U. S. NUCLEAR REGULATORY COMMISSION

OBSERVATION AUDIT REPORT NO. 90-2

FOR THE YUCCA MOUNTAIN PROJECT OFFICE

AUDIT NO. 90-1 OF LOS ALAMOS NATIONAL LABORATORY

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1.0 INTRODUCTION

From March 26 through 30, 1990, members of the U.S. Nuclear Regulatory Commission (NRC) staff participated as observers on the U.S. Department of Energy (DOE)/Yucca Mountain Project Office (YMPO) Quality Assurance (QA) Audit No. 90-1 of Los Alamos National Laboratory (LANL), which was conducted in Los Alamos, New Mexico. LANL, a participant in the Yucca Mountain Project (YMP), is responsible for radionuclide migration, geochemistry, mineralogy, and petrology studies, and is the lead organization for the coordination and scheduling of the exploratory shaft testing program.

This report addresses the effectiveness of the DOE/YMPO audit and, to a lesser extent, the adequacy of the LANL QA program.

2.0 OBJECTIVES

The objective of the DOE/YMPO audit was to determine the effectiveness of the LANL QA program in meeting the applicable requirements of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project Quality Assurance Plan NNWSI/88-9 Revision 4 (88-9 QA Plan) for the YMP. The NRC staff's objective was to gain confidence that DOE and LANL are properly implementing the requirements of their QA programs by evaluating the effectiveness of the DOE/YMPO audit and determining whether the LANL QA program is in accordance with the requirements of the 88-9 QA Plan and 10 CFR Part 50, Appendix B.

3.0 SUMMARY AND CONCLUSIONS

The NRC staff based its evaluation of the DOE/YMPO audit process and the LANL QA program on direct observations of the auditors, discussions with the audit team, and reviews of the pertinent audit information (e.g., audit plan, checklists, and LANL documents).

The NRC staff found that, overall, DOE/YMPO Audit No. 90-1 of LANL was effective. The programmatic and technical portions of the audit, including their subsequent integration, were effective.

The NRC staff agrees with the preliminary DOE/YMPO audit team finding that, in general, the LANL QA program is adequate to control QA-related activities. However, as determined by the audit team, the adequacy of the LANL audit and surveillance program and the corrective action program could not be determined due to lack of implementation, and the procurement area in general requires LANL management attention. The NRC staff also believes that resolution of LANL software QA problems requires DOE and LANL management attention.

DOE must closely monitor the LANL program to ensure that future implementation is carried out in an acceptable manner. The NRC staff expects to participate in this monitoring as observers and may perform its own independent audit at a later date to determine the adequacy and effectiveness of the LANL QA program.

4.0 AUDIT PARTICIPANTS

4.1 NRC

Kenneth R. Hooks	Observer
John W. Bradbury	Observer
John S. Trapp	Observer
Michael R. Gonzalez	Observer (Center for Nuclear Waste Regulatory Analyses)

4.2 DOE

James Blaylock	Audit Manager	DOE/YMPO
Stephen R. Dana	Audit Team Leader	SAIC
Martha J. Mitchelll	Lead Technical Specialist	SAIC
Amelia I. Arceo	Auditor	SAIC
Joseph R. Caldwell	Observer	DOE/YMPO (MACTEC)
Anthony E. Cocoros	Auditor	DOE/YMPO (MACTEC)
Sidney L. Crawford	Auditor	SAIC
Mario R. Diaz	Auditor	DOE/YMPO
Christopher Fridrich	Technical Specialist	DOE/YMPO
William Haslebacher	Technical Specialist	DOE HQ (Weston)
Richard L. Maudlin	Auditor	DOE/YMPO (MACTEC)
W. R. (John) Marchand	Observer	DOE HQ (Weston)
Terry W. Noland	Auditor-in-Training	DOE/YMPO (Westinghouse)
Forrest D. Peters	Technical Specialist	SAIC

4.3. State of Nevada

Susan Zimmerman	Observer

5.0 REVIEW OF THE AUDIT AND AUDITED ORGANIZATION

The DOE audit was conducted in accordance with procedures WMPO QMP 18-01, "Audit System for the Waste Mangement Project Office," Revision 3, and WMPO QMP 16-03, "Standard Deficiency Reporting System," Revision 1. The NRC staff observation of the DOE/YMPO audit was based on the NRC procedure "Conduct of Observation Audits" issued October 6, 1989.

NRC staff observations are classified in accordance with the following guidelines:

(a) Level 1

Failure of the audit team to independently identify either:

- Flaws in completed and accepted work important to safety or waste isolation which renders the work unuseable for its intended purpose. Denotes failure of the QA program to verify quality, or

- A breakdown in the QA program resulting in multiple examples of the same or similar significant deficiencies over an extended period of time in more than one work activity (technical area), or

- Multiple deficiencies of the same or similar significant deficiencies in a single work activity (technical area). Failure of the audit team to adequately assess a significant area of the QA program or its implementation, such as technical products, applicable 10 CFR Part 50, Appendix B criteria, or quality level classifications, without prior justification, such that the overall effectiveness of the QA program being audited is made indeterminate.

(b) Level 2

Failure of the audit team to independently identify an isolated significant deficiency.

(c) Level 3

Failure of the audit team to independently identify deficiencies that have minor significance, or failure of the audit team to follow applicable audit procedures.

Level 1, 2 and 3 NRC staff observations require a written response from DOE to be resolved.

The NRC staff findings may also include weaknesses (actions or items which are not deficiencies but could be improved), good practices (actions or items which enhance the QA program) and requests for information required to determine if an action or item is deficient. Written responses to weaknesses identified by the NRC staff will be requested when appropriate.

In general, weaknesses and items related to requests for information will be examined by the NRC staff in future audits or surveillances.

5.1 Scope of Audit

The Audit Plan for Audit 90-1 stated that the scope of the audit was to evaluate whether the LANL QA Program meets commitments and requirements imposed by YMPO by verifying implementation and effectiveness of the systems in place and compliance with requirements.

During the audit entrance briefing the LANL personnel stated that all work for the YMP is being done as QA Level 1. The YMP work has been done under the LANL Quality Assurance Program Plan (QAPP), LANL-YMP-QAPP R4.4 since August 31, 1989; there are only minor changes between R4.4 and R4.3, which became effective February 10, 1989. The Audit Team Leader stated during the entrance briefing that the audit would be based on Revision 4 of the 88-9 QA Plan which became effective March 19, 1990.

(a) Programmatic Elements

The programmatic portion of the audit utilized checklists based on the requirements in the 88-9 QA Plan, the YMP Administrative Procedures (APs), LANL YMP QAPP R4.4 and LANL Quality Assurance Procedures (QPs). The checklists covered QA program controls for fourteen of the eighteen 10 CFR Part 50 Appendix B criteria.

Criteria IX, X, XI and XIV of 10 CFR Part 50, Appendix B (Sections 9.0, 10.0, 11.0 and 14.0 of the 88-9 QA Plan and LANL-YMP-QAPP R4.4) were not included in the scope of the audit since LANL currently has no activities (i.e., engineered items) to which these criteria apply. The NRC staff has accepted this position and found the other fourteen programmatic elements addressing Appendix B criteria acceptable in their review of the LANL QAPP (ref. Linehan/Stein letter dated November 1, 1989).

(b) Technical Areas

Four technical areas were selected by DOE/YMPO to be reviewed during the audit. The technical checklists were developed from information contained in LANL monthly Project Status Reports, LANL Detailed (technical) Procedures (DPs) and LANL Study Plans (SPs).

The audit team technical specialists were instructed to review the following personnel and procedural-type elements common to all the technical (subject) areas:

- Technical qualifications of LANL Scientific Investigation Personnel (technical staff);
- LANL technical staff understanding of technical and QA procedural requirements as they pertain to scientific investigation activities;
- Adequacy of technical procedures; and
- Development of SPs, work supporting the Site Characterization Plan (SCP), and any related work products.

The audit plan did not specifically include the requirement to determine whether LANL had taken effective corrective actions to resolve discrepancies identified during previous DOE audits and surveillances. However, the Audit Team was directed to review the corrective actions for the Significant Deficiency Reports (SDRs) resulting from the November 1989 audit to determine if the corrective actions were acceptable and the SDRs could be closed. As required by QMP-18-01, Rev. 3 the nature and frequency of previously identified deficiencies were considered in establishing the audit scope. The DOE/YMPO Audit Team Leader stated during the pre-audit briefing for the observers that NRC and State of Nevada findings from the previous DOE/YMPO audit of LANL were reviewed as input to the scope of this audit.

The programmatic scope of the audit was acceptable in that it appeared to cover all the 10 CFR Part 50, Appendix B criteria for which LANL had responsibility. The scope of the technical portion of the audit was also acceptable as it included those technical areas in which there was significant activity and in which questions and concerns had been raised in Audit 89-7.

5.2 Timing of the Audit

The NRC staff believes the timing of the QA audit was questionable, since LANL had instituted many significant changes to their QA program as a result of Audit 89-7 in November 1989, but had not completed implementation in some significant areas.

LANL personnel stated during the entrance briefing that the following major changes had been made since Audit 89-7.

- QP 01.1, Interface Control
- QP 02.1 and QP 02.2, canceled and replaced with QP-02.5, QP-02.6, QP-02.7, and QP-02.9
- QP-15.1 and QP-16.1, canceled and replaced with QP-15.2
- QP-18.1 and QP-18.2 revised
- New Quality Organization
- New Training Program

5.3 Examination of Programmatic Elements

The DOE/YMPO programmatic checklists covered the QA program controls for the fourteen elements listed below:

1.0 Organization
2.0 Quality Assurance Program
3.0 Scientific Investigation Control and Design Control
4.0 Procurement Document Control
5.0 Instructions, Procedures, Plans, and Drawings
6.0 Document Control
7.0 Control of Purchased Items and Services
8.0 Identification and Control of Items, Samples and Data
12.0 Control of Measuring and Test Equipment
13.0 Handling, Shipping, and Storage
15.0 Control of Nonconformances
16.0 Corrective Action
17.0 Records
18.0 Audits

The NRC staff observed the audit team's evaluation of selected programmatic elements of the LANL QAPP. Only portions of some elements

were observed; the details of program deficiencies identified by the DOE/YMPO audit team members which were not part of the portion observed will not be discussed in this report.

(a) Organization (Criterion 1)

Interviews were conducted by the DOE/YMPO auditors with the LANL Technical Project Officer (TPO), the LANL QA Project Leader (QAPL), and LATA QA support staff to obtain their description of the LANL project and QA organizations. The interviews were based on the checklist questions. The following items were identified during the audit of Criterion 1.

- The LANL project and QA organization charts originally presented were incorrect and did not reflect the current organization. The charts were revised during the audit and presented to the audit team.

- The QA project organization had been reorganized without sufficient definition of the new QA groups, including Program Development and Program Verification and Administration.

The QA staff reorganization, re-assignment of the responsibility for development of technical procedures, and QA procedure revisions appear to be positive steps towards compliance to the QAPP. However, sufficient time for implementation had not transpired; therefore, a recommendation was made by the auditors that a surveillance be conducted at a later date.

Based on the depth of questioning and satisfactory completion of the audit checklist, the auditors adequately reviewed and evaluated the LANL project and QA organization for compliance to the 88-9 QA plan and the QAPP.

(b) Quality Assurance Program (Criterion 2)

The auditors reviewed selected LANL personnel record files for compliance to QP 2.5, 2.6, and 2.7 requirements relating to qualification, education, experience, and training. Record packages were reviewed for randomly selected personnel or individuals having performed technical activities. The auditors developed a matrix correlating individuals with their position descriptions, training, and required records for documentation and verifications. The NRC observers were able to review some of the personnel records directly, and found the sample they reviewed to be adequate.

Based on the extent of the records reviewed and interviews conducted with the TPO and personnel records clerk, Criterion 2 was effectively audited.

(c) Instructions, Procedures, Plans, and Drawings (Criterion 5)

The DOE/YMPO auditors covered requirements for QPs, DPs and SPs in depth, making appropriate use of their check list and probing to determine how requirements were being implemented in preparation of QPs, DPs and SPs. The five QPs issued since Audit 89-7 were reviewed and determined to meet applicable requirements. The LANL review packages for a number of DPs were investigated in detail, and appeared adequate. The auditors checked the contents of the DPs against the review comments to verify incorporation of the comments. The documentation of technical reviews appears to have been substantially improved since Audit 89-7.

The NRC observers identified a possible concern in that the preparers of some DPs appeared to regard these documents as QA documents, prepared mainly for QA purposes, and they did not feel a sense of ownership for the DPs. If this perception is correct, it could result in DPs which are less than optimum for the purpose of performing technical tasks.

During the course of the audit, the auditors demonstrated appropriate flexibility by revising the pre-selected sample of DPs to include those completed since Audit 89-7. The audit in this area was satisfactory, and LANL QA program implementation was also satisfactory.

(d) Document Control (Criterion 6)

The DOE/YMPO auditors reviewing this area were familiar with the YMPO and LANL QA requirements for document control. The audit checklist was used appropriately to guide the audit and ensure adequate coverage of pertinent documents and requirements, and the auditors followed up on areas of possible misunderstanding or program weaknesses.

A potential problem was identified by the auditors in which a document sent to YMPO as background for the audit appeared to have the identical approval signatures and dates on a cover sheet as a different version of the document. Further investigation indicated that a mistake had been made in handling the document, but no programmatic problem was identified.

The audit of the LANL Document Control program was thorough and effective, and the LANL QA program appeared to be effective and properly implemented in this areas.

(e) Corrective Action (Criterion 16)

LANL revised their corrective action program subsequent to Audit 89-7. LANL Quality Procedure TWS-QAS-QP-15.2, Rev. 0, which became effective on March 19, 1990 consolidated the two QPs for nonconformance reporting and corrective actions into a single procedure for deficiency reporting.

The DOE/YMPO auditors reviewed QP 15.2, and the one Deficiency Report (DR) issued since this new procedure become effective. The resolution of previous corrective actions was reviewed, including a root cause analysis of the thirty-four unvoided Corrective Action Reports (CARs) issued since January 1, 1988 (Memorandum Higby to Nunes dated February 22, 1990). The auditors performed a thorough review, using the checklist to ensure that all areas were covered, and probing when appropriate to obtained detailed explanations and answers.

The effectiveness of the LANL QA program in this area could not be determined due to lack of implementation. SDR 468, concerning effective corrective actions identified during Audit 89-7 could not be closed due to lack of implementation.

(f) Records (Criterion 17)

The auditors reviewed the list of record packages for activities affecting quality and randomly selected specific packages for review of compliance to QP 17.3. Interviews were conducted with the LATA Records Processing Center (RPC) records clerk to determine appropriate knowledge of the procedure requirements. The records packages were reviewed in detail for compliance to the required forms for transmittal and approvals.

The extent of questioning and the number of record packages reviewed allowed the auditors to conduct an effective evaluation of the QA records processing. The LANL QA program appeared to be effectively implemented in this area.

(g) Audits (Criterion 18)

The DOE/YMPO auditors reviewed the audit requirements identified in QP 18.1 and conducted interviews with the QA verification staff. Deficiencies were noted with the Fiscal Year (FY) 1989 audits since the scheduled audits had not been performed. Audit reports for FY 1990 were reviewed by the auditors for compliance to the FY 1990 audit schedule and QP 18.1 requirements. Only two out of nine scheduled audits had been performed as of February 1990. A revised schedule for FY 1990 was generated and distributed to the auditors.

Based on the interviews conducted and the limited number of audits performed, the LANL audit program was determined by the auditors to be at best marginally effective. It was recommended by the DOE/YMPO auditors that a surveillance be performed at a later date to verify compliance to the audit program requirements.

(h) Conclusions

The programmatic audit of the LANL QA program effectively evaluated the degree of compliance to the 88-9 QA Plan, the LANL QAPP and associated procedures. The audit utilized appropriate checklist

questions and in-depth interviews to obtain the required information in evaluating the LANL QA program. The daily caucuses held by the audit team provided good interaction between the technical and programmatic auditors.

Determination of the effectiveness of the LANL QA program was hampered by the extremely short time between implementation of new procedures (in response to Audit 89-7) and this audit.

5.4 Examination of Technical Products

The audit team technical specialists reviewed, to varying degrees, the technical areas listed below by Work Breakdown Structure (WBS) Number, Site Characterization Plan (SCP) section reference, and title:

WBS Number	SCP Reference	Title
1.2.3.2.5	8.3.1.8	Postclosure Tectonics
1.2.3.2.1.1.1	8.3.1.3.2.1	Mineralogy, Petrology and Rock Chemistry of Transport Pathways
1.2.3.4.1.3	8.3.1.3.5	Radionuclide Retardation by Precipitation Processes
1.2.3.4.1.5.2	8.3.1.3.7.2	Demonstration of Applicability of Laboratory Data

The NRC staff reviewed copies of five SPs prior to the start of the audit, with the understanding that these SPs were used by the audit team technical specialists in their preparation for the audit. It appeared that two of the five SPs were not directly related to the technical areas listed above.

The NRC staff observed the audit team's evaluation of selected technical areas. QA auditors and technical specialists working together as a team were involved in most of the reviews observed by the NRC staff. Only portions of the examinations of some technical products were observed; the details of program deficiencies identified by the audit team members which were not part of the portion observed will not be discussed in this report.

The NRC observers questioned the use of technical reviewers of LANL study plans on LANL audits due to the possible appearance of a conflict of interest. One of the technical specialists had reviewed the Postclosure Tectonics study plan. Although he did not act as a technical specialist auditing that activity, his presence in the audit team could have affected the decisions made by the team.

(a) Mineralogy, Petrology, and Rock Chemistry of Transport Pathways (SCP 8.3.1.3.2.1)

The technical specialists and auditors (audit team) utilized the study plans, detailed technical procedures, published reports, and LANL monthly reports in their interviews. The audit team was thorough, tracking data from inception to conclusions (in published reports). They checked personnel qualifications thoroughly.

LANL review comments on the study plans were technical in nature. This observation on the comment resolution process and documentation of the process is in contrast to an NRC comment made about the November 1989 audit that review comments on another audited technical area were not technical in nature.

(b) Radionuclide Retardation by Precipitation Processes (SCP 8.3.1.3.5)

The audit team utilized the draft study plan, detailed technical procedures, published documents, and LANL monthly reports in their interview. The technical specialist put much effort into explaining the purpose of the questions to the principle investigator. This process appeared useful and constructive for educating the LANL personnel on QA concerns.

The NRC observers looked at some of the detailed technical procedures and found one that had a clear acceptance criterion statement. This detailed technical procedure described the method for preparing "pure" radionuclides of desired oxidation states. The criterion of acceptance was 5% impurity as evidenced by extraneous peaks from spectrophotometric analysis.

All other detailed technical procedures reviewed by the NRC observers contained nebulous acceptance criteria. This problem was first identified at the NRC mini audit of LANL in 1987.

(c) Postclosure Tectonics (SCP 8.3.1.8)

The technical specialist who investigated this area is an experienced geophysicist who has a good understanding of the problems in conducting a technical investigation under an Appendix B type QA program. He was able to effectively communicate about the QA program and to suggest means of improving many areas.

The audit provided a good cross cut of the LANL program in this area, both in the technical and QA aspects. Examination of the field notebooks, journals, maps, etc., of LANL technical staff indicated that since 1987 the technical aspects of the program have been well documented. The NRC observers judged that the documentation since 1987 would be sufficient to allow the majority of the information to be qualified with minimal effort. The pre-1987 documentation is not as thorough, but it is possible that aspects of this information could also be qualified.

LANL has had analytical problems, primarily concerned with sample preparation. They were able to document which samples and analyses were in error, determine why the errors occurred, and institute corrective action.

(d) Conclusions

The technical portion of the audit was thorough and effective, and integration of the technical portion with the programmatic portion was good. The LANL technical personnel appeared well qualified and generally understand the QA requirements in their areas.

5.5 Conduct of Audit

The audit team members were generally well prepared and most demonstrated a sound knowledge of the QA and technical aspects of the LANL program.

The audit checklists included the important QA controls addressed in the 88-9 QA Plan that are applicable to LANL. In general, the audit team used the checklists effectively in their interviews with LANL personnel and review of documents. The technical and programmatic portions of the audit were generally effective, and integration of the technical and programmatic portions of the audit was effective.

5.6 Qualification of Auditors

The qualifications of the QA auditors on the team were previously accepted by the NRC staff (ref. NRC Observation Audit Report for USGS dated August 22, 1988) or were acceptable based on QMP-02-02, the DOE procedure for qualifying auditors. In general, the technical specialists appeared knowledgeable in the technical areas which they reviewed and knowledgeable of the LANL QA Program requirements.

5.7 Audit Team Preparation

The QA auditors were generally well prepared in the areas they were assigned to audit and knowledgeable in the LANL QAPP and implementing procedures. The technical specialists were familiar with the technical activities of the LANL personnel as described in the SPs and monthly PSRs. Audit Plan 89-7 overall was complete and included: (1) the audit scope; (2) a list of audit team personnel and observers; (3) a list of all the audit activities; (4) the audit notification letter; (5) the LANL QAPP, and past audit report; and (6) the programmatic and technical checklists.

5.8 Audit Team Independence

The audit team members did not have prior responsibility for performing the activities they investigated. Members of the team had sufficient independence to carry out their assigned functions in a correct manner without adverse pressure or influence from LANL personnel.

5.9 Review of Previous Audit Findings

(a) Five of the SDRs (464, 465, 466, 468, and 469) resulting from the November 1989 QA audit could not be closed during this audit due to lack of data or evidence of implementaion.

(b) The NRC had no observations resulting from the November 1989 audit, and all NRC observation from previous audits were effectively resolved during the November 1989 audit.

(c) Based on discussions between the State of Nevada and NRC observers, the State of Nevada observations from previous audits appeared to have been resolved during this audit.

5.10 Summary of NRC Staff Findings

(a) Observations

The NRC staff did not identify any observations relating to deficiencies in either the DOE/YMPO audit process or the LANL QA program.

(b) Weaknesses

- The audit was performed so soon after the implementation of a number of new or revised LANL procedures that QA program effectivity in some areas could not be determined (see Section 5.3(a), (e) and (g)).

- The NRC observers noted that LANL apparently does not receive copies of the DOE/YMPO Audit Reports for other participant programs, which would enable LANL to be aware of and look for deficiencies common to more than a single participant program.

- The LANL technical personnel involved with volcanism appeared unsure of the requirements for software QA. The majority of the programs which they wish to run are either quite simple or are commercially available programs; however, they have been unable to get resolution in this area. It was the perception of the NRC observers that overly restrictive QA requirements may be applied in some cases. The inability to approve software appears to be a problem which could cause significant delays in the program unless resolved.

- The Principle Investigator for volcanism is having considerable difficulties in getting Purchase Orders (POs) through the system. This includes POs for personnel and for equipment. He has been trying for several months to finalize a PO for services, and such delays seriously impede the progress of the program. It was again the perception of the NRC observers that overly restrictive QA requirements may be a source of this problem.

Resolution of this concern should be standardized throughout the Laboratory and should be a major concern of management, not the individual PIs.

- Several detailed procedures which are required to contain "acceptance criteria" for various investigations stated only that the PI would use his judgement as to what was acceptable. Such lack of acceptance criteria is not satisfactory. The procedure which explains how to write detailed procedures is not sufficiently descriptive in the area of acceptance criteria (see Section 5.4 (b)).

- In several cases the position descriptions for similar titles (specifically Associate Investigator) had totally different qualification requirements. In addition, the qualifications needed for the PI were listed as less than the qualifications for most persons (Associate Investigators) working under him.

- The procedures for requiring copying of notebooks appear to only require that copies be made when the notebook has been completed. A formal procedure should be developed which requires copies of material at some periodic interval to minimize the possibility of loss of information.

- Some of the investigators who are used to working as independent research scientists do not seem to understand that this is not a program for independent research, but a program to develop the information necessary to determine if the Yucca Mountain site can be licensed and built as a high-level nuclear waste disposal site.

- In the area of field notebooks and sample identification each investigator uses a slightly different method. Therefore, while each sample is documented and traceable it requires a slightly different procedure to trace samples from different investigators. Such practices could cause confusion at a later date, especially if new individuals take over certain aspects of the program.

(c) Good Practices

- The audit team was well prepared and conducted a thorough and effective audit. The technical specialists were particularly effective, and integration of the technical and programmatic portions of the audit was effective.

- LANL provided a plan to DOE/YMPO detailing the steps required to correct LANL QA program deficiencies (ref. letter Herbst to Horton dated January 25, 1990). The NRC staff recommends that this plan be expanded and a schedule for implementation provided by LANL.

5.11 Summary - DOE/YMPO Audit Team Findings

During the course of the audit, the audit team identified approximately fifteen deficiencies in the LANL QA program and prepared draft SDRs describing these deficiencies. Four of these potential SDRs remained unresolved at the time of the exit briefing on March 30, 1990. A summary statement of each of the four deficiencies follows:

(a) QA responsibilities and authority of LANL and LATA personnel are not adequately defined in existing documentation (see Section 5.3 (a)).

(b) The LANL audit and surveillance program was not adequately implemented during Fiscal Year 1989 (see Section 5.3 (g)).

(c) LANL procedures do not contain certain sufficient controls to ensure a consistent approach for selection and documentation of technical reviewers (see Section 5.4).

(d) Purchase requisitions which were issued for QA Level 1 items specified that commercial grade was acceptable.

In addition, the audit team found that acceptance/rejection criteria in a number of DPs are still inadequate.