

USGS SURVEILLANCE/

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JUN 01 1990

Mr. Ralph Stein, Associate Director  
for Systems Integration and Regulations  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy, RW 30  
Washington, D.C. 20585

Dear Mr. Stein:

SUBJECT: SURVEILLANCE OBSERVATION OF THE U.S. GEOLOGICAL SURVEY QUALITY  
ASSURANCE PROGRAM

From April 17 through 19, 1990 the U.S. Nuclear Regulatory Commission (NRC) staff participated as observers on the U.S. Department of Energy (DOE)/Yucca Mountain Project Office (YMPO) Quality Assurance (QA) Surveillance No. YMP-SR-90-026 of the U.S. Geological Survey (USGS) conducted at Denver, Colorado. This letter transmits the NRC Surveillance Observation Report for the DOE/YMPO surveillance of the USGS.

The NRC staff evaluated the DOE/YMPO QA surveillance to gain confidence that DOE and USGS are effectively implementing the requirements of their QA program pertaining to corrective actions taken with regard to previously identified deficiencies and to the development and review of study plans (SPs). The staff's evaluation is based on direct observations of the surveillance team members, discussions with the surveillance team and USGS staff, and reviews of pertinent QA and technical records relating to corrective actions and SPs.

The NRC observers found the DOE/YMPO surveillance of the USGS to be useful and effective. Adequate procedures for the preparation and review of SPs appear to be in place and appropriately implemented. The process used by the USGS for the five draft SPs reviewed during the surveillance is satisfactory since significant deficiencies were not identified, and furthermore the draft SPs will undergo technical and QA reviews at the YMPO and DOE headquarters to assure that finalized SPs will meet technical and QA program requirements.

The NRC staff is in general agreement with the surveillance team's preliminary evaluation that there were no deficiencies identified which would make the five draft SPs unacceptable. In addition, the staff was satisfied that USGS is

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closing out deficiencies (i.e. findings, corrective action reports, nonconformance reports, and standard deficiency reports) identified during previous audits and surveillances in an expeditious manner.

If you have any questions concerning this report, please contact Mark Delligatti of my staff on extension (301) 492-0430 or FTS 492-0430.

Sincerely,

ORIGINAL SIGNED BY

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  
M. Baughman, Lincoln County  
D. Bechtel, Clark County  
D. Weigel, GAO

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## SURVEILLANCE OBSERVATION REPORT

### 1.0 INTRODUCTION

The United States Geological Survey (USGS) is responsible for conducting geologic, geophysical, hydrologic, and seismologic investigations in support of the U.S. Department of Energy's (DOE) waste management and site characterization activities for the Yucca Mountain Project (YMP). The investigations are ongoing at the Nevada Test Site and the USGS offices in Denver, Colorado; Menlo Park, California; and Las Vegas, Nevada.

From April 17 through 19, 1990, the DOE Yucca Mountain Project Office (YMPO) conducted surveillance No. YMP-SR-90-026 of the USGS QA Program in Denver, Colorado, in accordance with the YMPO Quality Management Procedure, QMP-18-02, Revision 1 "Surveillances". The U.S. Nuclear Regulatory Commission (NRC) staff participated in the surveillance as observers. This report documents the staff's assessment of the effectiveness of the DOE/YMPO surveillance and the adequacy of the USGS QA program in the areas of corrective actions (CA) taken with regard to previously identified deficiencies and the development and review of study plans (SP).

USGS is presently involved in the development of 37 SPs, of which 16 have been submitted to the YMPO for technical and QA review and 9 have been sent to the NRC for their review.

### 2. PURPOSE

This DOE/YMPO surveillance team reviewed and evaluated the implementation of QA programmatic and technical activities pertaining to the development and review of SPs (AP-1.10 Q, Rev. 1 and Rev. 0, "Preparation, Review, and Approval of SCP Study Plans" and YMP-USGS-QMP-3.07, Rev. 2, "YMP-USGS Review Procedure" including Mods 1 & 2, Rev. 0) and the corrective action process (YMP-USGS QMPs 15-01, Rev. 4, "Control of Nonconforming Items", 16-01, Rev. 3, "Control of Corrective Action Reports", 18-01, Rev. 3, "Audits and 18-02, Rev. 0, "Surveillances"). The NRC staff observed this surveillance to gain confidence that DOE and the USGS are properly implementing QA program requirements in the areas of CA and development of SPs.

### 3. SCOPE

- Review of SPs submitted to DOE since August 1989
- Assessment of Technical Reviews (SPs/Publications/Procedures)\*
- Close-Out of previous YMPO Standard Deficiency Reports (SDR)
- USGS CA Process
- Status of USGS Nonconformance Reports (NCR) and CA Reports (CAR)

\* Due to the depth of review performed on SPs, activities related to Publications and Technical Procedures were not reviewed during this surveillance.

#### 4. PARTICIPANTS

##### ◦ DOE/YMPO

R. L. Maudlin, QA Specialist, Surveillance Lead  
 S. L. Crawford, QA Engineer  
 M. J. Mitchell, QA Engineer, Technical Specialist  
 T. W. Noland, QA Engineer  
 J. Blaylock, DOE/YMPO Observer

##### ◦ NRC

J. T. Conway, QA Engineer  
 J. W. Gilray, QA Engineer  
 K. McConnell, Geologist

##### ◦ STATE OF NEVADA

S.W. Zimmerman, State Observer

#### 5. USGS/CONTRACTOR PERSONNEL CONTACTED

L. R. Hayes, Technical Project Officer, USGS  
 T. Chaney, Acting QA Manager, USGS  
 A. Handy, QA Specialist, USGS  
 A. Whiteside, QA Advisor, SAIC-Golden  
 R. Raup, GD Coordinator, USGS  
 P. Warner, Records Coordinator, USGS  
 M. Mustard, QA Specialist, USGS  
 D. Porter, Manager, QA Records Support, SAIC-Golden  
 J. Barth, QA/GD, USGS  
 D. Lystrom, Acting NHP Chief, USGS  
 J. Ziemba, QA Audit Specialist, SAIC-Golden  
 T. Brady, Hydrologist, USGS  
 J. LaMonica, Records Specialist, USGS  
 T. Mendez-Vigo, NHP QA, USGS  
 W. Keefer, Geologist, USGS  
 B. Langer, SP Coordinator/GD, USGS  
 K. Causseaux, SP Coordinator/NHP, USGS  
 M. Brooks, QA Specialist, SAIC-Golden  
 J. Kinney, Dept. QA Manager, USBR/QA  
 W. Steinkampf, Principal Investigator (PI), USGS

## 6. SUMMARY RESULTS

DOE examined the USGS review process related to the following SPs which had been transmitted to the YMPO for review and comment:

- a) 8.3.1.2.1.3, - "Characterization of Yucca Mountain Regional Ground Water Flow"
- b) 8.3.1.2.2.1, - "Characterization of Unsaturated Zone Infiltration"
- c) 8.3.1.2.3.2, - "Characterization of Yucca Mountain Saturated Zone Hydrochemistry"
- d) 8.3.1.4.2.2, - "Characterization of Structural Features Within Site" (Activity 3 and 5 only)
- e) 8.3.1.5.1.4, - "Analysis of Paleoenvironmental History"

The NRC staff's observation of the DOE/YMPO surveillance of the USGS SP review process indicates that the preparation and review of SPs by the USGS is performed in accordance with Administrative Procedure (AP) 1.10Q and Quality Management Procedure (QMP) 3.07. The review process outlined in these procedures appears to be satisfactory to assure the technical adequacy of SPs written and reviewed by the USGS. Although QMP 3.07 is weak in outlining the criteria that reviewers are to use in establishing the adequacy of SPs with respect to the requirements outlined in the "Level of Detail Agreement" (LODA), the USGS has taken steps to clarify the criteria that reviewers are to use in the SP review process. This additional clarification along with the technical reviews of SPs performed at the YMPO and DOE/HQ levels should assure that finalized SPs will meet the LODA requirements.

The checklists used by the DOE/YMPO team members in this surveillance allowed for an in-depth review of backup supporting documentation showing the results of the technical and QA reviews of the draft SPs including the close out and resolution of comments. Throughout the surveillance, the USGS technical staff was interviewed by the DOE/YMPO team members to gain an understanding of their knowledge and experience relative to the technical aspects of the SPs under review and the QA process controls required in the preparation and review of the SPs. As a result of these interviews, the NRC observers were able to determine that the involved USGS technical reviewers were knowledgeable of the QA requirements and appeared qualified for their assigned tasks.

A review of outstanding USGS QA program deficiencies was undertaken by DOE/YMPO team members to assess the effectiveness of the CA process. The surveillance team noted that adequate CA had been implemented to recommend the close-out of 4 of 13 SDRs generated by the YMPO since the last audit of USGS in August 1989. In addition the USGS had closed-out 5 of 6 internal audit findings, 7 of 14 CARs, and 9 of 19 NCRs.

## 7. NRC CONCLUSIONS

The NRC observers found the DOE/YMPO surveillance of the USGS QA program useful and effective. The surveillance team members were well qualified in the QA and technical disciplines and displayed a high degree of professionalism and competence. The surveillance checklists were of sufficient depth both in the QA and technical areas.

The NRC staff believes that adequate USGS procedures for the preparation and review of SPs are in place, and the implementation of these procedures is adequate. Based on a close-out of approximately 50 percent of open QA program deficiencies, it would appear that the USGS CA process as it relates to audits and surveillances is in place and working effectively.

The NRC staff is in general agreement with the surveillance team's preliminary evaluation that there were no deficiencies identified which would make the five draft SPs unacceptable. Weaknesses that may have contributed to the four potential SDRs and seven observations identified by the DOE/YMPO surveillance team include: (a) inadequate documentation and implementation of specific review criteria for SPs; (b) lack of sufficient detail specified in SP preparation and review procedures; and (c) lack of in-depth surveillances/audits of the SP preparation and review process.