

U.S. NUCLEAR REGULATORY COMMISSION
OBSERVATION AUDIT REPORT 93-12
OF THE YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION
AUDIT YMP-93-013
OF RAYTHEON SERVICES NEVADA

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1.0 INTRODUCTION

During July 12-16, 1993, members of the quality assurance (QA) staff of the U.S. Nuclear Regulatory Commission Division of High-Level Waste Management observed a U.S. Department of Energy (DOE) Office of Civilian Radioactive Waste Management (OCRWM), Office of Quality Assurance, Yucca Mountain Quality Assurance Division (YMQAD) audit of Raytheon Services Nevada (RSN). The audit, YMP-93-13, was conducted at the RSN offices in Las Vegas, Nevada, and at the Nevada Test Site (NTS). The audit evaluated the adequacy and effectiveness of the RSN QA program in 17 programmatic areas. No technical areas were included in the scope of this audit. A State of Nevada representative was an observer at this audit.

This report addresses the effectiveness of the YMQAD audit and the adequacy and implementation of the QA controls in the audited areas of the RSN QA program.

2.0 OBJECTIVES

The objectives of the audit by YMQAD were to determine whether the RSN QA program and its implementation meet the applicable requirements and commitments of the OCRWM Quality Assurance Requirements Document (QARD), the OCRWM Quality Assurance Program Description (QAPD), the RSN QAPD and associated implementing procedures.

The NRC staff's objective was to gain confidence that YMQAD and RSN are properly implementing the requirements of their QA programs in accordance with the OCRWM QARD, the OCRWM QAPD, the RSN QAPD, and Title 10 of the Code of Federal Regulations (10 CFR), Part 60, Subpart G (which references 10 CFR Part 50, Appendix B).

3.0 SUMMARY AND CONCLUSIONS

The NRC staff based its evaluation of the YMQAD audit process and the RSN QA program on direct observations of the auditors; discussions with audit team and RSN personnel; and reviews of the audit plan, the audit checklists, and other pertinent documents. The NRC staff has determined that YMQAD Audit YMP-93-13 was useful and effective. The audit was organized and conducted in a thorough and professional manner. Audit team members were independent of the activities that they audited. The audit team was well qualified in the QA discipline, and its assignments and checklist items were adequately described in the audit plan.

The NRC staff agrees with the preliminary YMQAD audit team finding that implementation of the RSN QA program in the areas audited is generally adequate. Nine preliminary Corrective Action Requests (CARs) were discussed by the YMQAD audit team at the post-audit meeting. Several other potential CARs were acceptably resolved by the RSN organization during the audit. None of the preliminary CARs identified by the YMQAD audit team is significant in terms of the overall RSN QA program.

YMQAD should continue to closely monitor implementation of the RSN QA program to ensure that the deficiencies identified during this audit are corrected in a timely manner and that future QA program implementation is effective. The NRC staff expects to participate in this monitoring as observers and may perform its own independent audits at a later date to assess RSN implementation of its QA program.

4.0 AUDIT PARTICIPANTS

4.1 NRC

Kenneth R. Hooks	Observer	Center for Nuclear Waste Regulatory Analyses
Thomas Trbovich	Observer	

4.2 DOE

John S. Martin	Audit Team Leader (ATL)	YMQAD/Science Applications International Corporation (SAIC)
Cynthia H. Prater	ATL in Training	YMQAD/SAIC
Stephen R. Dana	Auditor	YMQAD/SAIC
Raul Hinojosa	Auditor	YMQAD/SAIC
Frank J. Kratzinger	Auditor	YMQAD/SAIC
John R. Matras	Auditor	YMQAD/SAIC

4.3 STATE OF NEVADA

Susan Zimmerman	Observer
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5.0 REVIEW OF THE AUDIT AND AUDITED ORGANIZATION

This YMQAD audit of RSN was conducted in accordance with OCRWM Quality Assurance Administrative Procedure (QAAP) 18.2, "Audit Program" (Revision 5 plus Interim Change Notice 1) and QAAP 16.1, "Corrective Action" (Revision 4). The NRC observation audit of this audit was based on the NRC procedure, "Conduct of Observation Audits," issued October 6, 1989.

5.1 Scope of Audit

This audit was designed to be performance-based to the maximum extent possible. The auditors were directed to focus on work products rather than programmatic requirements.

The audit scope included the 17 QA programmatic elements listed below:

- 1.0 Organization
- 2.0 Quality Assurance Program
- 3.0 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
- 10.0 Inspection
- 11.0 Test Control
- 12.0 Control of Measuring and Test Equipment
- 13.0 Handling, Storage, and Shipping
- 14.0 Inspection, Test and Operating Status
- 15.0 Control of Nonconforming Items
- 16.0 Corrective Action
- 17.0 Quality Assurance Records
- 18.0 Audits
- 19.0 Computer Software

The NRC staff observed the YMQAD audit team evaluation of Programmatic Elements 3.0, 10.0, 11.0, 14.0, 15.0, 16.0, and 19.0; only these programmatic areas are discussed in detail in this report. No technical areas were included in the scope of this audit.

5.2 Timing of the Audit

The NRC staff believes the timing of this audit was appropriate for YMQAD to audit the pertinent QA activities of RSN and for the NRC staff to evaluate the YMQAD audit process and implementation of the RSN QA program. This audit was scheduled in conformance with OCRWM's practice of auditing each applicable QA programmatic element at least annually.

5.3 Examination of QA Programmatic Elements

The NRC staff observed that each of the auditors reviewed related documentation and interviewed at least a representative sample of RSN personnel to determine their understanding and degree of implementation of the procedures. The auditors observed were well prepared and knowledgeable of the QA program requirements. They used their checklists effectively and pursued issues beyond the checklists when appropriate. They solicited comments and questions from the NRC observers in an appropriate manner. The NRC staff observations regarding the audit and the implementation of each appropriate QA programmatic element are discussed below.

5.3.1 Design Control (Programmatic Element 3.0)

The checklist for this portion of the audit contained 84 inquiries and was based on RSN Quality Assurance Procedure (QAP)-3.1(Y) and 23 RSN Project Procedures (PP)-03-01 through PP-03-23. The auditor was thorough in his evaluation and took extra time to further discuss areas of concern. Some difficulty was encountered during this process since design activities on the Exploratory Studies Facility Tunnel had been transferred to the Civilian Radioactive Waste Management Systems Management and Operating Contractor. This made dates for required reviews and signatures on various documents difficult to follow since the transfer took several months to complete. RSN is currently not responsible for design activities, and no CARs were initiated in this element.

The audit in this area was effective, and the NRC staff agrees with the audit team that implementation of the RSN QA program in this area was adequate.

5.3.2 Inspection (Programmatic Element 10.0) and Inspection, Test, and Operating Status (Programmatic Element 14.0); RSN Supplements II and IV, Sample Controls and Field Surveying

The auditor assigned to Programmatic Elements 10.0 and 14.0 also reviewed RSN Supplements II and IV. These criteria and activities were audited simultaneously. The audit checklist contained 37 inquiries covering Yucca Mountain Site Characterization Project Administrative Procedures 5.48Q and 6.3Q; QAPs 10.1(Y), 10.2(Y), 10.3(Y), and 2.6(Y); and PPs 10-01, 10-02, 01-02, 01-03, and 01-04. The auditor was very meticulous and thorough, taking sufficient time to review several drilling, surveying, and inspection record forms ensuring compliance with the various procedures. The auditor also applied performance-based auditing techniques evaluating personnel qualifications and witnessing the operations of surveying personnel, drilling inspection personnel, and core sample preparation personnel at the NTS. Minor discrepancies noted on records were corrected by RSN supervision during the audit. No CARs were issued in these areas.

5.3.3 Test Control (Programmatic Element 11.0)

During review of records at the Material Testing Laboratory (MTL), the auditor determined that Work Initiation Forms (WIs) had not been prepared prior to performance of tests by MTL personnel as required by PP-11-01, and that MTL test reports did not identify the date or revision number of the standard test procedure used. Preliminary CARs were prepared for both deficiencies.

The RSN MTL performs tests for a number of organizations at the NTS, not solely the Yucca Mountain Project. In general, the MTL tests are performed in the same fashion, to the same procedures, regardless of the source of the materials being tested. MTL personnel may not have adequately reviewed the requirements of the YMP to ensure that any additional documentation required by YMP, but not the other organizations that use the MTL, is identified, prepared, and maintained.

The audit in this area was effective, and the NRC staff agrees with the audit team that implementation of the RSN QA program in this area was adequate.

5.3.4 Control of Nonconforming Items (Programmatic Element 15.0)

The bulk of the audit of this element took place in the RSN offices and the MTL at the NTS. The YMQAD auditor began with a review of RSN Nonconformance Reports (NCRs) and the NCR Log, in accordance with the audit checklist. The auditor identified that one NCR had not been properly signed by a QA reviewer as required by RSN QAP 15.1(Y); this deficiency was corrected prior to the post-audit meeting and no CAR was issued.

The audit in this area was effective, and the NRC staff agrees with the audit team that implementation of the RSN QA program in this area was adequate.

5.3.5 Corrective Action (Programmatic Element 16.0)

The auditor reviewed RSN Deficiency Reports (DRs), the DR Log, and Trend Analysis Reports. Extension requests had not been reviewed and approved prior to the effective completion date for several DRs, as required by RSN QAP-16.1(Y). A preliminary CAR was issued for this deficiency.

The audit in this area was effective, and the NRC staff agrees with the audit team that implementation of the RSN QA program in this area was adequate.

5.3.6 Computer Software (Programmatic Element 19.0)

QAP-19.1(Y) and PP-19-07 were used to develop the audit checklist which consisted of 12 inquiries. Some difficulty was encountered with the definition of adaptive maintenance signifying software requalification was not necessary. RSN agreed to clarify the wording of the procedure.

The auditor was thorough and departed from the checklist to further evaluate concerns. Several software qualification folders were reviewed for adherence to the procedures with no difficulties being noted. The auditor had a background in software development and conducted the review in a capable and professional manner.

The audit in this area was effective, and the NRC staff agrees with the audit team that implementation of the RSN QA program in this area was adequate.

5.3.7 Conclusions

The audit was conducted in a professional manner, and the auditors adequately evaluated activities and objective evidence. The audit was effective in determining the adequacy and degree of implementation of the RSN QA program. The audit team identified nine preliminary CARs, but they do not indicate serious QA program deficiencies. Rather, they indicate a lack of attention to detail in isolated instances.

5.4 Conduct Of Audit

The audit was performed in a professional manner. The audit team was well prepared and demonstrated a sound knowledge of the RSN QA program. In general the audit team personnel were persistent in their interviews, challenged responses when necessary, and performed an acceptable audit. Daily caucuses were held between auditors and observers, and daily audit status meetings were held between RSN management and the ATL (with an NRC observer present) to discuss the preliminary findings.

5.5 Qualification Of Auditors

The qualifications of the ATL and auditors were found to be acceptable in that each auditor and the ATL met the requirements of QAAP 18.1, "Qualification of Audit Personnel."

5.6 Audit Team Preparation

The auditors were prepared in the areas they were assigned to audit and were knowledgeable of the applicable procedures. The Audit Plan for this audit included the audit scope, the audit schedule, a list of audit team personnel, a list of the activities to be audited, and audit checklist references.

5.7 Audit Team Independence

The audit team members did not have prior responsibility for performing the activities they audited.

5.8 Summary of NRC Staff Findings

5.8.1 Observations

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

5.8.2 Good Practices

No new good practices were identified.

5.8.3 Weaknesses

None were identified.

5.9 Summary of YMQAD Audit Findings

Within the scope of this audit, the audit team concluded that the RSN QA procedures are adequate and that RSN's QA program implementation in the areas audited is adequate except where corrective action is required. At the post-audit meeting, the audit team provided observations of the RSN QA program and discussed the nine preliminary CARs resulting from the audit (listed below). Two other potential CARs were acceptably resolved by the RSN organization prior to the post-audit meeting.

5.9.1 Documented verification of education and experience had not been accomplished for an MTL employee.

5.9.2 No Technical Data Information Form was submitted for data acquired from drill hole NRG-1.

5.9.3 Documented evidence was missing for receipt of some controlled documents.

5.9.4 MTL tests were performed without a WI (see Section 5.3.3).

5.9.5 MTL test reports did not reference number and revision of test procedure. (see Section 5.3.3).

5.9.6 MTL is not maintaining a Calibration History Log for Measuring and Test Equipment.

5.9.7 Requests for extension were not submitted for some Deficiency Reports (see Section 5.3.5).

5.9.8 Annual evaluations for MTL personnel were not documented.

5.9.9 Training on a test procedure was not accomplished prior to start of work for two MTL personnel.