

JB/SURV OBS OF THE SNL QA PRO

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JAN 15 1991

Mr. Dwight D. Shelor, Acting Associate Director
for Systems and Compliance
Office of Civilian Radioactive Waste Management
U. S. Department of Energy, RW 30
Washington, D.C. 20585

Dear Mr. Shelor:

SUBJECT: SURVEILLANCE OBSERVATION OF THE SANDIA NATIONAL LABORATORIES
QUALITY ASSURANCE PROGRAM

From September 4-7, 1990 the U.S. Nuclear Regulatory Commission (NRC) staff observed the U.S. Department of Energy (DOE)/Yucca Mountain Project Office (YMPO) Quality Assurance (QA) surveillance of Sandia National Laboratories (SNL) Yucca Mountain Project (YMP) QA program conducted at SNL in Albuquerque, New Mexico. The surveillance was a continuation of the review of the Exploratory Shaft Facility (ESF) Alternatives Study begun during Audit 90-04, August 20-24, 1990. This letter transmits the NRC Surveillance Observation Report for the DOE/YMPO surveillance.

The NRC staff evaluated the DOE/YMPO QA surveillance to gain additional confidence that DOE and SNL are effectively implementing the requirements of their QA program. The NRC staff based its evaluation of the surveillance process and the SNL QA program on direct observations of the surveillance team members, discussions with the surveillance team and the SNL staff, and reviews of the pertinent surveillance information (e.g., the surveillance checklist, QA procedures and QA supporting records) and other available pertinent information.

The surveillance team was familiar with the SNL QA program procedures being implemented. Their checklists for this surveillance were well prepared and were effectively utilized in determining the status and effectiveness of program implementation. The team had good knowledge of the requirements of Nevada Nuclear Waste Storage Investigations Quality Assurance Plan (NNWSI/88-9) and the SNL/YMP QA Program. The NRC staff found the DOE/YMPO surveillance to be generally useful and effective.

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The NRC staff notes that the DOE/YMPO surveillance mainly evaluated SNL's effectiveness in implementing procedures; while the surveillance team technical specialists performed a limited review of the technical adequacy of some portions of the ESF Alternatives Study, the surveillance team made no evaluation of the technical acceptability of the overall ESF Alternatives Study, which is still under development. Due to the limited nature of the surveillance, the NRC staff made no determination concerning the technical adequacy of the SNL procedures or the ESF Alternatives Study.

If you have any questions concerning this report, please contact John Buckley of my staff at FTS-492-0513 or (301)-492-0513.

Sincerely,

John J. Linehan, Director
 Repository Licensing and Quality
 Assurance Project Directorate
 Division of High-Level Waste Management
 Office of Nuclear Material Safety
 and Safeguards

Enclosure: As Stated

- cc: R. Loux, State of Nevada
- C. Gertz, DOE/NV
- S. Bradhurst, Nye County, NV
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- D. Bechtel, Clark County, NV
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SURVEILLANCE OBSERVATION REPORT OF
SANDIA NATIONAL LABORATORIES (SNL)
CONDUCTED SEPTEMBER 4-7, 1990

1. INTRODUCTION

The U.S. Department of Energy (DOE) Yucca Mountain Project Office (YMPO) conducted a surveillance of the Exploratory Shaft Facility (ESF) Alternatives Study at SNL on September 4-7, 1990. This surveillance was a follow-up to the DOE/YMPO review of the ESF Alternatives Study conducted during Audit 90-04 of SNL on August 20-24, 1990. The U.S. Nuclear Regulatory Commission (NRC) staff observed the surveillance. The NRC staff's assessment of the effectiveness of the DOE/YMPO surveillance and SNL's QA program is presented in this report.

2. SCOPE

The ESF Alternatives Study is composed of eight tasks. The task titles and a description of the work to be done under each task is presented below.

<u>TASK TITLE</u>	<u>DESIGN INVESTIGATION MEMO (DIM) TITLE</u>
1. MANAGEMENT	ESF Alternative Study Task 1 Plan Management
2. METHODOLOGY	Development of a Decision Methodology for the ESF Alternatives Study
	Development of Preliminary Screening Criteria and Method for the ESF Alternative Study
	Development of Influence Diagrams and Performance Measures for ESF Alternative Study
	Application of Management and Policy-Based Judgments to the ESF Alternative Study
3. REQUIREMENTS 10 CFR & OTHERS	Identification of Repository and ESF Design, Performance and Construction Requirements
4. IDENTIFICATION OF OPTIONS	Identification of Repository Access and ESF Options

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| 5. SELECTION OF PREFERRED OPTIONS | Selection of Evaluation Panel Members |
| | Scoring of Options for the ESF Alternatives Study |
| | Evaluation of Repository/ESF Feature Performance Discriminators |
| 6. REPORT | ESF Alternatives Study Task 6 Final Report |
| 7. ESF DESIGN REQUIREMENTS (Testing) | Subsystem Design Requirements Document (SDRD) Support |
| | Exploratory Shaft Facility (ESF) Alternatives Evaluation Study - Task 7, Subtask-Testing |
| | Verification of ESF SDRD Benchmark Number 6 (ITM-005) |
| 8. REPOSITORY DESIGN REQUIREMENTS | Not in place |

The scope of the DOE/YMPO surveillance of SNL was generally limited to QA procedural implementation, and no assessment of the technical adequacy of the ESF Alternatives Study, which is still in process, was intended or performed. This surveillance was intended to complete the review of the ESF Alternatives Study begun during Audit 90-04 to evaluate the implementation of the SNL QA program relative to Criterion 3, Design Control. During the surveillance, the DOE/YMPO surveillance team revisited Tasks 1 and 2 of the ESF Alternatives Study (begun during Audit 90-04), mainly for the benefit of the NRC observers. The DOE/YMPO surveillance team began and completed its review of Tasks 3, 4, and 5 during this surveillance.

In conducting the surveillance, the team completed the checklists developed for the August 20-24, 1990 audit of SNL. The SNL/YMP QA implementing procedures used by the surveillance team to evaluate the ESF Alternatives Study include: DIM's 241, 242, 243, 244, 245, 251, and 254. These DIMs were developed in accordance with SNL Department Operating Procedure (DOP) 03-04, Design Investigation Control.

3. PURPOSE

The NRC staff's purpose in observing the surveillance was to evaluate the effectiveness of the DOE/YMPO surveillance team and to determine SNL's effectiveness in implementing the QA requirements. In addition, observing the surveillance gave the NRC technical staff an opportunity to examine the ongoing ESF Alternatives Study. These objectives were attained through discussions with SNL staff, observations of the surveillance team performance and reviews of the SNL/YMP procedures and DIM's.

4. SURVEILLANCE PARTICIPANTS

The surveillance was conducted by Science Applications International Corporation (SAIC) staff members Martha Mitchell, Forrest Peters, and Stephen Hans with support from Bob White and Jim Blaylock of DOE/YMPO. The surveillance was observed by NRC staff members John Buckley and Dinesh Gupta, and NRC Consultant Randall Barnes from Itasca Consulting Group. Sandia participants included Aldred Stevens, Al Dennis, Ray Finley, Earl Gruer, and Deanna Arbuckle.

5. SURVEILLANCE SUMMARY RESULTS

The surveillance team evaluated the ESF Alternatives Study for (1) programmatic deficiencies, (2) process/methodology deficiencies, and (3) deficiencies in the application of the stated methodology. Based on their review, the DOE/YMPO surveillance team had the following preliminary conclusions:

1. The surveillance team was reasonably confident that DOP 03-04 is being applied and thus the process is documented, determinant and traceable. However, the team suggested that the DIM's be expanded to cover items such as a) procedure for selection of "best features", b) repository design requirements, and c) providing technical direction to technical rating panels.
2. The ESF Alternatives Study process appears capable of producing the stated objectives. Further, the review process chosen for the ESF Alternatives Study appears to be appropriate considering the form of the final product.

Since the product of the ESF Alternatives Study is a formal report rather than a detailed design, standard document review procedures are more appropriate for providing an independent review of the report than more rigorous design review methodologies (i. e., verifying calculations via different methods). The DOE/YMPO surveillance team considers the ESF Alternatives Study to be soft engineering since the study results are ultimately a managerial decision.

6. NRC CONCLUSIONS

The NRC staff found the DOE/YMPO surveillance of the SNL/YMP QA program associated with the ESF Alternatives Study program to be useful and effective. The DOE/YMPO surveillance team was well prepared and familiar with the SNL QA program and implementing procedures. The surveillance team completed the checklists developed for Audit 90-04 of SNL conducted from August 20-24, 1990.

Although no members of the DOE/YMPO surveillance team were experts in the area of decision analysis methodology, the surveillance team possessed extensive education and experience in the areas of geology, geophysics, geochemistry and mining engineering. The NRC staff believes that inclusion of a decision analysis expert on the surveillance team would have been useful.

As stated in Section 5 above, SNL appears to be effectively implementing those aspects of their procedures which were reviewed during this surveillance. The process is documented, determinant and traceable. However, it must be recognized that the ESF Alternatives Study is still in process and that this conclusion is based on the review of a limited amount of information. Due to the limited nature of the surveillance, the NRC staff made no determination concerning the technical adequacy of the SNL procedures or the ESF Alternatives Study.

The NRC staff also believes that the standard document review procedures identified by SNL are appropriate for the ESF Alternatives Study final report since the final document will be issued as a formal report rather than a detailed design with analyses. The NRC staff based this conclusion on the understanding that, since the ESF Alternatives Study is a design activity under Criterion 3 of the SNL Quality Assurance Program Plan (see 5.3(c) of NRC Observation Audit Report No. 90-7, letter Linehan to Schelor dated December 14, 1990), the appropriate design controls and design reviews will be applied to the technical tasks incorporated into the overall ESF Alternatives Study.