DOE F 1325.8

United States Government **Department of Energy**

memorandum

Carlsbad Field Office
Carlsbad, New Mexico 88221

DATE: August 24, 2021

REPLY TO ATTN OF: CBFO:OQA:JL:JM:21-0909:UFC 2300.00

SUBJECT: Interim Audit Report A-21-25, LLNL/CCP TRU Waste Characterization Activities

TO: Mr. James Davis III, DOE-LLNL

The Carlsbad Field Office (CBFO) conducted the annual Recertification Audit A-21-25, for Lawrence Livermore National Laboratory Central Characterization Program (LLNL/CCP) Transuranic (TRU) Waste Characterization Activities on August 10 – 12, 2021. The interim audit report is attached.

The audit team concluded that, overall, the LLNL/CCP programs evaluated are adequate relative to the flow-down of requirements, and the technical activities evaluated are satisfactorily implemented and effective, in all areas as reported. One recommendation was offered to management for consideration.

If you have any questions concerning the interim audit report, please contact me at (575) 200-0716.

JOE LOPEZ

Digitally signed by JOE LOPEZ
Date: 2021.08.24 14:28:23 -06'00'

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

Attachment (1)

cc: w/attachment (1)

J. Lorence, EM-3.113	* ED
R. Toro, EM-3.113	ED
R. Knerr, CBFO	ED
M. Bollinger, CBFO	ED
K. Princen, CBFO	ED
M. Brown, CBFO	ED
D. Jolley, CBFO	ED
M. Stapleton, CBFO	ED
H. Cruickshank, CBFO	ED
A. Walker, CBFO	ED
D. Foreman, CBFO	ED
M. Luckey, CBFO	ED
D. Smith, CBFO	ED
T. Carver, CBFO	ED
W. Iqbal, CBFO	ED
S. Dunagan, NWP	ED
S. Strong, NWP	ED
K. Stone, NWP/CCP	ED
R. Lee, NWP/CCP	ED
R. Reeves, NWP/CCP	ED
R. Hollister, NWP/CCP	ED
D. Moody, NWP/CCP	ED
B. Verlanic, NWP/CCP	ED
D. Wade, NWP/CCP	ED
J. Hulse, NWP/CCP	ED
J. Harvill, NWP/CCP	ED
C. Hatch, NWP/CCP	ED
B. Pace, NWP/CCP	ED
J. Carter, 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
R. Maestas, NMED	ED
D. Biswell, NMED	ED
M. McLean, NMED	ED
N. Barka, NMED	ED
T. Runyon, CTAC	ED
P. Martinez, CTAC	ED
S. Gomez, CTAC	ED
R. Castillo, CTAC	ED
C. Castillo, CTAC	ED
J. Maupin, CTAC	ED
D. Harvill, 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

LAWRENCE LIVERMORE NATIONAL LABORATORY
CENTRAL CHARACTERIZATION PROGRAM

FOR

TRU WASTE ACTIVITIES
AT
LIVERMORE, CALIFORNIA
and CARLSBAD, NEW MEXICO

AUDIT NUMBER A-21-25

August 10 – 12, 2021

Prepared by: CINDI CASTILLO (Affiliate) Digitally signed by CINDI CASTILLO (Affiliate) Date: 2021.08.19 14:16:09 -06'00' **Date:** _____

Cindi Castillo, CTAC
Audit Team Leader

Approved by: Michael Brown for Digitally signed by Michael Brown Date: 2021.08.24 11:55:01 -06'00' **Date:** _____

Darren Jolley
Director, Quality Assurance Division
Carlsbad Field Office

1.0 EXECUTIVE SUMMARY

U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Recertification Audit A-21-25 was performed to evaluate the continued adequacy, implementation, and effectiveness of established programs for transuranic (TRU) waste characterization activities performed for the Lawrence Livermore National Laboratory (LLNL) by the Nuclear Waste Partnership LLC (NWP) Central Characterization Program (CCP). The audit team evaluated the programs, procedures, and processes for characterizing contact-handled (CH) TRU Summary Category Groups (SCGs) S3000 solids and S5000 debris wastes. The audit team also verified that a technical review of the generator site's processes was performed, and that any issues identified during the technical review had been resolved per DOE/WIPP-16-3564, *Generator Site Technical Review Procedure*. 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* (WIPP WAC), and the *Waste Isolation Pilot Plant Documented Safety Analysis* (DSA), Chapter 18.

Due to heightened awareness and to decrease the potential development, spread, and impact of the acute respiratory illness, COVID-19, a limited number of audit team members travelled to the LLNL site to perform the audit on August 10 – 12, 2021. Some audit activities were conducted remotely via teleconference.

Gas Generation Testing (GGT) was included in the audit scope. GGT was deemed indeterminate in the previous CBFO Audit A-20-18; therefore, during this audit, the team was required to evaluate the process on-site, along with procedures and data, in order to lift the restriction. During this audit, the team determined the GGT procedures were adequate in addressing upper-tier requirements, and the GGT process was satisfactorily implemented and effective.

Real-time Radiography (RTR) was excluded from the scope of this audit. The LLNL RTR 2 Unit has been decommissioned, disassembled, and returned to the vendor. There will be no RTR operations at LLNL for the forseeable future. Also, an assessment of transportation activities was not included in the scope of this audit.

The audit team concluded that the LLNL/CCP TRU waste characterization program procedures for characterizing CH SCGs S3000 solids and S5000 debris wastes adequately address upper-tier requirements, were satisfactorily implemented, and effective in achieving the desired results.

No WIPP HWFP Waste Analysis Plan (WAP)-affecting or non-WAP-affecting conditions adverse to quality (CAQs) or Observations were identified during the audit. 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 LLNL for characterization of CH TRU SCGs S3000 solids and S5000 debris wastes. The audit team also verified a technical review of the generator site's processes was performed and any issues identified during the technical review had been resolved per DOE/WIPP-16-3564, Rev. 2, *Generator Site Technical Review Procedure*. Due to heightened awareness and to reduce the potential development, spread, and impact of the acute respiratory illness, COVID-19, a limited number of audit team members travelled to the LLNL site. Some audit activities were conducted remotely via teleconference. GGT evaluations were performed to lift restrictions imposed because the previous audit deemed the process indeterminate. Transportation and RTR activities were not included in the scope of this audit.

The following areas were evaluated during the audit:

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

- LLNL/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)
- Visual Examination (VE)
- WIPP Waste Information System (WWIS)/Waste Data System (WDS)

Non-WAP-Related Technical Activities

- Nondestructive Assay (NDA), including Performance Demonstration Program (PDP)
- Container Management (CM)

- Flammable Gas Analysis (FGA)
- Gas Generation Testing (GGT)

The evaluation of the adequacy of LLNL/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)
- DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC)
- DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis* (DSA), Chapter 18
- WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description*

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-048, *CCP/LLNL Interface Document*
- Related CCP QA and technical implementing procedures

2.2 Purpose

Audit A-21-25 was conducted to evaluate the adequacy and effective implementation of program requirements for the characterization and certification of CH TRU SCGs S3000 solids and S5000 debris wastes at the LLNL for compliance with applicable upper-tier requirements.

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

Darren Jolley	CBFO Quality Assurance Division (QAD) Director
Joe Lopez	CBFO QAD Management Representative and Auditor (QA Program/Program Status)
Cindi Castillo	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)
Tim Boswell	Auditor, CTAC (Interface/GSTR)
Paul Gilbert	Auditor, CTAC (C6 QA)
Bob Prentiss	Auditor, CTAC (C6 QA)
Rick Castillo	Auditor, CTAC (VE/CM)
Steve Shafer	Auditor, CTAC (NDA/PDP)
Jim Oliver	Technical Specialist, CTAC (NDA)

Shelly Gomez	Auditor, CTAC (FGA/GGT)
Maria Escarcega	Auditor-in-Training & Technical Specialist-in-Training, CTAC (AK)
Dick Blauvelt	Technical Specialist, CTAC (AK)
Randy Fitzgerald	Technical Specialist, CTAC (AK)
Jim Oliver	Technical Specialist, CTAC (NDA/PDP)
Paul Gomez	Technical Specialist, CTAC (PL V&V/FGA/GGT)
Dustin Stegman	Technical Specialist, CTAC (VE/CM)

OBSERVERS

Jerry Ellis	U.S. Environmental Protection Agency (EPA)
Ed Feltcorn	EPA
Patrick Kelly	Support Contractor to EPA, SC&A Inc.
David Biswell	New Mexico Environment Department (NMED)
Megan McLean	NMED
Natalie Barka	NMED
Tom Carver	CBFO Office of the National TRU Program (ONTP)
Herb Cruickshank	CBFO 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 August 10, 2021, at the LLNL site and via teleconference. Daily management briefings were held to update LLNL/CCP management and staff on audit progress and identified concerns. A post-audit meeting was held on August 12, 2021, at the LLNL site and via teleconference.

Attachment 2 lists the LLNL/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 the LLNL/CCP to characterize CH 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, VE, NDA (including PDP), GGT, and FGA. Other areas evaluated were data generation level (DGL) and PL V&V, WWIS/WDS data entry, data quality objective (DQO) reconciliation, CM, and the preparation of Waste Stream Profile Forms (WSPFs).

The audit team concluded that, based on personnel interviews and review of associated documentation and records, the LLNL/CCP TRU waste characterization program and

activities for characterizing CH SCGs S3000 solids and S5000 debris wastes adequately address upper-tier requirements. The processes utilized for characterizing CH TRU SCGs S3000 solids and S5000 debris wastes were satisfactorily implemented and effective in achieving the desired results.

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 LLNL/CCP (A-20-18), wherein one non-WAP-affecting CAQ was identified. The CAQ resulted in the initiation of Corrective Action Report (CAR) 20-027, related to the Site Project Manager (SPM) or Acceptable Knowledge Expert (AKE) not providing the AK briefing training for AK Summary Report CCP-AK-LLNL-002, Rev. 1, on July 22, 2019. The briefing was given by the Visual Examination Expert (VEE) instead. CBFO conducted an evaluation and verification of the corrective actions associated with CAR 20-027 and found them to be acceptable. The CAR is considered closed.

During the performance of this audit, the audit team verified sustained corrective action and did not observe any similar instances to the CAQ identified during the previous recertification audit (A-20-18), 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 an interview with the CCP SPM that GGT operations have been initiated by the LLNL/CCP since the previous audit. Also, demobilization of the RTR Unit #2 was accomplished. RTR operations are complete at the LLNL.

5.2.3 New Programs or Activities Being Implemented

There were no new programs or activities being implemented at the LLNL since the previous recertification audit.

5.2.4 Changes in Key Personnel

Changes in key personnel since the previous audit (A-20-18) include the following:

- Site Project Manager
- QA Specialist in the area of Nonconformance Reports

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

The CBFO and NWP, as WIPP HWFP co-permittees, performed Generator Site Technical Review (GSTR) LL-1-18-01, February 26 – March 2, 2018, at the LLNL in Livermore, California. The GSTR Final Report was issued via CBFO letter dated November 13, 2018 (CBFO:ONTP:CF:RMS:18-2245:UFC 5900.00). The GSTR team

completed their review of the program, LLNL satisfactorily addressed and resolved all of the identified issues related to the GSTR, and the GSTR closure letter was issued on May 21, 2019 (CBFO:ONTP:CF:RMS:19-1281:UFC 2300.00).

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-047, Rev. 3, *CCP Training and Qualification Program Document*
- 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. 3, *CCP Project Level Training and Qualification*
- CCP-QP-043, Rev. 5, *CCP Operations Level Training and Qualification*

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

Personnel training records associated with VE, NDA, AK, site project management, GGT, and FGA were examined to verify implementation of associated requirements. The audit team verified that personnel performing waste characterization and certification activities are appropriately qualified.

Record reviews included an evaluation of the LLNL/CCP CH List of Qualified Individuals (LOQI) dated August 10, 2021. Other record reviews included qualification cards and pertinent supporting qualification documentation, such as attendance sheets/briefings on newly-revised Acceptable Knowledge Summary Reports for VE operators (VEOs); appointment letters for VEEs and subject matter experts (SMEs)/on-the-job training (OJT), and NDA expert analysts (EAs); and comprehensive exams.

The procedures reviewed and objective evidence assembled provided evidence 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, or non-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 the procedure adequately addresses upper-tier requirements.

The audit team interviewed a CCP QA engineer and selected a random sample of nonconformance reports (NCRs) for review.

The following closed NCRs were reviewed:

Number	Revision
NCR-LLNL-0033-20	0
NCR-LLNL-0034-20	0
NCR-LLNL-0035-20	0
NCR-LLNL-0036-20	0
NCR-LLNL-0037-20	0
NCR-LLNL-0038-20	0
NCR-LLNL-0039-20	0
NCR-LLNL-0040-20	0
NCR-LLNL-0041-20	0
NCR-LLNL-0042-20	0
NCR-LLNL-0042-20_R1	1
NCR-LLNL-0336-20	0
NCR-LLNL-0337-20_R1	1
NCR-LLNL-0338-20_R2	2
NCR-LLNL-0339-20	0
NCR-LLNL-0340-20	0
NCR-LLNL-0341-20	0
NCR-LLNL-0343-20	0
NCR-LLNL-0344-20	0
NCR-LLNL-0344-20_R1	1
NCR-LLNL-0345-20	0
NCR-LLNL-0346-20	0
NCR-LLNL-0347-20_R1	1
NCR-LLNL-0348-20_R1	1
NCR-LLNL-0349-20	0
NCR-LLNL-0350-20_R1	1
NCR-LLNL-0353-20	0
NCR-LLNL-0354-20	0
NCR-LLNL-0466-21	0
NCR-LLNL-0467-21_R1	1
NCR-LLNL-0566-21	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 determined there were no NCRs generated at PL within the last 12 months that required reporting to the Permittees.

The team concluded that nonconformances are appropriately documented and tracked through resolution, or voided 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 procedures reviewed and objective evidence assembled 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 the procedures adequately address upper-tier requirements.

The level of control for QA records was verified through review of the CH Records Inventory and Disposition Schedule (RIDS) dated April 6, 2021, and General RIDS dated April 6, 2021. The RIDS are reviewed annually by the CCP Records Manager, as required.

The audit team selected and reviewed digitally captured records packages transmitted from the appointed LLNL/CCP 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 an interview with the CCP Records Manager that files are adequately organized and maintained in both paper and electronic file systems. Records are adequately segregated from non-record documents. Also, 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 access is restricted. Hard copies of these restricted-access documents are stored separate from other documents. 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 network server logon/password methods for electronic files maintained on computer servers.

The procedures reviewed and objective evidence assembled 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 QA 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 LLNL/CCP Program Interface

The audit team reviewed documents and conducted interviews with the Technical Support Manager and the CCP SPM responsible for LLNL/CCP waste characterization activities. The program interface was evaluated as established between the CCP and LLNL and documented in CCP-PO-048, Rev. 3, *CCP/LLNL Interface Document.* This document describes the interfaces, roles, responsibilities, and program requirements applicable to both organizations in support of CCP waste characterization activities at the LLNL. The audit team verified that CCP-PO-048 addresses flow-down requirements of CCP-PO-043, Rev. 0, *CCP Interface Document Preparation.*

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

The audit team verified that the CCP Vendor Project Manager (VPM) monitors the LOQI at the beginning of the shift to confirm that only qualified personnel perform waste characterization activities, that CCP performs safety walk-downs, and LLNL management release/approve work prior to performing CCP operations daily.

The audit team verified that the LLNL oversight of the CCP program is performed to ensure CCP work is performed in accordance with CCP procedures, as required by CCP-PO-048, Section 6.0, *Oversight*. The audit team evaluated objective evidence of three LLNL Host Site surveillances conducted since the previous audit.

The audit team verified that the CCP QA organization also conducts periodic surveillances to assess compliance with applicable WIPP requirements. The audit team

evaluated the NWP QA Independent Assessment Schedule for fiscal years 2021-2023 and NWP Audit Report I20-01, *Central Characterization Program QA Program*, dated January 27, 2020.

The audit team verified that the QA Engineer validates the NCRs generated by CCP personnel performing characterization activities. The audit team evaluated the following NCRs:

- NCR-LLNL-0566-21
- NCR-LLNL-0467-21
- NCR-LLNL-0466-21
- NCR-LLNL-0354-20
- NCR-LLNL-0350-20
- NCR-LLNL-0348-20

The audit team verified that the Host Site Management Representative (SMR) coordinates, reviews, provides comments, and approves comment resolutions on documents. The audit team reviewed five email correspondences demonstrating the SMR's involvement in the process, including facilitating generator site document review and comment resolution, as necessary. The review and comment resolutions were documented in accordance with CCP-QP-010, *CCP Document Preparation, Approval, and Control*.

The audit team verified that, at a minimum of once per calendar quarter, the LLNL management performs a review of the current Interface Waste Management Documents List (IWMDL) and provides written assurance to the CCP SPM that the list is current.

The audit team verified through review of training qualification cards, appointment letters for SMEs and VEEs, and the LOQI, that CCP personnel are trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan*.

The procedures reviewed and objective evidence assembled 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 LLNL/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 compliance with the requirements of the WAP. This is accomplished and documented in accordance with controlled processes and procedures.

Technical elements evaluated for waste characterization activities consisted of DGL and PL V&V, AK, VE, NDA, GGT, FGA, WWIS/WDS, and preparation of WSPFs. RTR was not included in the scope of the audit.

Objective evidence was selected and reviewed to evaluate the implementation of the associated waste characterization activities. Batch Data Reports (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 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 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, the LLNL/CCP demonstrated compliance with the waste characterization requirements of the WAP through documentation and by performing waste characterization activities.

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-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-QP-042, Rev. 3, *CCP Project Level Training and Qualification*

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

The audit team reviewed the qualifications of four SPMs and determined the SPMs involved with PL V&V activities at the LLNL/CCP are adequately trained and qualified.

The audit team evaluated the following BDRs in support of CH waste characterization activities completed at the LLNL to verify that PL V&V activities comply with applicable procedural requirements:

VE
- LLVECH0015
- LLVECH0016
- LLVECH0017
- LLVECH0018
- LLVECH0019

NDA
- LL-MILCC4-0034
- LL-MILCC4-0078 R1
- LL-MILCC4-0116
- LL-MILCC4-0137
- LL-SGS1-0008

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

The audit team verified that the WSPF was complete with Characterization Information Summaries (CIS). CIS lots were reviewed for the following waste streams:

- LL-M001-S5400-002 with CIS Lot 1; CIS Lot 15; Lot 20; Lot 22
- LL-T004-S3141-002 with CIS Lot 1

For audit purposes, the draft WSPF and CIS LL-W019-S3900-002 was reviewed to verify BDR results from this waste stream.

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

VE Quarterlies
- 3Q2020 Request (CP: 20:01278)
- 3Q2020 Results (CP: 20:01296)
- 4Q2020 Request (CP: 20:01303)
- 4Q2020 Results (CP: 21:01014)

- 1Q2021 Request (CP: 21:01157) No results due to no VE the 1st quarter 2021
- 2Q2021 Request (CP: 21:01136)
- 2Q2021 Results (CP: 21:01161)

The results from the quarterly package indicate there were no inconsistencies reported in the data results. There were no VE characterization activities performed during the first quarter of 2021.

The procedures reviewed and objective evidence assembled 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 and reviewed implementing procedure CCP-TP-030, Rev. 40, *CCP CH 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 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. Records reviewed included container information summaries, pages from BDRs showing analyses values in the IDC, WWIS/WDS Waste Container Data Reports, and submittals for WWIS/WDS review/approval. Records for data entry of CH waste characterization and certification data were reviewed.

The audit team reviewed waste characterization case files for the following eight CH SCG S5000 containers:

- LL85238199TRU
- LL85238328TRU
- LL85301437TRU
- LL85801345TRU
- LL85324441TRU
- LL85234507TRU
- LL85234509TRU
- LL85234511TRU

The LLNL CH containers listed above were certified under the current procedural process from CCP-TP-030, which provides certification for using modules of the IDC. The audit team determined that the IDC processes for CH waste container certification were performed in accordance with the appropriate procedure.

The audit team interviewed the CCP Lead Waste Certification Official (WCO) regarding procedure work steps for performance of Unreviewed Safety Question Determinations (USQDs) and Material at Risk (MAR) evaluations. The audit team determined that WCO personnel have not received containers for certification that exceed the WIPP WAC PE-Ci (Plutonium-Equivalent Curie) limit requiring a USQD since the previous audit. The WCO personnel also have not received a request from a Transportation Certification Official (TCO) for a high MAR evaluation. The audit team determined that waste certification personnel are familiar with these two processes due to simulations of procedure steps demonstrated during the audit. Implementation of the USQD and MAR processes are determined to be effective if future occurrences are presented.

The procedures reviewed and objective evidence assembled provided evidence that the applicable requirements for WWIS/WDS data entry are adequately established for compliance with upper-tier requirements and satisfactorily implemented in achieving the desired results. 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-005, Rev. 27, *CCP TRU Nonconforming Item Reporting and Control*
- CCP-QP-042, Rev. 3, *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*
- WP 13-QA.03, Rev. 31, *QA Independent Assessment Program*

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

The audit team evaluated the AK process for characterizing CH TRU SCGs S3000 solids and S5000 debris wastes. The audit team evaluated compliance with the WIPP WAC and WIPP WAP requirements listed in the C6-2 checklist, along with portions of the C6-1 and C6-3 checklists. Objective evidence was reviewed and compiled to demonstrate compliance with each of the applicable requirements on these checklists.

The audit team reviewed the latest revision to the AK Summary Report (AKSR) for three waste streams representing the two respective SCGs. The AKSR and waste stream designations are as follows:

- AKSR CCP-AK-LLNL-002, Rev. 2, for CH SCG S5000 debris waste stream LL-M001-S5400-002 and CH SCG S3000 solids waste streams LL-W019-S3900-002 and LL-T004-S3141-002.

The AKSR was reviewed by the audit team with respect to specific WIPP WAP and WIPP WAC requirements, including descriptions of waste processing activities, assignment of hazardous waste numbers (HWNs), identification of the two most prevalent radionuclides, waste stream volumes, periods of generation, and projections of future generation. Comparisons were made with information in the latest version of the WIPP Annual Transuranic Waste Inventory Report.

The audit team also examined the following completed documents generated from procedure CCP-TP-005 for each waste stream:

- Attachment 1: The respective AK Documentation Checklist
- Attachment 4: The AK Source Document Information List
- Attachment 5: The AK Hazardous Constituents List
- Attachment 6: The respective AK Waste Form, Waste Material Parameters, Prohibited Items, and Packaging, alongside the justification memoranda for waste material parameter weight estimates
- Attachment 7: The Radionuclides List and AK/NDA memoranda for the CH waste streams
- Attachment 8: The Waste Containers List, together with the Container Evaluation documentation that demonstrates that the parameters and properties of containers provided by the generator to be added to a waste stream are examined to assure that the assignment is appropriate.

The audit team also examined the current AK Tracking Spreadsheet and reconciled its data with the AK Waste Containers List (Attachment 8) and applicable AK documentation.

The audit team reviewed examples of discrepancies in the AK record, discrepancy resolutions at waste characterization, and the requisite AK Reevaluation forms. With regard to noncompliant waste containers, the auditors examined NCRs dealing with prohibited items and the requisite disposition. Waste Stream Characterization Checklists and supporting data reconciling the results of the characterization activities with the corresponding information in the AK records were also examined. AK Accuracy Reports were also reviewed and compiled as objective evidence. Approved WSPFs and attachments for waste streams LL-M001-S5400-002 and LL-T004-S3141-002 were also reviewed, along with a draft copy of the WSPF for waste stream LL-W019-S3900-002, currently in the review process.

The WAP-required container traceability exercise was conducted by the audit team for a total of ten waste containers from the three waste streams examined. The review included both newly-generated waste containers and those that had been previously packaged, and in some cases, repackaged. For the containers selected, the audit team examined BDRs for VE and NDA. Additional traceability documentation was collected through IDC database screenshots, AK tracking spreadsheet data, AK waste container lists, and extensive and detailed LLNL generator input, including information gathering documents (IGDs) and waste disposal requisitions (WDRs).

The audit team reviewed training records for two AKEs and three SPMs who have participated or could potentially participate in waste characterization activities for LLNL/CCP. 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. The audit team also examined the audit report for Internal Audit I21-02 performed on 1/12/21 at LLNL.

Enhanced AK products for the waste streams audited were examined. Those enhanced AK products included Interface Waste Management Documents Lists (IWMDLs), AK Assessments (AKAs), Chemical Compatibility Evaluations (CCEs), Basis of Knowledge (BoK), and AK Briefings.

IWMDL

IWMDLs were developed for each of the three waste streams in accordance with CCP-TP-005. The issuance of the WIPP WAC, Rev.10, reinstated the requirement for this enhanced AK product. Each IWMDL was thoroughly reviewed to verify the relevance of procedures/processes listed; the latest revision and date of issuance of the procedure/process; and that the date of the “walkdown” performed by the AKE with the site Point of Contact (POC) or SME was listed on the IWMDL. Each process/procedure is assigned an AK Source Document Number. The audit team examined each AK Source Document Summary to verify that the procedure/process was adequately described, that the verification/walkdown is documented with a date and with the names of individuals involved, and that each revision is reviewed with the site SME/POC with a determination of the impact on waste management operations documented.

AKA

AKAs and Addendums were examined for sub-populations of waste streams LL-M001-S5400-002, LL-T004-S3141-002, and LL-W019-S3900-002. Compliance with the requirements in CCP-TP-005 was examined. In addition to the AKA contents, including historic and current waste management practices/processes, a list of historic and current absorbents and other information relevant to waste stream ignitability, corrosivity, and reactivity was reviewed. The audit team also examined a detailed description of the contents of each waste container bounded by the AKA. The primary sources for the container-specific information came from generator site paperwork, including IGDs and WDRs, along with data from RTR quick scans. Finally, the AK audit

team reviewed and compiled as objective evidence comments from the internal CCP and LLNL site reviews.

CCE

The audit team reviewed the CCE addressing all three LLNL waste streams, LL-M001-S5400-002, LL-T004-S3141-002, and LL-W019-S3900-002. The audit team discussed and reviewed the CCE contents, including consolidated material inputs, technical evaluations, CCE Attachment 1-*Chemicals and Materials of Concern*, including reactivity group number (RGN) assignment and AKE designated quantities: dominant, minor or trace, and CCE Attachment 3-*Insignificant Trace Chemicals and Materials.* The audit team also reviewed Document Review Records (DRRs) from internal and CBFO reviews, with the CBFO approval letter. A revision to the existing CCE has been developed to address new chemicals primarily identified in the ongoing review of IGDs. There are no new RGNs identified. The CCE revision has been submitted to the CBFO for review.

Basis of Knowledge (non-WAP-related)

BoK documentation was reviewed for subpopulations of waste stream LL-M001-S5400-002, designated as BOK01, and waste stream LL-T004-S3141-002, designated as BOK03. These sub-populations were determined to contain no oxidizing chemicals, based upon the examination of specific container contents as noted above in the AKA section. Thus, these sub-populations are exempt from the BoK requirements as detailed in the BoK document DOE/WIPP-17-3589, Rev.1, *Basis of Knowledge for Evaluating Oxidizing Chemicals in TRU Waste*. Since the previous audit, an addendum was developed for BOK01 that added 475 containers to the BoK exempt list, and an addendum was developed for BOK03 that added 16 containers to the exempt list. These were reviewed or re-reviewed. In addition, a BoK memorandum, designated as BOK02, was developed to address the requirements of the BoK procedure for containers that are not BoK exempt. Seventy containers were included in BOK02. Since the previous audit, BOK04 has been developed that identifies six containers in waste stream LL-W019-S3900-002 that contain only absorbed organic solutions and are thus exempt from the BoK requirements. This BoK and supporting documentation, including discrepancy resolution DR106, were also examined during the audit.

AK Briefings

When an AKSR is issued or revised, a presentation is prepared and provided to requisite CCP waste characterization staff and appropriate generator site personnel. There have been no revisions to AK Summary Report CCP-AK-LLNL-002, Rev. 2, since the previous audit.

The procedures reviewed, and objective evidence assembled, provided evidence that the applicable requirements for AK are adequately established. For the waste streams reviewed by the audit team, all elements of enhanced AK were verified to be implemented. The information provided demonstrated that the AK process is satisfactorily implemented and effective in achieving the desired results. No WAP-affecting or non-WAP-affecting concerns in the area of AK were identified.

5.5.3 Table C6-3, Radiography Checklist

RTR was not in the scope of this audit. The LLNL RTR Unit 2 has been decommissioned, disassembled, and returned to the vendor. There will be no RTR operations at LLNL for the foreseeable future.

5.5.4 Table C6-4, Visual Examination Checklist

The audit team evaluated the adequacy, implementation, and effectiveness of LLNL/CCP activities to characterize and certify newly-generated CH SCG S5000 debris and CH SCG S3000 solids waste 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. 5, *CCP Operations Level Training and Qualification*
- CCP-QP-041, Rev. 4, *CCP Job Needs Analysis and Design*
- CCP-TP-113, Rev. 24, *CCP Standard Visual Examination*

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

During the audit, the team toured the Super Block Plutonium Facility Building 332, Room 1378, and observed the VE of container number LL85314080TRU from waste stream LL-W019-S3900-002 in BDR number LLVECH0023. The team verified the current revision of CCP-TP-113 was being used to perform VE and the current revision of the associated AKSR CCP-AK-LLNL-002, Rev. 2, was available for reference, as needed.

LLNL/CCP uses the two-operator method when performing VE characterization of waste. The audit team interviewed VEOs and the VEE. The logbooks for the Super Block Plutonium Facility were reviewed and verified to be in compliance with CCP-PO-005, Rev. 31, *CCP Conduct of Operations*. Entries to VE operational logbooks CCP-CH-LLNL-VE-02 (2020 VE operational logbook) and CCP-CH-LLNL-VE-03 (2021 VE operational logbook) were logged correctly and reviewed by the VPM as required. The audit team verified container scale/ID# 006591 with a calibration due date of 6/2/22. The audit team also verified the following torque wrenches were used during VE operations and were calibrated and maintained on the approved M&TE list:

- 1003970
- 1018904
- 1045207
- 1021893

- 1003970
- 1018904

The audit team examined the following CH VE BDRs generated from operations performed in the Super Block Plutonium Facility to verify implementation and compliance with the requirements for documenting VE activities, as specified in CCP-TP-113:

- LLVECH0015
- LLVECH0016
- LLVECH0017
- LLVECH0018
- LLVECH0019

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

The audit team conducted interviews with the VEE, Cognizant Engineer (CE), and responsible VE personnel performing VE operations. Records documenting VE of CH SCGs S3000 solids waste and S5000 debris waste were verified to be complete and accurate. The audit team examined training records for five VEOs/independent technical reviewers (ITRs) and confirmed the appointment letter for one LLNL/CCP VEE. The audit team verified that VEOs, ITRs, and the VEE were appropriately trained and qualified as required.

The audit team verified sustained corrective actions for CAR 20-027, which was issued from the previous CBFO Audit A-20-18. The CAR was written because, instead of the SPM and/or the AKE, the VEE was providing the AK waste stream summary training to personnel. During this audit, a review of AK Briefing CCP-AK-LLNL-002, Rev. 2, was performed and confirmed the SPM and/or the AKE provided the AK Briefing on July 21, 2020. No similar instances of this issue were identified.

The procedures reviewed, field operations, and objective evidence assembled provided evidence that the applicable requirements for VE of CH SCG S5000 debris and S3000 solids waste are adequately established for compliance with upper-tier requirements, effectively implemented, and satisfactory 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 Nondestructive Assay

The audit team evaluated the adequacy, implementation, and effectiveness of the LLNL/CCP NDA characterization process for CH TRU SCGs S3000 solids and S5000 debris wastes through review of objective evidence, observation of measurement operations, and interviews with operators, Expert Analysts (EAs), other program staff, and management. The audit team conducted interviews with NDA Operators/ITRs, EAs, and CE. The audit team reviewed the following procedures to determine the degree to which the procedures adequately address upper-tier requirements:

- CCP-QP-037, Rev. 5, *CCP Calculations*
- CCP-TP-048, Rev. 19, *CCP NDA System Data Reviewing, Validating, and Reporting*
- CCP-TP-058, Rev. 7, *CCP NDA Performance Demonstration Program*
- CCP-TP-076, Rev. 5 & 6, *CCP Operating the Mobile ISOCS Large Container Counter Using NDA 2000*
- CCP-TP-077, Rev. 4, *CCP Calibrating the Mobile ISOCS Large Container Counter Using NDA 2000*
- CCP-TP-202, Rev. 0, *CCP Operating the Segmented Gamma Scanner Using NDA 2000*
- CCP-TP-203, Rev. 0, *CCP Calibrating the Segmented Gamma Scanner Using NDA 2000*

Results of the review indicated the procedures adequately addressed upper-tier requirements.

The audit team evaluated the following NDA equipment: Segmented Gamma Scanner (SGS) and Mobile ISOCS Large Container Counter (MILCC) Unit # 4. The SGS is located in the Super Block Plutonium Facility Building 332 in Room 1013, and the MILCC4 is located in Tent 6198 in the 625 Yard.

Based on a review of the current revisions of LLNL/CCP procedures, three checklists were prepared and used to guide the evaluation and verification of the following:

- System stability as evidenced by the implementation and effectiveness of quality control measurements and calibration verifications
- Applicability of each system's calibration and operational range to the matrix, geometry, and radionuclide content of waste being assayed
- Successful participation in the CBFO-sponsored NDA PDP
- Completed BDRs
- Data storage and retrievability

- Personnel qualification and training for NDA Operators, ITRs, SME/OJTs, SPMs, and EAs
- Continued tracking, operability, and condition of the SGS and MILCC4
- Operational logbooks from 2020 and 2021 and current software versions for both systems

The operations process and associated procedures were evaluated for the two NDA systems. The audit team witnessed waste characterization activities on both the SGS and MILCC4 units.

SGS

The SGS unit had completed test measurements for PDP Cycle 28 and analyzed and submitted the results at the time of the audit. The SGS did not perform waste assays since the previous CBFO Audit A-20-18 due to limited availability of feedstock, and as a result of COVID-19 precautions. The audit team was provided with previously completed BDRs to verify implementation and compliance with the requirements for documenting SGS activities, as specified in CCP-TP-202. The following BDRs were reviewed by the audit team and discussed with the LLNL NDA personnel:

- BDR LL-SGS1-0008
- BDR LL-SGS1-0009
- BDR LL-SGS1-0010
- BDR LL-SGS1-0011
- BDR LL-SGS1-0014

The BDRs reviewed ranged from 1 to 4 containers for a total of 12 containers. The 28A PDP cycle was completed. The PDP cycle 27A approval for the LLNL SGS remains valid until October 21, 2021.

No new NCRs were written against waste assayed on the SGS since the previous audit.

The following SGS calibration documents were requested and provided to the audit team for evaluation:

- CI-LLNL-NDA-001, Rev. 3, *Calibration, Verification, and Confirmation Report for the Lawrence Livermore National Laboratory (LLNL) Room 1013 Segmented Gamma Scanner (SGS)*, dated August 20, 2019
- CI-LLNL-NDA-001-LLNL_SGS01, Rev. 4*, Calibration, Verification, and Confirmation Report for the Lawrence Livermore National Laboratory (LLNL) Room 1013 Segmented Gamma Scanner (SGS)*, dated June 14, 2021
- CI-LLNL-NDA-002, Rev. 0, *Total Measurement Uncertainty Report for the Lawrence Livermore National Laboratory Segmented Gamma Scanner*.

No full recalibration has been performed or required on the SGS since the initial calibration in 2014.

The audit team determined that procedures, operations, quality control measurements, training, calibration reports (documenting the calibration range, operating parameters, and measurement uncertainty), and data analysis, reporting, and storage are adequate and have been verified to address upper-tier requirements, are satisfactory in their implementation, and effective at controlling the waste characterization processes using the SGS.

MILCC4

LLNL/CCP completed the MILCC4 unit test measurements for PDP cycle 28A prior to this audit. PDP assay results are currently being analyzed and will be submitted for scoring. The MILCC4 did not perform waste assays since the previous CBFO Audit A-20-18 due to COVID-19 precautions; limited availability of feedstock; and because of a detector that required repair (described below). The audit team was provided with previously completed BDRs to verify implementation and compliance with the requirements for documenting MILCC4 activities, as specified in CCP-TP-076. The following 9 BDRs included 63 containers and were reviewed by the audit team and discussed with the LLNL NDA personnel:

- BDR LL-MILCC4-0023
- BDR LL-MILCC4-0034
- BDR LL-MILCC4-0078
- BDR LL-MILCC4-0082
- BDR LL-MILCC4-0116
- BDR LL-MILCC4-0132
- BDR LL-MILCC4-0136
- BDR LL-MILCC4-0137
- BDR LL-MILCC4-0138

CCP performed one calibration verification dated July 20, 2021, when CCP NDA staff unpacked and assembled detector SN 13289 recently returned from the factory for repair. The detector was connected to its controller and the controller turned on to begin the cool down process. On July 19, 2021, detector I reached operating temperature of -185 degrees Celsius and completed more than its 12 hour cool down period. The Lynx electronic unit was assembled and powered on. High voltage was applied, a pole zero was performed, a slight gain adjustment was made, and a full energy and shape calibration was performed. The audit team reviewed the full calibration verification report including attachments. A test Gamma instrument check was performed with no issues. On July 20, 2021, another Gamma instrument check and Environmental Background Check were performed with no issues. Verification assays were also completed. The calibration of the gamma modality was verified using Eu-152/Am-241 line sources in the homasote matrix drum in the near, filtered geometry for three verification assays. Gamma results were calculated using the Eu energy lines

of 121.78 keV, 344.29 keV, 778.92 keV, 964.l1 keV, 1112.07 keV, and 1408 keV. The results verified that the instrument remains functional and the calibration is satisfactory.

The audit team reviewed the following NCRs:

- NCR-LLNL-0666-19
- NCR-LLNL-0341-20
- NCR-LLNL-0354-20
- NCR-LLNL-0663-19

The following MILCC4 calibration documents were requested and provided to the audit team for evaluation:

- CI-MILCC4-NDA-1000, Rev. 0, 2/8/2019, *Lawrence Livermore National Laboratory MILCC4 ISOCS Calibration Report*
- CI-MILCC4-NDA-1001, Rev. 2, 8/9/2019, *Calibration Confirmation Report for the Mobile ISOCS Large Container Counter (MILCC4) at Lawrence Livermore National Laboratory*
- CI-MILCC4-TMU-101, Rev. 1, 4/11/2019, *Lawrence Livermore National Laboratory Mobile ISOCS Large Container Counter 4 (MILCC4) Total Measurement Uncertainty Report*.

The audit team interviews of MILCC4 NDA staff adequately verified the calibration range, operating parameters, and measurement uncertainty in accordance with upper-tier requirements.

The audit team examined training records for NDA personnel and confirmed they were trained and qualified as required, and the equipment software versions installed and used to perform NDA operations were appropriately identified and consistent with the versions listed in the CCP-QP-022, Rev. 19, *CCP Software Quality Assurance Plan*.

One concern was identified in the area of NDA. The audit team offered one recommendation for management's consideration regarding the process for performing NDA distance verifications (see Recommendation 1 in section 6.4).

The procedures reviewed and objective evidence assembled provided evidence that the applicable requirements for NDA characterization of CH SCGs S3000 solids and S5000 debris wastes using the two NDA systems (SGS and MILCC4) were adequately established for compliance with upper-tier requirements. The processes for characterizing CH SCGs S3000 solids and S5000 debris wastes were satisfactorily implemented and effective in achieving the desired results.

5.6.2 Container Management

The audit team interviewed LLNL/CCP container management (CM) personnel and reviewed documentation and the implementing procedure for CM activities. The audit

team verified that CCP conducts CM activities for CH waste using procedures CCP-TP-068, Rev. 12, *CCP Standardized Container Management* and CCP-QP-017, Rev. 4, *CCP Identification and Control of Items.* Results of the review indicate that the procedure adequately addresses upper-tier requirements.

The audit team reviewed eight container travelers and three container inspection/weight reports. All documents were completed as required, and entered into the CCP records system. Container Travelers (CCP-TP-068, Attachment 1) were reviewed for the following containers:

- LL85234571TRU
- LL85234574TRU
- LL85234576TRU
- LL85234595TRU
- LL85238281TRU
- LL85314029TRU
- LL85314079TRU
- LL85314080TRU

Container Inspection/Weight Reports (CCP-TP-068, Attachment 2) were reviewed for the following dates:

- 02/24/2020
- 02/26/2020
- 03/02/2020

All reports were completed, reviewed, and entered into the CCP records system as required.

The audit team examined training and qualification documentation for two CM personnel and determined they were qualified to perform CM operations.

The audit team confirmed the VPM verifies the container IDs are listed on the AK tracking spreadsheet and recorded on CCP-TP-068, Attachment 2, prior to entering the controlled area. The audit team observed the container integrity checks being performed while touring the Super Block Plutonium Facility, Building 332. The container travelers are located in an attached plastic pocket on the containers. The audit team observed the certified scale and check weights used for waste containers and verified they were all listed on the M&TE list and calibrated, as required. The calibration certificate for scale (#006591) was verified to be accurate and current.
Two containers (LL85234524TRU and LL85901665R) observed in the field were verified to have VPM hold tags attached and were isolated, per the direction of the associated NCRs (NCR-LLNL-0353-20 and NCR-LLNL0354-20).

The procedure reviewed, field operations observed, and objective evidence assembled provided evidence that the applicable requirements for CM of CH SCGs S3000 solids

waste and S5000 debris waste 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 CM were identified.

5.6.3 Flammable Gas Analysis

The audit team conducted interviews with responsible personnel and reviewed DOE/WIPP-06-3345, Rev. 10, *Waste Isolation Pilot Plant Flammable Gas Analysis,* relative to the FGA process. Results indicate that the document adequately addresses upper-tier requirements.

The audit team verified field activities at LLNL Building 612. Verification of compliance was demonstrated though review of FGA BDRs, logbook FGA Unit 7 CCP-CH-LLNL-FGA-UNIT7-03, training documents, and interviews conducted with FGA operations personnel.

The audit team examined the following CH FGA BDRs to verify implementation and compliance with the requirements for documenting FGA activities:

- LL19FG7001_ICAL (Initial Calibration Report)
- LL19FG7002_MDL (Minimum Detection Limit Level Report)
- LL19FG7024
- LL19FG7035
- LL19FG7069
- LL19FG7073
- LL20FG7013
- LL20FG7020
- LL20FG7024
- LL20FG7025
- LL21FG7002
- LL21FG7004

All BDRs were complete, reviewed as required, and maintained by CCP Records. There was one NCR associated with the FGA BDR NCR-LLNL-0664-19, which was properly prepared, satisfactorily completed, and maintained by CCP Records.

The audit team examined training and qualification documentation for FGA operators/ITRs and determined they are qualified to perform FGA operations.

The audit team verified the results contained in the BDRs and analytical operations records utilizing an Agilent Technologies Gas Chromatograph 7890A series Gas Chromatograph (GC) for CH waste containers, as reported in the BDRs, immediately followed by sample analysis. The team also verified the use of the procedure to determine the sampling scenario, determination of the drum age criteria, recording of the filter number, and all information properly documented on the procedure attachments. The team verified the analytes in the list of the flammable compounds and the Tentatively Identified Compounds reported for all reports and the verified run. All

samplings were performed in accordance with the procedure. No discrepancies were identified for either sampling or analysis of CH containers.

The audit team verified that an Independent Technical Review was performed following analytical BDR completion, that any discrepancies were noted and returned to the analyst for correction, and that the completed and reviewed BDR was submitted to CCP Records in accordance with CCP procedures.

NorLab Certificates of Accuracy were examined for Internal Standards and Bromofluorobenzene (BFB-CC723012, with an expiration 12/2021); Initial Calibration Standards (CC723017); and for continuing Calibration Standards (CC723026). All standards were within their expiration dates and contained the required number of volatile compounds, including hydrogen. Carrier gases such as Nitrogen (CC252086) and He (EB0072395) were also verified.

The audit team verified the lot numbers for the side port needle assemblies and filters. The audit team verified the paddles used to block the filter for sampling through the side port via the approved filter NFT-19DS.

The procedures reviewed and objective evidence assembled provided evidence that the applicable requirements for FGA characterization of CH SCGs S3000 solids and S5000 debris wastes are adequately established for compliance with upper-tier requirements. The processes for characterizing CH SCGs S3000 solids and S5000 debris wastes were satisfactorily implemented and effective. No non-WAP-affecting concerns in the area of FGA were identified.

5.6.4 Gas Generation Testing

The audit team conducted interviews with responsible personnel and reviewed procedures CCP-TP-083, Rev. 9, *CCP Gas Generation Testing* and CCP-PO-016, Rev. 7, *CCP Gas Generation Testing Quality Assurance Project Plan*, relative to the GGT process to determine the degree to which they address upper-tier requirements from DOE/WIPP-01-3187, Rev. 6, *Quality Assurance Program Plan for TRUPACT-II Gas Generation Test Program*. Results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team verified field activities at the LLNL tent facilities. Verification of compliance was demonstrated though review of a GGT BDR LL21GG702, Logbook GGT-2021, training documents, and interviews conducted with GGT operations personnel.

The audit team verified the test categories for the containers at LLNL and all the SCG S3000 containers are considered for GGT. The test determination was verified, and the Attachment 1 information was reviewed for BDR LL21GG702.

During field evaluations, the audit team witnessed GGT operations. A pre-job brief and safety walk-down were performed, and a fire extinguisher was verified to be charged

prior to entry into the test area. The GGT was 5 days into the test and nearly complete on the last day of the audit, involving two containers, LL85600771R and LL85600870R. The audit team verified the torque wrench used for the test was calibrated and the leak test solution Snoop was available. The temperature controller (GGTC-43723073) set point was 57.3 degrees Celsius, with the pressure gauge (GGTC-40723072) showing the expiration due 2/8/2022. The audit team reviewed logbook entries and examined hydrogen cylinder CC723026, with an expiration date of 12/2021. A “Caution Hot” sign was visible on each container.

The audit team examined training records for GGT Operators/ITRs and verified they were trained and qualified, as required.

The procedures reviewed and objective evidence assembled provided evidence that the applicable requirements for GGT analysis of CH SCG S3000 solids waste is adequately established for compliance with upper-tier requirements. The processes for characterizing CH SCG S3000 solids waste were satisfactorily implemented and effective; therefore, the indeterminate status/restriction reported in the previous audit report (A-20-18) should be lifted. No non-WAP-affecting concerns in the area of GGT were identified.

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.

> Condition Adverse to Quality (CAQ) – An all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, nonconformances, and technical inadequacies.
>
> Significant Condition Adverse to Quality – A condition which, if uncorrected, could have a serious effect on safety, operability, waste confinement, TRU waste site certification, regulatory compliance demonstration, or the effective implementation of the QA program.

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 (CDA)

During the audit, the audit team may identify CAQs. Audit team members, the Audit Team Leader (ATL), and the CBFO QAD 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 QAD Management Representative, determines if the CAQ is a minor and isolated case requiring only remedial action and therefore can be corrected during the audit.

Upon determination that the CAQ is minor and isolated, the audit team member, in conjunction with the ATL and the CBFO QAD 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 QAD 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

No non-WAP-affecting Observations were identified 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.

One recommendation was offered for management's consideration during the audit.

Recommendation 1:

The audit team recommended that the NDA MILCC Operator perform the standoff distance verification between the detector and the container with the Cadmium Filter in place without removing the shield collimator/cadmium filter. Performing the distance verification with the collimator/filter in place would assure that the detector cart would not be jarred or moved when replacing the collimator after the measurement. This change will improve operational efficiency and safety. The collimator/filter is heavy and there is not an appropriate laydown area for tools and parts.

7.0 LIST OF ATTACHMENTS

Attachment 1: Meeting Attendees and Personnel Contacted During Audit A-21-25
Attachment 2: Personnel Contacted During the Audit by Subject Area
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-21-25				
NAME	**TITLE/ORG**	**PRE-AUDIT MEETING**	**CONTACTED DURING AUDIT**	**POST-AUDIT MEETING**
Alcuran, Malia	QA Coordinator/LLNL QA Office for TRU Project			X
Ballew, Veronica	QA Program Manager/NWP		X	
Bamper, Daniel	Observer/CBFO ONTP			X
Barka, Natalie	Observer/NMED	X		X
Biswell, David	Observer/NMED	X		X
Bruce, Devin	FGA/GGT Operator/NWP-CCP	X	X	X
Burmann, John	CFM/LLNL		X	
Cabezas, Fernando	VE Operator/NWP-CCP		X	
Calder, Lisa	SPM/NWP-CCP	X	X	X
Carver, Tom	ONTP Waste Certification Manager, CBFO	X		X
Conrad, Clint	Waste Manager/RHWM	X	X	X
Cruickshank, Herb	Observer/CBFO ONTP	X		X
Davis, James	PM/NNSA-LFO			X
Diaz, David	VE Operator/NWP-CCP		X	
Ellis, Jerry	Observer/EPA	X		X
Feltcorn, Ed	Observer/EPA	X		
Fischer, Robert	Group Lead/RHWM	X		
Gaylord, Reggie	Program Manager/RHWM	X		X
Gentry, Katie	QA Specialist/NWP-CCP	X		
Groover, Terri Anne	VE Cog. Engineer/NWP-CCP	X	X	X
Haar, Kevin	NDA Cog. Engineer/NWP-CCP	X	X	X
Harvill, Joe	NDA Tech. Advisor/NWP-CCP	X	X	X
Hatch, Chris	SPM/NWP-CCP	X	X	X
Hernandez, Jennifer	CCP Training Coordinator TFE/CCP	X	X	
Hoggatt, Kyle	CCP-AKE/Tech Specs	X	X	X
Hollister, Rod	SME/RHWM	X	X	X
Hulse, Jackie	VEE-VPM/NWP-CCP	X	X	X

MEETING ATTENDEES AND PERSONNEL CONTACTED DURING AUDIT A-21-25				
NAME	**TITLE/ORG**	**PRE-AUDIT MEETING**	**CONTACTED DURING AUDIT**	**POST-AUDIT MEETING**
Jagielski, Richard	FGA/GGT Operator/NWP-CCP	X	X	X
Kantrowitz, Richard	Technical Support/NWP-CCP	X		X
Kirkes, Creta	WCO/NWP-CCP	X	X	X
Kelly, Patrick	Observer/EPA Support Contractor SC&A Inc.	X		
Kleckner, John	AKE/Tech Specs	X	X	
Knight, Matthew	Operator-in-training, Mirion Technologies	X	X	X
Lee, Ronnie	CCP Manager/NWP-CCP	X		X
Machado, Richard	Expert Analyst, Mirion Technologies	X	X	X
McLean, Megan	Observer/NMED	X		
Michaels, Kevin	Facility Manager/RHWM	X		
Moody, Dave	SPM/NWP-CCP		X	X
Morales, Bart	Expert Analyst, Mirion Technologies	X	X	
Pace, Berry	Waste Characterization Advisory Engineer/NWP-CCP	X		X
Pellegrini, William	Site Manager/Mirion		X	X
Reeves, Ron	Operations Manager/NWP-CCP	X	X	
Salter, Scott	Records & Issues Management Manager/NWP-CCP			X
Swift, Andrew	Staff Scientist/AFMH/LLNL		X	
Webb, Jessica	Document Services Manager/TFE-CCP	X		
Yturralde, Jewell	CCP Records Manager, TFE-CCP		X	

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

Personnel Qualification and Training	Jennifer Hernandez
Control of Nonconforming Items	Katie Gentry
Records	Jewell Yturralde
WIPP Waste Information System (WWIS Data Entry)	Creta Kirkes
Waste Certification/Project-Level Data V&V	Lisa Calder Chris Hatch David Moody
Acceptable Knowledge	Kyle Hoggatt John Kleckner Chris Hatch
Visual Examination	John Burmann Fernando Cabezas Clint Conrad David Diaz Terri Anne Groover Kevin Haar Jackie Hulse Andrew Swift

Audit A-21-25
Summary Table of Audit Results

QA / Technical Elements	Concern Classification				QA Evaluation		Technical Evaluation
	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
Program Status/ QA Program/Interface/GSTR					A	S	E
C6 General QA Elements: (NCRs, Qual. & Training, Records)					A	S	E
C6 General QA Element: (WWIS/WDS)					A	S	E
Acceptable Knowledge & Waste Certification					A	S	E
Project Level Data V&V					A	S	E
Visual Examination					A	S	E
Gas Generation Testing					A	S	E
Nondestructive Assay				1	A	S	E
Flam. Gas Analysis					A	S	E
Container Management					A	S	E
TOTALS	0	0	0	1	A	S	E

Definitions

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

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

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

WAP-Related Objective Evidence Reviewed During the Audit

The WAP-related objective evidence supporting the Audit A-21-25 will be included in the shipping box(es) submitted with the final audit report. 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-21-25
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	31	CCP Conduct of Operations
4.	CCP-PO-016	7	CCP Gas Generation Testing Quality Assurance Project Plan
5.	CCP-PO-043	0	CCP Interface Document Preparation
6.	CCP-PO-047	3	CCP Training and Qualification Program Document
7.	CCP-PO-048	3	CCP/LLNL Interface Document
8.	CCP-QP-002	47	CCP Training and Qualification Plan
9.	CCP-QP-005	27	CCP TRU Nonconforming Item Reporting and Control
10.	CCP-QP-008	27	CCP Records Management
11.	CCP-QP-010	33	CCP Document Preparation, Approval, and Control
12.	CCP-QP-016	26	CCP Control of Measuring and Testing Equipment
13.	CCP-QP-017	4	CCP Identification and Control of Items
14.	CCP-QP-022	19	CCP Software Quality Assurance Plan
15.	CCP-QP-028	17	CCP Records Filing, Inventorying, Scheduling, and Dispositioning
16.	CCP-QP-037	5	CCP Calculations
17.	CCP-QP-041	4	CCP Job Needs Analysis and Design
18.	CCP-QP-042	3	CCP Project Level Training and Qualification
19.	CCP-QP-043	5	CCP Operations Level Training and Qualification
20.	CCP-TP-001	22	CCP Project Level Data Validation and Verification
21.	CCP-TP-002	29	CCP Reconciliation of DQOs and Reporting Characterization Data
22.	CCP-TP-005	32	CCP Acceptable Knowledge Documentation
23.	CCP-TP-030	40	CCP CH TRU Waste Certification and WWIS/WDS Data Entry
24.	CCP-TP-033	25	CCP Shipping of CH TRU Waste
25.	CCP-TP-048	19	CCP NDA System Data Reviewing, Validating, and Reporting Procedure
26.	CCP-TP-058	7	CCP NDA Performance Demonstration Program
27.	CCP-TP-068	12	CCP Standardized Container Management
28.	CCP-TP-076	5&6	CCP Operating the Mobile ISOCS Large Container Counter Using NDA 2000
29.	CCP-TP-077	4	CCP Calibrating the Mobile ISOCS Large Container Counter Using NDA 2000
30.	CCP-TP-083	9	CCP Gas Generation Testing
31.	CCP-TP-113	24	CCP Standard Visual Examination
32.	CCP-TP-200	7	Enhanced Acceptable Knowledge Review
33.	CCP-TP-202	0	CCP Operating the Segmented Gamma Scanner using NDA 2000
34.	CCP-TP-203	0	CCP Calibrating the Segmented Gamma Scanner Using NDA 2000
35.	DOE/WIPP-06-3345	10	Waste Isolation Pilot Plant Flammable Gas Analysis
36.	DOE/WIPP-16-3564	2	Generator Site Technical Review Procedure
37.	WP 13-QA.03	31	Quality Assurance Independent Assessment Program

NOTE: Any changes to procedures that affect performance criteria or data quality, testing procedures, quality assurance objectives, calibration requirements, or QC sample acceptance criteria comply with the WIPP HWFP WAP (Attachment C) and shall not be made without prior approval of the CBFO.

Audit A-21-25
TABLE OF AUDITED PROCEDURES

Procedures CCP-QP-001, *CCP Graded Approach*, and CCP-PO-045, *CCP Waste Management Field Observations* were included in ONTP Scope memorandum CBFO:ONTP:KEP:VV:21-0818UFC 2300.00, dated June 22, 2021; but was not evaluated during this audit. These procedures are evaluated during a separate CCP QA All-Sites Audit or other respective assessment annually.

CBFO document DOE/WIPP-01-3187, Rev. 6, *Quality Assurance Program Plan for TRUPACT-II Gas Generation Test Program* was not included in ONTP Scope memorandum CBFO:ONTP:KEP:VV:21-0818UFC 2300.00, dated June 22, 2021; but was evaluated during this audit.

List of Processes and Equipment Evaluated

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams
PROCESSES OR EQUIPMENT EVALUATED		
N/A	Acceptable Knowledge (AK) Procedures: CCP-TP-005, CCP-TP-200 ❖ Enhanced AK ❖ Enhanced Chemical Compatibility Evaluation ❖ Basis of Knowledge Evaluation Oxidizing Chemicals in TRU Waste	Solids (S3000) Debris (S5000)
N/A	Load Management	N/A
N/A	Data Validation & Verification Procedures: CCP-TP-001, CCP-TP-002, CCP-TP-048	Solids (S3000) Debris (S5000)
13VE1	Visual Examination Procedure: CCP-TP-113 Description: Characterization performed utilizing Visual Examination (VE) and AK	Solids (S3000) Debris (S5000)
13MILCC4	Nondestructive Assay, including Performance Demonstration Program (PDP) Procedures: CCP-TP-076, CCP-TP-077, CCP-TP-048; CCP-TP-058 (relative to PDP) Description: Mobile In-Situ Object Counting System (ISOCS) Large Container Counter (MILCC) calibrated for 55-gallon drums, “12” Pipe Overpack Containers, and Standard Waste Boxes	Solids (S3000) Debris (S5000)
13SG1	Nondestructive Assay, including PDP Procedures: CCP-TP-202, CCP-TP-203, CCP-TP-048, CCP-TP-058 (relative to PDP) Description: Segmented Gamma Scanner (SGS) calibrated for 55-gallon drums	Solids (S3000) Debris (S5000)
13HG7	Flammable Gas Analysis Procedure: DOE/WIPP-06-3345	Solids (S3000) Debris (S5000)
13GG1	Gas Generation Testing Procedure: CCP-TP-083	Solids (S3000) Debris (S5000)
N/A	WIPP Waste Information System/Waste Data System (WWIS/WDS) Procedure: CCP-TP-030 Description: CH TRU Waste Characterization and WWIS Data Entry	Solids (S3000) Debris (S5000)
N/A	Quality Assurance (QA)	Solids (S3000) Debris (S5000)
NEW PROCESSES OR EQUIPMENT		
N/A	N/A	N/A

List of Processes and Equipment Evaluated

WIPP #	Process/Equipment Description	Applicable to the Following Waste Streams/Groups of Waste Streams
DEACTIVATED PROCESSES OR EQUIPMENT		
13RR1	Real-Time Radiography 2 Unit	Solids (S3000) Debris (S5000)