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Carlsbad Field Office  
Carlsbad, New Mexico 88221

DATE: DEC - 6 2012

REPLY TO  
ATTN OF: CBFO:OQA:CF:CC:12-1591:UFC 2300.00

SUBJECT: Interim Audit Report for SRS/CCP Recertification Audit A-13-02

TO: Herbert Crapse, DOE-SR

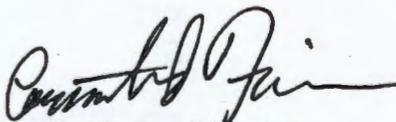


The Carlsbad Field Office (CBFO) conducted Recertification Audit A-13-02 of the Savannah River Site Central Characterization Program (SRS/CCP) November 6 – 8, 2012. The Interim Audit Report is attached.

The audit team concluded that SRS/CCP implementing procedures are adequate relative to the flow-down of requirements, and that the SRS/CCP quality assurance and technical requirements are satisfactorily implemented and effective in all areas evaluated.

The audit team identified six conditions adverse to quality, resulting in four CBFO Corrective Action Reports, one item corrected during the audit, and two Observations. The team offered one Recommendation for SRS/CCP management consideration.

If you have any questions or comments, please contact me at (575) 234-7065.

  
Randy Unger, Director  
Office of Quality Assurance

Attachment

121206



cc: w/attachment

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WWIS Database Administrators  
 WIPP Operating Record  
 CBFO QA File  
 CBFO M&RC

\*ED denotes electronic distribution

U.S. DEPARTMENT OF ENERGY  
CARLSBAD FIELD OFFICE

INTERIM AUDIT REPORT

OF THE

SAVANNAH RIVER SITE CENTRAL CHARACTERIZATION PROGRAM

TRU WASTE CHARACTERIZATION AND CERTIFICATION ACTIVITIES

AIKEN, SOUTH CAROLINA

AUDIT NUMBER A-13-02

November 6 – 8, 2012



Prepared by:

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Priscilla Y. Martinez, CTAC  
Audit Team Leader

Date:

12-3-12

Approved by:

*Randy Unger*  
Randy Unger, CBFO

Quality Assurance Director

Date:

6 Dec 2012

## 1.0 EXECUTIVE SUMMARY

Carlsbad Field Office (CBFO) Recertification Audit A-13-02 was conducted to evaluate the continued adequacy, implementation, and effectiveness of Savannah River Site (SRS) transuranic (TRU) waste characterization activities performed for SRS by the Nuclear Waste Partnership (NWP) Central Characterization Program (CCP). Activities were evaluated relative to the requirements of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP), the *CBFO Quality Assurance Program Document (QAPD)*, the *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC)*, the *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*, the *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*, and the *Remote-Handled TRU Waste Characterization Program Implementation Plan (WCPIP)*.

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

The audit was conducted at the SRS/CCP facilities near Aiken, SC, November 6 through 8, 2012. The audit team concluded that overall, the SRS/CCP technical and QA programs, as applicable to audited activities, were adequately established for compliance with upper-tier requirements. The audit team verified that the SRS/CCP program for characterization and certification activities related to CH SCGs S3000 homogeneous solids waste, S4000 soils/gravel waste, and S5000 debris waste, and RH SCG S5000 debris waste continues to be adequate, satisfactorily implemented, and effective. The audit team also determined that the SRS/CCP QA program requirements are being satisfactorily implemented and are effective.

The audit team identified six conditions adverse to quality (CAQs), resulting in the issuance of the following four CBFO Corrective Action Reports (CARs), 13-002, 13-003, 13-006, and 13-008. CBFO CAR 13-006 addresses two CAQs and one CAQ was corrected during the audit (CDA). The CAQs are discussed in detail in section 6.1 and 6.2. Two Observations were identified during the audit and a Recommendation was offered for management consideration. The Observations and Recommendation are described in sections 6.3 and 6.4.

## 2.0 SCOPE AND PURPOSE

### 2.1 Scope

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

The following general areas were audited, as required by Attachment C6, Section C6-3 of the HWFP:

General

- Results of previous audits
- Changes in programs or operations
- New programs or activities being implemented
- Changes in key personnel

The following CBFO QA elements were evaluated during the audit:

Quality Assurance

- Personnel Qualification and Training
- Nonconformance Reporting
- Records

The following technical elements were audited for CH SCG S3000 homogeneous solids waste, S4000 soils/gravel waste, and S5000 debris waste, and RH SCG S5000 debris waste:

Technical

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

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

- Waste Isolation Pilot Plant Hazardous Waste Facility Permit NM4890139088-TSDF
- DOE/CBFO-94-1012, *CBFO Quality Assurance Program Document (QAPD)*
- DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC)*

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

DOE/WIPP 02-3283, *RH Packaging Program Guidance*

DOE/WIPP 02-3284, *RH Packaging Operations Manual*

DOE/WIPP 02-3183, *CH Packaging Program Guidance*

DOE/WIPP 02-3184, *CH Packaging Operations Manual*

DOE/WIPP 11-3456, *TRUPACT-III Program Guidance*

DOE/WIPP 11-3451, *TRUPACT-III Operations Manual*

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

CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*

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

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

CCP-PO-002, *CCP Transuranic Waste Certification Plan*

Related technical and quality assurance implementing procedures

## **2.2 Purpose**

The audit team evaluated the continued adequacy, implementation, and effectiveness of SRS/CCP TRU waste activities as they relate to the WIPP HWFP for CH SCGs S3000 homogeneous solids waste, S4000 soils/gravel waste, and S5000 debris waste, and RH SCG S5000 debris waste.

## **3.0 AUDIT TEAM AND OBSERVERS**

### **AUDITORS/TECHNICAL SPECIALISTS**

Court G. Fesmire	Audit Team Management Representative, CBFO
Priscilla Y. Martinez	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)
Tammy Bowden	Auditor, CTAC
Cindi Castillo	Auditor, CTAC
Rick Castillo	Auditor, CTAC
Greg Knox	Auditor, CTAC
Katie Martin	Auditor, CTAC
Berry Pace	Auditor, CTAC
Charlie Riggs	Auditor, CTAC
Dick Blauvelt	Technical Specialist, CTAC

Rhett Bradford	Technical Specialist, CTAC
Paul Gomez	Technical Specialist, CTAC
Mavis Lin	Technical Specialist, CTAC
Jim Oliver	Technical Specialist, CTAC
Porf Martinez	Technical Specialist, CTAC
Robbie Morrison	Technical Specialist, NWP
B. J. Verret	Technical Specialist, CTAC

#### **OBSERVERS**

Thomas Morgan	CBFO
Herbert Crapse	DOE-SR
Steve Holmes	New Mexico Environment Department (NMED)
Ricardo Maestas	NMED
Bob Thielke	NMED Contractor

#### **4.0 AUDIT PARTICIPANTS**

SRS and CCP personnel contacted during the audit are identified in Attachment 1. A pre-audit meeting was held in the SRS conference room in trailer 704-59E, November 6, 2012. Daily briefings were held with SRS and CCP management and staff to discuss issues and potential deficiencies. The audit was concluded with a post-audit meeting held in the SRS conference room in trailer 704-59E and via teleconference with personnel at the Skeen-Whitlock Building in Carlsbad, NM, on November 8, 2012.

Attachment 2 is a Summary Table of Audit Results. Attachment 3 is a Listing of Audited Documents. Attachment 4 is a List of the Processes and Equipment Reviewed During the Audit.

#### **5.0 SUMMARY OF AUDIT RESULTS**

##### **5.1 Program Adequacy, Implementation, and Effectiveness**

This audit was performed to assess the ability of SRS/CCP to characterize CH SCGs S3000 homogeneous solids waste, S4000 soils/gravel waste, and S5000 debris waste, and RH S5000 debris waste to the requirements specified in the CBFO QAPD, the HWFP *Waste Analysis Plan* (WAP), and the WAC. The related characterization methods assessed were AK, HSG Sampling and Analysis, Solids Sampling and Analysis, RTR, VE, DTC, NDA, FGA, and Transportation. Other areas evaluated were project-level data V&V, data quality objective (DQO) reconciliation, the preparation of Waste Stream Profile Forms (WSPFs), WWIS/WDS data entry, the PDP, and the referenced SRS/CCP QA program elements.

The audit team concluded that the applicable SRS/CCP TRU waste characterization activities as described in the associated SRS/CCP implementing procedures are satisfactory in meeting upper-tier requirements. Audit activities are described in detail in the following sections.

## **5.2 General**

### **5.2.1 Results of Previous Audits**

The results of CBFO Recertification Audit A-12-02 and Certification Audit A-12-04 of SRS/CCP were examined and the audit team determined that the concerns identified in the audits have been addressed.

### **5.2.2 Changes in Program or Operations**

A change in program or operations that occurred after Audits A-12-02 and A-12-04 was the approval of the Five Foot Setback Configuration by the U.S. Environmental Protection Agency (EPA) on September 11, 2012.

### **5.2.3 New Programs or Activities Being Implemented**

One new program or activity implemented since Audits A-12-02 and A-12-04 was the NDA waste characterization process using the Non-destructive Assay Box Counter (NABC) gamma modality with the Five Foot Setback Configurations for the purposes of characterizing and certifying CH SCG S3000 homogeneous solids, SCG S4000 soils/gravel, and SCG S5000 debris wastes in 55-gallon containers.

### **5.2.4 Changes in Key Personnel**

One change in key personnel occurred since Audits A-12-02 and A-12-04: George Fussell is no longer the SRS/CCP Vendor Project Manager (VPM). Pat Tilmon is the SRS/CCP VPM, along with the night shift VPMs Bryan Ladner and Bret Templeton. No other changes in key personnel have been made.

## **5.3 Quality Assurance Activities**

### **5.3.1 Personnel Qualification and Training**

The audit team conducted interviews with responsible personnel and reviewed implementing procedure CCP-QP-002, Rev. 33, *CCP Training and Qualification Plan*, to determine the degree to which the procedure addresses upper-tier requirements. Personnel training records associated with VE, RTR, NDA, DTC, HSG Sampling, Flammable Gas Analysis, Gas Generation Testing, Transportation and Packaging Operations, AK, and Site Project Management (SPM) 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 including RTR Level-II certificates, eye exams, and attendance sheets for AK Waste Summary Training for RTR and VE operators, test drum/training container documentation, appointment letters, and formal Resource Conservation and Recovery Act (RCRA) training certificates for AK Experts (AKEs). The audit team determined that CCP personnel performing waste characterization activities are properly trained.

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 Qualification and Training 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 Nonconformance Reporting**

The audit team conducted interviews with the resident Quality Assurance Engineer and reviewed implementing procedure CCP-QP-005, Rev. 22, *CCP TRU Nonconforming Item Reporting and Control*, to determine the degree to which the procedure addresses upper-tier requirements. The review of the procedure indicated that upper-tier requirements are adequately addressed.

The audit team randomly selected a sampling of nonconformance reports (NCRs) (NCR-SRS-0107-12, NCR-SRS-0804-12, NCR-SRS-0956-12, NCR-SRS-1294-12, NCR-SRS-0024-12, NCR-SRS-3941-11, NCR-RHSRS-2942-11, NCR-RHSRS-0641-12, NCR-RHSRS-2943-11, and NCR-RHSRS-3534-11) to confirm that deficiencies are being appropriately documented and tracked through resolution as required. All NCRs were verified as being managed and tracked through closure in the CCP Integrated Data Center and on the CCP NCR Logs. The audit team also reviewed four NCRs (NCR-SRS-2452-11, NCR-SRS-0121-12, NCR-SRS-0823-12, NCR-SRS-0108-12) documenting non-administrative deficiencies first identified at the SPM level, requiring reporting to the Permittee within the seven days. The audit team verified the NCRs were reported as required.

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 Nonconformance Reporting 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 Records**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-PO-001, Rev. 20, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*; CCP-QP-008, Rev. 20, *CCP Records Management*; and CCP-QP-028, Rev. 14, *CCP Records Filing, Inventory, Scheduling, and Dispositioning*, relative to the control and administration of QA records to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed. Control of QA records was verified through review of the CH Records Inventory and Disposition Schedule (RIDS) dated 08/02/2012, and the RH RIDS dated 07/23/2012.

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 Records are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### 5.4 Technical Activities

Evaluations of applicable SRS/CCP technical activities are summarized in the following subsections.

##### 5.4.1 Data Validation and Verification

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-001, Rev. 20, *CCP Project Level Data Validation and Verification*; CCP-TP-002, Rev. 24, *CCP Reconciliation of DQOs and Reporting Characterization Data*; 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*, to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed.

The audit team evaluated the following batch data reports (BDRs) in support of both CH and RH characterization activities completed at the SRS to verify that project-level data V&V activities are performed in compliance with applicable procedural requirements. No concerns were identified.

##### RTR

SR4RTR0220	SR4RTR0249	SR4RTR0271	SR4RTR0281	SRLBR0051
SRSRTR0541	SRLBR0042			

##### VE

SRVEFW0361

##### HSG

SRHSG1107	SRHSG1206	SRHSG1217	SRHSG1218	
ECL12001M	ECL12010M	ECL12030M	ECL12031M	

##### Solids

SSC11-00008	ALD11026V	ALD11026S	ALD11026N	ALD11026M
SSG11-00006	ALD11027V	ALD11027S	ALD11027N	ALD11027M
SSC12-00002	ALD12012V	ALD12012S	ALD12012N	ALD12012M
ALD12012F	ALD12012H			

##### Nondestructive Assay

SRLBC0591	SRLBC0701	SRLBC0741	SRLBC0808	SRLBC0809
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##### Dose-to-Curie

SRSRHDTTC11003	SRSRHDTTC12001	SRSRHDTTC12002		
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The audit team reviewed five WSPFs for waste streams SR-221H-PuOx, SR-W027-HBL-BOX with Change Notice #1, SR-W027-221H-HET-C, SR-W027-235F-HOM, and SR-DWPF-HET. The WSPFs were found to be properly completed, including characterization information summaries (CISs).

The audit team verified documentation supporting 13 random sample selections of containers for solids waste streams. The audit team also verified documentation supporting 20 random sample selections of containers for HSG analysis. The audit team found the waste stream profiles were satisfactorily completed and documented. The audit team also verified that random sample selections for the waste streams sampled since the previous audit were satisfactorily completed and documented.

The audit team verified that the documentation of quarterly repeat reviews of data generation-level BDRs had been properly maintained since the previous audit. During the third quarter of 2012, VE was not conducted at the SRS and will therefore not be reported for that quarter. Similarly, during the fourth quarter of 2011, HSG sampling was not done at the SRS, and will therefore not be reported for that quarter.

The audit team verified HSG samples and solid samples are properly collected and disposed. The SRS/CCP maintains appropriate records for the solids co-located samples, properly documenting the relative percent difference and F-test.

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 project-level Data Validation and Verification activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.2 Solids and Soils/Gravel Sampling and Analysis**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-093, Rev. 16, *CCP Sampling of TRU Waste Containers*, CCP-TP-162, Rev. 1, *CCP Random Selection of Containers for Solids and Headspace Gas Sampling and Analysis*; and CCP-TP-180, Rev. 2, *CCP Analytical Sample Management*, to determine the degree to which the procedures address upper-tier requirements. The team concluded that upper-tier requirements are adequately addressed.

Solids and soils/gravel sampling and analysis and associated data generation-level V&V activities are performed at the Idaho National Laboratory (INL) under a separate certified program. However, the audit team did evaluate the random selection requirements for solids sampling, along with the associated BDRs. Additionally, the audit team evaluated the results of the analysis provided to SRS/CCP as part of the project-level data V&V evaluations.

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 Solids and Soils/Gravel Sampling and Analysis activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.3 Acceptable Knowledge**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-002, Rev. 24, *CCP Reconciliation of DQOs and Reporting Characterization Data*; CCP-TP-003, Rev. 18, *CCP Data Analysis for S3000, S4000, and S5000 Characterization*; CCP-TP-005, Rev. 24, *CCP Acceptable Knowledge Documentation*; CCP-QP-021, Rev. 7, *CCP Surveillance Program*; and CCP-TP-506, Rev. 2, *CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report*, to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed.

The audit team evaluated the AK process for characterizing CH SCGs S3000 solids, S4000 soils/gravel, and S5000 debris waste, and RH SCG S5000 debris waste. The audit team completed the WAP Table C6 checklists, Table C6-3, to demonstrate compliance with WAP requirements. The audit team also verified compliance with the WIPP WAC. Objective evidence was reviewed and compiled to demonstrate compliance with each of the applicable requirements on these checklists. The audit team also reviewed the AK record in relation to relevant requirements of the WAC, and for the RH stream, requirements of the RH TRU WCPIP, Rev 3.

The audit team reviewed the latest revision to the AK Summary Reports for four separate waste streams representing each of the respective SCGs: CCP-AK-SRS-21 for waste stream SR-221H-PuOx, CCP-AK-SRS-8 for waste stream SR-W027-235F-HOM, CCP-AK-SRS-8 for waste stream SR-MD-SOIL and CCP-AK-SRS-560 for waste stream SR-RH-235F.01. In addition, WSPFs or draft WSPFs and attachments were examined. Numerous AK Source documents were reviewed to establish support for the conclusions noted in the AK Summaries, particularly with respect to the assignment of hazardous waste numbers (HWNs) and the historical management of the containers in the waste streams, as appropriate. The audit team also examined the AK Documentation Checklists, attachment 1; the AK Source Document Information Lists, attachment 4; the AK Hazardous Constituents Lists, attachment 5; the respective AK Waste Form, Waste Material Parameters, Prohibited Items and Pkg., attachment 6, along with the applicable justification memos for waste material parameter weight estimates; and the AK Container Lists, attachment 8. Examples of the resolution of AK discrepancies in the AK record and discrepancy resolution at characterization, along with AK Reevaluation forms, were also reviewed and added to the objective evidence. WAP-compliant AK Accuracy Reports and the most recent internal surveillance were also collected and examined, along with screenshots from the item description code (IDC) database and copies of the respective AK Tracking spreadsheets.

The audit team reviewed training records for AKEs and SPMs and verified that training is appropriate to performance of AK activities. With regard to non-compliant waste

containers, the audit team examined several NCRs dealing with prohibited items and compiled objective evidence of container inspection prior to characterization. The WAP-required container traceability exercise was conducted for a total of seven waste containers from the four waste streams. For the drums selected, the audit team reviewed BDRs for HSG sampling and analysis, solids sampling and analysis, RTR, NDA, and DTC, as appropriate. Additional traceability documentation was collected through IDC database screenshots and container input forms. Several AK Characterization Checklists and supporting data reconciling the results of characterization with the AK record were also examined.

The audit team requested documentation for the SR-22-1H-PuOx WSPF, and a WSPF dated 6/1/2012 was provided; however, this was an obsolete document. Subsequently, the original WSPF dated 6/1/2012 was identified as "superseded" by CCP on 11/6/2012. The disposition of obsolete or superseded documents and forms is required by procedure to be controlled to avoid their inadvertent use; therefore, this concern was classified as a CAQ (see CBFO CAR 13-006, section 6.1).

For waste stream SR-RH-235F.01, the audit team 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 and the Characterization Reconciliation Report. Relevant AK Source documents were also examined.

One Recommendation was provided to CCP management concerning the addition of clarifying language to two AK Summaries. AK Summary CCP-AK-SRS-21 had language added that clearly specified expected prohibited items and projected future waste generation, as known at this time. Additional language in AK Summary CCP-AK-SRS-6 noted changes in the two most prevalent radionuclides and provided additional justification for not adding toxicity characteristic organic hazardous waste numbers (see Recommendation 1, section 6.4).

The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for Acceptable Knowledge activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.4 Headspace Gas Sampling and Analysis**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-093, Rev. 16, *CCP Sampling of TRU Waste Containers*; CCP-TP-162, Rev. 1, *Random Selection of Containers for Solids and Headspace Gas Sampling and Analysis*; CCP-PO-005, Rev. 22, *CCP Conduct of Operations*; CCP-TP-106, Rev. 7, *CCP Headspace Gas Sampling Batch Data Report Preparation*; and CCP-QP-016, Rev. 17, *CCP Control of Measuring and Testing Equipment*, to determine the degree to which the procedures address upper-tier requirements. The procedures were found to be compliant with upper-tier requirements.

SRS/CCP performs HSG sampling using SUMMA<sup>®</sup> canisters for sample collection. Samples are then shipped to INL for analysis. The audit team examined sampling BDRs SRHSGS1203, SRHSG1206, SRHSG1217, and SRHSGS1218. Collection of duplicate samples and a memo dated 10/13/08 authorizing SRS/CCP to cease collection of a Field Reference Standard (FRS) were verified. The Drum Age Criteria (DAC), operational logbook, sample chain of custody (COC), and transfer to the analytical laboratory were reviewed and found to be compliant. Material and testing equipment (M&TE) certifications were verified to be compliant with applicable procedures. Training and qualification of sampling individuals were evaluated and found to be compliant with applicable CCP training requirements. No TRU waste sampling activities were being performed at the time of the audit. A mock-up demonstration of HSG sampling operations in PAD 4 at the SRS was witnessed by the audit team.

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 Headspace Gas Sampling and Analysis are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.5 Real-time Radiography**

The audit team evaluated the continued adequacy, implementation, and effectiveness of SRS/CCP activities to characterize and certify CH SCGs S3000 solids, S4000 soils/gravel, and S5000 debris waste, and RH SCG S5000 debris waste using the RTR characterization process.

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-PO-005, Rev. 22, *CCP Conduct of Operations*; CCP-QP-002, Rev. 33, *CCP Training and Qualification Plan*; CCP-TP-028, Rev. 7, *CCP Radiographic Test Drum and Training Container Construction*; CCP-TP-053, Rev. 12, *CCP Standard Real-Time Radiography (RTR) Inspection Procedure*; CCP-TP-074, Rev. 5, *Large Container Non-Destructive Examination (LCNDE) Operating Procedure*; CCP-TP-075, Rev. 0, *CCP RTR #15 Operating Procedure*; and CCP-TP-145, Rev. 3, *RTR #4 Operating Procedure*; to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed.

The audit team examined the following CH RTR BDRs:

SRLBR0048	SRLBR0057	SR4RTR0232	SR4RTR0256
SR4RTR0275	SRSRTR0281	SRSRTR0584	

The audit team examined the following RH RTR BDRs:

SR4RTR0196	SR4RTR0220	SR4RTR0248
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The audit team evaluated RTR operator required test and training drum audio/video media for three RTR operators. Additionally, records of RTR operator training and qualification were examined, including test and training drum documentation. The audit team confirmed that RTR operators were appropriately trained and qualified as required.

The audit team observed the RTR characterization process at the SRS Solid Waste Materials Facility (SWMF) Area E, Cell 2 for CH container SR123587C using the Large Container RTR Unit. In addition, the audit team observed the RTR characterization process in TRU-Pad 4 facilities for container HBL120076. RTR Unit 15 was inoperable during the audit. The audit team walked-down each of the units to verify equipment and associated required components. Each RTR Unit contained the components required by the WAP to effectively characterize the CH and RH SCGs subject to the scope of the audit.

The audit team interviewed RTR operators and verified the use of current RTR operating procedures and AK Summary reports, and reviewed associated logbooks in order to verify entries were appropriately logged and that VPM reviews were being performed as required. As described below, the audit team identified five concerns during the audit.

During the walk-down of the RTR operations areas, the audit team observed the use of Standing Order CCP-SO-080, Rev. 0, dated 6/20/11, which states, *"If you have questions regarding this order, please contact Larry Porter at (575) 706-0463."* The Standing Order contact information is not correct. Procedure CCP-PO-005, section 17.5, states, *"Standing orders shall be reviewed on a quarterly basis to verify that the standing orders remain necessary and that the posted standing orders are current. Standing orders that remain current and necessary shall not be revised. Standing orders that are not current but are necessary shall be revised and reissued. Standing orders that are no longer necessary shall be cancelled and removed from the field."* These concerns were consolidated into CBFO CAR 13-006 (see section 6.1).

During the review of RTR BDRs, the audit team identified inconsistencies in how waste material parameters and associated weights are being identified and recorded, as demonstrated in the following two examples.

Example 1: The RTR data sheet for container HBL110096 in BDR SR4RTR0281 identifies flashlights with batteries in section 3, Container Inventory and Comments. The items are identified in the waste material parameter (WMP) for plastics (XPM) and assigned an estimated XPM weight in section 4, Packaging Material and Waste Material Parameters. The batteries are not identified as other metals (OM) in section 3, Container Inventory and Comments, nor are they assigned estimated OM weights in section 4, Packaging Material and Waste Material Parameters.

Example 2: In the RTR data sheet for container SR513062 in BDR SR4RTR0196, the RTR operator identified batteries and a flashlight. The RTR operator recorded the batteries in the waste material parameter for other metals (OM) and the flashlight in

waste material parameter for plastics (XPM). The RTR operator assigned estimated weights for batteries in the WMP for OM and estimated weights for the flashlight in the WMP for XPM.

Example 2 is compliant with CCP-TP-053, step 4.4.2[G], while example 1 is not compliant. This inconsistency was documented in CBFO CAR 13-003 (see section 6.1).

During the review of RTR BDRs SR4RTR0196, SR4RTR0248, and SRLBR0057, the audit team identified that the SPM did not accurately record the RTR examination dates at the top of the SPM checklists. The SPM only recorded one examination date on the CCP SPM Radiography Project Level Validation Checklist and Summary, Att. 2, for the referenced BDRs. RTR operations were performed on more than one day on the referenced BDRs. Procedure CCP-TP-001, section 4.2.4, states, "*Record the Sampling, Analysis, Sampling/Analysis, or Examination Date(s) at the top of the appropriate SPM checklist.*" This issue was documented as an Observation (see section 6.3, Observation 2).

During the review of RTR BDR SR4RTR0196, the audit team identified that the ITR answered "Yes" on CCP Radiography Independent Technical Reviewer Checklist, Attachment 3, of CCP-TP-053, item 14, which asks, "*Does the waste match the Waste Matrix Code and Waste Stream description?*" However, the BDR included NCR-RHSRS-3533-11, initiated for the waste not matching the waste matrix code on container SR504231. The audit team reviewed ten BDRs during the audit and found that the ITR answered item 14 correctly on the remaining nine BDRs. It was therefore determined that this was an isolated occurrence. The discrepancy was corrected during the audit and the audit team verified the correction was made and the BDR was re-reviewed by the appropriate reviewers prior to the end of the audit (see section 6.2, CDA 1).

While reviewing the video for RTR scan of container MDL0500775 (Large Box) in BDR SRLBR0057, the audit team observed the operator using the VJ Technology software feature "Window Leveling," which enhances screen contrast. At 3:19 (minutes/seconds) into the video, the operator was observed using the cursor and pointing to an area of the box and is heard stating "*You can see the bottom of a plastic container.*" This practice, if continued, could potentially influence the results of the independent observation (IO) if the container was selected for IO from the batch (see section 6.1, CBFO CAR 13-002).

As a result of interviews, field observations, and examination of related documents and records, despite the deficiencies identified, which were determined not to negatively affect the RTR waste characterization process, the audit team concluded that the applicable requirements for Real-time Radiography activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effectively implemented for achieving the desired results.

#### **5.4.6 Visual Examination**

The audit team evaluated the continued adequacy, implementation, and effectiveness of SRS/CCP ability to characterize and certify CH SCGs S3000 solids, S4000 soils/gravel, and S5000 debris waste using the VE characterization process.

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-QP-002, Rev. 33, *CCP Training and Qualification Plan*; CCP-TP-113, Rev. 16, *CCP Standard Contact-Handled Waste Visual Examination*; and CCP-TP-163, Rev. 3, *CCP Evaluation of Waste Packaging Records for Visual Examination of Records*, to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed.

The audit team evaluated BDRs SRVEFW0357, SRVEFW0358, SRVEFW0360, and SRVEFW0361.

SRS/CCP uses the two-operator method when performing VE characterization activities for CH waste. Two qualified operators visually examine the waste and place it into 55-gallon drums and standard waste boxes.

The audit team performed a walk-through of the F-Canyon facility, Building 221-F, where VE of CH waste is performed. No VE activities were being performed during the time of the audit.

The audit team examined training and qualification records for three VE personnel and determined the required training was adequate and qualifications were current. The audit team confirmed the appointment of an SRS/CCP VE Expert (VEE), as required. The audit team also evaluated the operational VE Logbook CCP-SRS-VE-001 and verified entries are appropriately reviewed as required.

During the review of BDR SRVEFW0361, it was discovered the VE operators listed an item in section 2 of Attachment 2, CCP Waste Visual Examination Data Form, that is not identified in the AK Summary (CCP-AK-SRS-8, Rev. 8). The VE operators listed the subject items as "Waste Lock," and the AK Summary does not list this item (see section 6.3, Observation 1).

The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for Visual Examination activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.7 Dose-to-Curie**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-139, Rev. 4, *CCP In Situ Object Counting System*

*Nondestructive Assay Operating Procedure*, and CCP-TP-504, Rev. 13, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*, to determine the degree to which the procedures address upper-tier requirements. The team concluded that upper-tier requirements are adequately addressed.

The audit team evaluated the implementation of the DTC method and its application as documented in BDRs SRSRHDT11003, SRSRHDT12001, and SRSRHDT12002 consisting of 17, 20, and 19 containers respectively.

In this particular application of the DTC methodology, the necessary ratios of the reportable radionuclides to the measured and modeled quantity of  $^{241}\text{Am}$  were derived from isotopic ratios obtained from the CH portion of this waste stream and measurement data gathered by an In Situ Object Counting System (ISOCS). This approach is fully described in CCP-RC-SRS-561. The ISOCS is not a certified assay system for use in measuring waste bound for WIPP; however, the ISOCS was used to re-measure seven containers of CH waste which were assayed on the approved and certified NABC system to validate the capability of the ISOCS to generate technically defensible results.

The audit team developed a checklist based on the CCP operating procedures for the ISOCS (CCP-TP-139, Rev. 4, 11/10/11) and the DTC Survey Procedure (CCP-TP-504, Rev. 13, 7/26/11) in order to evaluate the performance of the ISOCS and the implementation of the DTC methodology. The audit team also interviewed CCP personnel and observed the ISOCS and DTC survey equipment.

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 the Dose-to-Curie methodology, including the use of the ISOCS in this limited case, are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.8 Nondestructive Assay**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-058, Rev. 4, *CCP NDA Performance Demonstration Plan*; CCP-TP-139, Rev. 4, *CCP In Situ Object Counting System Nondestructive Assay Operating Procedure*; CCP-TP-189, Rev. 2, *CCP Box Segmented Gamma System (BSGS) Operating Procedure*; CCP-TP-190, Rev. 2, *CCP Box Segmented Gamma System (BSGS) Calibration Procedure*; CCP-TP-191, Rev. 1, *CCP Box Neutron Assay System (BNAS) Operating Procedure*; CCP-TP-192, Rev. 1, *CCP Box Neutron Assay System (BNAS) Calibration Procedure*; and CCP-TP-193, Rev. 3, *CCP Data Reviewing, Validating, and Reporting Procedure for the Nondestructive Assay Box Counters*, to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed.

The audit team evaluated the continued adequacy, implementation, and effectiveness of SRS/CCP ability to characterize and certify CH SCGs S3000 solids, S4000 soils/gravel, and S5000 debris waste using the NDA characterization process. Specifically, the audit team evaluated the Box Segmented Gamma Scanner (BSGS) and the Box Neutron Assay System (BNAS).

The BSGS also referred to as the Segmented Gamma Box Counter (SGBC) in some documents and the BNAS are also referred to as the Non-destructive Assay Box Counter (NABC) or the Savannah River Box Counter (SRBC) can act as stand-alone assay systems or work in concert in order to assay wastes contained in 55-gallon drums, standard large box 2 (SLB-2) containers, and standard waste boxes (SWBs).

The large box counter system consists of a Segmented Gamma Scanner (SGS) and a separate neutron assay counter. The BSGS uses four high purity germanium (HPGe) detectors to measure passive gamma emissions from the waste. The system can measure three different types of containers: 55-gallon drums, SWBs, and SLB-2s. The BSGS utilizes both a transmission and an efficiency correction. Transmission correction is accomplished by scanning the waste with an active gamma source (in this case, two 250 mCi  $^{60}\text{Co}$  sources (approximate as of date of installation)) paired with two 5-inch (dia.) by 4-inch (depth) sodium iodide detectors. Each  $^{60}\text{Co}$  source has a variable attenuation shutter that is independently controlled so that a transmission correction can be optimized for each measurement segment.

A new physical configuration for the BSGS was added during the past year and was evaluated as part of Surveillance S-13-11 and this audit. In the new physical configuration, the vertical "posts" that support the gamma detectors are retracted five feet further away from the waste container. In the past, approximately 700 containers assayed on the NABC resulted in indeterminate results. One cause for the indeterminate results could be excessive "dead-time" as a result of the gamma detector being swamped by too many gamma rays. The use of the Five Foot Setback and potentially the use of copper and/or cadmium filters can result in a successful assay.

Neutron measurement is performed by the BNAS. The BNAS has two operating modes: efficiency-determined multiplicity analysis mode and standard neutron coincidence counting (NCC) mode. The counter utilizes 320  $^3\text{He}$  proportional tubes arranged in a 4II geometry about the assay cavity and divided into 80 counting channels. Matrix correction is accomplished using an Add-A-Source (AAS) where the empty chamber response to the AAS is compared to system response with the waste present and the AAS inserted to determine neutron moderation characteristics of the waste matrix. NDA 2000 software is used to control these systems.

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

- System stability as demonstrated by the implementation and effectiveness of quality control measurements, calibration verifications, and weekly interfering matrix checks

- Applicability of each system's calibration and operational range to the matrix, geometry, and radionuclide content of samples assayed since Audit A-12-02
- Successful participation in the CBFO-sponsored NDA PDP Cycles 19A and B12A
- Completed BDRs to ensure data are reported and reviewed as required
- Data storage and retrievability
- Continued operability and condition of the NABC systems since Audit A-12-02

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

The audit team specifically focused the technical review on the adequacy and effectiveness of the Five Foot Setback measurement configuration. Individual container gamma assay spectra were reviewed in order to compare the spectra obtained from the previous indeterminate assay with the more recently obtained spectra using the Five Foot Setback. CCP was able to clearly demonstrate that a successful assay could be performed using the Five Foot Setback.

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 Nondestructive Assay activities, including the Five Foot Setback configuration, are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.9 Flammable Gas Analysis**

The flammable gas sampling and analysis operations at SRS/CCP were evaluated by examining the sampling and analysis equipment, conducting personnel interviews, and reviewing selected BDRs. No flammable gas sampling and analysis activities were being performed during the audit. Interviews were conducted with flammable gas operations personnel. The audit team conducted a walk-through of the flammable gas facility and verified the gas chromatography/mass spectrometry/thermal conductivity detector (GC/MS/TCD) instruments were available for use.

The audit team reviewed BDRs SR11FG11023, SR11FG3161, SR11F3058, SR12FG3008, and SR12FG3053, verifying data documentation of applicable requirements from DOE/WIPP-06-3345, Rev 4, *Flammable Gas Analysis*. Initial and continuing calibrations (ICal), determination of minimum detection limit (MDL), record management, and container analysis via WIPP TRAMPAC Evaluation Software (WTES) in the WDS, and personnel qualifications were verified compliant with applicable requirements. Laboratory notebook entries, gas standard certifications, and M&TE certification were also found to be compliant.

The audited team noted that one GC/MS/TCD instrument previously used at Oak Ridge National Laboratory was transported to SRS in the summer of 2011. The ICal for this

GC/MS/TCD was performed and found to be acceptable; however, the MDL was not performed for the instrument at the SRS site and the MDL in the associated BDRs was referenced to the MDL obtained at ORNL/CCP. The MDL requirement in DOE/WIPP-3345 states, "The MDL is performed at startup, after major repairs, or after column change." SRS/CCP interprets that the startup is meant for a brand new instrument startup.

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 Flammable Gas Analysis activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.10 Performance Demonstration Program**

The audit team verified that SRS/CCP participates in the PDP as required. SRS/CCP only performs HSG sampling. HSG samples are analyzed at the INL and are certified by the CBFO. The INL Analytical Laboratories participate in the PDP Program.

The audit team also verified that SRS/CCP successfully participated in CBFO-sponsored NDA PDP Cycles 19A and B12A. No concerns were identified during the audit.

The audit team concluded that SRS/CCP Performance Demonstration Program activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.11 WIPP Waste Information System/Waste Data System**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-030, Rev. 30, *CCP CH TRU Waste Certification and WWIS/WDS Data Entry*, and CCP-TP-503, Rev. 10, *CCP RH TRU Waste Certification and WWIS/WDS Data Entry*, to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed.

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, waste certification by the Waste Certification Official (WCO), submittal for WWIS review/approval, review of shipping packages, and records submittal. The audit team reviewed RH WWIS/WDS data packages for two canisters (SR0001 and SR0002) with three internal containers each (SR501028, SR504242, SR512002, SR118870, SR5133217A, SR526627), and CH WWIS/WDS data packages for nine drums (FBL05207, FBL06202, SR32531902, MDL504472B, MDL504586B, MDL506105A, MDL0502414, MDL0502419, MDL0502428).

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 WIPP Waste Information System/Waste Data System activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results

#### **5.4.12 Container Management**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-035, Rev. 24, *CCP Container Management*, CCP-TP-120, Rev. 14, *CCP Container Management*, and CCP-TP-509, Rev. 3, *CCP Remote-Handled Transuranic Container Tracking*, to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed.

Container management activities were evaluated by a walk-through of SRS/CCP container storage areas, examination of shipping documents, and interviews with the CCP Container Management Specialist (CMS). SRS personnel are trained to CCP-TP-035, and perform all movement and storage of containers. The CCP CMS verifies these activities. Tracking of containers is performed by the CMS by obtaining container numbers of stored containers in the field as they are transferred from SRS to CCP, then locating the containers in the CMS and CCP databases. Separate storage of containers with NCRs from containers without NCRs was verified. Storage of containers ready for shipment was verified to be satisfactory to preclude ineligible containers from being shipped to WIPP.

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 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.

#### **5.4.13 Transportation**

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-QP-030, Rev. 8, *CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel*, CCP-QP-032, Rev. 1, *CCP Written Practice for the Qualification of CCP Pressure Change Leak Testing Personnel*; CCP-TP-033, Rev. 19, *CCP Shipping of TRU Waste*; CCP-TP-054, Rev. 2, *CCP Adjustable Center of Gravity Lift Preoperational Checks and Shutdown*; CCP-TP-055, Rev. 4, *CCP Varian Porta-Test Leak Detector Operations*, CCP-TP-086, Rev. 17, *CCP CH Packaging Payload Assembly*, CCP-TP-505, Rev. 6, *CCP Removable Lid Canister Loading*; and CCP-TP-507, Rev. 7, *CCP Shipping of Remote-Handled Transuranic Waste*, to determine the degree to which the procedures address upper-tier requirements. The review of the procedures indicated that upper-tier requirements are adequately addressed.

The audit team reviewed shipping packages and observed the receipt and maintenance of empty transport vessels. The audit team observed payload preparation and container integrity for TRUPACT-II shipment number SR120090, and TRUPACT-III shipment number SR321063. Shipping of RH waste in 72-B shipping containers was not being performed; therefore, RH shipping package SRR12003 was examined. M&TE calibrations were verified to be compliant with procedures. The audit team verified transportation personnel were trained and qualified to perform transportation activities as required. Training documentation for the WCO and Transportation Certification Official (TCO) were also found to be compliant. The audit team also verified the performance of helium leak testing of inner and outer containment vessels was compliant with applicable procedures and conducted by properly trained personnel. The audit team also verified the required spare parts were present and properly labeled.

Maintenance logs were examined and the records were found to be compliant and complete, with one exception in the TRUPACT-III maintenance log. From 7/10/12 through 8/21/12, an outdated maintenance form was used to log maintenance activities. The forms are virtually identical; therefore, this concern was classified as a CAQ (see section 6.1, CBFO CAR 13-008).

The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for Transportation activities 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**

The audit team identified nine concerns during the audit. These concerns were classified by CBFO QA, and are documented in the following subsections.

### **6.1 Corrective Action Reports**

During the audit, the audit team may identify conditions adverse to quality (CAQs) and document such conditions on corrective action reports (CARs).

**Condition Adverse to Quality (CAQ)** – An all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, nonconformances, and technical inadequacies.

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

Five conditions adverse to quality, necessitating the issuance of CBFO CARs 13-002, 13-003, 13-006, and 13-008, resulted from Audit A-13-02.

### **CAR 13-002**

While observing the video for the RTR scan of container MDL0500775 (large box) in BDR SRLBR0057, the audit team observed the operator using the VJ Technology software feature "Window Leveling," which enhances screen contrast. At 3:19 (minutes/seconds) into the video, the operator was observed using the cursor to point to an area of the box and is heard stating; *"You can see the bottom of a plastic container."*

The IO is conducted with the audio off so as not to influence the observer's findings. Use of the cursor pointing to items during the review, even without sound, could potentially influence the IO's findings.

Using the "Window Leveling" cursor to point out specific items during the RTR scan is not the intended use of the "Window Leveling" feature of the software.

Similar activities using the VJ Technology software feature of "Window Leveling" were observed by CBFO auditors during the CCP/Hanford recertification audit .

During the audit of AMWTP (which is not a CCP operational activity), CBFO auditors did not observe use of the "Window Leveling" feature to point out specific items while reviewing RTR scans. However, NMED requested additional RTR video after the audit. During review of this additional video, NMED observed use of the "Window Leveling" feature to point out specific items. NMED is expressing their concern for this practice in an Observer Inquiry. Their concern is that such practice may negatively influence the independence of the IO.

### **CAR 13-003**

There is an inconsistency in how waste material parameters and associated weights are being identified and recorded. The following are two examples:

Example 1: The RTR data sheet for container HBL110096 in BDR SR4RTR0281 identifies flashlights with batteries in section 3, Container Inventory and Comments. The items are identified in the waste material parameter (WMP) for plastics (XPM) and assigned an estimated XPM weight in section 4, Packaging Material and Waste Material Parameters. The batteries are not identified as other metals (OM) in section 3, Container Inventory and Comments, nor are they assigned estimated OM weights in section 4, Packaging Material and Waste Material Parameters.

Example 2: In the RTR data sheet for container SR513062 in BDR SR4RTR0196, the RTR operator identified batteries and a flashlight. The RTR operator recorded the batteries in the waste material parameter for other metals (OM) and the flashlight in waste material parameter for plastics (XPM). The RTR operator assigned estimated weights for batteries in the WMP for OM) and estimated weights for the flashlight in the WMP for XPM.

Example 2 is compliant with CCP-TP-053, step 4.4.2[G], while example 1 is not compliant.

#### **CAR 13-006**

During the audit, the audit team requested documentation for the SR-22-1H-PuOx WSPF and was provided the WSPF dated 6/1/2012, an obsolete document. Subsequently, the original WSPF dated 6/1/2012 was identified as "superseded" by CCP on 11/6/2012.

CCP Standing Order CCP-SO-080, Rev. 0, dated 6/20/11, states: "If you have questions regarding this order, please contact Larry Porter at (575) 706-0463." The Standing Order contact information is not correct.

#### **CAR 13-008**

QAPD, Section 1.4.2C. requires: "The disposition of obsolete or superseded documents and forms shall be controlled to avoid their inadvertent use." The wrong revision of the TRUPACT-III Maintenance Record (superseded) form for the maintenance record prescribed in DOE/WIPP 11-3456 was posted on the DOE/CBFO web site and was used seven times by CCP/SRS from 7/10/12 – 8/21/12 for recording TRUPACT-III maintenance.

### **6.2 Deficiencies Corrected During the Audit**

During the audit, the audit team may identify CAQs. The audit team members, the Audit Team Leader (ATL), and the CBFO QA representative evaluate the CAQs to determine if they are significant using the following definitions:

*CAQ – Term used in reference to failures, malfunctions, deficiencies, defective items, and nonconformances.*

*Significant CAQ – A condition which, if uncorrected, could have a serious effect on safety, operability, waste confinement, TRU waste site certification, compliance demonstration, or the effective implementation of the QA program*

Once a determination is made that the CAQ is not significant, the audit team member, in conjunction with the ATL and the CBFO QA representative, determines if the CAQ is an isolated case requiring only remedial action and therefore can be corrected during the audit. Upon determination that the CAQ is isolated, the audit team member, in conjunction with the ATL and the CBFO QA representative, evaluates/verifies any objective evidence/actions submitted or taken by the audited organization and determines if the condition was corrected in an acceptable manner. Once it has been determined that the CAQ has been corrected, the CBFO QA representative categorizes the condition as 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.

The following CAQ was corrected during the audit.

#### **CDA 1**

The ITR recorded "Yes" on CCP Radiography Independent Technical Reviewer Checklist, Attachment 3, of CCP-TP-053, item 14, which asks, "Does the waste match the Waste Matrix Code and Waste Stream description" NCR-RHSRS-3533-11 was initiated for the waste not matching the waste matrix code on container SR504231 in RTR BDR SR4RTR0196. The audit team reviewed ten BDRs during the audit; the ITR answered item 14 correctly on the remaining 9 BDRs.

The audit team verified the correction to the ITR checklist item 14, was made and the BDR was re-reviewed by the appropriate reviewers prior to the end 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 CBFO QA representative, evaluates these conditions and classify them as Observations using the following definition.

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

The audit team documented following two Observations during the audit.

##### **Observation 1**

During the review of BDR SRVEFW0361, it was discovered that in section 2 of the CCP Waste Visual Examination Data Form the VE operators listed an item that is not identified in the AK Summary (CCP-AK-SRS-8, Rev. 8). The VE operators listed the subject item as "Waste Lock;" however, the AK Summary does not list this item specifically. Absorbent is generally listed in the AK Summaries.

##### **Observation 2**

CCP-TP-001, *Project Level Data Validation and Verification*, step 4.2.4, states: "Record the Sampling, Analysis, Sampling/Analysis, or Examination Date(s) at the top of the appropriate SPM checklist." The SPM recorded only one examination date on the CCP SPM Radiography Project Level Validation Checklist and Summary, Att. 2, for BDRs SR4RTR0196, SR4RTR0248, and SRLBR0057. RTR was performed on more than the one day recorded on the referenced BDRs.

#### **6.4 Recommendations**

During the audit, the audit team may identify suggestions for improvement that should be communicated to the audited organization. The CBFO QA representative evaluates

these conditions and classifies them as Recommendations using the following definition:

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

The audit team presented one Recommendation to SRS/CCP for management consideration.

### **Recommendation 1**

The following changes should be made to the respective AK Summaries and/or attachments for clarification and completeness.

#### **CCP-AK-SRS-21, Waste stream SR-221H-PuOx**

1. Indicate the time period of generation does not end in 2012, but will continue for approximately 10 years.
2. Clarify the absence of prohibited items in the AK record for this waste stream.
3. Add calculations to the memo attached to AK attachment 6 regarding justification of waste material parameter weight estimates.

#### **CCP-AK-SRS-6, Waste stream SR-W027-235F-HOM**

1. Revise the radiological section in the AK Summary to reflect the recently issued DR006, which changed the two most prevalent radionuclides to Np-237 and Pu-239.
2. Revise attachment 7 to clarify why a revised AK/NDA memo will not be issued based upon the resolution of DR006.
3. Provide additional justification for not adding toxicity characteristic organic hazardous waste numbers.

## **7.0 LIST OF ATTACHMENTS**

Attachment 1: Personnel Contacted During the Audit

Attachment 2: Summary Table of Audit Results

Attachment 3: Listing of Audited Documents

Attachment 4: Processes and Equipment Reviewed During Audit

**PERSONNEL CONTACTED DURING THE AUDIT**

<b>PERSONNEL CONTACTED DURING AUDIT A-13-02</b>				
<b>NAME</b>	<b>TITLE/ORG</b>	<b>PREAUDIT MEETING</b>	<b>CONTACTED DURING AUDIT</b>	<b>POST AUDIT MEETING</b>
Adams, James	VEE & VEO/HSG & FGA Lead Operator; NFT/CCP	X	X	X
Armijo, Cheryl	Records Analyst; NTPC Training		X	
Billett, Michele	Training Coordinator; NTPC Training		X	
Blackwell, Denise	Records Analyst; NWP/CCP/Stoller	X	X	
Carlton, Tim	NDA/DTC/ISOCS; MCS/CCP		X	
Ceo, Robert	NDA Expert Analyst; MCS/CCP		X	
Crapse, Bert	TRU Program Manager; DOE-SR	X	X	X
Dickes, Neil	NDA/DTC; NWP/CCP	X	X	X
Fox, Lee	SWM Deputy Director; SRNS-SWM	X	X	X
Gelderman, Byron	RTR Operator; NWP/CCP		X	
Gilmour, John	SWM Director; SRNS	X		X
Gulbransen, Ed	NTP Certification Manager; NWP/CCP	X		X
Harrison, Jeff	AKE; Tech Specs/CCP	X	X	
Holley, Aaron	MLU Operator; MLU		X	
Jones, Laura	QAE; NWP/CCP		X	
Joo, Irene	RH PM; NWP/CCP	X	X	
Kareis, Georgia N.	RTR SME & Lead Operator; NWP/CCP	X	X	X
Kirkes, Creta	WCO; NWP/CCP		X	
Ladner, Bryan	CME; NWP/CCP	X		

PERSONNEL CONTACTED DURING AUDIT A-13-02				
NAME	TITLE/ORG	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Ledford, Wayne	QA Specialist; NWP/QA		X	X
Lee, Ronnie	SRS PM; NWP/CCP	X	X	X
Matthews, Deven	MLU Operator; MLU		X	
Mueller, Terry	QAE; NWP/CCP		X	
Muse, Steve	QA Engineer; NWP/CCP	X		
Papp, Michael	AKE; Tech Specs/CCP	X	X	
Pearcy, Sheila	Records Manager; NWP/CCP		X	
Ramirez, Mike	WCO; NWP/CCP		X	
Redmond, Steve	RTR Operator; NWP/CCP		X	
Reed, Martin	MLU Operator; MLU		X	
Remington, Dan	NDA EA Reviewer; MCS/CCP		X	
Rigby, Brandon	TCO MLU; MLU/CCP			X
Scheel, Happy	PME; Packaging Transportation, NWP/CCP		X	
Schneider, Michael	NDA; MCS/CCP		X	
Schrock, Beverly	SPM; NWP/CCP	X	X	X
Sensibaugh, Michael	CCP Operations Manager; NWP/CCP	X	X	X
Shepley, Todd	NDA Lead Operator; MCS/CCP	X	X	X
Soaterna, Carolina	SPM; NWP/CCP	X	X	X
Stallings, Andrew	RTR SME & NDE Cognizant Engineer; NWP/CCP	X	X	X
Tilmon, Pat	VPM; NWP/CCP	X	X	X
Valdez, Joe L.	NDA; MCS/CCP		X	
Watson, Lisa	AKE; LANL/CCP	X	X	

PERSONNEL CONTACTED DURING AUDIT A-13-02				
NAME	TITLE/ORG	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Watson, Ronald	DTC; MCS/CCP	X	X	X
Weyerman, Wade	Manager, Mobile Loading Unit; LANL/CCP	X	X	X

Summary Table of Audit Results

Documents	Concern Classification				QA Evaluation		Technical
	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
<b>Activity</b>							
Acceptable Knowledge				1	A	S	E
Headspace Gas					A	S	E
Flammable Gas Analysis					A	S	E
Solids and Soils/Gravel Sampling and Analysis					A	S	E
Real-Time-Radiography	2	1	1		A	S	E
Visual Examination			1		A	S	E
Project Level V&V					A	S	E
Performance Demonstration Program					A	S	E
Nonconformance Reporting					A	S	E
Training					A	S	E
Records	2				A	S	E
WWIS/WDS					A	S	E
Nondestructive Assay					A	S	E
Dose-to-Curie					A	S	E
Transportation					A	S	E
<b>TOTALS</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>A</b>	<b>S</b>	<b>E</b>

**Definitions**

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

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

Rec = Recommendation  
A = Adequate  
NA = Not Adequate

<b>LISTING OF AUDITED DOCUMENTS</b>			
	<b>Document No.</b>	<b>Revision Number</b>	<b>Document Title</b>
1.	CCP-PO-001	20	CCP Transuranic Waste Characterization Quality Assurance Project Plan
2.	CCP-PO-002	26	CCP Transuranic Waste Certification Plan
3.	CCP-PO-003	12	CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)
4.	CCP-PO-004	32	CCP/SRS Interface Document
5.	CCP-PO-005	22	CCP Conduct of Operations
6.	CCP-PO-006	3	CCP Conduct of Operations Matrix
7.	CCP-PO-008	9	CCP Quality Assurance Interface with the WTS Quality Assurance Program
8.	CCP-PO-505	1	CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)
9.	CCP-QP-002	33	CCP Training and Qualification Plan
10.	CCP-QP-005	22	CCP TRU Nonconforming Item Reporting and Control
11.	CCP-QP-008	20	CCP Records Management
12.	CCP-QP-016	17	CCP Control of Measuring and Testing Equipment
13.	CCP-QP-021	7	CCP Surveillance Program
14.	CCP-QP-028	14	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
15.	CCP-QP-030	8	CCP Written Practice for the Qualification of CCP Helium Leak Detection Personnel
16.	CCP-QP-032	1	CCP Written Practice for the Qualification of CCP Pressure Change Leak Testing Personnel
17.	CCP-TP-001	20	CCP Project Level Data Validation and Verification
18.	CCP-TP-002	24	CCP Reconciliation of DQOs and Reporting Characterization Data
19.	CCP-TP-003	18	CCP Data Analysis for S3000, S4000, and S5000 Characterization
20.	CCP-TP-005	24	CCP Acceptable Knowledge Documentation
21.	CCP-TP-028	7	CCP Radiographic Test and Training Drum Requirements
22.	CCP-TP-030	30	CCP TRU Waste Certification and WWIS/WDS Data Entry
23.	CCP-TP-033	19	CCP Shipping of CH TRU Waste
24.	CCP-TP-035	24	CCP Container Management
25.	CCP-TP-053	12	CCP Standard Real-Time Radiography (RTR) Inspection Procedure
26.	CCP-TP-054	2	CCP Adjustable Center of Gravity Lift Fixture Preoperational Checks and Shutdown
27.	CCP-TP-055	4	CCP Varian Porta-Test Leak Detector Operations
28.	CCP-TP-056	5	CCP HSG Performance Demonstration Plan
29.	CCP-TP-058	4	CCP NDA Performance Demonstration Program
30.	CCP-TP-066	12	CCP Radiography Screening Procedure for Prohibited Items
31.	CCP-TP-074	5	CCP Large Container Non-Destructive Examination (LCNDE) Operating Procedure
32.	CCP-TP-075	0	CCP RTR #15 Operating Procedure
33.	CCP-TP-082	8	CCP Waste Container Filter Vent Operation
34.	CCP-TP-086	17	CCP CH Packaging Payload Assembly
35.	CCP-TP-087	5	CCP Scale Operations
36.	CCP-TP-093	16	CCP Sampling of TRU Waste Containers
37.	CCP-TP-098	3	CCP Installation of the NucFil HSG Sample Port
38.	CCP-TP-106	7	CCP Headspace Gas Sampling Batch Data Report Preparation
39.	CCP-TP-113	16	CCP Standard Contact-Handled Waste Visual Examination
40.	CCP-TP-120	14	CCP Container Management
41.	CCP-TP-136	2	CCP Standardized Prohibited Item Remediation
42.	CCP-TP-139	4	CCP in Situ Object Counting System Nondestructive Assay Operating Procedure
43.	CCP-TP-145	3	CCP RTR#4 Operating Procedure
44.	CCP-TP-162	1	CCP Random Selection of Containers for Solids and Headspace Gas Sampling

<b>LISTING OF AUDITED DOCUMENTS</b>			
	<b>Document No.</b>	<b>Revision Number</b>	<b>Document Title</b>
			and Analysis
45.	CCP-TP-163	3	CCP Evaluation of Waste Packaging Records for Visual Examination of Records
46.	CCP-TP-180	2	CCP Analytical Sample Management
47.	CCP-TP-189	2	CCP Box Segmented Gamma System (BSGS) Operating Procedure
48.	CCP-TP-190	2	CCP Box Segmented Gamma System (BSGS) Calibration Procedure
49.	CCP-TP-191	1	CCP Box Neutron Assay System (BNAS) Operating Procedure
50.	CCP-TP-192	1	CCP Box Neutron Assay System (BNAS) Calibration Procedure
51.	CCP-TP-193	3	CCP Data Reviewing, Validating, and Reporting Procedure for the Nondestructive Assay Box Counters
52.	CCP-TP-504	13	Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste
53.	CCP-TP-505	6	CCP Removable Lid Canister Loading
54.	CCP-TP-506	2	CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report
55.	CCP-TP-507	7	CCP Shipping of Remote-Handled Transuranic Waste
56.	CCP-TP-508	7	CCP Real-Time Radiography Inspection Presentation
57.	CCP-TP-509	3	CCP Remote-Handled Transuranic Container Tracking
58.	CCP-TP-530	10	CCP RH TRU Waste Certification and WWIS/WDS Data Entry
59.	CCP-TP-530	10	CCP RH TRU Waste Certification and WWIS/WDS Data Entry
60.	WP08-PT.01	7	Standard Waste Box Handling and Operation Manual
61.	WP08-PT.02	8	Ten-Drum Overpack Handling and Operation Manual
62.	WP08-PT.04	6	TRUPACT-II/HalfPACT Trailer Operation and Maintenance Manual
63.	WP08-PT.05	4	TRUPACT-III Standard Large Box 2 Handling and Operation Manual
64.	WP08-PT.13	6	RH-TRU 72-B Cask Uprighting Trailer Operation and Maintenance Manual
65.	WP08-PT.18	3	TRUPACT-III Trailer Operation and Maintenance Manual

**Processes and Equipment Reviewed During Audit A-13-02 of the SRS-CCP**

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams	Currently Approved by NMED	Currently Approved by EPA
<b>NEW PROCESSES OR EQUIPMENT</b>				
1NABC1	Nondestructive Assay Procedures – CCP-TP-189 and CCP-TP-191 Description – Box Segmented Gamma System (BSGS) and Box Neutron Assay System (BNAS) <b>Five Foot Setback Configuration</b>	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	N/A	YES
<b>PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT</b>				
The following were evaluated for recertification during CBFO Audit A-13-02				
1LCNDE	Real-time Radiography Procedure – CCP-TP-053 and CCP-TP-074 Description – Large Container Non-Destructive Examination (LCNDE) Unit – standard waste boxes (SWBs) and SLB2s	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	YES	YES
1NABC1	Nondestructive Assay Procedures – CCP-TP-189 and CCP-TP-191 Description – Box Segmented Gamma System (BSGS) and Box Neutron Assay System (BNAS)	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	N/A	YES
1RR3	Real-time Radiography Procedure – CCP-TP-053 Description – RTR-15, 55-gallon drums (PAD 4)	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	YES	YES
1RR4	Real-time Radiography Procedure – CCP-TP-053 and CCP-TP-145 Description – RTR-4, 55-gallon drums and standard waste boxes (SWBs), Standard large box 2s (SLB2s)	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	YES	YES
VISUAL	Visual Examination Procedure – CCP-TP-113 Description – VE QC Check for RTR, VE in lieu of RTR, VET for Retrievably Stored Waste	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	YES	YES
1DTC1	Dose-to-Curie	Solids (S3000)	N/A	YES

**Processes and Equipment Reviewed During Audit A-13-02 of the SRS-CCP**

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams	Currently Approved by NMED	Currently Approved by EPA
	Procedure – CCP-TP-504 Description – Radiological Characterization	Soils/Gravel (S4000) Debris (S5000)		
N/A	Headspace Gas Sampling Procedure – CCP-TP-093 Description – CCP Sampling of TRU Waste Containers using SUMMA® Canisters	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	YES	N/A
N/A	Acceptable Knowledge (AK)	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	YES	YES
N/A	Data Generation and Project Level Validation and Verification (V&V)	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	YES	YES
N/A	WIPP Waste Information System/Waste Data System (WWIS/WDS)	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	YES	YES
<b>LIST OF DEACTIVATED EQUIPMENT</b>				
N/A	N/A	None	N/A	N/A