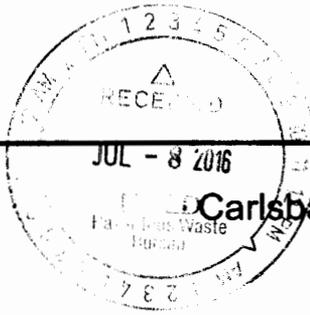


United States Government

Department of Energy

memorandum



Carlsbad Field Office  
Carlsbad, New Mexico 88221

DATE: JUL 08 2016

REPLY TO  
ATTN OF: CBFO:OQA:DSM:BA:16-1428:UFC 2300.00

SUBJECT: Interim Audit Report A-16-18, Characterization and Certification Activities for Contact-Handled and Remote-Handled Transuranic Waste

TO: Mr. Benjamine B. Roberts, DOE-ID

The Carlsbad Field Office (CBFO) conducted the subject Audit A-16-18 on June 14 – 16, 2016. The interim audit report is attached.

The audit team concluded that, overall, the Idaho National Laboratory (INL) Central Characterization Program (CCP) activities evaluated are adequate relative to the flow-down of requirements, and the technical activities evaluated are satisfactorily implemented and effective in all areas.

As a result of the audit, one CBFO Corrective Action Report was issued and transmitted under separate cover. The audit team also identified one condition adverse to quality that was corrected during the audit, one Observation, and one Recommendation, as described in the report.

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

Dennis S. Miehl  
Senior Quality Assurance Specialist

Attachment

cc: w/attachment

- S. Ross, EM-43 ED
- T. Shrader, CBFO ED
- M. Brown, CBFO ED
- J.R. Stroble, CBFO ED
- M. Navarrete, CBFO ED
- G. Birge, CBFO ED
- N. Castaneda, CBFO ED
- H. Cruickshank, CBFO ED
- J. Zimmerman, DOE-ID ED
- M. Willcox, DOE-ID ED
- P. Breidenbach, NWP ED
- J. Blankenhorn, NWP ED
- J. Britain, NWP ED
- F. Sharif, NWP ED
- D.E. Gulbransen, NWP ED
- R. Reeves, NWP ED
- A.J. Fisher, NWP ED
- I. Joo, NWP ED
- B. Pace, NWP ED
- J. Carter, NWP ED
- V. Cannon, NWP ED

- B. Allen, NWP ED
- S. Punchios, NWP ED
- A. Boyea, NWP ED
- T. Peake, EPA ED
- E. Feltcorn, EPA ED
- R. Joglekar, EPA ED
- J. Kieling, NMED ED
- R. Maestas, NMED ED
- C. Smith, NMED ED
- V. Daub, CTAC ED
- P. Martinez, CTAC ED
- C. Castillo, CTAC ED
- R. Boyko, CTAC ED
- J. Schuetz, CTAC ED
- D. Harvill, CTAC ED
- G. White, CTAC ED
- Site Documents ED
- WWIS Database Admin ED
- CBFO QA File
- CBFO M&RC
- \*ED denotes electronic distribution

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U.S. DEPARTMENT OF ENERGY  
CARLSBAD FIELD OFFICE

INTERIM AUDIT REPORT

OF THE

IDAHO NATIONAL LABORATORY  
CENTRAL CHARACTERIZATION PROGRAM

IDAHO FALLS, IDAHO  
AND CARLSBAD, NEW MEXICO

AUDIT NUMBER A-16-18

June 14 – 16, 2016

CHARACTERIZATION AND CERTIFICATION  
ACTIVITIES FOR CONTACT-HANDLED AND REMOTE-HANDLED TRANSURANIC  
WASTE



Prepared by: James R. Schuetz  
James R. Schuetz, CTAC  
Audit Team Leader

Date: 7-8-16

Approved by: M. R. Brown FOR  
Michael R. Brown, Director  
CBFO Office of Quality Assurance

Date: 7-8-16

## **1.0 EXECUTIVE SUMMARY**

Carlsbad Field Office (CBFO) Recertification Audit A-16-18 was conducted to evaluate the continued adequacy, implementation, and effectiveness of Idaho National Laboratory (INL) transuranic (TRU) waste characterization activities performed for INL by the Nuclear Waste Partnership LLC (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)*, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC)*, and the *Remote-Handled TRU Waste Characterization Program Implementation Plan (WCPIP)*.

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

The audit was conducted at the INL/CCP facility near Idaho Falls, ID, and the NWP/CCP facilities in Carlsbad, NM, June 14 – 16, 2016. The audit team concluded that the INL/CCP adequately incorporates upper-tier requirements into its program plans and procedures. The team verified that INL/CCP activities for characterization and certification related to CH SCGs S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris wastes, and RH SCGs S3000 homogeneous solids and S5000 debris wastes, continue to be adequate, satisfactorily implemented, and effective.

During the audit, the team identified one condition adverse to quality (CAQ) resulting in the issuance of CBFO Corrective Action Report (CAR) 16-045 (see section 6.1). The CAR was issued under separate cover. One deficiency, isolated in nature, and requiring only remedial corrective action, was identified and corrected during the audit (CDA) (see section 6.2). One Observation was identified during the audit, and one Recommendation was offered for management consideration (see sections 6.3 and 6.4).

## **2.0 SCOPE AND PURPOSE**

### **2.1 Scope**

Audit A-16-18 was conducted to evaluate the continued adequacy, implementation, and effectiveness of the INL/CCP TRU waste characterization and certification activities for CH SCGs S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris wastes, and RH SCGs S3000 homogeneous solids and S5000 debris wastes. The following areas were evaluated.

General

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

Quality Assurance

- Personnel Qualification and Training
- Quality Improvement/Nonconformance Reporting
- Records

Technical Activities

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

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

- Waste Isolation Pilot Plant Hazardous Waste Facility Permit NM4890139088-TSDF
- *Quality Assurance Program Document*, DOE/CBFO-94-1012
- *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, DOE/WIPP-02-3122
- *Remote-Handled TRU Waste Characterization Program Implementation Plan*, DOE/WIPP-02-3214
- *CCP Transuranic Waste Characterization Quality Assurance Project Plan*, CCP-PO-001
- *CCP Transuranic Waste Certification Plan*, CCP-PO-002
- *CCP/INL Interface Document*, CCP-PO-024
- *CCP/INL RH TRU Waste Interface Document*, CCP-PO-501
- Related technical and quality assurance implementing procedures

## 2.2 Purpose

The audit team assessed INL/CCP compliance with the referenced upper-tier requirements for waste characterization and certification and applicable QA program activities for CH SCGs S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris wastes, and RH SCGs S3000 homogeneous solids and S5000 debris wastes.

## 3.0 AUDIT TEAM AND OBSERVERS

### AUDITORS/TECHNICAL SPECIALISTS

|                |   |
|----------------|---|
| Dennis Miehl   | Management Representative, CBFO Office of Quality Assurance                         |
| Jim Schuetz    | Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)                      |
| Porf Martinez  | Auditor, CTAC (Program Status)  |
| Jack Walsh     | Auditor, CTAC (C6 QA)   |
| Katie Chester  | Auditor, CTAC (WWIS/WDS)  |
| Charlie Riggs  | Auditor, CTAC (AK)  |
| Roger Vawter   | Auditor, CTAC (RTR)   |
| Rick Castillo  | Auditor, CTAC (VE)  |
| Bob Boyko      | Auditor, CTAC (NDA, DTC)  |
| Kirk Kirkes    | Auditor, CTAC (PL V&V)  |
| Greg Knox      | Auditor/Technical Specialist, CTAC (RTR)  |
| Paul Gomez     | Auditor/Technical Specialist, CTAC (GGT, FGA, Container Management, Transportation) |
| Rhett Bradford | Technical Specialist, CTAC (VE)   |
| Jim Oliver     | Technical Specialist, CTAC (NDA, DTC)   |
| Dick Blauvelt  | Technical Specialist, CTAC (AK)   |
| Judith Stewart | Technical Specialist, CTAC (AK)   |

### OBSERVERS

|                 |   |
|-----------------|---|
| Roberto Maestas | New Mexico Environment Department (NMED)          |
| Coleman Smith   | NMED  |
| Gary Birge      | CBFO TRU Sites and Transportation Division (TSTD) |

## 4.0 AUDIT PARTICIPANTS

The INL/CCP individuals involved in the audit process are identified in Attachment 1. A pre-audit meeting was held at the Radioactive Waste Management Complex (RWMC), Building WMF-637 main conference room at the INL near Idaho Falls, ID, and at the Skeen-Whitlock Building in Carlsbad, NM, on June 14, 2016. Daily briefings were held with INL/CCP management and staff to discuss issues and potential deficiencies. The audit was concluded with a post-audit meeting held June 16, 2016, at the RWMC

Building WMF-637 main conference room at the INL and in the Skeen-Whitlock Building in Carlsbad.

## **5.0 SUMMARY OF AUDIT RESULTS**

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

The audit team concluded that the applicable INL/CCP TRU waste characterization activities, as described in the associated implementing plans and procedures, are adequate in meeting upper-tier requirements, and that the procedures evaluated are satisfactorily implemented and effective in achieving the desired results. Audited activities are described below. Attachment 2 contains a Summary Table of Audit Results. Attachment 3 contains a list of audited documents. Attachment 4 contains a list of the processes and equipment reviewed during the audit.

During Audit A-16-18, the audit team identified four concerns consisting of one CAQ, which resulted in the issuance of CBFO CAR 16-045, and one deficiency, isolated in nature and requiring only remedial corrective action, which was corrected during the audit. One Observation was identified and one Recommendation was offered for management consideration. Details of the CAR, CDA, Observation, and Recommendation are presented in section 6.

### **5.2 General Activities**

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

The audit team examined the results of the previous CBFO audit of the INL/CCP (Audit A-15-18). Audit A-15-18 identified one CAQ, which resulted in the initiation of CAR 15-050, regarding the incorrect indication of a solidification process in an AK document and incorrect source document references for step-by-step instructions for the solidification of fines process. During the performance of this audit, the team did not observe any instances similar to the conditions identified during A-15-18, suggesting that the corrective actions taken to address this CAQ were adequate in precluding recurrence.

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

The audit team determined through interview with the INL/CCP Project Manager that there were no significant changes in programs or operations since the previous recertification audit.

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

The audit team determined through interview with the INL/CCP Project Manager that no new programs or activities had been implemented since the previous recertification audit regarding waste characterization by CCP. However, INL site management and

operating (M&O) responsibilities have recently been awarded to a new contractor. RH waste characterization activities will remain the responsibility of CCP. Operational support of CCP RH waste characterization efforts are in transition to the new M&O host site location contractor. CH waste characterization activities have been transferred to the new M&O contractor.

This audit report covers the evaluation of the CCP program for RH waste characterization activities that are currently being performed and that were supported by the previous M&O contractor. The report also covers the evaluation of CH waste characterization activities that were performed up to October 1, 2015, and that were supported by the previous contractor.

The CCP interface document is adequate to provide for coordination between CCP and the new contractor regarding operations and RH waste characterization at the INL host site location. Waste management activities and CH waste characterization that is performed by the new INL contractor, as well as the new contractor's program, will be evaluated during a separate assessment of the Advanced Mixed Waste Treatment Project.

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

The audit team determined through interview with the INL/CCP Project Manager that two changes in key personnel, the CH waste characterization Project Manager and Site Project Manager, had occurred since the previous audit.

#### **5.2.5 INL/CCP Program Interface**

The audit team evaluated the program interface established between the NWP/CCP and the INL as documented in CCP-PO-024, Rev. 15, *CCP/INL Interface Document*, and CCP-PO-501, Rev. 9, *CCP/INL RH TRU Waste Interface Document*. These documents describe the interfaces, roles and responsibilities, and program requirements applicable to the INL and NWP/CCP organizations in support of CCP CH and RH waste characterization activities at the INL.

Program interface requirements evaluated for CH waste characterization activities included responsibilities of the CCP INL Project Manager, CCP Site Project Manager, CCP QA Engineer, Idaho National Laboratory Host Site Subcontract Technical Representative, and the CCP Vendor Project Manager. The audit team concluded that requirements evaluated, as described in CCP-PO-024, *CCP/INL Interface Document*, were satisfactorily implemented.

Program interface requirements evaluated for RH waste characterization activities included responsibilities of the CCP Project Manager, CCP QA Engineer, Idaho National Laboratory Host Site Management Representative, and the CCP Vendor Project Manager. The audit team concluded that requirements evaluated, as described

in CCP-PO-501, *CCP/INL RH TRU Waste Interface Document*, were satisfactorily implemented.

As a result of personnel interviews and reviews of objective evidence, the requirements specified in the interface documents were determined to be satisfactorily implemented and effective in achieving the desired results. No concerns related to management of program interface with INL and CCP were identified during the audit.

### **5.3 Quality Assurance Activities**

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

The audit team interviewed responsible personnel and reviewed documentation to verify that INL/CCP meets the requirements of the CBFO QAPD and CCP-QP-002, Rev. 40, *CCP Training and Qualification Plan*. The team determined that the procedure adequately addresses upper-tier requirements.

Training and qualification records for the following positions were reviewed:

- CH waste and RH waste Acceptable Knowledge Experts (AKEs)
- Site Program Managers (SPMs)
- Flammable Gas Analysts (FGAs)
- NDA Operators/Independent Technical Reviewers (ITRs)
- NDA Expert Analysts
- DTC Survey Operators/ITRs
- VE Operators/ITRs
- Nondestructive Examination (NDE) RTR Operators/ITRs

Records reviewed included the List of Qualified Individuals (LOQI) dated 05/27/16 for INL personnel working with CH waste, the RH Program LOQI dated 06/06/16, subject matter expert/on-the-job-training appointment letters, test drum (capability demonstrations) and training container documentation and annual eye examination forms for NDE RTR Operators. The results of the review indicate that the referenced personnel are adequately trained to accomplish their respective tasks.

The procedures reviewed and objective evidence assembled and evaluated during the audit indicated that the applicable requirements for personnel qualification and training are adequately established for compliance with upper-tier requirements and are satisfactorily implemented, resulting in an effective training program. No concerns related to personnel qualification and training were identified.

#### **5.3.2 Nonconformance Reporting**

The audit team conducted interviews and reviewed implementing procedure CCP-QP-005, Rev. 25, *CCP TRU Nonconforming Item Reporting and Control*, to determine the degree to which the procedure addresses upper-tier requirements.

Results of the review indicated that the procedure is adequate in addressing requirements.

The team interviewed the project office Quality Assurance Engineer and randomly selected the following nonconformance reports (NCRs) for review:

|                    |                        |                      |
|--------------------|------------------------|----------------------|
| NCR-INL-0001-15 R1 | NCR-INL-0174-15 R0 & 1 | NCR-RHINL-0233-15 R0 |
| NCR-INL-0006-15 R1 | NCR-INL-0183-15 R1 & 2 | NCR-RHINL-0560-15 R2 |
| NCR-INL-0014-15 R0 | NCR-INL-0186-15 R2     | NCR-RHINL-0561-15 R0 |
| NCR-INL-0015-15 R0 | NCR-INL-0419-15 R0     | NCR-RHINL-0576-15 R1 |
| NCR-INL-0016-15 R0 | NCR-INL-0491-15 R0     | NCR-RHINL-0206-16 R0 |
| NCR-INL-0019-15 R4 | NCR-RHINL-0231-15 R0   |                      |

The purpose of the review was to confirm that administrative deficiencies are appropriately documented and tracked through resolution. All NCRs were verified as being managed and tracked in the CCP Integrated Data Center (IDC) on the CCP NCR Logs.

One concern was identified related to determining if an NCR necessitates the generation of a WIPP Form. It was determined that, due to the language in CCP-QP-005, WIPP Forms may not be generated when necessary. For instance, NCR-INL-0015-15, Rev. 0, could be interpreted as necessitating a WIPP Form, based on the procedural requirement as written. Currently, a WIPP Form is written if a nonconforming condition is repeated multiple times within a certain timeframe, or if the nonconforming condition is deemed significant. The audit team concluded that if this practice continues, potential CAQs may not be identified and corrected through the WIPP Form process (Observation 1 section 6.3).

With the exception of the concern identified, the procedures reviewed and objective evidence assembled and evaluated during the audit indicated that requirements for nonconformances are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.3.3 Records

The audit team conducted interviews and reviewed implementing procedures relative to the control and administration of QA records to determine the degree to which the procedures adequately address upper-tier requirements. The audit team reviewed procedures CCP-QP-008, Rev. 25, *CCP Records Management*, and CCP-QP-028, Rev. 16, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning*. Control of QA records was verified through review of the CH Records Inventory and Disposition Schedule (RIDS) dated 07/03/2015, and the RH RIDS dated 07/16/2015.

The audit team verified that the annual review of CCP RH RIDS was submitted on 7/16/2015, as documented in an email provided in the objective evidence file.

There were two changes to the CCP RH RIDS and three changes to the CCP CH RIDS submitted to WIPP Records Management Services (WRMS) via the WIPP Records Inventory Work Sheet EA15RM3002-1-0 forms.

The audit team conducted a walkthrough of the WRMS facility to validate proper segregation of active records from archived records. The team observed active records stored in a segregated, secured area including a posted access list of authorized personnel.

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

## **5.4 Technical Activities**

### **5.4.1 Acceptable Knowledge/Waste Certification**

The audit team reviewed implementing procedures CCP-TP-002, Rev. 26, *CCP Reconciliation of DQOs and Reporting Characterization Data*; CCP-TP-005, Rev. 28, *CCP Acceptable Knowledge Documentation*; CCP-TP-506, Rev. 5, *CCP Preparation of the RH TRU Waste AK Characterization Reconciliation Report*; and WP 13-QA.03, Rev. 25, *Quality Assurance Independent Assessment Program*, to determine the degree to which the procedures adequately address upper-tier requirements. The results of the review indicate that the referenced procedures are satisfactory in addressing upper-tier requirements.

The audit team participated in a recertification audit of the INL CCP TRU waste characterization and certification program for all three SCGs of CH TRU waste and the S3000 SCG and S5000 SCG for RH TRU waste. This recertification audit was based upon the requirements contained in the latest version of the WIPP Resource Conservation and Recovery Act (RCRA) permit as described in the waste analysis plan. The team reviewed documentation to support all applicable AK requirements, completing relevant portions of WAP C6-1, C6-2 and C6-3 checklists and compiling and reviewing objective evidence to demonstrate compliance. The team also reviewed the AK record with respect to relevant requirements of the CH and RH WAC and, for the RH stream specifically, requirements of the RH TRU WCPIP, Rev 3.

The audit team examined specific and complete AK program documentation for CH S5000 debris waste stream ID-SDA-DEBRIS, and CH S4000 soils/gravel stream ID-SDA-SOIL, both from the excavation of the INL Subsurface Disposal Area (SDA) and documented in AK Summary Report CCP-AK-INL-001, R12. The team also examined CH S3000 homogeneous solids stream ID-SRP-S3000 from the remediation of both inorganic and organic sludge waste streams from the Rocky Flats Environmental

Technology Site (RFETS) and documented in AK Summary Report CCP-AK-INL-026, R0. In addition, the AK audit team examined S5000 RH TRU debris stream ID-HFEF-S5000-RP, and a related S3000 homogeneous solids stream described in AK Summary report CCP-AK-INL-620, R1. These waste streams represent the result of treatment of sodium- and sodium-potassium-contaminated waste from operations in the Hot Fuel Examination Facility (HFEF), the Fuel Conditioning Facility, and supporting laboratory operations.

The objective evidence compiled and reviewed included the AK Summary Reports and their supporting source documents and, for each waste stream, the AK Documentation Checklist (Attachment 1), AK Information List (Attachment 4), AK Hazardous Constituents List (Attachment 5), AK Waste Form, Waste Material Parameters, Prohibited Items and Pkg. (Attachment 6) along with the applicable justification memo for waste material parameter weight estimates, and AK Container List (Attachment 8) with memos supporting the process for adding containers to the waste streams, as applicable. It should be noted that most of the AK attachments for the CH waste streams had not been revised since the previous audit in June 2015, although there have been additional AK Source Document Summaries added to the AK record for these streams and up-to-date AK attachments 1 and 4 were available for review. The audit team also collected and examined examples of the resolution of AK discrepancies in the AK record and discrepancies identified during characterization, NCRs dealing with prohibited items, AK Accuracy Reports, and the most recent internal surveillance.

The WAP-required container traceability exercise was conducted for six waste containers from four of the five waste streams audited. No containers from ID-HFEF-S3000-RP have undergone characterization activities at this time. Data for traceability included batch data reports (BDRs) for RTR and VE, AK tracking spreadsheets, the IDC screen shots, container input forms from packaging and repackaging, characterization information summaries, and waste stream characterization checklists when available.

For the two RH waste streams, the audit team also reviewed and compiled objective evidence as available that demonstrates compliance with the requirements of the WCPIP. Documents reviewed included a draft Characterization Reconciliation Report and a draft waste stream characterization report, along with the examination of relevant AK Source documents supporting WCPIP requirements.

A significant part of the AK portion of the audit was dedicated to the review of the Interface Waste Management Documents List (IWMDL) for RH waste streams ID-HFEF-S5000-RP and ID-HFEF-S3000. The IWMDL requirement was a major addition to CCP-TP-005, Rev. 27, *CCP Acceptable Knowledge Documentation*. The objective is to work with the site to develop and maintain "a current list of generator site plans, procedures, and reports associated with current waste management and packaging (e.g., waste management, waste generation, waste treatment, waste packaging, waste repackaging, waste remediation, waste stream delineation, and waste characterization procedures)," that have the ability to affect waste stream characterization and certification activities. The site documents are tracked by assigning an AK Source

Document number, and the required CCP walk-down with the site Subject Matter Expert/Point of Contact (SME/POC) is noted on the AK Source Document Summary. Each INL procedure, guidance document, or report was reviewed for relevance and documentation of the required CCP walk-down of each document was noted.

A second major review activity during this audit was the examination of an approved AK Assessment for solids waste stream ID-RF-S3114 from RFETS activities. Although this waste stream was not included in this AK recertification audit process, it has a close association with the audited solids waste stream ID-SRP-S3000 as one of the two RFETS sludges undergoing remediation in the Sludge Repackaging Project (SRP). It provides an example of the application of the requirement in CCP-TP-005 S4.13 designed "to ensure that the AK documentation relating to the management of potentially reactive, corrosive, ignitable, and incompatible TRU waste materials is adequate, current, and accurately described in existing AK Summary Reports..." An examination of the document was performed, including the appropriate application of the procedure, supporting references and conclusions reached.

The audit team reviewed the approved Chemical Compatibility Evaluation (CCE) for waste stream ID-RF-S3114. The CCE was developed in conjunction with the requirements of CCP-TP-005 S4.15 and the 1980 EPA Method EPA-600/2-80-076, A Method for Determining the Compatibility of Hazardous Wastes. This method considers possible chemicals combinations that could occur in a waste stream and the potential adverse reactions that could result in the generation of fire, heat, explosion, or fumes. The team assessed CCP's application of this method to the ID-RF-S3114 sludge waste stream.

The IWMDL, AK Assessment, and CCE are identified in CCP-TP-005 and included in DOE/WIPP 07-3372, Rev. 5b, WIPP Documented Safety Analysis, Chapter 18, where they form the basis for an "enhanced" AK process.

For the QA portion of the AK audit, the audit team examined training records for three AKEs and two SPMs and reviewed BDRs, discrepancy reports, and NCRs. It was noted that for some of the NCRs reviewed, administrative controls had been used rather than tagging to maintain segregation of some of the containers due to accessibility considerations. The team examined AK records for compliance with preparation, legibility, accuracy, review, approval, and maintenance requirements. Distribution, control, and use of appropriate AK procedures were also reviewed. The team examined the most recent audit reports relevant to AK, I15-14 completed October 8, 2015 and I12-12 completed September 24, 2012, which specifically addressed INL/CCP activities.

The audit team identified two concerns regarding AK. The first relates to lack of documentation of the CCP walk-down of generator site procedures and reports on the appropriate AK Source Document Summary (Attachment 3). This verification requirement is clearly stated in CCP-TP-005, sections 4.2.14 and 4.2.15. The required documentation was provided during the audit and this concern was dispositioned as corrected during audit (CDA 1 section 6.2).

The second concern involved two radiological materials identified in AK Summary CCP-AK-INL-620, R1, uranium trichloride and uranium fission. The audit team concluded that the two materials should be added to the chemical table of that report (Recommendation 1, section 6.4).

With the exception of the concerns identified, the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for AK 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 Project-level Data Verification and Validation**

The audit team interviewed responsible personnel and reviewed implementing procedures CCP-TP-001, Rev. 21, *CCP Project Level Data Validation and Verification*; CCP-TP-002, Rev. 26, *CCP Reconciliation of DQOs and Reporting Characterization Data*; CCP-TP-005, Rev. 28, *Acceptable Knowledge Documentation*; CCP-TP-500, Rev. 15, *CCP Remote-Handled Waste Visual Examination*; and CCP-TP-508, Rev. 11, *CCP RH Standard Real-Time Radiography Inspection 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 for PL V&V.

The audit team verified the CCP-INL PL V&V of NDA BDRs, DTC sampling, and DTC results BDRs. The CH waste NDA systems used at INL-CCP provided reports using Stored Waste Examination Pilot Plant (SWEPP) Gamma-Ray Spectrometer (SGRS) and Waste Assay Gamma Spectrometer (WAGS) systems. The results from evaluation of PL V&V of the systems indicated that the appropriate quality control (QC) thresholds were met and reported. One NCR (NCR-INL-0491-15) was reported in BDR INNDAS150077, and no NCRs were reported for the WAGS BDRs.

SGRS BDRs INNDAS150077 and INNDAS150080, and WAGS BDRs INNDAW150047 and INNDAW150058 were evaluated.

The audit team verified the INL-CCP PL V&V of DTC sampling and DTC results BDRs. The RH waste DTC used at INL/CCP provides project-level BDR checklists were developed from the appropriate procedures, CCP-TP-504, Rev. 18, *CCP DTC Survey Procedure for RH TRU Waste*, and CCP-TP-512, Rev. 6, *CCP Remote-Handled Waste Sampling*. The results from the DTC indicated that the appropriate QC thresholds were met and reported. Two nonconformances were reportable for selected BDRs NCR-RHINL-0207-16 and NCR-RHINL-0576-15.

The following DTC BDRs were evaluated:

DTC Sampling: IDRH1501, IDRH1502, and IDRH1601 (Note that samples are destined for analysis at the Savannah River Site Labs.)

DTC Results: INLRHDTTC14006, INLRHDTTC15007, INLRHDTTC15011, and INLRHDTTC16006

The BDRs that were verified by the audit team met the data assessment criteria for precision, accuracy, completeness, comparability, and representativeness as applicable. The team verified that the results were legible, were provided to facility records as required, and that the individuals who performed PL V&V were qualified.

The audit team verified PL V&V activities are performed in compliance with applicable procedural requirements. In support of both CH and RH characterization activities completed at the INL, the team evaluated the following BDRs:

Nondestructive Examination

|               |               |               |
|---------------|---------------|---------------|
| INLRHRTR15010 | INLRHRTR16006 | INLRHRTR15005 |
| INLRHRTR15009 | INLRHRTR16001 |               |

Visual Examination

|                  |                  |                  |
|------------------|------------------|------------------|
| INLRHVE15001     | IN-ARP-VE-003277 | IN-ARP-VE-003311 |
| IN-ARP-VE-003264 | IN-ARP-VE-003304 | IN-ARP-VE-003285 |

The audit team determined the BDRs evaluated met procedure adequacy.

The audit team reviewed WSPFs for waste streams ID-SDA-SOIL, ID-SDA-DEBRIS, ID-ANLE-S5000, and ID-SDA-SLUDGE, and determined the WSPFs were properly completed. Characterization information summaries were evaluated for content in ID-SDA-SOIL Lots 98 and 99; ID-SDA-DEBRIS Lots 82 through 84; ID-SDA-SLUDGE Lots 435 and 436; and ID-ANLE-S5000 Lot 41 and were found to be complete and accurate.

AK Discrepancy resolutions 703 and 704, with associated NCRs, were reviewed and determined to be complete.

The audit team verified the required quarterly repeat of the data-generation level data for the following:

RH:

|                                  |                                  |
|----------------------------------|----------------------------------|
| 3 <sup>rd</sup> Quarter 2015 NDE | 1 <sup>st</sup> Quarter 2016 NDE |
| 4 <sup>th</sup> Quarter 2015 NDE | 3 <sup>rd</sup> Quarter 2015 VE  |

VE: No RH characterization activities were performed in the 4<sup>th</sup> quarter 2015 and 1<sup>st</sup> quarter 2016.

CH:

|                                 |                                 |
|---------------------------------|---------------------------------|
| 2 <sup>nd</sup> Quarter 2015 VE | 3 <sup>rd</sup> Quarter 2015 VE |
|---------------------------------|---------------------------------|

NDE: No CH characterization activities were performed in the 2<sup>nd</sup> and 3<sup>rd</sup> quarters 2015.

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

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

The audit team conducted interviews with responsible personnel and reviewed implementing procedures CCP-TP-030, Rev. 34, *CCP CH TRU Waste Certification and WWIS/WDS Data Entry*, and CCP-TP-530, Rev. 12, *CCP RH TRU Waste Certification and WWIS/WDS Data Entry*, to determine the degree to which they address upper-tier requirements. The team determined that the referenced procedures were adequate in addressing applicable requirements.

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

The audit team reviewed waste characterization case files for four CH waste containers and three RH waste containers. INL CH containers ARP82750, ARP82854, ARP82709, and SRP17904 were certified under procedure CCP-TP-030, Rev. 34, which allows certification using IDC modules. INL RH containers ANLE2A-1, ANLE17B-1, and FCO100C-3A were certified utilizing functions of the IDC for certification.

NWP WCO personnel were determined to be familiar with the process of characterization of CH and RH waste containers for submitting in conjunction with a new WSPF.

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

#### 5.4.4 Real-time Radiography

The audit team evaluated the adequacy, implementation, and effectiveness of the INL/CCP RTR characterization process for RH SCG S5000 debris waste. QA activities related to RTR that were audited included personnel training and qualification, control of nonconforming conditions, document control, records, control of measuring and test equipment (M&TE), logbooks, and work control for conduct of operations.

The team reviewed procedures CCP-TP-508, Rev. 11, *CCP RH Standard Real-Time Radiography Inspection Procedure*; CCP-TP-028, Rev. 9, *Radiographic Test Drum and Training Container Construction*; and CCP-QP-002, Rev. 40, *CCP Training and Qualification Plan*, and determined the procedures adequately address upper-tier requirements.

The audit team observed the RTR of drum ANLE31A-2 for BDR INLRHRTR16008 at the Idaho Nuclear Technology Engineering Center (INTEC) facility. The team examined the RTR operational logbooks and verified logbook entries were logged correctly and reviewed by the Vendor Project Manager (VPM) as required. The team also interviewed the operators and inspected the RTR unit. An evaluation of video and audio recordings of RTR analyses and review of BDRs and records for RH RTR were completed with respect to QA and technical content.

The audit team examined the following RTR RH BDRs and RTR tapes generated from operations performed in the INTEC facility to verify implementation and compliance with the requirements for documenting RTR activities, as stipulated in CCP-TP-508.

|               |               |               |
|---------------|---------------|---------------|
| INLRHRTR15005 | INLRHRTR15009 | INLRHRTR16003 |
| INLRHRTR15006 | INLRHRTR15010 | INLRHRTR16004 |
| INLRHRTR15007 | INLRHRTR16001 | INLRHRTR16005 |
| INLRHRTR15008 | INLRHRTR16002 | INLRHRTR16006 |

The team examined training records for four RTR operators and verified that the operators were appropriately qualified as required.

The procedures reviewed, results of field observations, and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for RTR activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results. No concerns related to real time radiography were identified.

#### 5.4.5 Visual Examination

The audit team evaluated the adequacy, implementation, and effectiveness of INL/CCP characterization and certification of CH SCGs S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris waste, and RH S5000 debris waste using the VE

process. The team evaluated procedures CCP-QP-002, Rev. 40, *CCP Training and Qualification Plan*; CCP-TP-006, Rev. 20, *CCP Visual Examination Technique for INL Newly Generated TRU Waste*; and CCP-TP-500, Rev. 15, *CCP Remote-Handled Waste Visual Examination*. The results of the review indicated that the procedures adequately address upper-tier requirements.

The audit team examined training records for eight VE Operators/ITRs, and confirmed the appointment of three INL/CCP VE Experts (VEEs). The team verified that VE Operators/ITRs and VEEs were appropriately qualified as required. INL/CCP uses the two-operator method when conducting VE characterization activities. VE is performed by two qualified operators who visually examine the waste and place it into containers. The audit team interviewed VE Operators, VEEs, the VE Cognizant Engineer, and the CCP RH Manager.

The audit team toured Hot Cell 308 in Building CPP-659 at the INTEC facility and observed RH VE being performed on containers ANLE19B-1A, ANLE19B-1B, and ANLE19B-1C from SCG S5000 debris waste stream ID-ANLE-S5000. The team verified that the most current revision of CCP-TP-500 (Rev. 15) was being used to perform VE, and the most current revision of the associated AK Summary Report (CCP-AK-INL-500, Rev. 11) was available for reference as needed. The audit team confirmed that no CH VE operations have been performed since the end of fiscal year 2015.

The audit team examined VE operational logbooks CCP-RH-INL-VE-010 for VE activities performed on RH waste at the INTEC facility, CCP-INL-VEL-030 (Airlock 5), CCP-INL-VEL-031 (Airlock 6), and CCP-INL-VEL-032 (Airlock 8) for VE activities performed at the ARP-8 facility. The audit team verified logbook entries were logged correctly and reviewed by the VPM as required.

The audit team examined the following VE RH BDR and eight VE CH BDRs and determined that they were appropriately completed as required.

|                  |                  |                  |
|------------------|------------------|------------------|
| INLRHVE15001     | IN-ARP-VE-003304 | IN-SRP-VE-000975 |
| IN-ARP-VE-003270 | IN-ARP-VE-003308 | IN-SRP-VE-001012 |
| IN-ARP-VE-003295 | IN-ARP-VE-003321 | IN-SRP-VE-001017 |

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

#### **5.4.6 Nondestructive Assay**

The audit team assessed the adequacy, implementation, and effectiveness of the NDA systems used at INL as part of the CCP to characterize waste from CH SCGs S3000, S4000, and S5000. The audit team evaluated the WAGS and the SWEPP SGRS. The SGRS and WAGS devices are no longer used for CH measurements at INL/CCP. The

audit team evaluated BDRs generated up to the time that the equipment was taken out of service on October 1, 2015.

The SGRS and WAGS are both gamma spectrometers with multiple high-resolution broad energy germanium (BEGe) detectors. The WAGS uses six such detectors divided into two vertical banks of three detectors each. One bank is positioned opposite a set of three Ba-133 sources. These detectors are calibrated, based on a density correction obtained from the Ba-133 transmission, to quantify gamma-emitting radionuclides using the Canberra MGA software. The second bank of three BEGe detectors uses cadmium filters to attenuate low-energy gamma rays, thus reducing dead time and increasing measurement resolution. The spectra obtained from these detectors are used to determine the relative isotopic ratios of gamma-emitting radionuclides. The SGRS differs from the WAGS in that it does not use a transmission source to perform a density correction. The SGRS utilizes four BEGe detectors that each acquires a gamma spectrum. The four spectra are then summed and corrected using a multi-curve correction that was developed during system calibration. This multi-curve correlates detector efficiency with waste density and gamma energy. Once the spectra are corrected, the same Canberra MGA software is used to quantify the individual radionuclides present. Both the WAGS and the SGRS can assay 55-gallon (208-liter) drums. CBFO previously evaluated these NDA systems during Audit A-15-18.

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

- System stability as determined by the implementation and effectiveness of quality control measurements, calibration verifications and weekly interfering matrix checks
- Applicability of each system's calibration and operational range to the matrix, geometry and radionuclide content of samples assayed since the last audit
- Successful participation in the CBFO-sponsored NDA Performance Demonstration Program
- Completed BDRs to ensure data are reported and reviewed as required
- Data storage and retrievability
- Personnel qualification and training
- Continued operability and condition of the WAGS and SGRS since Audit A-15-18

The audit team reviewed the following documents to guide checklist development and guide personal interviews, and as objective evidence of the adequate implementation of top-tier requirements and satisfactory and effective implementation of those requirements.

Calibration Reports

CCP-INL-WAGS-08-002 Cal Addendum    CCP-INL-WAGS-15-003    CCP-INL-SGRS-15-002  
CCP-INL-SGRS-001 R1

Total Measurement Uncertainty

CCP-INL-WAGS-002 04-20-05)    CCP-INL-SGRS-0002\_TMU (04-21-05)

Operating Procedures

CCP-TP-010, *CCP WAGS and SWEPP SGRS Calibration Procedure*  
CCP-TP-019, *CCP WAGS Operating Procedure*  
CCP-TP-115, *CCP SWEPP SGRS Operating Procedure*

Operating Documents (Logbooks)

CCP-INL-NDA-WAGS-023 log    CCP-INL-NDA-SGRS-025 log    CCP-INL-NDA-SGRS-026 log

Calibration Verifications/Confirmations

CCP-INL-WAGS-001 Cal Conf/Verif R0    CCP-INL-WAGS-001 Cal Conf/Verif R1    CCP-INL-SGRS-001 Cal Conf/Verif R2

Quality Control Measures

CCP-INL-WAGS-15-004 WIM    CCP-INL-SGRS-15-003 WIM

Batch Data Reports

WAGS: (3 BDRs of approximately 25 completed since the last audit, selected to represent two different waste streams):

INNDAW140123    INNDAW150037    INNDAW150060

SGRS: (2 BDRs of approximately 42 completed since the last audit selected to represent three different waste streams):

INNDAS150044    INNDAS150085

The audit team examined electronic and paper copies of reports and records.

The calibration verifications for the WAGS and SGRS were reviewed for technical adequacy and found to be acceptable.

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

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

The audit team assessed the adequacy, implementation, and effectiveness of the DTC methodology used at INL as part of the CCP to characterize waste from SCGs S3000 and S5000. The team also evaluated the DTC measurement system.

DTC measurements are accomplished using multiple detectors: one to obtain the relative contributions of Co-60 and Cs-137 to the gamma dose rate, and one of two probes (either high-range or low-range) to take dose rate measurements. CBFO previously evaluated the DTC methodology during Audit A-15-18.

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

- System stability as indicated by the implementation and effectiveness of quality control measurements, and the use of calibrated equipment
- Applicability of each detector's calibration and operational range to the matrix geometry and radionuclide content of samples assayed since the last audit
- Completed BDRs to ensure data are reported and reviewed as required
- Data storage and retrievability
- Personnel qualification and training
- Document distribution, control, and use
- Continued operability and condition of the DTC equipment since Audit A-15-18
- M&TE calibration and recall program

The audit team interviewed DTC personnel, observed equipment and measurement operations, and examined electronic and paper copies of reports and records.

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

M&TE utilized in the area included the drum scale, Transcell scale #7D200110007610/32703. The unit calibration was verified to be current, with a

pending due date of 06/25/16. The site demonstrated that the scale was identified in the recall program and scheduled for recalibration prior to the expiration date.

The dose rate measurement is acquired using either a Thermo Fisher Scientific Model RO-7 High Range Survey System or a Thermo Fisher Scientific Model FH 40 G Dose Rate Measuring Unit depending on the level of the radiation dose measurement relative to the environmental background. Neutron measurements were obtained utilizing a Thermo Fisher Scientific Model E600 with NRD probe.

The audit team observed the enclosure and shielding via closed circuit camera. CCP procedures were reviewed and operations staff was interviewed. Data acquisition and measurement data were observed and data contained in BDRs were reviewed.

The audit team reviewed the following 10 BDRs, which constitute a sample size of 100%:

INLRHDTTC14006 – 3 containers from waste stream ID-HFEF-S5000 RP  
INLRHDTTC15006 – 3 containers from waste stream ID-ANLE-S5000  
INLRHDTTC15007 – 8 containers from waste stream ID-ANLE-S5000  
INLRHDTTC15008 – 8 containers from waste stream ID-ANLE-S5000  
INLRHDTTC15009 – 12 containers from waste stream ID-ANLE-S5000  
INLRHDTTC15010 – 8 containers from waste stream ID-ANLE-S5000  
INLRHDTTC15011 – 10 containers from waste stream ID-ANLE-S5000  
INLRHDTTC16001 – 8 containers from waste stream ID-ANLE-S5000  
INLRHDTTC16002 – 8 containers from waste stream ID-ANLE-S5000  
INLRHDTTC16003 – 8 containers from waste stream ID-ANLE-S5000  
INLRHDTTC16004 – 8 containers from waste stream ID-ANLE-S5000  
INLRHDTTC16005 – 8 containers from waste stream ID-ANLE-S5000  
INLRHDTTC16006 – 6 containers from waste stream ID-ANLE-S5000

One concern was identified during the audit and was classified as a CAQ, resulting in the issuance of CBFO CAR 16-045 (see section 6.1). The audit team observed gamma and neutron measurements taken and recorded in accordance with CCP-TP-504 Rev. 18, section 4.1.5. The measurement equipment was calibrated and oriented as required by the operating procedure. The audit team noted that the readings were taken by the CCP Operator at the control panel and relayed to the Radiological Controls Technician (RCT) for recording, and that the time between readings was approximately 10 seconds. Per manufacturer's recommendations for the operation of the neutron instrument, response time on the observed scale should have approximated 60 seconds. When asked by the audit team regarding response times associated with the neutron reading, the Operator was unaware of any requirements. No response times were addressed in the operating procedure. Based on the audit team's observations, neutron measurements observed cannot not be considered accurate because the process did not meet the manufacturer's recommendations for response times.

With the exception of the concern identified, the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for DTC activities are adequately established for compliance

with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### **5.4.8 Flammable Gas Analysis**

The audit team verified DOE/WIPP 06-3345, Rev. 9, *Waste Isolation Pilot Plant Flammable Gas Analysis*, used at the headspace gas sampling and analysis facility in the RWMC was current, and the personnel performing flammable gas analysis were properly trained and qualified. The team was informed that the lead operator is currently training two new operators in preparation for resumption of flammable gas analysis operations.

For analysis of the samples, INL-CCP uses four Hewlett-Packard gas chromatography/mass spectrometry (GC/MS) systems equipped with Thermal Conductivity Detectors in addition to the Mass Spectral detectors and a sample splitter which delivers sample to both detectors. The site currently utilizes two instruments, #9 and #10. The other two instruments, #5 and #6, were unplugged and were not in operation during the facility walk-through. Instruments #5 and #6 are not planned to be used in the future.

Initial calibration reports IN14FG9112\_ICAL, reported during the previous audit, and IN15FG10072\_ICAL were examined. All initial calibrations were determined to be correctly performed, satisfactory and effective, and referenced in the FGA BDRs as applicable. The ICAL utilized in the randomly selected BDRs for instrument #6 was still active since the previous audit and is reported as IN14FG6145\_ICAL, evaluated in the previous audit.

The team examined the Minimum Detection Limit (MDL) spreadsheet from instrument #9 IN11FG9004\_MDL and MDL spreadsheet IN13FG10014\_MDL, from the previous audit. Results were verified to be correctly calculated and the spreadsheet was referenced in the appropriate FGA BDRs.

Analytical BDRs IN15FG10078, IN15FG10084, IN15FG10096, IN15FG10111, and IN15FG6042 were examined and were found to be complete and acceptable. Each BDR is reviewed by the ITR, as required by procedure. Transmittal of the reports to CCP records was verified to comply with procedural requirements.

INL-CCP logbooks CCP-INL-HSG-UNIT6-012 and CCP-INL-HSG-UNIT9-005 were reviewed during the previous audit. Entries were reported to be legible and timely, reviewed and initialed as required, and contained equipment status entries, preventative maintenance performed, and repairs. No logbook entries are being made at this time due to inactivity of the equipment transition of performance of FGA analyses to a new contractor.

The audit team verified the ultra-high purity (UHP) gases used for analysis and the carrier gases used for instruments #9 and #10. Documentation verified included Certificates of Accuracy for master calibration cylinders CC71701 and CC309970 (exp. 4-14-19), and for 1-bromofluorobenzene tune cylinder CC316154 (exp. 2-5-18). The

team verified the working class calibration cylinder documentation ALM012275 (exp. 1-23-2016 – note that the expiration date was not exceeded at the time calibrations for past analyses were performed) and the ICAL cylinder documentation ALM044425 (exp. 12-13-15 – note that the expiration date was not exceeded at the time past analyses were performed). Finally, the team verified the expiration dates are acceptable for the UHP carrier gases (nitrogen cylinder XA7689 and helium cylinder 1C3317) as of the date of the audit.

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

#### **5.4.9 Gas Generation Testing Program**

The audit team verified that GGT has not been performed on drums since the previous audit. A walkthrough of the GGT drum testing area was performed and an inspection of the GGT analytical instruments was conducted. All required equipment and standards were verified to be compliant.

Personnel interviews were conducted on operation of GGT and training of operators was verified. Use of the latest revision of the GGT procedure was verified. The audit team reviewed GGT procedures CCP-PO-016, Rev. 6, *CCP Gas Generation Testing Quality Assurance Project Plan*; CCP-TP-083, Rev. 8, *CCP Gas Generation Testing*; and CCP-TP-138, Rev. 2, *Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure*. The procedures were found to adequately capture upper-tier requirements.

There have been no additions to the Long-Term Objective Report since the last audit. The audit team found that GGT procedures were satisfactorily implemented and effective.

Filter vent change-out is completed according to CCP-TP-082, Rev. 10, *CCP Waste Container Filter Vent Operation*. Personnel were found to be properly trained for filter vent change-out activities; however, no such operations have been performed since the previous audit. The filters are maintained in Conex #2036 and the filters are NFT19SDS side-port filters. Postings in the radiological controlled area were determined to be appropriate for the work being performed.

Filter change-out procedures were found to be satisfactorily implemented and effective.

With the exception of the concerns identified, the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for GGT activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results. No concerns related to gas generation testing were identified.

#### **5.4.10 Container Management**

The audit team verified the adequacy of CCP-TP-509, Rev. 6, *CCP Remote Handled Transuranic Container Tracking*, and CCP-TP-068, Rev. 12, *CCP Standardized Container Management*. Scale calibration was verified by the team during the NDA process evaluation. The candidate container observed at INTEC was a 55-gallon drum from the AK tracking ANLE31A-2. The drum was placed on a rotating table with a gamma detector and a neutron ball detector placed one meter from the surface of the drum.

No container travelers have been completed since the previous audit. Container traveler completion activities will resume when waste shipment to the WIPP is reauthorized.

For RTR completed during the winter months at the INL, containers must undergo a thawing period prior to analysis according to Engineering Design File number 10679, Rev. 0, *Heat Transfer Thaw Time Evaluation of Lot 6 RH-TRU Drums*. With the exception of the concerns identified, the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for container management activities are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results. The audit team identified no concerns related to container management.

### **6.0 CORRECTIVE ACTIONS, OBSERVATIONS, AND RECOMMENDATIONS**

#### **6.1 Corrective Action Reports**

During the audit, the audit team may identify CAQs, as described below, and document such conditions using 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 (SCAQ) – 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.

One CAR was issued as a result of the audit.

#### **CAR 16-045**

Condition:

During interviews with INL and CCP personnel and as a result of observation of a

neutron measurement activity, the audit team determined that neutron measurements that are taken and recorded in accordance with CCP-TP-504, Rev. 18, are not accurate based on manufacturer recommendations for response time considerations. The team determined that CCP operators are not trained in the proper use of the neutron instrumentation being utilized and were not placing the neutron measurement equipment in a measurement location for an adequate length of time consistent with usual measurement processes and manufacturer recommendations for this type of equipment. The operators, supervisors, and CCP managers were not able to provide definitive documentation of training regarding knowledge of gamma and/or neutron instrumentation operation, in performance of measurements using these types of instruments, and/or training that covered manufacturer and standard radiation measurement response time considerations. CCP and INL procedures and training content do not appear to address manufacturer recommendations for response times. Corrective actions to address this CAQ will include remedial, investigative, and actions to preclude recurrence.

Requirement:

CBFO-94-1012, CBFO QAPD, Rev. 12, Section 1.2:

"Personnel shall be trained and qualified to ensure they are capable of performing their assigned tasks and to ensure that job proficiency is maintained."

CBFO-94-1012, CBFO QAPD, Rev. 12, Section 2.1.1.D:

"Work shall be planned, authorized, and accomplished under controlled conditions using technical standards, QA requirements, and implementing procedures commensurate with applicable control levels."

CCP-TP-504, *CCP Dose-to-Curie Survey Procedure for Remote Handled Transuranic Waste*, Rev. 18, Section 4.1.5 states in part:

"Perform container measurements as follows:

[H] Measure **AND** record the neutron dose rate (mrem/hr) on Attachment 2 in the Dose Rate 1 field (N/A if not applicable).

[J] Measure **AND** record the gamma dose rate on Attachment 2 in the Dose Rate 2 field."

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

During the audit, the audit team may identify CAQs. The audit team members and the Audit Team Leader (ATL) evaluate the CAQs to determine if they are significant. Once a determination is made that the CAQ is not significant, the audit team member, in conjunction with the ATL, determines if the CAQ is an isolated case requiring only remedial action and therefore can be CDA. Deficiencies that can be classified as CDA are those isolated deficiencies that do not require a root cause determination or actions to preclude recurrence, and those for which correction of the deficiency can be verified prior to the end of the audit. Examples include one or two minor changes required to correct a procedure (isolated), one or two forms not signed or not dated (isolated), or one or two individuals have not completed a reading assignment.

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

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

### **CDA 1**

Condition:

*An Interface Waste Management Documents List* has been developed for RH waste streams ID-HFEF-S5000-RP and ID-HFEF-S3000-RP in accordance CCP-TP-005 R28, *CCP Acceptable Knowledge Documentation*, sections 4.2.9 through 4.2.19. Sixteen generator site plans, procedures, or reports are cited on the lists and captured in the AK record with a unique AK Source Document number. However, the documentation of a CCP walk-down of these documents with the site SME/POC has not been documented on the AK Source Document Summary (Attachment. 3), as required by section 4.2.14 and the note above, and 4.2 15 for 10 of the 16 documents.

Documentation of the verification step (i.e., a verbal walk-down of the generator site document contents) with the site SME/POC, including the date of the verification and the name of the site SME/POC contacted, has been added to each of the 10 AK Source Document Summaries, Attachment 3, *Acceptable Knowledge Source Document Summary*, as required. The audit team reviewed the *Waste Management Documents List* and the 10 Attachment 3 documents and determined that the revised list and attachments provide a sufficiently detailed and reviewed AK summary in accordance with procedure. The deficiency was therefore determined to have been corrected during the audit.

Requirement:

CCP-TP-005, Rev. 28, *CCP Acceptable Knowledge Documentation*, Sections 4.2.9 through 4.2.19 state requirements regarding compiling and verifying AK documentation and completion of Attachment 3.

### **6.3 Observations**

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

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

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

The audit team identified the following Observation during the audit.

**Observation 1**

The audit team observed that WIPP Forms may not be generated when necessary and in conjunction with the scope of a NCR, based on the language in CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*, Rev. 25. For example, NCR-INL-0015-15, Rev. 0, could be interpreted as necessitating a WIPP Form, based on the procedural requirement as written. An incorrect version of a VE technique form was used. Corrective actions in the NCR included completion of the correct form and submittal to records. A WIPP Form might be determined to be in order to address programmatic reasons that resulted in the use of the out-of-date form. Currently, a WIPP Form is written if a nonconforming condition is repeated multiple times within a certain timeframe, or if the nonconforming condition is deemed significant. If this practice continues, potential programmatic CAQs may not be identified and corrected through the WIPP Form process.

**6.4 Recommendations**

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

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

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

One Recommendation was presented to INL/CCP management for consideration during the audit.

**Recommendation 1**

The audit team identified that AK Summary Report CCP-AK-INL-620 Rev. 1, contains references to two somewhat unique materials, uranium trichloride, and an alloy of depleted uranium and metals identified as "uranium fissium." The team recommends that CCP consider adding these materials to the chemical table of the AK Summary Report to provide completeness and to assure that some consideration is given to them during the preparation of a Chemical Compatibility Evaluation report.

## **7.0 LIST OF ATTACHMENTS**

**Attachment 1: Personnel Contacted During Audit A-16-18**

**Attachment 2: Summary Table of Audit Results for A-16-18**

**Attachment 3: Listing of Audited Documents for A-16-18**

**Attachment 4: Processes and Equipment Reviewed During Audit A-16-18 of the  
INL/CCP**

| <b>PERSONNEL CONTACTED DURING AUDIT A-16-18</b> |                                      |                         |                               |                           |
|---|--------------------------------------|-------------------------|-------------------------------|---------------------------|
| <b>NAME</b>                                     | <b>TITLE/ORG</b>                     | <b>PREAUDIT MEETING</b> | <b>CONTACTED DURING AUDIT</b> | <b>POST AUDIT MEETING</b> |
| Abbott, Preston                                 | MCS NDA                              |                         |                               | X                         |
| Armijo, Cheryl                                  | Training Records Analyst/CCP         | X                       |                               |                           |
| Bhatt, Raj                                      | RH TRU (Fluor)                       |                         | X                             | X                         |
| Billett, Michelle                               | CCP Training Coordinator             | X                       | X                             |                           |
| Birge, Gary                                     | TRU Waste Cert Manager DOE-CBFO-TSTD | X                       | X                             | X                         |
| Boyko, Robert                                   | Auditor                              |                         |                               | X                         |
| Bradford, Rhett                                 | Tech Spec VE                         |                         |                               | X                         |
| Bret Parmer, J.                                 | VEO                                  | X                       |                               |                           |
| Chester, Katie                                  | Auditor                              |                         | X                             | X                         |
| Christensen, Tyson                              | CCP RTR/LO                           | X                       |                               | X                         |
| Clements, Tom                                   | TRU Program Manager                  | X                       | X                             | X                         |
| Corey Boland, S.                                | CCP DTC/OSPNEY                       |                         |                               | X                         |
| Davis, Chris                                    | RTR Operator/VEO                     | X                       |                               |                           |
| Dover, Dale                                     | CCP Lead Operator FG/AGGT            | X                       | X                             | X                         |
| Fisher, A.J.                                    | Support Services Manager             |                         |                               | X                         |
| Frost, Lisa                                     | CH TRU/AKE/STR                       | X                       |                               | X                         |
| Gomez, Paul                                     | Sr. Technical Specialist             |                         |                               | X                         |
| Greenwood, Trey                                 | CCP/AK Manager/AKE/SPM               | X                       |                               | X                         |
| Grenfell, Michael                               | VPM CCP                              |                         | X                             |                           |
| Gulbransen, Ed                                  | CCP Manager                          |                         | X                             | X                         |
| Hoggatt, Kyle                                   | AKE (in-training)                    | X                       |                               | X                         |
| Johnson, Carrie                                 | AKE                                  | X                       |                               |                           |
| Joo, Irene                                      | CCP RH Project Manager               | X                       |                               | X                         |
| Joo, Irene                                      | RH Manager                           | X                       |                               |                           |
| Kantrowitz, Richard                             | SPM/CH Project Manager               | X                       | X                             |                           |
| Kirkes, Creta                                   | WCO/Certification/CCP                | X                       |                               |                           |
| Knox, Greg                                      | Auditor                              |                         |                               | X                         |

| <b>PERSONNEL CONTACTED DURING AUDIT A-16-18</b> |                             |                         |                               |                           |
|---|-----------------------------|-------------------------|-------------------------------|---------------------------|
| <b>NAME</b>                                     | <b>TITLE/ORG</b>            | <b>PREAUDIT MEETING</b> | <b>CONTACTED DURING AUDIT</b> | <b>POST AUDIT MEETING</b> |
| Maestas, Ricardo                                | NMED Regulator              | X                       |                               |                           |
| Martinez, Porf                                  | Auditor                     |                         |                               | X                         |
| Martinez, Shelly                                | CE/NDE/VE                   | X                       |                               | X                         |
| McCoy, John                                     | TRU Waste Program           |                         | X                             |                           |
| Miehls, Dennis S.                               | Sr. QA Specialist           | X                       |                               | X                         |
| Miles, Jeri                                     | CCP CH Project Manager      | X                       | X                             | X                         |
| Oliver, James R.                                | Auditor                     |                         |                               | X                         |
| Pattee, Spencer                                 | VPM/VEE                     | X                       | X                             | X                         |
| Pearcy, Sheila                                  | CCP Records Manager/CCP/TFE | X                       |                               | X                         |
| Pinnock, David                                  | DTC Operator                | X                       |                               |                           |
| Poling, Steve                                   | RH TRO OPS                  |                         | X                             |                           |
| Poole, Jeff                                     | CCP RH VPM/VEE              | X                       | X                             | X                         |
| Pruitt, Doug                                    | DOE-ID RH Program           |                         | X                             |                           |
| Pyeatt, Brandye                                 | QA Analyst/NCR Coordinator  | X                       |                               | X                         |
| Ramirez, Mike                                   | Manager                     | X                       |                               | X                         |
| Riggs, Charlie                                  | Auditor                     |                         |                               | X                         |
| Schuetz, Jim                                    | Audit Lead                  |                         | X                             | X                         |
| Smith, Coleman                                  | NMED Regulator              | X                       |                               |                           |
| Smith, Scott                                    | CCP/AKE                     | X                       |                               | X                         |
| Srala, Faye                                     | STR                         | X                       |                               |                           |
| Swenson, Michael                                | RH TRU Program (Fluor)      |                         | X                             | X                         |
| Templeton, Bret                                 | CCP DTC/OSPNEY              |                         |                               | X                         |
| Troescher, P.D.                                 | Fluor Program Manager       |                         | X                             |                           |
| Vawter, Roger                                   | Auditor                     |                         |                               | X                         |
| Vernon, Jim                                     | Auditor-In-Training (AIT)   |                         |                               | X                         |
| Walsh, Jack                                     | Auditor                     |                         |                               | X                         |
| Willcox, Mary W.                                | Observer DOE-Idaho          |                         |                               | X                         |

**Summary Table of Audit Results for A-16-18**

| Documents                    | Concern Classification |      |     |     | QA Evaluation |                | Technical     |
|------------------------------|------------------------|------|-----|-----|---------------|----------------|---------------|
|                              | CARs                   | CDAs | Obs | Rec | Adequacy      | Implementation | Effectiveness |
| <b>Activity</b>              |                        |      |     |     |               |                |               |
| Program Status/Interface     |                        |      |     |     | A             | S              | E             |
| Acceptable Knowledge         |                        | 1    |     | 1   | A             | S              | E             |
| Reconciliation of DQOs/WSPFs |                        |      |     |     | A             | S              | E             |
| Project Level V&V            |                        |      |     |     | A             | S              | E             |
| WWIS/WDS                     |                        |      |     |     | A             | S              | E             |
| Real-time Radiography        |                        |      |     |     | A             | S              | E             |
| Visual Examination           |                        |      |     |     | A             | S              | E             |
| Nondestructive Assay         |                        |      |     |     | A             | S              | E             |
| Dose-to-Curie                | 16-045                 |      |     |     | A             | S              | E             |
| Flammable Gas Analysis       |                        |      |     |     | A             | S              | E             |
| Gas Generation Testing       |                        |      |     |     | A             | S              | E             |
| Leak Testing                 |                        |      |     |     | A             | S              | E             |
| Container Management         |                        |      |     |     | A             | S              | E             |
| Training                     |                        |      |     |     | A             | S              | E             |
| Nonconformance Reporting     |                        |      | 1   |     | A             | S              | E             |
| QA Records                   |                        |      |     |     | A             | S              | E             |
| <b>TOTALS</b>                | 1                      | 1    | 1   | 1   | A             | S              | E             |

**Definitions**

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

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

Rec =Recommendation  
A = Adequate  
NA = Not Adequate

| <b>LISTING OF AUDITED DOCUMENTS FOR A-16-18</b> |                     |            |   |
|---|---------------------|------------|---|
|   | <b>Document No.</b> | <b>Rev</b> | <b>Document Title</b>   |
| 1.  | CCP-PO-001          | 22         | CCP Transuranic Waste Characterization Quality Assurance Project Plan                                 |
| 2.  | CCP-PO-002          | 27         | CCP Transuranic Waste Certification Plan  |
| 3.  | CCP-PO-005          | 27         | CCP Conduct of Operations   |
| 4.  | CCP-PO-016          | 6          | CCP Gas Generation Testing Program Quality Assurance Project Plan                                     |
| 5.  | CCP-PO-024          | 15         | CCP/INL Interface Document  |
| 6.  | CCP-PO-501          | 9          | CCP/INL RH TRU Waste Interface Document   |
| 7.  | CCP-QP-002          | 40         | CCP Training and Qualification Plan   |
| 8.  | CCP-QP-005          | 25         | CCP TRU Nonconforming Item Reporting and Control  |
| 9.  | CCP-QP-008          | 25         | CCP Records Management  |
| 10.   | CCP-QP-010          | 25         | CCP Document Preparation, Approval, and Control   |
| 11.   | CCP-QP-016          | 21         | CCP Control of Measuring and Test Equipment   |
| 12.   | CCP-QP-017          | 4          | CCP Identification and Control of Items   |
| 13.   | CCP-QP-022          | 16         | CCP Software Quality Assurance Plan   |
| 14.   | CCP-QP-028          | 16         | CCP Records Filing, Inventorying, Scheduling, and Dispositioning                                      |
| 15.   | CCP-TP-001          | 21         | CCP Project Level Data Validation and Verification  |
| 16.   | CCP-TP-002          | 26         | CCP Reconciliation of DQOs and Reporting Characterization Data  |
| 17.   | CCP-TP-005          | 28         | CCP Acceptable Knowledge Documentation  |
| 18.   | CCP-TP-006          | 20         | CCP Visual Examination Technique for INL Newly Generated TRU Waste Retrieved from Pits                |
| 19.   | CCP-TP-010          | 5          | CCP Waste Assay Gamma Spectrometer (WAGS) & SWEPP Gamma-Ray Spectrometer (SGRS) Calibration Procedure |
| 20.   | CCP-TP-019          | 8          | CCP Waste Assay Gamma Spectrometer (WAGS) Operating Procedure   |
| 21.   | CCP-TP-028          | 9          | CCP Radiographic Test Drum and Training Container Construction  |
| 22.   | CCP-TP-030          | 34         | CCP CH TRU Waste Certification and WWIS/WDS Data Entry  |
| 23.   | CCP-TP-033          | 22         | CCP Shipping of CH TRU Waste  |
| 24.   | CCP-TP-058          | 6          | CCP NDA Performance Demonstration Plan  |
| 25.   | CCP-TP-068          | 12         | CCP Standardized Container Management   |
| 26.   | CCP-TP-082          | 10         | CCP Waste Container Filter Vent Operation   |
| 27.   | CCP-TP-083          | 8          | CCP Gas Generation Testing  |
| 28.   | CCP-TP-109          | 9          | CCP Data Reviewing, Validating, and Reporting Procedure   |
| 29.   | CCP-TP-113          | 19         | CCP Standard Contact-Handled Waste Visual Examination   |
| 30.   | CCP-TP-115          | 6          | CCP SWEPP Gamma-Ray Spectrometer (SGRS) Operating Procedure   |
| 31.   | CCP-TP-138          | 2          | CCP Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure                     |
| 32.   | CCP-TP-163          | 4          | CCP Evaluation of Waste Packaging Records for Visual Examination of Records                           |

| <b>LISTING OF AUDITED DOCUMENTS FOR A-16-18</b> |                     |            |   |
|---|---------------------|------------|---|
|   | <b>Document No.</b> | <b>Rev</b> | <b>Document Title</b>   |
| 33.   | CCP-TP-500          | 15         | CCP Remote-Handled Waste Visual Examination                                   |
| 34.   | CCP-TP-504          | 18         | CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste       |
| 35.   | CCP-TP-506          | 5          | CCP Preparation of the RH TRU Waste AK Characterization Reconciliation Report |
| 36.   | CCP-TP-507          | 8          | CCP Shipping of Remote-Handled Transuranic Waste                              |
| 37.   | CCP-TP-508          | 11         | CCP RH Standard Real-Time Radiography Inspection Procedure                    |
| 38.   | CCP-TP-509          | 6          | CCP Remote-Handled Transuranic Container Tracking                             |
| 39.   | CCP-TP-512          | 6          | CCP Remote-Handled Waste Sampling   |
| 40.   | CCP-TP-530          | 12         | CCP RH TRU Waste Certification and WWIS/WDS Data Entry                        |
| 41.   | DOEWIPP 06-3345     | 9          | Waste Isolation Pilot Plant Flammable Gas Analysis Procedure                  |
| 42.   | WP 13-QA.03         | 25         | Quality Assurance Independent Assessment Program                              |

**Processes and Equipment Reviewed During Audit A-16-18 of the INL/CCP**

| WIPP #   | Process/Equipment Description  | Applicable to the Following Waste Streams/Groups of Waste Streams | Currently Approved by NMED | Currently Approved by EPA |
|--|--|---|----------------------------|---------------------------|
| <b>NEW PROCESSES OR EQUIPMENT</b>                        |  |   |                            |                           |
| --   | NO NEW PROCESSES   | --  | --                         | --                        |
| <b><u>PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT</u></b> |  |   |                            |                           |
| 14601C2  | Radiological characterization analysis using ORIGEN2.2<br>As identified in CCP-RC-INL-601  | Debris (S5000)  | N/A                        | YES                       |
| 14631C3  | Radiological characterization neutron dose-to-curie (DTC) method by confirmation<br>As identified in CCP-RC-INL-631  | Debris (S5000)  | N/A                        | YES                       |
| 14VE1*   | Visual Examination (VE)<br>Procedure – CCP-TP-006<br>Description – Visual Examination Technique (VET)  | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                 | YES                        | YES                       |
| 14RHVE1  | Visual Examination<br>Procedure – CCP-TP-500<br>Description – The VE of audio/video media process used for a total of 70 retrievably stored remote-handled (RH) debris waste drums | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                 | YES                        | YES                       |

**Processes and Equipment Reviewed During Audit A-16-18 of the INL/CCP**

| <b>WIPP #</b> | <b>Process/Equipment Description</b>  | <b>Applicable to the Following Waste Streams/Groups of Waste Streams</b> | <b>Currently Approved by NMED</b> | <b>Currently Approved by EPA</b> |
|---------------|---|--|-----------------------------------|----------------------------------|
| 14RRH1        | Nondestructive Examination Procedure – CCP-TP-508<br>Equipment – RTR-RTR-0659<br>Description – VJ Technologies, Real-time Radiography Characterization (RH-RTR-0659) System | Solids (S3000)<br>Debris (S5000)   | YES                               | YES                              |
| N/A           | Acceptable Knowledge  | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                        | YES                               | YES                              |
| N/A           | Data Validation and Verification  | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                        | YES                               | YES                              |
| N/A           | WIPP Waste Information System (WWIS)/Waste Data System (WDS)  | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                        | YES                               | YES                              |
| 14SGRS1*      | Nondestructive Assay Procedure – CCP-TP-115<br>Description – Stored Waste Examination Pilot Plant (SWEPP) Gamma Ray Spectrometer (SGRS)                                     | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                        | N/A                               | YES                              |

**Processes and Equipment Reviewed During Audit A-16-18 of the INL/CCP**

| <b>WIPP #</b> | <b>Process/Equipment Description</b>  | <b>Applicable to the Following Waste Streams/Groups of Waste Streams</b> | <b>Currently Approved by NMED</b> | <b>Currently Approved by EPA</b> |
|---------------|---|--|-----------------------------------|----------------------------------|
| 14WAGS1*      | Nondestructive Assay Procedure – CCP-TP-019<br>Description – Waste Assay Gamma Spectrometer   | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                        | N/A                               | YES                              |
| 14DTC1        | Radiological characterization process using dose-to-curie (DTC) and modeling-derived scaling factors for assigning radionuclide values to RH waste stream<br><br>Dose-rate fractional contribution of Cs-137 and Co-60 using OSPREY La <sub>3</sub> Br(Ce) gamma detector<br><br>Procedure CCP-TP-504 | Solids (S3000)<br>Debris (S5000)   | N/A                               | YES                              |
| 14GG1         | Gas Generation Testing Procedure – CCP-TP-083<br>Equipment – MGSS Unit/Cart 1 (GC-14B)<br>Description – Gas Generation Testing 55-gallon drums  | Waste Type IV  | N/A                               | N/A                              |
| 14GG2         | Gas Generation Testing Procedure – CCP-TP-083<br>Equipment – MGSS Unit/Cart 2 (GC-17A)<br>Description – Gas Generation Testing 55-gallon drums  | Waste Type IV  | N/A                               | N/A                              |

**Processes and Equipment Reviewed During Audit A-16-18 of the INL/CCP**

| <b>WIPP #</b> | <b>Process/Equipment Description</b> | <b>Applicable to the Following Waste Streams/Groups of Waste Streams</b> | <b>Currently Approved by NMED</b> | <b>Currently Approved by EPA</b> |
|---------------|--------------------------------------|--|-----------------------------------|----------------------------------|
| N/A           | Load Management                      | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                        | N/A                               | YES                              |
| N/A           | Quality Assurance Program            | Solids (S3000)<br>Soils (S4000)<br>Debris (S5000)                        | N/A                               | YES                              |

\* Indicates equipment currently deactivated that was used to generate BDRs prior to October 1, 2015. The program and procedures associated with the equipment and the BDRs will be evaluated as part of the scope of Audit A-16-18.