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M E M O R A N D U M

DATE: May 18, 1989

FOR: John J. Linehan, Director, Repository Licensing Project  
Directorate, Division of High-Level Waste Management,  
M/S 4-H-3

FROM: John W. Gilray, Sr. OR - YMP

SUBJECT: YMP Site Report for the months of March and April, 1989

The following report pertains to the QA, waste packages and surface facility activities associated with the Yucca Mountain Project for the above-referenced time period.

I. QUALITY ASSURANCE

A. QA AND TECHNICAL AUDITS OF FENIX AND SCISSON (F&S) AND HOLMES AND NARVER (H&N)

This office participated as the lead NRC observer on the YMP QA and technical audits of F&S and H&N conducted the weeks of April 10 and April 24 of 1989 respectively. The purpose of these two audits was to evaluate F&S and H&N QA and technical programs and to determine if H&N and F&S are qualified to start ESF Title II design activities.

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In general the QA and technical plans, procedures and personnel of H&N and F&S are acceptable for the start of ESF Title II design work except for those design activities that require support from QA software program. Ongoing work is taking place by YMP, F&S and H&N to develop an acceptable QA software program. Particular attention by YMP, H&N and F&S needs to be placed on the design work to assure the ongoing work is not compromised by the inadvertent use of an unqualified software program. The QA organizations of both H&N and F&S have been strengthened by assigning projectized QA managers and a projectized QA staff for developing and assuring proper implementation of the QA during the design work. The technical staff of both organizations were well qualified, experienced and knowledgeable of the overall design process with the exception of some lack of H&N understanding of configuration management.

In summary I found a continued improved transformation and growth of the QA program, plans and procedures at H&N and F&S.

Of particular interest in regard to these two audits was the audit team finding that ESF structures could be constructed without the design verification having been completed on the design. The YMP QA program allows the verification to be completed prior to relying on the structure to perform its intended function. This flexibility in the verification process is a fallout from controls allowed for NRR commercial nuclear reactors. To preclude possible abuse to this verification process the NRC and DOE should consider revising this control to require that verification be completed prior to releasing design packages and allowing for an extension as an exception rather than a rule.

In order to determine if H&N and F&S QA programs are fully qualified NRC will have to observe YMP audits of the implementation of their QA programs during ESF Title II design activities.

**B. STATUS OF PARTICIPANTS QA PROGRAMS**

The surveillance review of the participants QA program procedures has been accomplished by YMP-QA to determine if those QA procedures necessary to start ESF Title II design activities are in place and acceptable prior to the start of ESF Title II activities. At present H&N and F&S QA program procedures have been found acceptable with the exception of their QA software programs which are under development and review. The other participants QA program procedures either require additional improvements or verification that they are acceptable for implementation.

As a result of a recent YMP surveillance of Sandia's readiness to start ESF Title II activities several major deficiencies were identified pertaining to design and design interface activities, the preparation and assignment of quality levels, the preparation of the RIB and the control of records. YMP is awaiting Sandia's response to the SDRs issued on these findings. The scheduled June audit of Sandia was postponed as a result of this surveillance.

**C. STATUS OF START OF ESF TITLE II DESIGN ACTIVITIES**

The YMP office authorized the participants to start the ESF Title II design work providing certain conditions are fulfilled. These conditions are addressed in YMP authorization letter of April 17, 1989 and May 12, 1989 which address the QA recommended actions and prerequisites addressed in the YMP, J. Blaylock letter of January 31, 1989. At present only H&N and F&S have met the necessary conditions to start Title II ESF design activities.

D. FORMAL RELEASE OF SDRD REV. 0

The SDRD Rev. 0 for the ESF was formally issued April 11, 1989. This version of the SDRD is the same that was issued to the participants for review and comment (commonly referred to as Benchmark 4 and a 02-08 review). The numerous comments and disputed issues resulting from the participants' reviews have not however been resolved and appropriately incorporated in Rev. 0. This is expected to be accomplished near the end of May. Procedures are in place to require a re-design review and verification of design packages when the SDRD is revised to assure the changes are included and the necessary analyses are accomplished. Since H&N and F&S are not presently involved in major complex design packages YMP believes there will be little impact on the H&N and F&S designs once the SDRD Rev. 1 is released.

Close management attention by YMP and participants needs to be focused on the documentation, and accountability of the resolutions to the participants and YMP SDRD comments and on the verification process to assure that the SDRD revision and design output documents correctly incorporate the resolutions to these comments. Procedural controls are in place to accomplish this, however there is some risk in the successful completion of this task due to the complexity and number of organizations involved.

The YMP Systems Requirements document which is derived from the DOE/Hqts Generic Requirements and feeds input to the SDRD for the repository, waste package, and the ESF is under a final YMP-06-03 review. This document is expected to be submitted to DOE/Hqts in July for their 3 to 6 month review. Upon formal release of the Systems Requirements document the SDRD for the ESF will have to be revisited again to verify it complies with this document and make the necessary changes if it does not. Of course the design packages will also have to be revisited if the SDRD changes.

E. DESIGN ACCEPTABILITY ANALYSIS (DAA)

As a result of issuing the DAA, 54 comments have been issued which will be evaluated, documented and closed out per QMP-02-08. The plan for implementing the DAA recommendations is under development and will be published as an Appendix to the original technical Assessment Review Plan.

F. QA ORGANIZATION

YMP upper management is still actively recruiting for senior QA level positions both for SAIC and YMP. The overall QA effort at the YMP and at participants could be more effective with a larger and more experienced QA staff within YMP.

G. QA ASSOCIATED WITH THE USE OF SCIENTIFIC NOTEBOOKS

At the QA monthly meeting March 22, 1989 YMP-QA discussed the QA controls applied to the scientific tests and results performed by the participants (labs and USGS, etc.) which was informative and productive. These controls are addressed in the minutes of this meeting submitted through J. Linehan letter of May 16, 1989.

While I believe these controls are reasonably sufficient to control the documentation and recording of scientific data it seems appropriate for the technical and QA staff to review these controls to determine if they find the controls adequate. If additional information or clarification is necessary the OR office is available to assist in obtaining and providing such information. Conducting similar presentations on difficult QA issues at this type of QA meeting is productive provided there was better representation from QA members of participants. Suggested topics to consider are computer software, readiness reviews, best available data, study plans, quality levels and graded QA controls.

## H. QUALITY ASSURANCE LEVEL ASSIGNMENTS (QALAs)

YMP is reviewing 7 of the 9 QALAs prepared by Sandia but is having difficulty in the review due to the complexity of the procedures and the fact that these procedures and the process is new to the reviewers. The ESF Title II design activities is on hold at F&S until the release of certain QALAs.

## I. MISCELLANEOUS

- YMP conducted a two day technical QA audit training course for those technical specialists involved in the QA and technical audits to assure they are proficient and skilled in audit techniques. This action was recommended during the NRC staff observation of the 1988 supplement of the F&S audit. (Reference NRC Observation Report No. SB9-2). After reviewing and discussing the training course material with the YMP QA Staff I found it generally acceptable except for the need to explain in more detail the audit techniques on how to technically evaluate the qualification, knowledge and capabilities of the technical staff, and the contractors' design packages. This concern was brought to the attention of YMP-QA and will be followed up in future discussions with YMP-QA.
  
- The QA software programs of the participants continued to be deficient. Meetings are taking place between YMP-QA and participants to resolve comments and revise the QA software programs. Title II ESF design activities which rely on QA software programs cannot take place until the programs are found acceptable by the YMP. YMP is also identifying and assessing previous designs, calculations and studies which used uncontrolled software programs to determine the acceptability of the output product and corrective actions where necessary. Also this office met with YMP to discuss the problems in controlling proprietary software programs

used by reputable and qualified engineering firms. YMP has agreed to take action to evaluate this issue and determine how best to control these types of software programs.

† The investigation pertaining to the Singer allegation is still under evaluation by QA Projects. A report on this investigation and evaluation will be issued by the QA organization upon completion of their review which is expected in several months.

## II. SURFACE FACILITIES

F&S has completed the Basis for Design document for Title II which is going through review by YMP. The Engineering Plan is presently under development. F&S is waiting for YMP approval of the upper tier Quality Assurance Level Assignments before starting on ESF Title II designs.

H&N is presently developing the Engineering Design Plan and Basis For Design document (BFD). In addition H&N is scoping 7 construction packages from 23 design packages that will be addressed in the BFD. The two construction packages being worked on are the initial site preparation package and the main pad package.

## III. WASTE PACKAGES

The waste package design is presently undergoing a quality management review per QMP-06-03.

Discussions continue with YMP personnel and a planned visit to Lawrence Livermore National Laboratory is expected in June or July to become up-to-date with the overall waste package activities.

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