

United States Government

Department of Energy

**memorandum**Carlsbad Area Office  
Carlsbad, New Mexico 88221

DATE: September 5, 1997

REPLY TO  
ATTN OF: CAO:NTP:RAS 97-1857 UFC 2300


SUBJECT: CAO Audit Report A-97-07

TO: Bruce LeBrun, LAAO

The Carlsbad Area Office (CAO) conducted an audit of your Quality Assurance (QA) Program for TRU waste characterization and certification activities in Los Alamos, New Mexico, on August 18-22, 1997. The audit team determined that the implementation of the LANL QA Program was adequate, satisfactorily implemented, and effective.

As a result of the audit, five Corrective Action Reports (CARs) were issued and three Observations and two Recommendations were identified. Observations do not require a written response. The CARs were transmitted to LANL under a separate letter.

If you have any questions or comments concerning this report, please contact Butch Stroud at (505) 234-7483.



Don Watkins  
Manager  
National TRU Program

## Attachment

## cc w/attachment:

D. Brown, CAO  
K. Hunter, CAO  
R. Stroud, CAO  
R. Paedon, CTAC  
D. Winters, DNFSB  
B. Walker, EEG  
M. Eagle, EPA  
J. Oliver, EPA  
M. Gavett, LANL  
P. Rogers, LANL  
✓ S. Zappe, NMED  
C. Wentz, NMEM&NR  
CAO QA File



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U.S. DEPARTMENT OF ENERGY  
CARLSBAD AREA OFFICE

AUDIT REPORT

OF THE

LOS ALAMOS NATIONAL LABORATORY  
LOS ALAMOS, NEW MEXICO

AUDIT NUMBER A-97-07

AUGUST 18 - 22, 1997

TRU WASTE CHARACTERIZATION,  
CERTIFICATION AND TRANSPORTATION PROGRAM



Prepared By: R. Dennis Brown Date: 8/29/97

R. Dennis Brown  
Audit Team Leader

Approved By: Samuel Up for R.D. Brown Date: 9/3/97

R. Dennis Brown  
CAO QA Manager

Approved By: Robert A. Stroud Date: 9/3/97

Robert A. Stroud  
CAO NTP Certification Manager

## 1.0 EXECUTIVE SUMMARY

Carlsbad Area Office (CAO) Audit A-97-07 was conducted to evaluate the adequacy, implementation, and effectiveness of Los Alamos National Laboratory (LANL) transuranic (TRU) waste characterization, certification, and transportation activities. In addition, the audit scope included verification of the completion and effective implementation of corrective actions for previously identified conditions adverse to quality.

The audit was conducted at the LANL facilities in Los Alamos, New Mexico on August 18 through 22, 1997. The audit team concluded that the QA program was being satisfactorily implemented in accordance with LANL procedures corresponding to the scope of this audit. The team determined that the implementing procedures are adequate, except for the specific deficiencies noted in Section 6. The overall LANL technical program was also determined to be effective. The audit team also verified implementation of ten previous CAO Corrective Action Reports (CARs). The audit team concluded that the corrective actions for nine of the CARs (97-049, and 97-051 through 97-058) were effective. Corrective action for one other CAR (96-050), in the area of acceptable knowledge for radionuclide ratios, was not verified as fully effective.

The audit team identified five additional CARs that require corrective actions in the areas of the assignment of hazardous waste numbers; organizational independence; procedure implementation; the acceptable knowledge (AK) process; and software documentation. Thirteen deficiencies, isolated in nature and requiring only remedial corrective actions, were corrected during the audit (CDA). Three observations and two recommendations are provided for management action and consideration. The audit team noted four exemplary practices being performed by LANL personnel. The CARs, CDAs, observations, recommendations, and exemplary practices are described in Section 6.0 of this report.

## 2.0 SCOPE

The audit scope included evaluation of the adequacy, implementation, and effectiveness of the technical and quality assurance activities related to the LANL TRU waste characterization, certification, and transportation programs. The audit emphasized evaluation of the technical and quality assurance activities that had not been fully implemented during the May 1997 audit (A-97-01), and the effectiveness of corrective actions taken as a result of deficiencies identified during that audit.

The following CAO QAPD elements were evaluated:

- Organization/QA Program Implementation
- Personnel Qualification and Training

Quality Improvement  
Documents and Records  
Work Processes  
Procurement  
Testing  
Assessments  
Sample Control  
Data Documentation, Control, and Validation  
Software Requirements

The following CAO Characterization (QAPP) technical elements were evaluated:

Acceptable Knowledge (AK)  
Sampling  
Testing - Non-Destructive Assay (NDA)  
Analysis - Headspace Gas  
Data Validation and Usability

The following CAO Transportation (TRAMPAC) technical elements were evaluated:

Inspection of Packaging  
Preparation and Loading  
Shipping  
Package Maintenance  
Documentation and Records

The adequacy evaluations of LANL TRU Waste Characterization Program (TWCP) documents were based on current revisions of the following documents:

CAO Quality Assurance Program Document, CAO-94-1012

Transuranic Waste Characterization Quality Assurance Program Plan,  
CAO-94-1010

Waste Acceptance Criteria for the Waste Isolation Pilot Plant, DOE/WIPP-069

Safety Analysis Report (SARP) for TRUPACT-II Shipping Package Appendix  
1.3.7, TRAMPAC and the TRUPACT-II Certification of Compliance, NRC 71-  
9218

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

LANL Transuranic Waste Quality Assurance Project Plan, TWCP-PLAN-0.2.3

LANL Transuranic Waste Certification Plan, TWCP-PLAN-0.2.4

Related LANL technical and quality assurance implementing procedures

CAO Corrective Action Reports (CARs) 97-049 through 97-058 from CAO Audit A-97-01

### **3.0 AUDIT TEAM AND OBSERVERS**

#### **AUDITORS/TECHNICAL SPECIALISTS**

|                  |   |
|------------------|---|
| R. Dennis Brown  | CAO QA Manager, Audit Team Leader               |
| Robert A. Stroud | CAO Certification Manager, Technical Specialist |
| Robert Paedon    | Auditor, Audit Coordinator/CTAC                 |
| Sam Vega         | Auditor/CAO                                     |
| Steve Calvert    | Auditor/CTAC                                    |
| Pete Rodriguez   | Auditor/CTAC                                    |
| Ava Holland      | Auditor/CTAC                                    |
| Sid Ailes        | Auditor/Technical Specialist/CTAC               |
| Jim Bresson      | Technical Specialist/CTAC                       |
| R. Vann Bynum    | Technical Specialist/CTAC                       |
| Clint Kelley     | Technical Specialist/WID                        |

#### **EPA INSPECTION TEAM**

Mike Eagle, EPA  
Kyle Rogers, EPA  
John Goode, A.T. Kearney  
Donald Hammer, ICF Kaiser  
Paula Hugo, A. T. Kearney  
Patrick Kelley, S. Cohen & Associates  
Julie Shanahan, A. T. Kearney  
Ray Wood, A. T. Kearney

## **OBSERVERS**

Steve Zappe, NMED  
Tom Tatkin, NMED  
Steve Yanicak, NMED  
Chris Wentz, ENMRD  
Ben Walker, EEG  
Bill Weston, WID  
Mike Simpson, CTAC

## **4.0 AUDIT PARTICIPATION**

LANL individuals involved in the audit are listed in Section 3.0 and Attachment 1. A pre-audit meeting was held at LANL TA48, Building 29 on August 18, 1997. Daily briefings were held with LANL management and staff to discuss issues and potential deficiencies. The audit concluded with a post-audit meeting at the same location on August 22, 1997.

## **5.0 SUMMARY OF AUDIT RESULTS**

### **5.1 Program Adequacy, Implementation, and Effectiveness**

The audit team concluded that the QA program was being satisfactorily implemented in accordance with LANL procedures. The team determined that implementing procedures are adequate, except for specific deficiencies noted in Section 6. The overall LANL technical program was determined to be effective. The audit team also verified LANL corrective actions for ten previous CAO CARs. The audit team concluded that the corrective actions for nine CARs (97-049, and 97-051 through 97-058) were effective. Corrective action for one other CAR (96-050), in the area of acceptable knowledge for radionuclide ratios, was determined to be not fully effective.

### **5.2 QA Program Audit Activities**

A summary table of audit results is provided as Attachment 2. Details of audit activities, along with the specific objective evidence reviewed, are contained within the audit checklists. The checklists are maintained as QA Records.

## **Technical Activities**

### **5.3.1 Acceptable Knowledge**

The Acceptable Knowledge relevant to WIPP at LANL was reviewed. This review included the evaluation of the "Acceptable Knowledge Summary Report for TA-55-20A" for the ability of an independent, technically qualified person to arrive at the same conclusions and for the traceability of the roadmap and its supporting documentation. During the traceability portion of the evaluation, 14 documents were reviewed and it was determined that there is adequate traceability of the information utilized in the AK Summary Report. The AK process was determined not to be consistent with the requirements of the QAPP with respect to the assignment of EPA hazard codes, nor did the AK summary report identify the presence of other radionuclides (e.g. Np) despite the AK supporting documentation identifying their potential presence (see Observation #2 for details). Sufficient documentation to justify the waste as being generated by atomic energy defense activities was not initially available, but was presented during the interview (see Observation #3 for details). Additionally, the Reconciliation of Waste Stream Information (TWCP-QP-1.1-028) was found to be deficient which led to the omission of required data. Despite the cited deficiencies, the LANL AK process has significantly improved since the previous audit. The audit team determined that LANL has a marginally effective AK process established and implemented (see CAR 97-114 and 97-117, CDA 11, and Observation 2 and 3).

### **5.3.2 Nondestructive Assay**

LANL has proposed the use of a gamma scanning method, Fixed Response Functional Analysis With Multiple Efficiencies (FRAM), for determining the isotopic ratios of radionuclides in TRU waste drums. Data generated by the FRAM process will then be fed into the Passive-Active Neutron (PAN) assay process to quantify the radionuclide content and characterize the waste. The audit team observed a demonstration of the FRAM process and evaluated the interface of the FRAM data with the PAN data process. The team concluded that, although the FRAM process is capable of measuring and assigning ratios to the specific isotopes of Plutonium (Pu) and Americium (Am) of interest, the process was not fully effective for its intended use.

Three general areas of concern were identified during the demonstration; 1) the process was not being performed exactly as described in the procedure and the procedure did not contain sufficient instructions on the set up of FRAM equipment and associated shielding; 2) the demonstrated method was performed on stationary drums with a fixed detector position (relative to the drums) based on the assumption that the mix of radioisotopes is relatively homogeneous within each drum. The demonstration

showed that the rotation of the drum effected the indicated ratio of Am, therefore, the original assumption may not be valid; 3) although the FRAM detects and "flags" the presence of other radionuclides (e.g. Neptunium [Np] and Uranium [U], the process is not currently designed to assign ratios with these radionuclides present.

Based on results of the demonstration, the audit team concluded that the effectiveness of the FRAM process used to assign isotopic ratios to waste drums was indeterminate (see CAR 97-116 from this audit and CAR 97-050 from CAO Audit A-97-01).

### **5.3.3 Software**

The adequacy and effectiveness of the software quality assurance (SQA) program was evaluated for the control of software used for analysis, measurement, and data management activities. The evaluation included review and inspection of software classification, code development, configuration control, access control, security control, and verification and validation activities. At the time of the evaluation, approved baselines were in place for software used for radioassay and chemical assay activities and verification and validation activities were complete. Code development activities were still in progress for the WIN\_TGS database software. Review of the draft WIN\_TGS requirement specification, design specification, verification and validation plan, implementation document, validation document, and the user's manual indicated that code development activities had been adequately controlled.

Based on the evaluation, controls for software classification, configuration management, system access, and computer security activities were determined to be effective and satisfactorily implemented. However, the required evaluation of existing or commercial-grade software for use in radioassay measurements was not effectively implemented. Methods for planning and performing validation activities for commercial-grade software were not effective in assuring that test results demonstrate acceptable performance. Although extensive verification tests were performed as part of the installation, the evaluation and installation documentation did not always provide sufficient requirements, test cases, or acceptance criteria to fully validate the radioassay software for its intended use (see CAR 97-113 and CDA 7).

### **5.3.4 TRANSPORTATION**

LANL has not yet certified a WIPP payload for shipment. However, the audit team was able to review transportation procedures and activities in simulated demonstrations. The review included the full scope of transportation activities, i.e.; TRUPACT-II payload, TRUPACT-II maintenance, preparation of a simulated Hazardous Waste Manifest, demonstration of the processes to be used to implement procedure and



records requirements, and training certification of personnel performing critical activities.

Transportation processes were determined to be effective. Two (2) isolated deficiencies were corrected during the audit (see CDA 5 and 10, and Recommendation 1).

### **5.3.5 Head Space Gas and UCL-90 Analysis**

Head space gas report #LA 97-331-004 was reviewed as a follow up to CAR 97-049. The audit team determined that the report was technically satisfactory and in accordance with procedural requirements. The audit team also reviewed the UCL-90 calculations, report number TA-55-20A, dated 8/15/97, and interviewed key personnel regarding report content. The team identified isolated deficiencies, but concluded that the process was effective, that the report contained the required information, and that it was prepared in accordance with quality procedure, QP-1.1-028 (see CDA 4 and 9).

## **6.0 CORRECTIVE ACTIONS, OBSERVATIONS & RECOMMENDATIONS**

The audit team identified eighteen deficiencies, requiring the issuance of five Corrective Action Reports. Thirteen deficiencies that were isolated in nature and required only remedial action were corrected during the audit (CDAs).

The Corrective Action Reports are summarized below. The CARs have been transmitted under separate letter.

### **6.1 Corrective Action Reports**

#### **CAO CAR 97-113**

Evaluations of software qualification documentation for NDA processes (PC/FRAM v2.3, PAN v1.0 and MAESTRO v3.00) determined that the documents did not define sufficient requirements, test cases, or acceptance criteria to validate the software for its intended use. In addition, software requirements, test cases, and test results did not fully demonstrate the ability of the FRAM and PAN software to support measurement of the total alpha activity of all individual isotopes present.

#### **CAO CAR 97-114**

Based on a review of (one) Acceptable Knowledge Summary Report for waste stream TA55-20A.001, hazardous waste numbers were not assigned consistent with the QAPP requirements.

#### **CAO CAR 97-115**

QA management functions are not sufficiently independent. The TWCP organization chart, dated 8/18/97, indicates that the same two individuals report functionally to the Site Project Manager (Database Data Flow) and to the Site QA Officer (Software QA). Also, the Operations Leader for NDA is performing the Level 1 QA review of FRAM data. Based on a review of completed FRAM data packages, the same individual is performing data reduction activities for the FRAM system.

#### **CAO CAR 97-116**

During the observation of FRAM system operations, it was determined that the technical procedure was not being implemented as stated. Also, the procedure did not include some necessary instructions.

#### **CAO CAR 97-117**

Based on a review of the acceptable knowledge data packages, checks of radioassay data to distinguish between TRU and low-level radioactive waste were not performed as required. Sampling and analysis data were in the package, but the results of the review were not documented and the radioassay data check was not listed in the DQO checklist.

Also, documentation of the review of the gas sampling and analysis data to ensure that the concentrations of flammable gases meet the flammability and waste acceptance criteria was not available. Data to perform such a review were in the package, but the results of the review, if performed, were not documented nor listed in the DQO checklist.

### **6.2 Deficiencies Corrected During the Audit (CDA)**

Deficiencies considered isolated in nature and requiring only remedial action may be corrected and verified during an audit. The following thirteen deficiencies were corrected by LANL and verified by the audit team during the audit:

1. LANL has instituted "Walk-Around" management assessment reports as part of the overall management assessment process for the TWCP. Results of management walk-arounds are recorded on reports (observation cards). However, the reports did not contain "time" of walk around nor "group code" as required by procedure (QP-1.1-033). Blank forms were revised to include fields for time and group code, and completed reports were revised to include the required information.
2. The audit team reviewed and evaluated the procedure for management assessments, QP-1.1-033. Based on a review of assessment activities, the team determined that the QP had some problems with missing procedural steps, and that the word "may" had been used in several places where "shall" should have been used. The procedure was revised to correct these problems where appropriate.
3. Based on a review of two extension requests for corrective actions (both involving the same CAR), the audit team determined that the QA manager had been both generating and approving the extension requests. The procedure, QP-1.1-008, requires that the SPM or Operations Leader request an extension, and the QA manager approve the extension request. During the audit, LANL generated nonconformance report (NCR) #97-051 to identify and resolve the concern. The NCR was resolved by generating and approving one new extension request.
4. Based on a review of the one completed UCL-90 calculations package, the audit team determined that the UCL-90 gas analysis documentation was not being performed in accordance with the procedure. For example, a summary sheet was not attached to the report and the Excel spreadsheet format was not as specified by the procedure. In addition, the technical procedure for UCL-90 analysis, DTP-1.1-006, did not require independent review of the calculation packages. The procedure was revised to address each of the concerns.
5. Based on a review of one simulated Payload Certification Transportation Data Package (PCTCD), error calculations for the PCTCD (using simulated data) were performed incorrectly. Calculations were made by hand and the results of the calculations were not verified as required. To address the problem, LANL developed a spreadsheet that automatically performs the calculations and flags any out-of-bounds results. An Interim Change Report (ICR) was issued to the technical procedure, DTP-1.2-034 to address the use of this spreadsheet.
6. During the demonstration of activities performed in accordance with technical procedures DTP-1.2-034 and -035, the audit team determined that waste and

transportation certification statements were identified as QA records. However, these statements were not identified as such in the quality procedure (QP-1.1-004) for records management. Therefore, record retention requirements for waste and transportation certification statements were not defined. During the audit, an ICR was issued to QP-1.1-004 that identified the statements as records and identified the retention information.

7. The audit team reviewed software classifications, requirements checklists, installation and checkout activities, change control documentation, and documentation review records for seven software baselines. Based on review of 28 packages, the audit team found three minor discrepancies in completed forms; block 9 on the change control form for PC/FRAM v2.2 was not checked, block 18 on the installation and checkout form for EnviroQuant was not completed, and block 13 on the requirements checklist for PC/FRAM v2.2 was incomplete on one of two record copies. LANL made the necessary corrections.
8. Based on a review of one report, the audit team found that portions of the LANL Acceptable Knowledge Summary Report were not legible. This report is a QA record. QP-1.1-004 requires that records be legible and clearly identified. Illegible pages of the report that were not readable were replaced.
9. During the review of UCL-90 analysis technical procedure, DTP-1.2-006, the audit team discovered a handwritten letter attached to the procedure stating that the procedure was not implemented as required. The letter documented the procedure deviation and was signed by the Program Manager. No NCR had been generated identifying the deficiency. LANL issued NCR #97-054 and the procedure was subsequently revised to comply with the process being used.
10. The audit team observed the TRUPACT-II Adjustable Center of Gravity Lift Fixture operation. During power-up of the equipment, the audit team determined that the procedural steps of the technical procedure (DTP-1.2-032) could not be performed in the sequence specified. An ICR was issued to change the steps to the correct order and clarify the wording of the startup sequence. The audit team verified the procedure change and observed the procedure performed in the correct sequence.
11. Based on a review of one report, the audit team determined that Attachment 2 in the Acceptable Knowledge Summary Report for TA-55-20A did not include TRUCON codes for all of the drums, as required by procedure. Quality procedure QP-1.1-021 requires that the actual TRUCON code be assigned to the waste container at the time of

- packaging or the code be assigned using acceptable knowledge. The TRUCON codes were properly assigned during the audit.
12. Based on a review of documentation for four procurements, the audit team determined that some of the documentation required by quality procedure QP-1.1-005 was not being placed in the Document Center in a timely manner. Section 7.0 of the procedure requires records to be maintained by the Records Management Document Center (RMDC). At the time of the audit, the records had not been placed in the RMDC for procurements made several months prior. The required and acceptable documents were gathered from other locations and placed in the Document Center during the audit.
  13. Based on a review of procurement practices, the audit team determined that quality procedure QP-1.1-005 did not clearly address all approved methods for procurement of items for the TWCP. The procedure appeared to require a purchase requisition (PR) for each procurement and did not clearly point to the alternate process for procurements using credit cards and "just-in-time" methods. The audit team identified one procurement, that had been placed using a credit card, that did include a completed PR. An ICR was issued to the quality procedure to incorporate and clarify the credit card and just-in-time methods of procurement.

### **6.3 Observations**

The following three Observations resulted from the audit and are presented to LANL management for consideration. No written response to these Observations is required of LANL.

1. Several individuals within the TWCP are performing numerous job functions with limited backup. Examples included the Transportation Certification Official who performs five different functions in the transportation processes, and the Site Project Manager who doubles as the acceptable knowledge specialist. TWCP management needs to ensure that adequate resources and backups are trained and qualified to support the TRU waste program.
2. The Acceptable Knowledge Summary Report reviewed by the audit team did not identify the presence of some radionuclides (e.g. Np). AK supporting documents (TWCP-353) had identified the potential presence of Np in the process streams that had generated the waste. The program should develop more thorough methods for evaluating potentially available and including the results in the reports.

3. The audit team determined that there is not sufficient documentation available to support a determination that the waste is "defense related". The program needs to provide documentation that the generated TRU waste meets the definition of defense related in accordance with CAO interim guidance, issued 2/18/97.

#### **6.4 Recommendations**

The following two recommendations resulting from the audit are presented for LANL management consideration:

1. Based on a review of drum preparation activities, the audit team determined that aspiration is being performed on all drums, not only unvented retrievable stored drums. It is recommended that TWCP management consider whether program resources should be expended to aspirate vented retrievably stored drums in addition to the unvented retrievable stored drums.
2. Technical procedure DTP-1.2-014 does not identify differences between debris and homogeneous waste streams when obtaining random samples and locations. It is recommended that the procedure be revised to identify differences in the random sampling steps pertaining to debris and homogeneous waste streams and to ensure that the procedure is clear on the method to be applied to a specific type of waste stream.

#### **6.5 Exemplary Practices**

1. The Waste Certification Official has established a certification data book. The book contains all data needed for the certification and transportation officials to make their certification statements.
2. The Management Assessment process exceeds CAO requirements and can serve as an example for the entire WIPP program.
3. The audit team identified a problem with the completion of Waste Certification Checklists. This item was corrected in a very timely manner during audit. An ICR for TWCP-DTP-1.2-033 was issued to add document references to the appropriate checklist.
4. The new training process (implemented since CAO audit A-97-01 in May 1997) for TWCP personnel now includes a short quiz for "read only" training assignments. This is an effective way to ensure that the most important information is read and understood by trainees.

## **7.0 LIST OF ATTACHMENTS**

- Attachment 1: Personnel Contacted During the Audit
- Attachment 2: Summary Table of Audit Results

| NAME                | ORGANIZATION                          | A | B | C |
|---------------------|---------------------------------------|---|---|---|
| Bacicalupa, Gian    | LANL/ESH-19                           |   | X |   |
| Baros, Ricky        | LANL/CST-7                            |   | X | X |
| Beckstead, Leo      | LANL/CST-7                            | X | X |   |
| Berger, Michael     | LANL/EMPO                             | X |   |   |
| Chen, J-Li          | EM-SWO                                |   | X |   |
| Costigan, Steve     | LANL/ESH-1                            | X |   |   |
| Fresquez, Chris     | LANL/Procurement                      |   | X |   |
| Foxx, Charles L.    | LANL/NMT-7                            |   |   | X |
| Foxx, Jim           | LANL                                  |   | X |   |
| Frostenson, Carl    | LANL/AA-Z                             | X |   | X |
| Gavett, Marji       | LANL/CST-7                            | X |   | X |
| Gonzales, Bobby     | LANL/CST-7                            |   | X |   |
| Harper, Johnny      | LANL/CST                              |   |   | X |
| Janecky, David      | LANL/SQA SCM                          |   |   | X |
| Jung, Kathie        | EM-SWO                                |   | X |   |
| LeBrun, Bruce       | DOE/LAAO                              | X | X | X |
| Leibman, Chris      | LANL/Operations Leader                | X | X | X |
| Lucero, Fabiola     | LANL/CST-25                           |   | X | X |
| Mack, Jon           | DOE LAAO                              | X |   | X |
| Martinez, David V.  | LANL/CST-12                           |   | X |   |
| Martinez, Flavio    | LANL/CST-7                            |   | X | X |
| Martinez, Rick      | EM-SWO                                |   | X |   |
| Mitchell, Martha    | EM-SWO                                |   | X |   |
| Montoya, Andrew J.  | LANL/NMT-7                            |   |   | X |
| Mroz, Gene          | LANL                                  |   |   | X |
| Padilla, Michelle   | LANL/CST-7                            |   | X | X |
| Pothes, Harold      | LANL/CST-7                            |   | X |   |
| Rael, Charles       | LANL/CST-7                            |   |   | X |
| Robbins, Scott      | LANL/CST-25/Training Coord.           |   | X | X |
| Rogers, Pamela      | LANL/SPM                              | X | X | X |
| Schoolcraft, Albert | LANL/LDS Vacuum                       |   | X |   |
| Sowers, Joe         | LANL/CST-7                            |   | X | X |
| Stroud, Butch       | DOE/CAO                               | X |   | X |
| Taggart, Daniel P.  | LANL/CST-7                            |   | X | X |
| Triay, Ines         | LANL/Project Leader TRU Waste Manage. | X | X | X |
| Vigil, George       | LANL/CST-1                            | X | X | X |
| Vigil, Jack         | LANL/CST-7                            |   |   | X |



| NAME           | ORGANIZATION | A | B | C |
|----------------|--------------|---|---|---|
| Wander, Sandy  | LANL CST-7   | X | X | X |
| Yeamans, David | LANL/CST-7   |   | X | X |

A= Pre-Audit Briefing    B= Contacted During Audit    C= Post-Audit Briefing

| CAO AUDIT A-97-07 DETAIL SUMMARY |              |                 |             |          |     |     |            |       |         |
|----------------------------------|--------------|-----------------|-------------|----------|-----|-----|------------|-------|---------|
| PROGRAM ACTIVITIES               | REQUIREMENTS |                 | DISPOSITION |          |     |     | EVALUATION |       |         |
|                                  | Procedures   | Checklist Pages | CARs        | CDAs     | Obs | Rec | Adeq.      | Impl. | Effect. |
| Organization                     | QAPjP        | 1               | 97-115      |          | 1   |     | S          | M     |         |
| Qualification/Training           | QP-1.1-003   | 4               |             |          |     |     | S          | S     |         |
| Quality Improvement              | QP-1.1-007   | 1               |             |          |     |     | S          | S     |         |
|                                  | QP-1.1-008   | 3               |             | 3        |     |     |            |       |         |
|                                  | QP-1.1-020   | 3               |             |          |     |     |            |       |         |
|                                  | QP-1.1-026   | 1               |             |          |     |     |            |       |         |
|                                  | QP-1.1-030   | 2               |             |          |     |     |            |       |         |
| Documents                        | QP-1.1-001   | 4               |             |          |     |     | S          | S     |         |
|                                  | QP-1.1-002   | 1               |             |          |     |     |            |       |         |
|                                  | QP-1.1-031   | 5               |             |          |     |     |            |       |         |
| Records                          | QP-1.1-004   | 1               |             | 6, 8, 12 |     |     | S          | S     |         |
| Procurement                      | QP-1.1-005   | 5               |             | 13       |     |     | S          | S     |         |
| Assessments                      | QP-1.1-027   | 4               |             |          |     |     | S          | S     |         |
|                                  | QP-1.1-033   | 4               |             | 1, 2     |     |     |            |       |         |
| Data Documentation               | QP-1.1-010   | 4               |             |          |     |     | S          | S     |         |
| QA Grading                       | QP-1.1-029   | 3               |             |          |     |     | S          | S     |         |
| Drum Handling and Tracking       | QP-1.1-032   | 2               |             |          |     |     | S          | S     |         |
| Sampling                         | QP-1.1-022   | 1               |             |          |     |     | S          | S     |         |
|                                  | DTP-1.2-014  | 1               |             |          |     | 2   |            |       |         |
| Software Control                 | QP-1.1-006   | 16              | 97-113      | 7        |     |     | S          | M     |         |

| CAO AUDIT A-97-07 DETAIL SUMMARY                        |  |                             |                  |           |          |          |            |          |          |
|---|--|-----------------------------|------------------|-----------|----------|----------|------------|----------|----------|
| REQUIREMENTS  |  |                             | DISPOSITION      |           |          |          | EVALUATION |          |          |
|   | Procedures   | Checklist Pages             | CARs             | CDAs      | Obs      | Rec      | Adeq.      | Impl.    | Effect.  |
| TECHNICAL ACTIVITIES                                    |  |                             |                  |           |          |          |            |          |          |
| Acceptable Knowledge, Data Reconciliation and Reporting | QP-1.1-021<br>QP-1.1-028   | 11<br>6                     | 97-114<br>97-117 | 11        | 2, 3     |          |            |          | M        |
| Non-destructive Assay                                   | DTP-1.2-009<br>DTP-1.2-029   | 6<br>10                     | 97-116           |           |          |          |            |          | I        |
| Software  | QP-1.1-006   | 15                          |                  |           |          |          |            |          | E        |
| Transportation  | DTP-1.2-030<br>DTP-1.2-031<br>DTP-1.2-032<br>DTP-1.2-033<br>DTP-1.2-034<br>DTP-1.2-035 | 12<br>3<br>2<br>5<br>1<br>2 |                  | 10<br>5   |          | 1        |            |          | E        |
| Headspace Gas Analysis                                  | DTP-1.2-006<br>DTP-1.2-018<br>DTP-1.2-025  | 3<br>3<br>3                 |                  | 4, 9      |          |          |            |          | E        |
| <b>TOTALS/OVERALL EVALUATION</b>                        | <b>33</b>  | <b>148</b>                  | <b>5</b>         | <b>13</b> | <b>3</b> | <b>2</b> | <b>S</b>   | <b>S</b> | <b>E</b> |

CAR.....Corrective Action Requests  
Recs.....Recommendations  
OBS.....Observations  
Adeq.....Adequacy  
Impl.....Implementation  
Effect.....Effectiveness

CDAs.....Corrected During Audit  
S.....Satisfactory  
M.....Marginal  
E.....Effective  
I.....Indeterminate