



United States Government

Department of Energy

memorandumCarlsbad Field Office
Carlsbad, New Mexico 88221

DATE: JAN 15 2019

REPLY TO
ATTN OF: CBFO:OQA:DSM:JM:19-0115:UFC 2300.00

SUBJECT: Interim Audit Report, Idaho National Laboratory Central Characterization Program Recertification Audit A-19-06

TO: Mr. Jim Malm, Department of Energy-ID

The Carlsbad Field Office (CBFO) conducted Recertification Audit A-19-06 of the Idaho National Laboratory (INL) Central Characterization Program (CCP) December 17 – 19, 2018. The CBFO Interim Audit Report is attached.

The audit team concluded that, with the exception of acceptable knowledge (AK) for Summary Category Groups (SCGs) S4000 and S5000 waste, the INL-CCP technical and quality assurance processes for characterizing SCG S3000 homogeneous solids, SCG S4000 soils/gravel, and SCG S5000 debris waste are adequately established for compliance with applicable upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results for the activities available for evaluation. Since the completed enhanced AK products, as required by DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 9*, for SCG S4000 soils/gravel and for SCG S5000 debris waste were not available to review by the audit team, the AK for those SCGs is deemed indeterminate.

The audit team identified two concerns during the audit. One concern was classified as a condition adverse to quality documented in a corrective action report (CAR), and the second concern was classified as corrected during the audit. It should be noted that the identified CAR is a deficiency in the CBFO program and not the INL-CCP program.

If you have any questions concerning the audit report, please contact me at (575) 234-7491.

Dennis S. Miehl
Senior Quality Assurance Specialist

Attachment

190106



cc: w/attachment

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CBFO QA File	
CBFO M&RC	

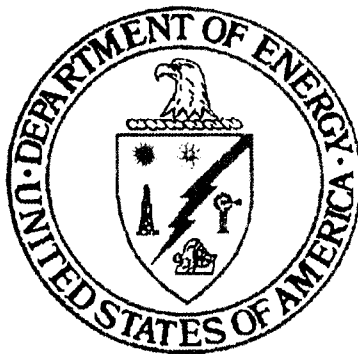
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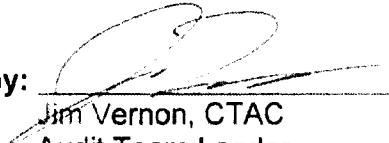
INTERIM AUDIT REPORT
OF THE
IDAHO NATIONAL LABORATORY
CENTRAL CHARACTERIZATION PROGRAM
FOR
CHARACTERIZATION AND CERTIFICATION ACTIVITIES FOR
CONTACT-HANDLED TRANSURANIC WASTE
AT
CARLSBAD, NEW MEXICO
and IDAHO FALLS, IDAHO

AUDIT NUMBER A-19-06

December 17 – 19, 2018




Prepared by:


Jim Vernon, CTAC
Audit Team Leader

Date:

1-14-19

Approved by:

 FOR
Donald C. Gadbury, Director
CBFO Office of Quality Assurance

Date:

1-15-19

1.0 EXECUTIVE SUMMARY

U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Recertification Audit A-19-06 was performed to evaluate the continued adequacy, implementation, and effectiveness of established programs for contact-handled (CH) transuranic (TRU) waste characterization activities performed at the Idaho National Laboratory (INL) through the Central Characterization Program (CCP). The audit team evaluated the programs, procedures, and processes for characterizing CH Summary Category Groups (SCGs) S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris waste. The audit was conducted relative to the requirements of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP); DOE/CBFO-94-1012, *U.S. Department of Energy Carlsbad Field Office Quality Assurance Program Document* (CBFO QAPD), Rev. 13; DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC), Rev. 9; and DOE/WIPP 07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis* (DSA), Rev. 5b, Chapter 18.

The audit team evaluated several areas specific to the INL-CCP. The audit team continued to evaluate the enhanced acceptable knowledge (AK) process, as defined in the WAC, Appendices H and I, performed by the INL-CCP. The audit team further evaluated flammable gas analysis (FGA) and gas generation testing (GGT) performed by the INL-CCP. Finally, the audit team evaluated the INL-CCP population of previously certified TRU waste containers in the WIPP Waste Information System/Waste Data System (WWIS/WDS).

The audit was performed December 17–19, at the Skeen-Whitlock Building in Carlsbad, New Mexico, and at the Advanced Mixed Waste Treatment Project (AMWTP) INL facilities in Idaho Falls, Idaho. The audit team concluded that, with the exception of AK for SCGs S4000 and S5000 waste, the INL-CCP technical and quality assurance (QA) processes for characterizing SCGs S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris waste are adequately established for compliance with applicable upper-tier requirements, satisfactorily implemented, and effective in achieving the desired results for the activities available for evaluation. Since the completed WAC-required enhanced AK products (EAKPs) for SCG S4000 soils/gravel and SCG S5000 debris waste were not available for review by the audit team, the AK for those SCGs is deemed indeterminate.

The audit team identified two concerns in the area of AK during the audit. The concerns are detailed in section 6.0 of this report. It should be noted that o in the CBFO program and not the INL-CCP program (see CAR 19-025 in section 6.1). It should be noted that CAR 19-025 is a deficiency in the CBFO program and not the INL-CCP program.

2.0 SCOPE AND PURPOSE

2.1 Scope

The scope of Audit A-19-06 included an evaluation of the continued adequacy, implementation, and effectiveness of the INL-CCP technical and QA activities performed for maintaining an inventory of previously certified CH TRU waste containers. The audit evaluated the enhanced AK process in accordance with the WAC, Appendices H and I. The audit team further evaluated FGA and GGT performed by the INL-CCP. Finally, the audit team evaluated the INL-CCP population of previously certified CH TRU waste containers in the WWIS/WDS. The areas evaluated by the audit team are specified below.

General Activities

- INL-CCP Interface

Technical Activities

- AK, including, but not limited to, waste certification and enhanced AK
- FGA
- GGT
- WWIS/WDS

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

- CBFO management procedure (MP) 5.2, *TRU Waste Program Certification/Recertification*
- CBFO QAPD
- Waste Isolation Pilot Plant Hazardous Waste Facility Permit NM4890139088-TSDF
- WIPP WAC
- WIPP DSA, Chapter 18

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

- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*
- CCP-PO-024, *CCP/INL Interface Document*
- Related INL-CCP QA and technical implementing procedures

2.2 Purpose

Audit A-19-06 was conducted to evaluate the adequacy, implementation, and effectiveness of program requirements for the characterization and certification of CH

TRU SCGs S3000 homogeneous solids, SCG S4000 soils/gravel, and SCG S5000 debris waste, and INL-CCP's compliance with applicable upper-tier requirements in regards to maintaining an inventory of previously certified CH TRU waste.

3.0 AUDITORS/TECHNICAL SPECIALISTS/MANAGEMENT REPRESENTATIVE/OBSERVERS

Dennis Miehl	CBFO QA Management Representative
Jim Vernon	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC), Auditor
Ricardo Chavez	Auditor, CTAC
Dick Blauvelt	Technical Specialist, CTAC
Randy Fitzgerald	Technical Specialist, CTAC
Joe Lopez	Technical Specialist, CTAC

OBSERVERS

No observers were present for Audit A-19-06.

4.0 AUDIT PARTICIPANTS

The INL-CCP individuals involved in the audit process are identified in Attachment 1. The pre-audit meeting was held on December 17, 2018, at the Skeen-Whitlock Building in Carlsbad, New Mexico. 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 December 19, 2018, at the Skeen-Whitlock Building in Carlsbad, New Mexico.

Attachment 2 contains a summary table of the audit results. Attachment 3 contains a list of INL-CCP documents audited, including the document revision number. Attachment 4 contains the list of processes and equipment evaluated during the audit. Audit activities, including objective evidence reviewed, are described below.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy, Implementation, and Effectiveness

This audit was performed to assess the capability of the INL-CCP to characterize CH TRU SCG S3000 homogeneous solids, SCG S4000 soils/gravel, and SCG S5000 debris waste for compliance with the requirements specified in the WIPP HWFP Waste Analysis Plan (WAP), the WIPP WAC, Chapter 18 of the DSA, and the CBFO QAPD. The characterization method assessed was AK. Other areas evaluated were FGA, GGT, and WWIS/WDS data entry. No other characterization methods were assessed based on the audit scope.

The audit team concluded that, with the exception of AK for SCGs S4000 and S5000 waste, the INL-CCP technical and QA processes for characterizing SCGs S3000 homogeneous solids, S4000 soils/gravel, and S5000 debris waste are adequately established for compliance with applicable upper-tier requirements, satisfactorily

implemented, and effective in achieving the desired results for the activities available for evaluation. Since the completed WAC-required EAKPs for SCG S4000 soils/gravel and SCG S5000 debris waste were not available for review, the AK for those SCGs is deemed indeterminate in regards to maintaining an inventory of previously certified CH TRU waste.

5.2 General Activities

5.2.1 INL-CCP Interface

The audit team evaluated CCP-PO-024, *CCP/INL Interface Document*, Rev. 17, based on the audit scope. CCP-PO-024 conveys that the INL-CCP will perform FGA, GGT, and AK according to CCP procedures. The INL-CCP has developed AK Summary Reports (AKSRs) for the AMWTP, as described in CCP-PO-024. The AKSRs are developed in accordance with CCP procedures, not AMWTP procedures. The audit team did not identify any issues with the INL-CCP Interface Document.

5.3 Technical Activities

Each technical area evaluated is discussed in detail in the following sections. The methods used to select objective evidence are discussed, the objective evidence used to assess compliance with the WIPP HWFP is cited briefly, and the results of the evaluation are provided.

5.3.1 Acceptable Knowledge (AK)

The CBFO AK audit team members participated in a desktop audit of the INL-CCP TRU waste certification program for all three SCGs of CH TRU waste. The scope of this audit from an AK perspective focused on two distinct objectives. The first was an examination of all required EAKPs and supporting documentation for the four CH TRU waste stream populations that the INL-CCP had certified prior to the end of their waste certification and characterization activities on September 30, 2015. The waste streams examined included ID-SDA-DEBRIS (SCG S5000), ID-SDA-SLUDGE (SCG S3000), and ID-SDA-SOIL (SCG S4000), generated by waste retrieved from designated areas within the Subsurface Disposal Area (SDA), and ID-SRP-S3000, an additional S3000 waste stream generated from the Sludge Repackaging Project (SRP). This portion of the audit involved the review of all available approved EAKPs for populations or subpopulations of the above-designated waste streams to determine if the AK-related requirements of the WAC have been met as a precursor to the CBFO approval to ship. Specifically, the requirements identified in Appendix I of the WAC, along with appropriate CCP procedures, formed the basis for the review.

The results of the examination of the EAKPs and supporting documentation are addressed below. It should be noted that many of the EAKPs were determined by the site's initial classification review to be "Official Use Only." This designation required rigorous control of these documents in accordance with DOE requirements, and could impact distribution of the audited objective evidence.

The second objective of the AK portion of the audit involved a review of the CCP program for the development of AKSRs. The four waste streams identified above are described in two AKSRs. CCP-AK-INL-001 covers the three waste streams from the SDA, while CCP-AK-INL-026 addresses the waste stream generated from the SRP. When the AMWTP took over the characterization and certification activities for these waste streams from CCP, they incorporated the CCP AKSRs as an attachment to their AKSRs, RPT-TRUW-097 (SRP) and RPT-TRUW-096 (SDA), respectively. These attachments form the basis for the AMWTP AKSRs.

In September 2018, the CCP issued revisions to both of their AKSRs, now CCP-AK-INL-001, Rev. 13, and CCP-AK-INL-026, Rev. 1. The objective of this portion of the audit scope is to examine the revised AKSRs and related documentation to assure that the INL-CCP can provide additional revisions of these documents if requested by the AMWTP. The basis for this review involves specific requirements from the HWFP WAP, and the CCP AK procedure, CCP-TP-005, *CCP Acceptable Knowledge Documentation*, Rev. 29, which addresses the development of AKSRs. The augmentation of AK by certified characterization activities is not addressed since this is an AMWTP responsibility.

In addition to a review of the AKSRs that focused on changes, several new AK source documents were examined to address, for example, the addition of a new designated area, ARP IX, to the SDA retrieval operation. The audit team reviewed all INL-CCP completed AK attachments from procedure CCP-TP-005 to assure consistency with the contents of the AKSRs. These AK attachments include the AK Documentation Checklist, attachment 1; the AK Source Document Information List, attachment 4; the AK Hazardous Constituents List, attachment 5; the respective AK Waste Form, Waste Material Parameters, Prohibited Items, and Packaging, attachment 6, along with the justification memoranda for waste material parameter weight estimates; the Radionuclides List, attachment 7, with AK/nondestructive assay (NDA) memoranda for the CH waste streams; and the AK Waste Containers List, attachment 8.

Particular attention was given to the CCP-TP-005 requirement that AK attachments 5, 6, and 7 be revisited when an AKSR is revised to assure that the relevant conclusion was reached. For example, the waste material parameter weight estimates are still applicable. Renewed AK attachment reviews are verified by ensuring the attachments display a new date. For the two CCP AKSRs examined, all AK attachments had been updated with the exception of both AK attachment 7's. Updated versions of these attachments were provided during the audit and this concern is considered "corrected during the audit" (CDA) (see CDA #1 in section 6.2). For this portion of the audit, the CCP AK Program was determined by the audit team to be adequate in addressing the requirements of the HWFP WAP as applicable, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

Enhanced AK

Regarding the review of the EAKPs for the four waste streams described in the initial scope objective, the audit team was able to examine the following documents for the waste streams reviewed.

Chemical Compatibility Evaluation (CCE)

The AK audit team examined approved CCEs for each of the four waste streams, designated as follows: ID-SRP-S3000 CCE01, ID-SDA-SLUDGE CCE01, ID-SDA-DEBRIS CCE02, and ID-SDA-SOIL CCE03. The review included a) technical assumptions/evaluations, b) chemicals listed on attachment 1 and how they were judged to be minor or dominant, c) the assignment of appropriate Reactivity Group Numbers (RGNs), and d) chemicals listed on attachment 3 with applicable footnotes justifying why they were not assigned an RGN. The examination included an assessment of the comments and resolutions noted on the Document Review Record (DRR) for both the internal INL-CCP and CBFO reviews, along with the review and compilation of relevant AK source documents. In addition, the audit team reviewed the applicable CCE checklist, attachment 1 from CCP-TP-200, *Enhanced Acceptable Knowledge Review*, Rev. 4, for each of the four waste streams. Each of the checklists identified the specific containers to which the CCE applied. The documentation of CBFO approvals and a copy of the appropriate checklist, attachment II from CBFO procedure MP 4.15, *Review of TRU Waste Acceptable Knowledge Documents*, Rev. 2, was also examined and compiled.

Acceptable Knowledge Assessment (AKA)

The audit team examined an AKA designated as AKA01 for waste stream ID-SDA-SLUDGE and an AKA designated as AKA01 for waste stream ID-SRP-S3000. The examination included a review of the historic and current waste management activities and identification of specific absorbent and neutralization agents used during those activities. Comments from internal reviews along with approval documentation from the INL Site Management Representative were also reviewed. Each AKA included a list of containers to which the respective AKA is applied. The attachments to the AKAs also included specific information regarding the contents of each of the containers based upon packaging, repackaging, and/or visual examination (VE) data forms. In addition to a comprehensive review of the AKAs, the auditors also examined the appropriate checklists, Attachment 2 from CCP-TP-200, which listed the applicable containers by ID number. This list was compared with the contents of the AK Tracking Spreadsheet for each AKA. AKAs for waste streams ID-SDA-DEBRIS and ID-SDA-SOIL were not available.

Basis of Knowledge (BoK)

The audit team examined BoK documentation for four subpopulations of two of the waste streams reviewed. For waste stream ID-SRP-S3000, a letter of exemption from the BoK requirements for an organic sludge subpopulation was reviewed along with the approval documentation. A second BoK document (BoK01) for a larger subpopulation of primarily inorganic sludge was reviewed along with reviewer comments and approvals. For the waste stream ID-SDA-SLUDGE, the audit team examined two BoK memoranda. BoK01 addressed a subpopulation that was primarily inorganic sludge with no evaporator salts and no cellulose used for absorption. BoK02 covered a subpopulation of organic sludge with no inorganic sludge, no evaporator salts, and no cellulose used for absorption. All review comments and approval letters were examined. Particular attention was given to the container-specific descriptions noted in the respective AKAs that verified container contents. No BoK documentation was available for waste streams ID-SDA-DEBRIS and ID-SDA-SOIL.

AK Briefings

It was determined that the required AK Briefings would be the responsibility of the AMWTP since they now control the certified characterization activities for these waste streams. In addition to reviewing the EAKP listed above, the audit team reviewed Rev. 66 of DOE WIPP 01-3194, *CH-TRU Waste Content Codes (CH-TRUCON)* to assure that the chemicals identified in the CCEs reviewed during the audit had been added to Appendix C and the appropriate TRUCON Codes had been applied to the requisite waste streams.

For this portion of the audit regarding EAKPs, the CCP AK Program was determined to be adequate in addressing the requirements of the WAC and CCP-TP-005 as applicable, satisfactory in the implementation of these requirements, and effective in achieving the desired results for CH SCG S3000 waste, as demonstrated for waste streams ID-SDA-SLUDGE and ID-SRP-S3000. However, compliance with respect to CH SCG S4000 and CH SCG S5000 waste is indeterminate based upon the lack of required EAKPs for waste streams ID-SDA-DEBRIS and ID-SDA-SOIL.

With regard to the QA aspects of AK, the audit team reviewed training records for seven AK experts and three site project managers (SPMs) who have participated or could potentially participate in characterization activities for the INL-CCP. No new discrepancy reports (DRs) were generated since the last recertification audit; however, some older DRs were reviewed to verify that a process is in place to resolve AK discrepancies identified in the AK record.

The audit team examined the handling of AK records for compliance with preparation, legibility, accuracy, review, approval, and maintenance requirements. Distribution, control, and use of appropriate AK procedures was reviewed. The audit team also examined the most recent internal audit report relevant to AK, Nuclear Waste Partnership Quality Assurance Audit A-18-01, completed November 2, 2017, at the Los Alamos National Laboratory. Although this internal audit report was not specific to the INL, the activities evaluated are relevant to all of the CCP-supported generator sites.

The audit team identified a QA concern related to AK which resulted in issuance of a corrective action report (CAR). In reviewing EAKPs for the INL-CCP, the audit team discovered that the CBFO Office of the National TRU Program (CBFO-NTP) did not complete the CBFO MP 4.15 Attachment III checklist (CBFO Form 4.15-3) for previously certified waste from waste stream ID-SDA-SLUDGE prior to approving the waste for shipment. On August 2, 2018, the INL-CCP received correspondence CBFO:ONTP:JMC:PG:18-2167:UFC 5900.00, "Approval to Ship and Emplace Contact-Handled Transuranic Waste; Waste Stream ID-SDA-SLUDGE with Approved Enhanced Acceptable Knowledge with a BoK Evaluation." It should be noted that this is a deficiency in the CBFO program and not the INL-CCP program (see CAR 19-025 in section 6.1).

Despite the two identified concerns, the INL-CCP AK Program was determined to be adequate in representing the relevant requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results with respect to the proper certification of CH SCG S3000 homogeneous solids waste for shipment to the WIPP. Since the completed WAC-required EAKPs for SCG S4000 soils/gravel and

SCG S5000 debris waste were not available for review by the audit team, the AK for those SCGs is deemed indeterminate.

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

Through interviews with responsible personnel, procedure reviews, and objective evidence reviews, the audit team verified that INL-CCP maintains a WWIS/WDS certification program that meets the requirements of the WIPP HWFP. In discussions with the CCP Waste Certification Official (WCO), the audit team determined that no recent CH or remote-handled waste certification activities have been performed at the INL-CCP since the last recertification audit, A-17-02. The audit team evaluated CCP-TP-030, Rev. 36, *CCP CH TRU Waste Certification and WWIS/WDS Data Entry*, with respect to requirements of DOE/CBFO-94-1012, Rev. 13, Section 2.1 – *Work Processes*. The audit team determined that CBFO QAPD requirements are being adequately addressed, and the procedure contains adequate flow-down of CBFO QAPD requirements. The audit team reviewed the objective evidence provided with respect to procedure implementation and flow-down of upper-tier requirements using the Table C6-1 WAP March 2015 Checklist.

The audit team requested a general overview of the WWIS/WDS from the INL-CCP WCO. The INL-CCP WCO logged into WWIS/WDS with required WIPPnet and WWIS/WDS credentials. The audit team verified new requests for Waste Stream Profile Form (WSPF) numbers. No new WSPFs have been generated since 2014. The INL-CCP WCO demonstrated the steps required to request a new WSPF online. The INL-CCP WCO explained how the SPM inputs data into the Integrated Data Center (IDC) and how the IDC sends notification to WCOs/waste certification assistants (WCAs) to check WSPF completeness. No data for CH waste containers has been entered since 2014; therefore, characterization data for CH waste containers was not entered nor verified using the IDC or the WDS. The audit team verified that the population of INL-CCP waste containers in the WDS was previously certified.

The audit team reviewed objective evidence for CCP's CH Packaging Payload Assembly (attachment 2-WWB Loading Form) for Standard Waste Box (SWB) Barcode number BN10652501 from waste stream ID-RF-S3114, and Ten-Drum Overpack (TDOP) BN10653311 from waste stream BNINW216. Objective evidence presented to the audit team included SWB and TDOP build lists, TCO Load Sheets, and Waste Container Data Reports. In addition, the audit team reviewed WDS WCAWCO High Material At Risk (MAR) Request package 18-0010 from shipment IN18054. The data package reviewed by the audit team contained the MAR Request from the transportation certification officials (TCOs) to the WCOs, the MAR Evaluation Request from WCOs to Nuclear Safety, the MAR Approval form from Nuclear Safety to WCOs, and the MAR Override Request and Approval form. The objective evidence was reviewed, and the audit team verified that the data was complete.

The audit team determined that WWIS/WDS data entry requirements are adequately established, satisfactorily implemented, and effective in achieving desired results.

Shipping CH Waste

The audit team evaluated procedure CCP-TP-033, Rev. 23, *CCP Shipping of CH TRU Waste*, with respect to requirements of DOE/CBFO-94-1012, Rev. 13, Section 2.1 – *Work Processes*, and determined that the CBFO QAPD requirements are being adequately addressed, and that the procedure contains adequate flow-down of CBFO QAPD requirements. The team reviewed the objective evidence provided with respect to procedure implementation and flow-down of upper-tier requirements using the Table C6-1 WAP March 2015 Checklist. No WAP-related deficiencies regarding Table C6-1 were identified during the audit.

The audit team interviewed the INL WCO to discuss shipping of CH TRU waste. The audit team reviewed dunnage containers that were created, identified, and managed. The audit team reviewed a Shipment Data Report (shipping # 180122, TRUPACT 176) for a shipment containing dunnage. All data fields contained appropriate entries and were complete. The audit team reviewed the following payloads: 10196001, 10198207, 10218621, 10365369, SRP13841, SRP13955, SRP17429, SRP18236, SRP17972, SRP18230, SRP18265, SRP18316, SRP14805, SRP17936, SRP17947, SRP18227, 10060461, 10124575, 10130518, and 10359461.

The audit team reviewed the Payload Container Transportation Certification Document (PCTCD) for shipment # IN180122. The audit team reviewed the Overpack Payload Container Transportation Certification Document (OPCTCD) for the following container numbers: BN10649275, BN10647102, BN10647103, BN10647104, and BN10649274. All data reviewed by the audit team was found to be complete.

Finally, the audit team reviewed and verified inspection and loading operations from the OPCTCD for container numbers BN10649275, BN10647102, BN10647103, BN10647104, and BN10649274. The reviewed data fields contained appropriate information. In addition to inspection/loading operations, the audit team reviewed shipment receipts from the PCTCD for the following containers: SRP13841, SRP13955, SRP17429, SRP1826, SRP17972, SRP18230, SRP18265, SRP18316, SRP14805, SRP17936, SRP17947, SRP18227, 10060461, 10124575, 10130518, and 101359461. These reviewed PCTCDs contained appropriate data and were found to be complete.

Overall, the audit team determined that the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for WWIS/WDS data entry and shipping CH TRU waste are adequately established, satisfactorily implemented, and effective in achieving the desired results.

5.3.3 Flammable Gas Analysis (FGA)

The audit team evaluated the INL-CCP in the process of FGA. The audit team evaluated FGA for adequacy, effectiveness, and implementation. The INL-CCP conducts FGA using the following units:

- Gas Chromatograph (GC) Mass Spectrometer (MS) Unit #6
- GC-MS Unit #9

- GC-MS Unit #10

The audit team conducted interviews, reviewed documentation, and observed FGA operations. The INL-CCP conducts FGA in WMF-628 at the AMWTP, and provides operations and radiological control personnel as needed to support the FGA process.

The upper-tier requirements for FGA are found in CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*, Rev. 14. Section 5.2.1 of the CCP CH-TRAMPAC specifies that all TRU wastes to be transported in the Transuranic Package Transporter Model II (TRUPACT-II) and HalfPACT packages are restricted so that no flammable mixtures can occur in any layer of confinement during shipping. CCP-PO-003 identifies that the predominant flammable gas of concern is hydrogen, primarily from radiolysis. Also, methane and flammable volatile organic compounds (VOCs) are also limited along with hydrogen to ensure the absence of flammable (gas/VOC) mixtures in TRU waste payloads. Section 5.2.5 of CCP-PO-003 identifies the Unified Flammable Gas Test Procedure (UFGTP) requirements that must be met by measurement to determine the flammable gas/VOC concentrations present in TRU waste containers.

The INL-CCP uses the following procedures associated with FGA:

- DOE/WIPP 06-3345, *Waste Isolation Pilot Plant Flammable Gas Analysis*, Rev. 10
- DOE/WIPP-11-3384, *CBFO Approved Filter Vents*, Rev. 16
- CCP-TP-082, *CCP Waste Container Filter Vent Maintenance and Operation*, Rev. 10

The audit team verified that the INL-CCP procedures associated with FGA adequately implement the upper-tier requirements of CCP-PO-003.

The audit team observed FGA operations performed by the INL-CCP. Prior to performing FGA, the INL-CCP must determine that the 55-gallon drums can be sampled. INL-CCP personnel were observed using INL-CCP characterization data from VE to determine the drum filter, closure date, vent date, and waste type. The information from VE is used to determine the packaging group and the drum age criteria (DAC) in accordance with DOE/WIPP 06-3345. The DAC is the minimum amount of time that the waste container must reach equilibration in order for FGA sampling to occur. Each filter listed in the VE data is compared against DOE/WIPP-11-3384 to ensure the filter is approved by the CBFO, and to identify the filter diffusivity.

After determining that the waste containers can be sampled, INL-CCP personnel were observed performing FGA sampling on 55-gallon drums. Drum sampling is performed by INL-CCP personnel in accordance with DOE/WIPP 06-3345, section 4.4.3, and each sample is monitored by AMWTP radiological control personnel to ensure no contamination was present.

The samples are analyzed by the INL-CCP. Each CG-MS unit must be properly calibrated on an initial calibration (ICAL). Each ICAL uses certified gas standards. The gases used for ICALs were inspected by the audit team and found to be properly

labeled, controlled, and not exceeding the expiration dates established by the gas manufacturer. Each GC-MS unit requires an ICAL to be performed before sample analysis. The ICAL is a quality control (QC) requirement for FGA. The following ICAL Batch Data Reports (BDRs) were reviewed by the audit team:

IN17FG9012_ICAL	IN17FG9062_ICAL	IN17FG10065_ICAL
IN17FG10090_ICAL	IN18FG6005_ICAL	IN18FG9052_ICAL
IN18FG10048_ICAL	IN18FG10094_ICAL	

Each GC-MS unit must also have a method detection limit (MDL). The MDL is the minimum concentration of a target analyte that can be measured and reported with 99 percent confidence. The MDL is a QC requirement for FGA. The following MDL BDRs were reviewed by the audit team:

IN11FG6067_MDL	IN11FG9004_MDL	IN13FG10014_MDL
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Each batch of samples analyzed by the INL-CCP must pass a 4-Bromofluorobenzene (BFB) tune and Continuing Calibration Verification (CCV). The BFB tune and CCV are also QC requirements for FGA. The CCV is the accuracy quality assurance objective for FGA. If the BFB tune and CCV are not successful, the INL-CCP will perform a new ICAL and/or MDL as appropriate.

After successfully passing the BFB tune and CCV, INL-CCP personnel were observed analyzing FGA samples. Each sample is analyzed on a GC-MS unit. INL-CCP FGA personnel analyze target analytes and the identification of tentatively identified compounds (TICs). The software used on each GC-MS unit automatically identifies the target analytes by comparing the sample mass spectrum of a standard of the suspected compound, and when not found, searches the National Institute of Science and Technology Mass Spectral Library for all unknown (non-target) compounds to assign the target analyte or TIC. The software used by the INL-CCP FGA personnel was determined to be listed on the current INL-CCP Software Inventory List.

After data evaluation is complete, the data will be collected into the FGA BDR. Each BDR requires an Independent Technical Review (ITR). The ITR will ensure that all data quality objective (DQO) and QC criteria for FGA have been met for each reviewed BDR. The audit team reviewed the following completed BDRs:

IN17FG9060	IN17FG9083	IN17FG9098	IN17FG10068
IN17FG10072	IN17FG10079	IN17FG10091	IN17FG10104
IN18FG6026	IN18FG6028	IN18FG96039	IN18FG9101
IN18FG10055	IN18FG10097		

After the BDRs are complete, the INL-CCP SPM will list the FGA BDR on the Characterization Information Summary (CIS) in accordance with CCP-TP-002, *CCP Reconciliation of DQOs and Reporting Characterization Data*. The audit team reviewed the latest CIS from the INL-CCP and determined the FGA BDRs were properly reported.

The audit team determined that the INL-CCP performed FGA operations in accordance with the currently approved procedures. The audit team also reviewed the training and

qualifications for all of the FGA personnel observed and listed on the reviewed BDRs. All of the INL-CCP FGA personnel were determined to be properly trained and qualified.

The audit team observed INL-CCP FGA personnel conduct filter replacement on two containers. Filter replacement was performed in accordance with CCP-TP-082, the currently approved procedure for filter replacement. Personnel performing filter replacement are required to complete a filter change operator qualification card. The operator observed performing filter change-out operations was currently qualified.

Any nonconforming conditions identified at FGA are documented on a Nonconformance Report (NCR). The audit team reviewed the following NCRs generated as a result of FGA operations by the INL-CCP:

NCR-INL-0569-18

NCR-INL-0570-18

NCR-INL-0141-17

The audit team did not identify any concerns with FGA. Overall, the audit team determined that the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for FGA are adequately established, satisfactorily implemented, and effective in achieving the desired results.

5.3.4 Gas Generation Testing (GGT)

The scope of Audit A-19-06 included an evaluation of GGT. GGT is performed in accordance with the following procedures:

- CCP-PO-016, *CCP Gas Generation Testing Quality Assurance Project Plan*, Rev. 6
- CCP-TP-083, *CCP Gas Generation Testing*, Rev. 8
- CCP-TP-138, *CCP Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure*, Rev. 2

The upper-tier requirements for GGT are found in CCP-PO-003. Section 5.2.5 (f) of CCP-PO-003 specifies that certain waste (Waste Type V) will undergo GGT to determine the total measured gas release rate for the payload container, and the maximum allowable gas release rate for the payload container. The audit team verified that the CCP procedures associated with GGT adequately implement the upper-tier requirements of CCP-PO-003.

Based on interviews with the INL-CCP SPM, the audit team learned the INL-CCP has not performed GGT since May 2012. The current population of previously certified containers at the INL-CCP includes waste streams that have Waste Type IV (ID-SDA-SLUDGE, ID-RF-S3114, and ID-SRP-S3000). For each Waste Type IV waste stream, the INL-CCP developed long-term objectives (LTOs) in accordance with CCP-TP-138. CCP-TP-138 describes that a population or sub-population of the Waste Type IV waste stream will undergo GGT, and based on the GGT testing, a LTO will be established. The audit team examined the LTOs for the following waste streams:

- ID-SDA-SLUDGE
- ID-RF-S3114

Based on the developed LTOs, GGT is not required by the INL-CCP. The audit team examined the most recently developed CIS by the INL-CCP and the LTO was listed for all Waste Type IV containers. Because the INL-CCP has developed LTOs for all Waste Type IV, the determination of adequacy, effectiveness, and implementation for GGT is met with the LTOs.

The audit team did not identify any concerns with GGT. Overall, the audit team determined that the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for GGT are adequately established, satisfactorily implemented, and effective in achieving the desired results.

6.0 CORRECTIVE ACTIONS, OBSERVATIONS, AND RECOMMENDATIONS

6.1 Corrective Action Reports

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

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

Significant Condition Adverse to Quality (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.

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

CAR 19-025

Condition:

During review of enhanced AK for the INL-CCP, it was discovered that the CBFO-NTP did not complete the CBFO MP 4.15, *Review of TRU Waste Acceptable Knowledge Documents*, Attachment III checklist for previously certified waste from waste stream ID-SDA-SLUDGE prior to approving the waste for shipment. On August 2, 2018, the CCP received correspondence CBFO:ONTP:JMC:PG:18-2167:UFC 5900.00, "Approval to Ship and Emplace Contact-Handled Transuranic Waste; Waste Stream ID-SDA-SLUDGE with Approved Enhanced Acceptable Knowledge with a BoK Evaluation."

Requirement:

CBFO MP 4.15, *Review of TRU Waste Acceptable Knowledge Documents*, Rev. 2, section 5.3, states:

Currently Certified Waste

Prior to the NTP Compliance Division Director providing approval for removal of the hold on waste in the Waste Data System (WDS) the following actions will be performed. These actions satisfy the requirements of Section 5.3 of the *CBFO Plan for Validating Currently Certified Waste* (DOE/CBFO-16-3568).

5.3.1 - For currently certified waste, complete the Currently Certified Waste Checklist (CBFO Form 4.15-3; See Attachment III example). If the Certified Program is seeking approval for a subpopulation of a waste stream, indicate this on the form.

It should be noted that CAR 19-025 is a deficiency in the CBFO program and not the INL-CCP program.

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 isolated requiring only remedial action and, therefore, can be corrected during the audit (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.

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

The following CDA was identified during the audit.

CDA #1

When a CCP AK Summary Report is revised, CCP-TP-005, *CCP Acceptable Knowledge Documentation*, Rev. 29, requires that some of the AK attachments (AK attachments 5, 6, and 7) be evaluated to determine the adequacy of the existing document, and revise if necessary. The review is documented by completing a new attachment and entering a new date. CCP-TP-005 attachment 7, Radionuclides List, and the requisite AK/NDA memorandum have not been updated for CCP-AK-INL-001, Rev. 13, or CCP-AK-INL-026, Rev. 1. During the audit, the required attachments were completed and presented to the audit team.

6.3 Observations

During the audit, the audit team may identify potential problems that should be communicated to the audited organization. The audit team members, in conjunction

with the ATL, evaluate these conditions and classify them as Observations using the following definition:

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

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

No Observations were made during the audit.

6.4 Recommendations

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

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

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

No Recommendations were made during the audit.

7.0 LIST OF ATTACHMENTS

- Attachment 1: Personnel Contacted During Audit A-19-06
- Attachment 2: Summary Table of Audit Results
- Attachment 3: List of Audited Documents
- Attachment 4: Processes and Equipment Reviewed

PERSONNEL CONTACTED DURING AUDIT A-19-06				
NAME	TITLE/ORG	PRE-AUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Brett Blood	FGA Operations - CCP		X	
Britney Andersen	Idaho Records Coordinator - CCP		X	X
Carrie Johnson	AKE – CCP		X	X
Chris Hatch	SPM - CCP	X	X	X
Creta Kirkes	WCO – CCP	X	X	X
David Biswell	WIPP Group Member – NMED	X		X
Ed Gulbransen	TRU Programs Deputy Manager - AMWTP			X
Hernesto Tellez	WIPP Group Member – NMED	X		X
Jewel Yturralde	Records Analyst – CCP	X		X
Kimberly Lopez	Training - CCP		X	
Kyle Hoggatt	AKE – CCP		X	
Megan McLean	WIPP Group Member – NMED	X		X
Michelle Billett	Training - CCP		X	
Mike Grenfell	VPM - CCP	X	X	X
Mike Ramirez	Manager – CCP	X		X
Rich Kantrowitz	SPM – CCP	X		X
Scott Smith	AKE – CCP	X	X	
Sheila Percy	Records Manager - CCP	X	X	X
Trevor Taylor	FGA Ops - CCP		X	

**Audit A-19-06
Summary Table of Audit Results**

QA / Technical Elements	Concern Classification				QA Evaluation		Technical Evaluation
	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
Acceptable Knowledge	1	1			A	S	E
Acceptable Knowledge for CH SCG S3000					A	S	E
Acceptable Knowledge for CH SCG S4000					A	I	I
Acceptable Knowledge for CH SCG S5000					A	I	I
WWIS/WDS					A	S	E
Flammable Gas Analysis					A	S	E
Gas Generation Testing					A	S	E
TOTALS	1	1	0	0			

Definitions

E = Effective	CAR = Corrective Action Report	Obs – Observation
S = Satisfactory	CDA = Corrected During Audit	Rec = Recommendation
I = Indeterminate	NE = Not Effective	A = Adequate
M = Marginal	U = Unsatisfactory	NA = Not Adequate

Audit A-19-06			
LIST OF AUDITED DOCUMENTS			
	Document No.	Rev.	Document Title
1.	CCP-PO-001	23	CCP Transuranic Waste Characterization Quality Assurance Project Plan
2.	CCP-PO-002	29	CCP Transuranic Waste Certification Plan
3.	CCP-PO-003	14	CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)
4.	CCP-PO-016	6	CCP Gas Generation Testing Quality Assurance Project Plan
5.	CCP-PO-024	17	CCP/INL Interface Document
6.	CCP-TP-002	27	CCP Reconciliation of DQOs and Reporting Characterization Data
7.	CCP-TP-005	29	CCP Acceptable Knowledge Documentation
8.	CCP-TP-030	36	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
9.	CCP-TP-033	23	CCP Shipping of CH TRU Waste
10.	CCP-TP-082	10	CCP Waste Container Filter Vent Maintenance and Operation
11.	CCP-TP-083	8	CCP Gas Generation Testing
12.	CCP-TP-138	2	CCP Execution of Long-Term Objective for the Unified Flammable Gas Test Procedure
13.	CCP-TP-200	4	Enhanced Acceptable Knowledge Review
14.	DOEWIPP 01-3194	66	CH-TRU Waste Content Codes (CH-TRUCON)
15.	DOEWIPP 06-3345	10	Waste Isolation Pilot Plant Flammable Gas Analysis
16.	DOEWIPP-11-3384	16	CBFO Approved Filter Vents

Processes and Equipment Reviewed During Audit A-19-06 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
NEW PROCESSES OR EQUIPMENT				
No new processes or equipment have been added since the previous Audit A-17-23.				
REVIEWED PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT				
N/A	Acceptable Knowledge	Solids (S3000) Soils (S4000) Debris (S5000)	YES	YES
N/A	WIPP Waste Information System (WWIS)/Waste Data System (WDS)	Solids (S3000) Soils (S4000) Debris (S5000)	YES	YES
14GG1	Gas Generation Testing Procedure – CCP-TP-083 Equipment – MGSS Unit/Cart 1 (GC-14B) Description – Gas Generation Testing 55-gallon drums	Waste Type IV	N/A	N/A
14GG2	Gas Generation Testing Procedure – CCP-TP-083 Equipment – MGSS Unit/Cart 2 (GC-17A) Description – Gas Generation Testing 55-gallon drums	Waste Type IV	N/A	N/A
N/A	Headspace Gas Sampling and Analysis DOE/WIPP 06-3345 GC/MS #6, #9 and #10	Solids (S3000) Soils (S4000) Debris (S5000)	N/A	N/A
N/A	Quality Assurance Program	Solids (S3000) Soils/Gravel (S4000) Debris (S5000)	N/A	YES