

U. S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
OFFICE OF QUALITY ASSURANCE

AUDIT REPORT

OF

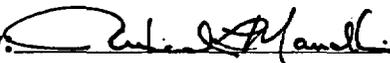
CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM
MANAGEMENT AND OPERATING CONTRACTOR

AT

LOS ALAMOS NATIONAL LABORATORY

LOS ALAMOS, NEW MEXICO

AUDIT NUMBER YM-ARC-96-16
JUNE 24 THROUGH JUNE 28, 1996

Prepared by:  Date: 08/06/96
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Approved by:  Date: 8/16/96
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1.0 EXECUTIVE SUMMARY

As a result of Quality Assurance (QA) audit YM-ARC-96-16, the audit team determined that the Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O) at Los Alamos National Laboratory (LANL) is satisfactorily implementing an effective QA program, with the exception of those areas where deficiencies existed, in accordance with the U.S. Department of Energy Office of Civilian Radioactive Waste Management Quality Assurance Requirements and Description (QARD), DOE/RW-0333P, Revision 5, and LANL's implementing procedures for QA Program Elements 1.0, 2.0, 5.0, 6.0, 12.0, 17.0, and Supplements I, II, and III. Implementation of QA Program Element 16.0 was determined to be marginal, QA Program Elements 4.0 and 7.0 were determined to be unsatisfactory. Because no NCRs were generated as of the last compliance audit, QA Program Element 15.0 was determined to be not implemented. Also, it was noted that there were areas where little implementation or objective evidence was evaluated because of reduced work scopes or redirection of work activities. In addition, it was determined that LANL is implementing adequate and effective process controls with regards to work performed under Work Breakdown Structure (WBS) 1.2.3.3.1.2.2 "Water Movement Tracer Tests".

The audit team identified seven deficiencies during the audit that resulted in the issuance of seven Deficiency Reports (DR) by the Yucca Mountain Quality Assurance Division (YMQAD).

DR YM-96-D-063 documents that a supplier has not undergone an annual evaluation as per LANL-YMP-QP-04.06, "Procurement" Revision 4. DR YM-96-D-064 identifies that software was used prior to release without written justification and not controlled by configuration management. DR YM-96-D-066 identifies that controlled manuals contain superseded or obsolete procedures. DR YM-96-D-067 documents that calibration standards are not traceable to National Institute of Standards and Technology (NIST). DR YM-96-D-068 identifies that conditions adverse to quality have not been identified in a prompt manner. DR YM-96-D-069 identifies that Measuring and Test Equipment (M&TE) Reports that indicate that when instruments were out of tolerance, deficiency documents were not generated. DR YM-96-D-073 identifies numerous problems in procurement such as; no documented QA program for suppliers, inadequate procedure, and calibration services performed without an approved QA program.

No deficiencies were corrected prior to the postaudit meeting. Additionally, there were six recommendations resulting from the audit, which are detailed in Section 6.0 of this report.

2.0 SCOPE

The audit was conducted to evaluate the adequacy of, compliance to, and the effectiveness of LANL's QA program as described in the QARD and LANL's implementing procedures.

In addition, a technical review was performed to assess the technical adequacy and effectiveness of Study Plan 8.3.1.2.2.2, "Water Movement Tests." (WBS 1.2.3.3.1.2.2)

The QA program elements/requirements evaluated during the audit, in accordance with the approved audit plan, are as follows:

QA PROGRAM ELEMENTS/REQUIREMENTS

- 1.0 Organization
- 2.0 Quality Assurance Program
- 4.0 Procurement Document Control
- 5.0 Implementing Documents
- 6.0 Document Control
- 7.0 Control of Purchased Items and Services
- 12.0 Control of Measuring and Test Equipment
- 15.0 Nonconformances
- 16.0 Corrective Action
- 17.0 Quality Assurance Records
- Supplement I, Software
- Supplement II, Sample Control
- Supplement III, Scientific Investigation

The following QA program elements/requirements were not reviewed during the audit because LANL currently has no activities to which these elements apply:

- 3.0 Design Control
- 8.0 Identification and Control of Items
- 9.0 Control of Special Processes
- 10.0 Inspection
- 11.0 Test Control
- 13.0 Handling, Storage, and Shipping
- 14.0 Inspection, Test, and Operating Status
- 18.0 Audits
- Supplement IV, Field Surveying
- Supplement V, Control of the Electronic Management of Data

3.0 AUDIT TEAM AND OBSERVERS

The following is a list of audit team members and observers and their assigned areas of responsibility:

<u>Name/Title/Organization</u>	<u>QA Program Elements/Requirements</u>
Richard L. Maudlin, Audit Team Leader, (ATL), YMQAD	4.0, 7.0, Supplement I
John R. Doyle, ATL in Training, YMQAD	Supplements II and III
James Blaylock, Auditor, YMQAD	2.0, 5.0, 6.0, 17.0
Hank T. Greene, Auditor, YMQAD	1.0, 2.0, 12.0, 15.0, 16.0
Stephen Nelson, Technical Specialist, CRWMS M&O	Study Plan 8.3.1.2.2.2
Jack Spraul, Observer, U.S. Nuclear Regulatory Commission (NRC)	
John Bradbury, Observer, NRC	
Susan W. Zimmerman, Observer, State of Nevada	

4.0 AUDIT MEETINGS AND PERSONNEL CONTACTED

The preaudit meeting was held at LANL in Los Alamos, New Mexico, on June 24, 1996. A daily debriefing and coordination meeting was held with LANL management and staff, and daily audit team meetings were held to discuss issues and potential deficiencies. The audit was concluded with a postaudit meeting held at LANL in Los Alamos, New Mexico, on June 28, 1996. Personnel contacted during the audit are listed in Attachment 1. The list also includes those who attended the preaudit and postaudit meetings.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Effectiveness

The audit team concluded that, in general, with the exception of those areas where deficiencies existed, the LANL QA Program is adequate and is being effectively implemented. Individually, QA Program Elements 1.0, 2.0, 5.0, 6.0, 12.0, 17.0, and Supplements I, II, and III are satisfactorily implemented. QA Program Element 16.0 was determined to be marginal, QA Program Elements 4.0 and 7.0 were found unsatisfactory. Because no NCRs were generated since the last compliance audit, QA Program Element 15.0 was determined to be not implemented. A meeting was held with LANL management to discuss in detail the unsatisfactory areas.

5.2 Stop Work or Immediate Corrective Actions Taken

There were no Stop Work Orders, immediate corrective actions or related additional items resulting from this audit.

5.3 QA Program Audit Activities

A summary table of audit results is provided in Attachment 2. The details of the audit evaluation, along with the objective evidence reviewed, are contained within the audit checklists. The checklists are kept and maintained as QA Records.

5.4 Technical Audit Activities

Technical Evaluation of WBS 1.2.3.3.1.2.2 "Water Movement Tracer Tests," Chlorine 36 (³⁶Cl) Studies

This section of the audit report represents a technical evaluation of ³⁶Cl and associated studies being conducted at LANL. This activity represents an evaluation of the technical adequacy of the scientific investigation being conducted in this area.

Laboratory Work and Sample Handling

Laboratory work was observed and discussed from the time of arrival of samples from the field until chloride is extracted and shipped to the current vendor of analytical services, PRIME lab at Purdue University for isotopic analysis. This included inspection and discussion of the sample storage facility, ³⁶Cl separation

lab, and the ion chromatography facility. Individual samples are stored in heavy plastic sample bags inserted into canvas sample bags. This minimizes the probability and magnitude of cross contamination between samples. Samples are stored in a secured area of the laboratory, and only trained personnel are allowed access to samples. Rock crushing has been minimized, and hammers and rock crushing plates are cleaned, and routinely precontaminated before processing of a given sample proceeds. This represents good laboratory practice.

The laboratories are clean and well organized. Reasonable precautions are being taken to avoid unnecessary sample contamination, mislabelling of samples, etc. Particularly impressive was the objective evidence of testing of sources of contamination (blanks) such as laboratory counter tops, floors, reagents, rock crushing equipment, chemical processing, etc. It is clear that ample consideration is being taken against sample contamination in the laboratory, and unusual sources of potential contamination are being identified and avoided.

One observation was made that some sample vials that had already been analyzed for Bromine and ^{36}Cl concentrations had labels that were beginning to peel off. These samples were to be discarded pending review of the analytical results, which if unacceptable, would be re-analyzed. In general, sample handling and laboratory practices appear to be adequate, even though an evaluation was not conducted at the offsite laboratory facilities by extended LANL staff on amberat.

Notebooks and Logbooks

The following approach was taken for the evaluation of scientific logbooks and notebooks. A sample (EO73-1) and its analytical data were chosen at random from Table 5 of Milestone 3783AD. Then the development of those data, from the time an aliquot of rock was taken from sample storage until the results were reported, were followed in the logbooks. Most of the time involved in tracing this sample was due to becoming familiar with the organization of the logbooks. Once this was accomplished, it was quite easy to follow the development of the data. A couple of items are noteworthy, however:

1. The detailed procedures that govern sample handling and preparation allow for deviations to occur so long as they are documented in the notebook. This appears to have been done, but many samples have been processed according to the documented deviations. This suggests that the detailed procedures might benefit from revision. However, there was no apparent indication that the quality of data were adversely affected.

2. An isotopic tracer (spike) is being added to some samples. Although the sample identity of the tracer is clearly indicated, there was no reference to composition of the tracer. Its composition was found in another cross reference notebook associated with the study and added to the notebook for cross reference.

3. Page 1 of logbook TSW-INC-7-04-92-04 indicates that it is assigned to S. J. Wightman. It is understood that this individual is no longer associated with this study. If so, this page should probably be revised.

Sample logbooks are well organized and the development of the data can be reasonably followed despite the relatively minor problems recognized.

Accelerated Mass Spectrometry (AMS) Services

Available data on inter-laboratory comparisons of isotopic analyses is fairly limited. This study, in the past, has relied on data from three U.S. laboratories capable of ^{36}Cl isotopic analysis. Inter-laboratory comparisons, with some exceptions, vary by as much as 20%. Replicate analysis over time of standards and other samples also indicate that differences of up to 20% may occur at PRIME laboratory. This external reproducibility is larger than the analytical uncertainty of samples reported in logbooks and technical reports (about 5%). External reproducibility, in other words the variation obtained by repeated analysis of the same sample over time, is usually larger than analytical uncertainty for most geochemical measurements. The investigators should keep this in mind as it may better reflect the total uncertainty in an isotopic analysis than the strict uncertainty in instrument statistics. These kinds of variations are not unusual and are not likely to adversely affect the overall interpretations of the data as long as the investigators are aware of them.

A brief examination of replicate data for sample R95-0027 ($n=23$) indicates that there is no discernable temporal trend in the $^{36}\text{Cl}/\text{Cl}$ ratios over the year that this sample was repeatedly analyzed. The unweighted mean for these data is $953 \pm 58 \times 10^{-15}$ one standard deviation. Using this information as a guide, it appears that there is no concern for unusual temporal drift in the analyses, and most reported values appear to reproduce to within about $\pm 5\%$.

General Scientific Issues

Within available constraints, the scientific studies are fairly comprehensive. Alternative hypotheses (other than bomb pulse) for the origin of elevated $^{36}\text{Cl}/\text{Cl}$ ratios are being considered and pursued. Samples of near-surface calcites as a source of elevated ^{36}Cl were in preparation for analytical work in the near future, and a program of confirmation by other bomb-pulse isotopes is in progress, including Technetium 99 which appears to have been detected in the Bow Ridge Fault within the Exploratory Studies Facility. The studies have yielded important new information on the flow of water at the Yucca Mountain Site and to the scientific community at large. Importantly, the studies seem focussed on addressing specific issues important to the performance of a potential repository at Yucca Mountain.

Progress appears to have been made within two areas. First is the recognition that the production rate of ^{36}Cl and the associated $^{36}\text{Cl}/\text{Cl}$ ratio of global fallout has varied significantly (a factor of 2-3) over the last few tens of thousands of years and more. This is forcing a re-examination of ^{36}Cl data, not only for Yucca Mountain, but the scientific community at large. In order for precise estimates of groundwater residence/travel time to be made, it is important for the investigator to be able to assume the $^{36}\text{Cl}/\text{Cl}$ ratio of fallout has been effectively constant. As a result, observed values of ^{36}Cl need to be consistent with modeling of groundwater flow as a calibration tool, but the ^{36}Cl technique may be found wanting as a precise geochronometer for groundwater. Second, barring some other explanation for elevated ^{36}Cl signals, the technique is providing information on which structural/hydrologic features are transmissive to liquid flow at the repository level. This will probably prove to be extremely valuable for developing models of fluid flow and transport at the site scale.

5.5 Summary of Deficiencies

The audit team identified seven deficiencies during the audit for which seven DRs were issued. No deficiencies were corrected during the course of the audit.

Synopses of deficiencies documented as DRs are presented below. The DRs have been issued by separate letters (YM-96-D-063, 064, 066, 067, 068, 069, YMQAD:RBC-2153 dated 7/12/96 and YM-96-D-073: RBC-2276 dated 7/25/96) to the responsible individuals in accordance with Administrative Procedure (AP)-16.1Q, Revision 0, "Performance/Deficiency Reporting."

5.5.1 Corrective Action Requests (CAR)

No CARs were issued during the audit.

5.5.2 Deficiency Reports (DR)

YM-96-D-063

No objective evidence of an annual review of SIMCO as per LANL-YMP-QP-04.6, "Procurement" Revision 4, Paragraph 6.3.7.

YM-96-D-064

LANL-YMP-QP-03.20, Revision 4, Paragraph 6.2.1 "Software Configuration Management," does not require either a written justification for software that has not been verified or validated or a mechanism for controlling its use as per QARD Revision 5, Section I.2.2(A) requirements. In addition, FEHM software used in Chlorine 36 Milestone report did not have a justification for use nor was it released for use under the configuration management program.

YM-96-D-066

LANL has transitioned from hard copy controlled documents to an electronic distribution from the Yucca Mountain Web site. About ten days before the audit, an additional six procedures were added to the web site. The acknowledgment form had been returned to the document control coordinator by the manual holders; the holders were to remove the old hard copy or mark them as obsolete. Three of the eight QA manuals examined had the superseded copies in their books. In one of the three, the holder had not removed a procedure that had been deleted in addition to the superseded procedures.

A single technical procedure had been electronically distributed. Three manual holders had returned the acknowledgment form. Two of the three holders still had the superseded version of the procedure without the

required "obsolete/superseded" identifications on the said procedure. These conditions are in conflict with QARD Revision 5, Paragraph 6.2.5C requirements.

YM-96-D-067

A review of M&TE used by LANL revealed that weight set standard identifier # 0347 does not have documented certification to the NIST. The weight set did have traceability to SNL Primary Standards Laboratory, but traceability had stopped there. This standard also had its expiration date extended with no apparent program approval. These conditions were contrary to QARD Revision 5, Paragraphs 12.2.1A and 12.2.1C requirements.

YM-96-D-068

Potential conditions adverse to quality have not been promptly documented on PRs or DRs. PRs drafted have not been issued as of the close of this audit, contrary to QARD Revision 5, Paragraph 16.1 requirements.

YM-96-D-069

A review of M&TE Reports indicates that M&TE was found to be out of tolerance prior to its calibration. As per requirements of LANL-YMP-QP-12.3, Revision 2, "Control of Measuring and Test Equipment and Standards," a deficiency document is generated when such condition is identified. Contrary to this requirement, no objective evidence could be found that any deficiency documents were generated.

YM-96-D-073

The QARD, Revision 5, Section 4.0, Paragraph 4.2.1, "Procurement Document Control," requires that procurement documents issued by each Affected Organization include provisions, as applicable, for the item or service being procured and that suppliers have a documented QA Program that implements the applicable portions of the QARD.

This DR identifies numerous problems in procurement. Examples are: LANL-YMP-QP-04.6, Revision 4, "Procurement," lacks QARD requirements to provide that suppliers have a documented QA program; services procured for ³⁶C1 sample preparation and AMS work were provided by a vendor with an unapproved QA program; and calibrations were performed by vendors without approved procurement documentation.

5.5.3 Performance Reports (PR)

There were no PRs generated as a result of the audit.

5.5.4 Deficiencies Corrected During the Audit

No deficiencies were corrected during the course of the audit.

5.5.5 Follow-up of Previously Identified Deficiency Documents

Follow-up action on one deficiency document, YMQAD-96-D033 indicated that corrective action to preclude recurrence is due during the later part of calendar year and no follow-up was required at this time.

6.0 RECOMMENDATIONS

The following recommendations resulted from the audit and are presented for consideration by LANL management.

1. A programmatic issue for the Yucca Mountain Site Characterization Office (YMSCO) at large is the status of study plans within the scientific programs. The Project has evolved considerably since adoption of the Site Characterization Plan, DOE/RW-0199, and the current direction of the Project may not be entirely consistent with the scope of work and philosophy to be found in many of the study plans. Should the YMSCO decide to maintain and revise Study Plans, 8.3.1.2.2.2, "Water Movement Test," would benefit from revision. Many of the current hypotheses and conceptualizations are somewhat out of date; however, this could be viewed as progress in the scientific programs rather than deficiencies in the study plan.
2. Revise detailed procedures to reflect pervasive modifications currently documented and controlled in scientific notebooks.
3. The PI and other Saturated Zone Investigators should, through technical exchanges or other avenues, have the opportunity to interpret and integrate data that has been collected thus far.
4. In the past LANL QA performed surveillances that provided an effective tool in measuring and assuring quality. Due to numerous reasons, including reduction in the budget and resulting manpower losses, these surveillances have been conducted without the reports issued during this fiscal year. Since April 1996,

eight surveillances have been initiated; however, no reports have been issued to date. It is recommended that this surveillance process be emphasized and surveillance reports be issued in a timely manner in order to be able to inform LANL Management of the status of the QA Program implementation.

5. LANL procedure LANL-YMP-QP-03.21, Revision 5, "Software Life Cycle," establishes requirements for a Change Control Board. However, the procedure does not identify minimum attendees. It is recommended that a list of minimum attendees (i.e., QA representative) be identified in the next procedure revision.
6. The investigators are regularly submitting blanks to the analytical laboratories. In addition, it would be wise for the Principal Investigator (PI) to submit an internal LANL standard as an unknown in order to further monitor analytical performance. The PI should also continue to monitor the results of standards and replicate samples analyzed and reported by the vendor.

7.0 LIST OF ATTACHMENTS

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

ATTACHMENT 1
Personnel Contacted During the Audit

Name	Organization/Title	Preaudit Meeting	Contacted During Audit	Postaudit Meeting
Brenner, D.	LANL/Research Technician			X
Burningham, A.	CRWMS M&O/QA Liaison (by phone)		X	
Bussod, G.	LANL/Site and Regulatory, Project Leader	X		X
Canepa, J.	LANL/Laboratory Lead	X	X	X
Clevenger, M.	LANL/QA Project Leader	X	X	X
Cotter, C.	LANL/Research Technician		X	
Dixon, P.	LANL/Associate Investigator, Water Movement Test	X	X	X
Fabryka-Martin, J.	LANL/PI, Water Movement Test	X	X	X
Gallegos, A.	LATA/QA Liaison	X	X	X
Gillespie, P.	LATA/Verification Coordinator	X	X	X
Gundlach, B.	LANL/Software Management Coordinator	X	X	X
Levy, S.	LANL/Associate Investigator	X		
Martinez, S.	LATA/Document/Records Coordinator	X	X	X
Musgrave, J.	LANL/Staff Member	X		
Pelchat, C.	LANL/Functional Specialist for M&TE Calibration (by phone)		X	
Plummer, M.	LANL/Research Technician		X	
Roach, J.	LANL/Research Technician	X	X	X
Serrano, R.	LANL/Functional Specialist for M&TE Calibration (by phone)		X	
Watt, J.	LANL/Research Technician	X		X
West, K.	LANL/Administrative & Control Project Leader	X	X	
Wichman, L.	LATA/M&TE Coordinator		X	
Wolfsberg, L.	LANL/Associate Investigator, Water Movement Test	X	X	X
Young, J.	LATA/M&TE Coordinator	X	X	X

Legend

LATA Los Alamos Technical Associate

Attachment II
 Summary of Audit Results

AUDIT YM-ARC-96-16 DETAIL SUMMARY
 PROGRAMMATIC CHECKLIST

QA ELEMENT/ACTIVITIES	DOCUMENTS REVIEWED	DETAILS (Checklist) YM-ARC-96-16	CAR (5.5.1)	DR (5.5.2)	PR (5.5.3)	CDA (5.5.4)	REC (6.0)	ADE-QUACY	COM-PLIANCE	OVER-ALL
1	LANL-YMP-QP-01.3, R3	Pgs. 2 & 3	N	N	N	N	N	SAT	N/I	SAT
	LANL-YMP-QP-01.4, R3	Pgs. 4-12	N	N	N	N	N	SAT	SAT	
2	LANL-YMP-QP-02.5, R3	Pgs. 13-15	N	N	N	N	N	SAT	SAT	SAT
	LANL-YMP-QP-18.2, R6	Pgs. 16-18	N	N	N	N	4	SAT	SAT	
	LANL-YMP-QP-02.12, R2	Pg. 19	N	N	N	N	N	SAT	N/I	
	LANL-YMP-QP-02.7, R4	Pgs. 21-23	N	N	N	N	N	SAT	SAT	
	LANL-YMP-QP-02.11, R5	Pg. 20	N	N	N	N	N	SAT	SAT	
4/7	LANL-YMP-QP-04.6, R3 & R4	Pgs. 24-34	N	YM-96-D-063 & 073	N	N	N	UNSAT	UNSAT	UN-SAT
5/6	LANL-YMP-QP-06.1, R8	Pgs. 35-39	N	YM-96-D-066	N	N	N	SAT	SAT	SAT
	LANL-YMP-QP-06.2, R5	Pgs. 40-44	N	N	N	N	N	SAT	SAT	

Attachment II
Summary of Audit Results

QA ELEMENT/ACTIVITIES	DOCUMENTS REVIEWED	DETAILS (Checklist) YM-ARC-96-16	CAR (5.5.1)	DR (5.5.2)	PR (5.5.3)	CDA (5.5.4)	REC (6.0)	ADE-QUACY	COM-PLIANCE	OVER-ALL
5/6 cont'd	LANL-YMP-QP-06.3, R4	Pgs. 45-50	N	N	N	N	N	SAT	SAT	SAT
	LANL-YMP-QP-06.4, R0	Pgs. 51-52	N	N	N	N	N	N/I	N/I	
12	LANL-YMP-QP-12.3, R2	Pgs. 53-67	N	YM-96-D-067 & 069	N	N	N	SAT	SAT	SAT
15	YAP-15.1Q, R2	Pgs. 68-73	N	N	N	N	N	SAT	N/I	N/I
16	AP-16.1Q, R0	Pgs. 74-83	N	YM-96-D-068	N	N	N	SAT	MAR	MAR
	AP-16.2Q, R0	Pg. 84	N	N	N	N	N	SAT	SAT	
17	LANL-YMP-QP-17.6, R 4	Pgs. 85-91	N	N	N	N	N	SAT	SAT	SAT
Supplement I	LANL-YMP-QP-03.20, R4	Pgs. 98-103	N	YM-96-D-064	N	N	N	SAT	N/I	SAT
	LANL-YMP-OP-03.21, R5	Pgs. 92-97	N	N	N	N	5	SAT	SAT	

Attachment II
 Summary of Audit Results

QA ELEMENT/ACTIVITIES	DOCUMENTS REVIEWED	DETAILS (Checklist) YM-ARC-96-16	CAR (5.5.1)	DR (5.5.2)	PR (5.5.3)	CDA (5.5.4)	REC (6.0)	ADE-QUACY	COM-PLIANCE	OVER-ALL
Supplement II	LANL-YMP-QP-08.1, R4	Pgs. 104-110	N	N	N	N	N	SAT	SAT	SAT
	YAP-SII.1Q, R1	Pgs. 104-110	N	N	N	N	N	SAT	SAT	
	YAP-SII.2Q, R0	Pg. 104	N	N	N	N	N	SAT	SAT	
Supplement III	LANL-YMP-QP-03.5, R5	Pgs. 111-115	N	N	N	N	N	SAT	SAT	SAT
	LANL-YMP-QP-03.23, R3	Pgs. 116-118	N	N	N	N	N	SAT	N/I	
	LANL-YMP-QP-03.25, R2	Pgs. 119-122	N	N	N	N	N	SAT	N/I	
	LANL-YMP-QP-08.3, R3	Pgs. 123-127	N	N	N	N	N	SAT	SAT	

TECHNICAL CHECKLIST

WBS 1.2.3.3.1.2.2 ³⁶ Cl Studies	Study Plan 8.3.1.2.2.2, R1	Pgs. 1-13	N	N	N	N	1	SAT	N/A	SAT
	LANL-INC-DP-105, R0	Pgs. 14-16	N	N	N	N	2	SAT	SAT	
	LANL-INC-DP-103, R0	Pgs. 17-19	N	N	N	N	N	SAT	SAT	
	LANL-INC-DP-93, R1	Pgs. 20-23	N	N	N	N	N	SAT	SAT	
	Summary Report 3783AD	Pgs. 24-25	N	N	N	N	N	SAT	N/A	

Attachment II
Summary of Audit Results

QA ELEMENT/ ACTIVITIES	DOCUMENTS REVIEWED	DETAILS (Checklist) YM-ARC-96-16	CAR (5.5.1)	DR (5.5.2)	PR (5.5.3)	CDA (5.5.4)	REC (6.0)	ADE- QUACY	COM- PLIANCE	OVER- ALL
	General Technical and Analytical	Pgs. 26-28	N	N	N	N	3,6	SAT	N/A	SAT
TOTAL		155	0	7	0	0	6			SAT

LEGEND:

CDA Corrected During the Audit
 N None
 N/A Not Applicable
 N/I Not Implemented

R Revision
 REC Recommendation
 SAT Satisfactory
 UNSAT Unsatisfactory