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Department of Energy

memorandum

Carlsbad Field Office
Carlsbad, New Mexico 88221

MAY 12 2016

DATE: MAY 12 2016

REPLY TO
ATTN OF: CBFO:OQA:MPN:BA:16-1368:UFC 2300.00

SUBJECT: Interim Audit Report A-16-15, ORNL/CCP TRU Waste Characterization Activities

TO: Ms. Laura Wilkerson, DOE-OR

The Carlsbad Field Office (CBFO) conducted Audit A-16-15, Oak Ridge National Laboratory/Central Characterization Program (ORNL/CCP) Transuranic (TRU) Waste Characterization Activities, April 19 – 21, 2016. The interim audit report is attached.

The audit team concluded that, overall, the ORNL/CCP programs evaluated are adequate relative to the flow-down of requirements, and the technical activities evaluated are satisfactorily implemented and effective in all areas, with one exception documented in the audit report.

As a result of the audit, one CBFO corrective action report was issued and transmitted under a separate cover. Additionally, the audit team identified one condition adverse to quality that was corrected during the audit, and one observation.

If you have any questions or comments concerning the audit report, please contact me at (575) 234-7483.

Martin P. Navarrete
Senior Quality Assurance Specialist

Attachment

cc: w/attachment

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- P. Martinez, CTAC ED
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- B. Boyko, CTAC ED
- R. Castillo, CTAC ED
- D. Harvill, CTAC ED
- G. White, CTAC ED
- Site Documents ED
- WWIS Database Admin ED
- CBFO QA File
- CBFO M&RC

*ED denotes electronic distribution

160509



**U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE**

INTERIM AUDIT REPORT

OF THE

**OAK RIDGE NATIONAL LABORATORY
CENTRAL CHARACTERIZATION PROGRAM**

FOR

**TRU WASTE CHARACTERIZATION ACTIVITIES
AT
OAK RIDGE, TENNESSEE
and CARLSBAD, NEW MEXICO**

AUDIT NUMBER A-16-15

APRIL 19 – 21, 2016



Prepared by: *R. L. Castillo* Date: 5/9/16
Rick L. Castillo, CTAC
Audit Team Leader

Approved by: *Michael R. Brown* Date: 5/12/2016
Michael R. Brown, Director
CBFO Office of Quality Assurance

1.0 EXECUTIVE SUMMARY

U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Recertification Audit A-16-15 was performed to evaluate the adequacy, implementation, and effectiveness of established programs for transuranic (TRU) waste characterization activities performed for the Oak Ridge National Laboratory (ORNL) by the Nuclear Waste Partnership LLC (NWP) Central Characterization Program (CCP). The audit team evaluated the programs, procedures, and processes for characterizing contact-handled (CH) Summary Category Groups (SCGs) S3000 solids, S4000 soils/gravel, and S5000 debris wastes, and remote-handled (RH) SCG S5000 debris waste. The audit was conducted 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)*, and the *Remote-Handled TRU Waste Characterization Program Implementation Plan (WCP/IP)*.

Audit activities were conducted at the ORNL TRU Waste Processing Center (TWPC) facilities in Oak Ridge, Tennessee, and at the Skeen-Whitlock Building in Carlsbad, New Mexico, April 19 –21, 2016. Overall, the audit team concluded that the ORNL/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.

The audit team identified two concerns during the audit. One concern related to a departure from a requirement to apply a Tamper Indicating Device (TID) to a container when access to the container is uncontrolled. The concern was observed during the evaluation of visual examination activities, and resulted in the issuance of CBFO Corrective Action Report (CAR) 16-035 (see section 6.1). The remaining concern was identified in the area of project-level data validation and verification, resulting in one minor isolated deficiency that was corrected during the audit (CDA) (see section 6.2).

2.0 SCOPE AND PURPOSE

2.1 Scope

The scope of the audit included evaluations for the adequacy, implementation, and effectiveness of the technical and QA activities performed by NWP CCP at ORNL for characterization of CH and RH SCG S5000 debris wastes, CH SCG S3000 solids waste, and CH SCG S4000 soils/gravel waste. Transportation evaluations were limited to the area of flammable gas analysis, since that was the only transportation-related activity being performed. The following areas were evaluated:

General

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

Quality Assurance

- Nonconformances
- Personnel Qualification and Training
- Records

Technical

- Acceptable Knowledge (AK) (including waste certification, e.g., Waste Stream Profile Forms)
- Project-Level Data Validation and Verification (PLV&V)
- Real-time Radiography (RTR)
- Visual Examination (VE)
- Nondestructive Assay (NDA)
- Radiological Characterization (Dose-to-Curie) (DTC)
- Container Management
- Flammable Gas Analysis (FGA)
- WIPP Waste Information System (WWIS)/Waste Data System (WDS)

The evaluation of the adequacy of ORNL/CCP documents was based on current versions of the following documents:

Waste Isolation Pilot Plant Hazardous Waste Facility Permit NM4890139088-TSDF

Quality Assurance Program Document (QAPD), DOE/CBFO-94-1012

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

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

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

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

CCP Transuranic Waste Certification Plan, CCP-PO-002

Related CCP QA and technical implementing procedures

2.2 Purpose

Audit A-16-15 was conducted to determine the degree of adequacy and effective implementation of program requirements for the characterization and certification of CH and RH SCG S5000 debris wastes, CH SCG S3000 solids waste, and CH SCG S4000 soils/gravel waste at the ORNL.

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Michael Brown	Director, CBFO Office of Quality Assurance
Rick Castillo	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)
Porf Martinez	Auditor, CTAC
Tamara Ackman	Auditor, CTAC
Katie Martin	Auditor, CTAC
Priscilla Martinez	Auditor, CTAC
Charlie Riggs	Auditor, CTAC
Jim Schuetz	Auditor, CTAC
Bob Prentiss	Auditor, CTAC
Dick Blauvelt	Technical Specialist, CTAC
Rhett Bradford	Technical Specialist, CTAC
Paul Gomez	Technical Specialist, CTAC
Jim Oliver	Technical Specialist, CTAC
Greg Knox	Technical Specialist, CTAC
Judith Stewart	Technical Specialist, CTAC
B.J. Verret	Technical Specialist, CTAC

OBSERVERS

Ricardo Maestas	New Mexico Environment Department (NMED)
Coleman Smith	NMED
Tom Carver	CBFO TRU Sites & Transportation Division (TSTD)
Gary Birge	CBFO TSTD

4.0 AUDIT PARTICIPANTS

The ORNL/CCP individuals involved in the audit process are identified in Attachment 1. A pre-audit meeting was held on April 19, 2016, at the TWPC in Oak Ridge, Tennessee, and at the Skeen-Whitlock Building in Carlsbad, New Mexico. Daily management briefings were held to update ORNL/CCP management and staff on audit progress and identified concerns. A post-audit meeting was held on April 21, 2016, at the TWPC in Oak Ridge, Tennessee, and at the Skeen-Whitlock Building in Carlsbad, New Mexico.

Attachment 2 contains a summary table of audit results. Attachment 3 contains a list of ORNL/CCP documents audited. Attachment 4 lists the processes and equipment

evaluated during the audit. Audit activities, including objective evidence reviewed, are described below.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy, Implementation, and Effectiveness

This audit was performed to assess the capability of ORNL/CCP to characterize CH and RH SCG S5000 debris wastes, CH SCG S3000 solids waste, and CH SCG S4000 soils/gravel waste for compliance with the requirements specified in the WIPP HWFP Waste Analysis Plan (WAP), the WIPP WAC, the CBFO QAPD, and the RH TRU WCPIP. The characterization methods assessed were AK, VE, RTR, NDA, and DTC. Other areas evaluated were data generation and project-level data V&V, WWIS/WDS data entry, FGA, data quality objective (DQO) reconciliation, container management, and the preparation of Waste Stream Profile Forms (WSPFs).

The audit team concluded that, based on personnel interviews, observations of operations, and review of associated documentation and records, the ORNL/CCP TRU waste characterization program and activities for characterizing CH and RH SCG S5000 debris wastes, CH SCG S3000 solids waste, and CH SCG S4000 soils/gravel waste are adequately established, satisfactorily implemented, and effective in achieving the desired results.

5.2 General

5.2.1 Results of Previous Audits

The audit team examined the results of the previous CBFO audit of the ORNL/CCP (A-15-09), wherein two conditions adverse to quality (CAQs) were identified. One CAQ resulted in the initiation of CAR 15-033, related to the documentation of waste items on the applicable Visual Examination Data Forms. The other CAQ, which was corrected during the audit, related to an incorrect annotation by a Site Project Manager (SPM) for an approved document. During the performance of this audit, the audit team did not observe any instances similar to the conditions identified during A-15-09, suggesting that the corrective actions taken were adequate in precluding recurrence.

5.2.2 Changes in Programs or Operations

The audit team determined through interview with the ORNL/CCP SPM that RTR Unit #7 was taken out of service on November 19, 2015. There were no additional significant changes in the programs or operations at the ORNL TWPC since the previous recertification audit.

5.2.3 New Programs or Activities Being Implemented

In response to the breached drum event at the WIPP in February 2014, the DOE and NWP are strengthening their programs to provide more oversight of TRU waste

generator site processing/treatment activities being applied to active waste streams prior to waste being transferred to CCP for characterization, certification, and shipment. The audit team verified through review of CCP Management Assessment MA-CCP-0002-16 that the CCP Assessment Leader performed an evaluation of waste processes being performed at the TWPC in the Hot Cell at the Processing Building and at the Radiochemical Engineering Development Center (REDC). The results of the assessment did not identify any deficiencies.

5.2.4 Changes in Key Personnel

Changes in key personnel include the former Vendor Project Manager (VPM) assuming ORNL/CCP Project Manager duties at the direction of the CCP Operations Manager. A new VPM is assuming VPM duties at the direction from the new ORNL/CCP Project Manager.

5.2.5 ORNL/CCP Program Interface

The audit team evaluated the program interface established between the CCP and the ORNL TWPC as documented in CCP-PO-027, *CCP/TRU Waste Processing Center/Oak Ridge National Laboratory Interface Document*, Rev. 6. This document describes the interfaces, roles and responsibilities, and program requirements applicable to both organizations in support of CCP waste characterization activities at the ORNL TWPC. Program interface requirements evaluated included responsibilities of the ORNL TWPC Site Technical Representative (STR), CCP VPM, SPM, and QA Engineer. The audit team concluded that requirements evaluated, as described in the interface document, were satisfactorily implemented. No concerns were identified.

5.3 Quality Assurance Activities

The audit team evaluated the 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 and reviewed implementing procedure CCP-QP-002, Rev. 39, *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 upper-tier requirements.

Personnel training records associated with VE, RTR, NDA, DTC, AK, FGA, and site project management were examined to verify implementation of associated requirements and to verify that personnel performing waste characterization activities are appropriately qualified. Record reviews included qualification cards and other pertinent qualification documentation, such as attendance sheets/briefings on newly-revised AK summaries for RTR and VE operators; appointment letters for VE Experts (VEEs), RH technical staff,

and NDA expert analysts; comprehensive exams; test drum and training container documentation; and eye examinations for qualified RTR operators. The audit team reviewed the draft qualification card for the SPM position including the recent job analysis performed to support the new qualification card. The audit team determined that the job analysis and draft qualification card both address provision of training in Chemical Compatibility Evaluation Memorandum (CCEM), Acceptable Knowledge Assessment (AKA), and other appropriate sections of revision 5 of the WIPP site Documented Safety Analysis (DSA). The new qualification card will be administered to all currently qualified SPM personnel to document training to applicable details of the revised WIPP DSA regarding characterization of waste for emplacement at WIPP.

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. No concerns were identified.

5.3.2 Nonconformances

The audit team reviewed implementing procedure CCP-QP-005, Rev. 25, *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 QA Engineer and randomly selected nonconformance reports (NCRs) for review.

The following NCRs reviewed were initiated at the data generation level (DGL):

<u>Number</u>	<u>Revision</u>	<u>Process</u>
NCR-ORNL-0003-16	R0.....	NDA
NCR-ORNL-0027-16	R0.....	NDA
NCR-ORNL-0041-16	R0.....	NDA
NCR-ORNL-0126-15	R0.....	NDE
NCR-ORNL-0154-15	R0.....	VE
NCR-ORNL-0403-15	R0.....	NDA

The following NCRs reviewed were initiated at the project level (PL):

<u>Number</u>	<u>Revision</u>	<u>Process</u>
NCR-ORNL-0053-15	R2, R1, & R0	NDE
NCR-ORNL-0125-15	R1.....	NDE
NCR-ORNL-0145-16	R1 & R0.....	NDA
NCR-RH-ORNL-0271-16	R0.....	RH-DTC
NCR-RH-ORNL-0335-15	R1.....	RH VE

The team concluded that nonconformances are being appropriately documented and tracked through resolution as required. NCRs reviewed included original and revised NCRs. The audit team determined that there were no NCRs related to RH waste characterization activities initiated at the DGL since the last ORNL/CCP recertification audit. There were no NCRs related to CH or RH waste characterization activities written at the PL that required reporting to CBFO. NCR-ORNL-0053-15 was reviewed by the audit team and was initially classified by NWP/CCP as reportable, but after review of details by NWP, the reportability determination was changed to non-reportable. The audit team discussed the NCR with NWP/CCP personnel and determined the change to non-reportability was valid and documented correctly per NWP/CCP procedures. The audit team verified CCP personnel are familiar with the process for reporting NCRs to the Permittee via email to CBFO within the time frame required by the Permit. All the NCRs examined were verified to have been entered, managed, and tracked in both the CCP Integrated Data Center (IDC) and the NCR 2015 and 2016 Logs, as well as through the required reconciliation reporting mechanism. The CCP QA Engineer performed an evaluation of all NCRs written within the last 12 months and determined that there are no NCRs of similar subject that identified a reportable trend.

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. No concerns were identified.

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. 22, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*; CCP-QP-008, Rev. 25, *CCP Records Management*; and CCP-QP-028, Rev. 16, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning*. Results of the review indicate that the procedures adequately address upper-tier requirements.

The level of control for QA records was verified through review of the CH Records Inventory and Disposition Schedule (RIDS) dated 06/29/2015 and the RH RIDS dated 06/15/2015. Each RIDS is reviewed annually, as required. The audit team reviewed a sample of EA15RM3002-1-0, *WIPP Records Inventory Work Sheet* forms related to changes proposed for the CH and RH RIDS. Changes on the worksheet forms are adequately collected and detailed for inclusion on the next RIDS release version. The audit team evaluated a sample of transmittal forms used to document submittal of records from the ORNL/CCP host site location to the CCP Records Center in Carlsbad, New Mexico. The audit team determined that the completed forms adequately described the records being transmitted, and that the transmittal process was performed in accordance with the procedure.

The audit team verified the maintenance of records in file cabinets and in the electronic system. Records that are maintained in paper copy in the CCP Records Center are placed in locked fire-resistant cabinets. Access to the file cabinets is controlled through the use of keys, and labels placed on each cabinet post the names of personnel approved for access to the files. Files are adequately organized and maintained in both the paper and electronic file systems. Records are adequately segregated from non-record documents. Files that require control of access, such as those determined to be Unclassified Controlled Nuclear Information (UCNI), Official Use Only (OUO), Internal Use Only (IUO), and No Foreign National (NFORN) documents, are maintained on separate electronic servers where computer user access is restricted. Paper copies of these restricted access documents are stored separate from other documents. Records personnel are familiar with requirements for restricted access files and adequately control distribution. Access to electronic files and restricted files is controlled administratively in the case of physical electronic media and by use of server logon / password methods for electronic files maintained on computer servers.

The procedures reviewed and objective evidence assembled provided evidence that the applicable requirements for records are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No concerns were identified.

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 briefly, and the result of the assessment is provided.

5.4.1 Acceptable Knowledge

The audit team evaluated the AK process for characterizing CH TRU mixed SCGs S3000 solids, S4000 soils/gravel, S5000 debris wastes, and RH TRU mixed SCG S5000 debris waste. The AK audit staff specifically evaluated compliance with the WAP requirements listed in the C6-2 checklist along with portions of the C6-1 checklist. Objective evidence was reviewed and compiled to demonstrate compliance with each of the applicable requirements on these checklists. The team also reviewed the AK record with respect to relevant requirements of the WAC and, specifically for the RH waste stream, the requirements of the WCPIP, Rev. 3.

The AK auditors reviewed the latest revision to the AK Summary Reports for four distinct waste streams representing the four respective SCGs identified above. The AK Summary Reports and respective waste stream designations are as follows: CCP-AK-ORNL-001, Rev. 10 for CH S3000 waste stream OR-NFS-CH-HOM-A and CH S4000 waste stream OR-NFS-CH-SOIL; CCP-AK-ORNL-002, Rev. 4 for CH S5000 waste stream OR REDC-CH-HET; and CCP-AK-ORNL-500, Rev. 5 for S5000 RH waste stream OR-REDC-RH-HET. These AK Summary Reports were reviewed very thoroughly by the AK audit team with respect to the information that relates to specific WAP and WAC requirements. In addition, WSPFs or draft WSPFs and attachments

were examined for each audited waste stream. Numerous AK source documents were reviewed to establish support for the waste stream descriptions and parameters noted in the AK summaries, including descriptions of waste processing activities, assignment of hazardous waste numbers, and the historical management of the containers in the waste streams. Furthermore, the review of AK source documentation also included a review of the historic and current use of all absorbents identified in the AK record.

The audit team also examined the following completed attachments from CCP-TP-005, *CCP Acceptable Knowledge Documentation*, for each waste stream: the respective AK Documentation Checklist (Attachment 1); the AK Source Document Information List (Attachment 4), the AK Hazardous Constituents List (Attachment 5), the respective AK Waste Form, Waste Material Parameters, Prohibited Items, and Packaging (Attachment 6), alongside the justification memos for waste material parameter weight estimates; the Radionuclides List (Attachment 7) and AK/NDA memos for the CH waste streams; and the Waste Containers List (Attachment 8), together with the Add-Containers documentation that demonstrates that the parameters and properties of containers added to a waste stream are examined to assure that the assignment is appropriate.

Review of the Interface Waste Management Documents List (CCP-TP-005 Attachment 9) for the REDC waste streams relevant to activities in the TWPC was significant in the AK process evaluation portion of this audit. This requirement was a major addition to CCP-TP-005, Rev. 27, *CCP Acceptable Knowledge Documentation*. The objective is to work with the site to develop and maintain "a current list of generator site plans, procedures, and reports associated with current waste management and packaging (e.g., waste management, waste generation, waste treatment, waste packaging, waste repackaging, waste remediation, waste stream delineation, and waste characterization procedures)" that have the ability to affect waste stream characterization and certification activities. The audit team examined the documents on this list and performed a detailed review of ORNL procedures CH-REF-OP-013, Rev. PCN 9-1, *Contact Handled Waste Repackaging*, and CH-REF-OP-014, Rev. PCN 5-1, *Absorbing Liquids in the Glovebox and Box Breakdown Area*. The review included discussions with the ORNL process superintendent.

Examples of the resolution of AK discrepancies in the AK record and discrepancy resolution at characterization, alongside the associated AK Reevaluation forms, were reviewed and added to the AK objective evidence. WAP-compliant AK Accuracy Reports and the most recent internal surveillance (I15-14, dated 10/8/15) were also collected and examined. Requisite training records were reviewed for three AK experts and two SPMs. The audit team also reviewed selected batch data reports (BDRs), discrepancy reports, and NCRs. With regard to non-compliant waste containers, the auditors examined several NCRs dealing with prohibited items and compiled objective evidence of container inspection prior to characterization activities. Additionally, it was determined that administrative controls had been used for the NCRs reviewed, rather than tagging, to maintain segregation of some of the containers due to the high radiation levels of the RH waste. AK records were evaluated with regard to compliance through preparation, legibility, accuracy, review, approval, and maintenance.

The WAP-required container traceability exercise was conducted by the AK audit team for a total of eight waste containers from the four waste streams. The drums selected provided BDRs for RTR, VE, NDA and the DTC process. Additional traceability documentation was collected through IDC database screenshots, AK tracking spreadsheet data, waste container lists, and ORNL waste container input forms completed by the waste generators. Waste Stream Characterization Checklists and supporting data reconciling the results of characterization activities with the information in the AK record were also examined. The review of these checklists was coordinated with the traceability containers where possible. A total of eight waste containers, two from each waste stream, went through the traceability exercise.

For waste stream OR-REDC-RH-HET, the AK auditors also reviewed and compiled objective evidence that demonstrates compliance with the requirements of the WCPIP as noted above. Documents reviewed included a WCPIP-compliant AK Accuracy Report, the CCP TRU Waste Correlation and Surrogate Form, and Characterization Reconciliation Reports with the examination of relevant AK source documents supporting these WCPIP requirements.

The audit team evaluated the required AK documents identified in CCP-TP-005, Rev. 27, and enhanced documents required by CCP-TP-005, Rev. 28, dated 2/29/2016. The evaluated documents included the Interface Waste Management Documents List (IWMDL) (AK Attachment 9), Acceptable Knowledge Assessment (AKA), and the Chemical Compatibility Evaluation Memorandum (CCEM). The latest revision of CCP-TP-005 provides additional detail regarding the development of the IWMDL, AKA, and the CCEM documents. These documents are required for each waste stream, or portion thereof, that has an inventory of unshipped containers. For the two REDC waste streams that were examined during the audit, record copies of the IWMDL were available. During the audit, a records copy of the AKA for waste stream OR-NFS-CH-SOIL was received and reviewed, while others are currently being developed and implemented.

The procedures reviewed and objective evidence assembled provided evidence that the applicable requirements for AK are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No concerns were identified.

5.4.2 Project-Level Data Validation and Verification

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-001, Rev. 21, *CCP Project Level Data Validation and Verification*; CCP-TP-002, Rev. 26, *CCP Reconciliation of DQOs and Reporting Characterization Data*; CCP-TP-500, Rev. 15, *CCP Remote-Handled Waste Visual Examination*; CCP-TP-504, Rev. 17, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*; and CCP-TP-005, Rev. 28, *CCP Acceptable Knowledge Documentation*, to determine the degree to which the procedures address upper-tier requirements. Results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team evaluated the following BDRs in support of both CH and RH waste characterization activities completed at the ORNL to verify that project-level data V&V activities are performed in compliance with applicable procedural requirements.

RTR

OR-RTR6-0650	OR-RTR6-0652	OR-RTR6-0701	OR-RTR6-0716
OR-RTR6-0723	OR-RTR6-0736	OR-RTR6-0739	OR-RTR7-0131
OR-RTR7-0149			

VE

ORNLRHVE15002	ORNLRHVE15006	ORNLRHVE15008	ORRHVE16001
ORVECH0135	ORVECH0142	ORVECH0145	

NDA

OR-IQ3-0483	OR-IQ3-0510	OR-IQ3-0569	OR-MILCC2-0170
OR-MILCC2-0256	OR-MILCC2-0280		

DTC

ORRHDTTC15003	ORRHDTTC15004	ORRHDTTC16001	ORRHDTTC16003
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The audit team reviewed WSPF Change Notice #1 and WSPFs for waste streams OR-ISTP-CH-HET, OR-CHEM-CH-HET, OR-RF-CH-HET, and OR-REDC-RH-HET. The WSPFs were properly completed with characterization information summaries (CISs). AK Accuracy Reports for waste streams OR-ISTP-CH-HET (Lots 4-15), OR-CHEM-CH-HET (Lots 6 & 7), OR-RF-CH-HET (Lots 8 & 9), and OR-RADP-CH-HET (Lots 30-35) were reviewed and confirmed to include the WSPF and associated CISs.

The audit team also reviewed ORNL Discrepancy Resolutions DR027, DR045, DR046, and DR047, and found none of them required a change to the waste stream profiles regarding waste classification.

The audit team verified the required quarterly re-review of the DGL data by project-level personnel for the following:

2nd Quarter 2015 requests and results for VE, RTR, and RH-VE

3rd Quarter 2015 requests and results for VE, RTR, and RH-VE

4th Quarter 2015 requests and results for VE, RTR, and RH-VE

1st Quarter 2016 requests for VE and RTR (results have not been issued to Records currently)

Further, the results of each reported quarterly package stated there were no inconsistencies in the data.

The audit team also verified continued corrective actions for a CAQ identified and corrected during the previous audit (A-15-09) where an AK Summary Report was annotated as "APPROVED FOR USE" by an SPM who did not approve the controlled document. No similar instances were identified during this audit.

One concern was identified during the PL V&V review. It was discovered that container X10C1300177A in BDR OR-RTR6-0723 was identified as having observable liquid in the container. The SPM marked "N/A" on the SPM Checklist for question #12, which asks, "Does observable liquid, if present, meet the criteria of the TSDF-WAC?" The question should have been answered "Yes." The document was corrected with the proper answer for question #12, issued, and provided to the audit team. Additionally, the audit team acknowledged that since no other DOE/CCP sites are actively performing routine RTR operations where BDRs can be reviewed for the same issue, a total of 29 ORNL BDRs were randomly chosen and reviewed for accuracy, which included all BDRs reviewed by this particular SPM as well as other SPMs. One additional instance was found in BDR OR-RTR6-0736, where the same SPM answered question #12 incorrectly. This document was also corrected with the proper answer for question #12, issued, and provided to the audit team during the audit. Due to the issue being isolated to only one SPM after the BDRs were reviewed, this concern was considered to be isolated and corrected during the audit (see CDA-1 in section 6.2).

With the exception of the concern identified, the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for project-level data V&V activities are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results.

5.4.3 Real-time Radiography

The audit team evaluated the adequacy, implementation, and effectiveness of ORNL/CCP's ability to characterize CH SCGs S3000 solids waste, S4000 soils/gravel waste, and S5000 debris waste using RTR Unit #6 and Unit #7. Although RTR Unit #7 was deactivated on November 19, 2015, BDRs from Unit #7 were generated and evaluated during the audit.

The audit team evaluated the following RTR-related CCP procedures: CCP-QP-002, Rev. 39, *CCP Training and Qualification Plan*; CCP-TP-028, Rev. 9, *CCP Radiographic Test Drum and Training Container Construction*; CCP-TP-053, Rev. 15, *CCP Standard Real-Time Radiography (RTR) Inspection Procedure*; CCP-TP-164, Rev. 1, *CCP Real-Time Radiography #7 Operating Procedure*; and CCP-TP-165, Rev. 3, *CCP Real-Time Radiography #6 Operating Procedure*. Results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team examined the following CH RTR BDRs generated by characterizing waste in RTR Unit #6 and Unit #7:

- OR-RTR6-0650
- OR-RTR6-0654
- OR-RTR6-0676
- OR-RTR6-0688
- OR-RTR6-0695
- OR-RTR6-0706
- OR-RTR6-0713
- OR-RTR6-0723
- OR-RTR7-0138
- OR-RTR7-0148

The audit team also reviewed a sampling of audio/video media recordings of containers characterized on the referenced BDRs. The audit team reviewed video recordings of RTR characterization scans for CH SCGs S3000 solids waste, S4000 soils/gravel waste, and S5000 debris waste.

The audit team observed RTR operations for RTR Unit #6, interviewed the RTR operators, and verified the use of current AK summaries and RTR operating procedures. The audit team also examined RTR Unit #6 operational logbook CCP-ORNL-RTR6-004, 2016, ORNL-TWPC-RTR6, 7880J and verified logbook entries were reviewed by the VPM as required. The audit team also verified the use of several RTR operator aides and CCP standing orders. The audit team observed the image (lines/pair) test and the RTR characterization scan on container X10C1250272 from BDR OR-RTR6-0713 and waste stream OR-NFS-CH-SOIL performed on RTR Unit #6. The RTR unit contained the components required by the WAP to effectively characterize each CH SCG waste subject to the scope of the audit.

The audit team also examined RTR operational logbook CCP-ORNL-RTR-007-001, 2015, ORNL-TWPC, 7880ZZ and verified logbook entries were logged correctly and reviewed by the VPM as required. The audit team evaluated RTR operator required test and training drum audio/video media for five RTR operators. Records of RTR operator training and qualification, including test and training drum documentation, eye exams, and waste stream training were examined. The audit team verified that RTR operators were appropriately trained and qualified as required.

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for RTR are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No concerns were identified.

5.4.4 Visual Examination

The audit team evaluated the adequacy, implementation, and effectiveness of the ORNL/CCP VE characterization process for CH and RH SCG S5000 debris waste. The audit team reviewed procedures CCP-TP-113, Rev. 19, *CCP Standard Contact-Handled Waste Visual Examination*, CCP-TP-500, Rev. 15, *CCP Remote-Handled Waste Visual Examination*, and CCP-QP-002, Rev. 39, *CCP Training and Qualification Plan*, to determine their adequacy in addressing upper-tier requirements. Results of the review indicate that the procedures adequately address upper-tier requirements.

ORNL/CCP uses the two-operator method when performing VE characterization. VE is performed by two qualified operators where the waste is visually examined and placed into containers. The audit team interviewed VE operators and the VEE. The audit team also examined the VE operational logbooks (CCP-ORNL-VE-003 and CCP-RH-ORNL-VE-004) and verified logbook entries were logged correctly and reviewed by the VPM as required. During the audit, the VE audit team toured the TWPC Hot Cell Facility and observed VE being performed on RH container ORRH00762 and CH container X10C1001985A.

The audit team examined the following CH and RH VE BDRs generated from operations performed in the TWPC Hot Cell Facility to verify implementation and compliance with the requirements for documenting VE activities, as specified in CCP-TP-113 and CCP-TP-500:

- ORNLRHVE15003 ORVECH0136 ORVECH0146
- ORNLRHVE15016 ORVECH0138 ORVECH0148
- ORNLRHVE16002 ORVECH0142 ORVECH0162
- ORNLRHVE16009 ORVECH0143
- ORNLRHVE16010 ORVECH0144

The audit team examined training records for five VE operators/independent technical reviewers (ITRs), and confirmed the appointment of three ORNL/CCP VEEs. The audit team verified that VE operators, ITRs, and the VEE were appropriately trained and qualified as required.

The audit team also verified continued corrective actions for CAR 15-033 identified during the previous audit (A-15-09) where there were two instances the VE operator did not record all of the waste items in the Waste Description field on the VE Data Form. No similar instances were identified during this audit.

One concern was identified during the review of VE BDRs. There was no TID applied to container X10C9311083A when access to the container was uncontrolled (see CAR 16-035 in section 6.1).

With the exception of the concern identified, the procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for VE are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results.

5.4.5 Nondestructive Assay

The audit team evaluated the adequacy, implementation, and effectiveness of NDA activities at ORNL to characterize CH SCGs S3000 solids waste, S4000 soils/gravel waste, and S5000 debris waste using the Mobile Qualitative and Quantitative Drum Counter with Isotopics (IQ3) and the Mobile ISOCS (in-situ object counting system) Large Container Counter Unit #2 (MILCC2).

The audit team reviewed procedures CCP-TP-046, Rev. 5, *CCP Mobile IQ3 System Calibration Procedure*; CCP-TP-047, Rev. 12, *CCP Mobile IQ3 Gamma Scanner Operation*; CCP-TP-048, Rev. 16, *CCP ORNL NDA System Data Reviewing, Validating, and Reporting Procedure*; CCP-TP-076, Rev. 1, *CCP Operating the Mobile ISOCS Large Container Counter Using NDA 2000*; CCP-TP-077, Rev. 1, *CCP Calibrating the Mobile ISOCS Large Container Counter Using NDA 2000*; and CCP-TP-058, Rev. 6, *CCP NDA Performance Demonstration Program*, to determine the degree to which they address

applicable upper-tier requirements. Results of the review indicate that the procedures adequately address upper-tier requirements.

MILCC2

The audit team interviewed MILCC2 operators, observed actual measurement operations, and interviewed ORNL/CCP representatives to verify compliance with operating procedures and governing requirements applicable to NDA contained in the CBFO QAPD, CCP Transuranic Waste Certification Plan, WAC, and WCIIP.

MILCC2 BDRs reviewed included:

- OR-MILCC2-0170
- OR-MILCC2-0183
- OR-MILCC2-0216
- OR-MILCC2-0260
- OR-MILCC2-0265
- OR-MILCC2-0271

The audit team confirmed the BDRs included results for 1 weekly interfering matrix drum and 9 waste drums; 1 weekly interfering matrix drum and 5 waste drums; 1 weekly interfering matrix drum and 8 waste drums; 1 weekly interfering matrix drum and 5 waste drums; 1 weekly interfering matrix drum and 12 waste drums; and 1 weekly interfering matrix drum and 12 waste drums, respectively, for a total of 6 weekly interfering matrix drum and 51 waste drums. The audit team also verified ORNL/CCP successfully participated in PDP Cycle 22A that included two matrices (combustibles and metals).

The following documents were reviewed and provided to the audit team prior to and during the audit:

- CI-MILCC2-NDA-1001, *Calibration Report for the MCS Mobile ISOCS Large Container Counter 2 (MILCC II) at the Transuranic Waste Processing Center in Oak Ridge, TN*, Rev. 0, dated March 10, 2014
- CI-MILCC2-NDA-1002, *Oak Ridge MILC Counter Total Measurement Uncertainty Report*, Rev. 0, dated March 12, 2014
- CI-MILCC2-CAL-CONF-2014-1, *Calibration Confirmation and Verification Test Plan for the MCS MILCC2 at the Transuranic Waste Processing Center*, Rev. 0, dated January 22, 2014
- SO 14956, *ISOCS/LabSOCS Detector Characterization Report*, Detector Model BE5030, S/N 8879, dated July 30, 2013
- SO 1519185, *ISOCS/LabSOCS Detector Characterization Report*, Detector Model BE5030, S/N 8903, dated November 08, 2013
- CI-MILCC2-NDA-1004, *Calibration Verification Report for the MCS MILCC2*, Rev. 0, dated April 15, 2014

ORNL/CCP performed a single calibration verification documented in CI-MILCC2-NDA-1008, *Calibration Verification Report for the MCS MILCC2*, Rev. 0, dated July 30, 2015. The audit team reviewed this document and interviewed ORNL/CCP staff about the cause and resolution of the issue that led to the performance of a calibration verification. The audit team found that the description of the cause and resolution were technically adequate.

IQ3

The audit team interviewed IQ3 personnel, which included operators and expert analysts. The audit team also reviewed electronic and paper copies of reports and records. Further, based on a review of the current revisions of CBFO requirements documents (DOEWIPP 02-3122, WAC, Rev. 7.4) and CCP procedures (CCP-TP-046, *CCP Mobile IQ3 System Calibration Procedure*, Rev. 5, CCP-TP-047, *CCP Mobile IQ3 Gamma Scanner Operation*, Rev. 12, and CCP-TP-048, *CCP ORNL NDA System Data Reviewing, Validating, and Reporting*, Rev. 16) provided prior to the audit, checklists were prepared and used to evaluate the following:

- Operability and condition of the IQ3 since Audit A-15-09
- System stability as evidenced by the implementation and effectiveness of quality control measurements and two calibration verifications (*Calibration Verification for the MCS IQ3*, Rev. 0, MCS-IQ3-CALVER-2016-01, dated January 28, 2016 and MCS-IQ3-CALVER-2016-02, dated April 20, 2016). The audit team confirmed weekly interfering matrix checks are being performed as evidenced in the associated BDRs and two *Summary Reports Weekly Interfering Matrix Standards for the MCS IQ3* (MCS-IQ3-WIMS-2015-2, Rev. 1, dated October 12, 2015 and MCS-IQ3-WIMS-2015-2, Rev. 1, dated December 30, 2015). These reports document a six-month cycle of weekly interfering matrix checks spanning the expected types of waste matrices and radionuclide content.
- Successful calibration verifications and calibration confirmation
- Applicability of each system's calibration and operational range to the waste assayed since Audit A-15-09
- Successful participation in the CBFO-sponsored PDP
- Completed BDRs to ensure data reported and reviewed as required
- Data storage and retrievability

IQ3 BDRs reviewed included:

- OR-IQ3-0480
- OR-IQ3-0483
- OR-IQ3-0492
- OR-IQ3-0510
- OR-IQ3-0531
- OR-IQ3-0619

The audit team confirmed the BDRs included results for 1 weekly interfering matrix drum and 9 waste drums; 1 weekly interfering matrix drum and 6 waste drums; 1 weekly interfering matrix drum and 4 waste drums; 1 weekly interfering matrix drum and 6 waste drums; 1 weekly interfering matrix drum and 11 waste drums; and 1 weekly interfering matrix drum and 2 waste drums, respectively, for a total of 6 weekly interfering matrix drums and 38 waste drums. The audit team also verified ORNL/CCP successfully participated in PDP Cycle 22A that included two matrices (combustibles and metals).

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for NDA are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No concerns were identified.

5.4.6 Radiological Characterization (Dose-to-Curie)

The audit team evaluated the adequacy, implementation, and effectiveness of the DTC methodology used by the ORNL/CCP to characterize waste stream OR-REDC-RH-HET. The audit team interviewed operators, observed actual measurement operations, and interviewed ORNL/CCP representatives to verify compliance with operating procedures and governing requirements applicable to RH DTC contained in the CBFO QAPD, CCP Transuranic Waste Certification Plan, WAC, and WCPIP.

The audit team reviewed procedures CCP-TP-504, Rev. 17, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*, and CCP-TP-509, Rev. 6, *CCP Remote-Handled Transuranic Container Tracking*, to determine the degree to which they address applicable upper-tier requirements. Results of the review indicate that the procedures adequately address upper-tier requirements. The following documents were reviewed and provided to the audit team prior to and during the audit:

- CCP-AK-ORNL-500, Rev. 5, *CCP AK Summary Report for ORNL Radiochemical Engineering Development Center RH Transuranic Waste*
- CCP-AK-ORNL-501, Rev. 4, *CCP RH Transuranic Radiological Characterization Technical Report for Remote-Handled Transuranic Waste From Oak Ridge National Laboratory Radiochemical Engineering Development Center*
- CCP-AK-ORL-505A, Rev. 1, *CCP Nondestructive Assay Sampling Plan for ORNL Radiochemical Engineering Development Center RH Transuranic Waste (Pre-SETF)*
- CCP-AK-ORL-505B, Rev. 1, *CCP Nondestructive Assay Sampling Plan for ORNL Radiochemical Engineering Development Center RH Transuranic Waste (SETF)*
- CCP-RH-ORNL-DTC-003, *Operational Logbook for Remote-Handled Dose-to-Curie Operations – Calendar year 2015*

For DTC, the dose rate is defined as the external exposure rate from gamma-ray-emitting radionuclides within the waste matrix, predominately Cesium-137 (Cs-137).

Approximately twenty-nine 55-gallon drums of RH SCG S5000 debris waste have been measured, resulting in the audit team reviewing the completed BDRs listed below:

- ORRHDTTC15003
- ORRHDTTC15004
- ORRHDTTC15005
- ORRHDTTC15006
- ORRHDTTC15007
- ORRHDTTC16001
- ORRHDTTC16002
- ORRHDTTC16003

The audit team confirmed the BDRs listed above included one, one, twelve, two, one, three, five, and four containers, respectively (for a total population sample of 29 containers).

The audit team previously evaluated the collection and analysis of swipe samples from the hot cells, the development of scaling factors that relate the measured dose rate to the average activity, and the actual measurement of the dose rate. There were no changes in any of these areas since Audit A-15-09.

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for radiological characterization are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No concerns were identified.

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

The audit team conducted interviews and reviewed implementing procedures relative to the WWIS/WDS data entry process to determine the degree to which the procedures adequately address upper-tier requirements. The procedures reviewed included CCP-TP-030, Rev. 34, *CCP CH TRU Waste Certification and WWIS/WDS Data Entry*, and CCP-TP-530, Rev. 12, *CCP RH TRU Waste Certification and WWIS/WDS Data Entry*. Results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team evaluated the implementation of the WWIS/WDS data entry procedures for electronic population of data, manual up-date of data, and electronic data transfer of data from the Integrated Data Center (IDC) software database to the WWIS/WDS. The evaluation included review of electronic records in the IDC, review of data up-date by a waste certification assistant, and waste certification by a waste certification official (). Other records reviewed included container information summaries, pages from BDRs showing analyses values in the IDC, WWIS/WDS Waste Container Data Reports, and submittals for WWIS/WDS review/approval. Records for data entry of both CH- and RH-type waste characterization and certification data were reviewed.

The audit team reviewed waste characterization case files for three CH containers, six RH waste containers, and builds for two RH waste canisters. ORNL CH containers X10C0401623A, X10C0402820M1, and X10C0501703A were certified under the current procedural process, CCP-TP-030, Rev. 34, which provides for certification using modules of the IDC. ORNL RH containers ORRH00736, ORRH00737, ORRH00738, ORRH00736, ORRH00737, and ORRH00738 were certified under the new procedural process of CCP-TP-530, Rev. 12, which utilizes functions of the IDC for certification. Revision 11 of CCP-TP-530 allowed only manual data entry into the RH spreadsheet and electronic submittal to WWIS/WDS. Use of the IDC for RH containers provides for electronic certification of RH waste containers and streamlines the electronic submittal process to WWIS/WDS. Use of the IDC to build RH canisters ORR0090 and ORR0093 was reviewed. The audit team determined that the IDC processes for CH and RH waste container certification and the build process for RH canisters were performed in accordance with the appropriate procedures. Per interviews with CCP personnel, the audit team determined that implementation using the IDC process is preferred and expected to reduce time to characterize, certify, and submit CH and RH container information to WWIS/WDS for approval.

The audit team determined that there are currently no new WSPFs under consideration for submittal for approval. Because of this, there are no CH or RH waste containers currently being characterized to provide data for approval of a new WSPF. NWP WCO personnel are familiar with the process of characterization of CH and RH waste containers for submitting in conjunction with a new WSPF.

The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for WWIS/WDS data entry are adequately established, satisfactorily implemented, and effective in achieving the desired results. No concerns were identified.

5.4.8 Flammable Gas Sampling and Analysis

The audit team conducted interviews with responsible FGA personnel and confirmed that ORNL/CCP personnel performing FGA use DOE procedure DOE/WIPP 06-3345, Rev. 9, *Waste Isolation Pilot Plant Flammable Gas Analysis*. A walkthrough of the FGA CH drum sampling area was performed, and the instrumentation and equipment was verified to be acceptable. A demonstration of sampling and analysis was observed. The following FG BDRs were examined:

- OR15FG8071
- OR15FG8082
- OR15FG8090
- OR15FG8099
- OR15FG8101
- OR15FG8109
- OR15FG11007
- OR15FG11010

- OR16FG8019
- LA1013FG8002_MDL (minimum detection limit study)
- SR13FG11014_MDL
- OR15FG8122_ICAL (initial calibration study)
- OR15FG8076_ICAL
- OR15FG11001_ICAL

All FG BDRs were determined to have been completed accurately and compliantly. The logbook for FG CCP-ORNL-FGA8-004 contained the required information and was properly reviewed and signed by the VPM, as required. Additionally, ORNL/CCP has initiated a new Instrument Logbook for Flammable Gas Analysis, and all entries were reviewed and found to be in compliance.

The procedures reviewed and objective evidence assembled concluded that the applicable requirements for FGA are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No concerns were identified.

5.4.9 Container Management

ORNL performs container movement for the CCP and is responsible for supplying containers to the CCP for characterization activities. ORNL personnel move containers and track their location using ORNL procedures and techniques. Observation of container management activities for both RH waste and CH waste was conducted on April 19-20, 2016.

The audit team conducted interviews with responsible personnel and reviewed implementing procedure CCP-TP-509, Rev. 6, *CCP Remote-Handled Transuranic Container Tracking*, relative to RH container management activities performed by ORNL/CCP, to determine the degree to which the CCP procedure adequately addresses upper-tier requirements. ORNL/CCP tracks RH containers using the RH AK Tracking Spreadsheet. This spreadsheet was examined and contained the required information.

ORNL/CCP CH container management is performed using procedure CCP-TP-068, Rev. 12, *CCP Standardized Container Management*. Compliance was verified by field observations of CH containers in the Contact-Handled Staging Area (CHSA) building, examination of container management documents, and interviews with the container management specialist. CH containers are introduced into the ORNL/CCP characterization system by verifying the integrity of the container, weighing it, and initiating a drum traveler sheet which is affixed to the top of the drum. The containers are prepared for the characterization technique and then ORNL/CCP performs the required characterization. It was verified that a drum traveler sheet is affixed to containers, and that each characterization process completed was noted on the drum traveler sheet. ORNL/CCP personnel use information entered into the CH AK Tracking Spreadsheet to track drums until disposal, and note final disposition in the CH AK Tracking Spreadsheet.

Containers associated with an NCR are returned to ORNL for remediation. VPM Hold Tags were verified to be properly placed on drums as required, and the tags are removed only with approval of the VPM. Drums with NCRs or Hold Tags are easily identified to preclude shipment to the WIPP.

The procedure review, field observations, and document reviews provided evidence that the applicable requirements for container management are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No concerns were identified.

6.0 CORRECTIVE ACTIONS, OBSERVATIONS, AND RECOMMENDATIONS

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 CARs.

Condition Adverse to Quality (CAQ) – Term used in reference to failures, malfunctions, deficiencies, defective items, and nonconformances.

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 Quality Assurance (QA) program.

The following CAR was issued as a result of this audit.

CAR 16-035

Condition:

There was no TID applied to container X10C9311083A when access to the container was uncontrolled.

Requirement:

CCP-TP-113, Rev. 18, *CCP Standard Contact-Handled Waste Visual Examination*, Section 4.4, NOTE states, "Waste container(s) SHALL be closed and have a TID applied when access to the container is uncontrolled."

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 Management 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 Management Representative, determines if the CAQ is a minor and isolated case requiring only remedial action and therefore can be corrected during the audit.

Upon determination that the CAQ is minor and isolated, the audit team member, in conjunction with the ATL and the CBFO QA Management 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 Management Representative categorizes the condition as corrected during audit (CDA) according to the definition below.

CDA – 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.

One CAQ was identified and corrected during this audit, as detailed below.

CDA-1

Condition:

The SPM marked "N/A" on the SPM Checklist for question #12, which states, "Does observable liquid, if present, meet the criteria of the TSDF-WAC?" Observable liquid was identified by the RTR operator for container #X10C1300177A, BDR #OR-RTR6-0723; therefore, the question should have been answered "Yes."

Requirement:

CCP-TP-001, Rev. 21, section 4.2.8 states, "Answer each question on the appropriate SPM checklist after verifying that the specific criteria have been met."

During the audit, the auditor was provided with objective evidence that included the corrected SPM Checklist for BDR #OR-RTR6-0723, answering question #12 correctly. The concern was determined to be isolated in nature and evidence confirming the correction was presented to the audit team and verified prior to the conclusion of the 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 Observations were identified during this audit.

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.

No Recommendations were identified during this audit

7.0 LIST OF ATTACHMENTS

- Attachment 1: Personnel Contacted During the Audit
- Attachment 2: Summary Table of Audit Results
- Attachment 3: Table of Audited Documents
- Attachment 4: List of Processes and Equipment Reviewed

PERSONNEL CONTACTED DURING AUDIT A-16-15				
NAME	ORG/TITLE	PRE-AUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Susan Anderson	MCS/CCP NDA Operator		X	
William Bailey	DOE OR EM FR			X
Thomas Barton	TWPC/Northwind Waste Programs SMR	X	X	X
Linda Beach	Northwind Program Manager	X		X
Michele Billett	NWP/CCP TFE Training Coordinator		X	
Gary L. Birge	DOE/CBFO TRU Waste Certification Manager/Physical Scientist	X	X	X
Michael R. Brown	CBFO OQA Director	X	X	X
Tom Carver	DOE/CBFO TSTD Observer	X		
Robert Ceo	Canberra/MCS NDA EA		X	
Dan E. Coffey	TWPC AKPKE/ Characterization Support	X	X	X
Kevin East	WAI Operations Procurement Superintendent		X	X
A.J. Fisher	NWP/CCP Support Services Manager	X		X
Tim Forrester	UT-B ORNL Radiological Team Leader	X		X
Trey Greenwood	NWP/CCP AK Manager	X	X	
Ed Gulbransen	NWP/CCP Manager	X		X
Gilbert Gutierrez	NWP/CCP VE Operator		X	
Anthony Harley	NWP/CCP VE Operator		X	
LaTravia Harmon	NWP QA	X	X	X
Jeff Harrison	NWP/CCP AK Expert		X	
Joe P. Harvill	NWP/CCP Technical Advisor	X	X	X
Irene Joo	NWP/CCP RH Manager	X	X	
Richard Kantrowitz	NWP CCP SPM	X	X	X

PERSONNEL CONTACTED DURING AUDIT A-16-15				
NAME	ORG/TITLE	PRE-AUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Creta Kirkes	NWP/CCP WCO		X	
David Lamance	NWP/CCP RTR Operator		X	
Ronnie Lee	NWP/CCP Waste Characterization Manager			X
Eric Lyles	NWP/CCP RTR Operator		X	
Ricardo Maestas	NMED Observer	X	X	X
Shelly Martinez	NWP/CCP RTR Operator	X	X	X
Derek Matheny	NWP/CCP VEE	X	X	X
Mike McCauley	TWPC WCO		X	
Kevin Meyer	MCS/CCP NDA EA	X	X	
Martin Navarrete	CBFO Sr. QA Specialist	X		X
Brian Oakley	TWPC/ORNL TWMD			X
Fred Oney	NWP/CCP RTR Lead Operator	X	X	
Sheila Percy	NWP CCP Records Manager	X	X	X
Eric Pennala	MCS General Manager	X	X	
Larry Perkins	DOE-HQ EM43 Representative			X
Brandye Pyeatt	NWP QA Analyst		X	
Ron Reeves	NWP/CCP Operations Mgr	X	X	X
Jeremy Robinson	NFT/CCP Lead FGA SME	X	X	X
Steve Schafer	NWP/CCP AK Expert	X	X	
Beverly Schrock	NWP/CCP SPM	X	X	X
Farok Sharif	NWP NTP Project Manager		X	X
Chris Shannon	TWPC QA		X	X
Jeff Shelton	UT-B ORNL TWMD			X
Coleman Smith	NMED Observer	X	X	X
Patrick Smith II	NWP/CCP Records	X		
Carolina Soaterna	NWP/CCP SPM			X
Andrew Stallings	NWP/CCP ORNL Project Mgr	X	X	X

PERSONNEL CONTACTED DURING AUDIT A-16-15				
NAME	ORG/TITLE	PRE-AUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Rob Szozda	Northwind TSM			X
Pat Tilmon	NWP/CCP VPM	X		X
Shawn Treadway	NWP/CCP Container Manager	X	X	X
Daniel Wade	NWP/CCP SPM			X
Ronald Whitson	MCS/CCP NDA/DTC Lead	X	X	
Lisa Yoder	Northwind Training Coordinator		X	
Jewell Yturalde	NWP/CCP Records Clerk III	X		X

SUMMARY TABLE OF AUDIT RESULTS

QA / Technical Elements	Concern Classification				QA Evaluation		Technical Evaluation
	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
Acceptable Knowledge					A	S	E
Reconciliation of DQO's WSPFs					A	S	E
Project Level Data V & V		X			A	S	E
Real-time Radiography					A	S	E
Visual Examination	X				A	S	E
Nondestructive Assay					A	S	E
Dose-to-Curie					A	S	E
Container Mgmt / FGA					A	S	E
QA General C6-1 Training					A	S	E
QA General C6-1 NCRs / Records / Doc Control					A	S	E
QA General C6-1 WWIS / WDS					A	S	E
TOTALS	1	1	0	0	A	S	E

Definitions

E = Effective

S = Satisfactory

I = Indeterminate

M = Marginal

U = Unsatisfactory

CAR = Corrective Action Report

CDA = Corrected During Audit

NE = Not Effective

Obs – Observation

Rec = Recommendation

A = Adequate

NA = Not Adequate

TABLE OF AUDITED DOCUMENTS

NUMBER	PROCEDURE NUMBER	REV	PROCEDURE TITLE
1.	CCP-PO-001	22	CCP Transuranic Waste Characterization Quality Assurance Project Plan
2.	CCP-PO-002	27	CCP Transuranic Waste Certification Plan
3.	CCP-PO-003	13	CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)
4.	CCP-PO-005	27	CCP Conduct of Operations
5.	CCP-PO-027	6	CCP/TRU Waste Processing Center/Oak Ridge National Laboratory Interface Document
6.	CCP-PO-043	0	CCP Interface Document Preparation
7.	CCP-PO-050	1	CCP TRUPACT-III TRU Waste Authorized Methods for Payload Control (CCP-TRUPACT-III TRAMPAC)
8.	CCP-PO-505	3	CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP-RH-TRAMPAC)
9.	CCP-QP-002	39	CCP Training and Qualification Plan
10.	CCP-QP-005	25	CCP TRU Nonconforming Item Reporting and Control
11.	CCP-QP-008	25	CCP Records Management
12.	CCP-QP-010	25	CCP Document Preparation, Approval, and Control
13.	CCP-QP-016	20	CCP Control of Measuring and Testing Equipment
14.	CCP-QP-017	4	CCP Identification and Control of Items
15.	CCP-QP-022	15	CCP Software Quality Assurance Plan
16.	CCP-QP-028	16	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
17.	CCP-TP-001	21	CCP Project Level Data Validation and Verification
18.	CCP-TP-002	26	CCP Reconciliation of DQOs and Reporting Characterization Data
19.	CCP-TP-005	28	CCP Acceptable Knowledge Documentation
20.	CCP-TP-028	9	CCP Radiographic Test Drum and Training Container Construction
21.	CCP-TP-030	34	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
22.	CCP-TP-033	22	CCP Shipping of CH TRU Waste
23.	CCP-TP-046	5	CCP Mobile IQ3 System Calibration Procedure
24.	CCP-TP-047	12	CCP Mobile IQ3 Gamma Scanner Operation
25.	CCP-TP-048	16	CCP ORNL NDA System Data Reviewing, Validating, and Reporting Procedure
26.	CCP-TP-053	15	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
27.	CCP-TP-058	6	CCP NDA Performance Demonstration Program
28.	CCP-TP-068	12	CCP Standardized Container Management
29.	CCP-TP-076	1	CCP Operating the Mobile ISOCS Large Container Counter Using NDA 2000
30.	CCP-TP-077	1	CCP Calibrating the Mobile ISOCS Large Container Counter Using NDA 2000
31.	CCP-TP-082	10	CCP Waste Container Filter Vent Operation
32.	CCP-TP-113	19	CCP Standard Contact-Handled Waste Visual Examination
33.	CCP-TP-164	1	CCP Real-Time Radiography #7 Operating Procedure
34.	CCP-TP-165	3	CCP Real-Time Radiography #6 Operating Procedure
35.	CCP-TP-500	15	CCP Remote-Handled Waste Visual Examination
36.	CCP-TP-504	17	CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste
37.	CCP-TP-506	5	CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report
38.	CCP-TP-507	8	CCP Shipping of Remote-Handled Transuranic Waste
39.	CCP-TP-509	6	CCP Remote-Handled Transuranic Container Tracking
40.	CCP-TP-530	12	CCP RH TRU Waste Certification and WWIS/WDS Data Entry
41.	DOEWIPP 06-3345	9	Waste Isolation Pilot Plant Flammable Gas Analysis
42.	WP 13-QA.03	25	QA Independent Assessment Program
43.	WP 15-GM1002	1	Issues Management Processing of WIPP Forms

List of Processes and Equipment Reviewed

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams
PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT		
N/A	Acceptable Knowledge Procedures – CCP-TP-002, CCP-TP-005, & CCP-TP-506	Solids (S3000) Soils (S4000) Debris (S5000)
N/A	Data Generation and Project Level Validation & Verification (V&V) Procedures – CCP-TP-001, CCP-TP-002, CCP-TP-500	Solids (S3000) Soils (S4000) Debris (S5000)
N/A	WIPP Waste Information System (WWIS) Procedures – CCP-TP-030, CCP-TP-033, & CCP-TP-530	Solids (S3000) Soils (S4000) Debris (S5000)
16VE1	Visual Examination (VE) Procedures – CCP-TP-113	Soils (S4000) Debris (S5000)
16RHVE1	Visual Examination (VE) Procedures – CCP-TP-500	Debris (S5000)
16RR1	Real-Time Radiography Mobile Characterization System (MCS) RTR #6 Procedures – CCP-TP-053 & CCP-TP-165	Solids (S3000) Soils (S4000) Debris (S5000)
16RR2	Real-Time Radiography Mobile Characterization System (MCS) RTR #7 Procedures – CCP-TP-053 & CCP-TP-164 NOTE: BDRs were generated since the previous ORNL audit utilizing RTR #7 until its deactivation on November 17, 2015.	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)
16DTC1	Radiological Characterization (Dose-to-Curie) Procedure - CCP-TP-504	Debris (S5000)
16IQ1	Nondestructive Assay – Canberra Mobile Qualitative and Quantitative Drum Counter with Isotopics (IQ3) Procedures – CCP-TP-046, CCP-TP-047, & CCP-TP-048	Solids (S3000) Soils (S4000) Debris (S5000)
16MILCC2	Nondestructive Assay – Mobile In Situ Object Counting System Large Container Counter (MILCC2) Procedures – CCP-TP-076, CCP-TP-077, CCP-TP-048	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)

List of Processes and Equipment Reviewed

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams
N/A	Quality Assurance Program	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)
NEW PROCESSES OR EQUIPMENT		
NONE		
DEACTIVATED PROCESSES OR EQUIPMENT		
NONE		