AUDIT OBSERVATION REPORT
WMPO QA AUDIT OF SANDIA NATIONAL LABORATORIES
ALBUQUERQUE, NEW MEXICO
JULY 25 THROUGH AUGUST 3, 1988
AUDIT NO. 88-06

A. PURPOSE OF AUDIT

The purpose of this audit was to evaluate the Sandia National Laboratories (SNL) Quality Assurance Program through verification of the implementation of the SNL Quality Assurance Plan Revision 0, and its implementing procedures. This included evaluation of technical work areas as well as QA programmatic activities. This audit was originally scheduled for five (5) days; however, due to the amount of technical and programmatic work in progress at SNL, the audit was extended for three (3) more days.

B. RESULTS OF AUDIT

The results of the audit presented to SNL were considered preliminary and may be subject to modification or consolidation when the WMPO Project Quality Manager reviews the results with the Audit Team Leaders.

There were 20 findings (Standard Deficiency Reports) identified during the audit; however, 5 of the findings were satisfactorily addressed and resolved during the course of the audit and one finding was downgraded to an observation after further investigation. Seventeen observations were identified.

There were no Severity Level 1 findings identified during this audit. Attachment A provides a summary of the SDRs and observations which will require response from SNL.

Preliminary results indicate that SNL has implemented an effective overall QA Program. To increase the effectiveness in certain areas, the audit team will make the following recommendations:

1. Use technical representatives on SNL audits.
2. Use a graded QA approach in the work plan system.
3. Provide more focus on the awareness of QA training.
4. Institute improvements in the Record Center.

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Note

A Standard Deficiency Report is the WMPO method used to document deficient, non-hardware related conditions adverse to quality, to document remedial/investigative/corrective actions, to document evaluation of these actions, and to document verification of satisfactory completion of these actions. Each SDR is then assigned a severity level based on the following criteria:

Severity Level 1 - significant deficiencies considered of major importance. These deficiencies require remedial, investigative, and corrective actions to prevent recurrence:

- Significant deficiencies such as a breakdown in a participants QA program (i.e., failure of an organization to establish and implement appropriate QA and technical requirements, plans, and procedures) and/or repetitive programmatic and hardware deficiencies for which previous corrective action has not been reasonably prompt or effective.

- The scope of the deficiency is extensive and/or could have a major impact on schedule and/or cost.

- Significant deficiencies in QA administrative and technical documentaton, including procedures, technical data and computer codes, which were not detected and corrected by quality verification methods.

- Significant deficiencies in design and construction practices which were detected subsequent to formal quality verification and acceptance.

- Deficiencies which may require a stop work order.

Severity Level 2 - A deficiency which is not of major importance but will require remedial action, corrective action to prevent recurrence, and may also require investigative action to determine if similar conditions exist:

- Operating outside the scope of the quality program or approved quality procedures.

- Repetitive hardware deficiencies for which no previous corrective action measures exist.

Severity Level 3 - A minor deficiency (i.e., one which meets one or both of the following criteria) and for which only remedial action is required:

- The integrity of the end result of the activity is not affected nor does the deficiency affect the ability to achieve those results.

- The deficient condition is an isolated occurrence or very limited in scope.

Observation - A recognition by the audit team of a weakness in a quality assurance program element that, if left uncorrected, could result in a condition adverse to quality.

C. AUDIT PERSONNEL

The audit team consisted of 34 people. This group included auditors (QA and technical) and observers representing OCRWM-HQ, WMPO, SAIC, NRC and the State of Nevada. The observers from OCRWM-HQ consisted of a representative from OCRWM QA, WESTON QA and WESTON Engineering and Geosciences. The observers witnessed the audit interviews with SNL and had an opportunity to review any objective evidence presented. All observers were requested to ask questions through the auditor and were afforded an opportunity to present any comments/questions during the audit team caucus. Attachment B identifies the audit team members.

D. CONDUCT OF AUDIT

This audit was conducted in a well prepared, organized and professional manner. The auditors, both QA and technical, were knowledgeable and well aware of the scope of SNL activities.

A meeting was conducted at SNL in June 1988 to meet with responsible personnel, to discuss the scope of the audit and to confirm the audit dates. The meeting was attended by the audit team leader, the lead auditor, the lead technical specialist, and appropriate SNL personnel.

Sixteen of the eighteen NQA-1 criteria were investigated. Criteria 9, Control of Processes, and 14, Inspection and Test Status, are not applicable to SNL work at this time. Thirteen technical areas were audited and they are as follows:

	WBS Elements	Activity
1)	1.2.1.3.1	Site and Engineering Properties Data Base
2)	1.2.1.3.3	Reference Information Base
3)	1.2.1.4.1	Flow and Radionuclide Transport
4)	1.2.4.2.1.1	Rock Mass Analysis
5)	1.2.4.2.1.3	Laboratory Properties
6)	1.2.4.6.1	Repository Performance Code Development/Certification
7)	1.2.4.6.3	Preclosure Safety Analysis
8)	1.2.4.1.2	Basis for Design (Seismic Activities)
9)	1.2.4.3.2	Surface Facilities
10)	1.2.4.3.3	Shaft/Ramps
11)	1.2.4.3.4	Underground Excavations
12)	1.2.4.3.5	Underground Service System
13)	1.2.4.6.2	Design Analysis

The checklist used for the audit contained over 200 pages. The applicable sections of the checklist were distributed to the QA and technical auditors responsible for the specific activities being investigated.

Potential deficiencies, identified during interviews, were thoroughly investigated through review of objective evidence. There was general agreement between SNL and the auditors concerning the SDRs and observations.

Daily meetings with SNL and with the audit team provided for adequate interface and opportunities to further investigate any contentious issues.

E. OBSERVATIONS OF AUDIT

Although there are approximately 14 SDRs and 17 observations, the overall implementation of the SNL QA Program appears to be adequate. Most of the deficiencies require clarification through a procedure revision or require a review of current practices. None of the deficiencies appear to be a serious detriment to data collected or design activities already completed nor to any ongoing work at SNL.

The cooperation and assistance of SNL personnel were excellent. Despite the logistical problems with tight security requirements, SNL provided an organized approach for access to information. All of the SNL personnel interviewed were knowledgeable of their specific activities as well as the overall requirements of the SNL QA Program. SNL management awareness and involvement in the QA Program was evident and is commendable.

The Audit Team Leaders forwarded the audit plan, checklists, the SNL QA Program Plan and applicable work plans and procedures to the observers in ample time for review. An inquiry sheet was provided to observers for any questions which the observers had. This system worked well because it didn't interfere with the auditor's line of questioning. Answers were provided in writing after the question was investigated.

Overall, the audit was performed satisfactorily. The only improvement suggested would be to decrease the size of the audit team with regard to observers. Auditing time is not productively utilized when dealing with large audit teams.

In a caucus on July 25, 1988, the NRC identified the following preliminary observations:

1. NRC questioned the method for how the scope of the audit was determined.

2. NRC questioned the use of "non-qualified" data in Q-Level 1 and 2 work.

3. NRC questioned the SNL Q-Level methodology.

4. NRC noted that the technical areas were well covered during audit.

5. NRC noted that the auditors were well qualified.

6. NRC requested a copy of the OCRWM-HQ Observer Report.

The representative from the State of Nevada questioned DOE control over participants. The State also indicated that Nevada's Observation Reports for the USGS and SNL audits would be issued to DOE.

SUMMARY OF SDRs AND OBSERVATIONS

SDRs

	Criteria	Severity Level	Finding
a.	Organization	3	Stop Work Order issued by SNL on 3/21/88 not acknowledged and no response received.
b.	QA Program	2	Position descriptions are not adequate.
c.	QA Program	2	Training of SNL personnel on 12 procedure revisions is not adequate.
d.	Design Control	2	QA Group does not review design inputs or outputs.
e.	Design Control	2	Less restrictive requirements are applied to Q-Level 2 activities than Q-Level 1.
f.	Design Control	2	Scoping of Q-Level 1 activity is Q-Level 3.
g.	Design Control	2	Documentation of calculations sometimes only have a cover sheet and not the entire calculation.
h.	Design Control	2	Some work instructions contain data which are not in the SNL Reference Information Base (RIB).
i.	Design Control	2	Some calculations are not performed in accordance with the correct procedure.

SUMMARY OF SDRs AND OBSERVATIONS

SDRs

	Criteria	Severity Level	Finding
j.	Procedures	2	QA Group does not review technical procedures.
k.	Nonconformances	3	NCRs are not distributed to the WMPO.
l.	Corrective Action	2	Responses to an SNL audit are late.
m.	QA Records	3	Records are corrected without an approved procedure.
n.	Audits	3	SNL QA Audit Reports are not issued in a timely manner.

OBSERVATIONS

	Criteria	Observation
a.	QA Program	Documentation for computer codes is not closed out in a timely manner.
b.	QA Program	Two procedures are inconsistent on certification requirements.
c.	QA Program	Training procedures are not clear on which personnel receive specific training.
d.	Design Control	A procedure for interface with USGS should be developed. SNL uses Underground Nuclear Explosion data for design whereas USGS uses seismic data.
e.	Design Control	Several minor errors were identified in work plans.

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OBSERVATIONS

	Criteria	Observation
f.	Design Control	The SNL drawing checklist for design verification should be incorporated into the review procedure.
g.	Design Control	Inadequate response to a previous WMPO audit finding.
h.	Design Control	Use of unqualified data in Q-Level 2 activities.
i.	Design Control	Lack of traceability between SCP/CDR and RIB.
j.	Design Control	Inconsistent values in tables of SCP/CDR and RIB.
k.	Design Control	SNL has not reviewed all of the data in notebooks submitted by Parsons.
l.	Design Control	SAND Reports should designate use or reference.
m.	Procedures	SNL participants are not keeping up with latest revisions to QA requirements and procedures.
n.	Procedures	SNL needs a trend analysis procedure and, possibly, a procedure for organization.
o.	Procedures	SNL should use a Review and Comment Sheet to document reviews.
p.	QA Records	The Records Center makes "minor" changes to documents. Define "minor".
q.	QA Records	Several minor problems were noted on Manuscript Review Sheets.

AUDIT TEAM MEMBERS

Member	Function	Organization
Henry H. Caldwell	Audit Team Leader	SAIC, Las Vegas, NV
Gerard Heaney	Lead Auditor	SAIC, Las Vegas, NV
Catherine Thompson	Auditor	SAIC, Las Vegas, NV
James Ulseth	Auditor	SAIC, Las Vegas, NV
Steven Dana	Auditor	SAIC, Las Vegas, NV
Wendell B. Mansel	Auditor	WMPO, Las Vegas, NV
William Camp	Auditor	SAIC, Las Vegas, NV
Frederick Ruth	Auditor	SAIC, Las Vegas, NV
Mae Cotter	Auditor Candidate	SAIC, Las Vegas, NV
William Sublette	Lead Technical Specialist	SAIC, Las Vegas, NV
Forrest D. Peters	Technical Specialist	SAIC, Las Vegas, NV
Margaret C. Brake	Technical Specialist	SAIC, Las Vegas, NV
David Cummings	Technical Specialist	SAIC, Las Vegas, NV
Barry Dial	Technical Specialist	SAIC, San Francisco, CA
John P. Tinucci	Technical Specialist	SAIC, San Francisco, CA
Steven Woolfolk	Technical Specialist	SAIC, Las Vegas, NV
Tom Watson	Technical Specialist	HARZA, Las Vegas, NV
U-Sun Park	Technical Specialist	SAIC, Las Vegas, NV
David Brown	Observer	DOE/EQ (WESTON)
Francisco Cheng	Observer	DOE/EQ (WESTON)
Jay Jones	Observer	DOE/EQ Washington, DC
James Donnelly	Observer	U.S. NRC, Washington, DC
Joseph Holonich	Observer	U.S. NRC, Washington, DC
Naiem Tanious	Observer	U.S. NRC, Washington, DC
John Peshel	Observer	U.S. NRC, Washington, DC
William Belke	Observer	U.S. NRC, Washington, DC
Marshall Davenport	Observer	SAIC, Las Vegas, NV
Susan Zimmerman	Observer	State of Nevada, NV
James Grubb	Observer	State of Nevada, NV
Steven Leedom	Observer	WMPO, Las Vegas, NV
Royce Monks	Observer	WMPO, Las Vegas, NV
Anthony Baca	Observer	WMPO, Las Vegas, NV
Frank Kendorski	Observer	State of Nevada, NV
Stanley H. Klein	Observer	SAIC, Las Vegas, NV

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SUMMARY REPORT OF QUALITY ASSURANCE AUDIT OF
SANDIA NATIONAL LABORATORIES, ALBUQUERQUE, NEW MEXICO
JULY 25–AUGUST 3, 1988

I. Scope of Audit

The purpose of the audit was to evaluate the Sandia National Laboratories (SNL) Quality Assurance Program through verification of the implementation of the SNL QA Program Plan, Revision 0, and its implementing procedures. The scope of the audit included 16 of the 18 NQA-1 criteria (Criteria 9, Control of Processes, and Criteria 14, Inspection and Test Status, were not applicable to SNL at the time of the audit). In addition, 13 technical areas were audited.

II. Audit team members

Henry Caldwell	Audit Team Leader	SAIC, Las Vegas, NV
Gerard Heaney	Lead Auditor	SAIC, Las Vegas, NV
Catherine Thompson	Auditor	SAIC, Las Vegas, NV
James Ulseth	Auditor	SAIC, Las Vegas, NV
Steven Dana	Auditor	SAIC, Las Vegas, NV
Wendell Mansel	Auditor	YMPO, Las Vegas, NV
William Camp	Auditor	SAIC, Las Vegas, NV
Frederick Ruth	Auditor	SAIC, Las Vegas, NV
Mae Cotter	Auditor	SAIC, Las Vegas, NV
William Sublette	Lead Technical Spec.	SAIC, Las Vegas, NV
Forrest Peters	Technical Specialist	SAIC, Las Vegas, NV
Margaret Brake	Technical Specialist	SAIC, Las Vegas, NV
David Cummings	Technical Specialist	SAIC, Las Vegas, NV
Barry Dial	Technical Specialist	SAIC, San Fran., CA
John Tunucci	Technical Specialist	SAIC, San Fran., CA
Steven Woolfolk	Technical Specialist	SAIC, Las Vegas, NV
Tom Watson	Technical Specialist	HARZA, Las Vegas, NV
U-Sun Park	Technical Specialist	SAIC, Las Vegas, NV
Jay Jones	Observer	DOE/HQ, Wash., DC
David Brown	Observer	Weston, Wash., DC
Francisco Cheng	Observer	Weston, Wash., DC
James Donnelly	Observer	NRC, Wash., DC
Joseph Holonich	Observer	NRC, Wash., DC
John Peshel	Observer	NRC, Wash., DC
Naiem Tanious	Observer	NRC, Wash., DC
William Belke	Observer	NRC, Wash., DC
Anthony Baca	Observer	YMPO, Las Vegas, NV
John Robson	Observer	YMPO, Las Vegas, NV
Steven Leedom	Observer	YMPO, Las Vegas, NV
Royce Monks	Observer	YMPO, Las Vegas, NV
Stanley Klein	Observer	SAIC, Las Vegas, NV
Marshall Davenport	Observer	SAIC, Las Vegas, NV
Susan Zimmerman	Observer	State of Nevada
Frank Kendorski	Observer	State of Nevada
James Grubb	Observer	State of Nevada

III. Comments of effectiveness of audit

As a participant on the audit of SNL, I was impressed with the professionalism and cooperation of the Sandia staff. They appear to have made a concerted effort to develop and strengthen their quality assurance program. The audit team showed a good knowledge of the procedures, and developed a comprehensive check-list to test the effectiveness of the QA program. Notification of any deficiencies, observations, and recommendations was discussed with the senior Sandia staff on a daily basis to allow for timely corrective action. Both programmatic and technical QA procedures were adequately covered by the audit team.

IV. Summary of findings and observations

At the time of the audit, there were 20 findings identified (Standard Deficiency Reports - SDRs), 5 of which were satisfactorily addressed and resolved during the course of the audit, and one of which was reduced to the level of observation. All of the SDRs were in the severity level 2 and 3 category. In addition, there were 17 observations made during the audit. Detailed lists of the SDRs and observations are available in Attachments A of the audit report.

Jay G. Jones
Office of Quality Assurance

SUMMARY OF SDRs AND OBSERVATIONS

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