Note A1B4 should be used for design testing.
A2	B3	C01	Startup Testing LTA	Functional testing did not exist for the equipment or system prior to placing them in service. Start-up testing was inadequate for the equipment or system being placed into service.

Attachment 3 – Cause Codes

A2	B3	C02	Inspection/Testing LTA	Required testing inspection was not established or performed for the equipment involved in the incident. The required testing/inspection was performed at an incorrect frequency. The acceptance criteria for the required testing/inspection were inadequately defined. All essential components were not included in the required testing/inspection.
A2	B3	C03	Post-maintenance/Post-modification testing LTA	The post-maintenance or post-modification testing specified was not performed or was performed incorrectly. The post-maintenance or post-modification testing was completed, but the testing requirements were less than adequate. The post-maintenance or post-modification testing was not performed in accordance with the schedule for testing.
A2	**Subc B4**		**Material control LTA**	The problem was due to the inadequate handling, storage, packaging or shipping of materials or equipment. The shelf life for material was exceeded. An unauthorized material or equipment substitution was made. Spare parts were inadequately stored. There was an error made in the labeling or marking.
A2	B4	C01	Material handling LTA	Material or equipment was damaged or mixed up during handling.
A2	B4	C02	Material storage LTA	The material or equipment was stored improperly. The material or equipment was damaged in storage or had weather damage or was stored in an environment that damaged it (heat, cold, acid fumes, etc.) or there was inadequate preventive maintenance performed during storage.
A2	B4	C03	Material packaging LTA	The material or equipment was packaged improperly; the material or equipment was damaged due to improper packaging; the material or equipment was damaged as a result of damage to the packaging.
A2	B4	C04	Material shipping LTA	The material or equipment was transported improperly. The material or equipment was damaged during shipping.
A2	B4	C05	Shelf life exceeded	Material, equipment, or parts that had exceeded the shelf life were installed. Materials continued in use after the shelf life was exceeded.
A2	B4	C06	Unauthorized material substitution	Incorrect materials or parts were substituted. Materials or parts were substituted without authorization. The requirements specified no substitutions.
A2	B4	C07	Marking/Labeling LTA	There was an error made in the labeling or marking. Equipment identification, labeling, or marking was less than adequate.
A2	**Subc B5**		**Procurement control LTA**	The error was due to inadequate control of changes to procurement specifications or purchase orders. A fabricated item failed to meet requirements or an incorrect item was received. Product acceptance requirements failed to match design requirements or were otherwise unacceptable. Note that procured services are addressed A4B2C10.
A2	B5	C01	Control of change to procurement specification/purchase order LTA	Changes were made to purchase orders or procurement specifications without the proper reviews and approvals. The changes resulted in purchase of the wrong material, equipment, or parts.
A2	B5	C02	Fabrication item does not meet requirements	The item of concern was not fabricated according to the requirements specified in the procurement specifications or purchase requisition.

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A2	B5	C03	Incorrect item received	An item received was not the one ordered. The inconsistency was not recognized. The item was accepted rather than returned.
A2	B5	C04	Product acceptance requirements LTA	The product acceptance requirements were incomplete. The product acceptance requirements did not address all the safety concerns for the item. The requirements did not address all the concerns for efficiency.
A2	**Subc B6**		**Defective, Failed or Contaminated**	An event was caused by a failed or defective part. The material used was defective or flawed. The weld, braze or soldered joint was defective. The component reached the end of its expected service life. There was electrical or instrument noise interference or interaction. Foreign material or contaminant caused the equipment or component to fail.
A2	B6	C01	Defective or failed part	A part/instrument that lacked something essential to perform its intended function. The degraded performance of a part or component contributed to the failure of the component, equipment or system. Note – use of this code does not explain why the item failed. Therefore, this node should be multiple coded.
A2	B6	C02	Defective or failed material	A component failed because the material used was not adequate for the application. The material used was found to be defective, flawed or damaged. Note – use of this code does not explain why the item failed. Therefore, this node should be multiple coded.
A2	B6	C03	Defective weld, braze, or soldering joint	A specific weld joint defect or failure. Note – use of this code does not explain why the item failed. Therefore, this node should be multiple coded.
A2	B6	C04	End of life failure	The failure resulted from equipment or material having reached the end of its expected or normal service life.
A2	B6	C05	Electrical or instrument noise	An unwanted signal or disturbance that interfered with the operation of equipment.
A2	B6	C06	Contamination	Failure or degradation of a system or component due to foreign material (i.e., dirt, impurities, salt buildup) or radiation damage due to excessive exposure.
Category A3			**Human Performance LTA**	An event or condition resulting from the failure, malfunction, or deterioration of the human performance associated with the process. Note that A3B1, A3B2, A3B3 are only applicable to problem solving. If the error occurs due to medications, look to A3B4C01 or A5B4C06. If there are multiple cases of A3C nodes, look for other rationale behind the behavior.
A3	**Subc B1**		**Skill Based Errors**	Inattention or over-attention to performance of work affected the event.
A3	B1	C01	Check of work was LTA	An individual made an error that would have been detectable and correctable if a check of the completed or partially completed work was performed.
A3	B1	C02	Step was omitted due to distraction	Attention was diverted to another issue during performance of the task and the individual committed an error in performance due to the distraction.
A3	B1	C03	Incorrect performance due to mental lapse	The individual knew appropriate action(s) to take, but failed to initiate the correct action(s) based on inattention/over-attention.
A3	B1	C04	Infrequently performed steps are performed incorrectly	An individual was not completely familiar with the tasks required based on not frequently performing the tasks and not operating at a fluency level.

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A3	B1	C05	Delay in time cause LTA actions	An individual performed the wrong actions based on an extended length of time expiring between the time the task was defined and the time the task was completed.
A3	B1	C06	Wrong action selected based on similarity with other actions	An individual selected a wrong action out of a series of actions that appeared to be the same but are not.
A3	B1	C07	Omission/repeating of steps based on assumptions for completion	Individual, based on assumptions, concluded that activity steps were not completed. An error occurred because the incorrect decision or assumption was made.
A3	**Subc B2**		**Rule Based Error**	A misapplication of a good rule for behavior or application of a bad rule applied for behavior during the work process impacted the event.
A3	B2	C01	Strong rule incorrectly chosen over other rules	Individual chose behavior rules based on the number of times the rule(s) had been used successfully in the past. The more times the rule(s) have been used successfully, the stronger the desire to apply the rule(s) become.
A3	B2	C02	Signs to stop were ignored and step performed incorrectly	Most activities generate indication of status both positive and negative. The human tendency is to focus on the indications of success rather than all the indicators. The negative indicators are the signs to stop. "Signs" are not necessarily physical.
A3	B2	C03	Too much activity was occurring and error made in problem solving	The error was initiated when the individuals committing the error experience information overload. The right set of decisions was not made based on too many details to process mentally.
A3	B2	C04	Previous success in use of rules reinforces continued use of rule	If a rule for behavior has been used successfully in the past, there is an overwhelming tendency to apply the rule again, even though circumstances no longer warrant the use of the rule.
A3	B2	C05	Situation incorrectly identified or represented results in wrong rule used	Individual interpreted facts based on training and experience that helped form stored mental knowledge from which the individual interpreted the facts. When the individual used the stored knowledge, the right set of training and experience was sometimes not selected based on the existing facts. A broader search of the stored knowledge would have been necessary to explain the existing facts.
A3	**Subc B3**		**Knowledge Based Error**	The problem was solved without using stored rules for behavior. The involved personnel were in a problem solving troubleshooting mode.
A3	B3	C01	Attention was given to wrong issues	Selective mental processing of information was targeted at the wrong issues and was not focused on the right issues. Often the individual focus was centered around what was psychologically important instead of targeted on what was logically important.
A3	B3	C02	LTA conclusion based on sequence of facts	An individual when establishing a timeline or recalling step-by-step compilation of facts as they occurred in an event, sometimes reordered the sequence which affected the conclusion based on the facts.
A3	B3	C03	Individual justified action by focusing on biased evidence	An individual was overconfident in evaluating the correctness of his/her knowledge. The chosen course of action was selected based on evidence that favored it and contradictory evidence was overlooked.

Attachment 3 – Cause Codes

A3	B3	C04	LTA review based on assumption that process will not change	Individual believed that no variability existed in the process and overlooked the fact that a change has occurred leading to differing results than normally realized.
A3	B3	C05	Incorrect assumption that a correlation exists between two or more facts	Wrong assumptions were made based on the belief that two or more facts are related to each other and incorrect actions were taken based on the assumption.
A3	B3	C06	Individual underestimated the problem by using past events as basis	Individuals tend to oversimplify events. Based on stored knowledge of past events, the individual underestimated problems with the existing event and plans for fewer contingencies than will actually be needed.
A3	**Subc B4**		**Work Practices LTA**	The capacity to perform work was impaired. The act to incorrectly perform work was deliberate.
A3	B4	C01	Individual capabilities to perform work LTA	a. Sensory/Perceptual Capabilities LTA b. Motor/Physical Capabilities LTA c. Attitude/Psychological Profile LTA. Signs may include horseplay; absence from work location; failure to perform expected work; maliciousness; poor performance under stress; poor psychological health; use of drugs or alcohol; insubordination; failure to work well or communicate with others; disregard for safety rules.
A3	B4	C02	Deliberate violation	The action on the part of the individual was a deliberate action to commit human error.
Category A4			**Management Problem**	An event or condition that could be directly traced to managerial actions or methodology (or lack thereof).
A4	**Subc B1**		**Management methods LTA**	The processes used to control or direct work-related plant activities, including how manpower and material was allocated for a particular objective.
A4	B1	C01	Management policy guidance/expectations not well-defined, understood, or enforced	Personnel exhibited a lack of understanding of existing policy and/or expectations, or policy/expectations were not well-defined or policy/expectation is not enforced.
A4	B1	C02	Job performance standards not adequately defined	Measurement of effectiveness could not be performed for a specific job function due to lack of defined standards.
A4	B1	C03	Management direction created insufficient awareness of the impact of actions on safety/reliability	Management failed to provide direction regarding safeguards against non-conservative actions by personnel concerning quality, safety, or reliability.
A4	B1	C04	Management follow-up or monitoring of activities did not identify problems	Management methods for monitoring the success of initiatives were ineffective in identifying shortcomings in the implementation.
A4	B1	C05	Management assessment did not determine causes of previous event or known problem	Analysis methods failed to uncover the causal factors of consequential or nonconsequential events.
A4	B1	C06	Previous industry or in-house experience was not effectively used to prevent recurrence	Industry or in house experience relating to a current problem that existed prior to the event but was not assimilated by the organization.
A4	B1	C07	Responsibility of personnel not well defined or personnel not held accountable	Responsibility for process elements such as procedures, engineering, training, etc. was not placed with individuals or accountability for failures of those process elements was not placed with individuals.

Attachment 3 – Cause Codes

A4	B1	C08	Corrective action responses to a known or repetitive problem was untimely	Corrective action for known or recurring problem was not performed at the proper time or was not performed within the proper time.
A4	B1	C09	Corrective action for previously identified problem or event was not adequate to prevent recurrence	Meaningful corrective action was not taken. Extent of the corrective actions was not provided to more individuals.
A4	**Subc B2**		**Resource Management LTA**	Manpower and material allocation is insufficient to successfully perform assigned tasks.
A4	B2	C01	Too many administrative duties assigned to immediate supervisors	The administrative load on immediate supervisors adversely affects their ability to supervise ongoing activities.
A4	B2	C02	Insufficient supervisory resources to provide necessary supervision	Supervision resource is less than that required by task analysis considering the balance of procedures, supervision and training.
A4	B2	C03	Insufficient manpower to support identified goal/objective	Personnel were not available as required by task analysis of goal or objective.
A4	B2	C04	Resources not provided to assure adequate training was provided/maintained	Training resources were not available as required by task analysis.
A4	B2	C05	Needed resource changes not approved/funded	Corrective actions for existing deficiencies that were previously identified were not approved or funded.
A4	B2	C06	Means not provided to assure procedures/documents/records were of adequate quality and up-to-date	A process for changing procedures or other work documents to assure quality and timeliness was nonexistent or inadequate.
A4	B2	C07	Means not provided for assuring adequate availability of appropriate materials/operability	A process for supplying personnel with appropriate materials or tools did not exist.
A4	B2	C08	Means not provided for assuring adequate equipment quality, reliability, or operability	A process for assuring personnel's equipment was satisfactory did not exist.
A4	B2	C09	Personnel selection did not assure match of worker motivations or job descriptions.	Personnel selection processes failed to determine a mismatch between motivation and job description prior to task.
A4	B2	C10	Means/Method not provided for assuring adequate quality of contract services	A process for assuring quality contract services was being provided was nonexistent or inadequate.
A4	**Subc B3**		**Work Organization & Planning LTA**	Problems in how the work to be performed was organized, including work scope, planning, assignment and scheduling of a task to be performed. Failures in this node usually imply related failures in supervisory methods addressed in B4.
A4	B3	C01	Insufficient time for worker to prepare task	Scheduling of the task did not adequately address the time frame required for accepted worker preparation practices to occur.
A4	B3	C02	Insufficient time allotted for task	Scheduled duration of the task did not adequately address known conditions or account for reasonable emergent issues.
A4	B3	C03	Duties not well-distributed among personnel	The work loading individuals within a group or team did not adequately address training, experience, task frequency and duration, or other situational factors such that responsibility was inappropriately distributed.

Attachment 3 – Cause Codes

A4	B3	C04	Too few workers assigned to task	Job planning did not allot a realistic number of man hours or the number of people necessary to complete the task based on the scope of work described.
A4	B3	C05	Insufficient number of trained or experienced workers assigned to task	Though the overall number of personnel assigned matched the planned man hour allotment, organization methods failed to identify that the personnel assigned did not have adequate experience or training to perform the work.
A4	B3	C06	Planning not coordinated with inputs from walkdowns/task analysis	The job plan did not incorporate information gathered during field visits or task analysis concerning the steps and conditions required for successful completion of the task.
A4	B3	C07	Job scoping did not identify potential task interruptions and/or environmental stress	The work scoping process was not effective in detecting reasonable obstructions to work flow (e.g., shift changes) or the impact of environmental conditions.
A4	B3	C08	Job scoping did not identify special circumstances and/or conditions	The work scoping process was not effective in detecting work process elements having a dependency upon other circumstances or conditions.
A4	B3	C09	Work planning not coordinated with all departments involved in task	Interdepartmental communication and teamwork did not support the work flow being planned.
A4	B3	C10	Problem performing repetitive tasks and/or subtasks	The work flow plan repeated tasks or sub-tasks to the detriment of successful completion of the evolution.
A4	B3	C11	Inadequate work package preparation	Though scoping and planning were adequately performed, the work package did not reflect the information gathered from these activities.
A4	**Subc B4**		**Supervisory Methods LTA**	Causes that can be traced back to the immediate supervision and evaluated techniques that were used to monitor, direct and control work assignments. Supervision is a function not a title.
A4	B4	C01	Tasks and individual accountability not made clear to worker	Task and accountability for the task were outside written guidance or training was not made clear to the worker.
A4	B4	C02	Progress/status of task not adequately tracked	Supervision did not take the appropriate actions to monitor the task progress or status.
A4	B4	C03	Appropriate level of in-task supervision not determined prior to task	Supervision did not adequately assess the task for points of supervisory interaction prior to assignment to workers.
A4	B4	C04	Direct supervisory involvement in task interfered with overview role	Supervision became so involved with the actual task steps that overall command and control were adversely affected.
A4	B4	C05	Emphasis on schedule exceeded emphasis on methods/doing a good job	Accepted standards for methods were not met due to supervision's focus on completing the activity within a certain time frame.
A4	B4	C06	Job Performance and self-checking standards not properly communicated	Supervision failed to adequately communicate how standards for job performance and self-checking could be applied to the actual job at hand.
A4	B4	C07	Too many concurrent tasks assigned to worker	Supervision failed to detect that concurrent job assignments for an individual exceeded the individual's abilities.
A4	B4	C08	Frequent job or task "shuffling"	Supervision transferred a worker from one task to another without adequate time to shift attention away from previous task.

Attachment 3 – Cause Codes

A4	B4	C09	Assignment did not consider worker's need to use higher-order skills	Supervision did not consider the worker's talents or innovative strengths that could be used to perform more challenging work.
A4	B4	C10	Assignment did not consider effects of worker's previous task	Supervision did not adequately assess the previous task's impact upon the worker's ability to implement the current task.
A4	B4	C11	Assignment did not consider worker's ingrained work patterns	Supervision failed to assess the incompatibility between worker's ingrained work patterns and necessary work patterns for successful completion of the current task.
A4	B4	C12	Contact with personnel too infrequent to detect work habit/attitude changes	Supervision not aware of deviation from desired work habits/attitudes due to lack of interaction with personnel.
A4	B4	C13	Provided feedback on negative performance but not on positive performance	Worker's performance adversely affected by supervision's focus on negative performance feedback.
A4	**Subc B5**		**Change Management LTA**	Problems caused the process by which changes are controlled and implemented by management as organizational needs change to accommodate new business needs.
A4	B5	C01	Problem identification methods did not identify need for change	Existing problem identification methods did not recognize the difference between actual practices and expectations.
A4	B5	C02	Change not implemented in a timely manner	A change in expectations was not realized in practices within an acceptable time period.
A4	B5	C03	Inadequate vendor support of change	Management failed to adequately assess the ability of vendors to supply products or services in support of changing expectations for a particular objective.
A4	B5	C04	Risks/consequences associated with change not adequately reviewed/assessed	Elements of the process change were not recognized as having adverse impact or increased risk of adverse impact prior to implementing the change.
A4	B5	C05	System interactions not considered	Changes to processes or physical systems caused interactions with other processes or physical systems that were not identified prior to implementation.
A4	B5	C06	Personnel/department interactions not considered	Changes to processes created new requirements for interaction between personnel or departments that were not considered in the implementation phase of the change.
A4	B5	C07	Effects of change on schedules not adequately addressed	Changes to processes that resulted in scheduled changes had effects on personnel or equipment that were not addressed in the change implementation.
A4	B5	C08	Change related training/retraining not performed or not adequate	Changes to processes resulted in a need for new training or revisions to existing training activities that were not performed or were not adequate to meet the needs of the new process.
A4	B5	C09	Change related documents not developed or revised	Changes to processes resulted in a need for new training or revisions to existing training activities that were not performed or were not adequate to meet the needs of the new process.
A4	B5	C10	Change related equipment not provided or not revised	Changes to processes resulting in a need for new or revised software/hardware that was not provided or revised.
A4	B5	C11	Change not adequately communicated	Changes to processes were not communicated to affected personnel effectively.
A4	B5	C12	Change not identifiable during task	Changes to processes were not distinguishable from the previous process such that personnel did not modify how they performed the process.

Attachment 3 – Cause Codes

A4	B5	C13	Accuracy/effectiveness of change not verified or not validated	Verification/validation practices for process changes failed to identify inaccurate or ineffective methods.
Category A5			**Communications LTA**	Inadequate presentation or exchange of information. Persons on all sides of a communication link should be questioned regarding known or suspected problems.
A5	**Subc B1**		**Written Communication Method of Presentation LTA**	Problems with visual attributes of accurate information.
A5	B1	C01	Format deficiencies	The layout of the written communication made it difficult to follow. The format differed from that which the user was accustomed to using. The steps of the procedure were not logically grouped. Steps in the written communication had more than one action or direction to perform. Some steps stated one action, which in practice required several steps to perform.
A5	B1	C02	Improper referencing or branching	The written communication referred to an excessive number of additional procedures; contained numerous steps of the type Calculate limits per procedure XYZ; the written communication was difficult to follow because of excessive branching to other procedures. References to different processes and areas contributed to the event.
A5	B1	C03	Checklist LTA	An error was made because each separate action in a step did not have a check off space provided; the checklist was confusing. Each instruction did not clearly indicate what was required. Insufficient room was provided for the response; The checklist required unique responses for each step.
A5	B1	C04	Deficiencies in user aid (charts, etc.)	An error was made because graphics or drawings were of poor quality. The graphics or drawings were unclear, confusing, or misleading. Graphics, including datasheets, were not legible.
A5	B1	C05	Recent change not made apparent to user	The written communication user was required to carry out an action different from those he was accustomed to doing. The written communication did not identify that the step for this action had been revised. The written communication user performed the action as the previous revision specified rather than the current revision.
A5	B1	C06	Instruction step/information in wrong sequence	The instructions in the written communication were out of sequence.
A5	B1	C07	Unclear/complex wording or grammar	Wording, grammar or symbols fail to clearly and concisely specify the required action: instructions provided for team of users failed to specify roles of each user. Considering the training and experience of the user, the written communication was too difficult to understand or follow. There was insufficient information to identify the appropriate written communication. The written communication was not designed for the less practiced user.
A5	**Subc B2**		**Written Communication Content LTA**	Any written document used to perform work such as procedures, work orders, memos, standing orders, manuals, surveillance, etc.
A5	B2	C01	Limit accuracies	Limits were not expressed clearly and concisely. Limits or permissible operating ranges were expressed in a +/- format instead of absolute numbers.
A5	B2	C02	Difficult to implement	Standards, Policies, or Administrative Controls were not followed because no practical way of implementing them existed. Implementation would have hindered production.

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A5	B2	C03	Data/computations wrong/incomplete	The error was made because of a mistake in recording or transferring data. Calculations were made incorrectly. The formula or equation was confusing or had multiple steps.
A5	B2	C04	Equipment identification LTA	The equipment identification was too generic. Equipment identification or labeling in the field did not agree with the identification in the procedure.
A5	B2	C05	Ambiguous instructions/requirements	The instructions in the written communication were unclear, uncertain, or interpretable in more than one way. Different procedures related to the same task contained different requirements. There were conflicting or inconsistent requirements stated in different steps of the same procedure. Requirements were stated in different units.
A5	B2	C06	Typographical error	A typographical error in the written communication caused the event.
A5	B2	C07	Facts wrong/requirements not correct	Specific information in the written communication was incorrect. The written communication contained outdated requirements. The written communication did not reflect the current status of equipment.
A5	B2	C08	Incomplete/situation not covered	Details of the written communication were incomplete. Insufficient information was presented. The written communication did not address situations likely to occur during the completion of the procedure.
A5	B2	C09	Wrong revision used	The wrong revision of the written communication used.
A5	**Subc B3**		**Written Communications Not Used**	Written communication was not used to do the job. Written communication did not exist for the job. The written communication system was required to be used and was not just for training.
A5	B3	C01	Lack of written communication	Some form of written communication did not exist for the job task being performed.
A5	B3	C02	Not available or inconvenient for use	The written communication was not readily available. A copy of the written communication was not available in the designated file or rack. A master copy of the written communication was not available for reproductions. Use of the written communication was inconvenient because of working conditions (e.g., radiation areas, tight quarters, plastic suits).
A5	**Subc B4**		**Verbal Communications LTA**	The problem was caused by the transmission or receiving of information by voice or signal (e.g., face-to-face, telephone, and radio).
A5	B4	C01	Communication between workgroups LTA	Lack of communication between work groups contributed to the incident.
A5	B4	C02	Shift communication LTA	Lack of communication between management and the shifts, between employees and management, or communication between workers during the shift change contributed to the incident.
A5	B4	C03	Correct terminology not used	Standard or accepted terminology was not used; the communication could be interpreted in more than one way; a piece of equipment had two or more commonly used names or the terminology could apply to more than one item.
A5	B4	C04	Verification/repeat back not used	The communication error was caused by failure to repeat back a message to the sender for the purposes of verifying that the message was heard and understood correctly.
A5	B4	C05	Information sent but not understood	The message or instruction was misunderstood because of noise interference or the message was too long and should have either been shortened or should have been written.

Attachment 3 – Cause Codes

A5	B4	C06	Suspected problem not communicated to supervision	There was incorrect, incomplete, or an otherwise lack of communication between personnel and their supervision.
A5	B4	C07	No communication method available	A method or system did not exist for communicating the necessary message or information. The communication system was out of service or otherwise unavailable at the time of the incident.
Category A6			**Training deficiency**	An event or condition that could be traced to a lack of training or insufficient training to enable a person to perform a desired task adequately.
A6	**Subc B1**		**No training provided**	A lack of appropriate training. The task had not been identified for training.
A6	B1	C01	Decision not to train	The decision was made not to provide specific training on a task or training was only provided to some of the employees.
A6	B1	C02	Training requirements not identified	Training on the task was not part of the employee's training requirements. The necessary training had not been defined for the job description.
A6	B1	C03	Work incorrectly considered "skill-of-craft"	The work was not a skill that could be developed through job experience.
A6	**Subc B2**		**Training Methods LTA**	The correct training setting was not used; there was not enough practice or hands-on time allotted; testing did not adequately measure the employee's ability to perform the task, the task was not identified for refresher training; the training had inadequate instructors and facilities.
A6	B2	C01	Practice or "Hands-on" experience LTA	The on the job training did not provide opportunities to learn skills necessary to perform the job; there was insufficient OJT; there was inadequate preparation before performing the activity; the employee had not previously performed the task under direct supervision.
A6	B2	C02	Testing LTA	Testing did not cover all the knowledge and skills necessary to do the job. Testing did not adequately reflect the trainee's ability to perform the job.
A6	B2	C03	Refresher training LTA	Training updates were not performed; continuing training was not performed to keep employees equipped to perform non-routine tasks. The frequency of continuing training was inadequate. The frequency of refresher training was not sufficient to maintain the required knowledge and skills.
A6	B2	C04	Inadequate presentation	The qualifications for the instructor were inadequate; the qualification did not include all that is necessary to perform training on this task; the instructor who performed the training was not qualified on this task. The training equipment was inadequate. Simulators were not used. The equipment used in training was not like that used on the job.
A6	**Subc B3**		**Training Material LTA**	The training material content was inadequate; did not adequately address new work methods; did not address normal and abnormal working conditions; did not adequately address performance standards for the job.
A6	B3	C01	Training Objectives LTA	The objectives were not written to accurately represent the task analysis; they did not satisfy the needs identified in task analysis; did not cover all the requirements necessary to successfully complete the task.

Attachment 3 – Cause Codes

A6	B3	C02	Inadequate content	The training content did not address the objectives, did not identify the knowledge and skills required to perform the task or did not contain all the information necessary to perform the task.
A6	B3	C03	Training on new work methods LTA	Training was not provided when the work methods for this task were changed, training on procedure changes was not provided; training on the new equipment used to perform the task was not provided.
A6	B3	C04	Performance standards LTA	The requirements for performance were not stringent enough or did not address performing the task under normal, abnormal, and emergency conditions.
Category A7			**Other Problem**	The problem was caused by factors beyond the control of the organization such as natural phenomena or legacy issues.
A7	**Subc B1**		**External Phenomena**	Caused by factors not under the control of the reporting organization.
A7	B1	C01	Weather or ambient conditions LTA	Unusual weather conditions such as hurricanes, tornadoes, flooding, earthquake, and lightning.
A7	B1	C02	Power failure or transient	Loss of off-site or partial on-site power.
A7	B1	C03	External fire or explosion	Event outside the facility affects equipment systems or personnel inside the facility.
A7	B1	C04	Other natural phenomena LTA	Phenomena that could include animal intrusion.
A7	**Subc B2**		**Radiological/Hazardous material problem**	Problems related to radiological or hazardous material contamination that could not be attributed to any of the other causes.
A7	B2	C01	Legacy contamination	Radiological or hazardous material contamination attributed to past practices.
A7	B2	C02	Source unknown	Radiological or hazardous material contamination where the source cannot be reasonably determined.

LIST OF PROCESSES AND EQUIPMENT REVIEWED

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams	Currently Approved by NMED	Currently Approved by Environmental Protection Agency
PROCESSES OR EQUIPMENT				
20RHVE1	Visual Examination Procedure: CCP-TP-500 Description – RH Characterization performed utilizing Visual Examination (VE) and Acceptable Knowledge (AK) Procedure: CCP-TP-163 Description – CCP Evaluation of Waste Packaging Records for Visual Examination	Debris (S5000)	NO	NO
N/A	Acceptable Knowledge Procedure: CCP-TP-005 Description – CCP Acceptable Knowledge Documentation	Debris (S5000)	NO	NO
N/A	Data Validation and Verification Procedure: CCP-TP-001, CCP-TP-500 Description – CCP Project Level Data Validation and Verification, CCP Remote-Handled Waste Visual Examination	Debris (S5000)	NO	NO
N/A	Quality Assurance Program	N/A	N/A	YES
N/A	WIPP Waste Information System (WWIS)/Waste Data System (WDS)	N/A	NO	NO
NEW PROCESSES OR EQUIPMENT				
NONE				
DEACTIVATED PROCESSES OR EQUIPMENT				
NONE				