APR 26 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 SOFTWARE QUALITY ASSURANCE PROGRAM

From February 20 through 23, 1990, 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-90-019 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 software QA program.

The NRC staff evaluated the DOE/YMPO QA surveillance to gain confidence that DOE and USGS are effectively implementing the requirements of their software QA program. The NRC staff based its evaluation of the surveillance process and the USGS software QA program on direct observations of the surveillance team members, discussions with the surveillance team, discussions with USGS staff, and reviews of the pertinent surveillance information (e.g., the surveillance check-list and USGS software documents) and other available pertinent information.

The NRC observers found the DOE/YMPO surveillance of the USGS software QA program useful and effective. The surveillance team was familiar with the USGS software QA Plan and the two procedures being implemented. Their checklist for this surveillance was well prepared and utilized in determining the status and effectiveness of implementation. The team seemed to have a good knowledge of the software QA requirements of Nevada Nuclear Waste Storage Investigations Quality Assurance Plan (NNWSI/88-9), Appendix H. The scope of this surveillance was limited to procedural implementation and no assessment of the technical adequacy and qualification of any of the computer codes was made during the surveillance. The NRC staff agrees with the DOE/YMPO surveillance team's conclusion that the implementation of both USGS software procedures is adequate.

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

Sincerely,

/S/

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
M. Baughman, Lincoln County, NV
D. Bechtel, Clark County, NV
D. Weigel, GOA

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Enclosure

SURVEILLANCE OBSERVATION REPORT

1. INTRODUCTION

The United States Geological Survey (USGS) is responsible for the Yucca Mountain Project (YMP) site characterization activities in the areas of hydrology, geophysics, seismology, and some of the geology and geochemistry investigations. Work in these areas is ongoing at the Nevada Test Site (NTS) and the USGS offices in Denver, Colorado; Menlo Park, California; and Las Vegas, Nevada. The USGS uses software in the form of computer models and codes to facilitate their site characterization activites for the YMP. Software development, testing, modification, maintenance and use are controlled through the U.S. Department of Energy (DOE)/Yucca Mountain Project Office (YMPO) approved Software QA Plan (YMP-USGS-SQA-01, Rev.0).

From February 20 through 23, 1990, the DOE/YMPO conducted a surveillance (No. YMP-SR-90-019) of the USGS software program in Denver, Colorado. This surveillance was conducted in accordance with the YMPO Quality Management Procedure, QMP-18-02, "Surveillance", Revision 1. The US Nuclear Regulatory Commission (NRC) staff participated in this surveillance as observers. This surveillance observation report documents the staff's assessment of the effectiveness of the DOE/YMPO surveillance and to a lesser extent, the adequacy of the USGS software QA program.

2. PURPOSE

This DOE/YMPO surveillance evaluated the implementation of USGS software procedures YMP-USGS QMP-3.03, "Software Quality Assurance", Revision 1, and YMP-USGS-QMP-3.14, "Software Configuration Management System", Revision 2, by the USGS. The NRC staff's purpose in observing this surveillance was to gain confidence that the DOE and its contractors are properly implementing the requirements of the QA program by assessing the effectiveness of the DOE/YMPO surveillance and determining the adequacy of the USGS software QA program.

3. SCOPE

The DOE/YMPO surveillance team selected a number of computer codes from the USGS Software Configuration Status Accounting Log that lists 75 computer codes. Two computer codes from this list had been previously examined in DOE/YMPO Audit 89-4 and were not selected for this surveillance. The selected computer codes were checked for verification of procedural implementation. The scope of this surveillance did not include any review of the technical adequacy of the selected computer codes.

4. SURVEILLANCE PARTICIPANTS

DOE/YMPO

T.J. Higgins, QA Engineer, Lead
S.D. Harris, Team Member
R.L. Maudlin, Team Member
N.D. Cox, Team Member
A.C. Williams, DOE Observer
J. Blaylock, DOE Observer

NRC

T.R. Verma, Observer
J.W. Gilray, Observer

State of Nevada

S.W. Zimmerman, Observer

5. SURVEILLANCE SUMMARY RESULTS

The DOE/YMPO surveillance team conducted a detailed examination of the existing USGS records, logs and meeting minutes to assess compliance with the procedural requirements. The team interviewed several USGS and contractor personnel and reviewed their training and qualifications. These personnel included the software QA specialist, Software Configuration Management (SCM) Librarian and technical contacts. The surveillance team concluded that the implementations of both procedures is adequate. No potential deficiencies were identified from this surveillance. However, the team did identify five weaknesses in the form of observations. Three of these observations relate to the implementation of YMP-USGS-3.03, "Software Quality Assurance," Revision 1 and the other two relate to the implementation of YMP-USGS-3.14, "Software Configuration Management System", Revision 2. The surveillance team also made three recommendations in the area of software QA personnel and completion of QA records and logs.

6. USGS AND CONTRACTOR PERSONNEL CONTACTED

L.R. Hays, Technical Project Officer, USGS
T. Chaney, Acting QA Manager, USGS
D.T. Hoxie, Software QA Specialist, USGS
M.A. Wallendorf, SCM LIbrarian, SAIC (Golden)
P.A. Covington, Geologic Division QA, SAIC (Golden)
T.M. Mendez-Viga, Nuclear Hydrology Program QA, SAIC (Golden)
J.S. Gomberg, Technical Contact, USGS
S.C. Harmsen, Technical Contact, USGS

7. NRC CONCLUSIONS

The NRC observers found the DOE/YMPO surveillance of the USGS software QA program useful and effective. The surveillance team was familiar with the USGS software QA Plan and the two procedures being implemented. Their checklist for this surveillance was well prepared and utilized in determining the status and effectiveness of implementation. The team seemed to have a good knowledge of the software QA requirements of Nevada Nuclear Waste Storage Investigations Quality Assurance Plan, NNWSI/88-9, Appendix H. The scope of this surveillance was limited to procedural implementation and no assessment of the technical adequacy and qualification of any of the computer codes was made during the surveillance. The NRC staff agrees with the DOE/YMPO surveillance team's conclusion that the implementation of both procedures is adequate.