U.S. NUCLEAR REGULATORY COMMISSION

OBSERVATION AUDIT REPORT 94-04

OF THE YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION

AUDIT YMP-94-04

OF REYNOLDS ELECTRICAL & ENGINEERING COMPANY

08/3/94
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1.0 INTRODUCTION

During May 2-6, 1994,the Nuclear Regulatory Commission Division of Waste Management observed a Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM), Office of Quality Assurance, Yucca Mountain Quality Assurance Division (YMQAD) audit of Reynolds Electrical & Engineering Company, Inc. (REECo). The audit, YMP-94-04, was conducted at the REECo offices in Las Vegas, Nevada, and at the Nevada Test Site (NTS) in Mercury, Nevada. The audit evaluated the adequacy and effectiveness of the REECo quality assurance (QA) program in sixteen programmatic areas. The State of Nevada was invited to send a representative to observe at this audit, but chose not to do so.

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

2.0 OBJECTIVES

The objectives of the audit by YMQAD were to determine whether the REECo QA program and its implementation meet the applicable requirements and commitments of the OCRWM Quality Assurance Requirements and Description document (QARD), and REECo's Yucca Mountain Project Management Control Procedures (MCPs) and Technical Control Procedures (TCPs).

The NRC staff's objective was to gain confidence that YMQAD and REECo are properly implementing the requirements of their QA programs in accordance with the OCRWM QARD, the REECo MCPs and TCPs, 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 MANAGEMENT SUMMARY AND CONCLUSIONS

The NRC staff based its evaluation of the YMQAD audit process and the REECo QA program on direct observations of the auditors; discussions with the audit team, REECo and contractor personnel; and reviews of the audit plan, the audit checklists, and other pertinent documents. The NRC staff has determined that the YMQAD Audit YMP-94-04 was useful and effective in determining the adequacy and degree of implementation in the areas examined. The audit was organized and conducted in a thorough and professional manner. Audit team members were independent of the activities they audited. The audit team was well qualified in the QA disciplines, 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 REECo QA program is adequate in the programmatic areas audited. No preliminary Corrective Action Requests (CARs) were identified by the YMQAD audit team.

YMQAD should continue to closely monitor implementation of the REECo QA program to ensure that future QA program implementation is effective. The NRC may conduct its own independent audits at a later date to assess implementation of the REECo QA program.

4.0 AUDIT PARTICIPANTS

4.1 NRC

John W. Gilray	Observer	
Bruce Mabrito	Observer	Center for Nuclear Waste Regulatory Analyses

4.2 DOE

Frank Kratzinger	Audit Team Leader (ATL)	YMQAD/Quality Assurance Technical Support Services (YMQAD/QATSS)
Amy Arceo	Auditor	YMQAD/QATSS
Don Harris	Auditor	YMQAD/QATSS
Raul Hinojosa	Auditor	YMQAD/QATSS
Bob Klemens	Auditor	YMQAD/QATSS
Ken McFall	Auditor	YMQAD/QATSS
Steve Nolan	Auditor	YMQAD/QATSS
John Pelletier	Auditor	YMQAD/QATSS
Rick Weeks	Auditor	YMQAD/QATSS

5.0 REVIEW OF THE AUDIT AND AUDITED ORGANIZATION

This YMQAD audit of REECo was conducted in accordance with OCRWM Quality Assurance Procedure (QAP) 18.2, "Audit Program" (Revision 6) and QAP 16.1, "Corrective Action" (Revision 5). The NRC observation of this audit was based on the NRC procedure, "Conduct of Observation Audits," issued October 6, 1989.

5.1 Scope of Audit

The audit was designed to evaluate the REECo QA program to determine whether it meets the requirements and commitments imposed by the Office of Civilian Radioactive Waste Management. This was accomplished by verifying compliance with requirements.

In addition, a representative sample of deficiencies identified during previous QA audits and surveillances of REECo was included in the scope of this audit to determine the effectiveness of REECo corrective actions.

5.1.1 Programmatic Elements

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

1.0 Organization
2.0 Quality Assurance Program
3.0 Design Control
4.0 Procurement Document Control
5.0 Implementing Documents
6.0 Document Control
7.0 Control of Purchased Items and Services
8.0 Identification and Control of Items
9.0 Control of Special Processes

10.0 Inspection
12.0 Control of Measuring and Test Equipment
13.0 Handling, Storage, and Shipping
14.0 Inspection, Test and Operating Status
15.0 Nonconformances
16.0 Corrective Action
17.0 Quality Assurance Records
18.0 Audits

5.2 Timing of the Audit

The NRC staff believes the timing of this audit was appropriate since the last audit of REECo conducted December 6-9, 1993, covered only Programmatic Elements 4.0 and 7.0 and that the REECo MCP's had been recently revised to meet the OCRWM QARD.

5.3 Examination of QA Programmatic Elements

As identified in the audit plan, the evaluation process and product acceptability was based upon: (1) proper implementation of the critical process steps; (2) use of trained and qualified personnel working effectively; (3) safety and quality conscious attitudes during performance; (4) documentation that substantiates quality of the products; and (5) acceptable results and quality of the end products.

5.3.1 Quality Assurance Program

The auditor evaluated REECo procedure MC-13.2, "Surveillance", which included the review of both the scheduled and unscheduled surveillances. Five out of fourteen recent surveillances were reviewed to verify compliance with MC-13.2. No discrepancies were noted in the sampled surveillance reports. In order to further investigate the area, the auditor asked appropriate questions of the Senior QA Specialist in charge of the surveillance activities.

REECo had performed a lengthy special surveillance on the functional test and final shop inspection of the Tunnel Boring Machine (TBM) at its place of manufacturer. This was accomplished because a failure in its operation could have severe impact on the schedule and successful completion of site characterization activities. This special surveillance was well documented and served to emphasize the importance of the TBM to future site characterization work.

The controls implemented in the area of surveillance were adequate and the auditor was effective in his approach.

5.3.2 Procurement Document Control and Control of Purchased Items and Services.

It was determined that no quality-affecting procurements had been made by REECo since the last audit in June, 1993. Therefore, these two elements (Criteria 4 and 7) were declared indeterminate. However, some of the checklist questions were directed toward verification that appropriate QARD requirements had been incorporated into REECo MCPs. As a result of this review, several minor errors

were noted by the auditor in the REECo Requirements Traceability Network (RTN) which provides a matrix between the QARD and the REECo implementing procedures. The REECo RTN was identified by the audit team as having minor disconnects, such as incorrect paragraph numbers referenced, however, the specific requirements were present in the REECo procedures.

5.3.3 Nonconformance Control

Out of a total of 26 REECo quality-affecting and non-quality-affecting nonconformance reports (NCRs) listed in the Nonconformance Report Log, the auditor selected six quality-affecting NCRs and two non-quality-affecting NCRs pertaining to REECo work. The sampling was adequate and the non-quality-affecting NCRs were reviewed to ensure the nonconformance system works for all NCRs. The NCR forms were checked to ensure they fully met the requirements of the governing procedure YAP-15.1Q. When it was necessary to verify closure of NCRs which had not yet been returned from the site, copies were faxed to the auditors promptly and the REECo organization was responsive in addressing auditor questions. The auditors went beyond the audit checklist on numerous occasions to ask questions about the NCR system, determine individual REECo staff knowledge of the NCR process, and verify the maintenance of NCR forms.

The nonconformance control element of the audit was effectively audited and implementation was determined to be adequate.

5.3.4 Corrective Action

Open and closed CARs for both 1993 and 1994 were reviewed, as were the REECo Deficiency Notices (DNs) for those calendar years. DNs are used by REECo to identify, correct, and track a programmatic, lower level deficiency which has been identified as a non- significant condition to quality. If they are determined to be significant or are not responded to in a timely manner, they can be elevated to a CAR condition.

There was sufficient demonstration of implementation of CAR dispositioning. There were 17 total CARs issued during the previous 2 years and the auditor took a sample of 7 and found no discrepancies. The auditor noted that there had been 41 DNs issued to date in 1994 and selected 10 to check for detailed evaluation. Four of the 10 selected DNs had been elevated to CAR conditions, which the auditor agreed was appropriate due to the slow response in clearing the DNs.

Following in-depth investigation of the CARs, four REECo Quarterly Status Reports and four REECo Quarterly Trend Reports were reviewed to determine if they met the requirements of REECo procedure MC-11.4, "Trending". Data from deficiency reports must be entered into a tracking and trending data base and include the following: (1) type of report, (2) number of report, (3) issuance or identification date, (4) responsible organization, (5) the deficient item, (6) subject of the deficiency, and (7) apparent or root cause. The status reports included the required information, and trends were accurately evaluated and submitted to cognizant YMP management. Trend reporting, therefore, had been accomplished as required.

Because of the slow response to close a CAR regarding a material control deficiency, a REECo stop-work order had been issued for all quality-affecting material utilized by REECo and related actions to correct this problem were to be completed by the end of June, 1994. The auditor requested that DOE QA be kept informed of the actions to clear the stop-work order.

The audit team proposed in the post-audit meeting that the verification of closure of two CARs for failure to take timely action to resolve the original deficiencies cited in a DN be the subject of a focus of a surveillance. Additionally, the audit team proposed a follow-up surveillance on the CAR where a stop-work order had been issued on the material control issue.

Corrective action controls were sufficient and were being adequately implemented. The auditor was effective in his evaluation.

5.3.5 Quality Assurance Records

This segment of the audit took place at the Field Operations Center (FOC) and the Yucca Mountain construction offices at the Nevada Test Site (NTS), and at the REECo offices at Las Vegas, NV. The audit checklist questions were directed toward verifying that requirements of the QARD had been incorporated into REECo implementing procedures. The Document and Records Center at the FOC, which is utilized by REECo for storage of in-process records, was verified as meeting the 1-hr fire rating for temporary records storage specified by the QARD.

This portion of the audit observed included the evaluation of the implementation of REECo procedure MC-12.0, "Records Management". The auditors interviewed REECo field engineers and reviewed the various inspection checklists and inspection monitoring records. REECo field engineers are responsible for contributing to and maintaining the in-process records before they are turned over to the respective job package records coordinator. Only one REECo records package segment had been fully completed and submitted, so the timing of the audit was appropriate from the perspective of "first article inspection." At the FOC Document and Records Center, an in-process job package was reviewed which held a diverse assortment of documents. Parts of the in-process documentation job packages will be assembled into formal QA Records and authenticated by the authorized job package records coordinator.

Adequate samples of various field documentation were reviewed by the auditor, including drill and blast log sheets for both the top cut and bench cut of the starter tunnel and the shotcrete placement forms completed to date. The documentation was found acceptable.

At the post-audit meeting, the auditors proposed that the processing of the REECo construction records during the verification process, be the focus of a surveillance to ensure all necessary documents are captured as QA records.

From the sampling of documents at the FOC, the Yucca Mountain construction site, and the Las Vegas REECo office facility, the auditor was able to adequately review the level of implementation of the MC-12.0 procedure. The audit of the QA Records element was effective and the NRC agrees with the audit team that the implementation is adequate.

5.3.6 Audits

The DOE auditor reviewed four lead auditor and two auditor qualification folers out of a total of nine lead auditors and auditors for an adequate sampling. The auditor utilized the checklist and a matrix to verify all requirements were met, and referred back to the OCRWM QARD to ensure REECo lead auditors/auditors met program requirements.

The audit of the Auditor Qualifications portion of Criterion 18 was thorough and implementation of that part of the REECo quality system element was effective.

5.4 Conduct of Audit

The auditors utilized prepared audit checklists based on the QARD, and the REECo MCPs and TCPs applicable to the sixteen programmatic elements audited. The auditors extended their investigations beyond the checklists and the specific criteria identified in the scope of the audit on numerous occasions.

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 Independence

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 scope, the 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. The audit team members had sufficient independence to carry out their assigned functions without adverse pressure or influence.

5.8 Review of Previous Audit Findings

Six YMQAD CARs against REECo from previous audits/surveillance were reviewed by the audit team to determine that adequate disposition and closeout of deficiencies had occurred.

5.9 Summary of NRC Staff Findings

5.9.1 Observations

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

5.9.2 Good Practices

No new good practices were identified.

5.9.3 Weaknesses

No weaknesses were identified.

5.10 Summary of YMQAD Audit Findings

No preliminary CARs were identified by the YMQAD audit team; seven recommendations were made by the audit team for consideration by REECo management.

Within the scope of this audit, the audit team concluded that the REECo QA procedures are adequate and that REECo's QA program implementation is adequate for those programmatic elements audited. The NRC staff agrees with these conclusions.