DOE F 1325.8

United States Government **Department of Energy**

# memorandum

Carlsbad Field Office
Carlsbad, New Mexico 88221

**DATE:** March 15, 2021

**REPLY TO ATTN OF:** CBFO:OQA:JL:JM:21-0132:UFC 2300.00

**SUBJECT:** Interim Audit Report A-21-28, INL/CCP RH Certification Audit

**TO:** Mr. Jim Malmo, Dept. Of Energy-Idaho

The Carlsbad Field Office (CBFO) conducted Certification Audit A-21-28 of the Idaho National Laboratory/Central Characterization Program (INL/CCP) on February 23 – 25, 2021. The Interim Audit Report is attached.

The audit team concluded that, overall, the INL/CCP remote-handled (RH) programs evaluated are adequate relative to the flow-down of requirements, and the technical activities evaluated are satisfactorily implemented and effective, in all areas, with the exceptions documented in the audit report.

No CBFO corrective action reports were issued as a result of this audit. Two Observations were identified and one Recommendation was offered for management consideration.

If you have any questions concerning the audit report, please contact me at (575) 499-5054.

JOE LOPEZ
Digitally signed by JOE LOPEZ
Date: 2021.03.15 13:57:55 -06'00'

Joe Lopez,
Software Quality Assurance Specialist
Carlsbad Field Office
Office of Quality Assurance

Attachment

210311

cc: w/attachment

| | |
|---|---|
| L. Perkins, EM-3.113 | *ED |
| R. Knerr, CBFO | ED |
| M. Hall, CBFO | ED |
| K. Princen, CBFO | ED |
| M. Brown, CBFO | ED |
| D. Jolley, CBFO | ED |
| M. Stapleton, CBFO | ED |
| D. Foreman, CBFO | ED |
| H. Cruickshank, CBFO | ED |
| T. Carver, CBFO | ED |
| A. Walker, CBFO | ED |
| D. Smith, CBFO | ED |
| T. Jenkins, DOE-ID | ED |
| C. Flohr, DOE-ID | ED |
| D. Pruitt, DOE-ID | ED |
| A. Wichmann, DOE-ID | ED |
| D. Larsen, DOE-ID | ED |
| G. Byram, AMWTP | ED |
| S. Poling, AMWTP | ED |
| J. McCoy, AMWTP | ED |
| E. Gulbransen, AMWTP | ED |
| S. Winterbottom, AMWTP | ED |
| J. Miles, AMWTP | ED |
| G. Tedford, AMWTP | ED |
| R. Hubler, AMWTP | ED |
| L. Frost, AMWTP | ED |
| I. Joo, AMWTP | ED |
| S. Dunagan, NWP | ED |
| S. Strong, NWP | ED |
| K. Stone, NWP/CCP | ED |
| R. Lee, NWP/CCP | ED |
| B. Pace, NWP/CCP | ED |
| R. Reeves, NWP/CCP | ED |
| C. Simmons, NWP/CCP | ED |
| J. Harvill, NWP/CCP | ED |
| J. Carter, NWP/CCP | ED |
| D. Moody, NWP/CCP | ED |
| D. Ivey, NWP/QA | ED |
| V. Ballew, NWP/QA | ED |
| S. Saiz, NWP/QA | ED |
| A. Boyea, NWP/QA | ED |
| J. Ellis, EPA | ED |
| T. Peake, EPA | ED |
| E. Feltcorn, EPA | ED |
| K. Pierard, NMED | ED |
| R. Maestas, NMED | ED |
| D. Biswell, NMED | ED |
| M. McLean, NMED | ED |
| N. Barka, NMED | ED |
| G. Walvatne, NMED | ED |
| T. Runyon, CTAC | ED |
| P. Martinez, CTAC | ED |
| S. Gomez, CTAC | ED |
| R. Castillo, CTAC | ED |
| D. Stegman, CTAC | ED |
| D. Harvill, CTAC | ED |
| J. Maupin, CTAC | ED |
| G. White, CTAC | ED |
| S. Sifuentes, SNL | ED |
| Site Documents | ED |
| WWIS Database Admin. | ED |
| CBFO M&RC | ED |
| CBFO QA File | |

*ED denotes electronic distribution

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

## INTERIM AUDIT REPORT

## OF THE

## IDAHO NATIONAL LABORATORY
## CENTRAL CHARACTERIZATION PROGRAM

## FOR

## REMOTE-HANDLED TRU WASTE ACTIVITIES

## AT

## IDAHO FALLS, IDAHO
## and CARLSBAD, NEW MEXICO

## AUDIT NUMBER A-21-28

## February 23 – 25, 2021

**Prepared by:** DUSTIN STEGMAN (Affiliate) Digitally signed by DUSTIN STEGMAN (Affiliate) Date: 2021.03.15 12:52:07 -06'00' **Date:** _____

Dustin Stegman, CTAC
Audit Team Leader

**Approved by:** Michael Brown for Digitally signed by Michael Brown Date: 2021.03.15 13:37:59 -06'00' **Date:** _____

Darren Jolley, Director
CBFO Office of Quality Assurance

## 1.0 EXECUTIVE SUMMARY

U. S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Certification Audit A-21-28 was performed to evaluate the adequacy, implementation, and effectiveness of established programs for transuranic (TRU) waste characterization activities performed for the Idaho National Laboratory (INL) by the Nuclear Waste Partnership LLC (NWP) Central Characterization Program (CCP). The audit team evaluated the programs, procedures, and processes for characterizing remote-handled (RH) TRU Summary Category Groups (SCGs) S3000 solids and S5000 debris wastes. The audit was conducted relative to the requirements of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP), the *CBFO Quality Assurance Program Document* (QAPD), the *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC), and the *Waste Isolation Pilot Plant Documented Safety Analysis* (DSA), Chapter 18.

Due to travel restrictions and to decrease the potential development, spread, and impact of the acute respiratory illness, COVID-19, the audit team did not travel to the INL site. Audit activities were conducted remotely and via teleconference, February 23 – 25, 2021.

In response to the New Mexico Environment Department (NMED) letter dated April 24, 2020, from Kevin Pierard, Chief, Hazardous Waste Bureau, to Greg Sosson, Acting Manager, CBFO, and Sean Dunagan, Project Manager, NWP, this report documents in detail the actions taken by auditors and technical specialists to verify compliance to WIPP HWFP Waste Analysis Plan (WAP) requirements. Although no field activities were evaluated at the INL facilities, verification of compliance was demonstrated through review of Batch Data Reports (BDRs), specific waste characterization process logbooks, and interviews conducted with appropriate operations and project management personnel.

The HWFP issued to the WIPP by the NMED requires that the DOE conduct audits of each generator/storage site prior to certifying that the site meets the waste characterization requirements for shipment of waste to the WIPP. In accordance with Attachment C6 of the HWFP, audits must be performed at least annually after the initial audit to determine continued compliance with the HWFP WAP.

The audit team concluded that the evaluated areas specific to the INL/CCP waste characterization program procedures for characterizing RH TRU SCGs S3000 solids and S5000 debris wastes adequately address upper-tier requirements and, were satisfactorily implemented and effective in achieving the desired results. Field activities for the Real-time Radiography (RTR) process for characterizing RH TRU SCGs S3000 solids and S5000 debris wastes were not evaluated during this audit; therefore, the implementation and effectiveness of the RTR process must be deemed indeterminate. Additionally, the implementation and effectiveness of the WIPP Waste Information System (WWIS)/Waste Data System (WDS) process was deemed indeterminate due to

inactivity in both SCGs. The INL/CCP RH program does not perform Flammable Gas Analysis (FGA); therefore, FGA was not evaluated for this audit

No WIPP HWFP WAP-affecting conditions adverse to quality (CAQs) (see section 6.1.1) or WAP-affecting Observations (see section 6.3.1) were identified during the audit. No non-WAP-affecting CAQs were identified (see section 6.1.2). There were no deficiencies corrected during the audit (CDA) (see section 6.2.2). There were two non-WAP-affecting Observations identified during the audit (see section 6.3.2), and one concern was offered to management as a Recommendation (see section 6.4).

## 2.0 SCOPE AND PURPOSE

### 2.1 Scope

The scope of the audit included evaluations for the adequacy, implementation, and effectiveness of the technical and quality assurance (QA) activities performed by the NWP CCP at INL for characterization of RH TRU SCGs S3000 solids and S5000 debris wastes. Due to heightened awareness and to reduce the potential development, spread, and impact of the acute respiratory illness, COVID-19, the audit team did not travel to the INL site. Mostl audit activities were conducted via teleconference and live-streaming, on February 23 – 25, 2021.

The following areas were evaluated remotely:

**General Activities**

- Results of Previous Audits
- Changes in Programs or Operations
- New Programs or Activities Being Implemented
- Changes in Key Personnel
- Generator Site Technical Review (GSTR) (non-WAP-related)

**WAP-Related Quality Assurance Activities**

- Nonconformances
- Personnel Qualification and Training
- Records

**Non-WAP-Related Quality Assurance Activities**

- INL/CCP Program Interface
- Measuring and Test Equipment (M&TE)*
- Software Version Installation*

*These QA activity evaluations are found within the report and do not have their own respective sections.

**WAP-Related Technical Activities**

- Acceptable Knowledge (AK)
- Project-Level Data Validation and Verification (PL V&V)
- Real-time Radiography (RTR)
- Visual Examination (VE)

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

**Non-WAP-Related Technical Activities**

- Dose-to-Curie (DTC)
- Container Management

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

- Waste Isolation Pilot Plant Hazardous Waste Facility Permit NM4890139088-TSDF
- DOE/CBFO-94-1012, *CBFO Quality Assurance Program Document* (QAPD)
- WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description*
- 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-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis* (DSA), Chapter 18

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

- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (QAPjP)
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-501, *CCP/INL RH TRU Waste Interface Document*
- Related CCP QA and technical implementing procedures

## 2.2 Purpose

Audit A-21-28 was conducted to evaluate the adequacy and effective implementation of program requirements for the characterization and certification of RH TRU SCGs S3000 solids and S5000 debris wastes at the INL for compliance with applicable upper-tier requirements. The audit team also evaluated specific QA elements relating to WIPP HWFP WAP requirements.

## 3.0 AUDIT TEAM, MANAGEMENT REPRESENTATIVE, TECHNICAL SPECIALISTS, AND OBSERVERS

| | |
|---|---|
| Joe Lopez | CBFO QA Management Representative |

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|---|---|
| Dustin Stegman | Audit Team Leader, CBFO Technical Assistance Contractor (CTAC) |
| Harley Kirschenmann | Auditor, CTAC (Program Status, Interface) |
| Bob Blyth | Auditor, CTAC (C6 QA – Training, Records) |
| Katie Gentry | Auditor, CTAC (C6 QA – WWIS/WDS, NCRs) |
| Nathan Denney | Auditor, CTAC (AK) |
| Prissy Yanez | Auditor, CTAC (RTR) |
| Steve Shafer | Auditor, CTAC (DTC) |
| Tim Boswell | Auditor, CTAC (VE, Container Management) |
| Paul Gilbert | Auditor-In-Training, CTAC (WWIS/WDS, NCRs) |
| Dick Blauvelt | Technical Specialist, CTAC (AK) |
| Randy Fitzgerald | Technical Specialist, CTAC (AK) |
| Paul Gomez | Technical Specialist, CTAC (PL V&V) |
| Shelly Gomez | Technical Specialist, CTAC (RTR) |
| Rick Castillo | Technical Specialist, CTAC (VE) |
| Jim Oliver | Technical Specialist, CTAC (DTC) |

**OBSERVERS**

| | |
|---|---|
| David Biswell | NMED |
| Ricardo Maestas | NMED |
| Megan McLean | NMED |
| Natalie Barka | NMED |
| Gary Walvatne | Trinity Engineering |
| Herb Cruickshank | CBFO Office of National TRU Program (ONTP) |

## 4.0 AUDIT MEETING ATTENDEES AND PERSONNEL CONTACTED

The audit meeting attendees and personnel contacted during the audit process are identified in Attachment 1. A pre-audit meeting was held on February 23, 2021, via teleconference. Daily management briefings were held to update INL/CCP management and staff on audit progress and identified concerns. A post-audit meeting was held on February 25, 2021, via teleconference.

Attachment 2 lists the INL/CCP personnel contacted during the audit by subject area. Attachment 3 contains a summary table of audit results. Attachment 4 identifies the WAP-related objective evidence compiled (provided in boxes). Attachment 5 lists the audited procedures. Attachment 6 lists the processes and equipment evaluated.

## 5.0 SUMMARY OF AUDIT RESULTS

### 5.1 Program Adequacy, Implementation, and Effectiveness

This audit was performed to assess the capability of INL/CCP to characterize RH TRU SCGs S3000 solids and S5000 debris wastes for compliance with the requirements specified in the WIPP HWFP WAP, the WIPP WAC, Chapter 18 of the WIPP DSA, and

the CBFO QAPD. The characterization methods assessed were AK, RTR, VE, and DTC. Other areas evaluated were data generation level (DGL), PL V&V, WIPP WWIS/WDS data entry, data quality objective (DQO) reconciliation, container management, and the preparation of Waste Stream Profile Forms (WSPFs). No other characterization methods were included in the scope of this audit.

The audit team concluded that, based on personnel interviews and review of associated documentation and records, the evaluated areas specific to the INL/CCP waste characterization program procedures for characterizing RH TRU SCGs S3000 solids and S5000 debris wastes adequately address upper-tier requirements. The program procedures reviewed were satisfactorily implemented and effective in achieving the desired results. Field activities for the RTR process for characterizing RH TRU SCGs S3000 solids and S5000 debris wastes were not evaluated during this audit; therefore, the implementation and effectiveness of the RTR process must be deemed indeterminate. Additionally, the WWIS/WDS process was deemed indeterminate due to inactivity in both SCGs.

## 5.2 General Activities

### 5.2.1 Results of Previous Audits

The audit team examined the results of the previous CBFO recertification audit of the INL/CCP (A-17-23). The audit was conducted at the INL/CCP facility near Idaho Falls, ID, and the NWP/CCP facilities in Carlsbad, NM, June 13-15, 2017. One non-WAP-affecting CAQ was identified. A Noncompliance Report (NCR), NCR-RHINL-0210-16, Rev. 1, was determined not to be reportable by the Certification Manager; however, the NCRM “CBFO” block was checked, indicating that it was reportable. The CAQ resulted in the initiation of Corrective Action Report (CAR) 17-039. The CBFO conducted an evaluation and verification of the corrective actions associated with CAR 17-039 and found them to be acceptable. The CAR is considered closed.

During the performance of this audit (A-21-28), the audit team verified sustained corrective action and did not observe any similar instances to the CAQ identified during the previous recertification audit (A-17-23), suggesting that steps taken to address these issues were adequate in precluding recurrence.

### 5.2.2 Changes in Programs or Operations

The audit team determined through interviews with the CCP Project Manager that there was one significant change in programs or operations since the previous recertification audit (A-17-23).

Procedure CCP-TP-508, *CCP RH Standard Real-Time Radiography Inspection Procedure*, is in transition to be incorporated into CCP-TP-053, *CCP Standard Real-*

*Time Radiography (RTR) Inspection Procedure*, to eliminate differences between the RH and CH radiography programs.

### 5.2.3 New Programs or Activities Being Implemented

The audit team determined through interviews with the CCP Project Manager that there were no significant new programs or activities implemented.

### 5.2.4 Changes in Key Personnel

The audit team determined through interviews with the CCP Project Manager that changes in key personnel since the previous recertification audit (A-17-23) include the following:

- Site Project Manager (SPM) change, June 30, 2020.

### 5.2.5 Generator Site Technical Review (GSTR) (non-WAP-related)

The CBFO and NWP, as WIPP HWFP co-permittees, performed GSTR-ID-1-17-01, January 23 – 27, 2017, at the INL, Fluor Idaho, LLC Idaho Clean-up Project (ICP), and areas associated with the handling and packaging of TRU waste (i.e., Advanced Mixed Waste Treatment Project [AMWTP], Accelerated Retrieval Project, Radioactive Waste Management Complex, and Idaho Nuclear Technology and Engineering Center [INTEC]). The GSTR covered both CH and RH TRU waste operations in Idaho. The GSTR Final Report was issued on July 6, 2017 (CBFO:ONTP:CF:RMS:17-0674:UFC 5900.00). The GSTR team identified eight issues during their review. The INL has satisfactorily addressed and resolved all of the identified issues, and a closure letter was issued by CBFO on October 6, 2017 (CBFO:ONTP:JC:RMS:17-2320:UFC 5900.00).

## 5.3 WAP-Related Quality Assurance Activities

The audit team evaluated the QA elements for personnel qualification and training, nonconformances, and records for compliance with requirements in the WIPP HWFP WAP. The evaluation results for each area audited are described below.

### 5.3.1 Personnel Qualification and Training

The audit team conducted interviews and reviewed the following implementing procedures to determine the degree to which the procedures adequately address upper-tier requirements:

- CCP-PO-001, Rev. 23, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-047, Rev. 3, *CCP Training and Qualification Plan*
- CCP-QP-002, Rev. 47, *CCP Training and Qualification Plan*

- CCP-QP-041, Rev. 4, *CCP Job Needs Analysis and Design*
- CCP-QP-042, Rev. 2, *CCP Project Level Training and Qualification*
- CCP-QP-043, Rev. 4, *CCP Operations Level Training and Qualification*

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

Personnel training records associated with AK, DTC, RTR, VE, and PL V&V were examined to verify implementation of associated requirements. The audit team verified that personnel performing waste characterization and certification activities were appropriately qualified.

Record reviews included an evaluation of the List of Qualified Individuals (LOQI) for INL/CCP personnel working with the RH program. Other record reviews included qualification cards and pertinent supporting qualification documentation.

During the audit, one non-WAP-affecting concern in the area of personnel qualification and training was identified. It was observed that three DTC/Independent Technical Reviewer (ITR) Operator qualification cards were inconsistent with the qualification dates indicated on the LOQI. There are two SPM signatures and two certification dates. The qualification of the operator is not in question. The presence of multiple SPM signatures on the qualification card could lead to a condition adverse to quality (see Observation 2 in section 6.3.2).

With the exception of the one non-WAP-affecting concern identified, the procedures reviewed and objective evidence assembled and evaluated provided evidence that the applicable requirements for personnel qualification and training are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No WAP-affecting concerns in the area of personnel qualification and training were identified.

### 5.3.2 Control of Nonconforming Items

The audit team reviewed implementing procedure CCP-QP-005, Rev. 27, *CCP TRU Nonconforming Item Reporting and Control*, to determine the degree to which the procedure adequately addresses upper-tier requirements. Results of the review indicate that the procedure adequately addresses upper-tier requirements.

The audit team interviewed the NWP QA Programs Manager and selected a random sample of NCRs for review.

The following closed NCRs were reviewed:

| Number | Revision |
|---|---|
| NCR-RHINL-0208-17 | 1 |
| NCR-RHINL-0331-20 | 2 |

| | |
|---|---|
| NCR-RHINL-0332-20 | 1 |
| NCR-RHINL-0343-17 | 1 |
| NCR-RHINL-0344-17 | 1 |
| NCR-RHINL-0351-17 | 1 |
| NCR-RHINL-0355-17 | 0 |
| NCR-RHINL-0526-19 | 0 |
| NCR-RHINL-0540-20 | 0 |
| NCR-RHINL-0620-18 | 0 |
| NCR-RHINL-0645-19 | 0 |
| NCR-RHINL-0798-19 | 0 |

The audit team verified CCP personnel are familiar with the process for reporting NCRs to the Permittees via email to the CBFO within the time frame required by the Permit. The audit team reviewed the only closed NCR (NCR-RHINL-0642-19, Rev. 0) generated at project level (PL) since the previous recertification audit that required reporting to the Permittees.

The audit team concluded that nonconformances are appropriately documented and tracked through resolution in accordance with the procedure. NCRs reviewed included original and revised NCRs and all applicable supporting documentation in the records package. The NCRs examined were verified to have been entered, managed, and tracked in the NCR log/module located within the CCP Integrated Data Center (IDC).

The procedure reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for nonconformances are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No WAP-affecting or non-WAP-affecting concerns in the area of nonconformances were identified.

### 5.3.3 QA Records

The audit team conducted interviews with responsible personnel and reviewed the following implementing procedures relative to the control and administration of QA records to determine the degree to which the procedures adequately address upper-tier requirements:

- CCP-PO-001, Rev. 23, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-QP-008, Rev. 27, *CCP Records Management*
- CCP-QP-028, Rev. 17, *CCP Records Filing, Inventorying, Scheduling, and Dispositioning*

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

The level of control for QA records was verified through review of the NWP/CCP Remote-Handled (For All Sites) Records Inventory and Disposition Schedule (RIDS) dated December 22, 2020. The RIDS are reviewed annually by the CCP Records Manager, as required.

Due to the social distancing restrictions during the audit, the audit team was unable to physically review any records packages or tour the records facility. The audit team selected and reviewed twenty digitally captured records packages transmitted from the INL/CCP Facility Records Coordinator to the CCP Records Center in Carlsbad, NM. The audit team verified that the completed transmittal forms adequately described the records being transmitted, and that the transmittal process was performed in accordance with the procedure.

It was determined through interview with the CCP Records Manager that electronic files that require control of access (such as those determined to be Unclassified Controlled Nuclear Information [UCNI], Official Use Only [OUO], Internal Use Only [IUO], and No Foreign National [NFORN] documents) are maintained on separate file servers where computer user access is restricted. Records personnel are familiar with requirements for restricted access files and adequately control distribution. Access to electronic files and restricted files are controlled administratively in the case of physical electronic media and by use of server logon/password methods for electronic files maintained on computer servers.

The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for records are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No WAP-affecting or non-WAP-affecting concerns in the area of QA records were identified.

### 5.4 Non-WAP-Related Quality Assurance Activities

Each non-WAP-related quality assurance area audited is discussed in detail in the following sections. The method used to select objective evidence is discussed; the objective evidence used to assess compliance with the CBFO QAPD, WIPP WAC, or WIPP DSA, as applicable, is cited briefly; and the result of the assessment is provided.

#### 5.4.1 INL/CCP Program Interface

The audit team reviewed documents and conducted interviews with the CCP Project Manager responsible for CCP/INL RH waste characterization activities. The program interface was evaluated as established between the CCP and INL and documented in CCP-PO-501, Rev. 11, *CCP/INL RH TRU Waste Interface Document*. This document describes the interfaces, roles, responsibilities, and program requirements applicable to both organizations in support of CCP RH waste characterization activities at the INL.

The results of the review indicate the documents adequately address the associated requirements and are effectively implemented.

The audit team interviewed the CCP SPM and the CCP Vendor Project Manager (VPM) responsible for INL/CCP waste characterization activities. The audit team reviewed objective evidence to confirm requirements were met as specified in CCP-PO-501 for RH waste characterization activities. The audit team verified the level of oversight by the Host site of the CCP program, and that the Host site QA has scheduled future surveillances to ensure CCP work is conducted in accordance with CCP procedures, as required by CCP-PO-501.

The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for the interface document are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No non-WAP-affecting concerns in the area of INL/CCP Program Interface were identified.

### 5.5 WAP-Related Technical Activities

Each technical area audited is discussed in detail in the following sections. The method used to select objective evidence is discussed, the objective evidence used to assess compliance with the WIPP HWFP is cited briefly, and the result of the assessment is provided.

#### 5.5.1 Table C6-1, WAP Checklist

The C6-1 WAP Checklist addresses general program requirements from an overall management perspective. The general requirements checklist addresses both technical requirements and specific WIPP HWFP WAP-related QA programmatic requirements that, when collectively implemented, ensure effective overall management of TRU waste characterization activities. Requirements are integrated into controlled documents to ensure the waste characterization strategy, as defined in the WAP, is accomplished and documented in accordance with controlled processes and procedures.

Technical elements evaluated for waste characterization activities consisted of AK, WWIS/WDS, and preparation of Waste Stream Profile Forms (WSPFs). Objective evidence was selected and reviewed to evaluate the implementation of the associated waste characterization activities. BDRs, sampling records, and personnel qualification and training documentation were included in the evaluation. Each characterization process involves:

- Collecting raw data
- Collecting QA/quality control samples or information
- Reducing the data to a useable format, including a standard report
- Review of the report by the data generation facility and the site project office

- Comparing the data against program data quality objectives (DQOs)
- Reporting the final waste characterization information to the WIPP

The flow of data from the point of generation to inclusion in the WSPF for each waste characterization technique was reviewed to ensure that all applicable requirements were captured in the site operating procedures. The specific procedures audited and the objective evidence reviewed are described in the following sections.

During the audit, INL/CCP demonstrated compliance with the waste characterization requirements of the WAP through interviews and documentation.

**Project-Level Data Validation and Verification (PL V&V)**

The audit team conducted interviews with responsible personnel and reviewed the following implementing procedures relative to the PL V&V process to determine the degree to which the procedures address upper-tier requirements:

- CCP-QP-042, Rev. 2, *CCP Project Level Training and Qualification*
- CCP-TP-001, Rev. 22, *CCP Project Level Data Validation and Verification*
- CCP-TP-002, Rev. 29, *CCP Reconciliation of DQOs and Reporting Characterization Data*
- CCP-TP-005, Rev. 32, *CCP Acceptable Knowledge Documentation*

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

The audit team verified that the SPMs who performed work for INL/CCP were appropriately trained and qualified as required by CCP-QP-042.

The audit team evaluated the following BDRs in support of RH waste characterization activities completed at the INL to verify that PL V&V activities are performed in compliance with applicable procedural requirements:

RTR
- INLRHRTR18002
- INLRHRTR18013
- INLRHRTR18015
- INLRHRTR18020
- INLRHRTR18025

VE
- INLRHVE19001
- INLRHVE19004
- INLRHVE19008
- INLRHVE19016
- INLRHVE19018

DTC
- INLRHDTC19002
- INLRHDTC19014
- INLRHDTC19021
- INLRHDTC19029
- INLRHDTC20001

The BDRs were verified to be complete and accurate, and were found to be in compliance with all applicable procedural requirements.

The audit team verified that the WSPFs were complete with Characterization Information Summaries (CIS). The following were reviewed:

- WSPF for Waste Stream ID-ANLE-S5000 with CIS Lots 1, and 42-43
- WSPF ID-HFEF-S5000-RP, R0 (Draft) with CIS Lot 1
- WSPF ID-HFEF-S3000-RP, R0 (Draft) with CIS Lot 1
- CCP-AK-INL-700, R0, CCP AK Summary Report for Waste Stored at INL, Waste Stream IN-NRF-SPC-103, date September 22, 2018

The audit team verified the required quarterly repeat of the RTR and VE DGL data by the PL for the following:

RTR
- 4Q2018 Request (CP:18:01312)
- 4Q2018 Results (CP:19:01017)

VE
- 2Q2019 Request (CP:19:01242)
- 3Q2019 Request (CP:19:01308)
- 3Q2019 Results (CP:21:01039)
- 4Q2019 Request (CP:21:01035)
- 4Q2019 Results (CP:21:01040)

The VE 2Q2019 request indicates that no characterization activities occurred during that quarter. The results from each quarterly package indicate there were no inconsistencies reported in the data.

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, satisfactorily implemented, and effective in achieving the desired results. No WAP-affecting or non-WAP-affecting concerns in the area of PL V&V were identified.

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

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

The audit team evaluated the implementation of the WWIS/WDS data entry procedure for electronic population of data, manual update of data, and electronic transfer of data from the IDC software database to the WWIS/WDS. A description of the WWIS/WDS process was provided to the audit team by the CCP Lead Waste Certification Official to describe the established method for entering containers into the WWIS/WDS. The description ensured the established process for RH waste container certification will be performed in accordance with the appropriate procedure. However, there was no objective evidence of the end product available for the audit team to evaluate during the audit. Therefore, the effective implementation of the WWIS/WDS process is deemed indeterminate.

The procedure reviewed provided evidence that the applicable requirements for WWIS/WDS data entry are adequately established for compliance with upper-tier requirements. However, objective evidence of the end product was not available for the audit team to evaluate during the audit; therefore, the implementation and effectiveness of the WWIS/WDS process is deemed indeterminate. No WAP-affecting or non-WAP-affecting concerns in the area of WWIS/WDS were identified.

### 5.5.2 Table C6-2, Acceptable Knowledge Checklist

The audit team conducted interviews with responsible personnel and reviewed the following implementing procedures relative to the AK process to determine the degree to which the procedures address upper-tier requirements:

- CCP-PO-001, Rev. 23, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-QP-002, Rev. 47, *CCP Training and Qualification Plan*
- CCP-QP-042, Rev. 2, *CCP Project Level Training and Qualification*
- CCP-TP-001, Rev. 22, *CCP Project Level Data Validation and Verification*
- CCP-TP-002, Rev. 29, *CCP Reconciliation of DQOs and Reporting Characterization Data*
- CCP-TP-005, Rev. 32, *CCP Acceptable Knowledge Documentation*
- CCP-TP-200, Rev. 7, *Enhanced Acceptable Knowledge Review*
- CCP-TP-506, Rev. 6, *CCP Preparation of the RH TRU Waste AK Characterization Reconciliation Report*
- WP 13-QA.03, Rev. 30, *QA Independent Assessment Program*

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

The audit team conducted a certification audit that evaluated the AK process for characterizing RH TRU mixed waste in SCGs S3000 solids and S5000 debris wastes. The audit team specifically addressed the WAP requirements listed on the C6-2 checklist along with portions of the C6-1 checklist. Objective evidence was reviewed and compiled to demonstrate compliance with each of the applicable requirements on these checklists. The audit team also reviewed the AK record with respect to relevant requirements of the WAC and requirements of the RH TRU Waste Characterization Program Implementation Plan (WCPIP). A portion of the audit addressed the status of enhanced AK products for the waste streams examined with the upper-tier requirements identified in the WAC.

The audit team reviewed the latest revision to the AK summary report for the waste streams representing the respective SCGs identified above. The AK summary report and respective waste stream designations are: CCP-AK-INL-620, Rev. 2, for RH S3000 waste stream ID-HFEF-S3000-RP and RH S5000 waste stream ID-HFEF-S5000-RP.

The original waste stream ID-HFEF-S5000-RP inventory consisted of 29 canisters of RH TRU debris waste stored in various packaging configurations. The waste was generated during hot cell and analytical chemistry operations conducted in the Hot Fuel Examination Facility (HFEF), the Fuel Conditioning Facility, and the Laboratory and Office Building Analytical Laboratory hot cells. Waste from these operations were generated in support of the Liquid Metal Fast Breeder Reactor and the Integral Fast Reactor irradiation studies performed on alloy fuel, and sample materials. All of the original waste contains sodium and/or sodium-potassium and was treated and repackaged to remove and/or neutralize this material in the INTEC Buildings CPP-666 and CPP-659.

Waste stream ID-HFEF-S3000-RP was generated from the treatment and repackaging of waste stream ID-HFEF-S5000-RP and consists of drums of debris materials packaged with greater than 50 volume percent immobilized spritzing and immersion water. Therefore, the bounding physical, chemical, and radiological properties of the two waste streams are essentially the same.

The audit team evaluated the AK summary report, including supporting AK source documents and AK source document summaries, with respect to the information contained that relate to specific WAP and WAC requirements. For example, the AK summary report, along with several relevant AK source documents, were reviewed to establish support for the waste stream descriptions and parameters including descriptions of waste processing activities, assignment of hazardous waste numbers (HWNs), and waste stream volumes and periods of generation.

The audit team examined the following items (attachments from CCP-TP-005) for each waste stream identified above:

- Attachment 1 – AK Documentation Checklist
- Attachment 4 – AK Source Document Information List

- Attachment 5 – AK Hazardous Constituents List
- Attachment 6 – AK Waste Form, Waste Material Parameters, Prohibited Items, and Packaging along with the justification memos for waste material parameter weight estimates
- Attachment 8 –Waste Container List along with the waste stream container evaluation memos that demonstrate that the parameters and properties of containers added to a waste stream are examined to assure that the assignment is appropriate.

The audit team reviewed examples of resolution of AK discrepancies in the AK record and discrepancy resolution at characterization along with AK reevaluation forms. The auditors examined NCRs dealing with prohibited items, and draft WSPFs with attachments for the two waste streams. In addition, several relevant draft AK documents developed for "audit purposes only" including Waste Stream Characterization Checklists and supporting data, AK Accuracy Reports for both WAP and WCPIP compliance, and WCPIP Characterization Reconciliation Reports were reviewed and compiled as objective evidence.

The WAP-required container traceability exercise was conducted by the audit team for a total of four waste containers from the two waste streams. For the containers selected, the audit team examined BDRs for RTR, VE, and DTC. Additional traceability documentation was collected through IDC database screenshots, AK tracking spreadsheet data, waste container lists (Attachment 8), container evaluation memos, and INL waste container input forms completed by the waste generators.

The audit team reviewed training records for five SPMs and four AKEs who have previously participated, or currently participate, in characterization activities for INL/CCP. The audit team reviewed document review records (DRRs), document approval packets, discrepancy resolutions, and NCRs. The audit team examined the handling of AK records for compliance with preparation, legibility, accuracy, review, approval, and maintenance requirements. The distribution, control, and use of appropriate AK procedures was reviewed.

Interface Waste Management Documents List (IWMDL)
Waste management activities identified in the latest revisions of the IWMDLs had been completed for both audited waste streams and the IWMDLs were declared to be no longer active.

Acceptable Knowledge Assessment (AKA)
AK Assessments and AK addendums have been completed and are in the AK record for both audited waste streams, ID-HFEF-S3000-RP and ID-HFEF-S5000-RP. The AKA contents included a description of historical and current waste management practices and processes, a list of historical and current absorbents and information relevant to waste stream ignitability, corrosivity and reactivity. The audit team also examined a detailed description of the contents of each waste container bounded by the

AKA. The audit team also reviewed and compiled, as objective evidence, comments from the internal CCP and AMWTP site review.

Chemical Compatibility Evaluation (CCE)
A CCE memorandum was developed for waste streams ID-HFEF-S3000-RP and ID-HFEF-S5000-RP. In addition to a detailed review of the CCE contents, the audit team reviewed and compiled the following as objective evidence: DRRs from internal and CBFO reviews, the CBFO approval letter, and associated CBFO Form 4.15-2, *Chemical Compatibility Evaluation Checklist.*

AK Briefings
AK Summary Report CCP-AK-INL-620 was revised and issued on January 19, 2021. Accordingly, an AK Briefing was prepared and presented to relevant personnel, describing the changes reflected in the new revision. The audit team examined both the briefing and the attendance list.

Basis of Knowledge (Non-WAP-related)
Basis of Knowledge (BoK) documentation was evaluated for both waste streams reviewed. For each waste stream, a BoK exemption memo documented that the respective container subpopulations were exempt from the requirements of the BoK procedure due to the absence of oxidizers, rags, and other cellulosics. In addition, both waste streams had BoK memos that conservatively addressed container subpopulations that in some cases had rags/wipes present. The BoK procedure was applied to these subpopulations and documentation was presented regarding the potential presence of small amounts of oxidizers.

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

### 5.5.3 Table C6-3, Radiography Checklist

The audit team evaluated the adequacy, implementation, and effectiveness of the INL/CCP activities to characterize RH TRU SCGs S3000 solids and S5000 debris wastes.

The audit team conducted interviews with responsible personnel and reviewed the following implementing procedures relative to the RTR process to determine the degree to which the procedures address upper-tier requirements:

- CCP-PO-001, Rev. 23, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-QP-002, Rev. 47, *CCP Training and Qualification Plan*

- CCP-QP-043, Rev. 4, *CCP Operations Level Training and Qualification*
- CCP-TP-028, Rev. 11, *CCP Radiographic Training Container Construction*
- CCP-TP-053, Rev. 18, *CCP Standard Real-Time Radiography (RTR) Inspection Procedure*
- CCP-TP-508, Rev. 11, *CCP RH Standard Real-Time Radiography Inspection Procedure*

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

The audit team identified a concern in the area of RTR. During the review of CCP-TP-508, Rev. 11, it was identified that the Notes following section 4.3, RTR System Operation, include action statements and should not be written as Notes (for example: Verify Waste Container ID Numbers. Attachment 2 will be completed for all waste containers examined.) During the audit, INL/CCP acknowledged the procedural issue, and will be deactivating the procedure. No additional RTR characterization activities will be conducted utilizing the procedure. INL/CCP will perform all further RH waste characterization activities using CCP-TP-053, *CCP Standard Real-Time Radiography (RTR) Inspection Procedure*. If CCP uses CCP-TP-508 in the future, it could lead to a condition adverse to quality (see Observation 1, section 6.3.2).

The audit team examined the following RH RTR BDRs and associated audio/video recordings generated from operations performed at the facility to verify implementation and compliance with the requirements for documenting RTR activities:

| | | |
|---|---|---|
| INLRHRTR17001 | INLRHRTR18003 | INLRHRTR18023 |
| INLRHRTR17004 | INLRHRTR18012 | INLRHRTR18024 |
| INLRHRTR17007 | INLRHRTR18013 | INLRHRTR18025 |
| INLRHRTR17008 | INLRHRTR18014 | |
| INLRHRTR17009 | INLRHRTR18015 | |
| INLRHRTR17012 | INLRHRTR18020 | |
| INLRHRTR18001 | INLRHRTR18021 | |
| INLRHRTR18002 | INLRHRTR18022 | |

The audit team was unable to observe field activities of the RTR process due to an ongoing upgrade of the RTR equipment at the INL facility. The team examined the RTR operational logbooks and verified logbook entries were logged according to procedure, and reviewed by the VPM as required.

The team examined training and qualification records for five RTR operators. Two RTR operators are listed on the LOQI and are currently qualified. Three RTR operators have expired qualifications and are not listed on the LOQI; however, they were qualified to perform RH RTR activities at the time the BDRs were completed.

During the review of training container inventory sheets, the audit team identified a concern. The audit team determined that training container inventory sheets NDE-Training-127 and NDE-Training-131 did not indicate prohibited items failed, as listed on previous training container inventory sheets. It was recommended that prohibited items be recorded consistently with a failure notation to avoid a possible grading error (see Recommendation 1, section 6.4).

With the exception of the two concerns identified, the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for RTR are adequately established for compliance with upper-tier requirements. However, the audit team was unable to evaluate field activities during the audit; therefore, the implementation and effectiveness of the RTR process is deemed indeterminate. No WAP-affecting concerns regarding Table C6-3 were identified during the audit.

### 5.5.4 Table C6-4, Visual Examination Checklist

The audit team evaluated the adequacy, implementation, and effectiveness of INL/CCP activities to characterize and certify RH TRU SCGs S3000 soils and S5000 debris wastes using the VE characterization process. The audit team reviewed the following CCP VE procedures to determine the degree to which they adequately address upper-tier requirements:

- CCP-QP-002, Rev. 47, *CCP Training and Qualification Plan*
- CCP-QP-043, Rev. 4, *CCP Operations Level Training and Qualification*
- CCP-TP-163, Rev. 4, *CCP Evaluation of Waste Packaging Records for Visual Examination of Records*
- CCP-TP-500, Rev. 17, *CCP Remote-Handled Waste Visual Examination*

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

All audit activities were conducted via teleconference. Verification of compliance was demonstrated though live-streaming field activities, review of VE BDRs, logbooks, and training documents, and interviews conducted with VE operations personnel.

The team confirmed through interview that the current revision of CCP-TP-500 was utilized to perform VE during the live-streaming activities and the current revision of the associated AK Summary Report (CCP-AK-INL-680B, Rev. 0) was available for reference, as needed.

INL/CCP uses the two-operator method when performing VE waste characterization. The team also confirmed VE activities were performed through review of waste packaging records in accordance with CCP-TP-163 since the last audit in 2017.

During the audit, the audit team observed live-streaming video of two Indirect Load VEs being performed on containers IDIRDOT6M-2A-1 and IDIRDOT6M-2A-3. The VEs were conducted at the INTEC facility, Building CPP-659, Cell 308, and evaluated waste stream ID-TRA-660-S5100-RH. The audit team also interviewed VE Operators (VEOs) and the Visual Examination Expert (VEE). The personnel conducting the live-streaming VE were confirmed to be currently qualified through review of associated VE training files.

The audit team also reviewed the VE operational logbooks and verified they complied with the requirements in CCP-PO-005, Rev. 30, *CCP Conduct of Operations*. VE operational logbooks (CCP-RH-INL-002 for 2018, CCP-RH-INL-VE-03 for 2019, and CCP-RH-INL-VE-04 for 2021) were logged correctly and reviewed by the VPM as required. There were no RH VE operational activities in calendar year 2020.

The audit team examined the following RH VE BDRs generated from the INTEC facilities to verify implementation and compliance with the requirements for documenting VE activities, as specified in CCP-TP-500 and CCP-TP-163:

| | |
|---|---|
| INLRHVE17001 | INLRHVE19006 |
| INLRHVE17002 | INLRHVE19008 |
| INLRHVE18001 | INLRHVE19010 |
| INLRHVE18002 | INLRHVE19012 |
| INLRHVE18004 | INLRHVE19014 |
| INLRHVE18005 | INLRHVE19016 |
| INLRHVE19001 | INLRHVE19017 |
| INLRHVE19002 | INLRHVE19018 |
| INLRHVE19004 | |

The BDRs were verified to be complete and accurate, and found to be in compliance with all applicable procedural requirements.

The audit team reviewed four NCRs and concluded that nonconformances are appropriately documented and tracked through resolution. The four NCRs reviewed were:

NCR-RHINL-0332-20
NCR-RHINL-0621-18
NCR-RHINL-0673-19
NCR-RHINL-0647-19

The audit team conducted interviews with responsible personnel and examined training records for nine VEOs/ITRs, and confirmed the appointment of two INL/CCP VEEs. The audit team verified that VEOs, ITRs, and the VEEs were appropriately trained and qualified, as required. Further, the audit team verified that all VEOs/VEEs performing work at the INL/CCP RH site were trained on existing, revised, and/or newly-developed waste streams found in the associated AK Summary Reports. The team confirmed that whenever the waste generating processes, packaging, and/or the waste material

parameters expected to be found in each waste stream are changed, an associate waste stream training was conducted as required. Objective evidence included review of waste stream training presentations and the associated attendance sheets given on the following AK Summary Reports:

| | |
|---|---|
| CCP-AK-INL-500 Rev. 12 | CCP-AK-INL-680B Rev. 0 |
| CCP-AK-INL-540 Rev. 5 | CCP-AK-INL-700 Rev. 0 |
| CCP-AK-INL-580 Rev. 6 | CCP-AK-INL-710 Rev. 0 |
| CCP-AK-INL-620 Rev. 1 & 2 | CCP-AK-INL-720 Rev. 0 |
| CCP-AK-INL-640 Rev. 2 | CCP-AK-INL-720A Rev. 0 |
| CCP-AK-INL-650 Rev. 1 | CCP-AK-INL-720A Rev. 1 |
| CCP-AK-INL-660 Rev. 0 | CCP-AK-INL-740 Rev. 0 |

The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for VE characterization of RH TRU SCGs S3000 soils and S5000 debris wastes are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No WAP-affecting or non-WAP-affecting concerns in the area of VE were identified.

### 5.6 Non-WAP-related Technical Activities

Each non-WAP-related technical area audited is discussed in detail in the following sections. The method used to select objective evidence is discussed; the objective evidence used to assess compliance with the CBFO QAPD, WIPP WAC, or WIPP DSA, as applicable, is cited briefly; and the result of the assessment is provided.

#### 5.6.1 Radiological Characterization (Dose-to-Curie)

The audit team assessed the adequacy, implementation, and effectiveness of the DTC methodology used at the INL as part of the CCP to characterize RH TRU SCGs S3000 soils and S5000 debris wastes. Dose measurements were observed through remote video of instrumentation meters, and the operations personnel were interviewed via video conference while performing measurement activities on-site at the INTEC in building CPP-659 and subsequently via teleconference to verify procedural and technical adequacy of the DTC methodology when applied to the waste streams that were the subject of the audit. Document reviews and interviews with an expert analyst and DTC/ITR operators were conducted remotely via teleconference.

Calculation packages cited within CCP-RC-INL-621, Rev. 1, were made available for the audit team. The calculation packages reviewed included:

INL-RH-170, Revision 0 (12-07-2016)
INL-RH-171, Revision 0 (11-06-2014)
INL-RH-172, Revision 0 (11-06-2014)
INL-RH-173, Revision 0 (11-06-2014)

INL-RH-174, Revision 0 (11-06-2014)

The live-streaming video operations began with placement of container #ANLE-39A-1 and container #ANLE41A-1 onto the scale/turntable #72442 (calibration due November 18, 2021, as observed by video on the calibration label). The audit team observed the dose rate measurements being collected for container #ANLE-39A-1 and then for container #ANLE41A-1. The video camera focused on the gamma dose rate display of instrument Thermo FH 40 G# 020555 coupled to FHZ 612 Probe number XC0674, with calibration due date on June 2, 2021. The observed gamma dose rates for container #ANLE-39A-1 were 364, 316, 303, and 315 mR/hr and for container number #ANLE41A-1 were 488, 629, 555, and 446 mR/hr, respectively. In addition, quality control duplicate dose rate measurements were collected on container #ANLE41A-1 and were observed by the audit team to be 486, 624, 565, and 442 mR/hr.

DTC measurements were accomplished using multiple detectors: one Canberra Osprey system 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.

The following procedures and documents were reviewed to verify compliance with applicable upper-tier requirements:

- CCP-TP-504, Rev. 21, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*
- CCP-QP-037, Rev. 5, *CCP Calculations*

The results of the review confirmed that the procedures and documents are adequately established for compliance with upper-tier requirements.

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

- System stability as evidenced 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 drums measured since the last audit.
- Completed BDRs to ensure all data are reported, forms properly completed, and reviewed as required.
- Host site program interface and evaluation with the CCP DTC characterization program.
- Data storage and retrievability.
- Personnel qualification and training.
- Continued operability and condition of the DTC equipment since Audit A-17-23.

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

DTC is performed in the CPP-659 area of the INTEC. The measurement acquisition control room (Cell 302) contains closed circuit camera control systems and display units and the readouts for the dose measurement systems and gamma spectrometry computer displaying the analysis resulting from the Osprey detector measurements. The actual measurements are performed in an adjacent hot cell (Cell 306) where the Osprey detector, DTC dose measurement probes, measurement fixtures, and the rotating platform are deployed. The containers are lowered into the hot cell from a high bay above the hot cell. Cell 302 was examined remotely by use of the video system panning across the surveillance displays of the cells with abilities to focus on some of the instrument calibration labels; attending personnel were interviewed using an approved video conferencing system; data acquisition equipment was examined using a digital video camera; and records, logbooks, and procedures utilized for the day were available to be viewed for completeness.

The dose rate measurements are acquired using either a Thermo Fischer Scientific Model RO-7 High Range Survey System or a Thermo Scientific FH 40 G display instrument coupled to FHZ 612 Probe depending on the level of the radiation dose measurement relative to the environmental background.

The audit team observed the dose rate measurement, the enclosure, and shielding via close circuit camera. Data acquisition, measurement, and data recording were observed and data contained in randomly selected BDRs from years 2017 through 2020 were reviewed.

DTC utilizes Excel spreadsheets “Waste Container DTC Conversion Record” and “Relative Percent Difference Spreadsheet” to perform the DTC process. The audit team confirmed that the Excel spreadsheets are controlled in accordance with CCP-QP-022, Rev. 19, *CCP Software Quality Assurance Plan*. The audit team reviewed BDRs, spreadsheets, training and qualification documentation, and other applicable records generated from the DTC process. DTC records were determined to be complete, maintained, and controlled as required.

The audit team reviewed the following BDRs:

| | | | |
|---|---|---|---|
| INLRHDTC20001 | INLRHDTC16016 | INLRHDTC16020 | INLRHDTC17002 |
| INLRHDTC17004 | INLRHDTC17006 | INLRHDTC17009 | INLRHDTC18002 |
| INLRHDTC18014 | INLRHDTC18021 | INLRHDTC18025 | INLRHDTC19002 |
| INLRHDTC19006 | INLRHDTC19014 | INLRHDTC19021 | INLRHDTC19029 |

Additionally, the audit team focused on a number of NCRs, some of which were issued against the BDRs listed above. The audit team specifically reviewed the following NCRs:

| | | |
|---|---|---|
| NCR-RHINL-0431-16 | NCR-RHINL-0436-16 | NCR-RHINL-0457-16 |
| NCR-RHINL-0210-17 | NCR-RHINL-0346-17 | NCR-RHINL-0530-19 |
| NCR-RHINL-0377-18 | NCR-RHINL-0529-19 | NCR-RHINL-0528-19 |
| NCR-RHINL-0643-19 | NCR-RHINL-0799-19 | NCR-RHINL-0800-19 |
| NCR-RHINL-0333-20 | NCR-RHINL-0208-17 | NCR-RHINL-0343-17 |
| NCR-RHINL-0344-17 | NCR-RHINL-0526-19 | NCR-RHINL-0645-19 |
| NCR-RHINL-0798-19 | NCR-RHINL-0331-20 | NCR-RHINL-0540-20 |

The results of the review indicated the NCRs listed above were appropriately documented and tracked through resolution.

The procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for RH waste characterization utilizing DTC are adequately established for compliance with upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results. No non-WAP-affecting concerns in the area of DTC were identified.

### 5.6.2 Container Management

The audit team reviewed the implementing procedure for container management (CM) activities conducted at the INL by the CCP. The audit team verified that CCP conducts CM activities only for RH waste using procedure CCP-TP-509, Rev. 7, *CCP Remote-Handled Transuranic Container Tracking*, to determine the degree to which it adequately addresses applicable upper-tier requirements. The results of this review confirmed that the procedure continues to adequately address upper-tier requirements

The audit team interviewed the VPM and determined that the VPM performs a verification that containers are listed on the Acceptable Knowledge Tracking Spreadsheet, as well as the site-specific tracking spreadsheet. The VPM indicated that no container management activities have been completed since the last audit. The audit team verified container scale number 724422 and test weight number 724422 were on the approved M&TE list dated February 24, 2021, as required by CCP-QP-016, Rev. 26, *CCP Control of Measuring and Testing Equipment.* Both the scale and test weight were calibrated on November 18, 2020, with a due date for re-calibration on November 18, 2021.

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

### 5.6.3 Flammable Gas Analysis (FGA)

The INL/CCP RH program does not perform FGA; therefore, FGA was not evaluated for this audit.

## 6.0 CARs, CDAs, OBSERVATIONS, AND RECOMMENDATIONS

### 6.1 Corrective Action Reports

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

> 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.

### 6.1.1 WAP-Affecting Corrective Action Reports

No WAP-affecting CARs were identified during the audit.

### 6.1.2 Non-WAP-Affecting Corrective Action Reports

No non-WAP-affecting CARs were identified during the audit.

### 6.2 Deficiencies Corrected During the Audit

During the audit, the audit team may identify CAQs. Audit team members, the Audit Team Leader (ATL), and the CBFO QA Management Representative evaluate the CAQs to determine if they are significant. Once a determination is made that the CAQ is not significant, the audit team member, in conjunction with the ATL and the CBFO QA Management Representative, determines if the CAQ is a minor and isolated case requiring only remedial action and therefore can be corrected during the audit (CDA).

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

### 6.2.1 WAP-Affecting Deficiencies Corrected During the Audit

No WAP-affecting CAQs were identified and corrected during this audit.

### 6.2.2 Non-WAP-Affecting Deficiencies Corrected During the Audit

No non-WAP-affecting CAQs were identified and corrected during this audit.

## 6.3 Observations

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

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

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

### 6.3.1 WAP-Affecting Observations

No WAP-affecting Observations were identified during the audit.

### 6.3.2 Non-WAP-Affecting Observations

Two non-WAP-affecting Observations were identified during the audit.

**Observation 1**

The audit team identified a concern in the area of RTR. During the review of CCP-TP-508, Rev. 11, it was identified that the Notes following section 4.3, RTR System Operation, include action statements and should not be written as Notes (for example: Verify Waste Container ID Numbers. Attachment 2 will be completed for all waste containers examined.) During the audit, INL/CCP acknowledged the procedural issue, and will be deactivating the procedure. No additional RTR characterization activities will be conducted utilizing the procedure. INL/CCP will perform all further RH waste characterization activities using CCP-TP-053, *CCP Standard Real-Time Radiography (RTR) Inspection Procedure*. If CCP uses CCP-TP-508 in the future, it could lead to a condition adverse to quality.

**Observation 2**

It was observed that three DTC/ITR Operator qualification cards were inconsistent with the qualification dates indicated on the LOQI. There are two SPM signatures and two certification dates. The qualification of the operator is not in question. The presence of multiple SPM signatures on the qualification card could lead to a condition adverse to quality.

## 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 identified during the audit.

**Recommendation 1**

During a review of training container inventory sheets, the audit team discovered that training container Inventory Sheets NDE-Training-127 and NDE-Training-131 did not indicate prohibited items failed as listed on previous Training Container Inventory Sheets. A Recommendation was offered to management that prohibited items be recorded consistently with a failure notation to avoid a possible grading error.

## 7.0 LIST OF ATTACHMENTS

Attachment 1: Meeting Attendees and Personnel Contacted During Audit A-21-28
Attachment 2: Personnel Contacted During the Audit by Subject Area (WAP-Related)
Attachment 3 Summary Table of Audit Results
Attachment 4: WAP-Related Objective Evidence Reviewed During the Audit
Attachment 5: Table of Audited Procedures
Attachment 6: List of Processes and Equipment Evaluated

| MEETING ATTENDEES AND PERSONNEL CONTACTED DURING AUDIT A-21-28 | | | | |
|---|---|---|---|---|
| **NAME** | **TITLE/ORG** | **PRE-AUDIT MEETING** | **CONTACTED DURING AUDIT** | **POST-AUDIT MEETING** |
| Abbott, Preston | Manager NDA Services/Mirion-Canberra | X | X | |
| Alade, Lashell | DTC Operator/Fluor-ID | | X | |
| Ballew, Veronica | QA Programs Manager/NWP | | X | |
| Barka, Natalie | Observer/NMED | X | | X |
| Biswell, David | Observer/NMED | X | | X |
| Calvin, Cierra | Radiological Engineer | | X | |
| Cruickshank, Herb | Observer/DOE-CBFO ONTP | X | | X |
| Dial, Brent | DTC Operator/Mirion-Canberra | | X | |
| Ferguson, Bruce | RTR Operator/VJ Technologies | X | X | X |
| Gulbransen, Ed | TRU Programs Manager/Fluor-ID | X | | X |
| Harvill, Joe | Senior Technical Advisor/NWP-CCP | | X | |
| Hernandez, Jennifer | Training Administrator/TFE-CCP | | X | X |
| Hinojos, Gabriela | Records Custodian/TFE-CCP | X | | |
| Hoggatt, Kyle | AKE/Tech Specs | | X | |
| Jenkins, Tally | Observer/DOE-ID | X | | X |
| Johnson, Carrie | AKE/Tech Specs | X | X | X |
| Joo, Irene | RH TRU Program Manager/Fluor-ID | | X | X |
| Kantrowitz, Richard | Technical Support/NWP-CCP | X | X | |
| Kirkes, Creta | WCO/NWP-CCP | | X | |
| Larsen, Daphne | Observer/DOE-ID | X | | X |
| Maestas, Ricardo | Observer/NMED | | | X |
| McLean, Megan | Observer/NMED | | | X |
| Moody, David | SPM/NWP-CCP | X | X | X |
| Oates, Berta | Observer/High Desert Consulting Services (Contractor for DOE-ID) | | | X |

| MEETING ATTENDEES AND PERSONNEL CONTACTED DURING AUDIT A-21-28 | | | | |
|---|---|---|---|---|
| **NAME** | **TITLE/ORG** | **PRE-AUDIT MEETING** | **CONTACTED DURING AUDIT** | **POST-AUDIT MEETING** |
| Oney, Fred | RTR Operator/VJ Technologies | X | | |
| Pace, Berry | Issues Management/NWP-CCP | X | | X |
| Parmer, Bret | Operations Manager/Fluor-ID | | X | |
| Pattee, Troy | VEE/NWP-CCP | X | X | |
| Poole, Jeff | VPM/NWP-CCP | X | X | X |
| Pyeatt, Brandye | QA Analyst/NWP-CCP | | X | X |
| Reeves, Ron | CCP Operations Manager/NWP-CCP | X | | X |
| Renard, Jarod | System Engineer/VJ Technologies | | X | |
| Saiz, Sheri | QA Staff Administration/NWP | X | | |
| Sheppard, Jordan | Radiological Engineer/Fluor-ID | | X | |
| Simmons, Craig | CCP Project Manager/NWP-CCP | X | X | X |
| Smith, Scott | AKE/Tech Specs | X | X | |
| Taylor, Royce | System Engineer/Fluor-ID | | X | |
| Wade, Daniel | CCP Certification Manager/NWP-CCP | | X | X |
| Walvatne, Gary | Observer/Trinity Engineering | X | | X |
| Webb, Jessica | Document Services Manager/TFE-CCP | | | X |
| Yturralde, Jewell | Records Manager/TFE-CCP | | X | |
| Zwahlen, Eric | RH Expert/Orano Federal Services | | X | X |

**PERSONNEL CONTACTED DURING THE AUDIT BY SUBJECT AREA (WAP-RELATED)**

| | |
|---|---|
| Personnel Qualification and Training | Jennifer Hernandez |
| Control of Nonconforming Items | Veronica Ballew |
| Records | Jewell Yturralde |
| WIPP Waste Information System (WWIS Data Entry) | Creta Kirkes |
| Waste Certification/Project-Level Data V&V | David Moody |
| Acceptable Knowledge | Kyle Hoggatt<br>Carrie Johnson<br>Scott Smith |
| Real-Time Radiography | Bruce Ferguson<br>Fred Oney |
| Visual Examination | Troy Pattee<br>Jeff Poole |

# Audit A-21-28
# Summary Table of Audit Results

| QA / Technical Elements | Concern Classification | | | | QA Evaluation | | Technical Evaluation |
|---|---|---|---|---|---|---|---|
| | CARs | CDAs | Obs | Rec | Adequacy | Implementation | Effectiveness |
| Program Status/Program Changes/Interface | | | | | A | S | E |
| C6 General QA Elements (NCRs, Quals & Training, Records) | | | 1 | | A | S | E |
| Project-Level Data V&V | | | | | A | S | E |
| Container Management | | | | | A | S | E |
| C6 General QA Elements (WWIS/WDS) | | | | | A | I | I |
| Acceptable Knowledge & Waste Certification | | | | | A | S | E |
| Real-time Radiography | | | 1 | 1 | A | I | I |
| Visual Examination | | | | | A | S | E |
| Dose-to-Curie | | | | | A | S | E |
| TOTALS | 0 | 0 | 2 | 1 | | | |

**Definitions**

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

CAR = Corrective Action Report
CDA = Corrected During Audit
NE = Not Effective
U = Unsatisfactory

Obs – Observation
Rec = Recommendation
A = Adequate
NA = Not Adequate

# WAP-Related Objective Evidence Reviewed During the Audit

The WAP-related objective evidence supporting Audit A-21-28 will be included in the shipping box(es) submitted with the final audit report. Some AK records and supporting documentation, which have been classified as Official Use Only (OUO), are located on the WIPP Secure File Transfer Protocol (SFTP) site for New Mexico Environment Department's (NMED's) review. Included in the shipping box(es) will be a "Content Map" describing the location (using color coding) and identity of all required objective evidence supporting the performance of the audit.

## Audit A-21-28
## TABLE OF AUDITED PROCEDURES

| | Procedure No. | Rev. | Procedure Title |
|---|---|---|---|
| 1. | CCP-PO-001 | 23 | CCP Transuranic Waste Characterization Quality Assurance Project Plan |
| 2. | CCP-PO-002 | 31 | CCP Transuranic Waste Certification Plan |
| 3. | CCP-PO-005 | 30 | CCP Conduct of Operations |
| 4. | CCP-PO-047 | 3 | CCP Training and Qualification Program Document |
| 5. | CCP-PO-501 | 11 | CCP/INL RH TRU Waste Interface Document |
| 6. | CCP-QP-002 | 47 | CCP Training and Qualification Plan |
| 7. | CCP-QP-005 | 27 | CCP TRU Nonconforming Item Reporting and Control |
| 8. | CCP-QP-008 | 27 | CCP Records Management |
| 9. | CCP-QP-016 | 26 | CCP Control of Measuring and Testing Equipment |
| 10. | CCP-QP-022 | 19 | CCP Software Quality Assurance Plan |
| 11. | CCP-QP-028 | 17 | CCP Records Filing, Inventorying, Scheduling, and Dispositioning |
| 12. | CCP-QP-037 | 5 | CCP Calculations |
| 13. | CCP-QP-041 | 4 | CCP Job Needs Analysis and Design |
| 14. | CCP-QP-042 | 2 | CCP Project Level Training and Qualification |
| 15. | CCP-QP-043 | 4 | CCP Operations Level Training and Qualification |
| 16. | CCP-TP-002 | 29 | CCP Reconciliation of DQOs and Reporting Characterization Data |
| 17. | CCP-TP-005 | 32 | CCP Acceptable Knowledge Documentation |
| 18. | CCP-TP-028 | 11 | CCP Radiographic Training Container Construction |
| 19. | CCP-TP-053 | 18 | CCP Standard Real-Time Radiography (RTR) Inspection Procedure |
| 20. | CCP-TP-163 | 4 | CCP Evaluation of Waste Packaging Records for Visual Examination of Records |
| 21. | CCP-TP-200 | 7 | Enhanced Acceptable Knowledge Review |
| 22. | CCP-TP-500 | 17 | CCP Remote-Handled Waste Visual Examination |
| 23. | CCP-TP-504 | 21 | CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste |
| 24. | CCP-TP-506 | 6 | CCP Preparation of the Remote-Handled Transuranic Waste Acceptable Knowledge Characterization Reconciliation Report |
| 25. | CCP-TP-508 | 11 | CCP RH Standard Real-Time Radiography Inspection Procedure |
| 26. | CCP-TP-509 | 7 | CCP Remote-Handled Transuranic Container Tracking |
| 27. | CCP-TP-530 | 12 | CCP RH TRU Waste Certification and WWIS/WDS Data Entry |
| 28. | WP 13-QA.03 | 30 | Quality Assurance Independent Assessment Program |
| 29. | WP-15-GM-1002 | 8-FR1 | Issues Management Processing WIPP Forms |
| | | | |
| The following procedures were not evaluated during the INL/CCP Certification Audit A-21-28; however, they were included in the National TRU Program (NTP) Scope memo for the INL/CCP Certification Audit (CBFO:ONTP:KEP:VV:21-0410:UFC 5900.00, dated January 8, 2021) after discussions between CBFO QA and NTP regarding the 2021 CBFO NTP Scope memo for the A-21-28 INL/CCP RH Certification Audit. | | | |
| 30. | CCP-PO-016 | 7 | CCP Gas Generation Testing Quality Assurance Project Plan |
| 31. | CCP-PO-024 | 19 | CCP/INL Interface Document |
| 32. | CCP-PO-045 | 3 | CCP Waste Management Field Observation |
| 33. | CCP-PO-505 | 4 | CCP RH Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC) |
| 34. | CCP-QP-017 | 4 | CCP Identification and Control of Items |
| 35. | CCP-TP-030 | 39 | CCP CH TRU Waste Certification and WWIS/WDS Data Entry |
| 36. | CCP-TP-033 | 25 | CCP Shipping of CH TRU Waste |

## Audit A-21-28
## TABLE OF AUDITED PROCEDURES

| | Procedure No. | Rev. | Procedure Title |
|---|---|---|---|
| 37. | CCP-TP-082 | 11 | CCP Waste Container Filter Vent Operation |
| 38. | CCP-TP-138 | 2 | CCP Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure |
| 39. | CCP-TP-507 | 8 | CCP Shipping of Remote-Handled Transuranic Waste |
| 40. | CCP-TP-512 | 7 | CCP Remote-Handled Waste Sampling |
| 41. | WP-15-GM-1002 | 8-FR1 | Issues Management Processing WIPP Forms |

NOTE: The procedures were not reviewed during the audit due to the following conditions listed below:
30) Procedure not applicable to the A-21-28 INL/CCP Certification Audit
31) Procedure not applicable to the A-21-28 INL/CCP Certification Audit
32) Procedure not utilized for activities evaluated during the A-21-28 INL/CCP Certification Audit.
33) Transportation was not included in the CBFO NTP Scope memo (CBFO:ONTP:KEP:VV:21-0410:UFC 5900.00, dated January 8, 2021)
34) Procedure not utilized for activities evaluated during the A-21-28 INL/CCP Certification Audit.
35) Procedure not applicable to the A-21-28 INL/CCP Certification Audit
36) Procedure not applicable to the A-21-28 INL/CCP Certification Audit
37) Procedure not applicable to the A-21-28 INL/CCP Certification Audit
38) Procedure not applicable to the A-21-28 INL/CCP Certification Audit
39) Transportation was not included in the CBFO NTP Scope memo (CBFO:ONTP:KEP:VV:21-0410:UFC 5900.00, dated January 8, 2021)
40) Procedure not utilized for activities evaluated during the A-21-28 INL/CCP Certification Audit.
41) Procedure not utilized for activities evaluated during the A-21-28 INL/CCP Certification Audit.

| | | | |
|---|---|---|---|
| 42. | CCP-TP-001 | 22 | CCP Project Level Data Validation and Verification |

NOTE: The procedure above was evaluated during the audit; however, was not included in the 2021 NTP Scope memo for the INL/CCP RH Certification Audit (CBFO:ONTP:KEP:VV:21-0410:UFC 5900.00) dated January 8, 2021.

# List of Processes and Equipment Evaluated

| WIPP # | Process/Equipment Description | Applicable to the Following Waste Streams/Groups of Waste Streams |
|---|---|---|
| PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT | | |
| N/A | Acceptable Knowledge | Solids (S3000)<br>Debris (S5000) |
| N/A | Data Generation and Project Level Validation & Verification (V&V) | Solids (S3000)<br>Debris (S5000) |
| N/A | WIPP Waste Information System/Waste Data System (WWIS/WDS) | Solids (S3000)<br>Debris (S5000) |
| 14RHVE1 | Visual Examination<br>Procedure – CCP-TP-500<br>Description – The VE process of audio/media review/VE Technique to characterize RH TRU SCGs S3000 and S5000 waste. | Solids (S3000)<br>Debris (S5000) |
| 14RRH1 | Real-Time Radiography<br>Procedure – CCP-TP-053, CCP-TP-508<br>Equipment – RTR-RTR-0659<br>Description – Real-Time Radiography Characterization System [built by VJ Technologies] | Solids (S3000)<br>Debris (S5000) |
| 14DTC1 | Dose-to-Curie<br>Procedure – CCP-TP-504<br>Description – Radiological characterization process using dose-to-curie (DTC) and modeling-derived scaling factors for assigning radionuclide values to RH waste streams for which the scaling factors are applicable, as described in the waste stream specific radiological reports.<br><br>Dose-rate fractional contribution of Cs-137 and Co-60 using OSPREY™ La3Br(Ce) gamma detector | Solids (S3000)<br>Debris (S5000) |

## List of Processes and Equipment Evaluated

| WIPP # | Process/Equipment Description | Applicable to the Following Waste Streams/Groups of Waste Streams |
|---|---|---|
| 14601C2 | Radiological characterization analysis using ORIGEN2.2<br><br>As identified in CCP-RC-INL-601 | Debris (S5000) |
| 14631C3 | Radiological characterization neutron dose-to-curie (DTC) method by confirmation<br><br>As identified in CCP-RC-INL-631 | Debris (S5000) |
| N/A | Quality Assurance Program | Solids (S3000)<br>Debris (S5000) |
| **NEW PROCESSES OR EQUIPMENT** | | |
| NONE | | |
| **DEACTIVATED PROCESSES OR EQUIPMENT** | | |
| NONE | | |