

United States Government

Department of Energy

memorandum

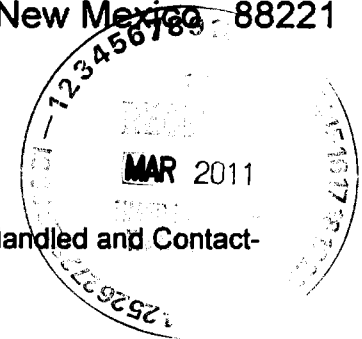
 Carlsbad Field Office
 Carlsbad, New Mexico 88221

DATE: March 9, 2011

 REPLY TO
 ATTN OF: CBFO:OQA:MPN:MAG:11-0479:UFC 2300.00

SUBJECT: Interim Audit Report A-11-08, ORNL/CCP for the Recertification of Remote-Handled and Contact-Handled Transuranic Waste Characterization Activities

TO: William (Bill) McMillan, ORNL



The Carlsbad Field Office (CBFO) conducted the subject audit on February 8-10, 2011. The interim audit report is attached.

The audit team concluded that that Oak Ridge National Laboratory (ORNL) and Central Characterization Project (CCP) technical and quality assurance programs for the activities evaluated were adequate in accordance with the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit, the CBFO *Quality Assurance Program Document (QAPD)*, the WIPP Waste Acceptance Criteria, and the *RH TRU Waste Characterization Program Implementation Plan*. The audit team determined that the applicable ORNL/CCP procedures were satisfactorily implemented and the evaluated processes were effective.

No CBFO Corrective Action Reports (CARs) were issued as a result of the audit. One condition adverse to quality (CAQ), isolated in nature, was corrected during the audit. The audit team identified no Observations during the audit and offered one Recommendation to ORNL/CCP management for consideration.

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

Martin P. Navarrete
 Acting Director, Office of Quality Assurance

Attachment

cc: w/attachment

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

INTERIM AUDIT REPORT

OF THE

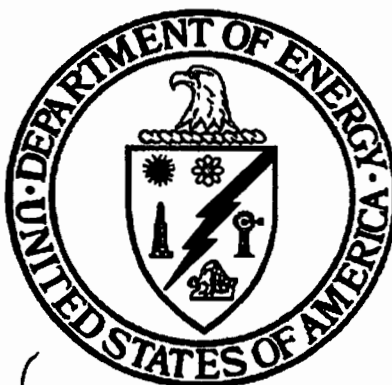
**OAK RIDGE NATIONAL LABORATORY (ORNL)
UTILIZING THE
CENTRAL CHARACTERIZATION PROJECT (CCP)**

OAK RIDGE, TENNESSEE

AUDIT NUMBER A-11-08

FEBRUARY 8 – 10, 2011

**INTERIM AUDIT REPORT OF WASTE CHARACTERIZATION
ACTIVITIES IN ACCORDANCE WITH THE HAZARDOUS WASTE
FACILITY PERMIT**



Prepared by:

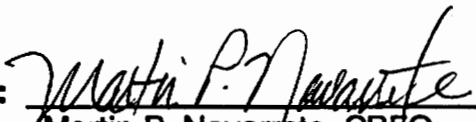


Pofi Martinez, CTAG
Audit Team Leader

Date:

3/9/2011

Approved by:



Martin P. Navarrete, CBFO
Acting Director, Office of Quality Assurance

Date:

3-9-11

1.0 EXECUTIVE SUMMARY

Carlsbad Field Office (CBFO) Recertification Audit A-11-08 was conducted to evaluate the continued adequacy, implementation, and effectiveness of Oak Ridge National Laboratory (ORNL) transuranic (TRU) waste characterization activities performed for remote-handled (RH) and contact-handled (CH) Summary Category Group (SCG) S5000 debris waste and CH SCG S4000 soils waste by the Washington TRU Solutions (WTS) Central Characterization Project (CCP). The audit team also evaluated transportation activities for RH waste. No transportation activities for CH waste were being conducted during the audit. 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 *Waste Acceptance Criteria (WAC) for the Waste Isolation Pilot Plant*, the *RH TRU Waste Characterization Program Implementation Plan (WCPIP)*, and the *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*.

The audit was conducted at the ORNL TRU Waste Processing Center (TWPC) February 8 – 10, 2011. The audit team concluded that the overall adequacy of the ORNL/CCP technical and quality assurance (QA) programs, as applicable to the audited activities, was satisfactory in meeting requirements. The audit team verified that the ORNL/CCP program for characterization, certification, and shipment activities related to SCG S5000 RH and CH debris waste and SCG S4000 CH soils waste continue to be satisfactorily implemented and effective.

The audit team identified three concerns during the audit, which were submitted to CBFO QA for validation. The concerns consisted of one condition adverse to quality, one condition adverse to quality corrected during the audit (CDA), and one Recommendation.

Objective evidence for the condition adverse to quality was provided to the audit team and CBFO QA after completion of the audit. A review of the objective evidence was performed and the audit team verified that the documentation was sufficient to address the concern. Therefore, no corrective action report (CAR) was issued and the proposed condition adverse to quality has been rescinded. The two remaining concerns resulting from this audit are discussed below.

One deficiency isolated in nature and requiring only remedial corrective action was identified and corrected during the audit as discussed in section 6.2. No Observations were identified during the audit, and one Recommendation is being offered for management consideration (see section 7.2).

2.0 SCOPE AND PURPOSE

2.1 Scope

The audit team evaluated the continued adequacy, implementation, and effectiveness of the ORNL/CCP TRU waste characterization activities for SCG S5000 RH and CH debris waste and SCG S4000 CH soils waste. The audit team also evaluated transportation activities for RH waste. The following elements were evaluated.

Quality Assurance

Personnel Qualification and Training
Nonconformances
Records

Technical

Acceptable Knowledge (AK)
Waste Certification (e.g., Waste Stream Profile Form)
Project-Level Data Validation and Verification (V&V)
Headspace Gas (HSG) Sampling
Visual Examination (VE)
Real-time Radiography (RTR)
Nondestructive Assay (NDA)
Radiological Characterization (Dose-to-Curie)
WIPP Waste Information System (WWIS)
Transportation (including Flammable Gas Analysis)
Container Management

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

Hazardous Waste Facility Permit (HWFP) Waste Isolation Pilot Plant EPA No. NM4890139088-TSDF, New Mexico Environment Department

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

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

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

TRUPACT-II Safety Analysis Report: TRUPACT-II Authorized Methods for Payload Control (TRAMPAC), and the TRUPACT-II Certification of Compliance, NRC 71-9281

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

CCP Transuranic Waste Certification Plan, CCP-PO-002

CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC), CCP-PO-505

Related technical and QA implementing procedures

2.2 Purpose

ORNL/CCP Annual Recertification Audit A-11-08 was conducted to assess the level of compliance of waste characterization, certification, and transportation activities for SCG S5000 RH and CH debris waste, and SCG S4000 CH soils waste, as related to the requirements of the HWFP, WAC, QAPD, WCPIP, and TRAMPAC.

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Porf Martinez	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)
Rick Castillo	Auditor, CTAC
Katie Martin	Auditor, CTAC
Prissy Martinez	Auditor, CTAC
Greg Knox	Auditor, CTAC
Cindi Castillo	Auditor, CTAC
Earl Bradford	Auditor, CTAC
Dick Blauvelt	Technical Specialist, CTAC
B. J. Verret	Technical Specialist, CTAC
James Oliver	Technical Specialist, CTAC
Rhett Bradford	Technical Specialist, CTAC
Paul Gomez	Technical Specialist, CTAC
Thomas Putnam	Technical Specialist, CTAC

OBSERVERS

Tim Hall	New Mexico Environment Department (NMED)
Connie Walker	NMED Contractor
Tom Morgan	National TRU Program
Randall Allen	CTAC

4.0 AUDIT PARTICIPANTS

The individuals who were contacted during the audit are identified in Attachment 1. A pre-audit meeting was held in the conference room in Trailer 7880JJ at the TWPC in Oak Ridge, TN, on February 8, 2011. Daily meetings were held with ORNL/CCP management and staff to discuss the previous day's issues, audit progress, and potential deficiencies. The audit was concluded with a post-audit meeting held in the

conference room in Trailer 7880JJ at the TWPC in Oak Ridge, TN, on February 10, 2011.

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 ability of ORNL/CCP to characterize RH and CH waste from SCG S5000 debris waste and SCG S4000 CH soils waste to the requirements specified in the WIPP Waste Analysis Plan (WAP), WIPP WAC, QAPD, RH TRU WCP/IP, and the TRAMPAC. The characterization methods assessed were AK, HSG Sampling, VE, RTR, NDA, and Dose-to-Curie (DTC). Other processes evaluated were generation and project-level data V&V, WWIS data entry, and transportation activities including flammable gas analysis. Data quality objective (DQO) reconciliation and the preparation of Waste Stream Profile Forms (WSPFs) were also evaluated.

The audit team concluded that overall, the applicable ORNL/CCP TRU waste characterization activities for RH and CH SCG S5000 debris waste and CH SCG S4000 soils waste, as described in the implementing procedures, were adequate, satisfactorily implemented, and effective.

5.2 Quality Assurance Activities

5.2.1 Personnel Qualification and Training

The audit team conducted interviews with responsible personnel and reviewed implementing Procedure CCP-QP-002, Rev. 30, *CCP Training and Qualification Plan*, to determine the degree to which the procedure adequately addresses upper-tier requirements. Personnel training records associated with VE, RTR, NDA, DTC, HSG Sampling, Transportation and Packaging Operations, AK, and Site Project Management were examined to verify implementation of associated requirements and to verify that personnel performing 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, test drums and training container documentation, and eye exams.

No concerns were identified during the audit. The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for personnel training and qualification are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.2.2 Nonconformances

The audit team interviewed the resident quality assurance engineer and then randomly selected a sampling of nonconformance reports (NCRs) to confirm that deficiencies are being appropriately documented and tracked through resolution as required. The following NCRs were reviewed: NCR-ORNL-0100-10, NCR-ORNL-0119-10, NCR-ORNL-0132-10, NCR-ORNL-0138-10, NCR-ORNL-0519-10, NCR-ORNL-0030-11, NCR-ORNL-0301-11, NCR-ORNL-0500-11, NCR-RHORNL-0503-10, and NCR-RHORNL-0501-11. Two NCRs (NCR-ORNL-0509-10 and NCR-RHORNL-0525-10) documented non-administrative deficiencies first identified at the site project manager (SPM) level requiring the reporting of the NCRs to the Permittees within seven days, as required. The audit team verified notifications to CBFO were made within the required time frame. All NCRs were verified as being managed and tracked in the CCP data center and on the CCP NCR Logs.

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

5.2.3 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 procedures reviewed included CCP-PO-001, Rev. 18, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*; CCP-QP-008, Rev. 17, *CCP Records Management*; and CCP-QP-028, Rev. 12, *CCP Records Filing, Inventory, Scheduling, and Dispositioning*. Control of QA records was verified through review of the CH RIDS dated 6/7/10, RH Records Inventory Disposition Schedule (RIDS) dated 6/7/10, and associated characterization process batch data reports (BDRs).

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

5.2.4 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. 27, *CCP CH TRU Waste Certification and WWIS/WDS Data Entry*, and CCP-TP-530, Rev. 9, *CCP RH TRU Waste Certification and WWIS/WDS Data Entry*.

The audit team evaluated the implementation of the WWIS/WDS data entry procedures for manual data entry and electronic data transfer into the WWIS/WDS software application. The audit team evaluated implementation of the CCP TRU Waste Certification and WWIS/WDS data entry procedure for data entry using the WWIS/WDS data entry spreadsheet. The evaluation included data population of the spreadsheet, review of data entry by a Waste Certification Assistant (WCA), and waste certification by the Waste Certification Official (WCO). Record reviews included container information summaries, pages from BDRs showing analyses values, WWIS/WDS Container Data Reports, and submittals for WWIS review/approval.

The audit team reviewed two WWIS/WDS waste certification packages for RH waste. The first package reviewed was for canister OR0061, which had three internal containers (ORRH00414, ORRH00415, and ORRH00425). The second package reviewed was for canister OR0062, which also included three containers (ORRH00424, ORRH00426, and ORRH00427). Two waste certification packages (X10C0012921A and X10C9310049A) for CH waste from Waste Stream OR-REDC-CH-HET were also reviewed.

No concerns were identified during the audit. The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for WWIS/WDS activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.2.5 Transportation

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-030, Rev. 28, *CCP CH TRU Waste Certification and WWIS/WDS Data Entry*, CCP-TP-033, Rev. 18, *CCP Shipping of CH TRU Waste*, and CCP-TP-507, Rev. 7, *CCP Shipping of Remote-Handled Transuranic Waste*, relative to transportation activities, to determine the degree to which procedures adequately address upper-tier requirements.

The audit team verified the procedures ensure accurate identification of container-specific information and the accurate completion of the U.S. Environmental Protection Agency (EPA) Uniform Hazardous Waste Shipping Manifests. The audit team reviewed two RH shipping data packages and verified that the data identified in the C6-1 checklist had been properly included and verified.

The audit team observed the receipt of an empty RH TRU 72B shipping container and evaluated the shipping container maintenance activities, shipping container integrity, and payload preparation operations for shipment ORR 11001. In addition, RH payload number OR0066 was observed being loaded into shipping cask 00-01 and onto trailer RH004 for ORNL shipment ORR 11001.

The audit team examined shipping documentation, material and testing equipment calibration was verified, and personnel training and qualification were assessed. WCO and Transportation Certification Official (TCO) activities were also evaluated.

The audit team examined flammable gas sampling and analysis BDRs OR10FG4119, OR10FG4127, OR10FG4138, and OR10FG4142. A walkthrough of the sampling area was conducted on February 9, 2011, which included an explanation of the sampling processes for both CH and RH waste drums. The audit team conducted interviews with flammable gas samplers on drum sampling; performed inspections of on-site analysis of flammable gas samples; verified acceptability of gas chromatograph/mass spectrometer (GC/MS) calibration and minimum detection limit studies; verified analytical standard traceability and expiration date acceptability; conducted inspections of sampling syringes and needle assemblies produced onsite; confirmed calculation of drum age criteria (DAC), and verified Sampling and Analytical flammable gas BDR preparation was complete.

No concerns were identified during the audit. The procedures reviewed and objective evidence assembled concluded that the applicable requirements for transportation including flammable gas sampling and related documentation are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.2.6 Container Management

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-068, Rev. 8, *CCP Standardized Container Management*, and CCP-TP-509, Rev. 2, *CCP Remote-Handled Transuranic Container Tracking*, relative to container management activities, to determine the degree to which procedures adequately address upper-tier requirements. Container management of CH and RH containers processed by ORNL/CCP was verified by reviewing the data-generation level container management database and by field observations of containers in characterization areas.

No concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for container management 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 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.

5.3.1 Acceptable Knowledge

The audit team reviewed the AK record for both CH and RH S5000 TRU debris waste streams and a CH S4000 TRU soils/gravel waste stream as part of the recertification audit for ORNL TRU waste. The waste streams for which the AK record was examined included RH debris stream OR-REDC-RH-HET from the ORNL Radiochemical Engineering Development Center, CH debris waste stream OR-CHEM-CH-HET from ORNL Analytical Chemistry Laboratory Operations in Bldg 2026, and CH soils/gravel stream OR-NFS-CH-SOIL from Nuclear Fuels Services being stored at ORNL. This recertification audit was based upon the requirements contained in the current WIPP Resource Conservation and Recovery Act (RCRA) permit and described in the WAP as well as the requirements of the RH TRU WCPIP. The audit team reviewed documentation to support both sets of requirements, completing WCPIP checklists and WAP C6-3 and C6-1 checklists, and compiling and reviewing objective evidence to demonstrate compliance.

The objective evidence reviewed and compiled included the AK Summary Reports CCP-AK-ORNL-500, Rev. 2, for waste stream OR-REDC-RH-HET; CCP-AK-ORNL-005, Rev. 1, for waste stream OR-CHEM-CH-HET; and CCP-AK-ORNL-001, Rev. 6, for waste stream OR-NFS-CH-SOIL; numerous AK source documents; WAP-compliant WSPFs and attachments; and BDRs for HSG, solids sampling and analysis, VE, RTR, NDA, and DTC waste characterization processes. 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 a WCPIP WSPF, a Characterization Reconciliation Report 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 audit team 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, the audit team reviewed for each waste stream 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 Packaging form, 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 during characterization activities, NCRs dealing with prohibited items, AK Accuracy reports, and the most recent internal surveillance reports were also collected and examined along with screenshots from the project tracking system (PTS) database. Requisite training records were reviewed for AK experts (AKEs) and SPMs to ensure appropriate training requirements were met.

The WAP-required container traceability exercise was conducted for a total of six waste containers from the three waste streams, including individual container waste input

forms when applicable, along with AK Characterization checklists and data reconciling characterization testing.

The audit team recommends that changes be made to the text of the AK Summary Reports for the purposes of clarification and consistency, and to provide added focus on recent changes in WAP requirements. Freeze files of these changes were prepared by the AKEs and reviewed by the audit team. The freeze files were found to be acceptable with the understanding that they be incorporated in the next AK Summary revisions. The Recommendation also addressed minor changes to AK attachments 5 and 6 for clarification and consistency (see section 7.2 for details).

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for Acceptable Knowledge are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.3.2 Project-Level Data Validation and Verification

The audit team conducted interviews with responsible personnel and reviewed implementing Procedures CCP-TP-001, Rev. 19, *CCP Project Level Data Validation and Verification*; CCP-TP-003, Rev. 18, *CCP Data Analysis for S3000, S4000, and S5000 Characterization*; and CCP-TP-162, Rev. 1, *CCP Random Selection of Containers for Solids and Headspace Gas Sampling and Analysis*, relative to project-level V&V activities, to determine the degree to which procedures adequately address upper-tier requirements.

The audit team reviewed objective evidence to ensure project-level V&V activities were adequately performed to support waste characterization activities. BDRs were evaluated based on project-level V&V requirements for CH and RH S5000 debris waste and CH S4000 soils waste. Random sample selection documentation, WSPFs, and Characterization Information Summaries for waste streams OR-CHEM-CH-HET, OR-NFS-CH-SOIL, and OR-REDC-RH-HET were evaluated. Although no S4000 soils waste has been characterized since Audit A-10-08, the audit team re-examined CH S4000 soils BDRs to verify the project-level review process for S4000 soils waste is still adequate. The project-level data V&V process was evaluated by reviewing the following BDRs.

Radiography

OR-RTR6-0305
OR-RTR6-0317
OR-RTR6-0337
OR-RTR6-0347
OR-RTR6-0361

Visual Examination

ORVECH0021
ORVECH0031
ORVECH0047
RHORVE100143

Solids and Soils/Gravel from A-10-08

SSC09-00002	ALD09004V	ALD09004S
ALD09004N	ALD09003M	

Headspace Gas

ORHSGS100002	ECL10004G	ECL10004M
ORHSGS100003	ECL10005G	ECL10005M
ORHSGS100009	ECL10023G	ECL10023M
ORHSGS100011	ECL10035G	ECL10035M
ORHSGS100014	ECL10044G	ECL10044M

The audit team found the project-level RTR, VE, soils/gravel sampling and analysis, and HSG sampling and analysis review of the BDRs to be acceptable.

One concern was identified during the audit. The CCP SPM HSG Summa Sampling Project Level Validation Checklist and Summary (CCP-TP-001, Att. 10) question 25, in part, asks the SPM to verify that a field reference sample has been collected as required. The following is an example of what is recorded in the comment section to question 25: "The collection of FRS samples is no longer necessary as the required field reference standard demonstrates accuracy (70-130%). See CP:08:00410, dated 09/12/08 for details." Other examples reference "FRS Memo: 08:01267".

During the audit, memorandum CP:08:00410 was provided to the audit team for review. Memorandum 08:01267 was not available to the audit team for review, thus the concern. Memorandum 08:01267 was located and provided to the audit team on February 14, 2011, for review. Both memoranda contained information satisfying CCP SPM HSG Summa Sampling Project Level Validation Checklist and Summary (CCP-TP-001, Att. 10) question 25. CCP management personnel explained that Memorandum 08:01267 was misfiled. Both memoranda will be included as objective evidence. As a result, concern number 3 has been withdrawn.

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for the project-level data V&V process are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.3.3 Headspace Gas Sampling

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-082, Rev. 7, *CCP Preparing and Handling Waste*

Containers; CCP-TP-093, Rev. 14, CCP Sampling of TRU Waste Containers; and CCP-TP-106, Rev. 7, CCP Headspace Gas Sampling Batch Data Report Preparation, relative to HSG sampling activities, to determine the degree to which procedures adequately address upper-tier requirements. The audit team assessed the ability of ORNL/CCP to characterize CH and RH waste from SCG S5000 (debris) using HSG sampling. ORNL/CCP operations for HSG sampling is performed using SUMMA[®] canisters. HSG sample analyses are performed by the Idaho National Laboratory (INL) Environmental Chemistry Laboratory (ECL) and were evaluated under a separate audit.

A walkthrough and examination of the sampling area was conducted on February 9, 2011. Interviews with sampling personnel included an explanation of the sampling processes for both CH and RH waste containers and packaging of samples for shipment to the off-site laboratory for analysis. The audit team observed the inspection of SUMMA[®] canisters and needle assemblies (provided by the INL ECL), calculation of DAC, and temperature equilibration activities performed by ORNL/CCP.

HSG sample collection was not being performed at the time of the audit. The following BDRs were examined:

ORHSGS100002
ORHSGS100003
ORHSGS100006
ORHSGS100009

Records of HSG sampling personnel including training and qualification cards were examined. The audit team determined that HSG sampling personnel were appropriately qualified as required.

No concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for Headspace Gas Sampling are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.3.4 Real-time Radiography

The audit team evaluated the adequacy, implementation, and effectiveness of ORNL/CCP characterization and certification of CH SCG S4000 soils waste and SCG S5000 debris waste using the RTR characterization process.

The audit team evaluated the following RTR-related CCP procedures: CCP-TP-053, Rev. 7, *CCP Standard Real-Time Radiography (RTR) Inspection Procedure*; CCP-TP-028, Rev. 3, *CCP Radiographic Test and Training Drum Requirements*, and CCP-TP-165, Rev. 1, *CCP Real-Time Radiography #6 Operating Procedure*. The review determined that the procedures adequately address upper-tier requirements.

The audit team examined the following CH RTR BDRs

OR-RTR6-0290
OR-RTR6-0303
OR-RTR6-0326
OR-RTR6-0305
OR-RTR6-0317
OR-RTR6-0337
OR-RTR6-0347
OR-RTR6-0354

The audit team evaluated evidence of RTR operator required capability demonstrations for three RTR operators. Records of RTR operator training and qualification, including audio/video media of capability demonstrations, were examined and the audit team determined that the RTR operators were appropriately qualified as required.

The audit team witnessed the RTR characterization process for container X10CSATNO2697G using the RTR6 Unit. The RTR Unit contained the required elements. 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 NDE-ORNL-005, 2011, ORNL-TWPC-RTR6, 7880J, and verified logbook entries were reviewed by the vendor project manager (VPM).

No concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for Real-time Radiography are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.3.5 Visual Examination

The audit team evaluated the adequacy, implementation, and effectiveness of ORNL/CCP VE processes for characterizing CH SCGs S4000 soils/gravel and S5000 debris waste. The audit team also evaluated the adequacy, implementation, and effectiveness of ORNL/CCP VE processes for characterizing RH SCG S5000 debris waste.

A review of ORNL/CCP procedures CCP-TP-113, Rev. 15, *CCP Standard Contact-Handled Waste Visual Examination*; CCP-TP-163, Rev. 2, *CCP Evaluation of Waste Packaging Records for Visual Examination of Records*; and CCP-TP-500, Rev.10, *CCP Remote-Handled Waste Visual Examination*, to determine their adequacy in addressing upper-tier requirements. The review indicated that the procedures adequately address requirements.

ORNL/CCP uses the two-operator method when performing VE characterization. VE is performed by two qualified operators as the waste is visually examined and placed into 55-gallon drums. The audit team examined the following CH and RH VE BDRs to verify

implementation and compliance with the requirements for documenting VE activities, as stipulated in CCP-TP-500 and CCP-TP-113.

CH

ORVECH0011
ORVECH0013
ORVECH0015
ORVECH0023
ORVECH0030
ORVECH0041
ORVECH0052

RH

RHORVE100041
RHORVE100056
RHORVE100091
RHORVE100119
RHORVE100144

During the review of these BDRs, the audit team identified one concern. In BDR ORVECH0013, Attachment 2, CCP Waste Visual Examination Data Form, for Waste Container ID: X10C0102698C1, one of the RTR operators signed and dated the BDR with the wrong year (2009 vs. 2010). This concern was corrected during the audit and was submitted to records. The audit team verified the submittal to records and received a copy of the corrected form during the audit (see section 6.2, CDA 1).

The audit team examined training records and qualification cards for seven VE operators and concluded the required training was adequate and qualifications were current. The audit team also confirmed the appointment of the ORNL/CCP VE Experts (VEEs) as required.

No concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for Visual Examination are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.3.5 Nondestructive Assay

The audit team assessed the adequacy, implementation, and effectiveness of the NDA systems used at ORNL/CCP to characterize waste from SCG S4000 (soils) and S5000 (debris) on the Drum Waste Assay System (DWAS) made up of an Imaging Passive/Active Neutron (IPAN) counter coupled with a Segmented Gamma Scanner (SGS), and waste from SCGs S4000 and S5000 on the Mobile Qualitative and Quantitative Drum Counter with Isotopics (IQ3). CBFO evaluated the DWAS IPAN/SGS in January 2010 as part of Audit A-10-08. The DWAS ceased operation in early 2010

and the last BDR was completed in April 2010. DWAS BDRs generated after April 2010 were not evaluated during this audit.

DWAS

The DWAS could quantify the activities and masses of radionuclides in the waste by utilizing either or both of its measurement capabilities. The IPAN quantifies the activities and masses of radionuclides in the waste by combining either a count of the spontaneous fission rate, measured in the passive mode, or the induced fission rate, measured in the active mode, with measured or declared radionuclide ratios. The spontaneous fission rate from plutonium-240 (Pu-240), and other spontaneously fissioning radionuclides, is measured by an array of helium-3 (He-3) proportional tubes surrounded by a neutron moderator in the passive mode. In the active mode, a neutron generator is used to induce fission in plutonium-239 (Pu-239), and other fissile radionuclides. The neutron emitted during fission, are detected by the above-mentioned array of He-3 proportional tubes. The SGS contains one collimated high-purity germanium (HPGe) coaxial detector and one europium-152 (Eu-152) transmission source that are translated vertically in a line parallel to the axis of the drum during the assay. A low-energy germanium (LEGe) detector is used to determine the isotopic ratios of plutonium and/or uranium using Multi-Group Analysis (MGA) or Fixed-Energy, Response Function Analysis with Multiple Efficiency (FRAM).

IQ3

The IQ3 quantifies the activities and masses of radionuclides in the waste through the detection of gamma rays emitted by these radionuclides. The IQ3 system contains three HPGe coaxial detectors for wide energy range detection and three LEGe detectors used along with MGA to determine the isotopic ratios of plutonium and/or uranium. When used in the Segmented Analysis mode, the system uses three barium-133 (Ba-133) transmission sources to correct for the attenuation of photons by the waste matrix, while in the Summed Spectrum mode, multi-density calibration curves are used.

Based on a review of the current revisions of CCP procedures provided prior to the audit, checklists were prepared and used to evaluate the following:

- Continued operability and condition of the DWAS (during its use in the first few months of 2010) and the IQ3 since Audit A-10-08
- System stability as evidenced by the implementation and effectiveness of quality control measurements, calibration verifications, and weekly interfering matrix checks
- Successful calibration verifications and calibration confirmation, as required
- Applicability of each system's calibration and operational range to the waste assayed since Audit A-10-08

- Successful participation in the CBFO-sponsored Nondestructive Assay Performance Demonstration Program (NDA PDP) Cycle 17A
- Completed BDRs to ensure data are reported and reviewed as required
- Data storage and retrievability

The IQ3 has received conditional approval from CBFO for PDP Cycle 17A.

The following DWAS BDRs were reviewed:

OR-DWAS-0369
OR-DWAS-0378
OR-DWAS-0411
OR-DWAS-0394

The following IQ3 BDRs were reviewed:

OR-IQ3-0125
OR-IQ3-0101
OR-IQ3-0074
OR-IQ3-0053
OR-IQ3-0037
OR-IQ3-0073

The audit team interviewed NDA personnel, observed equipment and practices, and examined electronic and paper copies of reports and records. Records of NDA operators including training and qualification cards were examined. The audit team determined that NDA operators were appropriately qualified as required.

No concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for Nondestructive Assay are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.3.7 Radiological Characterization (Dose-to-Curie)

The audit team assessed the adequacy, implementation, and effectiveness of the DTC methodology used by ORNL/CCP to characterize RH S5000 debris waste stream OR-REDC-RH-HET. Since Audit A-10-08, approximately fifty-nine 55-gallon drums of RH TRU debris waste have been measured and associated BDRs have been completed.

The audit team interviewed DTC personnel and examined electronic and paper copies of reports, BDRs, operational logs, and records.

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-10-08. 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).

Based on a review of the current revisions of CCP procedures and data provided prior to and during the audit, a checklist was prepared and used to evaluate the following:

- Continued use of average radionuclide ratios previously developed through examination of swipe sample data and corroborated by the NDA of CH waste derived from the original RH waste stream
- Continued use of the previously approved relationship between the measured dose or exposure rate and the activity of Cs-137
- Measurement of the external dose or exposure rate of the waste containers
- Calculation of the radionuclide activities and other derived radiological quantities and associated uncertainties
- Results of applying the DTC methodology to characterize waste as evidenced in BDRs ORRHDTTC10021, ORRHDTTC10028, ORRHDTTC10044, ORRHDTTC10046, ORRHDTTC10069, and ORRHDTTC10077
- Determination of the number of containers examined, completed BDRs, and BDRs that had been through project-level review that were generated prior to this audit
- Completed BDRs to ensure data are reported and reviewed as required
- Data storage and retrievability
- Personnel qualification and training

The source of the RH waste at the ORNL Radiochemical Engineering Development Center (REDC) hot cells that were presented as part of this audit was the decontamination of the cells following years of efforts to produce curium and trans-curium elements. Based on sample data collected for 63 samples, scaling factors were developed to establish ratios of the isotopes of interest to Cs-137. An understanding of the similarity of the chemical processes used during various time periods was used to develop a mathematical relationship to relate the isotopic quantities between the various time periods of waste generation. CH waste that was separated from the original RH waste stream was subjected to NDA and the results used to confirm the radionuclide ratios developed by the mathematical relationship.

Measurements of the external dose or exposure rates of the waste are made in a hot cell in building 7880 Room 231 (DTC Hotcell/Alcove). The exposure rate, attributed

entirely to Cs-137, is measured four times at a distance of 1.0 meter from the 55-gallon waste containers. A Thermo Scientific Model FHZ-612 (XC-0672 or 3) survey meter is used to measure the dose rate. Each container is rotated 90 degrees successively between each of the four measurements. The average measured dose or exposure rate for each 55-gallon waste container and associated scaling factors are used to estimate the activity of individual radionuclides and other derived radiological quantities and associated uncertainties.

Records of Radiological Characterization (DTC) personnel including training and qualification cards were examined. The audit team determined that Radiological Characterization (DTC) personnel were appropriately qualified as required.

No concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for Radiological Characterization (DTC) are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

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) 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.

No CARs were issued during this audit.

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 corrected during the audit. 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 according to the definition below.

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

One CDA was identified and corrected during Audit A-11-08.

CDA 1

An RTR operator recorded an incorrect date on CCP Waste Visual Examination Data Form, Attachment 2, for Waste Container ID: X10C0102698C1 in BDR ORVECH0013. The RTR operator making the entry inadvertently dated his signature 3-3-09, rather than the correct date of 3-3-10. The date was corrected and submitted to records, and the corrected form was placed in the BDR. The audit team verified actions were completed prior to the end of the audit.

7.0 SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS

During the audit, the audit team may identify potential problems or suggestions for improvement that should be communicated to the audited organization. The audit team member, in conjunction with the ATL, evaluates these conditions and classifies them as Observations or Recommendations using the following definitions.

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

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.

7.1 Observations

No Observations were identified during this audit.

7.2 Recommendations

One Recommendation was presented to ORNL/CCP management during this audit.

Recommendation 1

It is recommended that the following changes be made to AK documentation for the three waste streams examined during the ORNL recertification audit.

1. AK Summary CCP-AK-ORNL-500, Rev. 2, S. 5.4.2.2, p. 39: change "DR004" to "D004"
2. AK Summary CCP-AK-ORNL-005, Rev. 1, S. 4.4.2, p. 17: clarify the disposition of secondary wastes
3. AK Summary CCP-AK-ORNL-005, Rev. 1, Table 5-4, p. 53: change the EPA Hazardous Waste Number for trichlorofluoromethane from "NA" to "F002"
4. AK Summary CCP-AK-ORNL-005, Rev. 1, S. 5.4.3.1, p. 56: include trichlorofluoromethane in the discussion of F002 constituents that were identified in tank waste
5. AK Attachment 5 for waste stream OR-NFS-CH-SOIL: change suspected present for barium from "N" to "Y"
6. AK Attachment 5 for waste stream OR-REDC-RH-HET: remove cyclohexane from the list of potentially flammable constituents
7. AK Attachment 5 for waste stream OR-CHEM-CH-HET: change "Y" to "N" under suspected present for ethyl ether
8. Reconcile the number of containers for waste stream OR-CHEM-CH-HET between the AK Summary and AK Attachment 8 container list
9. AK Summary CCP-AK-ORNL-001, Rev. 6, S. 6.4.1.1, p. 45: add language that provides additional clarification to the circumstances that resulted in the movement of these drums
10. Ensure freeze files are prepared for all three AK Summaries reviewed during this audit to address the action items identified in the C. Walker memo, "Compliance Tracking Table Rev. 2"

8.0 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 THE AUDIT

PERSONNEL CONTACTED DURING AUDIT A-11-08				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Sherry Auckland	CCP/LANL TRU Waste Sciences Manager		X	
Michele Billett	CCP Training Coordinator		X	
Larry Bolden	CCP/WTS VE Expert	X	X	X
John Brookshire	CCP/WTS VE Operator			
Val Cannon	CCP/WTS QA Manager		X	X
Norma Castaneda	CBFO/NTP CH Certification Manager			X
Bob Ceo	CCP/MCS NDA Expert Analyst (EA)		X	
Don Coffey	TWPC Support			X
Tyson Christensen	CCP RTR Operator		X	
Neil Dickes	CCP/WTS NDA Nuclear Engineer	X	X	
Steve Ewing	MCS RTR Operator	X	X	
A.J. Fisher	CCP/WTS Training Manager		X	X
Thomas Gatcliffe	CCP/WTS SPM		X	
Chris Gomez	CCP/WTS QA Engineer		X	X
Tim Hall	NMED Observer	X	X	X
LaTravia Harmon	CCP/NFT HSG Operator	X	X	X
Jeff Harrison	CCP/Tech Specs AKE		X	X
Joe P. Harvill	CCP/WTS NDA Support	X	X	
Fred Heacker	WAI Operations Waste Manager	X		X
Kristoffer Henderson	CCP/NFT HSG Operator	X	X	X
Martin Jones	Energx Floor Supervisor		X	
Richard Kantrowitz	CCP/WTS SPM	X	X	X

PERSONNEL CONTACTED DURING AUDIT A-11-08				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Creta Kirkes	CCP/WTS WWIS WCO		X	
Rita Littleton	CCP/WTS VE Operator		X	
Ryan Martin	CCP Training/Records Analyst		X	
Bill McMillan	DOE/ORO TRU Project Manager			X
Kevin Meyer	CCP/MCS EA	X	X	
Dennis Miehlis	CBFO Acting QA Manager			X
Jeri Miles	CCP/WTS Container Manager	X	X	
Shane Miles	VPM	X		X
Dean Mooney	CCP/WTS Quality Assurance Engineer	X	X	X
Jim Moore	DOE/ORO Contract/Technical Support	X		X
Tom Morgan	CBFO/NTP Project Management Advisor	X		X
Wade C. Morris	CCP/MCS NDA Lead Operator	X	X	
Martin Navarrete	CBFO QA Representative	X		X
Laura Nelson	CCP/WTS RH SPM	X	X	X
Mark Percy	CCP/WTS SPM	X	X	X
Sheila Percy	CCP/WTS Records Manager		X	X
Kevin Peters	CCP/Tech Specs AK Expert		X	X
Helen Pettus	CCP/WTS WCA		X	
D. K. Ploetz	CCP/WTS Manager			X
Larry Porter	CCP SPM		X	
Irene Quintana	CCP/WTS RH Site Project Manager	X	X	X
Mike Ramirez	CCP/WTS WCO		X	
Steve Schafer	CCP/Tech Specs AK Expert		X	X
Michael L. Sensibaugh	CCP/WTS Project Manager	X	X	X

PERSONNEL CONTACTED DURING AUDIT A-11-08

NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Beverly Schrock	CCP/WTS SPM	X	X	X
Lauren Smith	CCP/WTS Records Analyst	X		
Ty Snipes	Energx/ Manipulator Operator		X	
J. R. Stroble	DOE/CBFO RH Certification Manager			X
Pat Tilmon	CCP/WTS Project Manager	X	X	X
Eric Townsend	CCP VE Operator		X	
Joe Wachter	Canberra/MCS EA	X		X
Jim Walker	CCP Project Control	X	X	
Lisa Watson	LANL AKE		X	X
John West	CCP/MCS EA	X	X	
Wade Weyerman	CCP/LANL TCO	X	X	
Ronald Whitson	CCP/MCS RH DTC Lead Operator	X	X	

SUMMARY TABLE OF AUDIT RESULTS

Documents	Concern Classification					QA Evaluation		Technical
	CARs	CDAs	Obs	Rec	EP	Adequacy	Implementation	Effectiveness
Activity								
Acceptable Knowledge				1		A	S	E
Reconciliation of DQO's WSPFs						A	S	E
Visual Examination		1				A	S	E
Dose-to-Curie						A	S	E
Project Level Data V & V						A	S	E
QA General B6-1 NCRs / WWIS / Transportation						A	S	E
QA General B6-1 Records / Training						A	S	E
Headspace Gas Sampling						A	S	E
Container Management						A	S	E
Flammable Gas Analysis						A	S	E
Real-time Radiography						A	S	E
Nondestructive Assay						A	S	E
Transportation						A	S	E
TOTALS	0	1	0	1	0	A	S	E

Definitions

E = Effective

S = Satisfactory

I = Indeterminate

M = Marginal

U = Unsatisfactory

CAR = Corrective Action Report

CDA = Corrected During Audit

EP = Exemplary Practice

NE = Not Effective

Obs -- Observation

Rec = Recommendation

A = Adequate

NA = Not Adequate

TABLE OF AUDITED DOCUMENTS

No.	Procedure Number	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-016	4	CCP Gas Generation Testing Program Quality Assurance Project Plan
5.	CCP-PO-505	0	CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)
6.	CCP-QP-002	30	CCP Training and Qualification Plan
7.	CCP-QP-005	19	CCP TRU Nonconforming Item Reporting and Control
8.	CCP-QP-008	17	CCP Records Management
9.	CCP-QP-011	10	CCP Laboratory Logbooks
10.	CCP-QP-016	15	CCP Control of Measuring and Testing Equipment
11.	CCP-QP-021	7	CCP surveillance Program
12.	CCP-QP-023	3	CCP Handling, Storage and Shipping
13.	CCP-QP-028	12	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
14.	CCP-QP-030	8	CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel
15.	CCP-TP-001	19	CCP Project Level Data Validation and Verification
16.	CCP-TP-002	23	CCP Reconciliation of DQOs and Reporting Characterization Data
17.	CCP-TP-003	18	CCP Data Analysis for S3000, S4000, and S5000 Characterization
18.	CCP-TP-005	21	CCP Acceptable Knowledge Documentation
19.	CCP-TP-028	6	CCP Radiographic Test and Training Drum Requirements
20.	CCP-TP-030	28	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
21.	CCP-TP-033	18	CCP Shipping of CH TRU Waste
22.	CCP-TP-046	3	CCP Mobile IQ3 System Calibration Procedure
23.	CCP-TP-047	10	CCP Mobile IQ3 Gamma Scanner Operation
24.	CCP-TP-048	14	CCP Mobile IQ3 System Data Reviewing, Validating, and Reporting Procedure
25.	CCP-TP-053	9	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
26.	CCP-TP-055	4	CCP Varian Porta-Test Leak Detector Operations
27.	CCP-TP-068	8	CCP Standardized Container Management
28.	CCP-TP-082	7	CCP Preparing and Handling Waste Containers for Headspace Gas Sampling
29.	CCP-TP-083	6	CCP Gas Generation Testing
30.	CCP-TP-086	15	CCP CH Packaging Payload Assembly
31.	CCP-TP-093	14	CCP Sampling of TRU Waste Containers
32.	CCP-TP-106	7	CCP Headspace Gas Sampling Batch Data Report Preparation
33.	CCP-TP-113	15	CCP Standard Contact-Handled Waste Visual Examination
34.	CCP-TP-138	1	CCP Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure
35.	CCP-TP-162	1	CCP Random Selection of Containers for Solids and Headspace Gas Sampling and Analysis
36.	CCP-TP-165	1	CCP Real-Time Radiography #6 Operating Procedure
37.	CCP-TP-166	3	CCP Drum Waste Assay System Imaging Passive/Active Neutron Operations
38.	CCP-TP-167	1	CCP Drum Waste Assay System Imaging Passive/Active Neutron Calibration
39.	CCP-TP-168	3	CCP Drum Waste Assay System Imaging Passive/Active Neutron/Segmented Gamma Scanner Data Generation Level Validation
40.	CCP-TP-169	2	CCP Operating the Mobile Segmented Gamma Scanner
41.	CCP-TP-172	0	CCP Calibrating the Mobile Segmented Gamma Scanner
42.	CCP-TP-500	10	CCP RH Waste Visual Examination
43.	CCP-TP-504	10	CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste
44.	CCP-TP-506	2	CCP Preparation of the Remote Handled Transuranic Waste Acceptable Knowledge Characterization reconciliation Report
45.	CCP-TP-507	7	CCP Shipping of Remote-Handled Transuranic Waste
46.	CCP-TP-509	2	CCP Remote-Handled Transuranic Container Tracking
47.	CCP-TP-530	9	CCP RH TRU Waste Certification and WWIS Data Entry
48.	WP 13-QA.03	17	Quality Assurance Independent Assessment Program
49.	CCP-PO-001	19	CCP Transuranic Waste Characterization Quality Assurance Project Plan

List of Processes and Equipment Reviewed

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams	Currently Approved by NMED	Currently Approved by EPA
PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT				
N/A	Acceptable Knowledge Procedures – CCP-TP-002, CCP-TP-003, CCP-TP-005, & CCP-TP-506	Soils (S4000) Debris (S5000)	YES	YES
N/A	Data Generation and Project Level Validation & Verification (V&V) Procedure – CCP-TP-001	Soils (S4000) Debris (S5000)	YES	YES
N/A	WIPP Waste Information System (WWIS) Procedures – CCP-TP-030, CCP-TP-033, & CCP-TP-530	Soils (S4000) Debris (S5000)	YES	YES
16RHVE1	Visual Examination (VE) Procedures – CCP-TP-163 and CCP-TP-500	Debris (S5000)	YES	YES
16RR1	Real-Time Radiography Mobile Characterization System (MCS) RTR #6 Procedures – CCP-TP-053 & CCP-TP-165	Soils (S4000) Debris (S5000)	YES	YES
16DTC1	Radiological characterization (Dose-to-Curie) Procedure - CCP-TP-504	Debris (S5000)	N/A	YES
N/A	Headspace Gas Sampling Procedures – CCP-TP-082 & CCP-TP-093	Debris (S5000)	YES	YES
16SG1	Nondestructive Assay - DWAS/IPAN/SGS Procedures - CCP-TP-166, CCP-TP-167, CCP-TP-168, CCP-TP-169 & CCP-TP-172	Soils (S4000) Debris (S5000)	N/A	YES

List of Processes and Equipment Reviewed

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams	Currently Approved by NMED	Currently Approved by EPA
16IQ1	Nondestructive Assay – Canberra Mobile Qualitative and Quantitative Drum Counter with Isotopics (IQ3) Procedures – CCP-TP-046, CCP-TP-047, & CCP-TP-048	Soils (S4000) Debris (S5000)	N/A	YES
DEACTIVATED PROCESSES OR EQUIPMENT				
16SG1	Nondestructive Assay - DWAS/IPAN/SGS Procedures - CCP-TP-166, CCP-TP-167, CCP-TP-168, CCP-TP-169 & CCP-TP-172	Soils (S4000) Debris (S5000)	N/A	YES