



105/147

# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES QUALITY ASSURANCE SURVEILLANCE REPORT

PROJECT NO.: 20.01420.871/872 *9/18/03* | REPORT NO.: 2002-13 | PAGE 1 OF 2

**SURVEILLANCE SCOPE:** Surveillance Activities on Repository Design & Thermal Mechanical Effects

**REFERENCE DOCUMENTS:** Quality Assurance Procedure QAP-002, Review of CNWRA Documents, Reports, and Papers; Quality Assurance Procedure QAP-004, Surveillance Control; Quality Assurance Procedure QAP-013, Quality Planning

**STARTING DATE:** June 11, 2002

**ENDING DATE:** June 14, 2002

**QA REPRESENTATIVE:** Mark R. Ehnstrom *MRE*

**PERSONS CONDUCTING TEST/EXAM/ACTIVITY:** G. Ofoegbu, D. Gute, B. Dasgupta, and R. Benke

### SATISFACTORY FINDINGS:

Discussions were held on June 11 and June 14, 2002 with members of the Repository Design and Thermal-Mechanical Effects (RDTME) staff. These discussions concentrated on activities performed within the last year and included reviews of published documents submitted as Intermediate and Major Milestone documents identified in the CNWRA Operations Plan. The Repository Design part of the discussion identified CNWRA involvement concerning safety analysis activities for the Waste Handling Building and the final placement analysis for the repository. Analysis activities consist of reviewing and assuring that inputs for the analysis are dependable and that outputs are properly calculated and presented. Analysis results produce calculations for possible failure probability and the probabilities for radiation/contamination release. The analysis results are then factored into the Integrated Safety Analysis Report. Additional activities include performing evaluations on design reviews and requirements, monitoring construction licensing reviews, and also monitoring specific reviews for the acceptance of the waste packages.

In the Thermal-Mechanical activities the CNWRA performs analysis to determine how rock located at the repository will respond mechanically to the thermal effects created by the decay heat of the spent nuclear fuel and high-level waste stored within the waste packages. Additional activities include evaluating the stability of underground openings and assuring that the design of the repository will allow for the retrievability of the waste packages.

Computer codes are being used by the CNWRA at this time for both pre-closure/post-closure safety assessments. Codes such as ABAQUS, RSAC, and MELCOR are controlled by the CNWRA quality program and are listed on the CNWRA Master Directory of Scientific & Engineering Software. ABAQUS has been validated by the performance of an onsite audit. The validation test plans for the MELCOR and RSAC codes have been submitted, but validation testing is not complete. Within RDTME there is no "freeware" being used. One software code titled MACCSII is currently being evaluated for possible use. If determined to be useful, the code will be placed under control and will be subjected to TOP-018 software control requirements.

Al Lozano, David Stead, and George Adams are non-CNWRA, SwRI personnel working on software development for the RDTME. Their Professional Personnel Qualification files were reviewed. Each file contained documentation showing they had received the required indoctrination and training into the CNWRA quality program. The Conflict of Interest (COI) questionnaire was also complete and the memorandum showing that the COI information had been evaluated by the Source Evaluation Committee was also in each file.

RDTME has not received any samples for testing that would require identification and control. They have not used any measuring and test equipment to record data which may be used in analysis currently being performed. A number of scientific notebooks are being used to document project activities. The Scientific Notebook Control Log was reviewed and identified 12 notebooks assigned to personnel working in this area. These notebooks were cross-referenced to the review performed in March 2002 on Scientific Notebooks. This cross-reference showed that the required notebooks had been submitted for the bi-annual review and were found to be compliant with procedural requirements.

A review was performed on RDTME Intermediate and Major Milestone documents submitted to the client within the last year which had gone through the required QAP-002 review. The review found that the documents had been reviewed and processed in accordance with the procedure and no comments were generated as a result of this review.

UNSATISFACTORY FINDINGS: None

NONCONFORMANCE REPORT NO.: None

ATTACHMENTS: None

**RECOMMENDATIONS/ACTIONS:**

The review of Albert Lozano's Professional Personnel Qualification file found that the file had gone through the normal annual review in May 2002. Upon closer review of the file it was noted that the Questionnaire for Preliminary Evaluation of Potential Conflict of Interest was dated in December 1993. It is recommended that a new questionnaire be submitted to Mr. Lozano and that he update the information contained on this form as soon as possible.

APPROVED:

  
CENTER DIRECTOR OF QUALITY ASSURANCE

DATE:

6/24/2002

**DISTRIBUTION:**

- ORIGINAL - CENTER QA DIRECTOR QA Records
- ORIGINATOR
- PRINCIPAL ENGINEER: G. Ofoegbu
- ALL ELEMENT MANAGERS
- B. Sagar
- H. Garcia, M. Ehnstrom