

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION
QUALITY ASSURANCE SURVEILLANCE REPORT
OF
RAYTHEON SERVICES NEVADA REVIEW OF
SITE CHARACTERIZATION FACILITIES
SURVEILLANCE NO. YMP-SR-92-030
CONDUCTED SEPTEMBER 15 THROUGH 28, 1992

ACTIVITIES SURVEILLED:

EXPLORATORY STUDIES FACILITY/GEOLOGIC REPOSITORY OPERATIONS AREA
DESIGN INTERFACE

Prepared by: Robert E. Harpster Date: 10/13/92
Robert E. Harpster
Senior Quality Assurance Engineer
Surveillance Team Leader
Yucca Mountain Quality Assurance Division

Approved by: R. G. Horton For Date: 10/15/92
Donald G. Horton
Director
Office of Quality Assurance

1.0 EXECUTIVE SUMMARY

This surveillance assesses the interface activities of Exploratory Studies Facility (ESF)/Geologic Repository Operations Area (GROA) design.

10 CFR Part 60, Subpart B, Section 60.15 (d), details the program of site characterization to protect the proposed repository against potential adverse effects as follows:

1. Investigation in a manner to protect the repository,
2. limit the number of boreholes consistent with needed information,
3. locate boreholes and shafts in areas where shafts are planned or in large unexcavated pillars, and
4. plan exploratory drilling, excavation, and insitu testing to coordinate with repository operations.

Responsiveness to these requirements was found in the following listed documents and drawings, and were available during the ESF Title II, Package IA 90% technical review.

1. The Control Change Board (CCB) Controlled Title I Design Summary Report for the ESF.
2. The site Characterization Program Baseline (SCPB) YMP/CM-0011, Revision 6; an updated document that presents the conceptual plan for the ESF, the potential repository, and detailed descriptions of the integration.

This surveillance identified no conditions adverse to quality and, therefore, no Corrective Action Requests were issued.

2.0 PURPOSE AND SCOPE

This surveillance was performed to evaluate the following:

1. Project response to interface requirements.
2. Comments and their resolution of the Raytheon Services Nevada (RSN) ESF 90% design where ESF/GROA interface concerns appeared to be a consideration.

3. Repository design organization participation in the review of the ESF 90% design.
4. Availability of drawings reflecting interface.
5. Water tank design adequacy.

3.0 SURVEILLANCE TEAM

Robert E. Harpster, Surveillance Team Leader, Senior Quality Assurance Engineer, MAC Technical Services (MACTEC)/Yucca Mountain Quality Assurance Division (YMQAD)

Thomas E. Vandel, Senior Quality Assurance Engineer, MACTEC/YMQAD

4.0 PERSONNEL CONTACTED DURING SURVEILLANCE

James Gardiner, General Engineer, ESF Branch, U.S. Department of Energy (DOE)

Neil Norman, Observer/Commenter (contacted by phone), Weston

Edgar Petrie, Branch Chief, ESF Branch, DOE

Randolf Schreiner, Manager, Systems Engineering, RSN

5.0 SURVEILLANCE RESULTS

Responsiveness to interface requirements were found in the following documents and were available during the ESF Title II, Package IA independent review.

1. CCB controlled Title I design summary report for the ESF: This report is based on a design study that incorporated the findings from the ESF alternatives study with respect to favorable design features, and explicitly considered the interfaces between the ESF and the conceptual design of the geological repository.
2. SCPB YMP/CM-0011 shows illustrations of the conceptual plan for the general arrangements for the surface facilities (Section 8.4.2.3.3.2), for the potential repository, and the ESF testing, layout and operations (Sections 8.4.2.3.1 and 8.4.2.3.5). Detailed descriptions of the integration of the ESF with the

repository design covers the objectives, and the specific actions taken to plan and coordinate the ESF design and layout with the repository designed in a manner consistent with the governing regulations of 10 CFR 60.15 (c) (1), (3), and (4). The specific intent of this effort is to limit potential interference between the ESF and the repository. The repository conceptual design is described in detail in Chapter 6 of the Site Characterization Plan (SCP) and support by detailed evaluation presented in the SCP Conceptual Design Report (Sandia National Laboratories (SNL) 1987).

The ESF testing, layout, and operations are described in Sections 8.4.2.3.1 and 8.4.2.3.5 of the SCPB. The results of the ESF alternative studies are also reported in the SCPB, Page 8.4.1-180, and the SCPB states, "ESF alternative studies recently completed...the configuration study was defined as the combination of ESF configuration and associated construction methods integrated with a repository configuration so as to provide compatible interfaces between the ESF and the potential repository. That is, for each configuration the access and other ESF interfaces with the potential repository were defined in the context of a total ESF/Repository system, so the ESF access were compatible with and had integral functions in the repository."

Also, to ensure interfacing design consideration, the repository design organization was specifically asked to review and comment on the design interfaces. This organization participated in the design review.

Independent technical review (number PO-MR4-ESFN-1A) for Title II: 1A was reviewed and utilized as a subject for the interface concern. The comments generated by Neil Norman, designated by Headquarters as an observer, were signed by James Gardiner as the DOE coordinator for the observers. Comments and their resolution were completed in accordance with the requirements.

Four items included in the document were used as examples for further review and as discussion subjects. The results are as follows:

1. Items 1 and 2, "Interface with GROA" and "Water Tank Design."
 - a. Surface facilities are now all located above the Probable Maximum Flood (PMF).
 - b. ESF proposed buildings, road, muck conveyor, and water tank are all considered to be temporary and only for ESF use. Any and all could easily be removed or moved.

- c. The RSN Manager, Systems Engineering, indicated that the tank design is adequate, and its location is satisfactory for continued use by the GROA without interferences; although, there are no such plans at present.
 - d. Design reviews (i.e. 50% and 90%) included delegated reviewers from the repository design organization as an interface review.
 - e. Surface facility repository location drawings are located in the Title I Design Summary Report and in the SCPB, and were available during the review.
 - f. Parson Brinkerhoff's documents prepared for alternate studies were relied on as the base for the current baseline plot. A study of the portal location, main interface area, based on interface drawings developed by Parson Brinkerhoff, was available for use during the 90% review of the 1A package.
2. Item 3, "Flood Plain Impacts".
- a. An SNL report discussed the concern of occurrence of debris flows included in the flood plain. The PMF design studies did include consideration for the influence of debris flows and the resulting PMF is shown on design drawing YMP-025-1-CIVIL-PL117 of ESF Package 1A for 90% review.
3. Item 4, "ESF to GROA Interface Coordination."
- a. As established in 1.b above, the concern of surface facilities interfering with the repository surface facilities is not considered to be a problem (including ventilation and utilities).
 - b. Also, the present repository design contributes little information for plot plan overlays. Again, the RSN position is that all ESF facilities and appurtenances are temporary, and if a conflict does develop, any of the items can be moved or removed.

Within the available information for the designer, ESF/GROA Design Interface activities appeared to be performed in accordance with requirements.

6.0 RECOMMENDATIONS

None.