Department of Energy
Carlsbad Field Office
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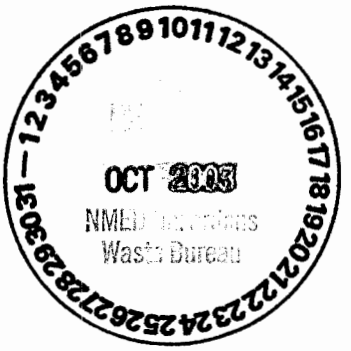
9 OCT 2003



Mr. Steve Zappe, Project Leader
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, New Mexico 87505-6303

Subject: Transmittal of the Final Certification Audit Report for the ANL-E, CCP Audit A-03-26

Dear Mr. Zappe:

This letter transmits the Argonne National Laboratory – East (ANL-E), Central Characterization Project (CCP) Certification Audit Report for the processes being performed to characterize and certify homogeneous solid waste (summary category group S3000) as required by Section II.C.2.c of the WIPP Hazardous Waste Facility Permit. The report contains the results of the certification audit performed to evaluate the ANL-E/CCP addition of the solids sampling and analysis services of an independent analytical laboratory and the final AK confirmation processes, including sample design, reconciliation of DQOs, and project level data verification and validation for the ANL-E solids waste stream.

The CBFO audit A-03-15 evaluated the independent analytical laboratory being utilized by the CCP program and verified the acceptability of their solids sampling operations, e.g., sample collection, sample chain-of-custody, or analytical laboratory sample analysis processes.

I certify under penalty of law that this document and all enclosures were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CBFO:QA:DM:VW:03-2908:UFC:2300

031014

If you have any questions concerning this audit report, please contact Ms. Ava L. Holland at (505) 234-7423.

Sincerely,

Dr. Inés R. Triay
Manager

Enclosure

cc: w/enclosure
C. Walker, Techlaw
K. Dunbar, WRES (Operating Record)

cc: w/o enclosure
K. Watson, CBFO *ED
R. Knerr, CBFO *ED
A. Holland, CBFO *ED
D. Miehls, CBFO *ED
J. Kieling, NMED
S. Martin, NMED
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U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE

FINAL AUDIT REPORT
OF
ARGONNE NATIONAL LABORATORY-EAST
UTILIZING THE
CENTRAL CHARACTERIZATION PROJECT

Chicago, Illinois

AUDIT NUMBER A-03-26
August 26-27, 2003

FINAL AUDIT REPORT OF SOLID WASTE CHARACTERIZATION IN ACCORDANCE WITH THE HAZARDOUS WASTE FACILITY PERMIT

Prepared by: A. Earl Bradford **Date:** 10/8/03
A. Earl Bradford, CTAC
Audit Team Leader

Approved by: Ava L. Holland **Date:** 10/9/03
Ava L. Holland, CBFO
Quality Assurance Manager

1.0 EXECUTIVE SUMMARY

The Central Characterization Project (CCP) was developed by Washington TRU Solutions (WTS) to provide transuranic (TRU) waste characterization, certification, and transportation services, including the necessary management and administrative functions to ensure the acceptability of these processes in accordance with regulatory requirements. The CCP provides these services under contract to those waste generator sites that request support or lack the expertise, program infrastructure, or equipment to characterize TRU waste for shipment to and disposal at the Waste Isolation Pilot Plant (WIPP).

Argonne National Laboratory-East (ANL-E) has entered into an agreement with the CCP to characterize ANL-E debris waste (S5000) and homogeneous solid waste (S3000). Carlsbad Field Office (CBFO) Audit A-02-03 resulted in the certification of the CCP program for characterization of debris waste. CBFO Audit A-03-13, conducted in February 2003, verified that the already certified program and equipment were adequate for the physical characterization of homogeneous solid wastes, including visual examination (VE), real-time radiography (RTR), and headspace gas (HSG) sampling and analysis processes.

The scope of Audit A-03-13 did not include verification of a solids sampling process, or the processes needed for analysis of the solids samples. In the absence of these capabilities, the CCP could not demonstrate the full capability to characterize the solids waste stream. Additionally, there was no objective evidence that would demonstrate traceability of any solids containers throughout the acceptable knowledge (AK) confirmation process, including reconciliation of data quality objectives (DQOs), verification of an adequate sample design, or project-level data verification and validation (V&V).

Rather than develop a solids sampling technique or the required sample analysis processes, the CCP elected to utilize the services of an independent analytical laboratory at the Idaho National Engineering and Environmental Laboratory (INEEL). The INEEL analytical laboratory will sample the ANL-E drums, perform the required solids analysis, including generation-level data V&V, and forward the analysis batch data reports (BDRs) to the ANL-E/CCP program for final project-level data V&V. The ANL-E/CCP program retains responsibility for the accuracy of the analysis data and will perform project-level data V&V (i.e. AK confirmation). The INEEL analytical laboratories solids sampling and analysis program is audited and will be certified by CBFO.

CBFO Audit A-03-26 was conducted at the CCP offices in Carlsbad, New Mexico, August 26 and 27, 2003, to finalize the evaluation of the CCP characterization and certification activities related to the ANL-E solid wastes. The audit was conducted to evaluate the adequacy, implementation, and effectiveness of the CCP processes needed for sample design, reconciliation of DQOs, and the administrative processes ensuring project-level data V&V and the subsequent confirmation of AK. The audit

team assessed the adequacy, implementation, and effectiveness of the technical and selected quality assurance (QA) activities. The QA program activities not evaluated as part of this audit were evaluated in the two previous ANL-E audits of the ANL-E/CCP program.

The audit scope included verification of traceability of solid waste containers throughout the characterization process. Drums were tracked through the physical characterization processes conducted at ANL-E, the solids sampling and solids sampling analysis conducted at the INEEL, and the project-level data V&V processes conducted at the Carlsbad CCP management offices. The documentation evaluated included objective evidence of initial characterization with mobile equipment at the ANL-E facility, sample design, the newly implemented solids sampling and analysis processes conducted at the INEEL, and project-level data V&V, including AK confirmation activities conducted at the CCP offices in Carlsbad.

The audit team concluded that the technical and QA procedures were adequate relative to the flow-down of requirements from the CBFO Quality Assurance Program Document (QAPD), the Waste Analysis Plan (WAP) of the WIPP Hazardous Waste Facility Permit (HWFP), and the WIPP Waste Acceptance Criteria (WAC). The audit team also concluded that the assessed activities were satisfactorily implemented in accordance with the CCP Quality Assurance Project Plan (QAPjP) and the implementing procedures. The established technical processes and the QA program were determined to be effective.

The audit team did not identify any conditions adverse to quality (CAQs) that resulted in the issuance of a CBFO corrective action report (CAR). The audit team identified one WAP-related Observation and one WAP-related Recommendation that were offered for CCP management consideration. The Observation and Recommendation are described in Section 6.

2.0 SCOPE AND PURPOSE

2.1 Scope

The audit team evaluated the adequacy, implementation, and effectiveness of the ANL-E/CCP TRU waste characterization program and processes implemented to add the processes for solid sampling and analysis, as well as demonstration of the AK confirmation process for the homogeneous solid waste in accordance with the requirements contained in the WIPP HWFP, Attachments B through B6. Compliance was demonstrated and documented by updating the appropriate Attachment B6 checklists related to solids sampling and analysis activities and by completing the B6-2 checklist for the solids and soils/gravel sampling.

The following ANL-E/CCP program elements were evaluated in accordance with the HWFP.

Quality Assurance Activities

QA Program interfaces
Procurement of analytical laboratory services
Sample control

WAP Technical Activities

Project-level data V&V
Sample design/reconciliation of DQOs
AK confirmation
WAP Section B6

The evaluation of the ANL-E/CCP management and waste characterization and certification activities and documents was based on current revisions of the following documents:

- *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*
- *Quality Assurance Program Document* (QAPD), DOE CBFO-94-1012
- *CCP Transuranic Waste Quality Assurance Characterization Project Plan* (QAPjP), CCP-PO-001
- *CCP Transuranic Waste Certification Plan*, CCP-PO-002
- Related ANL-E/CCP Quality Assurance and technical implementing procedures (Attachment 4)

2.2 Purpose

Audit A-03-26 was conducted to assess whether the ANL-E/CCP waste characterization and certification activities for Summary Category Group S3000, homogeneous solid waste, complied with the WIPP HWFP requirements. The assessment included evaluation of the management controls needed for the addition of a service contract with an independent analytical laboratory performing solids sampling and solids analysis services and assessment of the AK confirmation processes implemented for the homogeneous solid waste stream.

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Dennis Miehls	CBFO QA Specialist
Earl Bradford	Audit Team Leader, CBFO Technical Assistance Contractor (CTAC)

Pete Rodriguez	Auditor, CTAC
Priscilla Dugger	Auditor, CTAC
Tammy Bowden	Auditor in training, CTAC
Dick Blauvelt	AK Technical Specialist, CTAC

OBSERVERS

Steve Holmes	Observer – New Mexico Environmental Department (NMED)
Ben Walker	Observer – Environmental Evaluation Group

4.0 AUDIT PARTICIPANTS

A pre-audit conference was held in Carlsbad, NM, in the Skeen-Whitlock Building, Room 237, on August 26, 2003. Daily management briefings were held with CCP and ANL-E management to discuss the progress of the audit and potential deficiencies. The audit was concluded with a post-audit conference held in the Skeen-Whitlock Building in Carlsbad on August 27, 2003. CCP and ANL-E personnel contacted during the audit are identified in Attachment 1.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy and Implementation

The audit was performed to assess the ANL-E/CCP ability to characterize and certify waste from Summary Category Group S3000, homogenous solid waste, to the requirements specified in the WIPP WAP.

The CCP processes assessed were project-level data V&V, reconciliation of DQOs, preparation of the Waste Stream Profile Form (WSPF), and the process for data entry to the WIPP Waste Information System (WWIS).

The audit team concluded that the applicable ANL-E/CCP activities, as described in the associated implementing procedures, satisfactorily meet the requirements contained in the HWFP. Details of audit activities, including specific objective evidence reviewed, are described below and in the attached B6 checklist. The B6 checklist identifies the ANL-E/CCP program documents and procedures in which the requirements of the WAP have been met. Attachment 2 contains examples of the objective evidence that was reviewed during the audit.

A list of ANL-E/CCP procedures evaluated during Audit A-03-26 is provided in Attachment 3.

5.2 Technical Activities

Each technical area audited is discussed in detail in the following sections. The method used to select objective evidence is discussed, the objective evidence used to assess compliance with the WAP is cited briefly (and in detail on the checklist), and the results of the assessments are provided.

The audit team did not identify any conditions adverse to quality (CAQs) that resulted in the issuance of a CBFO corrective action report (CAR). The audit team identified one WAP-related Observation and one WAP-related Recommendation that were offered for CCP management consideration. The Observation and Recommendation are described in Section 6.

5.2.1 Table B6-1 WAP Checklist

The B6-1 WAP checklist addresses program requirements from an overall management perspective. It documents the verification that the waste characterization strategy, as defined in the WAP, is implemented using controlled procedures. Audit A-03-26 was performed to assess the ability of the ANL-E/CCP to complete the AK confirmation processes for final characterization of the ANL-E homogeneous solid waste (S3000). In particular, the BDRs provided by the analytical laboratory related to the solids sampling and solids analysis activities were evaluated and the implementation of the AK confirmation process related to the solids waste stream was evaluated. Objective evidence to evaluate the implementation of the associated characterization activities was selected and reviewed. BDRs and sampling records were included in the evaluations. The audit included evaluation of the records associated with waste characterization activities (such as gas sampling and analysis, RTR, VE, and WWIS data entry). Implementation was verified by review of objective evidence related to:

- The collection of raw data
- The collection of quality assurance/quality control (QA/QC) samples or information
- The reduction of data to a useable format, including standard reports
- The review of reports by the data generation facility and the site project office
- The comparison of the data against Program DQOs
- The reporting of final waste characterization information to WIPP

The flow of data from the point of generation to incorporation on the WSPF for each characterization technique was reviewed to ensure that all applicable requirements were included in the operating procedures.

The ANL-E/CCP demonstrated compliance with the characterization requirements of the WAP by providing documentation of the characterization activities. The following BDRs were reviewed as objective evidence of completion of characterization activities:

- HSG BDRs AEHSG01030403a and AEHSG01030503a
- RTR BDR AERTR025
- VE BDRs AEMover032003a, AEMover031903i, and AEMover031903b

The project-level data V&V process was evaluated by reviewing HSG BDRs, AEHSG01030403a and AEHSG01030503a; VE BDRs, AEMover032003a, AEMover031903i, and AEMover031903b; solids sampling BDRs WCS-0305 and WCS-0306; and solids analysis BDRs ALD03015M, ALD03016M, ALD03011V, ALD03012V ALD03013N, ALD03014N, ALD03011S and ALD03012S. Copies of the BDRs are included in Attachment 2.

During CBFO Audit A-03-13, the AK process and the AK auditable record were reviewed in detail for a Summary Category Group S3000 homogeneous solid waste stream and a S5000 retrievably stored debris waste stream.

The BDRs cited above were also used to demonstrate the confirmation of AK, the reconciliation of DQOs, the preparation of a waste stream profile form (WSPF), and the transmittal of data to WIPP (using the WWIS) for the S3000 homogeneous solid waste stream.

A draft WSPF #AECHHM and summarized characterization information related to it were reviewed to evaluate the objective evidence for reporting waste characterization information to WIPP. The form was completed using information from the various characterization processes. A WSPF will be submitted to CBFO prior to any shipments. The form will be reviewed and approved by the CBFO when the waste stream has been fully characterized and the site is approved to ship waste to WIPP.

The audit teams concluded that these areas were adequate, satisfactorily implemented, and effective. The audit team documented one condition (Observation 1) that, if left uncorrected, could result in a future condition adverse to quality. The Observation identified a situation where Attachment 5 of the AK procedure requires listing hazardous constituents suspected to be present in the waste stream. Several constituents were listed as "not expected," but were detected during solids analysis. The corrections were made to the attachment, but there was no text justifying the original assumptions.

In addition, the audit team offered one Recommendation for improvement of the AK confirmation process. It is recommended that more detail be added to the nonconformance report (NCR) corrective actions and BDRs associated with needed AK changes to more clearly explain the rationale for not updating impacted BDRs and/or explaining why data are not impacted (Recommendation 1).

The Observation and Recommendation are described in Sections 6.1 and 6.2.

5.2.2 Table B6-2 Solids and Soils/Gravel Sampling Checklist

CBFO Audit A-03-13 verified that the ANL-E/CCP characterization processes were adequate to perform the physical characterization of the homogeneous solid waste stream. During this previous audit, the audit team examined the characterization activities, evaluated BDRs for each of the characterization processes, and evaluated the AK documentation associated with the S3000 waste stream. The audit team determined that the implementing procedures and processes were adequate, implemented and effective.

Audit A-03-26 was performed to assess the ANL-E/CCP ability to properly implement the use of the INEEL independent analytical laboratory services, perform sample design and reconciliation of DQOs, and complete the required AK confirmation activities for the homogeneous solid waste stream. The audit team evaluated the ANL-E/CCP incorporation of the INEEL independent analytical laboratory services to provide solids sampling and solids sample analysis and verified the interfaces to ensure that the laboratory data were adequate to complete the waste characterization and AK confirmation processes.

CBFO Audit A-03-15 evaluated the capability of the INEEL independent analytical laboratory being used by the ANL-E/CCP. The INEEL analytical laboratories provide solids sampling and solids analysis services under a CBFO contract and will be certified by CBFO. During the audit of the laboratory, the audit team determined that the S3000 sampling operations (e.g., sample collection, sample chain-of-custody, analytical laboratory sample analysis) were adequate, satisfactorily implemented and effective.

Soils/gravel waste streams were not included in the audit scope; therefore, no Summary Category Group S4000 waste will be characterized for disposal at WIPP until ANL-E/CCP procedures and processes have been audited and accepted by CBFO and a final audit report for those processes has been approved by the NMED.

5.2.3 Table B6-3 Acceptable Knowledge Checklist

Audit A-03-26 was performed to assess the ability of ANL-E/CCP to perform AK confirmation activities and to complete the characterization processes for certification of Summary Category Group S3000, homogeneous solid waste. The CCP processes assessed were project-level data V&V, reconciliation of DQOs, preparation of the WSPF, and the process for data entry to the WWIS.

During CBFO Audit A-03-13, the AK record for solids was examined including relevant AK Source Document references to verify that the AK Summary Report, CCP-AK-ANLE-001, had accurately characterized this waste stream. Confirmatory testing results were also reviewed for all but the solids sampling. Since the confirmatory testing process was assessed as incomplete at that point, the reconciliation of the AK record was indeterminate. Audit A-03-26, based upon project level solids batch data reports for ten containers from this waste stream allowed the auditors to complete

reconciliation of AK. Relevant documentation including all BDRs for 3 containers used for traceability evaluation, a draft WSPF (#AECHHM) and attachments including the CIS and DQO checklist, a draft AK Confirmation checklist, an example of AK confirmation discrepancy resolution and AK reevaluation and a draft AK accuracy report were examined and collected as objective evidence. In conjunction with the traceability assessment, the original waste input forms for the three containers selected, (AE24454, AE24463 and AETD97-0143) were retrieved from records, reviewed and added to the objective evidence list

The procedures used by the ANL-E/CCP to assemble, evaluate, document, and reconcile solids sampling and analysis results were reviewed for adequacy and implementation during the audit.

Reports and records used to document the ANL-E/CCP AK basis were evaluated. Copies of pages used to evaluate the objective evidence are included in Attachment 2. The reports were satisfactory and the records were being properly maintained as QA records. The list of AK documentation reviewed is included in Attachment 2.

The ANL-E/CCP process of using sampling and analysis data to confirm the waste characterization designations made using AK was determined to be satisfactory. The ANL-E/CCP process used to resolve discrepancies and document changes was determined to be satisfactory. Waste characterization designations were confirmed by reviewing the BDRs that provide documentation of the characterization activities.

The AK confirmation processes for the reconciliation of DQOs, and the sample design and data analysis processes are adequate, implemented and effective, with respect to the WAP requirements.

6.0 SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS

6.1 Observations

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 audit team leader (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.

Observation 1

Attachment 5 of CCP-TP-005 lists numerous hazardous constituents and other target analytes. The first column of the attachment is entitled "Suspected Present" and must be answered yes or no. While the justification for adding or not adding hazardous waste numbers (HWNs) is documented in the AK summary report, there is no reference to the decision to expect constituents such as nickel, thallium and beryllium. For the solids waste stream, these constituents were listed as "not expected" and were detected during solids analysis, addressed on the AK confirmation checklist with changes made to Attachment 5. However, there is no text justifying the original assumptions.

6.2 Recommendation

The following WAP-related Recommendation was provided to the ANL-E/CCP management for consideration.

Recommendation 1

RTR BDR AEETR025 contained an NCR issued at the Site Project Manager (SPM) level that changed the TRUPACT-II content (TRUCON) code for the ANL-E solids from AE229 to AE211. The NCR was issued on 3/21/03 and corrective action required correction of the AK summary report. In addition, the AK summary report, CCP-AK-ANLE-001, Rev. 8, reissued on 4/1/03, added a new waste matrix code (WMC) for solids containing cement or Aqua-Set®.

Three VE BDRs initiated during this time and signed off by the SPM on 4/2/03 did not clearly address these changes. The SPM signed them knowing that the data presented would not be impacted. It is recommended that more detail be added to the NCR corrective actions and BDRs associated with needed AK changes to more clearly explain the rationale for not updating impacted BDRs and/or explaining why data are not impacted.

7.0 LIST OF ATTACHMENTS

Attachment 1: Personnel Contacted During the Audit
Attachment 2: Objective Evidence
Attachment 3: Audited ANL-E/CCP Documents/Procedures

PERSONNEL CONTACTED DURING THE AUDIT				
NAME	**TITLE/ORG**	**PRE AUDIT MEETING**	**CONTACTED DURING AUDIT**	**POST AUDIT MEETING**
Becker, David	CCP AKE	X	X	X
Bickerstaff, Sheila	CCP Records Custodian	X		
Billet, Bob	CCP/ANL-E VPM	X		X
Burns, Tim	LANL-CO Mgr	X	X	
Fisher, AJ	CCP Project QA Mgr	X	X	X
Freeze, Debbie	CCP Training Coordinator		X	
Gomez, Christine	CCP SPQAO	X	X	X
Gomez, Paul	CCP SPM	X	X	X
Haar, Dave	CCP Deputy Manager	X	X	X
Harrison, Jeff	CCP AKE	X	X	X
Hedahl, Tim	CCP Manager	X		X
Peters, Kevin	CCP AKE	X	X	X
Porter, Larry	CCP SPM		X	
Rose, Steve	CCP SPM	X	X	X
Sharif, Farok	CCP Manager	X		X

AUDITED ANL-E/CCP DOCUMENTS/PROCEDURES

Number of Documents	Procedure Number/Rev. No.	DOCUMENT TITLE
CCP PROGRAM DOCUMENTS		
1	CCP-PO-007	CCP/ANL-E Interface Document
2	University of Chicago/WTS Contract/Statement of Work	Argonne National Laboratory-East (ANL-E) Statement of Work for Characterization of ANL-E TRU Waste
CCP QUALITY ASSURANCE PROCEDURES		
3	CCP-QP-015	CCP Procurement
CCP TECHNICAL PROCEDURES		
4	CCP-TP-001,	CCP Project-Level Data Validation and Verification
5	CCP-TP-002,	CCP Reconciliation of DQOs and Reporting Characterization Data
6	CCP-TP-003,	CCP Sampling Design and Data Analysis for RCRA Characterization
7	CCP-TP-005,	CCP Acceptable Knowledge Documentation