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# memorandum

Carlsbad Field Office
Carlsbad, New Mexico 88221



DATE: NOV 15 2012

REPLY TO ATTN OF: CBFO:OQA:RU:CC:12-1575:UFC 2300.00

SUBJECT: Interim Audit Report for Recertification Audit A-13-01 of the Advanced Mixed Waste Treatment Project

TO: William Lattin, DOE-ID

The Carlsbad Field Office (CBFO) conducted recertification audit A-13-01 of the Advanced Mixed Waste Treatment Project (AMWTP) October 15-18, 2012. The CBFO interim audit report is attached.

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

The audit team identified seven observations during the audit and offered one recommendation for AMWTP management consideration.

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

Randy Unger, Director
Office of Quality Assurance

Attachment

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cc: w/attachment

| | |
|---|---|
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| D. Haar, AMWTP | ED |
| S. Peterman, AMWTP | ED |
| G. Tedford, AMWTP | ED |
| E. Schweinsberg, AMWTP | ED |
| A. Morse, AMWTP | ED |
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| L. Bender, EPA | ED |
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| S. Holmes, NMED | ED |
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| C. Castillo, CTAC | ED |
| P. Hinojos, CTAC | ED |
| WWIS Database Administrators | ED |
| WIPP Operating Record | ED |
| CBFO QA File | |
| CBFO M&RC | |

*ED denotes electronic distribution

CBFO:OQA:RU:CC:12-1575:UFC 2300.00

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

## INTERIM AUDIT REPORT

## OF THE

## ADVANCED MIXED WASTE TREATMENT PROJECT

## TRU WASTE CHARACTERIZATION AND CERTIFICATION

## ACTIVITIES

## IDAHO FALLS, IDAHO

## AUDIT NUMBER A-13-01

## October 15 - 18, 2012

**Prepared by:** _____ **Date:** 11/14/12
Poff Martinez, CTAC
Audit Team Leader

**Approved by:** _____ / COURTLAND FESMIRE **Date:** 15 NOV 2012
for Randy Unger, CBFO
Quality Assurance Director

## 1.0 EXECUTIVE SUMMARY

U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Recertification Audit A-13-01 was conducted to evaluate the adequacy, implementation, and effectiveness of Advanced Mixed Waste Treatment Project (AMWTP) transuranic (TRU) waste characterization activities performed at the Idaho National Laboratory (INL) relative to the requirements detailed in the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (HWFP), the *CBFO Quality Assurance Program Document* (QAPD), and the *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC).

The audit was performed at the INL and AMWTP facilities in Idaho Falls, Idaho, October 15 through 18, 2012. The audit team concluded that, overall, the AMWTP technical and quality assurance (QA) programs, as applicable to the audited activities, were adequate in addressing upper-tier requirements. The audit team concluded that, overall, the defined AMWTP QA and technical programs for characterizing contact-handled (CH) Summary Category Group (SCG) S3000 homogeneous solids and CH SCG S5000 debris waste were being satisfactorily implemented in accordance with the CBFO QAPD, the HWFP *Waste Analysis Plan* (WAP), and the WAC, and were effective in achieving the desired results.

The audit team identified eight concerns during the audit. Final classification of concerns was made by CBFO QA. No corrective action reports were issued as a result of the audit. One Recommendation was offered for AMWTP Management consideration and seven Observations were documented as described in section 7.

## 2.0 SCOPE AND PURPOSE

### 2.1 Scope

The audit team evaluated the adequacy, implementation, and effectiveness of the AMWTP TRU waste characterization activities for CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste.

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

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

The following CBFO QA elements were audited:

- Organization/QA Program Implementation
- Personnel Qualification and Training
- Quality Improvement (nonconformance reporting and corrective action)

- Document Control
- Records
- Work Processes
- Procurement
- Inspection and Testing
- Assessments
- Software QA
- Container Management

The following CBFO waste characterization technical elements were audited for CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste:

- Acceptable Knowledge (AK) including waste certification (i.e., Waste Stream Profile Forms)
- Project-Level Data Validation and Verification (V&V)
- Solids Sampling and Analysis (SS&A)
- Headspace Gas Sampling and Analysis (HSG S&A)
- Real-time Radiography (RTR)
- Visual Examination (VE)
- Nondestructive Assay (NDA)
- WIPP Waste Information System/Waste Data System (WWIS/WDS)
- Load Management

Evaluation of adequacy of AMWTP documents was based on the current revisions of the following documents:

- *CBFO Quality Assurance Program Document*, DOE/CBFO-94-1012
- Hazardous Waste Facility Permit, Waste Isolation Pilot Plant, EPA No. NM4890139088-TSDF, the New Mexico Environment Department
- *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, DOE/WIPP-02-3122

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

- *AMWTP Certification Plan for INL Transuranic Waste*, MP-TRUW-8.1
- *AMWTP Quality Assurance Project Plan*, MP-TRUW-8.2
- Related AMWTP quality assurance and technical implementing procedures

## 2.2 Purpose

Audit A-13-01 was conducted to assess AMWTP's waste characterization activities related to the certification of CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste for compliance to the HWFP WAP and the WAC requirements. The audit team also evaluated the AMWTP QA program with regard to the requirements of the CBFO QAPD.

## 3.0 AUDIT TEAM AND OBSERVERS

### AUDITORS/TECHNICAL SPECIALISTS

| | |
|---|---|
| Courtland Fesmire | CBFO Management QA Representative |
| Porf Martinez | Audit Team Leader, CBFO Technical Assistance Contractor (CTAC) |
| Cindi Castillo | Auditor, CTAC |
| Randall Allen | Auditor, CTAC |
| Tammy Bowden | Auditor, CTAC |
| Berry Pace | Auditor, CTAC |
| Norm Frank | Auditor, CTAC |
| Roger Vawter | Auditor, CTAC |
| Charlie Riggs | Auditor, CTAC |
| Earl Bradford | Auditor, CTAC |
| Greg Knox | Auditor, CTAC |
| Paul Gomez | Technical Specialist, CTAC |
| Dick Blauvelt | Technical Specialist, CTAC |
| Charlene Roberts | Technical Specialist, CTAC |
| Rhett Bradford | Technical Specialist, CTAC |
| Prissy Martinez | Technical Specialist, CTAC |
| Jim Oliver | Technical Specialist, CTAC |
| BJ Verret | Technical Specialist, CTAC |
| Michael Hall | Technical Specialist in-training, CTAC |

### OBSERVERS

| | |
|---|---|
| Norma Castaneda | CBFO Office of the National TRU Program |
| Kenneth Lickliter | CBFO Office of the National TRU Program |
| Steve Holmes | New Mexico Environment Department (NMED) |
| Ricardo Maestas | NMED |
| Connie Walker | NMED Contractor |
| Lee Beidelman | DOE Idaho |
| Bruce LaRue | Idaho Department of Environmental Quality (IDEQ) |
| Pete Johansen | IDEQ |

## 4.0 AUDIT PARTICIPANTS

The individuals at the INL and AMWTP facilities who were contacted during the audit are identified in Attachment 1. A pre-audit meeting was held at the INL building WMF-1613 conference room, and via video conference from the AMWTP Energy Drive Facility (EDF) building EDF-259, conference room 524, in Idaho Falls, Idaho, on October 15, 2012. Daily meetings were held with AMWTP Management and staff to discuss the previous day's issues and deficiencies. The audit was concluded with a post-audit meeting held in building EDF-259, room 524, of the AMWTP EDF in Idaho Falls, Idaho, on October 18, 2012.

## 5.0 SUMMARY OF AUDIT RESULTS

### 5.1 Program Adequacy, Implementation, and Effectiveness

This audit was performed to assess the ability of AMWTP to characterize CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste to the requirements specified in the CBFO QAPD, the HWFP WAP, and the WAC. The related characterization methods assessed were AK, HSG S&A, SS&A, RTR, VE, and NDA. Other areas evaluated were project-level data V&V, data quality objective (DQO) reconciliation, the preparation of waste stream profile forms (WSPFs), WWIS/WDS data entry, container management, load management, and the AMWTP QA program.

The audit team concluded that the applicable AMWTP TRU waste characterization activities, as described in the associated AMWTP implementing procedures, are satisfactory in meeting upper-tier requirements. Attachment 2 contains a summary table of audit results. Attachment 3 contains a table of documents evaluated during the audit. Attachment 4 is a list of processes and equipment evaluated during the audit. Details of audit activities are described below.

### 5.2 General

#### 5.2.1 Results of Previous Audits

The results of CBFO Recertification Audit A-12-03 of AMWTP were examined. No conditions adverse to quality (CAQ) requiring the issuance of a corrective action report (CAR) were issued as a result of the referenced audit.

#### 5.2.2 Changes in Programs or Operations

The certified VE process for characterizing CH SCG S3000 solids waste, implemented for the south boxline in the waste treatment facility, building WMF-676, is no longer being used. Procedure INST-FOI-022, *Visual Examination of S3000 Waste in the Facility*, has been deactivated.

### 5.2.3 New Programs or Activities Being Implemented

No new programs or new activities have been implemented since the previous audit.

### 5.2.4 Changes in Key Personnel

The following personnel changes have occurred since the previous audit:

- President and Project Manager changed from Dick Raaz to Dave Sandlin, Acting President and Project Manager
- QA Manger changed from Elvin Dumas to Ed Vokoun
- Training Manager changed from Mike Parrish to Todd Goldberg

## 5.3 Quality Assurance Activities

Each QA element audited 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 CBFO QAPD is cited briefly, and the results of the assessment are provided.

### 5.3.1 Organization/QA Program Implementation

The audit team reviewed associated documentation to verify that the AMWTP met the requirements of the CBFO QAPD, Section 1.1, Organization and Quality Assurance Program. The audit team reviewed AMWTP procedures MP-TRUW-8.2, Rev. 16, *Quality Assurance Project Plan*; MP-TRUW-8.1, Rev. 22, *Certification Plan for INL Transuranic Waste*; and MP-Q&SI-5.6, Rev. 4, *Graded Approach*, to determine the degree to which the procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team interviewed QA management personnel and reviewed the organizational chart to verify independence of the QA program from TRU waste characterization activities.

The QA grading process was also evaluated. Structures, systems, and components are graded and classified. These classifications are documented and maintained in the AMWTP Maintenance Management System (MMS). Additionally, procedure MP-PCMT-15.1, *Acquisition of Material and Services*, defines the graded approach and assigns quality levels for procurement activities based on the MMS classifications.

One concern was identified during the review of the QA grading process. AMWTP procedure MP-Q&SI-5.6, section 2.0, states that the QA Manager is "responsible for review and concurrence with classification of structures, systems and components in the MMS...." Classifications are documented on a Notice to Code Spares (Form-1448), which includes QA review. QA personnel other than the QA Manager have been

performing review and concurrence of the classifications in MMS with no current delegation of authority documentation. The only documentation available was Delegation of Authority Letter C-2009-0382, dated 8/19/2009. The QA Manager and organization structure have changed since this letter was issued. See Observation 1 in section 7.1.

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

### 5.3.2 Personnel Qualification and Training

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 1.2, Personnel Qualification and Training. The audit team conducted interviews with responsible personnel in the AMWTP Training Department. The following implementing procedures were reviewed to determine the degree to which the procedures adequately address upper-tier requirements: MP-RTQP-14.4, Rev. 18, *Personnel Qualification and Certification*; MP-RTQP-14.6, Rev. 7, *Job Analysis;* MP-RTQP-14.16, Rev. 6, *Training Program Evaluation*; MP-RTQP-14.19, Rev. 6, *Training Records Administration*; MP-Q&SI-5.8, Rev. 8, *Qualifying Supply Chain Inspectors, Auditors, Lead Auditors, and Technical Specialists*; and LST-RTQP-03-IM, Rev. 0, *WIPP Training Requirements Implementation Matrix*. The results of the review indicate that the procedures adequately address upper-tier requirements.

Personnel training records associated with VE, RTR, HSG S&A, SS&A, AK, NDA, and site project management were examined to verify implementation of associated requirements and to verify that personnel performing characterization activities are appropriately qualified.

The records reviewed provided objective evidence of AMWTP training program implementation. The audit team evaluated AMWTP Qualification/Requalification Packages (Qualification Cards) and related individual training files for the various AMWTP positions; job analysis documentation; AMWTP-Employee Training History (from the AMWTP training database (TRAIN system)); VE expert (VEE) appointment memoranda; AK expert (AKE) training for revised AK summaries; RTR operator test drum (capability demonstrations) and training container records; eye examination forms; and management assessment reports of the AMWTP training program.

The audit team identified a concern with the procedural references to the training requirements matrix that identifies WIPP WAP-specific training requirements. The *WIPP Training Requirements Implementation Matrix*, LST-RTQP-03-IM, Rev. 0, is not referenced in AMWTP training program procedures. Training program procedures reference *Training Implementation Matrix,* MP-RTQP-14.20, which does not address WIPP WAP training requirements. See Observation 2 in section 7.1.

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

### 5.3.3 Quality Improvement (Nonconformance Reporting and Corrective Action)

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 1.3, Quality Improvement. The audit team conducted interviews with representatives of the AMWTP QA program. The following implementing procedures were reviewed to determine the degree to which the procedures adequately address upper-tier requirements: MP-Q&SI-5.1, Rev. 9, *Investigation and Root Cause Analysis*; MP-Q&SI-5.3, Rev. 12, *Corrective Action*; and MP-Q&SI-5.4, Rev. 21, *Identification of Nonconforming Conditions.* The results of the review indicate that the procedures adequately address upper-tier requirements.

Randomly selected nonconformance reports (NCRs) and CARs were evaluated to ensure that CAQs were appropriately identified, documented, dispositioned, investigation and root cause analysis performed where mandated, resolved, and tracked through closure. The selected NCRs and CARs were reviewed, including verifications, to ensure that AMWTP was appropriately documenting and reporting WAP-related nonconformances (identified at the site project management level) to CBFO as required. The review indicated AMWTP is documenting and reporting WAP-related nonconformances as required.

The audit team identified a concern relating to nonconformance reporting and corrective actions. Review of NCR 68515, Supercompactor Glovebox Glass Cracked by Tipping Material, revealed the QA verification completion was done on 1/25/12. Attached to the NCR in Track Wise was a Temporary Physical Change Record (TPC-0216), Form-1508. TPC-0216 was completed through the Installation Approval Section (page 2 of 6). The next sections for installation were not completed. Also attached to the NCR in Track Wise was Work Order #396618, which completed the temporary installation on 1/25/12. TPC-0216 should have been completed through installation of the temporary change in order to close the NCR. See Observation 3 in section 7.1.

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

### 5.3.4 Document Control

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 1.4, Documents. The audit team evaluated AMWTP procedures MP-DOCS-18.1, Rev. 12, *Developing Written Work Instructions*; MP-DOCS-18.3, Rev. 7, *Developing*

*Management Procedures*; and MP-DOCS-18.4, Rev. 37, *Document Control*, to determine the degree to which the procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team interviewed document control personnel, observed document control activities for compliance to approved procedures, and evaluated recently completed document change requests and case files associated with revised and currently used documents and procedures. Demonstrations of the electronic document control system were also evaluated.

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

### 5.3.5 Records

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 1.5, Records. The audit team evaluated the adequacy of AMWTP procedure MP-DOCS-18.2, Rev. 15, *Records Management*, with respect to the requirements of the CBFO QAPD and determined that the procedure contains adequate flow-down of upper-tier requirements. The results of the review indicate that the procedure adequately addresses upper-tier requirements.

The audit team interviewed records management personnel and observed activities to determine if AMWTP record storage methods were in compliance with procedural and WAP requirements. Documents for record coordinator designation and training, records transmittals, and record indices were reviewed during the evaluation. The audit team observed records management activities at the records center.

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

### 5.3.6 Work Processes

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 2.1, Work Processes. The audit team evaluated the adequacy of AMWTP procedures MP-CD&M-11.1, Rev. 9, *Change Control*, and INST-CD&M-11.1.2, Rev. 13, *Facility Modification Proposal Preparation*, with respect to the CBFO QAPD, and determined that the procedures and instructions contain adequate flow-down of upper-tier

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

The audit team reviewed facility modification proposals (FMPs), temporary physical change forms, and test and investigation forms, and conducted interviews with appropriate AMWTP personnel. The audit team verified that the processes for documenting unreviewed safety question (USQ) evaluator reviews and USQ determinations are performed in accordance with the procedural requirements. Where FMPs identified hardware changes, in conjunction with software changes, the audit team verified appropriate software changes had also been initiated to work with the changed hardware. Similarly, when a software change required an FMP, an appropriate FMP had been initiated to ensure the hardware would work with the software modification.

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

### 5.3.7 Procurement

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 2.3, Procurement. The audit team evaluated the adequacy of AMWTP procedures MP-PCMT-15.1, Rev. 12, *Acquisition of Material and Services,* and MP-PCMT-15.21, Rev. 7, *Material Management*, with respect to the CBFO QAPD, and determined that the procedures and instructions contain adequate flow-down of upper-tier requirements. The results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team observed the storage of inventory at the main receiving area (Lindsay 01 warehouse) and at building 676, room 137, and building 692 at the INL site. All items observed were appropriately tagged and stored. Items not completely through the receiving inspection process and items with NCRs were segregated from accepted items. Items with a specific shelf life were identified with a bright green shelf life label. The audit team verified a sample of shelf life dates agreed with specified shelf life periods. The audit team verified that supply chain inspectors who performed receiving inspection had completed their required training and that warehouse personnel had completed suspect/counterfeit item awareness training.

The audit team interviewed procurement personnel and reviewed randomly selected purchase orders, purchase requisitions, receipt inspection reports, the AMWTP Approved Vendor List, stores adjustments, certificates of conformance, nonconformance reports, suspect/counterfeit item training documentation, and supplier evaluation reports. AMWTP uses an electronic system, MAXIMO, to track inventory. The audit team evaluated inventory shelf life documentation maintained in MAXIMO.

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

### 5.3.8 Inspection and Testing (Control of Measurement and Test Equipment for Data Collection)

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 2.4, Inspection and Testing. The audit team evaluated the adequacy of AMWTP procedures MP-CMNT-10.5, Rev. 9, *Measuring and Test Equipment Program*; INST-CMNT-10.5.1, Rev. 11, *Calibration and Control of Measuring and Test Equipment*; MP-CMNT-10.14, Rev. 6, *In-Plant and Process Instrumentation Testing Program;* and INST-CMNT-10.14.1, Rev. 8, *Testing In-Plant and Process Instrumentation,* with respect to the CBFO QAPD, and determined that the procedures and instructions contain adequate flow-down of upper-tier requirements. The results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team interviewed personnel and reviewed the applicable AMWTP procedures for the established methods and processes to calibrate and control both M&TE and in-plant and process instrumentation. In general, M&TE is calibrated by an approved calibration facility, SIMCO Electronics. In-plant and process instruments have calibration and/or functional checks performed using calibrated M&TE at prescribed intervals using approved procedures.

Records of both M&TE calibrations and in-plant and process instrumentation checks are maintained in the Computerized Maintenance Management System (CMMS). Several records for M&TE and in-plant and process instruments were reviewed using CMMS. A site tour was also conducted to observe the site tool crib and instrumentation used for HSG S&A.

No inspection and testing concerns were identified during the audit. The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for inspection and testing are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.3.9 Audits/Assessments

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 3, Assessment Requirements. The audit team evaluated the adequacy of AMWTP procedures MP-M&IA-17.1, Rev. 11, *Management Assessment*; MP-M&IA-17.2, Rev. 10, *Independent Assessment*; MP-M&IA-17.3, Rev. 8, *Quality Assurance Surveillance*; and MP-TRUW-8.26, Rev. 5, *Reports to Management*, with respect to the CBFO QAPD, and determined that the procedures contain adequate flow-down of upper-tier

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

The audit team interviewed QA personnel and evaluated 2011 and 2012 Management and QA Assessment Schedules, assessment personnel qualification documentations, QA assessment notification letters, assessment reports, CARs, and AMWTP QA Programs Manager E-Mail assessment notifications.

Two concerns were identified in the area of audits and assessments. AMWTP procedure MP-M&IA-17.1, section 3.3.8, requires responsible managers to review completed management assessment reports no later than 10 calendar days from receipt of notification. According to QA personnel, this requirement was added to the procedure in an effort to encourage more timely managerial reviews. Review of a sampling of assessment reports indicated that the requirement was mostly effective; however, the requirement, as stated, also created a condition of procedural non-compliance. One of the assessment reports documented that the management review had been completed 19 days after receipt of notification. See Observation 4 in section 7.1.

The second concern, identified during the review of management assessments, indicated that some action items may have been actual CAQs, and CARs should have been issued. An alternate system was being used to assign actions or correct deficiencies identified during assessments rather than the approved corrective management system prescribed by procedure (MP-M&IA-17.1, section 3.3.5). This condition was determined to have been previously identified and was currently tracked in the AMWTP corrective action management system. See Observation 5 in section 7.1.

The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for audits/assessments are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

**5.3.10 Software QA**

The audit team verified that the AMWTP met the requirements of CBFO QAPD Section 6, Software Requirements. The audit team evaluated the adequacy of AMWTP procedures MP-TRUW-8.5, Rev. 28, *TRU Waste Certification;* MP-CD&M-11.2, Rev. 17, *Software Quality Assurance*; INST-CD&M-11.2.1, Rev. 7, *Software Version Control*; INST-CD&M-11.2.2, Rev. 9, *Software Inventory Classification*; INST-CD&M-11.2.3, Rev. 5, *System Data Change Request;* and INST-CD&M-11.2.6, Rev. 4, *Temporary Software Overrides,* with respect to the CBFO QAPD, and determined that the procedures contain adequate flow-down of upper-tier requirements. The results of the review indicate that the procedures adequately address upper-tier requirements.

The audit team evaluated the implementation of the of AMWTP software QA processes. The evaluation included interviews with personnel, examination of a sample of changes to the Waste Tracking System (WTS), examination of the electronic software change tracking system and version control system, Polytronic Version Control System (PVCS), review of a sample of software change requests from inception to closure, and review of a sample of the baseline software installed on AMWTP systems. TestTrack Pro and PVCS Version Manager are used to control software and data changes. Both programs allow access only to those people who need access. Only authorized personnel may check-in or check-out (fetch) software versions for modification or installation. The audit team verified the effective implementation of the AMWTP software QA process.

The audit team verified a sample of installed versions of software/code on AMWTP systems. Configured and controlled items matched version numbers on the listings. The audit team verified that software test personnel were appropriately qualified.

Software change requests (SCRs) and software data change requests for the AMWTP were reviewed by the audit team and determined to be adequate. Proposed changes were adequately reviewed and required approvals were obtained prior to modification of code. Software versions were adequately controlled through the use of a software version control system for checking-out code for modification and checking-in code for testing. The audit team verified that software testing was performed by qualified test engineers and that the test results were documented in the SCRs. Examples of testing failures were also evaluated to verify controls were in place to ensure adequate reviews of changes resulting from test failures.

The audit team identified a concern relating to software QA. Form-2034, Electronic System Record Storage, Record Identification Form, was not available for either PVCS or Test Track Pro. Though AMWTP believed they had been prepared some years ago when the systems were first established, these forms could not be found on the electronic document management system. New forms were developed during the audit. See Observation 6 in section 7.1.

The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for software QA are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.4 Technical Activities

Each technical area audited 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 HWFP is cited briefly, and the results of the assessment are provided.

### 5.4.1 Table C6-1, WAP Checklist

The audit was performed to assess AMWTP's ability to manage and perform TRU waste characterization and certification activities for CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste. The C6-1 WAP checklist addresses general program requirements from an overall management perspective. The general requirements checklist addresses both technical requirements and QA programmatic requirements that, when collectively implemented, ensure effective overall management of TRU waste characterization and certification activities. Requirements are integrated into controlled documents that will ensure the waste characterization strategy as defined in the WAP is accomplished and documented in accordance with controlled processes and procedures.

The audit team evaluated the QA program, including aspects of the C6-1 checklist, and the technical activities defined in the remaining C6 checklists. The following items related to QA program implementation were evaluated by the audit team:

- **Personnel Qualification and Training:** The audit team conducted interviews with responsible personnel and reviewed AMWTP implementing procedures MP-RTQP-14.4, Rev. 18, *Personnel Qualification and Certification*; MP-RTQP-14.6, Rev. 7, *Job Analysis;* MP-RTQP-14.16, Rev. 6, *Training Program Evaluation*; MP-RTQP-14.19, Rev. 6, *Training Records Administration*; MP-Q&SI-5.8, Rev. 8, *Qualifying Supply Chain Inspectors, Auditors, Lead Auditors, and Technical Specialists,* and LST-RTQP-03-IM, Rev. 0, *WIPP Training Requirements Implementation Matrix*, relative to the training and qualification of personnel, to determine the degree to which the procedures adequately address HWFP WAP training requirements. The results of the review indicate that the procedures adequately address HWFP WAP requirements.

  Personnel training records associated with VE, RTR, NDA, SS&A, HSG S&A, AK, and site project management were examined to verify implementation of associated requirements and to verify that personnel performing characterization activities are appropriately qualified. Record reviews included individual training plans, qualification and requalification checklists/packages, training course reports, and required reading documentation.

  The audit team identified a concern with the procedural references to the training requirements matrix that identifies WIPP WAP-specific training requirements. The *WIPP Training Requirements Implementation Matrix*, LST-RTQP-03-IM, Rev. 0, is not referenced in AMWTP training program procedures. Training program procedures reference *Training Implementation Matrix,* MP-RTQP-14.20, which does not address WIPP WAP training requirements. See Observation 2 in section 7.1.

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

training and qualification are adequately established for compliance with HWFP WAP training requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

- **Records**: The audit team conducted interviews and reviewed AMWTP implementing procedure MP-DOCS-18.2, Rev. 15, *Records Management*, relative to the control and administration of QA records, to determine the degree to which the procedures adequately address HWFP WAP records requirements. The results of the review indicate that the procedure adequately addresses HWFP WAP requirements.

  The audit team interviewed records management personnel and observed activities to determine if AMWTP record storage methods were in compliance with procedural and WAP requirements. Documents such as record coordinator designation and training, records transmittals, and records indexes were reviewed during the evaluation. The audit team observed records management activities at the records center.

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

- **Nonconformances:** The audit team conducted interviews with responsible personnel and reviewed AMWTP implementing procedure MP-Q&SI-5.4, Rev. 21, *Identification of Nonconforming Conditions,* relative to nonconformances, to determine the degree to which the procedure adequately addresses HWFP WAP nonconformance requirements. The results of the review indicate that the procedure adequately addresses HWFP WAP requirements.

  The audit team reviewed randomly selected NCRs to ensure that nonconformances were appropriately identified, documented, dispositioned, investigative and root cause analysis performed where mandated, resolved, and tracked through closure. Review of the selected NCRs included verifications to ensure that AMWTP was appropriately documenting and reporting WAP-related nonconformances identified at the site project management level to the CBFO, as required.

  The audit team identified a concern relating to nonconformance reporting. Review of NCR 68515, Supercompactor Glovebox Glass Cracked by Tipping Material, revealed the QA verification completion was done on 1/25/12. Attached to the NCR in Track Wise was a Temporary Physical Change Record (TPC-0216), Form-1508. TPC-0216 was completed through the Installation Approval Section (page 2 of 6). The next sections for installation were not completed.

Also attached to the NCR in Track Wise was Work Order #396618, which completed the temporary installation on 1/25/12. TPC-0216 should have been completed through installation of the temporary change in order to close the NCR. See Observation 3 in section 7.1.

The procedure reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for nonconformances are adequately established for compliance with HWFP WAP records requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

- **Transportation**: The audit team conducted interviews with AMWTP waste certification officials (WCOs) and reviewed AMWTP implementing procedure MP-TRUW-8.12, Rev. 22, *Waste Receipt and Shipping Inspection*, relative to transportation requirements, to determine the degree to which the procedure adequately addresses HWFP WAP transportation requirements. The results of the review indicate that the procedure adequately addresses HWFP WAP requirements.

  The audit team evaluated shipping documentation and verified that the generator/storage site accurately completed the U.S. Environmental Protection Agency Hazardous Waste Manifest as required, including the container-specific information, and the shipment documentation was included within the shipment package.

  No WAP-related concerns were identified during the audit. The procedure reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for transportation are adequately established for compliance with HWFP WAP transportation requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

- **WWIS/WDS**: The audit team conducted interviews with responsible personnel and reviewed AMWTP implementing procedure MP-TRUW-8.5, Rev. 28, *TRU Waste Certification*, relative to WWIS/WDS data entry, to determine the degree to which the procedure adequately addresses HWFP WAP WWIS/WDS requirements. The results of the review indicate that the procedure adequately addresses HWFP WAP requirements.

  The audit team reviewed documentation of WDS access requests and requests for removal from WDS access for AMWTP WCO personnel. The audit team determined that appropriate personnel have been granted access to WDS and are adequately trained in WDS operations. Access control to WDS applications is established using AMWTP user identification and passwords for network/server access and WDS assigned access user names and passwords.

The audit team observed data entry and uploading to the WDS Offsite Shipping Module (OSM) and reviewed selected documentation packages to provide objective evidence of data entry into the WDS certification module and the OSM. The audit team determined that WCOs properly enter data directly into WDS characterization and certification modules. Data entry is properly performed to complete characterization data and submit it for certification.

No WAP-related concerns were identified during the audit. The procedure reviewed and objective evidence assembled and evaluated during the audit provided evidence that the applicable requirements for WWIS/WDS are adequately established for compliance with HWFP WAP WWIS/WDS requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

- **Container Management**

The audit team conducted interviews with responsible personnel and reviewed AMWTP implementing procedures MP-TRUW-8.12, Rev. 22, *Waste Receipt and Shipping Inspection*; MP-TRUW-8.25, Rev. 18, *Random Selection of Containers for Headspace Gas and Solids Sampling and Analysis*; INST-OI-09, Rev. 49, *Retrieval Inspection Station Operations*; INST-OI-11, Rev. 47, *Waste Container Handling;* and MP-PRPL-22.1, Rev. 25, *Production Planning*, relative to container management activities, to determine the degree to which procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address upper-tier requirements.

Container management activities were evaluated by a walkthrough of AMWTP container storage areas and interviews with operators involved with container management. Container tracking is maintained using the WTS and Track Wise system. Containers are located by obtaining container numbers and entering the specific container number in WTS or Track Wise database systems. Daily checks are performed to verify location of acceptable drums and results are reported to AMWTP management via e-mail. The audit team verified storage locations for WIPP-certified containers were segregated from non-WIPP-certified containers. The audit team also verified that containers with open NCRs were segregated and tracked using the WTS and Track Wise systems.

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

Technical activities evaluated, including both characterization and certification activities, consisted of data-generation and project-level data V&V, AK, RTR, VE, SS&A, HSG

S&A (including Performance Demonstration Program [PDP] participation), NDA (including PDP participation), and preparation of WSPFs for CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste. Objective evidence was selected and reviewed to evaluate the implementation of the associated characterization activities. Batch Data Report (BDRs), sampling records, and personnel training documentation were included in the evaluation. The audit included direct observation of actual waste characterization activities. Each characterization process involves:

- Collecting raw data
- Collecting quality assurance/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 WIPP

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

During the audit, AMWTP demonstrated compliance with the waste characterization requirements of the HWFP WAP through documentation and by performing characterization activities.

Objective evidence was reviewed to ensure project-level activities were adequately performed to support waste characterization. The audit team reviewed AMWTP procedures MP-TRUW-8.14, Rev. 12, *Preparation of Waste Stream Profile Forms;* MP-TRUW-8.8, Rev. 32, *Level I Data Validation*; MP-TRUW-8.9, Rev. 24, *Level II Data Validation;* and MP-TRUW-8.25, Rev. 18, *Random Selection of Containers for Headspace Gas and Solids Sampling and Analysis,* relative to project-level and random selection activities, to determine the degree to which the procedures adequately address HWFP WAP requirements. The results of the review indicate that the procedures adequately address HWFP WAP requirements.

BDRs were evaluated based on project-level requirements for SS&A, HSG S&A, RTR, VE, and NDA for CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste. The project-level data V&V process was evaluated by reviewing the following BDRs:

<u>Solids Sampling & Analysis (SS&A)</u>
SSG11-00008 SSC12-00001 SSG12-00001

<u>Headspace Gas Sampling & Analysis (HSG S&A)</u>
HS111-00023 HS112-00002 HS112-00005

Real-time Radiography (RTR)

| | | | |
|---|---|---|---|
| RTR11-00393 | RTR12-00019 | RTR12-00070 | RTR12-00101 |

Visual Examination (VE)

| | | | |
|---|---|---|---|
| VEB11-00929 | VEB12-00555 | VEB12-00711 | VEB12-00747 |

Nondestructive Assay (NDA)

| | | | |
|---|---|---|---|
| ASY11-02274 | ASY12-00002 | ASY12-00019 | ASY12-00513 |
| ASY12-01357 | ASY12-02338 | | |

The audit team evaluated the random selection process for HSG S&A and SS&A. Random selection documentation for HSG samples and their associated BDRs were evaluated for the supercompacted SCG S5000 debris waste stream BN510.1, for Boxline Lots 2 & 3, and random selection documentation for solids samples for SCG S3000 solids waste stream BNINW216, First/Second Stage Sludge for Lot 21. The evaluation determined that the random selection process for HSG S&A and SS&A is being performed in accordance with applicable procedures.

Procedures and objective evidence were reviewed to ensure that AMWTP can adequately perform data reconciliation and properly prepare WSPFs. A review was performed on the CH SCG S5000 debris and CH SCG S3000 homogeneous solids WSPF/Characterization Information Summary for waste streams BNINW216, First/Second Stage Sludge; BNINW218, Building 374 Sludge; BN835, Solidified Acid/Caustic Waste; BN510, Supercompacted Debris Waste; BN004, Special Setups Waste; BN836, Cemented Sludge; BN222, Solidified Plutonium Recovery Incinerator Waste; BN510.1, Supercompacted Debris Waste; and BN600, AMWTP WMF-676 PCB Contaminated Debris. The results of the review of the above referenced documents indicate that AMWTP is completing WSPFs in accordance with applicable requirements.

No WAP-related concerns were identified during the audit. The audit team verified that AMWTP is satisfactorily implementing the program requirements from an overall management perspective, including the project-level data V&V process to characterize and certify waste for disposal in accordance with HWFP WAP requirements.

Overall, the procedures reviewed and objective evidence assembled and evaluated during the audit provided evidence that procedures are adequately established for compliance with HWFP WAP requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.4.2 Table C6-2, Solids and Soils/Gravel Sampling Checklist

The audit team evaluated the AMWTP's ability to characterize CH SCG S3000 homogeneous solids waste and CH SCG S4000 soils/gravel waste using the solids sampling methods of coring and obtaining representative grab samples. The AMWTP

has the capability to sample both CH SCG S3000 homogeneous solids waste and CH SCG S4000 soils/gravel wastes.

The audit team evaluated the following AMWTP implementing procedures: MP-TRUW-8.17, Rev. 7, *Co-Located Core Sampling Control Charts*; INST-OI-16, Rev. 40, *Drum Coring Operations*; MP-TRUW-8.34, Rev. 8, *WIPP Sample Transfers*; INST-OI-73, Rev. 13, *Manual Drum Coring Operations*; INST-OI-75, Rev. 11, *Container-in-Container Sampling*; MP-TRUW-8.8, Rev. 32, *Level I Data Validation*; LST-RTQP-03-IM, Rev. 0, *WIPP Training Requirements Implementation Matrix,* relative to solids and soils/gravel sampling activities, to determine the degree to which procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address HWFP WAP requirements.

AMWTP solids sampling activities were evaluated by examining two BDRs, SSG12-00004 and SSC12-00004. No sampling operations were observed during this audit. The audit team toured building WMF-634, Coring Facility, and examined coring tools and storage of sampling equipment and samples. The audit team reviewed training records for solids sampling operators and verified that their required training and qualifications had been achieved and were current. Equipment blank records were evaluated, sample tags were checked, custody seals were examined, and control charts were verified to be compliant with applicable requirements.

The AMWTP performs its own SCG S3000 solids sampling and performs SCG S3000 solids and SCG S4000 soils/gravel waste sampling for other generator sites. The AMWTP retains responsibility for the accuracy and completeness of SCG S3000 BDRs by performing project-level data V&V. Solids analysis was not evaluated as part of this audit. The AMWTP utilizes the services of the INL analytical laboratory for analysis of solids samples. The INL laboratory program is audited and approved by CBFO and is currently qualified and certified.

No WAP-related concerns were identified in this area during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for characterizing CH SCG S3000 solids and CH SCG S5000 debris waste using the solids and soils/gravel sampling process are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.4.3 Table C6-3, Acceptable Knowledge Checklist

The audit team evaluated the AK process for characterizing SCG S5000 debris and SCG S3000 homogeneous solids wastes. For the evaluation, the audit team used the WAP Table C6 checklists, primarily checklist C6-3, as a guide for demonstration of HWFP compliance and also examined compliance with the WIPP WAC. Two waste streams were examined during the audit, including S5000 mixed waste debris stream BN510.1, the supercompacted debris waste stream (RPT-TRUW-83, *Acceptable Knowledge Summary for Supercompacted Debris Waste (BN510.1)*) and an S3000

mixed waste solids stream (RPT-TRUW-63, *Acceptable Knowledge Summary for Cemented Sludge (BN836)*), a waste stream generated at the Mound Plant.

The audit team evaluated the following AMWTP implementing procedures: MP-TRUW-8.1, Rev. 22, *Certification Plan for INL Transuranic Waste*; MP-TRUW-8.2, Rev. 16, *Quality Assurance Project Plan*; MP-TRUW-8.11, Rev. 24, *Data Reconciliation*; MP-TRUW-8.13, Rev. 24, *Collection, Review, and Management of Acceptable Knowledge Documentation*; and MP-TRUW-8.14, Rev. 12, *Preparation of Waste Stream Profile Forms,* relative to AK activities, to determine the degree to which procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address HWFP WAP requirements.

Numerous documents from the AK record that demonstrate adherence to the applicable requirements were reviewed and compiled as objective evidence, including relevant AK summary reports, WSPFs and attachments, AK source document summaries, and BDRs from characterization testing. Random container selection memos for HSG and solids sampling lots, as appropriate, were reviewed along with corresponding HSG and Solids Analysis Summary Reports and data reconciliation packages that compared the results of characterization testing with the AK record. In addition, the audit team examined AK discrepancy resolution documentation for discrepancies in the AK record and the resolution of discrepancies identified during characterization testing. Further, the audit team reviewed NCRs dealing with the identification and treatment of prohibited items.

In addition to the respective AK summary reports for the two waste streams (RPT-TRUW-83, Rev. 3, and RPT-TRUW-63, Rev. 6), WAP-required and/or supporting information from AK upper-tier documents was reviewed by the audit team including RPT-TRUW-06, *AMWTP Baseline AK for Newly Generated Waste*; RPT-TRUW-13, *AK Knowledge Document for INL Stored TRU Waste-Mound Plant Waste*; RPT-TRUW-12, *AMWTP Waste Stream Designations*; RPT-TRUW-07, *Determination of Radioisotopic Content in TRU Waste Based on AK*; and RPT-TRUW-05, *Waste Matrix Code Reference Manual.* The audit team examined WAP-compliant AK accuracy reports, and the most recent internal surveillance. Requisite training records were reviewed for AKEs and site project managers (SPMs) and found to be compliant with applicable training requirements.

A total of five drums were tracked for the WAP-required traceability exercise, including two drums from the BN836 waste stream, one of which was part of the latest SS&A lot, and three drums from the supercompacted waste stream BN510.1, with two of those drums from distinct HSG S&A lots for the boxline process in the AMWTP facility. In addition to HSG S&A and SS&A BDRS, the relevant VE, RTR and NDA characterization BDRs were also examined. The audit team also compiled traceability data from active and historic waste container databases.

The AK audit team identified one concern during the evaluation of AK. The AK Summary for Cemented Sludge (BN836), RPT-TRUW-63, Rev. 6, section 1.5,

Prohibited Items, simply recites all of the prohibited items listed in the WAP and how they will be segregated from the waste prior to shipment to WIPP. It is recommended that the potential prohibited items that may be present in this waste also be listed and that a direct reference to RPT-TRUW-05, *Waste Matrix Code Reference Manual*, be made in section 1.5. This document contains specific information regarding prohibited items potentially present in all item description codes (IDCs). See Recommendation 1 in section 7.2.

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for characterizing CH SCG S3000 solids and CH SCG S5000 debris waste using the AK process are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.4.4 Table C6-4, Headspace Gas Checklist

The audit team reviewed AMWTP implementing procedures MP-TRUW-8.8, Rev. 32, *Level I Data Validation*; MP-TRUW-8.25, Rev. 18, *Random Selection of Containers for Headspace Gas and Solids Sampling and Analysis*; INST-OI-43, Rev. 22, *HGAS Sampling and Analysis Operations*; INST-OI-45, Rev. 17, *Drum Filter Installation*; and INST-OI-50, Rev. 14, *WMF-615 Filter Insertion Operations*, relative to HSG sampling activities, to determine the degree to which procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address HWFP WAP requirements.

The audit team evaluated AMWTP operations for HSG S&A using an automated online sampling and analytical system with gas chromatography/mass spectrometry (GC/MS) and gas chromatography/thermal conductivity detector (GC/TCD). HSG S&A operations were evaluated by observation, by examining the equipment, by conducting personnel interviews, and by reviewing HSG S&A BDRs. The audit team reviewed BDRs HS111-00023 and HS112-00002. The results of the review indicated that the BDRs were complete and compliant with applicable requirements. The audit team verified that AMWTP has successfully participated in the latest PDP, Cycle 26A. The determination of method detection limits and performance and accuracy studies were verified compliant to requirements. Laboratory logbooks, standard gas certifications, and the current WIPP-approved equipment were audited and found to be compliant. M&TE was audited and found to be acceptable. Training and qualification of sampling individuals was confirmed to be acceptable to the AMWTP training program. Random sampling documentation was provided and evaluated to indicate compliance to the requirements for the random selection process. Confirmation of sample size and containers selected for waste stream BN510.0, Boxline Lot 2, and waste stream BN510.1 Boxline Lot 3, were verified to be compliant.

No WAP-related concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for characterizing CH SCG S3000 solids and CH SCG S5000 debris

waste using the HSG S&A process are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.4.5 Table C6-5, Radiography Checklist

The audit team evaluated the adequacy, implementation, and effectiveness of AMWTP characterization and certification of CH SCG S5000 debris waste and CH SCG S3000 solids waste using the RTR characterization process.

The audit team reviewed AMWTP procedures MP-TRUW-8.8, Rev. 32, *Level I Data Validation*; INST-OI-12, Rev. 49, *Real-Time Radiography Operations (Drum);* and INST-OI-81, Rev. 10, *Real-Time Radiography Operations (for WIPP Certification of Boxes)*, relative to RTR activities, to determine the degree to which procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address HWFP WAP requirements.

The audit team evaluated RTR operator required test and training drum audio/video media for four RTR operators. Records of RTR operator training and qualification, including test and training drum documentation, were examined. The audit team verified that RTR operators were appropriately qualified as required for compliance with training requirements.

The audit team evaluated RTR operations in building WMF-634. RTR operations for the scan of container number 10202305 was observed using RTR Unit 101 for S3000 solids waste. The audit team also examined RTR operational log entries for both RTR Units 101 and 106 (Unit 106 was out of service at the time of the audit) to verify logbook entries were logged correctly and reviewed by the facility shift supervisor as required. Both RTR units are located in building WMF-634 and are appropriately equipped with the required components.

The audit team examined the following RTR BDRs:

| | | | |
|---|---|---|---|
| RTR11-00378 | RTR11-00387 | RTR11-00401 | RTR11-00414 |
| RTR11-00426 | RTR11-00442 | RTR12-00015 | RTR12-00029 |
| RTR12-00054 | RTR12-00081 | RTR12-00096 | |

No WAP-related concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for characterizing CH SCG S3000 solids and CH SCG S5000 debris waste using the RTR process are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.4.6 Table C6-6, Visual Examination Checklist

The audit team evaluated the adequacy, implementation, and effectiveness of AMWTP characterization and certification of CH SCG S5000 debris waste and CH SCG S3000 solid waste using the VE characterization process.

The audit team reviewed procedures MP-TRUW-8.8, Rev. 32, *Level I Data Validation*; INST-OI-34, Rev. 27, *Non-Facility Visual Examination Operations;* INST-FOI-17, Rev. 25, *Facility Visual Examination Operations*; INST-FOI-20, Rev. 36, *Supercompactor and Post-Compaction Operations*; and LST-RTQP-03-IM, Rev. 0, *WIPP Training Requirements Implementation Matrix*, relative to VE activities, to determine the degree to which procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address HWFP WAP requirements.

The certified VE process for characterizing SCG S3000 solids waste, implemented for the south boxline in the waste treatment facility, building WMF-676, is no longer being used. Procedure INST-FOI-022, *Visual Examination of S3000 Waste in the Facility*, has been deactivated.

AMWTP uses the two-operator VE characterization method in which VE is performed by two qualified operators who examine the waste and place it into containers.

The audit team conducted interviews with VE operators and reviewed training and qualification records. The audit team toured building WMF-676 where boxline VE operations are performed. VE operations were not being performed at time of audit in the boxline for S5000 debris waste. The audit team also examined VE operational logbook entries for both boxlines and verified entries were logged correctly and reviewed by the facility shift supervisor as required.

The audit team examined the following VE BDRs:

| | | | |
|---|---|---|---|
| VEB12-00044 | VEB12-00200 | VEB12-00540 | VEB12-00725 |
| VEB12-00764 | VEB12-00766 | VEB12-00941 | VNC12-00156 |

The audit team examined training records for VE operators/independent technical reviewers (ITRs) and SPMs and confirmed the appointment of VEEs. The audit team verified that VE operators, ITRs, and SPMs were appropriately qualified as required. During the review of the training files the audit team identified one concern. No objective evidence was provided to verify that VE operators receive and pass a comprehensive examination during VE requalifications. Although the WAP does not require VE operators to receive and pass a comprehensive examination during VE requalification, MP-TRUW-8.8, Rev. 32, section 3.2.4.10, imposes this requirement. See Observation 7 in section 7.1.

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for characterizing CH SCG S3000 solids and CH SCG

S5000 debris waste using the VE process are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.4.7 Nondestructive Assay (NDA)

The audit team evaluated the continued adequacy, implementation, and effectiveness of the Z-390-100 and Z-390-101 NDA systems in building WMF-676, and the Z-211-102 and Z-211-103 NDA systems in building WMF-634 at the AMWTP. The Z-390-100 and Z-390-101 systems are capable of assaying waste in 55-gallon drums, while the Z-211-102 and Z-211-103 systems are capable of assaying waste in both 55- and 83/85-gallon drums.

The audit team reviewed procedures MP-TRUW-8.8, Rev. 32, *Level I Data Validation*; INST-TRUW-8.1.1, Rev. 11, *Drum Assay Post-Maintenance Calibration & Verification;* RPT-TRUW-03, Rev. 8, *Drum Assay Technical Review Report;* CI-IDA-NDA-0035, Rev. 3, *Calibration Verification & Confirmation Procedure for the Integrated Waste Assay System (IWAS) at AMWTP, Canberra Industries;* CI-IDA-NDA-0055, Rev. 1, *Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems, Canberra Industries;* INST-OI-14, Rev. 31, *Drum Assay Operations;* and INST-FOI-01, Rev. 25, *In-Plant Drum Assay Operations*, relative to NDA activities, to determine the degree to which procedures adequately address upper-tier requirements. The results of the review indicate that the procedures adequately address upper-tier requirements.

The NDA systems are Canberra multi-mode hybrid systems that run on NDA 2000 and incorporate Canberra's Genie 2000, Multi Group Analysis, as well as Multi-Group Analysis-Uranium, when sufficient quantities of uranium are detected. Each system consists of the following components:

- Two broad energy germanium (BEGe) gamma detectors mounted one over the other in the assay chamber wall, perpendicular to, and pointing toward the vertical axis of the drum.
- An array of 122 Helium-3 (He-3) proportional tubes is arranged in a $4\pi$ geometry about the assay chamber. These tubes are divided into 16 detector banks currently only used in the passive neutron coincidence counting mode. These systems have the capability (both qualified and maintained) to assay in the active neutron differential die-away (DDA) mode. Active mode was not used for WIPP assay purposes in the year since the last audit.
- A Cf-252/Cs-137 Add-A-Source correction source, mounted in a retractable housing external to the assay cavity, with an intensity of approximately $10^5$ neutrons per second is used, in part, for the determination of matrix correction factors.
- A 14 MeV neutron generator with a capability of producing $10^8$ 14-MeV neutrons per second can be used, along with cavity and barrel flux monitors and four Fast Neutron Detector Packs, in the active neutron DDA mode.

The four NDA systems listed above are not the only NDA systems used at the AMWTP, but they are currently the only four systems used to characterize waste for disposal at WIPP.

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

- System stability as evidenced by the implementation and effectiveness of daily and weekly measurement controls and calibration verifications.
- Applicability of each system's calibration and operational range to the matrix, geometry and radionuclide content of waste assayed since Audit A-12-03.
- Successful participation in the CBFO-sponsored NDA PDP Cycle 19A.
- Completed BDRs to ensure data are reported and reviewed as required.
- Data storage and retrievability.
- Personnel qualification and training.
- Continued operability and condition of the NDA systems since Audit A-12-03.

The audit team interviewed AMWTP NDA personnel and operations staff, observed equipment and practices, and examined electronic and paper copies of records, including BDRs, control charts, NCRs, and work orders. No system recalibrations have been required or performed since Audit A-12-03 in October 2011, and the system performance checks have been performed as required. AMWTP successfully participated in PDP Cycle 19A for combustibles and glass waste matrices for all four systems.

The following BDRs were reviewed during the audit:

| | | | |
|---|---|---|---|
| ASY11-02612 | ASY12-00349 | ASY12-00492 | ASY12-00951 |
| ASY12-01274 | ASY12-01800 | ASY12-02286 | ASY12-02441 |
| ASY11-02297 | ASY11-02401 | ASY11-02446 | ASY12-00147 |
| ASY12-00902 | ASY12-01329 | ASY12-01615 | ASY12-02127 |
| ASY12-02368 | ASY12-02567 | ASY11-02658 | ASY12-00177 |
| ASY12-00457 | ASY11-02322 | ASY11-02655 | ASY12-00485 |
| ASY12-01759 | | | |

No concerns were identified during the audit. The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for characterizing CH SCG S3000 solids and CH SCG S5000 debris waste using the NDA process are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

### 5.4.8 Load Management

The audit team conducted interviews with responsible personnel and reviewed AMWTP implementing procedure MP-TRUW-8.1, Rev. 22, *Certification Plan for INL Transuranic Waste,* to determine the degree to which the procedure adequately addresses upper-tier requirements. The results of the review indicate that the procedures adequately address upper-tier requirements.

AMWTP practices load management on CH TRU waste streams as appropriate following the guidance and requirements in AMWTP implementing procedure MP-TRUW-8.1, Rev. 22, *Certification Plan for INL Transuranic Waste*. The audit team examined two waste streams that are load managed: AMWTP RPT-TRUW-83, *Acceptable Knowledge Summary for Supercompacted Debris Waste (BN510.1)*, and RPT-TRUW-63, *Acceptable Knowledge Summary for Cemented Sludge (BN836)*. Estimates of the amount of waste greater than, and less than, 100nCi/g are 50% in both cases, with supporting documentation available for these numbers.

For the BN510.1 supercompacted waste stream, pucks that assay at slightly less than 100nCi/g are loaded in 100-gallon waste containers with a contact dose rate greater than 100 nCi/g and load managed as TRU waste. Pucks that assay well below the 100nCi/g contact dose rate are also placed in 100-gallon containers but are then managed as mixed low level waste if the contact dose rate for the 100-gallon container is less than 100nCi/g. These containers are treated to meet Land Disposal Restriction standards and are shipped to the Nevada National Security Site, formerly the Nevada Test Site, as appropriate.

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

## 6.0 CORRECTIVE ACTIONS, OBSERVATIONS, AND RECOMMENDATIONS

The audit team identified eight concerns during the audit. These concerns were classified by CBFO QA as documented in sections 7.1 and 7.2.

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

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

No CARs were issued during this audit.

### 6.2 Deficiencies Corrected During the Audit

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

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

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

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

No CDAs were corrected during this audit.

## 7.0 SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS

During the audit, the audit team may identify potential problems or suggestions for improvement that should be communicated to the audited organization. The CBFO QA representative evaluates these conditions and classifies them as Observations or Recommendations using the following definitions.

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

*Recommendation – Suggestion that is directed toward identifying opportunities for improvement and enhancing methods of implementing requirements.*

Once a determination is made, the CBFO QA representative categorizes the condition appropriately.

## 7.1 Observations

The following Observations were identified during the audit.

**Observation 1**

The AMWTP QA program did not have a current Delegation of Authority Letter. QA personnel other than the QA Manager have been performing review and concurrence of classifications of structures, systems, and components in the Maintenance Management System with no current delegation of authority documentation. The only documentation available was Delegation of Authority Letter C-2009-0382, dated 8/19/2009. The QA Manager and organization structure have changed since this letter was issued.

**Observation 2**

The *WIPP Training Requirements Implementation Matrix*, LST-RTQP-03-IM, Rev. 0, is not referenced in AMWTP training program procedures. Training program procedures reference *Training Implementation Matrix,* MP-RTQP-14.20, which does not address WIPP WAP training requirements.

**Observation 3**

During the review of NCR 68515, Supercompactor Glovebox Glass Cracked by Tipping Material, the audit team noted the QA verification completion was done on 1/25/12. Attached to the NCR in Track Wise was a Temporary Physical Change Record (TPC-0216), Form-1508. TPC-0216 was completed through the Installation Approval Section (page 2 of 6). The next sections for installation were not completed. Also attached to the NCR in Track Wise was Work Order #396618, which completed the temporary installation on 1/25/12. TPC-0216 should have been completed through installation of the temporary change in order to close the NCR.

**Observation 4**

Review of completed Management Assessment Reports in Track Wise indicated that some management reviews are completed later than 10 days after the Track Wise notification was provided.

**Observation 5**

During the review of management assessments, action items identified indicated that some action items may have been actual CAQs, and CARs should have been issued.

An alternate system was being used to assign actions or correct deficiencies identified during assessments rather than the approved corrective management system prescribed by procedure (MP-M&IA-17.1, section 3.3.5). This condition was determined to have been previously identified and was currently tracked in the AMWTP corrective action management system.

**Observation 6**

Form-2034, Electronic System Record Storage, Record Identification Form, was not available for (PVCS and Test Track Pro. Though AMWTP believed they had been prepared some years ago when the systems were first established, these forms could not be found on the electronic document management system. New forms were developed during the audit.

**Observation 7**

No objective evidence was provided to verify that VE operators receive and pass a comprehensive examination during VE requalifications. Although the WAP does not require VE operators to receive and pass a comprehensive examination during VE requalification, MP-TRUW-8.8, Rev. 32, section 3.2.4.10, imposes this requirement.

## 7.2 Recommendations

One Recommendation was provided to AMWTP Management as a result of the audit.

**Recommendation 1**

The AK Summary for Cemented Sludge BN836, RPT-TRUW-63, Rev. 6, section 1.5, Prohibited Items, simply recites all of the prohibited items listed in the WAP and how they will be segregated from the waste prior to shipment to WIPP. It is recommended that the potential prohibited items that may be present in this waste also be listed and that a direct reference to RPT-TRUW-05, *Waste Matrix Code Reference Manual*, be made in section 1.5. This document contains specific information regarding prohibited items potentially present in all IDCs.

## 8.0 LIST OF ATTACHMENTS

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

# PERSONNEL CONTACTED DURING THE AUDIT

| PERSONNEL CONTACTED DURING AUDIT A-13-01 | | | | |
|---|---|---|---|---|
| **NAME** | **ORG/TITLE** | **PREAUDIT MEETING** | **CONTACTED DURING AUDIT** | **POST-AUDIT MEETING** |
| Angel Aguinaga | ITG Solids Sampling SME | | X | |
| Kevin Bake | ITG Systems Engineer | X | X | |
| D. Lee Beidelman | DOE ID Observer | X | X | |
| Mike Bece | Facility Operations Technician | | X | |
| Scott Bjorn | ITG Operations Manager | | X | |
| Mike Brugger | ITG VE Expert | | X | |
| Dave Butler | ITG Training Specialist | X | X | X |
| George Byram | ITG SPM | X | X | X |
| Sean Caniff | ITG TRU Programs SPM | | X | |
| Steve Carpenter | ITG AK Expert | X | X | X |
| Cassandra Carter | ITG Records Specialist | | X | |
| George Fussel | ITG Operations Manager | X | | |
| Nathaniel Garcia | ITG Warehouse Clerk | | X | |
| Denny Gasper | ITG VE Operator | X | X | |
| Todd Goldberg | ITG Training Manager | | X | X |
| Danny Green | ITG Operations SPM | | X | |
| Ronald Grise | ITG VE Expert | X | X | |
| David Haar | ITG Waste Programs Manager | X | | X |
| Rod Harrison | ITG Procurement Manager | | X | X |
| Jared Hawley | ITG PAIT Software Engineering Manager | X | X | X |
| Jason Hayne | ITG RTR SME | X | X | X |
| Steve Holmes | NMED Observer | X | X | X |
| Jim Jackson | ITG IPP | | | X |

| PERSONNEL CONTACTED DURING AUDIT A-13-01 | | | | |
|---|---|---|---|---|
| **NAME** | **ORG/TITLE** | **PREAUDIT MEETING** | **CONTACTED DURING AUDIT** | **POST-AUDIT MEETING** |
| Pete Johansen | Idaho DEQ Observer | X | X | |
| Nancy Kirk | ITG AK Expert | | X | |
| Jason Kettle | ITG Chemist | | X | |
| Bruce LaRue | Idaho DEQ Observer | X | X | X |
| Denise Lee | ITG RTR ITR | X | X | |
| Ricardo Maestas | NMED Observer | X | X | X |
| Stormy McCurdy | ITG WCO | | X | |
| J. Paul Minor | ITG QA Engineer | | X | |
| Randy Morris | ITG AK Expert | | X | |
| Angie Morse | ITG QA Specialist | X | X | X |
| William J. Muirhead | ITG PAIT Manager | | X | X |
| Casey Nielson | ITG Supplier Chain Inspector | | X | |
| Seth Oldham | ITG HSG Operator | | X | |
| Sue Peterman | ITG TRU Programs Manager | X | X | X |
| Wendy Powell | ITG Document Services Supervisor | X | X | |
| Dave Preston | ITG TRU Programs SME | X | X | X |
| Camille Robison | ITG QA Specialist | | X | |
| Cesar Rojas | ITG HSGS Chemist | X | X | |
| Stepheni Rudolph | ITG M&TE Custodian | | X | |
| Lyle Ryman | ITG QA Specialist | X | X | X |
| Eric Schweinsberg | ITG TRU Programs SPM | X | X | X |
| James Seamans | ITG TRU Programs NDA SME | X | X | X |
| Michelle Sharp | ITG QA Specialist | X | X | X |
| David Shell | Facility Operations Technician | | X | |
| Jim Simonds | ITG Control & Logistics Manager | | | X |

| PERSONNEL CONTACTED DURING AUDIT A-13-01 | | | | |
|---|---|---|---|---|
| **NAME** | **ORG/TITLE** | **PREAUDIT MEETING** | **CONTACTED DURING AUDIT** | **POST-AUDIT MEETING** |
| Mark Sorenson | ITG VE Expert | | | X |
| Matthew Storms | ITG Certification SME | X | X | |
| Gina Tedford | ITG SPM Audit Lead | X | X | X |
| Tim Venneman | ITG AKE | | X | |
| Connie Walker | NMED Observer | X | X | |
| L. J. Walker | ITG VE Expert | | | X |
| Sherri Walker | ITG Document Control Supervisor | X | X | X |
| Jerry Wells | DOE-ID Project Manager | X | | X |
| William Whitehead | ITG IT Specialist | X | | |

# SUMMARY TABLE OF AUDIT RESULTS

| QA/ Technical Elements | Concern Classification | | | | QA Evaluation | | Technical |
|---|---|---|---|---|---|---|---|
| | CARs | CDAs | Obs | Rec | Adequacy | Implementation | Effectiveness |
| Acceptable Knowledge | | | | 1 | A | S | E |
| Reconciliation of DQOs/WSPFs | | | | | A | S | E |
| Project Level Data V & V | | | | | A | S | E |
| Solids Sampling & Analysis | | | | | A | S | E |
| HSG Sampling & Analysis | | | | | A | S | E |
| Real-time Radiography | | | | | A | S | E |
| Visual Examination | | | 1 | | A | S | E |
| Nondestructive Assay | | | | | A | S | E |
| Container Management/ C6-1 Transportation | | | | | A | S | E |
| Training | | | 1 | | A | S | E |
| Corrective Actions/NCRs M&TE/Graded Approach | | | 2 | | A | S | E |
| Work Processes | | | | | A | S | E |
| Assessments/Records Document Control | | | 2 | | A | S | E |
| Software QA / WWIS/WDS Procurement | | | | | A | S | E |
| Organization/QA Program/Load Management | | | 1 | | A | S | E |
| TOTALS | 0 | 0 | 7 | 1 | A | S | E |

**Definitions**

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

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

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

## TABLE OF AUDITED DOCUMENTS

| NUMBER | PROCEDURE NUMBER | REVISION NUMBER | PROCEDURE TITLE |
|---|---|---|---|
| 1. | CI-IDA-NDA-0035 | 3 | Calibration Verification & Confirmation Procedure for the Integrated Waste Assay System (IWAS) at AMWTP |
| 2. | CI-IDA-NDA-0055 | 1 | Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems |
| 3. | RPT-TRUW-03 | 8 | Drum Assay Technical Review Report |
| 4. | INST-CD&M-11.1.2 | 13 | Facility Modification Proposal Preparation |
| 5. | INST-CD&M-11.2.1 | 7 | Software Version Control |
| 6. | INST-CD&M-11.2.2 | 9 | Software Inventory Classification |
| 7. | INST-CD&M-11.2.3 | 5 | System Data Change Requests |
| 8. | INST-CD&M-11.2.6 | 4 | Temporary Software Override |
| 9. | INST-CMNT-10.14.1 | 8 | Testing In-Plant and Process Instrumentation |
| 10. | INST-CMNT-10.5.1 | 11 | Calibration and Control of Measuring and Test Equipment |
| 11. | INST-FOI-01 | 25 | In-Plant Drum Assay Operations |
| 12. | INST-FOI-17 | 25 | Facility Visual Examination Operations |
| 13. | INST-FOI-20 | 36 | Supercompactor and Post-Compaction Operations |
| 14. | INST-OI-09 | 49 | Retrieval Inspection Station Operations |
| 15. | INST-OI-11 | 47 | Waste Container Handling |
| 16. | INST-OI-12 | 49 | Real-Time Radiography Operations (Drum) |
| 17. | INST-OI-14 | 31 | Drum Assay Operations |
| 18. | INST-OI-16 | 40 | Drum Coring Operations |
| 19. | INST-OI-34 | 27 | Non-Facility Visual Examination Operations |
| 20. | INST-OI-43 | 22 | HGAS Sampling and Analysis Operations |
| 21. | INST-OI-45 | 17 | Drum Filter Installation |
| 22. | INST-OI-50 | 14 | WMF-615 Filter Insertion Operations |
| 23. | INST-OI-73 | 13 | Manual Drum Coring Operations |
| 24. | INST-OI-75 | 11 | Container-in-Container Sampling |
| 25. | INST-OI-81 | 10 | Real-Time Radiography Operations (WIPP Certification of Boxes) |
| 26. | INST-TRUW-8.1.1 | 11 | Drum Assay Post-Maintenance Calibration and Verification |
| 27. | LST-RTQP-03-IM | 0 | WIPP Training Requirements Implementation Matrix |
| 28. | MP-CD&M-11.1 | 9 | Change Control (Facility) |
| 29. | MP-CD&M-11.2 | 17 | Software Quality Assurance |
| 30. | MP-CMNT-10.14 | 6 | In-Plant and Process Instrumentation Testing Program |
| 31. | MP-CMNT-10.5 | 9 | Measuring and Test Equipment Program |
| 32. | MP-DOCS-18.1 | 12 | Developing Written Work Instructions |
| 33. | MP-DOCS-18.2 | 15 | Records Management |
| 34. | MP-DOCS-18.3 | 7 | Developing Management Procedures |
| 35. | MP-DOCS-18.4 | 37 | Document Control |
| 36. | MP-M&IA-17.1 | 11 | Management Assessment |
| 37. | MP-M&IA-17.2 | 10 | Independent Assessment |
| 38. | MP-M&IA-17.3 | 8 | Quality Assurance Surveillance |
| 39. | MP-PCMT-15.1 | 12 | Acquisition of Material and Services |
| 40. | MP-PCMT-15.21 | 7 | Material Management |
| 41. | MP-PRPL-22.1 | 25 | Production Planning |
| 42. | MP-Q&SI-5.1 | 9 | Investigation and Root Cause Analysis |
| 43. | MP-Q&SI-5.3 | 12 | Corrective Action |
| 44. | MP-Q&SI-5.4 | 21 | Identification of Nonconforming Conditions |
| 45. | MP-Q&SI-5.6 | 4 | Graded Approach |
| 46. | MP-Q&SI-5.8 | 8 | Qualifying Supply Chain Inspectors, Auditors, Lead Auditors and Technical Specialists |

| NUMBER | PROCEDURE NUMBER | REVISION NUMBER | PROCEDURE TITLE |
|---|---|---|---|
| 47. | MP-RTQP-14.16 | 6 | Training Program Evaluation |
| 48. | MP-RTQP-14.19 | 6 | Training Records Administration |
| 49. | MP-RTQP-14.4 | 18 | Personnel Qualification and Certification |
| 50. | MP-RTQP-14.6 | 7 | Job Analysis |
| 51. | MP-TRUW-8.1 | 22 | Certification Plan for INL Transuranic Waste |
| 52. | MP-TRUW-8.2 | 16 | Quality Assurance Project Plan |
| 53. | MP-TRUW-8.5 | 28 | TRU Waste Certification (Includes OSM) |
| 54. | MP-TRUW-8.8 | 32 | Level I Data Validation |
| 55. | MP-TRUW-8.9 | 24 | Level II Data Validation |
| 56. | MP-TRUW-8.11 | 24 | Data Reconciliation |
| 57. | MP-TRUW-8.12 | 22 | Waste Receipt and Shipping Inspection |
| 58. | MP-TRUW-8.13 | 24 | Collection, Review, and Management of Acceptable Knowledge Documentation |
| 59. | MP-TRUW-8.14 | 12 | Preparation of Waste Stream Profile Forms |
| 60. | MP-TRUW-8.17 | 7 | Co-Located Core Sampling Control Charts |
| 61. | MP-TRUW-8.25 | 18 | Random Selection of Containers for Headspace Gas and Solids Sampling and Analysis |
| 62. | MP-TRUW-8.26 | 5 | Reports to Management |
| 63. | MP-TRUW-8.34 | 8 | WIPP Sample Transfers |

# Processes and Equipment Reviewed

| 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** | | | | |
| **NONE** | | | | |
| **PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT** | | | | |
| The following processes and equipment were evaluated during CBFO Audit A-12-03 | | | | |
| **Headspace Gas (HSG)** | | | | |
| 9HG4 | Procedure – INST-OI-43<br>Description – CTI Headspace Gas Sampling System – Unit 001 | Solids (S3000)<br>Debris (S5000) | YES | N/A |
| **Solids Sampling** | | | | |
| 9DC1 | Drum Coring<br>Procedures – INST-OI-16 and INST-OI-73 (*Manual Drum Coring Operation*) and INST-OI-75<br>Description – Drum Coring and Sample Collection System | Solids (S3000)<br>Soils/Gravel (S4000) | YES | N/A |
| **Nondestructive Assay (NDA)** | | | | |
| 9DA1 | Procedure – INST-OI-14<br>Description – Canberra Drum Assay System Z-211-102 | Solids (S3000)<br>Debris (S5000) | N/A | Yes |
| 9DA2 | Procedure – INST-OI-14<br>Description – Canberra Drum Assay System Z-211-103 | Solids (S3000)<br>Debris (S5000) | N/A | Yes |
| 9DA3 | Procedure – INST-FOI-01<br>Description – Canberra Drum Assay System Z-390-100 | Debris (S5000) | N/A | Yes |
| 9DA4 | Procedure – INST-FOI-01<br>Description – Canberra Drum Assay System Z-390-101 | Debris (S5000) | N/A | Yes |

# Processes and Equipment Reviewed

| WIPP # | Process/Equipment Description | Applicable to the Following Waste Streams/Groups of Waste Streams | Currently Approved by NMED | Currently Approved by EPA |
|---|---|---|---|---|
| **Nondestructive Examination (NDE)** | | | | |
| 9RR1 | Procedure – INST-OI-12 and INST-OI-81<br>Description – Real-Time Radiography System | Solids (S3000)<br>Debris (S5000) | YES | YES |
| 9RR2 | Procedure – INST-OI-12 and INST-OI-81<br>Description – Real-Time Radiography System | Solids (S3000)<br>Debris (S5000) | YES | YES |
| **Visual Examination** | | | | |
| 9VE2 | Visual Examination<br>Procedure – INST-OI-34<br>Description – Visual Examination (in lieu of RTR) (VEC) | Solids (S3000)<br>Debris (S5000) | YES | YES |
| 9VE3 | Visual Examination<br>Procedure – INST-OI-34<br>Description – Newly Generated Waste Visual Examination Closure (VNC) | Solids (S3000)<br>Debris (S5000) | YES | YES |
| 9VE5 | Visual Examination<br>Procedure – INST-FOI-17<br>Description –Visual Examination (in lieu of RTR) (VEC) | Debris (S5000) | YES | YES |
| 9VE6 | Visual Examination<br>Procedure – INST-FOI-17<br>Description – Newly Generated Waste Visual Examination Closure (VNC) | Debris (S5000) | YES | YES |

# Processes and Equipment Reviewed

| WIPP # | Process/Equipment Description | Applicable to the Following Waste Streams/Groups of Waste Streams | Currently Approved by NMED | Currently Approved by EPA |
|---|---|---|---|---|
| 9VE7 | Visual Examination<br>Procedure – INST-FOI-17<br>Description – Box Line Visual Examination (VEB) – Box to drum repackaging | Debris (S5000) | YES | YES |
| 9VE8 | Visual Examination<br>Procedure – INST-FOI-17<br>Description – Box Line Visual Examination (VEB) – Drum to new drum repackaging | Debris (S5000) | YES | YES |
| 9VE10 | Visual Examination<br>Procedure – INST-OI-34<br>Description – Box Line Visual Examination (VEB) – Drum to new drum repackaging | Solids (S3000)<br>Debris (S5000) | YES | YES |
| 9VE11 | Visual Examination<br>Procedure – INST-FOI-22<br>Description – Box Line Visual Examination (VEB) – Drum to new drum repackaging | Solids (S3000) | YES | YES |
| **DEACTIVATED PROCESSES OR EQUIPMENT** | | | | |
| **Visual Examination** | | | | |
| 9VE11 | Visual Examination<br>Procedure – INST-FOI-22<br>Description – Box Line Visual Examination (VEB) – Drum to new drum repackaging | Solids (S3000) | YES | YES |