UNITED STATES
NUCLEAR REGULATORY COMMISSION
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M E M O R A N D U M

DATE: February, 1994

TO: Joseph Holonich, Director
Repository Licensing and Quality Assurance Project Directorate

FROM: John W. Gilray, Sr. On-Site Licensing Representative

SUBJECT: YMP SITE REPORT

1. On-Site Sample Management Facility & Control of Core Samples

Two YMPO QA surveillances were conducted on (1) the procedural and QA controls of core samples processed, stored and released for use by the Sample Management Facility (SMF) and (2) the control and use of core samples at LANL and USGS.

Surveillance No. YMP-SR-94-019 was conducted the week of December 20, 1993, to determine if the removal of core specimens from SMF, and the return of core specimen remnants to the SMF comply with QA Procedure YLP-SII.1Q-SMF, Rev 0, "Removal of Whole or Other Specimens from Samples by the SMF for Shipment and Remnant Return". Six core specimens that were boxed for shipment were examined during this surveillance along with three remnants that were boxed for return to storage. In particular the marking and preparation of shipping containers, the entries in the Specimen Removal Log, the labeling of the inside sample containers and the unique identifications of the core specimens and remnants were part of the inspections during this surveillance. It was concluded that the core specimens and remnants were correctly being processed by the SMF in accordance with procedure YLP-S II.1Q-SMF, Rev. 0.

Surveillance No. YMP-SR-93-043 was conducted at LLNL and at USGS during the period of September 30 through October 26, 1993. The purpose of this surveillance was to evaluate the control and use of the ESF rock and core samples to determine that personnel were properly processing maintaining identification, and documenting tests and experiment results in accordance with QA procedures. Also personnel were interviewed to determine their awareness of program requirements.

Based on the results of this surveillance it was determined that, overall, LANL & USGS were effectively identifying and controlling the ESF rock and core samples in accordance with QA approved procedure with the exception of one deficiency which was described on a CAR. This was a procedural deficiency for not maintaining in several instances the core temperatures for transportation and storage of core samples.

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The ORs continue to monitor the SMF regarding the control and use of core samples on a regular basis.

2. Job Package (JP) & Test Planning Package (TPP) which Control Work On-site

I am presently reviewing selected JPs and TTPs describing the engineering, excavation, drilling testing and inspection activities at the Yucca Mountain site. In addition I am reviewing the ongoing and completed work and QA records at the site to determine completeness of the JPs and TPPs and whether there is sufficient documentation to defend supporting data that may be used in licensing. In this regard I will be meeting with the YMPO & M&O QA & technical staff periodically to discuss and resolve potential concerns resulting from these reviews.

3. On-Site YMPO QA Activities

John Martin of the YMPO QA organization has recently been assigned responsibility for directing the YMPO QA on-site personnel relative to the overview of on-site activities on a day to day basis. John's role is to assist and support Al Williams, who represents the lead DOE QA on-site representative. One of the major objectives of John Martin is to assure that the YMPO on-site staff are cognizant of important quality affecting scientific and engineering activities and that they are regularly monitoring these activities on a day to day basis.

Particular attention is devoted by the ORs in the review of these on-site activities and the involvement by the YMPO-QA organization.

4. Engineered Barrier Large Block Experiment

Excavation at the test site is underway for the Engineered Barrier Large Block Experiment. This activity is under the direction of Lawrence Livermore National Laboratory (LLNL) and uses Sandia National Laboratories (SNL) to assist in overseeing site preparation, excavation, and sawing of the test block. Tests and experiments (under WBS 1.2.2.2.4 & SCP 8.3.4.2.4.4.1) of this test block are intended to gather preliminary data to evaluate concepts relating to the coupling of thermal, mechanical, hydrological, and chemical processes, in order to develop models of the performance of a nuclear waste repository.

The overall activities of the Large Block Tests are described in the Scientific Investigation Plan for Large Block Testing of Coupled Thermal Mechanical Hydrological-Chemical Processes (TMHC), SIP-NF-02-Rev.0. Also a Study Plan is in preparation for these activities and should be available to NRC for review in March. Detailed description of testing activities, requirements, and constraints will be included in Activity Plans (AP). Detailed information of construction related activities will be included in Job Packages and Test Planning Packages.

The Large Block Tests (LBT) are divided into 5 major areas as follows: LBT-01: Collect and isolate rock blocks. This activity includes locating a rock outcrop where the large block will be isolated, collecting smaller blocks, and cutting and preparing the blocks(s). LBT-02: Design and fabricate a load retaining frame. This activity includes designing and constructing a steel frame that is big enough to accommodate the large block and strong enough to retain the stresses that will be loaded on the large block. LBT-03: Characterize the blocks. This activity includes determining the physical and hydrological characteristics of the large block and the smaller blocks. The physical characteristics include, but are not limited to, dimensions, fracture density and configuration, fracture aperture, mechanical properties, and thermal properties. The hydrological characteristics include, but are limited to, moisture content, effective porosity, suction potential, saturated permeability. LBT-04: Conduct the main tests, This activity includes testing on the large block of the coupled TMHC processes, and the tests of model validation on smaller blocks made of the same material as the large block. Data acquisition, analysis, and reporting are also included in this activity. And LBT-05: Perform model calculations in support of the design of the test, and analyze the test results.

Also quality grading classification studies have been prepared for the above activities. The SIP-NF-02 and grading reports have been submitted to the NRC staff (K. Hooks) for information.

The ORs will continue to follow the progress of these activities, particularly the QA overview and keep the NRC staff appropriately informed.

The YMP QA organization has performed a QA surveillance (YM-SR-94-014) of the 1st phase of the Large Block Experiment activities regarding the documented controlled use of water. It was verified by the surveillance team that correct water tanks were in place to control the use of water and that water log books were on location which recorded the daily use of all water. The surveillance team concluded that LANL was effectively implementing requirements for the control and use of water.

5. Design Reviews of ESF Design Package

I participated on a part time basis in the 90% Design Reviews of ESF Design Package 2B from January 5 through January 7, 1994. The NRC staff participated as observers in this Design Review. This design package consisted of the ESF Ventilation System procurement specifications, the Surface Conveyor System concrete drawings and specifications, the Rail Haulage System procurement specifications, the Tunnel Boring Machine Platform procurement specifications and the Communications System specifications. While the NRC staff found the design package 2B reasonably acceptable they did identify several weaknesses in the preparation of this design package relative to the preparation and documentation of the DIE and the lack of an effective design interaction with various responsible design groups. For more details on these issues refer to the NRC staff report on this subject (i.e., contact Bill Belke for report).

I also participated at the request of the NRC staff in the observation of the 90% Design Review of the ESF Design Package 1C from January 25 through January 26. This design package consisted of designs and specifications for the Standby Power Generators and the Compressed Air System. This design package was found generally acceptable recognizing the questions and comments submitted by the participating reviewers remain to be resolved. This design review appeared to be conducted in a more effective manner than the previous design review on Package 2B.

The schedule for future upcoming design reviews is Design Package 2C is due early April and Design Package 1D is due mid June of 1994.

6. M&O Design Improvement Plan

M&O continues to initiate corrective and improvement actions to enhance the overall design process in accordance with the M&O Design Improvement Plan. These actions were determined necessary when the YMPO QA organization identified serious procedural control weaknesses in the design process. The majority of the Design Control improvements have been completed to satisfy the Improvement Plans, however outstanding improvement actions identified in the plan are still ongoing and remain to be accomplished. One area in particular where ongoing corrective measures are taking place is improving the procedural detail for performing, scheduling, and documenting the Determination of Importance Evaluation. This task is expected to be complete during the month of March. The recent YMPO QA surveillance of the DIE process which I observed and reported on (refer to Item 10 of this report) further confirmed the need for procedural enhancement since certain key DIE evaluation steps were not adequately described. The YMPO QA organization will need to audit/surveil this process upon completion of these corrective measures to assure completeness of procedures and proper implementations.

The ORs are monitoring the design improvement process closely and keeping the NRC staff appropriately informed of the progress.

7. Upcoming M&O Audit of M&O QA Program

At the request of the NRC staff I will observe the M&O Audit of the M&O activities at Las Vegas scheduled to start Monday, February 21, 1994. This audit will focus on M&O Organization, Design Control, Implementing documents and Corrective Actions. The audit of Design Control will be performanced based. I intend to focus on the auditing of the Design Control process since previous M&O audits have not been that effective in this area.

8. Change in M&O Organization

Effective January 10, 1994, Ron Ruth has replaced Jack Jackson as the M&O Quality Assurance Manager located in Las Vegas, Nevada, and who reports directly to the M&O General Manager in Vienna, Virginia. This change should improve the effectiveness of implementation of the M&O QA program particularly in the area of Design. I have observed Ron Ruth's

performance within the M&O QA organization and have noted his strong ability of leadership and understanding of QA requirements. The ORs will continue to closely monitor the performance and progress of the M&O QA organization QA functions and report the results as appropriate, to the NRC staff.

Alden Segrest of Duke Engineering & Services has accepted the position of MGDS Development Manager within the M&O organization. This position which was previously held by Robert Sandifer (Robert has been elevated to Deputy MGDS Operations reporting to Dale Foust, Assistant General Manager), has the responsibility for managing the overall design process including the Design Improvement Plan. The ORs meet with Alden Segrest on a regular basis to keep abreast of the Design activities and the status of accomplishments of the Design Improvement Plan.

9. DOE Rescheduled Audit of the YMPO

DOE scheduled QA audit of the Las Vegas YMPO has been rescheduled from the week of March 21, 1994, to the week of July 18, 1994.

10. OR Observation of DOE Surveillance of M&O Design Process

At the request of the NRC staff I observed the U. S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM) Yucca Mountain Quality Assurance Division (YMQAD) Quality Assurance Surveillance (YMP-SR-94-013) of the design process of the Management and Operating Contractor (M&O). The surveillance team conducted interviews with M&O personnel and reviewed pertinent documents in Las Vegas, Nevada. The purpose of this surveillance was to review design packages for the Exploratory Studies Facility (ESF) to verify that items are classified in accordance with approved QA procedures and to verify that requirements identified in the Determination of Importance Evaluation (DIE) and the Design Acceptability Analysis (DAA) documents are incorporated into appropriate design documents.

I observed and evaluated the YMQAD QA surveillance to gain confidence that OCRWM and the M&O are property implementing the requirements of their QA programs by assessing the effectiveness of the YMQAD surveillance and determining the adequacy of the M&O QA program in areas of design control which were within the scope of the surveillance. This evaluation is based on direct observations of the surveillance process, discussions with the YMQAD surveillance team and involved M&O personnel, and reviews of pertinent M&O procedures and records. The surveillance team reviewed the DIE and the resultant Waste Isolation Evaluations, design drawings, and specifications for the ESF starter tunnel drill and blast section, north portal pad, water supply system, switchgear building, temporary 69kv power supply system, rock storage area, and starter tunnel steel arch section. The surveillance team also reviewed the DAA to verify that its requirements and commitments had been correctly incorporated into the ESF Design Requirements document.

As a result of these activities, the surveillance team concluded that the design documents were being developed in an acceptable manner. However, there were four areas where the procedural controls did not adequately describe the design process, and four preliminary Corrective Action Requests (CARs) were generated as a result. In addition, the surveillance team made four recommendations to improve the M&O's design control process. The staff agrees with these CARs and recommendations.

As a result of this observation it was determined that the surveillance was effective and that within the scope of the surveillance, the M&O design control process effectively controls the ESF design except for the items noted in the four preliminary CARs. In addition, it was observed that there were general improvements in the design process, recognizing that the M&O is in the process of initiating and implementing corrective design control measures addressed in its Design Improvement Plan. The ORs will continue to closely monitor the M&O design process and the ongoing corrective measures to improve the overall design process.

There are no new issues that this office has identified that have not been brought to management's attention.

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