Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221
December 19, 2002

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

RE: Transmittal of the Audit Report for the Los Alamos National Laboratory Manual Headspace Gas Sampling (A-03-07)

Dear Mr. Zappe:

This letter transmits the Los Alamos National Laboratory Audit Report for the manual headspace gas sampling for subsequent analysis by the Idaho National Engineering and Environmental Laboratory as required by Section II.C.2.c of the WIPP Hazardous Waste Facility Permit. The report contains the results of the audit performed for the manual headspace gas sampling of Summary Category Group S5000 retrievably stored and newly generated CH-TRU debris waste. The Audit was conducted October 29-31, 2002.

I certify under penalty of law that this document and all attachments 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.

Please contact the Carlsbad Field Office Quality Assurance Manager, Ava L. Holland, at (505) 234-7423 should you have any questions concerning this audit report.

Sincerely,

Inés Triay

Dr. Inés R.Triay
Manager

Enclosure

021229

*ED denotes electronic distribution
CBFO:QA:MLC:GS:02-1987:UFC 2300.00

cc: w/o enclosure
A. Holland, CBFO *ED
M. Chism, CBFO *ED
K. Watson, CBFO *ED
J. Kieling, NMED *ED
J. Bearzi, NMED *ED
D. Reber, WTS *ED
T. Bowden, CTAC *ED

cc: w/enclosure
P. Roush, WTS
L. Greene, WTS
C. Walker, Techlaw
CBFO QA File
CBFO M&RC

*ED denotes electronic distribution
CBFO:QA:MLC:GS:02-1987:UFC 2300.00

U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE

FINAL AUDIT REPORT

OF THE

LOS ALAMOS NATIONAL LABORATORY (LANL)

LOS ALAMOS, NEW MEXICO

AUDIT NUMBER A-03-07

October 29 – 31, 2002

Manual Headspace Gas Sampling for Analysis at the Idaho National Engineering and Environmental Laboratory

Prepared By: _____ **Date:** 12/18/02
Wayne Ledford, CTAC
Audit Team Leader

Approved By: _____ **Date:** 12/19/02
Ava L. Holland, CBFO
QA Manager

1.0 EXECUTIVE SUMMARY

Carlsbad Field Office (CBFO) Audit A-03-07 was conducted to evaluate the adequacy, implementation, and effectiveness of obtaining manual samples of headspace gas (HSG) in Summa® canisters and utilizing the Idaho National Engineering and Environmental Laboratory (INEEL) for analytical services.

The audit was conducted at the Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico, October 29-31, 2002. The audit team concluded that overall, the LANL process for obtaining manual HSG samples was adequate relative to the flow-down of requirements from the CBFO Quality Assurance Program Document (QAPD) and the Hazardous Waste Facility Permit (HWFP). The audit team also concluded that overall, the LANL technical processes were satisfactorily implemented and effective.

The audit team identified one isolated deficiency requiring only remedial corrective action that was corrected during the audit (CDA). The audit resulted in two Observations, and one Recommendation was offered for management consideration.

2.0 SCOPE

The scope of the audit was to evaluate the adequacy, implementation, and effectiveness of obtaining manual samples of HSG in Summa® canisters and utilizing the INEEL laboratory for analytical services. Compliance with the WIPP HWFP Waste Analysis Plan (WAP) and selected portions of the CBFO QAPD was also evaluated.

The following quality assurance (QA) elements were evaluated:

- Personnel Qualification and Training
- Procurement
- Document Control

The following characterization technical elements were evaluated:

- HSG Sampling and Analysis
- Project-level Data Verification and Validation

The evaluation of LANL documents was based on the current revisions of the following documents:

- *CBFO Quality Assurance Program Document*, CAO-94-1012
- WIPP *Hazardous Waste Facility Permit*
- Related LANL technical and QA implementing procedures

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Wayne Ledford	Audit Team Leader, CTAC
Steve Calvert	Auditor, CTAC
Dorothy Gill	Technical Specialist, CTAC

OBSERVERS

Steve Holmes	New Mexico Environment Department (NMED)
Kevin Krause	NMED
Judith Youngman	Environmental Evaluation Group (EEG)

4.0 AUDIT PARTICIPANTS

LANL personnel participating in the audit process are identified in Attachment 1. A pre-audit meeting was held in the Oppenheimer Building on October 29, 2002. A daily meeting was held with LANL management and staff to discuss issues and potential deficiencies. The audit was concluded with a post-audit meeting held in the Oppenheimer Building on October 31, 2002.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy, Implementation, and Effectiveness

The audit team concluded that overall, the LANL technical and QA procedures continue to be adequate relative to the flow-down of requirements from the CBFO QAPD and the HWFP. The audit team also concluded the LANL technical processes were satisfactorily implemented and effective.

The audit team concluded that the defined LANL QA program elements reviewed were adequate and satisfactorily implemented in accordance with the LANL Quality Assurance Program Manual (QAMP), the LANL Quality Assurance Project Plan (QAPjP), and LANL implementing procedures for the areas evaluated. The LANL QA program was also determined to be effective. For details of CARs, CDAs, Observations, and Recommendations, see Section 6.

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 and contained in Attachment 3, and the results of the assessments are provided.

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 by using controlled procedures. This audit was performed to assess LANL's ability to manually sample the headspace of S5000 contact-handled, retrievably stored, and newly generated heterogeneous debris waste. Objective evidence to evaluate the implementation of the associated characterization activities was selected and reviewed. Batch data reports, sampling records, and training documentation for TRU Waste Characterization Program (TWCP) personnel were included in the evaluation. The audit included direct observation of actual waste characterization activities (HSG sampling). Each characterization process involves:

- Collecting raw data
- Collecting quality assurance/quality control (QA/QC) 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 data quality objectives (DQOs)
- Reporting the final waste characterization information to the WIPP

The scope of Audit A-03-07 was limited to manual HSG sampling and the installation of the NucFil® sample port. The focus of the B6-1 checklist was the verification that LANL had integrated the manual HSG sampling process and the receipt of analytical information from INEEL into their existing processes. Items on the B6-1 checklist that are unaffected by the new sampling process are marked "NA."

During the audit, LANL demonstrated compliance with the characterization requirements of the WAP through documentation and by performing the characterization activities. LANL provided documentation to support compliance with the WAP. Copies of the documents reviewed are provided in Attachment 3. Documents reviewed included HSG batch data reports LA02-HGAS/IS-001, LA02-HGAS/IA-001, LA02-HGAS/IS-003, and LA02-HGAS/IA-003 (data review of sampling and gas analytical batch information).

The batch data reports reviewed and the processes observed were found to be acceptable.

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

LANL is currently not certified to characterize homogeneous solid or soil/gravel waste streams. These processes were not audited during A-03-07.

5.2.3 Table B6-3 Acceptable Knowledge Checklist

The acceptable knowledge (AK) processes at LANL were not evaluated during Audit A-03-07. The AK processes are not changed as a result of obtaining manual HSG samples for analysis at the INEEL.

5.2.4 Table B6-4 Headspace Gas Checklist

Direct canister HSG sampling and associated activities were reviewed during the audit. The activities audited were documented in the following procedures:

- TWCP-DTP-1.2-074, *Manual Headspace Gas Sampling of LANL TRU Waste Containers for Analysis by INEEL*
- TWCP-DTP-1.2-075, *Headspace Gas Sampling Batch Data Report Preparation (INEEL)*
- TWCP-QP-1.1-043, *TWCP Receipt from INEEL of LANL Headspace Gas Analysis Data Reports*
- TWCP-QP-1.1-040, *Tracking and Reporting of TICs*
- TWCP-DTP-1.2-038, *HGAS Filter Removal & Replacement*
- TWCP-DTP-1.2-069, *Installation of the NucFil HGAS Sample Port*

Operators were knowledgeable with regard to their sampling duties, and the sampling processes were well organized. Batch data report generation and data validation processes were sufficiently comprehensive to meet all WIPP WAP requirements, and were well coordinated.

Successful installation of a sample port was observed during the audit. Review of QP-040, *Tracking and Reporting of TICs*, was limited because LANL has not identified a tentatively identified compound (TIC) in the samples processed to date.

The areas of manual HSG sampling and sample port installation were determined to be adequate, satisfactorily implemented, and effective.

5.2.5 B6-5 Radiography Checklist

Radiography was not included in the scope of Audit A-03-07.

5.2.6 B6-6 VE Checklist

Visual examination was not included in the scope of Audit A-03-07.

6.0 CORRECTIVE ACTION REPORTS (CARs), CORRECTED DURING THE AUDIT (CDAs), OBSERVATIONS, AND RECOMMENDATIONS

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

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

Significant Condition Adverse to Quality – 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.

6.1 Corrective Action Reports (CARs)

No WAP-related CARs were initiated as a result of Audit A-03-07.

6.2 Corrected During the Audit

During the audit, the audit team may identify conditions adverse to quality (CAQ). The audit team members and the audit team leader (ATL) evaluate the CAQs to determine if they require a CAR. Once a determination is made that the CAQ does not require a CAR, the audit team members, in conjunction with the ATL, determine if the CAQ is an isolated case requiring only remedial action and, therefore, can be corrected during the audit (CDA). Upon determination that the CAQ is isolated, the audit team members, in conjunction with the ATL, evaluate/verify any objective evidence/actions submitted or taken by the audited organization and determine if the condition was corrected in an acceptable manner. Once it has been determined that the CAQ has been acceptably corrected, the ATL categorizes the condition as CDA.

Condition Adverse to Quality (CAQ) – Term used in reference to failures, malfunctions, deficiencies, defective items, and nonconformances.

Corrected During the Audit (CDA) – Isolated deficiencies that do not require a root cause determination or actions to preclude recurrence, and for which correction of the deficiency can be verified prior to the end of the audit

One WAP-related isolated deficiency, requiring remedial action only, was identified during the audit. This was corrected and verified before the completion of the audit. A description of this item and its resolution is given below.

6.2.1 CDA 1

LANL issued a letter to INEEL directing that samples be released after analytical activities have been completed. The WAP requires that samples can only be released after the Site Project Manager (SPM) has determined the data are acceptable (Ref. WAP B3-10b(3)). LANL issued revised instructions to INEEL during the audit.

6.3 Observations

The following WAP-related observation was identified by the audit team as an area of concern that was not yet an actual deficient condition, but which raises the probability of a future deficiency if not corrected.

6.3.1 Observation 1

The statement of work (SOW) from INEEL requires sample results to be supplied to LANL within two weeks of sample analysis completion. The results of the analysis were received by LANL approximately two months after the analyses were complete (Ref. SOW, R1, S3.6). The audit team recommends that the SOW be reviewed to remove unnecessary requirements. The timing of receipt of analysis results does not impact compliance with WIPP requirements.

6.3.2 Observation 2

The instructions for the chain-of-custody forms used in manual HSG sampling requires that the "sampling crew" print and sign their names in the space for "samplers." Sampling personnel were not sure what constituted the sampling crew. The term "sampling crew" should be defined in the procedure. In the batch data reports reviewed, it appeared that all samplers involved had signed appropriately.

6.4 Recommendations

The following Recommendation was provided for LANL management consideration.

6.4.1 Recommendation 1

The ultrasonic micrometer used for determining drum lid thickness prior to installation of the sample port is checked using a certified metal strip (0.0625 inch thick). The acceptance tolerance for the instrument reading is not provided in the procedure. The audit team recommends that LANL enhance the daily calibration check instructions in the procedure. The micrometer is not used to perform a measurement that impacts compliance with WIPP requirements.

7.0 LIST OF ATTACHMENTS

Attachment 1: Personnel Contacted During the Audit
Attachment 2: Corrective Action Supporting Documentation
Attachment 3: Objective Evidence
Attachment 4: Audited LANL Implementing Procedures

PERSONNEL CONTACTED DURING AUDIT A-03-07

NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Anghel, Ioana	LANL/RRES-AT		X	X
Ankrom, James	LANL/NOC			
Baker, Michael	LANL/NDA-NDE			X
Baker, Shannon	LANL/QA	X		X
Bentley, Jessica	LANL/RRES-AT/SPQAO Staff		X	
Burt, Jean	LANL/RRES-AT/SPQAO Staff		X	
Coriz, Suzanne	LANL/RRES-AT	X		X
DelSignore, J.C.	LANL/Deputy Project Manager	X		
Fernandez, Ruby-Ann	LANL/Training Coordinator		X	
Gavett, Marji	LANL/RRES-AT/SPQAO		X	
Hardesty, Bill	LANL/HSG	X		X
Hartwell, Ware	LANL/RRES-AT Cert			X
Humphrey, Betty	LANL/SPM	X	X	
Lin, Mavis	LANL/SPM		X	X
Lindahl, Peter	LANL/SPM		X	X
Lucero, Fabi	LANL/RRES-AT/Records Coordinator		X	
Marczak, Stanislaw	LANL/RRES-AT		X	
Martin, Beverly	LANL/RRES			X
Ortega, Laura	LANL/RRES-AT HSG	X	X	
Polley, Mark	RRES-AT/TCO		X	

NAME	ORG/TITLE	PREAUDIT MEETING	CONTACTED DURING AUDIT	POST AUDIT MEETING
Romero, Bobby	RRES-AT/Technician		X	
Romero, Myrna	RRES-AT/Team Leader		X	
Saunders, Lori	LANL/QA	X	X	X
Souza, Larry	LANL/QA		X	
Sullivan, Jeri	LANL/HSG	X		X
Valdez, Joseph	RRES-AT/Technician		X	
Velarde-Lashley, Karen	LANL/RRES-AT HSG	X	X	

ATTACHMENT 1
PERSONNEL CONTACTED DURINGTHE AUDIT BY AREA

Headspace Gas Sampling and Analysis	I. Anghel L. Ortega L. Souza B. Hardesty M. Lin S. Marczak J. Sullivan K. Velarde-Lashley
NucFil® Sample Port Installation	J. Ankrom M. Polley B. Romero J. Valdez
Verification and Validation	P. Lindahl M. Lin L. Souza F. Lucero B. Humphrey J. Burt J. Bentley M. Gavett
Training	R. Fernandez

PROCEDURES AUDITED DURING A-03-07

NUMBER	PROCEDURE NUMBER	TITLE
1.	QP-1.1-010	Project Level Data Validation and Verification
2.	DTP-1.2-006	Calculation of UCL90 Values
3.	DTP-1.2-064	Waste Characterization Data Reconciliation with AK
4.	DTP-1.2-038	HGAS Filter Removal & Replacement
5.	QP-1.1-040	Tracking and Reporting of TICs
6.	DTP-1.2-069	Installation of the NucFil HGAS Sample Port
7.	DTP-1.2-074	Manual Headspace Gas Sampling of LANL TRU Waste Containers for Analysis by INEEL
8.	DTP-1.2-075	Headspace Gas Sampling Batch Data Report Preparation (INEEL)
9.	QP-1.1-043	TWCP Receipt from INEEL of LANL Headspace Gas Analysis Data Reports
10.	QP-1.1-003	TWCP Training