

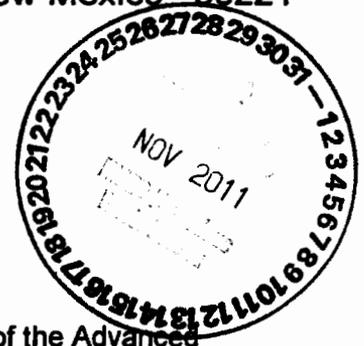


United States Government

Department of Energy

memorandum

Carlsbad Field Office
Carlsbad, New Mexico 88221



DATE: NOV 30 2011

**REPLY TO
ATTN OF:** CBFO:OQA:CGF:MAG:11-1975:UFC 2300.00

SUBJECT: Interim Audit Report for Recertification Audit A-12-03 of the AMWTP

TO: William (Bill) Lattin, DOE-ID

The Carlsbad Field Office (CBFO) conducted recertification audit A-12-03 of the Advanced Mixed Waste Treatment Project (AMWTP) on November 1-3, 2011. 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 did not identify any conditions adverse to quality that warranted issuance of a CBFO Corrective Action Report. As described in the attached report, the audit team identified one Observation during the audit and offered two Recommendations for AMWTP management consideration.

If you have any questions or comments, please contact me at (575) 234-7548.


Courtland G. Fesmire, P.E.
Quality Assurance Engineer

Attachment

- | | | | |
|------------------------|------|-------------------------------------|----|
| cc: w/attachment | | | |
| R. Unger, CBFO | * ED | S. Ghose, EPA | ED |
| J. R. Stroble, CBFO | ED | R. Lee, EPA | ED |
| N. Castaneda, CBFO | ED | J. Kieling, NMED | ED |
| J. Cooper, DOE-ID | ED | T. Hall, NMED | ED |
| J. Wells, DOE-ID | ED | S. Holmes, NMED | ED |
| T. Jenkins, DOE-ID | ED | T. Klipuis, NMED | ED |
| R. Raaz, AMWTP | ED | T. Kesterson, DOE OB WIPP NMED | ED |
| D. Haar, AMWTP | ED | D. Winters, DNFSB | ED |
| S. Peterman, AMWTP | ED | P. Gilbert, LANL-CO | ED |
| G. Tedford, AMWTP | ED | G. Lyshik, LANL-CO | ED |
| E. Schweinsberg, AMWTP | ED | P. Martinez, CTAC | ED |
| E. Dumas, AMWTP | ED | M. Mager, CTAC | ED |
| T. Peake, EPA | ED | WIPP Operating Record | ED |
| M. Eagle, EPA | ED | CBFO QA File | |
| E. Feltcorn, EPA | ED | CBFO M&RC | |
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**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-12-03

November 1 – 3, 2011



Prepared by:

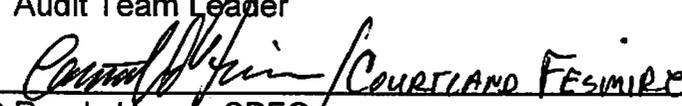


Porf Martinez, CTAC
Audit Team Leader

Date:

11/30/11

Approved by:



Randy Unger, CBFO
Quality Assurance Director

Date:

11/30/11

1.0 EXECUTIVE SUMMARY

Carlsbad Field Office (CBFO) Recertification Audit A-12-03 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, November 1 through 3, 2011. 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 contact-handled (CH) Summary Category Group (SCG) S3000 homogeneous solids and S5000 debris waste were 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 also evaluated a new visual examination process for characterizing S3000 homogeneous solids in the waste treatment facility.

No conditions adverse to quality were identified during the audit. One Observation was identified during the audit, and two Recommendations were offered for management consideration. The Observation and Recommendations are 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 from 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 (control of measuring and test equipment (M&TE) for data collection)
- Audits/Assessments
- Container Management
- Software Control
- Load 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 (Solids S&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)

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

- *Quality Assurance Program Document (QAPD)*, DOE/CBFO-94-1012
- Waste Isolation Pilot Plant Hazardous Waste Facility Permit NM4890139088-TSDF
- *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC)*, DOE/WIPP-02-3122

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

- *AMWTP Certification Plan for INEEL Contact-Handled Transuranic Waste*, MP-TRUW-8.1
- *AMWTP Quality Assurance Project Plan (QAPjP)*, MP-TRUW-8.2
- Related AMWTP quality assurance and technical implementing procedures

2.2 Purpose

Audit A-12-03 was conducted to assess the level of AMWTP compliance to HWFP WAP and WAC requirements for waste characterization activities related to the certification of CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste. 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)
Jack Walsh	Auditor, CTAC
Katie Martin	Auditor, CTAC
Cindi Castillo	Auditor, CTAC
Norm Frank	Auditor, CTAC
Charlie Riggs	Auditor, CTAC
Earl Bradford	Auditor, CTAC
Margie Martinez	Auditor, CTAC
Priscilla Martinez	Auditor, CTAC
Paul Gomez	Technical Specialist, CTAC
Dick Blauvelt	Technical Specialist, CTAC
BJ Verret	Technical Specialist, CTAC
Rhett Bradford	Technical Specialist, CTAC
Jim Oliver	Technical Specialist, CTAC

OBSERVERS

Steve Holmes	New Mexico Environment Department (NMED)
Ricardo Maestas	NMED
Connie Walker	NMED Contractor
Norma Castaneda	CBFO Office of the National TRU Program
Thomas Morgan	CBFO Office of the National TRU Program
Kenneth Licklitter	CBFO Office of the National TRU Program
Dorothy Gill	Environmental Protection Agency
Bruce LaRue	Idaho Department of Environmental Quality
Pete Johansen	Idaho Department of Environmental Quality

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 in the INL Engineering Research Office Building main conference room in Idaho Falls, Idaho, on November 1, 2011. Daily meetings were held with AMWTP management and staff to discuss the

previous day's issues and potential deficiencies. The audit was concluded with a post-audit meeting held in Building EDF-259, conference room WMF-1613, of the AMWTP Energy Drive Facilities in Idaho Falls, Idaho, on November 3, 2011.

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, solids S&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, 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-10-24 of AMWTP were examined. No conditions adverse to quality (CAQ) were issued as a result of the referenced audit.

5.2.2 Changes in Programs or Operations

A contract transition occurred for the management and operations (M&O) contractor from Bechtel, BWXT Idaho (BBWI) to the Idaho Treatment Group (ITG) (a performance-based contract), on October 1, 2011. ITG also acquired the solids analytical laboratory (SAL) contract. The SAL was evaluated by the CBFO during the INL laboratory certification audit and was not included in the scope of this audit.

5.2.3 New Programs or Activities Being Implemented

A new VE process for characterizing S3000 solids waste has been implemented for the south boxline in the building WMF-676 waste treatment facility. The previous process for solids treatment was conducted in the treatment tent in building WMF-628. Procedure INST-FOI-022, Visual Examination of S3000 Waste in the Facility, is the new operating procedure used for this process.

5.2.4 Changes in Key Personnel

Due to the contract change, the following personnel changes have occurred:

- President/General Manager changed from Jeff Mousseau to Dick Raaz, President and Project Manager
- Waste Program Manager changed from Enrique Torres to Dave Haar
- TRU Programs Manager changed from Enrique Torres to Sue Peterman
- QA Manager changed from Tom Fallon to Elvin Dumas
- Training manager changed from Ralph Hartline to Mike Parrish

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 interviewed QA management personnel and reviewed associated documentation to verify that the AMWTP met the requirements of the CBFO QAPD, Section 1.1, Organization and Quality Assurance Program. The AMWTP QA Program is clearly documented and compliant with QAPD requirements. The audit team reviewed AMWTP procedures MP-TRUW-8.2, Rev. 15, *Quality Assurance Project Plan*; MP-TRUW-8.1, Rev. 21, *Certification Plan for INL Transuranic Waste*; and MP-Q&SI-5.6, Rev. 3, *Graded Approach*, to determine the degree to which the procedures adequately addresses upper-tier requirements. The QA Grading process continues to be implemented and QA program evaluation results are provided to upper levels of program management. No concerns were identified during the audit.

The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for Organization/QA Program Implementation are adequately established, satisfactorily implemented, and effective.

5.3.2 Personal Qualification and Training

The audit team verified that the AMWTP met the requirements of 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. 17, *Personnel Qualification and Certification*; MP-RTQP-14.6, Rev. 6, *Job Analysis*; MP-RTQP-14.16, Rev. 5, *Training Program Evaluation*; MP-RTQP-14.19, Rev. 5, *Training Records Administration*; and LST-RTQP-03-IM, Rev. 0, *WIPP Training Requirements Implementation Matrix*.

Personnel training records associated with VE, RTR, HSG, Solids Sampling and Analysis, 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, employee description plans, qualification and requalification checklists/packages, training course reports, physical/eye exams, comprehensive exams, RTR training container demonstration forms, and required reading documentation.

The audit team examined a random sampling of records for qualified VE operators who received waste stream training for AK RPT-TRUW-83, Rev. 1, and AK RPT-TRUW-88, Rev. 0. Waste stream training was verified and the objective evidence reviewed demonstrated that operators were trained or instructed in specific waste generating practices, typical packaging configurations, and waste material parameters, as required by the HWFP. No 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 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 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. 8, *Investigation and Root Cause Analysis*; MP-Q&SI-5.3, Rev. 11, *Corrective Action*; MP-Q&SI-5.4, Rev. 20, *Identification of Nonconforming Conditions*; and MP-Q&SI-5.1, Rev. 8, *Investigation and Root Cause Analysis*.

Randomly selected nonconformance reports (NCRs) and corrective action reports (CARs) were evaluated to ensure that conditions adverse to quality were appropriately identified, documented, and dispositioned, and that investigation and root cause analyses were 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. No concerns were identified during the audit.

The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for Quality Improvement are adequately established, satisfactorily implemented, and effective.

5.3.4 Document Control

The audit team verified that the AMWTP met the requirements of 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. 34, *Document Control*, to determine the degree to which the procedures adequately address the requirements of the CBFO QAPD.

The audit team interviewed document control personnel, observed document control activities, and evaluated the processes for Document Change Requests (DCRs), procedures and instructions case files, and approved procedures and instructions. The audit team determined that the document control processes evaluated were performed adequately and in accordance with AMWTP procedures. No concerns were identified during the audit.

The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for Document Control are adequately established, satisfactorily implemented, and effective.

5.3.5 Records

The audit team verified that the AMWTP met the requirements of QAPD Section 1.5, Records. The audit team evaluated the adequacy of AMWTP procedure MP-DOCS-18.2, Rev. 14, *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 audit team interviewed records management personnel and observed activities to determine if AMWTP records storage methods were in compliance with procedural requirements. Documents such as records 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 concerns were identified during the audit.

The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for Records Management are adequately established, satisfactorily implemented, and effective.

5.3.6 Work Processes

The audit team verified that the AMWTP met the requirements of QAPD Section 2.1, Work Processes. The audit team evaluated the adequacy of AMWTP Procedures MP-CD&M-11.1, Rev. 8, *Change Control*, and INST-CD&M-11.1.2, Rev. 11, *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 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, the audit team verified that appropriate software changes had also been made to ensure compatibility with the new hardware. When software changes required an FMP, the audit team verified that an appropriate FMP was initiated to ensure hardware compatibility with the modified software.

The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for Work Processes are adequately established, satisfactorily implemented, and effective.

5.3.7 Procurement

The audit team verified that the AMWTP met the requirements of QAPD Section 2.3, Procurement. The audit team evaluated the adequacy of AMWTP procedures MP-PCMT-15.1, Rev. 11, *Acquisition of Materials and Services*, and MP-PCMT-15.21, Rev. 6, *Materials Management*, with respect to the CBFO QAPD, and determined that the procedures and instructions contain adequate flow-down of upper-tier requirements.

The audit team observed the storage of inventory at the main receiving area (Lindsay 01 warehouse) and in the Elevate Fulfillment Incorporated warehouse. 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 that 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, Receiving Inspection Reports, the AMWTP Approved Vendor List, Unsatisfactory, Over, Short, and Damaged (UOS&D) Material Reports, Stores Adjustments, Packing/Packaging Lists, Straight Bill of Ladings, Certificates of Conformance, Nonconformance Reports, Suspect/Counterfeit Item Training Documentation, Standard Procurement Quality Clauses Documentation, and Supplier Evaluation Reports. The AMWTP uses an electronic system, MAXIMO, to track inventory. The audit team evaluated inventory shelf-life documentation maintained in MAXIMO. No concerns were identified during the audit.

The documents reviewed and evaluated during the audit 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 QAPD Section 2.4, Inspection and Testing. The audit team evaluated the adequacy of AMWTP procedures MP-CMNT-10.5, Rev. 9, *Calibration of 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. 5, *In-Plant and Process Instrumentation Testing Program*; and INST-CMNT-10.14.1, Rev. 7, *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 audit team interviewed personnel and reviewed the M&TE Equipment List located in the Computerized Maintenance Management System (CMMS), certificates of calibration, preventative maintenance forms, M&TE checkout logs, M&TE usage logs, and M&TE evaluations. No 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, satisfactorily implemented, and effective.

5.3.9 Audits/Assessment

The audit team verified that the AMWTP met the requirements of QAPD Section 3, Assessment Requirements. The audit team evaluated the adequacy of AMWTP procedures MP-M&IA-17.1, Rev. 10, *Management Assessment*; MP-M&IA-17.2, Rev. 9, *Independent Assessment*; MP-M&IA-17.3, Rev. 7, *Quality Assurance Surveillances*; 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 audit team interviewed QA personnel and evaluated 2010 and 2011 QA independent assessment schedules, lead auditor qualification documents, QA assessment notification letters, CARs, and AMWTP QA Programs Manager e-mail assessment notifications. No concerns were identified during the audit.

The documents reviewed and evaluated during the audit provided evidence that the applicable requirements for Audits/Assessments are adequate, satisfactorily implemented, and effective.

5.3.10 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*; MP-PRPL-22.1, Rev. 22, *Production Planning*, INST-OI-09, Rev. 42, *Retrieval Enclosure Waste Container Extraction*; and INST-OI-11, Rev. 44, *Waste Container Handling*, relative to container management activities, to determine the degree to which 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. Tracking of containers using the Waste Tracking System was performed by obtaining container numbers in the field of stored containers, then looking the containers up in the Waste Tracking System. Package shipping checklists were examined for incoming empty TRUPACT/HalfPACT containers and outgoing filled TRUPACT/HalfPACT containers. Container management activities reviewed were found to be satisfactory. A waste manifest for an outgoing shipment was verified to be compliant. The audit team verified that containers with NCRs were stored separated from containers without NCRs. Storage of containers ready for shipment was verified to be satisfactory in precluding non-eligible containers from being shipped to WIPP. No concerns were identified during the audit.

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for Container Management are adequately established, satisfactorily implemented, and effective.

5.3.11 Software Control

The audit team verified that the AMWTP met the requirements of QAPD Section 6, Software Requirements. The audit team evaluated the adequacy of AMWTP procedures MP-TRUW-8.5, Rev. 25, *TRU Waste Certification*; MP-CD&M-11.2, Rev. 16, *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 audit team evaluated the implementation of AMWTP Software QA (SQA) processes. The SQA evaluation included personnel interviews with, examination of a sample of changes to the WIPP Waste Tracking System, examination of the electronic software change tracking system and version control system (PVCS VM), review of a sample of software change requests from inception to closure, and review of a sample of the baseline software installed at AMWTP. TestTrack Pro and PVCS Version Manager are used to control software and data changes. Both programs allow

personnel access only as needed. Only authorized personnel may check in or check out software versions for modification of installation.

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 (SDCRs) for the AMWTP were reviewed by the audit team and determined to be adequate. Proposed changes were found to be 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 systems 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. No concerns were identified during the audit.

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for Software Control are adequately established, satisfactorily implemented, and effective.

5.3.12 Load Management

Load management is currently being conducted at the AMWTP on two approved waste streams: S5000 mixed waste debris stream BN510.1 (RPT-TRUW-83, *Acceptable Knowledge Summary for Supercompacted Debris Waste*), and S3000 mixed waste solids stream BNINW216 (*Acceptable Knowledge Summary for First/Second Stage Sludge*). For the load management process, AMWTP verifies that transuranic nuclides are present in the waste above the method detection limit and that the final container being characterized is above 200 nanocuries as required for TRU waste. Both waste streams were evaluated during this audit.

The procedure reviews, field observations, and document reviews performed by the audit team provided evidence that the applicable requirements for Load Management are adequately established, satisfactorily implemented, and effective.

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 B6-1, 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 both 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. 17, *Personnel Qualification and Certification*; MP-RTQP-14.19, Rev. 5, *Training Records Administration*; and LST-RTQP-03-IM, Rev. 0, *WIPP Training Requirements Implementation Matrix (TIM)*, relative to the training and qualification of personnel, to determine the degree to which the procedures adequately address HWFP C6-1 training requirements.

Personnel training records associated with VE, RTR, NDA, solids S&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. Records reviews included individual training plans, qualification and requalification checklists/packages, training course reports, and required reading documentation. No 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 personnel training and qualification are adequately established for compliance with HWFP C6-1 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. 14, *Records Management*, relative to the control and administration of QA records to determine the degree to which the procedure adequately addresses HWFP C6-1 records requirements. Control of QA records was verified through review of the AMWTP Record Categories, Classification, Disposition, and Retention Matrix and associated

characterization process batch data reports (BDRs). 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 QA records are adequately established for compliance with HWFP C6-1 records requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

- **Nonconformance:** The audit team conducted interviews with responsible personnel and reviewed AMWTP implementing procedure MP-Q&SI-5.4, Rev. 20, *Identification of Nonconforming Conditions*, relative to nonconformances, to determine the degree to which the procedure adequately addresses HWFP C6-1 nonconformance requirements.

The audit team reviewed randomly selected NCRs to ensure that nonconformances were appropriately documented and dispositioned, and that investigative and root cause analyses performed were 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. No concerns were identified during the audit.

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for nonconformances are adequately established for compliance with HWFP C6-1 nonconformance 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 C6-1 transportation requirements.

The audit team evaluated shipping documentation and verified that the generator/storage site accurately completed the Environmental Protection Agency (EPA) Hazardous Waste Manifest as required, including the container-specific information, and the shipment documentation was included within the shipment package. No 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 transportation are adequately established for compliance with HWFP C6-1 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. 25, *TRU Waste Certification*, relative to WWIS/WDS data entry, to determine the degree to which the procedure adequately addresses HWFP C6-1 WWIS/WDS requirements.

The audit team reviewed documentation of WWIS/WDS access requests and request for removal from WWIS/WDS access for AMWTP WCO personnel. The audit team determined that appropriate personnel have been granted access to WWIS/WDS and are adequately trained in WWIS/WDS operations. Access control to WWIS/WDS applications is established using AMWTP user identification and passwords for network/server access and WWIS/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 WWIS/WDS certification module and the OSM. The audit team determined that WCOs properly enter data directly into WWIS/WDS characterization and certification modules. Data entry is properly performed to complete characterization data and submit it for certification. No 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 WWIS/WDS are adequately established for compliance with HWFP C6-1 WWIS/WDS 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, solids S&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 implementation of the associated characterization activities. 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 (QA/QC) 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 characterization requirements of the HWFP through documentation and by performing characterization activities.

Objective evidence was reviewed to ensure project-level activities were adequately performed to support waste characterization. BDRs were evaluated based on project-level requirements for solids S&A, HSG S&A, RTR, VE, and NDA for CH SCG S3000 homogeneous solids and CH SCG S5000 debris waste. The random selection requirements for HSG were evaluated, along with the associated BDRs. In addition, procedures and objective evidence were reviewed to ensure that AMWTP could adequately perform data reconciliation and properly prepare a WSPF. The audit team reviewed AMWTP procedures MP-TRUW-8.14, Rev. 12, *Preparation of Waste Stream Profile Forms*; MP-TRUW-8.8, Rev. 31, *Level I Data Validation*; and MP-TRUW-8.9, Rev. 24, *Level II Data Validation*.

Objective evidence was reviewed to determine the adequacy of the site project management V&V procedures. 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.

A review was performed on the S5000 debris and S3000 Solids Waste Stream Profile Form (WSPF)/Characterization Information Summary (CIS) for BNINW216, *First/Second Stage Sludge Solids Sampling Plan*, Lot 21. The review included the random sample selection with two addenda to BNINW216 *First/Second Stage Sludge Solids Sampling Plan* and BNINW216, *First/Second Stage Sludge Solids Sampling Report with CIS*. The random sample selection for the debris waste stream BN510.1 Boline Lot 1 and Lot 2 were provided for review. To aid in the review process, the Site Project Manager (SPM) utilizes AK documents for the waste reviewed, including AK summary reports for waste streams BNINW216, BNINW218, BN835, BN510, BN004, BN836, BN222, BN510.1, and BN600.

The project-level data V&V process was evaluated by reviewing the following BDRs:

Radiography (RTR)

RTR11-00086 RTR11-00149 RTR11-00158

Visual Examination (VE)

VEB11-00579 VEB11-00853 VEB11-00760

Solids

SSC11-00004 SSC11-00009 SSG11-00005 SSG11-00006
ALD11024V ALD11024S ALD11024N ALD11024M

Headspace Gas (HSG)

HS110-00018 HS111-00010 HS111-00012

NDA

ASY11-00899 ASY11-01024 ASY11-01272

No 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 requirements. Overall, project-level activities were determined to be adequate, satisfactorily implemented, and effective.

5.4.2 Table B6-2, 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 S3000 homogeneous solids waste and CH SCG S4000 soils/gravel wastes. The audit team evaluated the following solids sampling procedures: MP-TRUW-8.17, Rev. 7, *Co-Located Core Sampling Control Charts*; INST-OI-16, Rev. 37, *Drum Coring Operations*; MP-TRUW-8.34, Rev. 6, *WIPP Sample Shipments*; INST-OI-73, Rev. 10, *Manual Drum Coring Operations*; INST-OI-75, Rev. 8, *Container-in-Container Sampling*; MP-TRUW-8.8, Rev. 31, *Level I Data Validation*; and LST-RTQP-03, Rev. 0, *Training Implementation Matrix*. The solids sampling procedures were found to be adequate in meeting HWFP requirements.

AMWTP solids sampling activities were evaluated by examining BDRs SSC11-00002 and SSG11-00006. Container-in-container sampling operations were observed during this audit. The audit team toured the 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 to verify that the required training and qualifications were complete and current. Equipment blank records were audited, sample tags were checked, custody seals were examined, and control charts were verified.

The AMWTP performs its own S3000 solids sampling and performs S4000 sampling for other generator sites. The AMWTP retains responsibility for the accuracy and completeness of 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 concerns were identified in this area during the audit.

Overall, Solids and Soils/Gravel Sampling activities were determined to be adequate in addressing the requirements of the WAP, satisfactory in the implementation of these requirements and effective in achieving the desired results.

5.4.3 Table B6-3, Acceptable Knowledge

The audit team evaluated the AK process for characterizing CH SCG S5000 debris and S3000 homogeneous solids waste. For the evaluation, the audit team used the WAP C6 checklists, primarily checklist C6-3, as a guide for demonstration of HWFP compliance and also examined compliance with the WIPP WAC. Three waste streams were examined during the audit: S5000 mixed waste debris stream BN510.1, the new supercompacted debris waste stream (RPT-TRUW-83, *Acceptable Knowledge Summary for Supercompacted Debris Waste (BN510.1)*); a new polychlorinated biphenyl (PCB) contaminated debris stream from operations in Bldg 676 where the supercompactor is housed (*Acceptable Knowledge Summary for AMWTP WMF-676 PCB Contaminated Debris (BN600)*); and an S3000 mixed waste solids stream BNINW216, 1st and 2nd Stage Sludge from the Rocky Flats Environmental Technology Site (RFETS) (*Acceptable Knowledge Summary for First/Second Stage Sludge (BNINW216)*). The new supercompacted stream was developed when feedstock to the process from the Hanford Site was introduced, resulting in the addition of several new Resource Conservation and Recovery Act (RCRA) hazardous waste numbers.

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, and reviewed NCRs dealing with the identification and treatment of prohibited items.

In addition to the respective AK Summary Reports for these streams (RPT-TRUW-83, Rev. 1, RPT-TRUW-88, Rev. 0, and RPT-TRUW-09, Rev. 7), 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-56, *AK Knowledge for INL Stored TRU Waste-Rocky Flats Plant*; 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*.

Five drums were tracked for the WAP-required traceability exercise, including two drums from the BN216 waste stream, one of which was part of the latest solids S&A lot, two drums from the supercompacted waste stream BN510.1, both from distinct HSG S&A lots for the boxline process in the AMWTF, and one drum from HSG S&A Lot 1 for

the BN600 debris stream. In addition to the HSG and solids S&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 data bases.

For each of the three waste streams reviewed, the WAP Compliance Tracking Table was completed by the generators and reviewed during the audit. As a result, document change requests (DCRs) were prepared and will be submitted for two of the three waste streams, along with a DCR for AK procedure MP-TRUW-8.13, *Collection, Review, and Management of AK Documentation*, to address site-specific and/or state-enforced agreements in the assignment of hazardous waste numbers. The Tracking Tables and DCRs will be attached to the final report submitted to NMED in keeping with the agreement established between NMED and CBFO at the Oak Ridge audit in February, 2011. The audit team recommends that AMWTP revise the affected AK documentation incorporating changes to ensure compliance with the December 2010 WAP requirements (see section 7.2, Recommendation 1).

Overall, the Acceptable Knowledge Process was determined to be adequate in addressing the requirements of the WAP and the WAC as applicable, satisfactory in the implementation of these requirements and effective in achieving the desired results.

5.4.4 Table B6-4, Headspace Gas

The audit team reviewed AMWTP implementing procedures MP-TRUW-8.8, Rev. 31, *Level I Data Validation*; INST-OI-43, Rev. 20, *HGAS Sampling and Analysis Operations*; INST-OI-45, Rev. 16, *Drum Filter Installation*; and INST-OI-50, Rev. 13, *WMF-615 Filter Insertion Operations*, relative to HSG sampling activities, to determine the degree to which procedures adequately address upper-tier 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). Operations were evaluated by observing S&A activities, examining equipment, interviewing personnel, and reviewing HSG BDR HS111-00018, which was found to be satisfactory. Successful participation in the latest PDP Cycle 25A, was verified and determination of Method Detection Limits (MDL) and Performance and Accuracy (P&A) studies, 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 personnel were confirmed to be acceptable to the AMWTP program. No concerns were identified during the audit.

Overall, HSG sampling activities were determined to be adequate in addressing upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

5.4.4 Table B6-5, 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. 31, *Level I Data Validation*; INST-OI-81, Rev. 8, *Real-Time Radiography Operations (for WIPP Certification of Boxes)*; and INST-OI-12, Rev. 47, *Real-Time Radiography Operations (Drum)*, to determine their adequacy in addressing upper-tier requirements. The procedures were deemed to adequately address 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 were examined, including test and training drum documentation. The audit team verified that RTR operators were appropriately qualified as required.

The audit team evaluated RTR operations in building 634. RTR operations for scan of container number 10352728 was observed using RTR Unit 101 for S3000 solid waste. The audit team also examined RTR operational log entries for both RTR Units 101 and 106, verifying logbook entries were logged correctly and reviewed by the facility shift supervisor as required. Both units are in the same area and had the required equipment.

The audit team examined the following RTR BDRs:

RTR11-00050	RTR11-00160	RTR11-00208
RTR11-00235	RTR11-00262	RTR11-00319

During the review of the RTR audio/video recording, the audit team identified one concern. During RTR characterization scans, RTR operators need to clearly and audibly identify the contents of the container. Auditors observed that the audio/video recording of the radiography examinations may not be loud enough to verify that the RTR operator is characterizing 100% of the waste container. If not corrected, this practice may result in a condition adverse to quality (see section 7.2, Observation 1).

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

5.4.5 Table B6-6, Visual Examination

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 VE characterization process.

The audit team reviewed procedures MP-TRUW-8.8, Rev. 31, *Level I Data Validation*; INST-OI-34, Rev. 25, *Non-Facility Visual Examination Operations*, INST-FOI-17, Rev. 23, *Facility Visual Examination Operations*, INST-FOI-22, Rev. 0, FC-3, *Visual Examination of S3000 Waste in the Facility*, and LST-RTQP-03-IM, Rev. 0, *WIPP Training Requirements Implementation Matrix*, to determine their adequacy in addressing upper-tier requirements. The results of the review determined that the procedures adequately address requirements.

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. AMWTP is performing VE for the Box Line Visual Examination (VEB) for S5000 debris waste and Visual Examination Sludge Closure (VSC) for the initial certification of S3000 solids waste.

The audit team conducted interviews with VE operators and reviewed training files, and evaluated VE operations in building WMF-676. VE operations for container number 10426237 were being performed in the North Box Line for S5000 debris waste. VE operations for container number 10417997 in the South Box Line for S3000 solid waste were also observed. The audit team also examined VE operational logbook entries for both box lines and verified entries were logged correctly and reviewed by the facility shift supervisor as required.

The audit team examined the following VE BDRs:

VEB10-00880	VEB11-00449	VEB11-00850
VSC11-00011	VSC11-00015	VSC11-00017

The audit team examined training records for VE operators/Independent Technical Reviewers and Site Project Managers and confirmed the appointment of six AMWTP VE Experts (VEEs). The audit team verified that VE operators, Independent Technical Reviewers, and Site Project Managers were appropriately qualified as required. During the review of the training files, the audit team identified one concern. The QP-VE-0001 qualification card does not reference procedure INST-FOI-22, which requires: "Personnel performing VE to be qualified in accordance with QP-VE-0001, *Visual Examiner*." The audit team recommends that AMWTP revise VE qualification card QP-VE-001 to include reference to VE procedure INST-FOI-22 (see section 7.2, Recommendation 2).

The procedure reviews, field observations, and document reviews provided evidence that the applicable requirements for characterizing S3000 solids and S5000 debris

waste using the VE process is 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 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 AMWTP building WMF-634. 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 NDA systems are Canberra multi-mode hybrid systems that run on NDA 2000 and incorporate Canberra's Genie 2000, Multi Group Analysis (MGA), as well as Multi-Group Analysis-Uranium (MGA-U) 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 arranged in a 4π 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 (AAS) correction source mounted in a retractable housing external to the assay cavity, with an intensity of approximately 10^5 neutrons per second used, in part, for the determination of matrix correction factors (MCF).
- A 14 MeV neutron generator with a capability of producing 10^8 14-MeV neutrons per second which can be used, along with cavity and barrel flux monitors and four Fast Neutron Detector Packs (FNDP), 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 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-10-24.
- Successful participation in the CBFO-sponsored NDA PDP Cycle 18A.
- 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-10-24.

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-10-24 in August 2010, and the system performance checks have been performed as required. AMWTP successfully participated in PDP Cycle 18A for glass, and metals waste matrices for all four systems.

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

6.0 CORRECTIVE ACTIONS, OBSERVATIONS, AND RECOMMENDATIONS

6.1 Corrective Action Reports

During the audit, the audit team may identify conditions adverse to quality (CAQs) 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. The audit team members and the Audit Team Leader (ATL) 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, 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, evaluates/verifies any objective evidence/actions submitted or taken by the audited organization and determines if the condition was corrected in an acceptable manner. Once it has been determined that the CAQ has been corrected, the ATL categorizes the condition as a CDA 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 CAQs 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 audit team member, in conjunction with the ATL, 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.

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.

7.1 Observations

The following Observation was identified during the audit.

Observation 1

In reviewing the RTR audio/video recording, the audit team identified that during RTR characterization scans, RTR operators need to clearly and audibly identify the contents of the container. Auditors observed that the audio/video media recording of the radiography examinations may not be loud enough to verify that the RTR operator is

characterizing 100% of the waste container. If not corrected, this practice may result in a condition adverse to quality.

7.2 Recommendations

Two Recommendations were provided to AMWTP management as a result of the audit.

Recommendation 1

The audit team recommends that AMWTP revise the affected AK documentation to ensure compliance with the December 2010 WAP requirements. The audit team reviewed three waste streams. The WAP Compliance Tracking Table, developed in an agreement established between NMED and CBFO at the Oak Ridge audit in February 2011, was completed by the generators and reviewed during the audit. As a result, DCRs were prepared and will be submitted for two of the three waste streams, along with a DCR for AK procedure MP-TRUW-8.13, *Collection, Review, and Management of AK Documentation*, to address site-specific and/or state-enforced agreements in the assignment of hazardous waste numbers. These Tracking Tables and DCRs will be attached to the final report submitted to NMED.

Recommendation 2

The audit team recommends that AMWTP revise VE qualification card QP-VE-001 to include reference to VE procedure INST-FOI-22. During the review of the training files the audit team identified that the QP-VE-0001 qualification card for qualifying AMWTP VE operators does not reference procedure INST-FOI-22. This procedure requires "Personnel performing VE to be qualified in accordance with QP-VE-0001, *Visual Examiner*". The audit team verified that VE operators were appropriately qualified as required.

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-12-03				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Jade M. Anderson	ITG Software Lead	X	X	X
Travis Baldwin	ITG Radiological Technician		X	
Dave Becker	ITG Shift Supervisor		X	
Keri Brashier	ITG Procurement Specialist		X	
Gail Brown	ITG Document Control Manager	X	X	X
F. Dave Butler	ITG Training Specialist	X	X	X
George Byram	ITG SPM Lead	X	X	X
Norma Castaneda	CBFO NTP Observer	X	X	X
Steve Carpenter	ITG AKE	X	X	X
John Cummings	ITG RTR Operator		X	
John Cunningham	ITG VE Operator		X	
Ken Downs	ITG VE Operator		X	
Elvin Dumas	ITG QA Manager	X	X	X
Courtland Fesmire	CBFO QA Representative	X	X	
Dorothy Gill	EPA Observer	X	X	
John Godak	ITG System Engineer		X	
Ted Griffin	ITG Nuclear Facility Manager			X
David Haar	ITG Waste Programs Manager	X	X	X
Jermaine Hagen	ITG VE Operator		X	
Rod Harrison	ITG Procurement Manager	X	X	
Jared Hawley	ITG Production Support	X	X	
Jason Hayne	ITG RTR SME	X	X	X
Steve Holmes	NMED Observer	X	X	X
J. M. Jackson	ITG Production Manager			X

PERSONNEL CONTACTED DURING AUDIT A-12-03				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Nolan Jacobs	ITG NDA Operator		X	
Jeff Jensen	ITG Engineer		X	X
Pete Johansen	Idaho DEQ Observer	X	X	
Shawn Jordon	ITG RTR Operator		X	
Nancy Kirk	ITG AKE		X	
Karl Kolbert	ITG System Engineer		X	
Bruce LaRue	Idaho DEQ Observer	X	X	X
Denise Lee	ITG RTR ITR	X	X	
Kenneth Licklitter	CBFO NTP Observer	X	X	
Ricardo Maestas	NMED Observer	X	X	X
Michael Martin	ITG Training Lead	X		
Stormie McCurdy	ITG WCO		X	
Thomas Morgan	CBFO NTP Observer	X	X	
Randall C. Morris	ITG AKE		X	
William J. Muirhead	ITG IT Manager	X	X	X
John Nicklas	ITG HSGS Chemist	X		X
Casey Nielson	ITG Supply Chain Inspector		X	
Michael Parrish	ITG Training Manager	X	X	
Sue Peterman	TRU Programs Manager	X	X	X
R. P. Raaz	ITG Project Manager	X		X
Scott Raish	ITG Business Manager			X
Cesar Rojas	ITG HSGS Chemist	X		X
Stephanie Rudolph	ITG M&TE Custodian		X	
Kaye Ryman	ITG WCO		X	
Eric Schweinsberg	ITG SPM	X	X	X
Richard Scott	ITG VE Operator		X	
James Seamans	ITG NDA SME	X	X	X

PERSONNEL CONTACTED DURING AUDIT A-12-03				
NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Jake Shuman	ITG Supply Chain inspector		X	
Jim Simonds	ITG Contracts and Records Manager	X		X
Michael Sorenson	ITG VEE			X
Matthew Storms	ITG WDS SME		X	
Cindy Tiegs	ITR RTR Operator		X	
Gina Tedford	ITG SPM Audit Lead	X	X	X
Steve Turner	ITG NDA Systems Engineer		X	
Tim Venniman	ITG AKE		X	
Connie Walker	NMED Observer		X	
L. J. Walker	ITG VEE	X	X	X
Sherri Walker	Records SME	X	X	X
Jerry Wells	DOE-ID Project Manager	X		X
Andy Wood	ITG VE Operator		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			1				
Visual Examination				1	A	S	E
Nondestructive Assay					A	S	E
Container Management/ C6-1 Transportation					A	S	E
Training					A	S	E
Corrective Actions/NCRs M&TE/Graded Approach					A	S	E
Work Processes					A	S	E
Assessments/Records Document Control					A	S	E
Software QA / WWIS Procurement					A	S	E
Organization/QA Program					A	S	E
TOTALS	0	0	1	2	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	TITLE
1.	CI-IDA-NDA-0035	Calibration Verification & Confirmation Procedure for the Integrated Waste Assay System (IWAS) at AMWTP, Canberra Industries
2.	CI-IDA-NDA-0055	Total Measurement Uncertainty for the AMWTP Integrated Waste Assay Systems, Canberra Industries
3.	AMWTP-RTP-TRUW-03	Drum Assay Technical Review Report
4.	AMWTP-RTP-TRUW-43	Acceptable Knowledge Summary For Filter Debris Waste (BN211)
5.	AMWTP-RTP-TRUW-44	Acceptable Knowledge Summary For Non-Special Source Metal Waste (BN296)
6.	AMWTP-RTP-TRUW-46	Acceptable Knowledge Summary For Glass Debris Waste (BN243)
7.	AMWTP-RTP-TRUW-48	Acceptable Knowledge Summary For Leaded Rubber Debris Waste (BN252)
8.	AMWTP-RTP-TRUW-52	Acceptable Knowledge Summary For Firebrick Debris Waste (BN161)
9.	RTP-TRUW-09	Acceptable Knowledge Summary For First/Second Stage Sludge (BNINW216)
10.	RTP-TRUW-15	Acceptable Knowledge Summary For Building 374 Sludge (BNINW218)
11.	RTP-TRUW-23	Acceptable Knowledge Summary For Solidified Acid/Caustic Waste (BN835)
12.	RTP-TRUW-30	Acceptable Knowledge Summary For Supercompacted Debris Waste (BN510)
13.	RTP-TRUW-53	Acceptable Knowledge Summary For Mound Debris Waste (BN304)
14.	RTP-TRUW-59	Acceptable Knowledge Summary For Special Setups Waste (BN004)
15.	RTP-TRUW-63	Acceptable Knowledge Summary For Cemented Sludge (BN836)
16.	RTP-TRUW-77	Acceptable Knowledge Summary For Solidified Plutonium Recovery Incinerator Waste (BN222)
17.	RTP-TRUW-83	Acceptable Knowledge Summary For Supercompacted Debris Waste (BN510.1)
18.	RTP-TRUW-88	Acceptable Knowledge Summary For AMWTP WMF-676 PCB Contaminated Debris (BN600)
19.	INST-CD&M-11.1.2	Facility Modification Proposal Preparation
20.	INST-CD&M-11.2.1	Software Version Control
21.	INST-CD&M-11.2.2	Software Inventory Classification
22.	INST-CD&M-11.2.3	System Data Change Requests
23.	INST-CD&M-11.2.6	Temporary Software Overrides
24.	INST-CMNT-10.14.1	Testing In-Plant and Process Instrumentation
25.	INST-CMNT-10.5.1	Calibration and Control of Measuring and Test Equipment
26.	INST-FOI-01	In-Plant Drum Assay Operations
27.	INST-FOI-17	Facility Visual Examination Operations
28.	INST-FOI-20	Supercompactor and Post-Compaction Operations
29.	INST-FOI-22	Visual Examination of S3000 Waste in the Facility
30.	INST-OI-09	Retrieval Enclosure Waste Container Extraction
31.	INST-OI-11	Waste Container Handling
32.	INST-OI-12	Real-Time Radiography Operations (Drum)
33.	INST-OI-14	Drum Assay Operations
34.	INST-OI-16	Drum Coring Operations
35.	INST-OI-34	Non-Facility Visual Examination Operations
36.	INST-OI-43	HGAS Sampling and Analysis Operations
37.	INST-OI-45	Drum Vent Filter Installation

NUMBER	PROCEDURE NUMBER	TITLE
38.	INST-OI-50	WMF-615 Filter Insertion Operations
39.	INST-OI-73	Manual Drum Coring Operations
40.	INST-OI-75	Container-in-container Sampling
41.	INST-OI-81	Real-Time Radiography Operations (WIPP Certification of Boxes)
42.	INST-TRUW-8.1.1	Drum Assay Post Maintenance Calibration & Verification
43.	MP-CD&M-11.1	Change Control
44.	MP-CD&M-11.2	Software Quality Assurance
45.	MP-CMNT-10.14	In-Plant and Process Instrumentation Testing Program
46.	MP-CMNT-10.5	Measuring and Test Equipment Program
47.	MP-DOCS-18.1	Developing Written Work Instructions
48.	MP-DOCS-18.2	Records Management
49.	MP-DOCS-18.3	Developing Management Procedures
50.	MP-DOCS-18.4	Document Control
51.	MP-M&IA-17.1	Management Assessment
52.	MP-M&IA-17.2	Independent Assessments
53.	MP-M&IA-17.3	Quality Assurance Surveillances
54.	MP-PCMT-15.1	Acquisition of Materials and Services
55.	MP-PCMT-15.21	Materials Management
56.	MP-Q&SI-5.1	Investigation & Root Cause Analysis
57.	MP-Q&SI-5.3	Corrective Action
58.	MP-Q&SI-5.4	Identification of Nonconforming Conditions
59.	MP-Q&SI-5.6	Graded Approach
60.	MP-Q&SI-5.8	Qualifying Supply Chain Inspectors, Auditors, Lead Auditors and Technical Specialists
61.	MP-RTQP-14.16	Training Program Evaluation
62.	MP-RTQP-14.19	Training Records Administration
63.	LST-RTQP-03-IM	WIPP Training Requirements Implementation Matrix
64.	MP-RTQP-14.4	Personnel Qualification and Certification
65.	MP-RTQP-14.6	Job Analysis
66.	MP-PRPL-22.1	Production Planning
67.	MP-TRUW-8.1	Certification Plan for INL Transuranic Waste
68.	MP-TRUW-8.2	Quality Assurance Project Plan
69.	MP-TRUW-8.5	TRU Waste Certification
70.	MP-TRUW 8.8	Level I Data Validation
71.	MP-TRUW 8.9	Level II Data Validation
72.	MP-TRUW 8.11	Data Reconciliation
73.	MP-TRUW 8.12	Waste Receipt and Shipping Inspection
74.	MP-TRUW 8.13	Collection, Review, and Management of Acceptable Knowledge Documentation
75.	MP-TRUW 8.14	Preparation of Waste Stream Profile Forms
76.	MP-TRUW 8.17	Co-located Core Sampling Control Charts
77.	MP-TRUW 8.25	Random Selection of Containers for Headspace Gas and Solids Sampling and Analysis
78.	MP-TRUW 8.26	Reports to Management
79.	MP-TRUW 8.34	WIPP Sample Shipments

Process 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				
TBD	Procedure – INST-FOI-22 Description – Sludge Visual Examination Closure (VSC) – S3000 to a new container	Solids (S3000)	No	No
PREVIOUSLY APPROVED PROCESSES OR EQUIPMENT				
The following processes and equipment were evaluated during CBFO Audit A-10-24				
Headspace Gas (HSG)				
9HG4	Procedure – INST-OI-43 Description – CTI Headspace Gas Sampling System – Unit 001	Solids (S3000) Debris (S5000)	YES	N/A
Solids Sampling				
9DC1	Drum Coring Procedures – INST-OI-16 and INST-OI-73 (<i>Manual Drum Coring Operation</i>) and INST-OI-75 Description – Drum Coring and Sample Collection System	Solids (S3000) Soils/Gravel (S4000)	YES	N/A
Nondestructive Assay (NDA)				
9DA1	Procedure – INST-OI-14 Description – Canberra Drum Assay System Z-211-102	Solids (S3000) Debris (S5000)	N/A	Yes
9DA2	Procedure – INST-OI-14 Description – Canberra Drum Assay System Z-211-103	Solids (S3000) Debris (S5000)	N/A	Yes
9DA3	Procedure – INST-FOI-01 Description – Canberra Drum Assay System Z-390-100	Debris (S5000)	N/A	Yes

Process 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
9DA4	Procedure – INST-FOI-01 Description – Canberra Drum Assay System Z-390-101	Debris (S5000)	N/A	Yes
Nondestructive Examination (NDE)				
9RR1	Procedure – INST-OI-12 and INST-OI-81 Description – Real-Time Radiography (RTR) System	Solids (S3000) Debris (S5000)	YES	YES
9RR2	Procedure – INST-OI-12 and INST-OI-81 Description – Real-Time Radiography System	Solids (S3000) Debris (S5000)	YES	YES
Visual Examination				
9VE2	Visual Examination Procedure – INST-OI-34 Description – Visual Examination (in lieu of RTR) (VEC)	Solids (S3000) Debris (S5000)	YES	YES
9VE3	Visual Examination Procedure – INST-OI-34 Description – Newly Generated Waste Visual Examination Closure (VNC)	Solids (S3000) Debris (S5000)	YES	YES
9VE5	Visual Examination Procedure – INST-FOI-17 Description – Visual Examination (in lieu of RTR) (VEC)	Debris (S5000)	YES	YES
9VE6	Visual Examination Procedure – INST-FOI-17 Description – Newly Generated Waste Visual Examination Closure (VNC)	Debris (S5000)	YES	YES

Process 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 Procedure – INST-FOI-17 Description – Box Line Visual Examination (VEB) – Box to drum repackaging	Debris (S5000)	YES	YES
9VE8	Visual Examination Procedure – INST-FOI-17 Description – Box Line Visual Examination (VEB) – Drum to new drum repackaging	Debris (S5000)	YES	YES
9VE9	Visual Examination Procedure – INST-OI-34 Description – Box Line Visual Examination (VEB) – Box to drum repackaging	Solids (S3000) Debris (S5000)	YES	YES
9VE10	Visual Examination Procedure – INST-OI-34 Description – Box Line Visual Examination (VEB) – Drum to new drum repackaging	Solids (S3000) Debris (S5000)	YES	YES