

U. S. NUCLEAR REGULATORY COMMISSION  
OBSERVATION AUDIT REPORT  
FOR THE  
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT  
AUDIT NO. 88-07 OF  
REYNOLDS ELECTRICAL AND ENGINEERING COMPANY

*James Donnelly 10/7/88*  
James Donnelly  
Project Management and  
Quality Assurance Branch  
Division of High-Level Waste Management

*James Kennedy 10/7/88*  
James Kennedy  
Project Management and  
Quality Assurance Branch  
Division of High-Level Waste Management

*Joseph Holonich Oct 7, 1988*  
Joseph Holonich  
Project Management and  
Quality Assurance Branch  
Division of High-Level Waste Management

## 1.0 Introduction

From August 22, 1988 through August 30, 1988 the Nuclear Regulatory Commission (NRC) staff participated as observers in the Department of Energy/Yucca Mountain Project Office (DOE/YMPO) quality assurance (QA) audit of Reynolds Electrical and Engineering Company (REECO). REECO is a prime contractor providing support for subsurface and surface construction, drilling, and mining. REECO also assists in the operation and maintenance of the site facilities and provides procurement and logistical activities for the Nevada Nuclear Waste Site Investigations (NNWSI) project when needed.

The DOE/YMPO audit (#88-07) was conducted at the Nevada Test Site (NTS) and the REECO offices in Las Vegas, Nevada. On August 23 and 24, 1988, the audit team conducted their activities at the NTS, with the preaudit conference being held the morning of August 23, 1988. The audit team conducted the remainder of their audit activities and the post-audit conference in Las Vegas on August 25 and 30 respectively.

Since REECO presently has very little ongoing activity associated with the High-Level Waste (HLW) Program, especially in the quality level I and II category, the DOE/YMPO audit concentrated mainly on the documented QA program and those work areas which will include future HLW repository work. These areas included the welding lab, the calibration lab, the records and procurement areas.

The remainder of this report will address the adequacy of the DOE/YMPO audit (#88-07). The NRC staff's evaluation of the DOE/YMPO audit team is based on direct observations of the auditors, discussions with the audit team, and review of the audit plan, checklist and background material.

## 2.0 Scope and Purpose of NRC Staff Participation

The purpose of the staff observation was to determine if DOE conducted the audit in a manner such that the NRC staff could gain confidence that DOE and its contractors were properly implementing their programs in accordance with internal DOE requirements and 10 CFR 50, Appendix B. Observation audits enable the staff to provide recommendations to DOE on their audit program and the implementation of their contractor's QA programs as they are being developed. These observation audits and the subsequent recommendations will assist DOE in meeting the NRC's QA requirements.

## 3.0 Audit Team Members

The DOE/YMPO audit team consisted of four members - all from Science Applications International Corporation (SAIC).

The NRC team members, DOE/YMPO audit team members, and other observers are listed below.

NRC

James Donnelly, Observer  
John Gilray, Observer

DOE

Stephen P. Hans, Lead Auditor (SAIC)  
Catherine M. Thompson, Auditor (SAIC)  
James E. Clark, Auditor (SAIC)  
Steven Dana, Auditor (SAIC)

Other Participants

Craig Walenga, Observer (DOE/HQ)  
Wendell B. Mansel, Observer (DOE/YMPO)  
Royce Monks, Observer (DOE/YMPO)  
Susan Zimmerman, Observer (State of Nevada)

4.0 Staff Observations

4.1 Summary of Staff Participation

As observers, the NRC staff evaluated the effectiveness of the audit and audit team. The audit areas that were observed and evaluated included:

- (1) scope of the audit;
- (2) timing of the audit;
- (3) conduct of the audit;
- (4) qualification of the auditors;
- (5) audit team preparation;
- (6) conduct of meetings; and
- (7) team coordination

4.2 Observations

4.2.1 Scope of Audit

Based on direct observations of the audit team and review of the audit plan, the NRC staff believes the audit scope, as defined in the audit plan, did not contain sufficient justification for the exclusion of several 10 CFR 50, Appendix B QA criteria. As presented in the audit plan, the audit scope did not include the following QA criteria.

- 3.0 Scientific Investigation/Design Controls
- 8.0 Identification and Control of Samples and Items
- 9.0 Control of Processes and Special Processes
- 10.0 Inspection
- 11.0 Test Control
- 14.0 Inspection and Test Status
- 15.0 Nonconformances
- 16.0 Corrective Action

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This gave the impression to the NRC staff that the QA program procedures pertaining to these eight areas would not be audited or evaluated. In discussing this concern with the audit team, they informed the NRC staff that during their preparatory activities they did indeed review and evaluate these procedures in the preparatory stages of the audit. In addition, the audit team stated that little or no work had occurred in these areas and that this was the basis for excluding them from the audit. The exclusion of some of these criteria appears justified due to the scope of work and responsibilities defined for REECO. However, the justification for their exclusion was not provided in the audit plan. For future audits, the NRC staff recommends that the audit plan should describe all the pertinent preparatory activities to allow the observers a better understanding of all aspects of the audit process.

The NRC staff was particularly concerned that criterion 16, "Corrective Action," was not evaluated in detail. The staff pointed out to the audit team that the last audit of REECO (#87-10) identified deficiencies and it would be meaningful to audit REECO's corrective action process in resolving these deficiencies. The audit team's justification for not including this area in their audit was twofold. First, with respect to the previously identified deficiencies, the audit team stated that they had discussed these deficiencies with the YMPO QA engineer responsible for assuring proper close out and concluded that they were properly and adequately closed out with the exception of one. After expressing the staff's concern, the team did evaluate REECO's corrective action in closing this open item and determined that the proposed corrective action and process were acceptable. The audit team's other justification for excluding criterion 16 was that little or no activity had occurred in this area and consequently, a very limited amount of objective evidence would be available for review. Although this may be true, little or no activity had occurred in other areas such as procurement, control of purchased items, and control of measuring and test equipment; yet, these areas were evaluated to determine whether REECO was ready to proceed with work. The lead auditor stated that the evaluation of REECO's readiness to proceed with work was one of the primary purposes of this audit. Criterion 16 (i.e. the identification and correction of problems) is applicable to any QA program and should be evaluated prior to initiating large scale work activities. Therefore, the rationale for not evaluating this control system in detail appears unjustified. For future audits, justification for excluding certain QA controls from a detailed evaluation should be documented.

It should be noted that no technical activities were evaluated by the audit team. As a result, there were no technical specialists on the audit team. The NRC staff believes this was acceptable since it appeared that REECO had performed very little work for the NNWSI project at this time.

#### 4.2.2 Timing of Audit

Although REECO is responsible for construction of the exploratory shaft facility - a near term activity - it was apparent that limited quality level I or II work had occurred. As a result, there was limited objective evidence (i.e., end products) available for review. However, based on the standard deficiency reports (SDRs) identified by the audit team during this audit, additional audits must be held prior to the authorization of quality level I or II construction activities.

#### 4.2.3 Conduct of the Audit

Based on an overall evaluation by the NRC staff of the performance of the DOE/YMPO audit team, it was determined that the conduct of the audit was acceptable with a few exceptions. The auditors demonstrated persistence in their investigations, utilized documented checklists, identified substantive SDRs, supported their SDRs with objective evidence, and, after initial comments by the NRC staff, placed the appropriate emphasis on performance rather than solely procedural compliance.

The audit team showed persistence in collecting objective evidence during their evaluation of the REECO document control system. As the audit progressed, it became evident that REECO was comprised of seven individual divisions - each having their own unique procedures and methods for document control. The audit team noted a document control problem with one division and subsequently expanded their sample to two other divisions in order to evaluate whether there was a systematic problem. The audit team appropriately interviewed key REECO personnel and adequately reviewed applicable procedures and documents in order to reach well-founded conclusions. The audit team's persistence in collecting objective and supporting evidence should be continued in future audits.

The audit team also identified substantive SDRs requiring prompt corrective action by REECO. For example, the audit team made an overall finding that the REECO implementing procedures were inadequate. Basically, the present REECO implementing procedures (labelled NQPs) do not contain the level of detail necessary to explain the "how's" for working level personnel. It should be noted that the NRC staff had identified this as a major deficiency during its initial review of the REECO procedures. If the DOE/YMPO audit team had not identified this as an issue, the staff would have questioned the acceptability of the audit.

Another concern of the NRC staff was with the over-emphasis placed by the audit team on programmatic controls rather than the quality of the product or activity. An example of this overemphasis on programmatic controls was observed in the area of surveillances. The REECO procedure for surveillances, NQP 10.1, states, "Surveillances are performed by personnel qualified and certified to perform this activity." The auditor focused on compliance with procedure NQP 10.1 to determine whether or not a certification form existed which clearly delineated which REECO personnel were certified to perform surveillance activities. The NRC staff believes the auditor should have placed more emphasis on the qualifications of the surveillance personnel, the quality of the surveillances performed, and the substance and content of the surveillance reports. The NRC staff agrees that auditing procedural controls is one part of an audit of a QA program; however, the auditing and evaluation of the quality of the activities is considered a major objective in conducting effective audits. Likewise, the staff observed that the DOE/YMPO audit team was correctly identifying weaknesses in REECO's documented training and qualification program. However, it was noted that the team did not intend to interview REECO staff members to determine: (1) that they were knowledgeable of the NNWSI QA program controls and their assigned tasks and (2) that they were experienced and qualified to carry out these assigned tasks. The NRC staff discussed this observation with the audit team and pointed out how the audit could be

more effective by evaluating performance in conjunction with programmatic auditing. Later it was observed that the team responded to this suggestion by expanding their audit to include an evaluation of personnel, through interviews, to determine the extent of their knowledge, experience and qualifications. Evaluating performance in conjunction with programmatic controls puts identified problems in a clearer perspective and allows for a more objective evaluation of problems and their overall impact on the quality of the product or activity. This concept of evaluating performance in conjunction with programmatic audits was further discussed with the audit team and a point made that an NRC training program had been developed introducing this concept in the NRC inspection and audit of nuclear operating facilities. It was also pointed out that a similar course is available to the industry. It is recommended that DOE/YMPO consider attending future courses on this subject.

#### 4.2.4 Qualification of the Auditors

As part of its effort to more efficiently observe the DOE audit program, the staff has conducted a review of the SAIC QA auditors who could be used on DOE/YMPO audit teams and the procedure used to qualify them. The results of this review are contained in the staff observation report covering the DOE/YMPO audit of the U.S. Geological Survey (John J. Linehan (NRC) letter to Ralph Stein (DOE) dated August 22, 1988). Based on this review, the staff concluded that the DOE/YMPO QA auditors available for audits were acceptably qualified to perform QA audits. In addition, as a result of its review of QMP-02-02, "Qualification of Quality Assurance Program Audit Personnel," the staff concluded any new auditors qualified using this procedure would also be acceptable. Since the qualifications of the auditors on the team were reviewed by the staff or were qualified using QMP-02-02, the staff finds the team qualified.

#### 4.2.5 Audit Team Preparation

The staff believes the audit team adequately prepared for the audit of REECO with a few exceptions. In particular, the audit team was familiar with the YMPO and REECO requirements documents, they had prepared a written audit plan and checklist, and they followed their implementing procedure QMP-18-01 in conducting audits.

Nonetheless, the audit team should have been better prepared in their awareness of implementing procedures and in their method of determining quality level I or II activities. For example, the audit team leader informed the NRC staff that while preparing for the evaluation of criterion 12, "Control of Measuring and Test Equipment," that the applicable implementing procedures did not address the specifics needed to implement the requirements of criterion 12 (e.g., the identification and marking system needed for statusing and recalling equipment requiring recalibration). However, during the audit of the Physical Standards Laboratory (the laboratory responsible for the calibration of equipment) it was noted that specific implementing procedures did exist. The NRC staff believes the audit team should have known that these procedures existed prior to initiating the audit. Therefore, the detailed implementing procedures found at the calibration laboratory should have been identified and reviewed prior to conducting the audit. Another

example of inadequate audit team preparation occurred in the method used for determining ongoing quality level I or II activities being performed by REECO. When asked how this was determined, the audit team stated that REECO provided their monthly status reports which identified ongoing activities. The NRC staff believes the audit team should have approached YMPO to either identify ongoing activities or confirm REECO's listing of ongoing activities. YMPO is the organization responsible for the NNWSI project and therefore, they should know what work activities have been or are being performed by REECO. For future audits, YMPO should provide such input to the appropriate audit teams.

#### 4.2.6 Conduct of Meetings

The overall conduct of the preaudit and postaudit conference by the audit team was acceptable. During the preaudit conference, the scope of the audit was clearly defined, requirements documents were identified, contacts were established, and questions or comments were encouraged. At the post audit conference, the SDRs, observations, and recommendations were, in general, explained well and the REECO personnel were given the opportunity to respond. This is consistent with QMP-18-01 and standard auditing practice.

The daily caucuses, however, were conducted in such a short time frame that it was difficult in some instances to get a clear understanding of problem areas. The daily afternoon caucus meetings were held first with the audit team and observers to discuss potential SDRs. Immediately after this caucus, a brief meeting was held with REECO management and staff to inform them of the potential SDRs. The staff was concerned that the lead auditor only had a limited amount of time to gather, discuss, and review the supporting information on potential SDRs. This often led to numerous questions from the REECO personnel and, at times, created some confusion among the observers relative to the specifics of identified problems and SDRs. Prior to meeting with the audited organization, additional time should be allotted in gathering and analyzing information so that the facts pertaining to potential SDRs can be clearly and properly documented.

#### 4.2.7 Audit Team Coordination

While the staff finds the overall coordination of the audit acceptable, improvements could be made by allowing for more time in discussing and understanding identified problems and potential SDRs during the daily caucus meeting. Note the related discussion in Section 4.2.6 above.

### 4.3 Summary of Observations

Based on the information contained in the previous sections, the NRC staff has identified areas where improvements are needed. For each observation provided below, the staff has identified the report section where it is discussed in more detail. DOE/YMPO should review the NRC staff observations and provide a response describing how these will be considered in future audits.

Observation 1

For future audits, all elements of 10 CFR 50, Appendix B should be included and addressed in the audit plan. When certain elements of Appendix B are not included in the audit the basis and justification should be included in the audit plan. (Section 4.2.1)

Observation 2

The audit process should include an evaluation of the quality of the product and/or activity as well as procedural controls. (Section 4.2.3)

Observation 3

DOE/YMPO had previously approved the procedures found inadequate by the audit team. Thus, the YMPO review process appears to be deficient. The staff recommends that the audit teams have available to them a formal mechanism in the audit procedure (such as use of a corrective action report) by which concerns outside of the program they are auditing can be identified. In this instance, such a mechanism would assure that an apparent problem in the YMPO review process was corrected. (Section 4.2.3)

Observation 4

The audit team should be better prepared in their awareness of applicable implementing procedures and in their method of determining the scope of quality level I or II work conducted since the last audit and presently ongoing. (Section 4.2.5)

Observation 5

During the daily caucuses, a sufficient amount of time should be allotted to gathering and analyzing information so that the facts pertaining to SDRs can be clearly documented. (Section 4.2.6)

5.0 Preliminary SDRs of the DOE/YMPO Audit Team

As a result of the audit, the DOE/YMPO team has several preliminary findings that it reported to REECO. These are as follows:

- No position descriptions specific to the REECO NNWSI QA manager exist.
- The REECO NNWSI QA manager is not at the same or higher level than the highest line manager responsible for performing activities that affect quality.
- No procedure exists for performing management assessments.
- The administrative procedures (NQPs) do not include or reference acceptance criteria and they do not meet the definition of an implementing procedure provided for in Appendix A of the REECO QAPP.
- No procedure exists for performing training.

- No procedure exists to implement document control.
- The administrative procedures (NQPs) do not identify the QA records to be generated during implementation.
- The NQPs are not independently reviewed by the originating organization.