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memorandum



Carlsbad Field Office
Carlsbad, New Mexico 88221

DATE: July 7, 2011

REPLY TO
ATTN OF: CBFO:OQA:DSM:MAG:11-0625:UFC 2300.00

SUBJECT: Interim Audit Report A-11-14, INL/CCP for the Recertification of Remote-Handled and Contact-Handled Transuranic Waste Characterization Activities

TO: Jerry L. Wells, DOE-ID

The Carlsbad Field Office (CBFO) conducted Annual Recertification Audit A-11-14 of the Idaho National Laboratory Central Characterization Project (INL/CCP) on June 7-9, 2011. The Interim Audit Report is attached.

The audit team concluded that, overall, the INL/CCP implementing procedures are adequate relative to the flow-down of requirements. The audit team determined that the INL/CCP technical and quality assurance requirements are being satisfactorily implemented and are effective in all areas except those documented in the report.

As a result, two CBFO Corrective Action Reports were issued. Six conditions adverse to quality, isolated in nature, were corrected during the audit. The audit team identified two Observations during the audit and offered two Recommendations to INL/CCP management for consideration.

If you have any questions or comments concerning the attached report, please contact me at (575) 234-7491.

Dennis S. Miehl
Senior Quality Assurance Specialist

Attachment

cc: w/attachment

R. Unger, CBFO	*ED	R. Joglekar, EPA	ED
J. R. Stroble, CBFO	ED	S. Ghose, EPA	ED
H. Budweg, CBFO	ED	R. Lee, EPA	ED
N. Castaneda, CBFO	ED	J. Kieling, NMED	ED
M. Navarrete, CBFO	ED	S. Holmes, NMED	ED
W. Lattin, DOE-ID	ED	T. Hall, NMED	ED
D. Ploetz, WTS/CCP	ED	T. Kesterson, DOE OB WIPP NMED	ED
V. Cannon, WTS/CCP	ED	D. Winters, DNFSB	ED
I. Quintana, WTS/CCP	ED	P. Gilbert, LANL-CO	ED
A. J. Fisher, WTS/CCP	ED	G. Lyshik, LANL-CO	ED
M. Walker, WTS/CCP	ED	T. Bowden, CTAC	ED
Y. Salmon, WTS/CCP	ED	K. D. Martin, CTAC	ED
J. Hoff, WTS	ED	WWIS Database Administrators	ED
M.A. Mullins, WTS	ED	WIPP Operating Record	ED
T. Peake, EPA	ED	CBFO QA File	
M. Eagle, EPA	ED	CBFO M&RC	
E. Felcorn, EPA	ED	*ED denotes electronic distributio	

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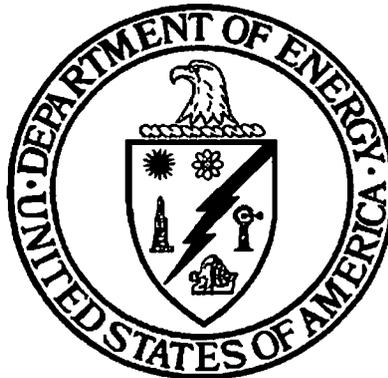
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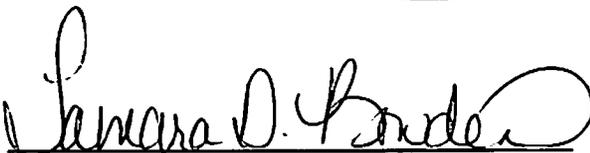
**U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE
INTERIM AUDIT REPORT
OF THE
IDAHO NATIONAL LABORATORY
CENTRAL CHARACTERIZATION PROJECT
IDAHO FALLS, IDAHO
AND CARLSBAD, NEW MEXICO
AUDIT NUMBER A-11-14**

June 7 – 9, 2011

**TRU WASTE CHARACTERIZATION AND CERTIFICATION
OF CONTACT-HANDLED (CH) AND REMOTE-HANDLED (RH)
WASTE ACTIVITIES**



Prepared by:



Tamara D. Bowden, CTAC
Audit Team Leader

Date:

07/07/11

Approved by:



Randy Unger, CBFO
Quality Assurance Director

Date:

7 Jul 11

1.0 EXECUTIVE SUMMARY

Carlsbad Field Office (CBFO) Recertification Audit A-11-14 was conducted to evaluate the continued adequacy, implementation, and effectiveness of Idaho National Laboratory (INL) transuranic (TRU) waste characterization activities performed for INL by the Washington TRU Solutions (WTS) Central Characterization Project (CCP). Activities were evaluated relative to the requirements of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP), the *CBFO Quality Assurance Program Document (QAPD)*, the *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC)*, the *Remote-Handled TRU Waste Characterization Program Implementation Plan (WCPIP)*, the *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*, and the *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*.

The audit team evaluated contact-handled (CH) Summary Category Groups (SCGs) S3000 homogeneous solids waste, S4000 soils/gravel waste, and S5000 debris waste, and remote-handled (RH) SCGs S3000 homogeneous solids waste and S5000 debris waste, in addition to other technical elements, quality assurance (QA) elements, and transportation activities. The specific items audited are listed in section 2.1.

The audit was conducted at the INL/CCP facility near Idaho Falls, Idaho, and the WTS/CCP facilities in Carlsbad, New Mexico, June 7 – 9, 2011. The audit team concluded that the overall adequacy of the INL/CCP technical and QA programs, as applicable to audited activities, was satisfactory in meeting requirements. The audit team verified that the INL/CCP program for characterization and certification activities related to CH SCGs S3000 homogeneous solids, S4000 soils/gravel, S5000 debris wastes, and RH SCGs S3000 homogeneous solids and S5000 debris wastes continue to be adequate, satisfactorily implemented, and effective.

The audit team also concluded that overall, the defined QA and technical programs for these activities were being satisfactorily implemented in accordance with the *CCP Transuranic Waste Characterization Quality Assurance Project Plan (QAPjP)* and its implementing procedures, and that the processes were effective.

The audit team identified two conditions adverse to quality resulting in the issuance of two corrective action reports (CARs). The CARs were identified during the evaluation of quality training and Acceptable Knowledge (AK) quality records and are discussed in detail in section 6.1.

Six deficiencies, isolated in nature and requiring only remedial corrective action, were identified and corrected during the audit (CDA). Three Observations were identified during the audit, and two Recommendations are being offered for management consideration.

2.0 SCOPE AND PURPOSE

2.1 Scope

The audit team evaluated the continued adequacy, implementation, and effectiveness of the INL/CCP TRU waste characterization and certification activities for CH SCGs S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris wastes, and RH SCGs S3000 homogeneous solids and S5000 debris wastes.

The following elements were evaluated:

Quality Assurance

- Personnel Qualification and Training
- Nonconformance Reporting
- Records

Technical

- Project-Level Data Validation and Verification (V&V)
- Solids Sampling and Analysis
- Acceptable Knowledge (AK)
- Headspace Gas (HSG) Sampling
- Real-Time Radiography (RTR)
- Visual Examination (VE)
- Nondestructive Assay (NDA)/ Dose-to-Curie (DTC)
- Performance Demonstration Program (PDP)
- WIPP Waste Information System/Waste Data System (WWIS/WDS)
- Flammable Gas Analysis
- Gas Generation Testing Program (GGTP)

TRUPACT-II Operations/Waste Certification/Transportation

The evaluation of INL/CCP TRU waste activities and documents was based on current revisions of the following documents:

Waste Isolation Pilot Plant Hazardous Waste Facility Permit (HWFP)

Quality Assurance Program Document, DOE/CBFO-94-1012

Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, DOE/WIPP-02-3122

Remote-Handled TRU Waste Characterization Program Implementation Plan, DOE/WIPP-02-3214

TRUPACT-II Safety Analysis Report: Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC), and the TRUPACT-II Certificate of Compliance NRC 71-9218

RH-TRU 72-B Safety Analysis Report: Remote-Handled Transuranic Waste Authorized Methods for Payload Control (RH-TRAMPAC), and the RH-TRU 72-B Certificate of Compliance NRC 71-9212

CCP Transuranic Waste Characterization Quality Assurance Project Plan, CCP-PO-001

CCP Transuranic Waste Certification Plan, CCP-PO-002

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/INL Interface Document, CCP-PO-024

CCP/INL RH TRU Waste Interface Document, CCP-PO-501

Related technical and quality assurance implementing procedures

2.2 Purpose

Audit A-11-14 was conducted to assess the level of compliance of waste characterization and certification activities for CH SCGs S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris wastes, and RH SCGs S3000 homogeneous solids and S5000 debris wastes.

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Tamara Bowden	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)
Dennis Miehls	Management Representative, CBFO
Katie Martin	Auditor, CTAC
Cindi Castillo	Auditor, CTAC
Greg Knox	Auditor, CTAC
Norm Frank	Auditor, CTAC
Rick Castillo	Auditor, CTAC
Jack Walsh	Auditor, CTAC
Porf Martinez	Auditor/Technical Specialist, CTAC
Tommy Putnam	Auditor/Technical Specialist, CTAC
Paul Gomez	Technical Specialist, CTAC
Jim Oliver	Technical Specialist, CTAC
Dick Blauvelt	Technical Specialist, CTAC
Rhett Bradford	Technical Specialist, CTAC
B.J. Verret	Technical Specialist, CTAC
Steve McGonagill	Technical Specialist, WTS

OBSERVERS

Norma Castaneda	NTP/CBFO
Kenneth Licklitter	Tech Specs
Tim Hall	New Mexico Environment Department (NMED)
Ricardo Maestas	NMED

4.0 AUDIT PARTICIPANTS

INL/CCP individuals involved in the audit process are identified in Attachment 1. A preaudit meeting was held at INL/CCP Site near Idaho Falls, ID, and the Skeen-Whitlock Building, in Carlsbad, NM, June 7, 2011. Daily briefings were held with INL/CCP management and staff to discuss issues and potential deficiencies. The audit was concluded with a postaudit meeting held at the INL/CCP Site near Idaho Falls, ID, and in the Skeen-Whitlock Building, in Carlsbad, NM, on June 9, 2011.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy, Implementation, and Effectiveness

The audit team concluded that the applicable INL/CCP TRU waste characterization activities, as described in the associated implementing procedures, are adequate, satisfactorily implemented, and effective. Audited activities are described below. Attachment 2 contains a Summary Table of Audit Results. Attachment 3 contains a list of documents that were included in the audit. Attachment 4 contains a list of the processes and equipment evaluated.

The audit team identified two conditions adverse to quality resulting in the issuance of CBFO CARs 11-042 and 11-043. Six deficiencies, isolated in nature and requiring only remedial corrective action, were identified and corrected during the audit (CDA). Three Observations were identified during the audit, and two Recommendations are being offered for management consideration. The CARs, CDAs, Observations, and Recommendations are described in section 6.

5.2 Quality Assurance Activities

Personnel Qualification and Training

The audit team conducted interviews with responsible personnel and reviewed implementing procedures relative to the training and qualification of personnel to determine the degree to which the procedures adequately address upper-tier HWFP (WAP) and CBFO QAPD requirements. Personnel training records covering both CH and RH waste characterization activities associated with AK, VE, RTR, HSG, GGTP, FlamGas, NDA, DTC, QA, Site Project Manager (SPM), and transportation personnel were examined to verify implementation of associated requirements and to verify that personnel performing characterization activities are appropriately qualified. Record reviews included the CCP List of Qualified Individuals (LOQI) and qualification cards.

One condition adverse to quality (CAQ) was identified in the area of Personnel Qualification and Training. There is no evidence that two Acceptable Knowledge Experts (AKEs) have had the training required by DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*, to be qualified in the RH Waste Program. The individuals in question have signed RH AK Summary Report attachments and have been involved in CCP RH AK Summary Reports. (CAR 11-042, see section 6.1.)

One Observation was identified in the area of Personnel Qualification and Training. One individual's (VE Operator) qualification card showed a qualification date of June 2, 2009. The qualification cards show that operators are due for requalification every two years; however, CCP does not requalify to a certain due date, they requalify during the month due. Both the HWFP (WAP) and CCP-QP-002, *CCP Training and Qualification Plan*, state that operators will be requalified every two years. The audit team believes that if this practice is not clarified in CCP's implementing procedures, it could potentially become a CAQ in the future. (Observation #2, see section 6.1.)

The procedures reviewed and objective evidence assembled and evaluated during the audit concluded that the applicable requirements for personnel qualification and training are adequately established for compliance with upper-tier requirements and are effectively implemented.

Nonconformance Reporting

The audit team conducted interviews with responsible personnel and reviewed implementing procedures relative to the control of nonconformances to determine the degree to which procedures adequately address upper-tier HWFP and CBFO QAPD requirements. Procedure CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*, was reviewed and adequately addressed upper-tier HWFP and CBFO QAPD requirements.

Evidence of the control of nonconformance was verified through the review of nonconformance report (NCR) logs and NCRs, both reportable and non-reportable. The following NCRs were reviewed.

CH NCRs

NCR-INL-0036-10
NCR-INL-0147-10
NCR-INL-0550-10
NCR-INL-0501-10
NCR-INL-0601-11
NCR-INL-2852-11

RH NCRs

NCR-RHINL-2579-11
NCR-RHINL-0007-11

The procedure reviewed and objective evidence assembled and evaluated during the audit concluded that the applicable requirements for control of nonconformances are adequately established for compliance with upper-tier requirements and are effectively implemented.

The audit team also verified continued corrective actions for CBFO CAR 10-036 which was issued during the A-10-16 INL/CCP Recertification Audit conducted in June 2010. In a brief summary, CAR 10-036 was issued because NCR-INL-0028-09 was identified at the SPM level and ultimately there was no evidence indicating that CBFO was notified of the NCR within the five (5) calendar days, as required. The audit team verified that notifications, for NCRs identified at SPM level, are now made to CBFO within seven (7) calendar days, as required by the HWFP modification change.

One CAQ was identified and corrected during the audit. NCR-INL-0550-10 was incorrectly marked "Reject" as a Final Disposition. This isolated deficiency was corrected by revising the NCR to correctly identify the disposition as "Rework." The audit team verified the resolution of this discrepancy. (CDA #1, see section 6.2.)

Records

The audit team reviewed implementing procedures relative to the control and administration of QA records to determine the degree to which the procedures adequately address upper-tier HWFP and CBFO QAPD requirements. The procedures reviewed included CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*; CCP-PO-002, *CCP Transuranic Waste Certification Plan*; CCP-QP-008, *CCP Records Management*; and CCP-QP-028, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning*. The audit team viewed the CCP Records storage areas in the Skeen-Whitlock Building. Facilities and records storage cabinets were locked, with access lists provided and keys stored in locked key boxes. Evidence of the control of QA records was verified through the review of the INL/CCP CH Waste Records Inventory and Disposition Schedule (RIDS) dated 02/23/11 and RH Waste RIDS dated 02/21/11.

A CAQ was identified during the review of AK records. It was determined by the audit team that AK records were not being processed in the CCP records system, as required by CCP-TP-005, Revision 22, *CCP Acceptable Knowledge Documentation*, section 4.4.38. Records personnel were unable to locate several AK Source Documents and associated attachments for five different waste streams. This CAQ has been documented under CAR 11-043. (see section 6.1.)

The procedures reviewed and objective evidence assembled and evaluated during the audit concluded that the applicable requirements for quality assurance records are adequately established for compliance with upper-tier requirements and are effectively implemented.

5.3 Technical Activities

Audit team evaluations of applicable INL/CCP technical activities are summarized in the following subsections.

5.3.1 Project-Level Verification and Validation

Project Level (PL) reviews were performed to assess the data collected as a result of the on-going waste characterization implementing procedures. The ability of the INL/CCP to characterize SCG S3000 solids, SCG S4000 soils/gravel, and SCG S5000 debris waste was evaluated. The flow of data from the point of generation to inclusion in the Waste Stream Profile Form (WSPF) for each characterization technique was reviewed to ensure that all applicable requirements were captured in the site operating procedures. The material in this section is also addressed in more detail in the following checklists, where the specific procedures audited and the objective evidence reviewed is identified. Objective evidence was reviewed as part of this assessment and utilized in the completion of Table C6-1, the Waste Analysis Plan (WAP) Checklist. The objective evidence included batch data reports (BDRs) completed through the CCP SPM review for RTR, VE, (HSG sampling and analysis, and soils/gravel and solids sampling and analysis. In addition, procedures were reviewed to ensure that INL/CCP could adequately perform data reconciliation and properly prepare a WSPF.

Objective evidence was reviewed to determine the adequacy of the Validation and Verification (V&V) procedures used by the SPM. Evidence included BDRs from each of the waste characterization activities.

Compliance with the characterization requirements of the WAP was demonstrated through documentation and by demonstrating the characterization activities. The project level data V&V process was evaluated by reviewing the following BDRs:

RTR

INLRHRTR1100 INLRHRTR1001 INRTR5110016 INRTR5100031
INRTR5100023

VE

RHINLVE110001 IN-ARP-VE-002402 IN-ARP-VE-002268

Headspace Gas Sampling and Analysis

INHSGS100005	ECL10022G	ECL10022M
INHSGS100006	ECL10024G	ECL10024M
INHSGS100008	ECL10031G	ECL10031M
INHSGS100010	ECL10034G	ECL10034M

Solids – Soils/Gravel Sampling and Analysis

S3900-LOT-04-05	ALD10020V	ALD10020S	ALD10020N	ALD10020M
S4200-LOT-04-05	ALD10025V	ALD10025S	ALD10025N	ALD10025M
S4200-LOT-04-01	ALD10041V	ALD10041S	ALD10041N	ALD10041M

Some of the BDRs cited were used to demonstrate confirmation of AK, to reconcile data quality objectives (DQOs), and to prepare WSPF for ID-LL-M001-S5400, ID-LL-T004-S3141, and ID-GEVNC-02.

Objective evidence was reviewed to ensure project level activities were adequately performed to support waste characterization. The quarterly repeat of data generation-level requirements for RTR, HSG, solids sampling, and VE was requested. INL/CCP provided quarterly data for review, and for those quarters when the characterizations were not administered for HSG or solids, the SPM provided objective evidence that the characterization was not done for that quarter.

Objective evidence was reviewed for the solids and soils/gravel waste for the INL/CCP evaluation of the subsurface disposal area. The BDRs from the Accelerated Retrieval Project (ARP) for both sampling and analysis were provided: S3900-LOT-04-05, ALD10020V, ALD10020S, ALD10020N, ALD10020M, S4200-LOT-04-05, ALD10025V, ALD10025S, ALD10025N, ALD10025M, S4200-LOT-04-01, ALD10041V, ALD10041S, ALD10041N, and ALD10041M. The BDRs were evaluated by the audit team. The team found an incomplete independent review checklist question in BDR ALD10041V. The SPM verified the incompleteness and initiated the correction. The BDR was corrected during the audit. Sample dispositions were adequately performed. (CDA #5, see section 6.2.)

The audit team concluded that the INL/CCP solids sampling and analysis V&V processes are adequate, satisfactorily implemented, and effective.

A review of the most current documentation was performed of the WSPF Characterization Information Summary (WSPF/CIS) for SCGs S5000 and S3000 waste streams. The waste streams are identified as ID-LL-M001-S5400, ID-LL-T004-S3141, ID-LL-W019-S3900, ID-GEVNC-02, and ID-RTC-S3000. The random selection of containers for these waste streams was properly completed.

INL/CCP performs HSG sampling using SUMMA[®] canisters. Sampling BDRs INHSGS100005, INHSGS100006, INHSGS100008, and INHSGS100010 for SCG S5000 debris waste were examined. Drum age criteria (DAC), sample chain-of-custody (COC), and shipment to the analytical laboratory were reviewed and determined to be compliant. The HSG analysis of the SUMMA[®] samples was reviewed by the team as well as the training and qualification of V&V personnel. The analysis and reporting of the Field Reference Standard (FRS) was completed. Sample disposition was adequately performed.

The audit team concluded that the INL/CCP HSG sampling and analysis V&V processes are adequate, satisfactorily implemented, and effective.

The INL/CCP RTR and VE project level processes were evaluated to determine the effectiveness of RTR and VE as characterization methods. The BDRs INLRHRTR1001, INLRHRTR1100, INRTR5110016, INRTR5100023, and INRTR5100031 were reviewed.

Visual Examination BDRs RHINLVE110001, IN-ARP-VE-002402, and IN-ARP-VE-002268 were also assessed by the team.

The audit team concluded that the INL/CCP RTR and VE processes are adequate, satisfactorily implemented, and effective.

DTC and NDA

Project Level for Dose to Curie (DTC) was evaluated by the audit team using characterization reports INLRHDTTC10001, INLRHDTTC10002, ALD09003R, and ALD09007I. Non Destructive Assay (NDA) was evaluated using BDRs INNDAS100127, INNDAS100128, INNDAS100136, and INNDAS110041.

The DTC and NDA V&V procedures and processes were found to be adequate, satisfactorily implemented, and effective.

5.3.2 Solids Sampling and Analysis

The audit team reviewed solids sampling activities performed by INL/CCP at the Accelerated Retrieval Project (ARP) and Idaho Nuclear Technology and Engineering Center (INTEC). While no sampling activities were being performed during the audit, the process was confirmed as being performed in accordance with INL/CCP procedures CCP-TP-008, *CCP Solids Sampling Procedure*, and CCP-TP-512, *CCP Remote-Handled Waste Sampling*.

Three CH sampling BDR's, S3900-LOT-04-05, S4200-LOT-04-04, and S4200-LOT-04-01, were reviewed by the audit team. The RH sampling process did not have any BDRs to review since the last audit. Training for the Solid Sampling Program at INL/CCP was verified and reviewed.

Overall, the team concluded the Solid Sampling Program at the INL/CCP was adequate, satisfactorily implemented and effective.

5.3.3 Acceptable Knowledge

The audit team reviewed specific and complete AK program documentation for the CH debris waste stream ID-LL-M001-S5400, originally generated at Lawrence Livermore National Laboratory (LLNL) and shipped to INL for WIPP characterization and certification, CH solids stream ID-LL-T004-S3141 also from LLNL, CH soils stream ID-SDA-SOIL from the excavation of the Subsurface Disposal Area (SDA) at Idaho, RH TRU debris stream ID-HFEF-S5400-RH from the INL Materials and Fuels Complex Hot Fuel Examination Facility, and RH solids stream ID-RTC-S3000 from waste water processes at the Idaho Reactor Technology Complex.

The objective evidence reviewed and compiled included the AK Summary Reports, AK source documents, WAP-compliant waste stream profile forms and attachments, and BDRs for HSG, Solids Sampling & Analysis, VE, RTR, and NDA. Random container

selection memos for HSG and solids sampling lots, as appropriate, were reviewed along with corresponding HSG and Solids Analysis Summary Reports. Additional supporting documentation for the WCPIP requirements included WCPIP WSPFs, Characterization Reconciliation Reports and supporting documentation, and DTC BDRs. Examples from the AK record were reviewed to assure that all of the DQOs cited in the WCPIP were met. In addition, the auditors examined the AK record regarding the methods for qualification of AK information as required by the WCPIP.

With regard to the WAP requirements, in addition to the AK Summary Reports, AK Source Document Summaries, and other relevant AK records cited above, for each waste stream the audit team reviewed the AK Documentation Checklist, attachment 1, the AK Source Document Reference List, attachment 4, the AK Hazardous Constituents List, attachment 5, the AK Waste Form, Waste Material Parameters, Prohibited Items and Package, attachment 6, along with the applicable justification memo for waste material parameter weight estimates, and the AK Container List, attachment 8, with memos supporting the process for adding containers to the waste streams. Examples of the resolution of AK discrepancies in the AK record and at characterization, NCRs dealing with prohibited items, AK Accuracy Reports, and the most recent internal surveillances were also collected and examined along with screenshots from the item description code database. Requisite training records were reviewed by the designated QA auditor for AK experts (AKEs) and SPMs. The WAP-required container traceability exercise was conducted for a total of 11 waste containers from the five waste streams. The drums selected provided BDRs for RTR, VE, HSG sampling and analysis, solids sampling and analysis, NDA and DTC.

With regard to the review of relevant AK Source Documents and Source Document Summaries, it was discovered during the audit that several AK Source Document Summaries for the two waste streams originally generated at LLNL, ID-LL-M001-S5400 and ID-LL-T004-S3141, could not be located in records. To avoid a negative impact to the audit schedule which required that five separate and distinct waste streams be audited, the AK audit team examined the PK Source Document Summaries and Source Document for the two streams. These documents were compiled to allow transport of the waste from LLNL to INL for final characterization and certification. The information, in the documents, is identical with the exception of the title heading PK versus AK. Subsequently, the AK Source Document Summaries were reproduced and a comparison made to demonstrate that they were, in fact, the same. The AK Source Document Summaries will be submitted with the final report.

The AK audit team drafted six concerns. These resolved into one CAR, two CDAs, one Observation, and two Recommendations.

Two concerns were determined to be Recommendations. In keeping with the agreement made between CBFO and NMED during the ORNL audit in February 2011, regarding the audit of waste streams with AK Summary Reports issued prior to the new permit compliance date of 12/30/10, it is recommended that freeze file changes, as appropriate, be made to the AK Summaries for the five waste streams examined during this audit to address the permit modifications dealing with Acceptable Knowledge.

These changes, if needed, are noted on the NMED matrix completed for each waste stream. A copy of the matrix and any relevant freeze file language will be attached to the appropriate AK Summaries submitted with the final report consistent with the agreement. The matrices also document when the existing revision of the AK Summary is compliant or when the WAP requirement is not applicable to a specific waste stream. It is anticipated that this exercise will continue until all Sites have participated once. (Recommendation #2, see section 6.4.) The second Recommendation primarily addressed issues of consistency between the AK Summary Reports and the AK attachments supporting those reports. For example, not all prohibited items listed in the AK Summary Report for the LLNL debris stream were noted in Attachment 6, *Waste Form, Waste Material Parameters, Prohibited Items, and Packaging*, of the summary report, for that waste stream. (Recommendation #1, see section 6.4.) The third concern in AK dealt with three items in the AK record that are WAP-required elements. These included the need for a legible and complete map of the LLNL site, a listing of potential prohibited items in the LLNL solids stream, and a discussion of the possible application of California hazardous waste codes to the LLNL solids stream. These issues were closed during the audit with appropriate documentation. (CDA #3, see section 6.2.)

One discrepancy was found where Source Document D024 (1/20/2011) page 1 had "ID-LL-T004-S3141" as the waste stream number. The correct numbers should be "ID-LL-M001-S5400 and ID-LL-W019-S3900." The rest of D024 used the correct waste stream numbers. This deficiency was corrected during the audit. (CDA #2, see section 6.2.)

The audit team evaluated, in depth, whether all source documents were available in CCP Records. CCP was requested to verify that all source documents in Attachment 4, *Acceptable Knowledge Source Document Reference List*, of the summary report documentation, for each waste stream, were included in the audited Summary Reports. Many documents listed in Attachment 4, *Acceptable Knowledge Source Document Reference List*, were not found in CCP Records. The results are reported in CAR 11-043, as previously mentioned in the section 5.2. (see section 6.1.)

The audit team evaluated the CCP and WTS assessments performed on AK activities. No CCP assessments included Acceptable Knowledge. WTS I10-08, performed June/July 2010, contained two findings that had been addressed through WTS WIPP Forms 10-224 and 10-225. A follow-up surveillance, WTS S11-18, performed in March 2011, contained one Finding that source documents had not been submitted to CCP Records (see WTS WIPP Form 11-051) and one Observation noting that there was no formal mechanism for submitting records to CCP Records. No WIPP Form is generated for Observations. WIPP Form 11-051 remains open, waiting for submittal of a Corrective Action Plan which was due 4/28/2011. The content of the Finding and Observation was related to the discrepancy reported in CAR 11-043 and indicated that although the concern had been identified at least three months prior to this audit, no documented action had been taken.

One Observation was identified during the AK portion of the audit. It was noted that upper-tier document CCP-PO-002, Revision 25, *CCP Transuranic Waste Certification Plan*, section 5, indicates CBFO will be notified of non-administration changes within five days of identification instead of the current requirement of seven days. CCP-PO-002 also makes several references to WCPIP attachments that do not exist in DOE/WIPP-02-3214, Revision 2. The correct requirement of "seven days" is documented in the implementing procedure CCP-QP-005, Revision 20, *CCP TRU Nonconforming Item Reporting and Control*. (Observation #1, see section 6.3.)

Overall, the AK Program was judged to be adequate in representing the requirements of the WAP, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.3.4 Headspace Gas Sampling

The audit team evaluated HSG sampling activities performed by the INL/CCP. Interviews were conducted with sampling personnel to determine that sampling was properly performed and that sample custody of HSG samples was properly initiated and maintained. The HSG samples are taken at either the CH sampling location in Building WMF-635 in the RWMC/AMWTP facility or at the RH sampling location at the INTEC facility, Building 659. Sample equipment and COC forms were examined. The sampling procedure was found acceptable. Training for personnel performing sampling activities and initiating and maintaining custody was verified to be current and acceptable.

One CAQ, isolated in nature, was corrected during the audit (CDA). Attachment 2, *Sample Container Data Form*, of BDR INHSG1105 had two columns of numbers inadvertently transposed. The audit team verified the correction and determined that it had been corrected in accordance with procedural requirements. (CDA #4, see section 6.2.)

The HSG sampling process at INL/CCP for both CH and RH gas sampling is operated under adequate procedures which produce satisfactory results and is effective.

5.3.5 Real-Time Radiography

The audit team evaluated the adequacy, implementation, and effectiveness of INL/CCP's ability to characterize and certify CH SCGs S3000 solids and S5000 debris waste and RH SCG S5000 debris waste using the RTR characterization process.

The audit team evaluated the following RTR-related CCP procedures; CCP-QP-002, Revision 31, *CCP Training and Qualification Plan*, CCP-TP-028, Revision 6, *CCP Radiographic Test and Training Drum Requirements*, CCP-TP-053, Revision 10, *CCP Standard Real-Time Radiography (RTR) Inspection Procedure*, CCP-TP-508, Revision 7, *Standard Real-Time Radiography Inspection Procedure*, and CCP- TP-510, Revision 1, *CCP Remote-Handled Radiography Test and Training Drum Requirements*. The review determined that the procedures adequately address upper-tier requirements.

The audit team examined the following CH RTR Batch Data Reports (BDRs)

INRTR5100023 INRTR5110027
INRTR5100028 INRTR5100037
INRTR5100039 INRTR5100061
INRTR5110045

The audit team examined the following RH RTR BDRs:

INLRHRTR10010 INLRHRTR10017
INLRHRTR10019 INLRHRTR11001

The audit team evaluated RTR operator required test and training drum audio/video media for six RTR operators. Records of RTR operator training and qualification, including test and training drum documentation, were examined. The audit team verified that RTR operators were appropriately qualified as required.

The audit team witnessed the RTR characterization process at RWMC Building WMF-610 for CH container 10051272 using RTR Unit 5. The RTR Unit contained the required hardware to effectively characterize CH SCG S3000 solids waste and S5000 debris waste. The audit team interviewed the RTR operator and verified the use of current AK summaries and RTR operating procedures. The audit team also examined RTR operational logbook INL-NDE5-007, and verified logbook entries were logged correctly and reviewed by the vendor project manager (VPM) as required.

The audit team witnessed the RTR characterization process at INTEC for RH container FCO105B using RTR Unit RTR-0659. The RH RTR Unit contained the required hardware to effectively characterize SCG S5000 debris waste. The audit team interviewed the RTR operator and verified the use of current AK summaries and RTR operating procedures. The audit team also examined RTR operational logbook INL-RH-RTR-005, and verified logbook entries were logged correctly and reviewed by the VPM as required.

During the review of RTR BDRs, the audit team identified one concern. On the RTR data sheets, the RTR operator must record the container type and its associated weight in Section 2: Waste Container Data. The container types on BDR INRTR5100028 for waste containers LL85101565TRU and LL85401615 were recorded as 55-Gallon Drums rather than 55-Gallon Galvanized Drums. The drums were correctly identified in the audio/video as 55-gallon galvanized drums and the correct weights were assigned based on Operator Aid: CCP-INL-057; 24.2 Kg for 55-gallon galvanized drums vs. 27.2 Kg for 55-gallon drum (Rocky Flats White Painted). Corrections were made to the affected waste container data sheets to identify the correct container type. The original RTR operator re-signed and dated the Radiography Data Sheets. The changes were reviewed by an independent technical reviewer (ITR); the ITR recorded changes on the ITR review checklist and signed and dated the applicable forms. The audit team verified the corrections were completed prior to the end of the audit. (CDA #6, see section 6.2.)

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for characterizing CH SCG S3000 solids waste and S5000 debris waste using RTR Unit 5, and RH S5000 debris waste using RTR Unit RTR-0659, are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.3.6 Visual Examination

The audit team reviewed VE activities performed by INL/CCP at ARP for CH waste and at INTEC for RH waste. For CH waste, VE is performed in accordance with CCP-TP-006, *CCP Visual Examination Technique for Idaho National Laboratory (INL) Newly Generated TRU Waste Retrieved From Pits*. For RH waste, VE is performed in accordance with CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*. The audit team reviewed BDRs and training records for VE operators and Visual Examination Experts (VEEs). The audit team observed VE Operations in Airlock 3, Building 1612, of the ARP Facility. At the time of the audit, the team could not observe RH-VE Operations because of a broken manipulator. The team did tour Building 659, Cell 308, where RH-VE Operations are being done.

One Observation was identified in the area of Personnel Qualification and Training. One individual's (VE Operator) qualification card showed a qualification date of June 2, 2009. The qualification cards show that operators are due for requalification every 2 years; however, CCP does not requalify to a certain due date, they requalify during the month due. Both the HWFP (WAP) and CCP-QP-002, *CCP Training and Qualification Plan*, state that operators will be requalified every two years. The audit team believes that if this practice is not clarified in CCP's implementing procedures, it could potentially become a CAQ in the future. (Observation #2, see section 6.3.)

During the review of VE Operational Logbooks, it was noted that that names of visitors to the Airlocks are not being recorded in the associated logbooks. CCP-PO-005, Revision 21, *CCP Conduct of Operations*, Section 12.2 states, "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." CCP needs to ensure that information required to reconstruct an event be included in the logbook entries. (Observation #3, see section 6.3.)

Overall, the team determined that INL/CCP VE Operations were deemed adequate, satisfactorily implemented, and effective.

5.3.7 Nondestructive Assay/Dose-to-Curie

The audit team assessed the adequacy, implementation, and effectiveness of the NDA systems used at INL as part of the CCP to characterize waste from the S3000, S4000, and S5000 SCGs. The audit team evaluated the Waste Assay Gamma Spectrometer (WAGS), the SWEPP Gamma-Ray Spectrometer (SGRS), the High Efficiency Neutron

Counter (HENC), the Super High Efficiency Neutron Counter (SuperHENC), and the DTC measurement system.

The SGRS and WAGS are both gamma spectrometers with multiple high-resolution Broad Energy germanium (BEGe) detectors. The WAGS uses six such detectors divided into two vertical banks of three detectors each. One bank is positioned opposite a set of three Ba-133 sources. These detectors are calibrated, based on a density correction obtained from the Ba-133 transmission, to quantify gamma-emitting radionuclides using the Canberra MGA software. The second bank of three BEGe detectors uses cadmium filters to attenuate low energy gamma rays, thus reducing dead time and increasing measurement resolution. The spectra obtained from these detectors are used to determine the relative isotopic ratios of gamma-emitting radionuclides. The SGRS differs from the WAGS in that it does not use a transmission source to perform a density correction. The SGRS utilizes four BEGe detectors that each acquires a gamma spectrum. The four spectra are then summed and corrected using a multi-curve correction that was developed during system calibration. This multi-curve correlates detector efficiency with waste density and gamma energy. Once the spectra are corrected, the same Canberra MGA software is used to quantify the individual radionuclides present. Both the WAGS and the SGRS can assay 55-gallon (208-liter) drums.

The HENC and SuperHENC are passive neutron counters. The HENC is fitted with an integral Cf-252 Add-A-Source for neutron correction. The gamma detectors simultaneously acquire spectra for both quantitative and isotopic analyses. A density based multi-curve correction is applied to correct waste density variations and variation effects on detected gamma rays. The HENC can assay 55-gallon (208-liter) drums. The SuperHENC differs from the HENC in that it does not have an integrated gamma spectrometer. The SuperHENC relies on isotopic distribution provided by either AK or an independent gamma measurement. The SuperHENC, however, can assay Standard Waste Boxes (SWBs) as well as 55-gallon (208-liter) drums.

During the previous audit, A-10-16, the HENC was temporarily out of service while its BEGe detector was being serviced by the manufacturer. The service efforts could not return the detector to a satisfactory condition so the detector was replaced with an identical model. A recalibration is required when a major system component, such as a detector, is replaced. INL/CCP decided to make a minor, but necessary modification to the systems design prior to the recalibration. A cadmium end cap was installed over the detector. This 32 mil filter serves to reduce detector dead time and pulse pileup from low energy gamma rays emitted from isotopes such as Am-241. The supplemental calibration document generated to document the recalibration of the system with the new detector fitted with the cadmium filter is documented in CCP-INL-HENC-001, *CCP HENC Supplemental Calibration Confirmation and Verification Report*, Revision 0. This supplemental calibration was found to be properly performed, adequately documented, technically adequate, and satisfactorily implemented.

DTC measurements are accomplished using two detectors: one to obtain the relative contributions of Co-60 and Cs-137 to the gamma dose rate, and one to take dose

measurements. CBFO previously evaluated these NDA systems June 8-10, 2010 during audit A-10-16.

Based on a review of the current revisions of INL/CCP procedures, technical documents, and completed BDRs provided prior to the audit, checklists were prepared and used to evaluate the following:

- System stability as evidenced by the implementation and effectiveness of quality control measurements, calibration verifications, and weekly interfering matrix checks
- Applicability of each system's calibration and operational range to the matrix, geometry and radionuclide content of samples assayed since the last audit.
- Successful participation in the CBFO-sponsored NDA PDP
- Completed BDRs to ensure data are reported and reviewed as required
- Data storage and retrievability
- Personnel qualification and training
- Continued operability and condition of the WAGS, SGRS, HENC, SuperHENC, and DTC since Audit A-10-16.

The audit team interviewed NDA personnel, observed equipment and practices, and examined electronic and paper copies of reports and records.

The SuperHENC participated in PDP Cycle 17A for drums along with the HENC, WAGS, and SGRS assaying three waste matrices including combustibles, sludge, and metals. All four instruments passed all test criteria. The SuperHENC also participated in PDP Cycle B10A for boxed waste. The test matrices included combustibles and mixed metals. The SuperHENC passed all test criteria.

DTC is performed in the CCP-659 area of the INTEC. The measurement acquisition control room (Cell 302) contains closed circuit camera control systems and display units and the readouts for the dose measurement and the analysis resulting from the Osprey detector measurement. The actual measurements are performed in an adjacent hot cell (Cell 306) where the Osprey detector, DTC dose measurement probes, the measurement fixture, and the rotating platform are located. The drums are lowered into the hot cell from a high bay above the hot cell. All three areas were examined; attending personnel were interviewed; data acquisition equipment was examined; and records, logbooks, and procedures were reviewed.

The dose rate measurement is acquired using either a Thermo Electron Corporation Model RO-7 High Range Survey System or a Thermo Electron Corporation Model FH 40 G Dose Rate Measuring Unit, depending on the level of the radiation dose measurement relative to the environmental background.

Since Audit A-10-16 in 2010, INL/CCP has been presented with an RH waste stream that has a significant proportion of the gamma dose rate originating from Co-60 in the

waste as well as Cs-137. With previous waste streams, the contribution from Co-60 was very small and thus neglected. In the case of the current waste stream (ID-HFEF-S5400), the DTC methodology was modified to employ an additional detector (Osprey), electronics, computer, and software system to resolve the relative contributions to the gamma dose from Co-60 versus Cs-137. The audit team observed the Osprey detector, the enclosure, and shielding. CCP procedures were reviewed and operations staff was interviewed. Mock data acquisition and measurement data was observed and actual data contained in BDRs was reviewed. Technical and personnel elements of the DTC methodology incorporating the Osprey detector are adequate, satisfactory, and effective.

No concerns were identified during the course of the audit.

Overall, NDA and DTC activities were determined to be adequate, satisfactorily implemented, and effective.

5.3.8 Performance Demonstration Program

The audit team examined PDP documentation and interviewed INL/CCP PDP personnel to verify that PDP activities were performed as required by established procedures and that the results were approved by CBFO. For additional PDP information, see section 5.3.7.

Overall, Performance Demonstration Program activities were determined to be adequate, satisfactorily implemented, and effective.

5.3.9 WIPP Waste Information System (WWIS)/Waste Data System (WDS)

The audit team conducted interviews with responsible personnel and reviewed implementing procedures relative to the use of the WWIS/Waste Data System (WDS) system to determine the degree to which procedures adequately address upper-tier requirements. The procedures reviewed included CCP-TP-030, *CCP CH TRU Waste Certification and WWIS/WDS Data Entry*, and CCP-TP-530, *CCP RH TRU Waste Certification and WWIS/WDS Data Entry*. Evidence for the proper use of the WWIS system was verified through review of the CH WWIS Data Shipping Package for Waste Container Numbers ARP21804, ARP11020, and ARP06227, and the RH WWIS Data Shipping Package for canister ID0244 containing waste container number SN053A.

The audit team witnessed CH WWIS/WDS Data Shipping Package data entry into the system. No concerns were identified.

The procedures reviewed, objective evidence assembled, and WWIS/WDS data entry witnessed during the audit indicated that the applicable requirements for use of the WWIS/WDS system were adequately established for compliance with upper-tier requirements and were effectively implemented.

5.3.10 Flammable Gas Sampling and Analysis

The audit team evaluated Flammable Gas (FG) Testing operations performed by the CCP at INL. The evaluation included examination of FG BDRs; Minimum Detection Limit (MDL) BDRs; Initial Calibration (ICAL) BDRs; verification of ITR activities; examination of FG BDRs for completeness and correctness; and evaluation of equipment and standards. Personnel were interviewed, the sampling areas were examined, and sampling equipment verified to be compliant. Training for all operators and ITRs was verified to be acceptable.

The FG testing process at INL/CCP is operated under adequate procedures which produce satisfactory results and is effective.

5.3.11 Gas Generation Testing Program

The audit team examined Gas Generation Testing (GGT) operations performed by the CCP at INL. The examination included checking two GGT BDRs; examination of three GGT ICAL reports; examination of one GGT MDL report; verification of ITR activities; and examination of GGT BDRs for completeness and correctness. Equipment and standards were checked. Personnel were interviewed, the sampling areas were examined, and sampling equipment verified to be compliant. Training for GGT personnel was determined to be satisfactory.

The Long Term Objective (LTO) report for waste stream ID-RF-S3144 was examined and contained all required information.

The GGT process at INL/CCP is operated under adequate procedures which produce satisfactory results and is effective.

5.4 TRUPACT-II Operations/Waste Certification/Transportation

The audit team evaluated transportation operations performed at the INL by the CCP. CH TRUPACT-II receipt, maintenance, container management, container integrity, payload preparation operations, and loading were audited for shipment IN1 10209, containing CH payloads 94598, 94596, and 94587. Payloads were observed being loaded into TRUPACT-II 182, TRUPACT-II 140 and HalfPACT 501. RH 72-B receipt, maintenance, and loading operations were observed for shipment INR1 1022 containing cask 00-01.

Personnel were interviewed and receipt and maintenance of empty transport vessels were observed. Payload preparation and container integrity were audited. Loading of TRUPACT-II and RH 72-B shipping vessels was observed. Shipping documentation was examined. Material and testing equipment calibration were verified. Personnel qualifications and training were audited. Waste Certification Official and Transportation Certification Official activities were audited. Helium leak testing of inner and outer containment vessels was observed. The maintenance log was examined and the records were compliant and complete. Examination of the maintenance logbook

verified that it contained sufficient information to show that CH maintenance was being performed as required. The RH maintenance log showed no maintenance was required for the current year.

Load management can be conducted at INL, but none was observed during the audit. The CCP Waste Certification Official interviewed during the audit indicated that CCP has a procedure in place to perform that task if necessary. No concerns were identified.

Overall, the procedures used for transportation/shipping of CH and RH waste for INL/CCP were found to be adequate. Implementation of the procedures was found to be satisfactory and effective.

6.0 CORRECTIVE ACTIONS, OBSERVATIONS, AND RECOMMENDATIONS

6.1 Corrective Action Reports

During the audit, the audit team may identify CAQs and document such conditions on CARs.

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.

Significant Condition Adverse to Quality – A condition which, if uncorrected, could have a serious effect on safety, operability, waste confinement, TRU waste site certification, regulatory compliance demonstration, or the effective implementation of the QA program.

Two CARs, described below, were issued as a result of Audit A-11-14. The CARs have been transmitted to INL/CCP under separate cover.

CBFO CAR 11-042

There is no evidence that two Acceptable Knowledge Experts (AKEs) have had the training required by DOE/WIPP 02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*, to be qualified in the RH Waste Program. The individuals in question have signed RH AK Summary Report attachments and have been involved in CCP RH AK Summary Reports.

CBFO CAR 11-043

AK records are not getting into the CCP Records system. For example, the auditor requested the CCP Records manager to verify that the source documents listed on Attachment 4, *Acceptable Knowledge Source Document Reference List*, for selected waste streams were in the hard copy CCP Records files. Results of the request are listed below.

- Waste Stream ID-SDA-SOIL (CCP-AK-INL-001)
Approximately 30 source documents and their associated Attachment 3, *Acceptable Knowledge Source Document Summary*, documents were missing from CCP Records. (Examples include: ID-P377, ID-P410, and RF-C502)
- Waste Stream ID-RTC-S5400 (CCP-AK-INL-520)
Approximately 13 source documents and their associated Attachment 3, *Acceptable Knowledge Source Document Summary*, documents were missing from CCP Records. (Examples include: C147, C253, and C223)
- Waste Stream ID-LL-M001-S5400 (CCP-AK-INL-018) and Waste Stream ID-LL-T004-S3141 (CCP-AK-INL-018)
Approximately 26 source documents and 249 associated Attachment 3, *Acceptable Knowledge Source Document Summary*, documents were missing from CCP Records. (Examples include: C001, C023, C035, C120, and C119)
- Waste Stream ID-HFEF-S5400-RH (CCP-AK-INL-580)
Approximately 207 source documents and their associated Attachment 3, *Acceptable Knowledge Source Document Summary*, documents were missing from CCP Records. (Examples include: C661, C754, P142, and U276)

6.2 Deficiencies Corrected During the Audit

During the audit, the audit team may identify CAQs. The audit team members and the Audit Team Leader (ATL) 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, determines if the CAQ is an isolated case requiring only remedial action and therefore can be CDA. Deficiencies that can be classified as CDA are those isolated deficiencies that do not require a root cause determination or actions to preclude recurrence, and those for which 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), or one or two individuals have not completed a reading assignment.

Upon determination that the CAQ is isolated, the audit team member, in conjunction with the ATL, 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 ATL categorizes the condition as a CDA.

Six deficiencies, requiring remedial action only, were identified during the audit.

CDA 1

NCR-INL-0550-10 was incorrectly marked "Reject" as a Final Disposition. This isolated deficiency was corrected by revising the NCR to correctly identify the disposition as

“Rework.” The audit team verified the resolution of this discrepancy and found it to be satisfactory.

CDA 2

A discrepancy was found where Source Document D024 (1/20/2011) page 1 had “ID-LL-T004-S3141” as the waste stream number. The correct numbers should be “ID-LL-M001-S5400 and ID-LL-W019-S3900.” The remainder of D024 used the correct waste stream numbers. It was determined that CCP inadvertently listed the incorrect stream on the Source Document. The audit team reviewed the corrected Source Document and determined that the newly added waste stream numbers were correct after verifying the numbers in the AK Summary Report.

CDA 3

The following bulleted items were identified as isolated CAQs in AK Summary Report CCP-AK-INL-018:

- A legible and complete map of LLNL site was missing out of the AK Summary Report, as required by CCP-TP-005, Attachment 1
 - A legible and completed map of LLNL was reviewed and verified by the audit team.
- A listing of potential prohibited items in the LLNL solids stream was missing out of the AK Summary Report, as required by CCP-TP-005, Section 4.8
 - A list of potential prohibited items for the LLNL solids stream was reviewed and verified by the audit team.
- A potential application of California hazardous waste codes to the LLNL solids stream was missing out of the AK Summary Report, as required by CCP-TP-005, Sections 4.4.28[A] and 4.4.34[K]
 - The audit team verified that the California hazardous waste codes were added to the LLNL solids stream.

The audit team verified that all corrected documentation was included into AK Summary Report CCP-AK-INL-018.

CDA 4

The data is transposed in BDR INHSG1105, Attachment 2, *Sample Container Data Form*, Page 2, “Permit Required Equilibrium Time” (days) and “Container Age” (days). The data listed under “Permit Required Equilibrium Time” and “Container Age” was corrected and verified during the audit.

CDA 5

The Independent Technical Review Checklist in BDR ALD10041V was not complete for Requirement (11) Batch Data Report Completeness item “h.” The CAQ was corrected and verified during the audit.

CDA 6

The container types on BDR INRTR5100028 for waste containers LL85101565TRU and LL85401615 were recorded as 55-gallon drums rather than 55-gallon galvanized drums. The drums were correctly identified in the audio/video as 55-gallon galvanized drums and the correct weights were assigned based on Operator Aid CCP-INL-057; 24.2 Kg for 55-gallon galvanized drums vs. 27.2 Kg for 55-gallon drum (Rocky Flats White Painted). Corrections were made to the waste container data sheets for waste containers LL85101565TRU and LL85401615 in BDR INRTR5100028 to identify the correct container type (55-gallon galvanized drum). The original RTR operator re-signed and dated the Radiography Data Sheets. The changes were reviewed by an ITR; the ITR recorded the changes on the ITR review checklist and signed and dated the applicable forms. The audit team verified that the corrections were made in accordance with procedural requirements.

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.

Three Observations were identified during this audit.

OBSERVATION 1

CCP upper-tier document CCP-PO-002, Revision 25, *CCP Transuranic Waste Certification Plan*, section 5, indicates CBFO will be notified of non-administration changes within five days of identification instead of seven days currently observed. CCP-PO-002 also makes several references to WCPIP attachments that do not exist in DOE/WIPP-02-3214, Revision 2. The correct requirement of “seven days” is documented in the implementing procedure CCP-QP-005, Revision 20, *CCP TRU Nonconforming Item Reporting and Control*.

OBSERVATION 2

One individual's (VE Operator) qualification card showed a qualification date of June 2, 2009. The qualification cards show that operators are due for requalification every two years; however, CCP does not requalify to a certain due date, they requalify during the month due. Both the HWFP (WAP) and CCP-QP-002, *CCP Training and Qualification Plan*, state that operators will be requalified every two years. The audit team believes that if this practice is not clarified in CCP's implementing procedures, it could potentially become a CAQ in the future.

OBSERVATION 3

During the review of VE Operational Logbooks, it was noted that the names of visitors to the Airlocks are not being recorded in the associated logbooks. CCP-PO-005, Revision 21, *CCP Conduct of Operations*, Section 12.2 states, "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." CCP needs to ensure that information required to reconstruct an event, be included in the logbook entries.

6.4 Recommendations

During the audit, the audit team may identify suggestions for improvement that should be communicated to the audited organization. The audit team members, in conjunction with the ATL, evaluate these conditions and classify them as Recommendations using the following definition.

Recommendations – Suggestions that are directed toward identifying opportunities for improvement and enhancing methods of implementing requirements.

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

Two Recommendations were presented for INL/CCP management consideration during this audit.

RECOMMENDATION 1

The audit team recommends that the following changes/additions be made to AK Summary CCP-AK-INL-018, Revision 1, and ID-SDA-SOIL, Revision 10 (CCP-AK-INL-001) to primarily address issues of consistency between the AK Summary Reports and the AK attachments supporting those reports.

- In CCP-AK-INL-018, add additional chemicals identified in the process description section to the chemical list in table 7
- Modify the reactivity discussion in CCP-AK-INL-018 and CCP-AK-INL-580 for the S5400 debris streams to indicate the potential for cyanides in the waste stream
- Modify attachment 5 in CCP-AK-INL-018 for S3141 to indicate that n-butanol is an expected hazardous constituent
- Modify attachment 6 in CCP-AK-INL-018 for S5400 to reflect the potential for prohibited items listed in the AK Summary
- Modify attachment 5 in CCP-AK-INL-001 for the soils stream to indicate that several chemicals that are listed in the chemical table should be marked as expected in the waste stream

- Modify attachment 6 for the RH debris stream in CCP-AK-INL-580 for potential prohibited items to align with the prohibited items section of the AK Summary Report
- Remove tetrachloroethylene from table 3, waste stream ID-RTC-S3000 Hazardous Waste Characterization Summary. It is not supported by the AK record. This is already included in an open CCP freeze file
- Section 4.1.2.1 of the AK Summary CCP-AK-INL-001 indicates that EBR-II (Building ANL-W-767) was designed to demonstrate a complete operational breeder reactor power plant with on-site reprocessing of metallic fuel (in the Fuel Cycle Facility, ANL-W-765). Suggest clarifying in Section 4.3.2.1 to indicate that no fuel reprocessing wastes from ANL-W-765 are in these waste streams.

RECOMMENDATION 2

In keeping with the agreement made between CBFO and NMED during the ORNL audit in February 2011, regarding the audit of waste streams with AK Summary Reports issued prior to the new permit compliance date of 12/30/10, it is recommended that freeze file changes, as appropriate, be made to the AK Summaries for the five waste streams examined during this audit to address the permit modifications dealing with Acceptable Knowledge. These changes, if needed, are noted on the NMED matrix completed for each waste stream. A copy of the matrix and any relevant freeze file language will be attached to the appropriate AK Summaries submitted with the final report consistent with the agreement. The matrices also document when the existing revision of the AK Summary is compliant or when the WAP requirement is not applicable to a specific waste stream. It is anticipated that this exercise will continue until all Sites have participated once.

7.0 LIST OF ATTACHMENTS

Attachment 1: Personnel Contacted During the Audit

Attachment 2: Summary Table of Audit Results

Attachment 3: Listing of Audited Documents

Attachment 4: Processes and Equipment Reviewed During Audit

PERSONNEL CONTACTED DURING AUDIT A-11-14				
NAME	TITLE/ORG	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Abbott, Preston	NDA Manager/MCS-CCP	X	X	
Almanza, Christian	NDA/CCP	X	X	
Billett, Michelle	Training Coordinator/CCP		X	
Boudreau, Shane	NDA/CCP	X		
Brasier, David	NDA/MCS	X	X	
Broomfield, Barbara	SPM/WTS	X	X	X
Cannon, Val	CCP QA Manager/CCP	X		X
Carlson, Ted	VPM/CCP	X	X	X
Castaneda, Norma	Observer/NTP/DOE-CBFO		X	
Christensen, Tyson	RTR/CCP	X	X	
Clements, Thomas	TRU Programs Manager/CWI	X		X
Colby, Kristina	NDA Operator/MCS-CCP		X	
Cummins, Sharon	NDA Operator/CCP		X	
Davis, Chezie	Records Personnel/Tech Specs		X	
Davis, Chris	INL Decon/RTR Operator/CCP		X	
Davis, Crary	NDA Lead/MCS-CCP	X		
Dial, Brent	NDA Operator/MCS-CCP		X	
Dover, Dale	GGT Lead/NFT	X	X	
Dumn, Barry	Shipping/Operator/AMWTP		X	
Fisher, A.J.	Senior Technical Advisor/CCP	X		
Galbraith, Michael	RTR Operator/CCP		X	
Gatliffe, Tom	SPM/CCP		X	
Gomez, Chris	QA Engineer/CCP	X	X	
Green, Rick	NDA-SHENC Lead Operator/ PSC/CCP	X	X	
Greenwood, Trey	AK/Tech Specs		X	
Griffith, Mary	DTC Lead Operator/CCP		X	
Grover, Douglas D.	DTC/D & D Skilled/CWI		X	
Haderlie, Michael	VE/CCP		X	
Hall, Timothy	Observer/NMED	X	X	
Hampton, Larry	Shipping/Operator/AMWTP		X	
Hauck, Brian	FGA/GGT/NFT-CCP		X	
Hebdon, Bruce	Shipping/Operator/AMWTP		X	
Jagielski, Richard	FGA/GGT/NFT-CCP		X	
Johnson, Carrie J.	AKE/CCP		X	X
Johnsen, Thomas	CWI CH TRU STR/CWI	X		X
Jones, Bart	Shipping/SS/AMWTP		X	
Kirkes, Creta	WCO/CCP		X	
Landon, Dave	RH Shipping/TCO/CCP		X	
Langston, Dawn	FGA Operator/Tech/NFT/CCP		X	

PERSONNEL CONTACTED DURING AUDIT A-11-14				
NAME	TITLE/ORG	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Law, Jenifer	NDA-SuperHENC Operator/CCP		X	
Licklitter, Kenneth	DOE Support/Observer/Tech Specs	X	X	
Maestas, Ricardo	Observer/NMED	X	X	
Martin, Ryan	Records Analyst/CCP		X	
Martin-Vaughn, Valerie	FGA/HGS Chemist/NFT-CCP		X	
McElhaney, Stephanie	NDA-SHENC Expert Analyst/PSC	X	X	
Merrill, Kip	RH Shipping/Ops/CCP		X	
Miehls, Dennis	Sr. QA Specialist/DOE-CBFO	X	X	X
Navarrete, Martin	Sr. QA Specialist/DOE-CBFO	X		
Nelson, Laura	RH SPM/CCP		X	X
Oney, Fred	RTR/CCP	X	X	
Pearcy, Mark	SPM/CCP	X		X
Pearcy, Sheila	Records Manager/CCP	X	X	X
Pimentel, Trisha	Records Clerk/CCP	X		
Poirier, Joe	FGA/EA/CCP	X		
Poole, Jeff	VEE/CCP		X	
Porter, Larry	Manager/CCP		X	
Quintana, Irene	SPM/CCP		X	
Ramirez, Mike	WCO/CCP		X	
Seihel, Lonney	Shipping/Operator/AMWTP		X	
Sensibaugh, Michael	CCP Projects Manager/CCP	X	X	X
Smith, Greg	VPM/CCP		X	X
Smith, Kim	Shipping/Operator/AMWTP		X	
Smith, Scott	AKE/CCP		X	X
Thielke, Bob	Observer/NMED		X	
Thomas, Bill	TCO/MLU/LANL		X	
Thompson, Rick	SHENC-Operator/CCP		X	
Verlanic, Bill	INL PM/CCP	X	X	X
Vernon, Jim	SPM/WTS	X	X	X
Wachter, Joseph	NDA/MCS	X		
Walters, Eddy R.	HSGS Lead Operator/NFT	X	X	
Whitmore, Rick	Shipping/Operator/AMWTP		X	
Woodbury, Bryce	Expert Analyst/MCS-CCP		X	
Young, Rachel	CCP QA/CCP	X	X	X

Summary Table of Audit Results

Documents	Concern Classification				QA Evaluation		Technical
	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
Activity							
Interface/SOW					A	S	E
Acceptable Knowledge		2	1	2	A	S	E
Reconciliation of DQO's/WSPFs					A	S	E
Project Level V & V		1			A	S	E
Real-Time Radiography		1			A	S	E
Headspace Gas Sampling		1			A	S	E
Visual Examination			1		A	S	E
Nondestructive Assay					A	S	E
Nonconformance Reporting		1			A	S	E
QA Records	1				A	S	E
Dose-to-Curie					A	S	E
Training	1		1		A	S	E
Transportation					A	S	E
WWIS					A	S	E
Flammable Gas Analysis					A	S	E
Gas Generation Testing					A	S	E
Solids/Soils Sampling					A	S	E
Container Management					A	S	E
Performance Demonstration Program					A	S	E
Sample Control					A	S	E
TOTALS	2	6	3	2	A	S	E

Definitions

E = Effective
S = Satisfactory
I = Indeterminate
M=Marginal

CAR = Corrective Action Report
CDA = Corrected During Audit
NE = Not Effective
Obs = Observation

Rec = Recommendation
A = Adequate
NA = Not Adequate

LISTING OF AUDITED DOCUMENTS			
	Document No.	Rev	Document Title
1.	CCP-PO-001	19	CCP Transuranic Waste Characterization Quality Assurance Project Plan
2.	CCP-PO-002	25	CCP Transuranic Waste Certification Plan
3.	CCP-PO-003	12	CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)
4.	CCP-PO-005	21	CCP Conduct of Operations
5.	CCP-PO-006	3	CCP Conduct of Operations Matrix
6.	CCP-PO-008	9	CCP Quality Assurance Interface with the WTS Quality Assurance Program
7.	CCP-PO-016	5	CCP Gas Generation Testing Program Quality Assurance Project Plan
8.	CCP-PO-024	10	CCP/INL Interface Document
9.	CCP-PO-501	5	CCP/INL RH TRU Waste Interface Document
10.	CCP-PO-505	0	CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)
11.	CCP-QP-002	31	CCP Training and Qualification Plan
12.	CCP-QP-005	20	CCP TRU Nonconforming Item Reporting and Control
13.	CCP-QP-008	18	CCP Records Management
14.	CCP-QP-016	15	CCP Control of Measuring and Test Equipment
15.	CCP-QP-017	3	CCP Identification and Control of Items
16.	CCP-QP-021	7	CCP Surveillance Program
17.	CCP-QP-022	12	CCP Software Quality Assurance Plan
18.	CCP-QP-028	12	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
19.	CCP-QP-030	8	CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel
20.	CCP-QP-036	4	CCP Qualification of Acceptable Knowledge for Remote-Handled Transuranic Waste Through a Quality Assurance Equivalency Demonstration
21.	CCP-TP-001	19	CCP Project Level Data Validation and Verification
22.	CCP-TP-002	23	CCP Reconciliation of DQOs and Reporting Characterization Data
23.	CCP-TP-003	18	CCP Data Analysis for S3000, S4000, and S5000 Characterization
24.	CCP-TP-005	22	CCP Acceptable Knowledge Documentation
25.	CCP-TP-006	16	CCP Visual Examination Technique for INL Newly Generated TRU Waste Retrieved from Pits
26.	CCP-TP-008	9	CCP Solids Sampling Procedure
27.	CCP-TP-010	4	CCP Waste Assay Gamma Spectrometer (WAGS) & SWEPP Gamma-Ray Spectrometer (SGRS) Calibration Procedure
28.	CCP-TP-019	5	CCP Waste Assay Gamma Spectrometer (WAGS) Operating Procedure
29.	CCP-TP-028	6	CCP Radiographic Test Drum and Training Container Construction
30.	CCP-TP-030	29	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
31.	CCP-TP-033	19	CCP Shipping of CH TRU Waste
32.	CCP-TP-053	10	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
33.	CCP-TP-054	2	CCP Adjustable Center of Gravity Lift Fixture Preoperational Checks and Shutdown
34.	CCP-TP-055	4	CCP Varian Porta-Test Leak Detector Operations
35.	CCP-TP-058	3	CCP NDA Performance Demonstration Plan
36.	CCP-TP-068	8	CCP Standardized Container Management
37.	CCP TP-080	3	CCP Operating the WMF 610 Real-Time Radiography (RTR) System
38.	CCP-TP-082	8	CCP Waste Container Filter Vent Operation
39.	CCP-TP-083	7	CCP Gas Generation Testing
40.	CCP-TP-086	15	CCP CH Packaging Payload Assembly
41.	CCP-TP-093	15	CCP Sampling of TRU Waste Containers
42.	CCP-TP-106	7	CCP Headspace Gas Sampling Batch Data Report Preparation

LISTING OF AUDITED DOCUMENTS			
	Document No.	Rev	Document Title
43.	CCP-TP-107	11	Operating the CCP High Efficiency Neutron Counter Using NDA 2000
44.	CCP-TP-108	6	Calibrating the CCP High Efficiency Neutron Counter Using NDA 2000
45.	CCP-TP-109	7	CCP Data Reviewing, Validating, and Reporting Procedure
46.	CCP-TP-113	16	CCP Standard Contact-Handled Waste Visual Examination
47.	CCP-TP-115	4	CCP SWEPP Gamma-Ray Spectrometer (SGRS) Operating Procedure
48.	CCP-TP-119	4	CCP Operating the Real-Time Radiography (RTR) System #5
49.	CCP-TP-138	1	CCP Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure
50.	CCP-TP-146	7	CCP SuperHENC Operating Procedure
51.	CCP-TP-148	6	CCP SuperHENC Data Reviewing, Validating and Reporting Procedure
52.	CCP-TP-162	1	CCP Random Selection of Containers for Solids and Headspace Gas Sampling and Analysis
53.	CCP-TP-163	2	CCP Evaluation of Waste Packaging Records for Visual Examination of Records
54.	CCP-TP-170	2	CCP SuperHENC Calibration Procedure
55.	CCP-TP-500	11	CCP Remote-Handled Waste Visual Examination
56.	CCP-TP-504	11	CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste
57.	CCP-TP-506	2	CCP Preparation of the RH TRU Waste AK Characterization Reconciliation Report
58.	CCP-TP-507	7	CCP Shipping of Remote-Handled Transuranic Waste
59.	CCP-TP-508	7	CCP RH Standard Real-Time Radiography Inspection Procedure
60.	CCP-TP-509	3	CCP Remote-Handled Transuranic Container Tracking
61.	CCP-TP-510	1	CCP Remote-Handled Radiography Test and Training Drum Requirements
62.	CCP-TP-512	5	CCP Remote-Handled Waste Sampling
63.	CCP-TP-530	10	CCP RH TRU Waste Certification and WWIS/WDS Data Entry
64.	DOE/WIPP-06-3345	4	Waste Isolation Pilot Plant Flammable Gas Analysis Procedure
65.	WP 13-QA.03	17	Quality Assurance Independent Assessment Program

Processes and Equipment Reviewed During Audit A-11-14 of the INL/CCP

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams	Currently Approved by NMED	Currently Approved by EPA
NEW PROCESSES OR EQUIPMENT				
	NONE			
PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT				
TBD	Visual Examination Procedure – CCP-TP-113 and CCP-TP-163 Description – Visual Examination	Debris (S5000)	YES	YES
14VE1	Visual Examination (VE) Procedure – CCP-TP-006 Description – Visual Examination Technique (VET)	Solids (S3000) Soils (S4000) Debris (S5000)	YES	YES
14RHVE1	Visual Examination Procedure – CCP-TP-500 Description - The VE of audio/video media process used for a total of 70 retrievably stored remote-handled (RH) debris waste drums	Solids (S3000) Soils (S4000) Debris (S5000)	YES	YES
14RR2	Nondestructive Examination Procedure – CCP-TP-053 Equipment – MCS RTR-5 Description – MCS Real-time Radiography (RTR) Mobile Characterization (RTR-5) System	Solids (S3000) Debris (S5000)	YES	YES
14RRH1	Nondestructive Examination Procedure – CCP-TP-508 Equipment – RTR-RTR-0659 Description – VJ Technologies, Real-time Radiography Characterization (RTR-RTR-0659) System	Debris (S5000)	YES	YES
14GG1	Gas Generation Testing Procedure – CCP-TP-083 Equipment – MGSS Unit/Cart 1 (GC-14B) Description – Gas Generation Testing 55-gallon drums	Waste Type IV	N/A	N/A

Processes and Equipment Reviewed During Audit A-11-14 of the INL/CCP

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams	Currently Approved by NMED	Currently Approved by EPA
14GG2	Gas Generation Testing Procedure – CCP-TP-083 Equipment – MGSS Unit/Cart 2 (GC-17A) Description – Gas Generation Testing 55-gallon drums	Waste Type IV	N/A	N/A
N/A	Acceptable Knowledge	Solids (S3000) Soils (S4000) Debris (S5000)	YES	YES
N/A	Solids/Soils and Gravel Sampling and Custody	Solids (S3000) Soils (S4000)	YES	N/A
N/A	Solids/Soils and Gravel Sampling and Custody for RH	Solids (S3000)	YES	N/A
N/A	SUMMA® Headspace Gas (HSG) Sampling and Custody	Debris (S5000)	YES	N/A
N/A	Data Validation and Verification	Solids (S3000) Soils (S4000) Debris (S5000)	YES	YES
N/A	WIPP Waste Information System (WWIS)	Solids (S3000) Soils (S4000) Debris (S5000)	YES	YES

Processes and Equipment Reviewed During Audit A-11-14 of the INL/CCP

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams	Currently Approved by NMED	Currently Approved by EPA
14SHC1	Nondestructive Assay Procedure – CCP-TP-146 Description – CCP Super High Efficiency Neutron Counter	Solids (S3000) Debris (S5000)	N/A	YES
14HENC1	Nondestructive Assay Procedure – CCP-TP-107 Description – CCP High Efficiency Neutron Counter	Solids (S3000) Soils (S4000) Debris (S5000)	N/A	YES
14SGRS1	Nondestructive Assay Procedure – CCP-TP-115 Description – Stored Waste Examination Pilot Plant (SWEPP) Gamma Ray Spectrometer (SGRS)	Solids (S3000) Soils (S4000) Debris (S5000)	N/A	YES
14WAGS1	Nondestructive Assay Procedure – CCP-TP-019 Description – Waste Assay Gamma Spectrometer	Solids (S3000) Soils (S4000) Debris (S5000)	N/A	YES
14DTC1	Radiological characterization process using dose-to-curie (DTC) and modeling-derived scaling factors for assigning radionuclide values to RH waste stream Dose-rate fractional contribution of Cs-137 and Co-60 using OSPREY La ₃ Br(Ce) gamma detector Procedure CCP-TP-504	Solids (S3000) Debris (S5000)	N/A	YES
N/A	Load Management	Solids (S3000) Soils (S4000) Debris (S5000)	N/A	YES
N/A	Quality Assurance Program	Solids (S3000) Soils (S4000) Debris (S5000)	N/A	YES