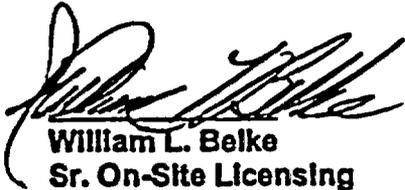


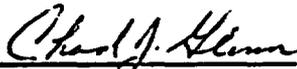
**U.S. NUCLEAR REGULATORY COMMISSION
ON-SITE LICENSING REPRESENTATIVE'S REPORT**

NUMBER 8-04

FOR THE REPORTING PERIOD OF JULY 1 THROUGH August 31, 1998

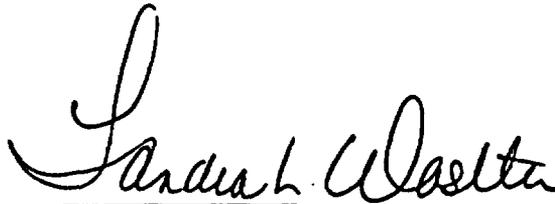


**William L. Belke
Sr. On-Site Licensing
Representative
Performance Assessment &
High-Level Waste Integration
Section
Division of Waste Management**



**Chad J. Glenn
Sr. On-Site Licensing
Representative
Performance Assessment &
High-Level Waste Integration
Section
Division of Waste Management**

Reviewed and approved by:



**Sandra L. Wastler
Acting Section Leader
Performance Assessment &
High-Level Waste Integration
Section
Division of Waste Management**

TABLE OF CONTENTS

**U.S. NUCLEAR REGULATORY COMMISSION
ON-SITE LICENSING REPRESENTATIVE REPORT
NUMBER OR-98-02**

	PAGE
1. APPROVAL SHEET.....	i
2. TABLE OF CONTENTS.....	ii
REPORT DETAILS	
1.0 INTRODUCTION.....	1
2.0 OBJECTIVES.....	1
3.0 QUALITY ASSURANCE, ENGINEERING, AND NRC KEY TECHNICAL ISSUES.....	1
4.0 EXPLORATORY STUDIES FACILITY AND KEY NRC TECHNICAL ISSUES.....	6
5.0 GENERAL	10

REPORT DETAILS

1.0 INTRODUCTION

The principal purpose of the On-Site Licensing Representative (OR) reports is to alert U.S. Nuclear Regulatory Commission (NRC) staff, managers and contractors to information on the U.S. Department of Energy (DOE) programs for site characterization, repository design, performance assessment, and environmental studies that may be of use in fulfilling NRC's role during pre-licensing consultation. The principal focus of this and future OR reports will be on DOE's programs for the Exploratory Studies Facility (ESF), surface-based testing, performance assessment, data management systems and environmental studies. Relevant information includes new technical data, DOE's plans and schedules, and the status of activities to pursue site suitability and ESF development. The ORs also participate in activities associated with resolving NRC Key Technical Issues (KTI). In addition to communication of this information, any potential licensing concerns, or opinions raised in this report represent the views of the ORs. The reporting period for this report covers July 1 through August 31, 1998.

2.0 OBJECTIVES

The function of the OR mission is to principally serve as a point of prompt informational exchange and consultation and to preliminarily identify concerns about site investigations relating to potential licensing issues. The ORs accomplish this function by communicating, consulting and identifying concerns. Communication is accomplished by exchanging information on data, plans, schedules, documents, activities and pending actions, and resolution of issues. The ORs consult with the DOE scientists, engineers, or managers with input from NRC Headquarters management on NRC policy, philosophy, and regulations. The ORs focus on such issues as quality assurance (QA), design controls, data management systems, performance assessment, and KTI resolution. A principle OR role is to identify areas in site characterization and related studies, activities, or procedures that may be of interest or concern to the NRC staff.

3.0 QUALITY ASSURANCE, ENGINEERING, AND NRC KEY TECHNICAL ISSUES

- o On July 14, 1998, the ORs attended a briefing on the Technical Data Management System (TDMS). The TDMS contains specific information to support development of the Viability Assessment, System Performance Assessment, Environmental Impact Statement, Repository Design Input and License Application. This system is accessible to the public and is intended to provide a centralized source of project-related data and satisfy DOE/NRC traceability requirements. The TDMS is accessible through the DOE Yucca Mountain Project Internet Home Page. Detailed technical data, e.g., heater test data, weather test data etc., will be contained in the DOE records system. The basis for developing the Viability Assessment and License application will be located in the Web Base Information System. All project data, not data necessarily used for licensing, will be listed in the Licensing Support Network.

- The online TDMS took about 1½ years to develop and is about 35 percent complete. Most of the data in the TDMS has been identified as "To Be Verified" (TBV) or not qualified. It is the OR's understanding that much of the data identified as TBV is a result of the finding that many of the M&O/USGS procurements of supplier's items and services were found not to be in compliance with QA program requirements.
- o On July 30, 1998, the ORs attended an internal DOE/M&O meeting which discussed the status of the implementation of the performance assessment transition plan. The transition plan was established to develop and implement a QA program for performance assessment activities and work products since these activities and work products were allowed to develop outside QA program controls. It is anticipated that the QA program development activities will be completed and implemented by October 1998.
 - o The current listing and status of the NRC QA Open Items is provided in Enclosure 1.
 - o On August 17 through August 20, 1998, the NRC OR and a staff member from the Division of Waste Management QA staff observed a DOE Office of Quality Assurance QA performance-based audit of the QA program of the Civilian Radioactive Waste Management System Management and Operating Contractor (M&O). The purpose of this audit was to evaluate the implementation of the M&O QA program requirements associated with the System Description Document (SDD) process. In the NRC OR Report dated December 1995 and in several NRC audit observation reports, the previous document system was noted as being somewhat complex, multi-tiered, and difficult to use especially for tracing the flowdown of requirements. As a result of observing this audit, the NRC OR believes the revised system for the SDD process represents a significant improvement when compared to the prior document hierarchy system. The results of the NRC audit observation will be documented in NRC Observation Report OA 98-02.
 - o Revision 8 to the DOE QARD includes the DOE position on data qualification. However, an NRC staff member noted that the NRC position on cited literature as defined in NRC NUREG-1298 may require further clarification. A sample of what DOE considers cited literature was provided to the OR and underwent discussion by the NRC Management Board. It was decided that the NUREG was sufficient and no clarification was needed. Consequently, NRC Open Item 96-1 is closed. Subsequently, DOE has developed an implementing procedure for the commitment to data qualification in QARD Revision 8. It is expected that this procedure will be completed and available to NRC prior to the end of FY98. Because of the importance of this subject matter, when this procedure is available, NRC staff will review this procedure to assure it meets the intent of the NRC regulations and staff positions.
 - o DOE has initiated a work effort to produce the final report from Los Alamos National Laboratory to resolve NRC Open Item 96-2 (initiated by NRC on October 24, 1996) on level of quality of work products. The procedure, YAP-SIII.1Q (Qualification of

Unqualified Data) is being revised and a technical assessment will be authorized to review the material in question to close this open item. The final report is expected to be completed in early 1999. Upon completion, the report will be forwarded to NRC for review and possible closure of this open item.

- o The M&O line organization performed two vertical slice reviews in late 1997 and early 1998. The findings from these reports were perceived by NRC to be of significance and necessary to track the corrective action through NRC Open Item 98-3. DOE Corrective Action Request LVMO-98-010 outlines the recommended actions to correct some of the deficiencies identified. An implementation plan has been developed by the line organization and was presented to NRC management at the August 19, 1998, NRC/DOE Management meeting. DOE indicated that the associated processes and work products relative to the vertical slice findings will be generally sufficient to support the soon-to-be-released Viability Assessment. Findings are planned to be fully resolved as DOE prepares for Site Recommendation and License Application.
- o On September 9, 1997, OR and DOE QA Management discussed an NRC request for obtaining the necessary additional information from DOE related to closing Site Characterization Plan Question 55 and Study Plan 8.3.1.5.2.2 comments. This has been discussed with DOE numerous times and listed in the OR Report since the original request. The NRC September 9, 1997, request for the information needed to resolve and close these open items is the responsibility of the appropriate DOE Technical Team Lead and not DOE QA. There appears to be no further actions being taken to resolve this open item. It should be noted that NRC QA Open Item 98-2 (See Jan./Feb. 1998 OR Report) may have a partial impact on the corrective action needed to close this open item and should be considered in its closure.
- o On June 1997, the NRC released for public comment, drafts of four Regulatory Guides, three Standard Review Plan sections, and a NUREG document designed to help power reactor licensees use risk information to make changes in their plant's licensing bases. Parts of this draft guidance provided methodology pertaining to use of the graded QA approach to determine the relative importance to safety of structure, systems, and components. The OR provided this information to DOE requesting a cursory review be performed for the purpose of possible application or parts thereof, to the high-level waste program. DOE completed its review of this draft guidance which resulted in six comments that were transmitted to NRC in the April 6, 1998, letter from A. Brownstein to the NRC Rules and Directives Branch. DOE indicates that they do anticipate the potential for use of the methodologies in the draft guidance, to the extent this information may be applicable to the Yucca Mountain Site in the future.

On June 29, 1998, the final guidance was approved and made publicly available. The final guidance was provided to DOE and discussed at an Appendix 7 meeting in Las Vegas, NV, on July 17, 1998, between NRC and DOE representatives. Representatives from Clark and Nye Counties were also in attendance. The purpose of the meeting was to promote a dialogue of the graded approach from the nuclear power plant and high-

level waste perspectives. The meeting also afforded DOE the opportunity to explain its present application of the graded approach in addition to future applications being considered. Information was also exchanged regarding past and present regulatory guidance that may be applicable to the high-level waste repository program. Feedback indicated this was a productive meeting and it was agreed that more such meetings on this subject should be scheduled in the near future.

- o It is the OR's understanding that from discussions with the DOE QA Director and Acting QA Director, DOE Headquarters is preparing to respond to the NRC November 21, 1997, letter from M. Bell to A. Brownstein pertaining to DOE Administrative Procedure AP 32.6 Reporting of Defects and Noncompliance to meet the intent of 10 CFR Part 21.
- o It appears that from recent OR observations, there is much data in the DOE/M&O data systems that is TBV, TBD, or unqualified for whatever reason. For example, the TDMS has almost all the data as TBV or unqualified. This was also noticed in the SDDs during the recent NRC observation of the August 17-20, 1998, audit of the M&O. It is also prevalent in the August 1998 TSPA Technical Basis Documents (WBS 1.2.5.4). The amount of uncertain data appears to be excessive especially after the QA programs have been accepted by the NRC and in use for about the past ten years. It should be noted that the QA organization has identified the majority of the issues. The problem or obstacle lies in timely corrective action and resolution.

4.0 EXPLORATORY STUDIES FACILITY AND NRC KEY TECHNICAL ISSUES

Enhanced Characterization of the Repository Block (ECRB)

Excavation of the ECRB or "Cross-Drift" began on December 8, 1997, and has advanced to station 19+46 meters over this reporting period (See Enclosure 2). In March 1998, the TBM started excavating a five meter diameter drift that will extend over 2800 meters southwest across the repository block and through the Solitario Canyon fault. This cross-drift will allow the collection of additional scientific and engineering data in the potential repository block to support the characterization of Yucca Mountain. This excavation is expected to be completed in October 1998.

Preliminary cross-drift stationing of selected stratigraphic and structural features encountered as of August 31, 1998, is provided below.

<u>Unit/Feature</u>	<u>Stationing (meters)</u>
Topopah Spring upper lithophysal zone	0+00 to 10+15
Drill Hole Wash Fault	Not detected
Ghost Dance Fault (strike/dip 183/83W, offset not evident)	4+99

Sundance Fault (strike/dip 147/82SW; offset TBD)	11+35
Topopah Spring middle nonlithophysal	10+15 to 14+44
Unnamed fault (strike/dip 170/83W; offset TBD)	13+18
Topopah Spring lower lithophysal	14+44 to TBM

Exploratory Studies Facility (ESF) Testing

Alcove 1:

On March 9, 1998, investigators started an artificial infiltration test above this alcove. A drip irrigation system is installed at the surface 37 meters above this alcove to determine if this water can induce fracture flow in Alcove 1. Traced water is applied at a measured rate of roughly 600 gallons per day. Moisture monitoring instrumentation is installed at the surface and in the alcove. A drip collection system is also installed in the alcove. On May 5, 1998, water was initially detected dripping from the crown of the alcove. As of August 22, 1998, approximately 63,375 gallons (239,895 liters) of water have been applied at the surface and 1,883 gallons (7,128 liters) collected in the alcove. On August 13, 1998, the surface irrigation was shut-off. Investigators plan to restart this system with a new tracer in early FY 1999. A report that addresses the infiltration modeling aspects of this testing is scheduled to be submitted to DOE in September 1998. A second report describing the overall results of this test is expected to be submitted to DOE in the Fall 1999 time frame.

Alcove 2:

This alcove now serves as a Yucca Mountain display center for ESF visitors.

Alcoves 3 and 4:

Over this reporting period, there were no new activities in Alcove 3. Core samples previously collected from Alcoves 3 and 4 will be used for Paintbrush non-welded tuff (PTn) lateral diversion studies and to further characterize the hydrologic properties of this unit. A report on the initial results of this work is expected to be submitted to DOE in September 1998. In Alcove 4, DOE's Test Coordination Office completed preparations for a fracture-matrix test. This test is expected to start in September 1998.

Alcove 5 (Thermal Testing Facility Access/Observation Drift, Connecting Drift, and Heated Drift):

DOE initiated the heating phase of this test on December 3, 1997. The four-year heat-up phase will be followed by a four-year cool-down phase. Heat generated by 9 electrical floor heaters and 50 wing electrical heaters will simulate heat from emplaced waste. This test is

designed to heat approximately 15,000 cubic meters of rock in the repository horizon to 100 degrees centigrade or greater to investigate coupled thermal-hydrologic-mechanical-chemical processes. These processes are monitored by approximately 4000 sensors positioned in 147 radial boreholes around the heated drift. A data collection system records measurements from these sensors. On August 31, 1998, sensors in the heated drift recorded the following preliminary temperatures: canister temperature of 145.0 degrees centigrade, rock-mass surface temperature of 131.1 degrees centigrade, and air temperature of 134.4 degrees centigrade. Over this reporting period, approximately 6 liters of water was collected from Drift Scale Test instrumentation borehole #60 and sent for laboratory analyses. A Drift Scale Test annual report is scheduled to be submitted to DOE in September 1998.

Thermomechanical Alcove:

The Single Element Heater Test started on August 26, 1996. This test is designed to heat approximately 25 cubic meters of rock to 100 degrees centigrade or greater to investigate the thermomechanical properties of rock in the potential repository horizon. The thermal objective for the heat-up phase of this test was met, and the heater was turned off on May 28, 1997, to begin the cool-down phase of this test. In late December 1997, the cool-down phase of the test was completed. After the completion of the cool-down phase, the heater hole and other instrumentation holes were overcored to evaluate the thermal effects on the rock mass. A final report on the results of the Single Element Heater Test is expected in January 1999.

Alcove 6 (Northern Ghost Dance Fault Alcove):

Testing in this alcove is designed to investigate the hydrochemical and pneumatic properties of the Ghost Dance Fault. Excavation of this alcove cut the fault at station 1+52. At this location, the fault is approximately one meter wide with a vertical offset of 6 meters. Investigators completed air permeability testing and gas sampling across this fault via three 30-meter radial boreholes. A report on this testing is scheduled to be submitted to DOE in December 1998.

In July 1998, investigators initiated a fracture-matrix interaction test in this alcove. Six boreholes have been dry drilled to a depth of five meters in the right rib above the invert (between stations 0+50 and 0+60) and air permeability and pneumatic tracer testing conducted to characterize fracture connectivity. A horizontal slot (approximately 2.1 meters wide X 3.7 meters deep X 0.3 meters high) was cut between these boreholes and the invert for the installation of a water/tracer collection system. A known quantity of traced water is being injected and released into the rock mass from selected boreholes to determine the fraction of water that is imbibed into the matrix versus the fraction that flows through fractures. The test sequence includes: a) air permeability and gas tracer testing in boreholes; b) water/tracer injection and moisture and tracer monitoring in selected boreholes; and c) overcoring selected boreholes and small-scale mine back of test bed for sample collection after the test. A status report on this and other fracture flow and seepage testing in the ESF is expected to be submitted to DOE in September 1998. A similar test will also be conducted in Alcove 4.

'Alcove' 7 (Southern Ghost Dance Fault Alcove):

Excavation of this alcove cut the Ghost Dance Fault at station 1+67. At this location, the fault is approximately one meter wide with a vertical offset of approximately 25 meters. Two steel bulkheads have been constructed in this alcove to isolate and test two different zones (a non-faulted zone from 0+64 to 1+34, and a faulted zone from 1+34 to 2+00). Since November 1997, data has been collected from moisture monitoring instrumentation installed at the surface, above this alcove, and in the alcove. This instrumentation is designed to measure natural infiltration at the surface and changes in temperature, pressure, and moisture conditions in the alcove. To date, DOE scientists report no significant hydrologic changes from baseline conditions in the alcove. The results of this testing are expected to be submitted to DOE in September 1999.

Niche #1 (35+66):

Data continues to be collected from instruments that monitor humidity, moisture, and rewetting of niche walls. The steel bulkhead for this niche was closed in January 1998 to monitor in-situ moisture conditions. Drift seepage tests will be conducted in this niche after this in-situ monitoring phase is completed.

Niche #2 (36+50):

Investigators installed a system to catch dripping water for drift seepage threshold testing. This test is designed to help understand how the downward flow of water is affected by a mined opening. This seepage testing was completed earlier this year and investigators have installed moisture monitoring equipment and closed the niche to monitor in-situ moisture conditions. A report on fracture flow and seepage testing in the ESF is expected to be submitted to DOE in September 1998.

Niche #3 (31+07) and Niche #4 (47+87):

Similar drift seepage tests and moisture studies are planned at these locations. The planned testing will be conducted in stages, including: 1) installation of seven boreholes, with subsequent testing and monitoring via these boreholes prior to niche construction; 2) niche excavation; 3) installation of seven boreholes within each of these niches, with subsequent testing and monitoring via these holes; 4) installation of niche bulkheads; 5) water release tests to quantify seepage into the drift; and 6) long-term hydrologic monitoring. Niche #3 is located below and approximately 25 meters off the planned trace of the ECRB cross-drift and will be used in conjunction with planned testing in a cross-drift alcove above this niche. In May 1998, constructors completed the excavation of Niche #3. Over this reporting period, air permeability testing was completed in the footprint of Niche #4 followed by niche excavation. Seven boreholes were dry-cored in each of these niches and bulkheads constructed at the entrance of each niche.

Surface-Based Testing

Fran Ridge Large Block Test:

The purpose of this test is to gather data to evaluate thermal-hydrologic-mechanical-chemical processes in rock similar to the potential repository horizon. The heat-up phase of

the Fran Ridge Large Block Test (LBT) started on February 28, 1997. In early March 1998, the heaters were turned off to begin a six month period to monitor the cool-down of the block. In October 1998, selected boreholes will be overcored to analyze the heating and cooling effects on the rock mass. A final report on the results of this testing is expected to be submitted to DOE in July 1999.

Borehole Testing:

The location of boreholes referenced in this section are provided in Enclosure 3.

C-Hole Complex:

On November 12, 1997, tracer testing in the Tram/Lower Bullfrog Tuff was terminated. Since that time, equipment and instrumentation in boreholes C#2 and C#3 have been reconfigured for saturated zone testing in the Prow Pass Tuff. This testing is designed to assess hydrologic properties and chemical interactions of tracers (used to simulate radionuclides) within this stratigraphic unit. Tracer testing in the Prow Pass Tuff started on June 17, 1998. The pumping rate from well C-2 is approximately 5 gpm of which approximately 1 gpm is recirculated into well C-3. C-3 is the injection well. Two tracers, consisting of approximately 15 kg of iodide and 15 kg of 2-4-5 trifluorobenzoic acid (TFBA), were injected in C-3 at the same time. Tracer breakthrough in C-2 occurred approximately 40 hours after injection in C-3. A preliminary plot showing the initial breakthrough, peak concentration, and tail-off of the concentration curve is provided in Enclosure 4.

On July 31, 1998, investigators initiated a second tracer test in the Prow Pass Tuff. In this test, 12.5 kg of tracer 2-3-4-5 TFBA was injected into the Prow Pass Tuff at C-1 without recirculation of pumped water from C-2. On August 17, 1998, breakthrough of this tracer was detected in water samples drawn from C-2.

WT-24:

This borehole is being drilled to assist in characterizing the large-hydraulic gradient or perched water body north of the proposed repository site. The WT-24 borehole depth is 2,834 feet (863.8 meters). There were no drilling activities at WT-24 over this reporting period.

SD-6:

This borehole is intended to assist in characterizing the geology and hydrology in the western portion of the proposed repository. The SD-6 borehole depth is 2,541 feet (775 meters). There were no drilling activities at SD-6 over this reporting period.

Pneumatic Testing:

Pneumatic data recording continues at boreholes UZ-4, UZ-5, UZ-7a, SD-12, NRG-7a, and SD-7. Nye County continues to record pneumatic data in NRG-4 and ONC-1.

Busted Butte UZ Transport Test:

The planned hydrologic and tracer testing at Busted Butte is designed to provide data to help model the travel of radionuclides in the unsaturated zone under the proposed

repository. This underground facility includes a 72.5 meter main drift and 19 meter test alcove. The test is fielded in the base of the Topopah Spring non-partly-welded vitric sub-zones and the top of the Calico Hills Formation. Tracer testing is designed to proceed in phases.

Phase I tracer injection started on April 2, 1998, and is scheduled to be completed by September 30, 1998. The Phase I test includes a total of 8 two-meter deep boreholes (6 single point injection boreholes and 2 collection borehole). A mixture of nonradioactive tracers are injected at rates of 1 and 10 milliliter per hour (ml/hr) in an effort to bound potential infiltration rates of 30 and 380 millimeters per year (mm/yr). In October 1998, Phase I injection boreholes will be overcored to determine tracer migration rates and pathways. A predictive report on the results of Phase I testing is expected to be submitted to DOE in September 1998.

The Phase II test is conducted in a separate 10 X 15 X 6 meter block of rock exposed on two sides in this underground facility. Tracer injection started on July 23, 1998, and is designed to continue for one year. The Phase II test includes 8 injection and 12 collection boreholes ranging from seven to ten meters deep. Each injection borehole is equipped with 10 injection ports representing a significant scale up from the Phase I test. Nonradioactive tracers are injected at rates of 1, 10 and 50 ml/hr simulating infiltration rates of 30, 380, and 1550 mm/yr. Borehole geophysics and moisture collection pads are used to monitor the migration of tracers. Post test characterization will include overcoring of selected boreholes to provide additional data on tracer migration rates and pathways. A predictive report on Phase II testing is expected to be submitted to DOE in September 1998.

5.0 GENERAL

1. Appendix 7 Site Interactions

- o On July 16, 1998, NRC representatives from the Division of Waste Management Engineering and Material Section and Office of Nuclear Reactor Regulation Quality Assurance, Vendor Inspection, and Maintenance Branch visited the Yucca Mountain Site. The purpose of this visit was to obtain an overview of the geologic features of the ESF, Yucca Mountain Crest, and Fran Ridge Large Block Test in concert with next day's meeting on graded QA. There were no outstanding issues raised as a result of this visit.
- o On August 10 and 15, 1998, representatives of NRC's Division of Waste Management and Division of Fuel Cycle Safety and Safeguards visited the Yucca Mountain site. The purpose of these visits were to obtain an overview of geologic features and testing activities at the Yucca Mountain site. There were no outstanding issues raised as a result of these visits.

2. Other

- o **Attended the Director July 8, 1998, Director's Program Review video conference meeting as presented to Mr. Lake Barrett, Acting Director of the Office of Civilian Radioactive Waste Management. The meeting was held between the DOE offices in Washington, D.C. and Las Vegas, NV. Enclosure 5 provides the agenda of the items discussed at this meeting.**
- o **Attended the August 19, 1998, NRC/DOE Management Meeting/video conference held between the NRC Offices in Washington, D.C. and Las Vegas, NV. Enclosure 6 provides an agenda of the items discussed at this meeting.**
- o **Attended the August 21, 1998, DOE sponsored Performance Assessment Peer Review Meeting in Las Vegas, Nevada. Enclosure 7 provides an agenda of items discussed at this meeting.**

RESOLUTION STATUS OF THE NRC OPEN QA ISSUES

ISSUE STATUS

96-1 In response to the NRC August 19, 1996, letter (J. Austin to S. Brocoum), DOE organized a working group for improving the requirements and process for qualification of existing data. This resulted in revised methodology which was incorporated into Revision 8 of the DOE Quality Assurance and Requirements document of which was reviewed and accepted by NRC in the March 16, 1998, letter from M. Bell to A. Brownstein.

However, an NRC technical staff member has questioned whether all "cited literature" actually needs to be qualified or whether all that is needed is to provide the source or reference. At the NRC request, DOE provided a number of examples of cited literature for the NRC to review. This item remained open until NRC determined whether the NRC guidance in NUREG-1298, "Qualification of Existing Data for High-Level Nuclear Waste Repositories," required a revision. A review by the NRC Management Board determined the present commitment and guidance is sufficient. Therefore, Open Item 96-1 is closed.

96-2 As a result of the LANL audit conducted September 16-23, 1996, four Deficiency Reports (DRs) were issued. Proposed corrective actions to resolve these DRs were originally scheduled for completion in August 1997, and verification for full closeout was scheduled for late 1997. At the January 21, 1998, NRC/DOE QA meeting, DOE indicated that they would provide the NRC staff the requested information pertaining to the timeliness and the reviewers of the report in question. On June 15, 1998, the OR was informed that the requested material would be available before the end of FY98. On September 1, 1998, the OR was informed that the implementing procedure was being revised and would be completed about December 1998. It was estimated the requested material would be available in early 1999. If the proposed corrective actions and satisfactory verification addresses the NRC Open Item, it will be closed by the NRC technical specialist.

97-2 As a result of the OR observation of increased deficiencies surfacing during DOE audits/surveillances of its suppliers, the OR questions whether the data/products produced by these suppliers will be acceptable and appropriately qualified for licensing. DOE has issued Corrective Action Request LVMO- 98-C- 002 and the response from the M&O is currently being evaluated by DOE. The impact on data produced by the applicable suppliers is also being evaluated by DOE. When completed, the results will be furnished to the OR and forwarded to NRC management.

98-1 The OR review of the open and closed deficiency documents indicate many deficiencies have remained open in excess of one year. This does not meet the full intent of Criterion XVI of Appendix B to 10 CFR Part 50 for prompt identification and closeout of

deficiencies. The matter of timely closeout of deficiencies also appears to be somewhat of a repetitive occurrence of CAR-LVMO-94-C-010. This CAR, originated in December 16, 1993, noted that 30 percent of CARs required an extension. 55 percent of the CARs were open for more than 90 days indicating an adverse trend that CARs were not being completed in a timely manner.

DOE has initiated an effort to categorize the open deficiencies in their order of priority and then initiate efforts to close these deficiencies in a more timely manner in their respective order of priority. The DOE position is that if the deficiency does not require "immediate corrective action," relative to safety/waste isolation, then timeliness is not a regulatory issue, rather a DOE management issue. At the August 19, 1998, NRC/DOE Management meeting, DOE presented proposed revisions to the corrective action procedure and indicated the due date for the completed revision was January 1999.

- 98-2 Recent DOE audits and surveillances indicate an increased pattern or trend in scientific notebook deficiencies. The deficiencies pertaining to scientific notebooks are being evaluated to determine whether a trend actually exists and the extent of the appropriate corrective action. As recent as this OR reporting period (July/August 1998), more scientific notebook deficiencies have surfaced.

DOE is in the process of developing a single scientific notebook procedure to be used by all participants. This procedure will take into consideration all deficiencies from a "lessons learned" aspect. When the draft procedure is completed, a DOE representative will visit the respective user facility, obtain comments, and then finalize the procedure.

- 98-3 Conclusions documented in the M&O's reports from the review of the Site-Scale Unsaturated Zone Flow Model and the Total System Performance - 1995 for Waste Form Degradation and Solubility Limits indicate that procedures used to develop and document these models do not generally meet accepted nuclear QA standards.

The DOE line organization has developed an action plan to evaluate and address this open item. This plan was presented to the NRC at the August 19, 1998, NRC/DOE Management meeting. DOE QA Management has indicated that several of the findings may have been previously documented on DOE deficiency reports. Should this be the case, the OR would be interested in following up on these deficiencies and determine if they are similar in nature or whether they are identical to those deficiencies identified in the vertical slice reports. The ORs will monitor the progress/improvements resulting from this action plan.

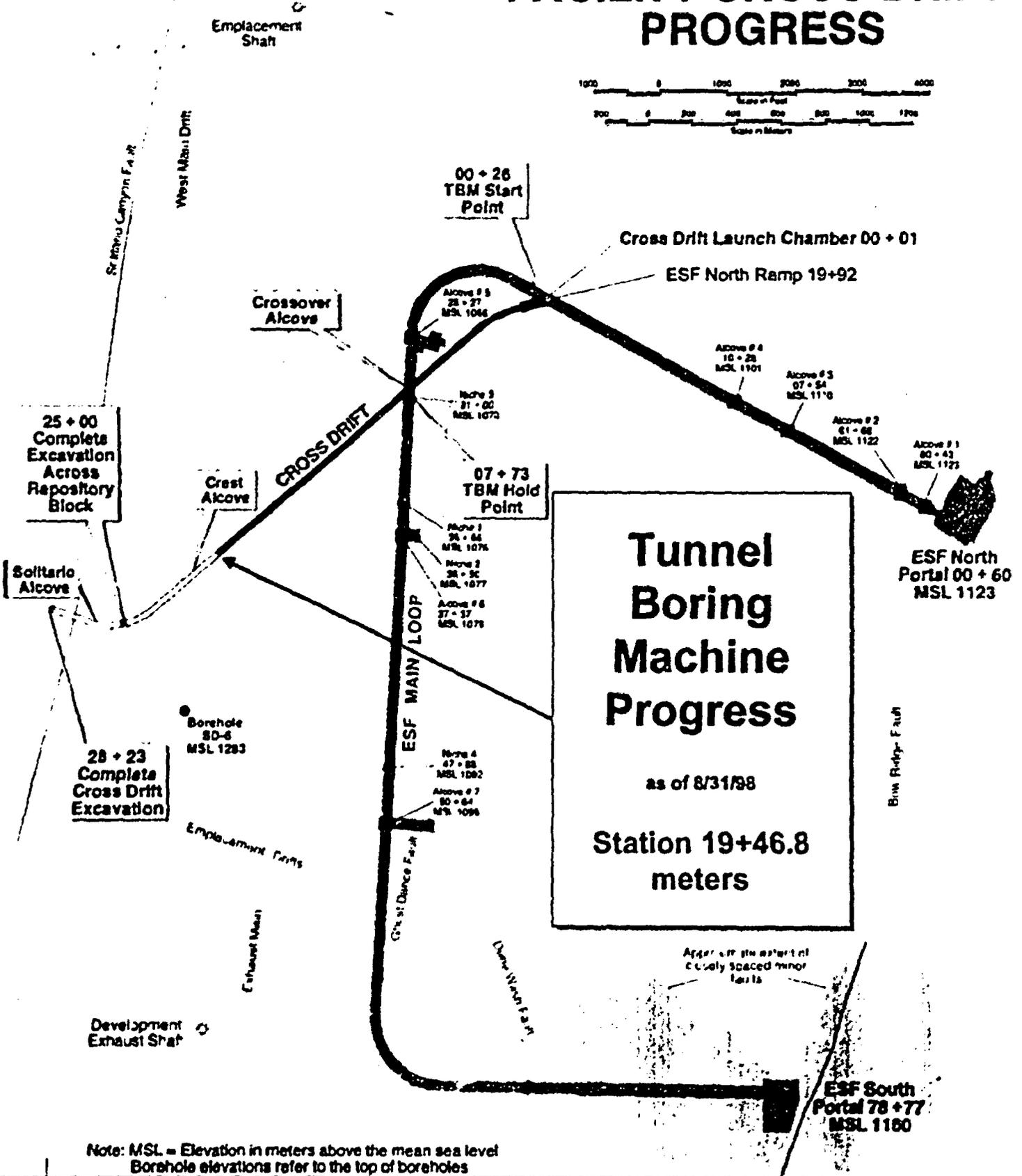
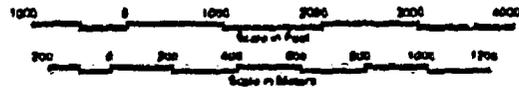
NRC QA OPEN ITEMS

KEY: N-WAITING NRC ACTION D-WAITING DOE ACTION

96-1	DATA QUALIFICATION	AUSTIN TO MILNER LTR. 3/18/96	CLOSED
96-2	LEVEL OF QUALITY OF WORK PRODUCTS	AUSTIN TO MILNER LTR. 10/24/96	OPEN (D)
97-2	VALIDITY AND QUALIFICATION OF SUPPLIER DATA	SECTION 4.0 OF NRC ONSITE REPORT SEPT./OCT. 1997 OR REPORT	OPEN (D)
98-1	DEFICIENCIES NOT BEING CLOSED IN A TIMELY MANNER	SECTION 4.0 OF NRC JAN./FEB. 1998 OR REPORT	OPEN (D)
98-2	INCREASED DEFICIENCIES PERTAINING TO SCIENTIFIC NOTEBOOKS	SECTION 4.0 OF NRC JAN./FEB. 1998 OF REPORT	OPEN (D)
98-3	VERTICAL SLICES OF UZ FLOW MODEL AND TSPA 1995 REPORT FOUND PROCEDURES USED TO DEVELOP DO NOT GENERALLY MEET ACCEPTED NUCLEAR QA STANDARDS	SECTION 4.0 OF NRC MARCH/APRIL 1998 OR REPORT	OPEN (D)

Enclosure 1

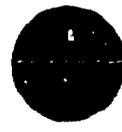
EXPLORATORY STUDIES FACILITY CROSS-DRIFT PROGRESS



Note: MSL = Elevation in meters above the mean sea level
 Borehole elevations refer to the top of boreholes

Legend

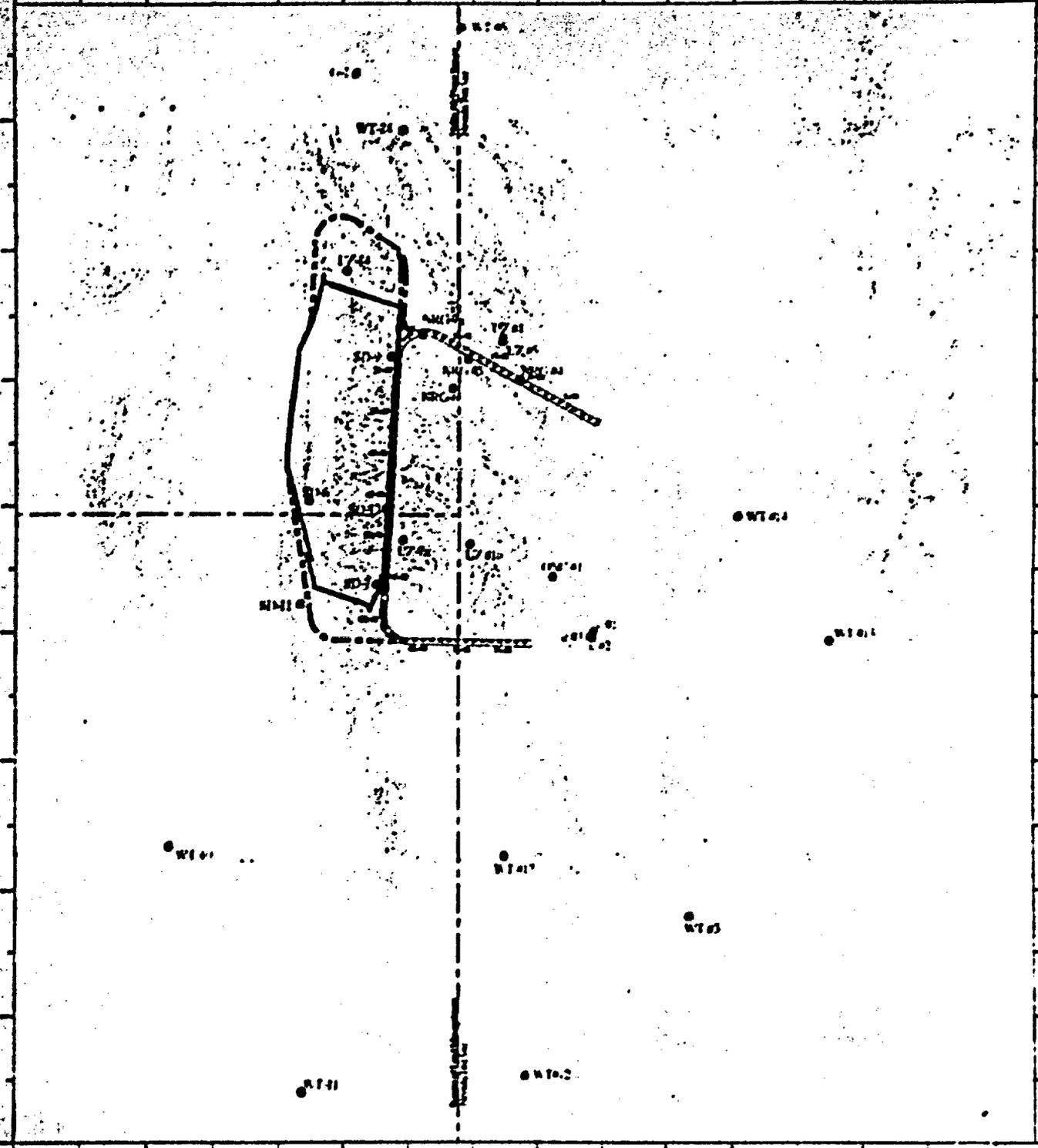
- BLACK/GRAY - Exploratory Studies Facility (ESF) construction and related activities
- RED - Cross Drift Construction
- BLUE - West Main Drift construction and related activities
- GREY - Faults



Yucca Mountain Site
 Characterization Project

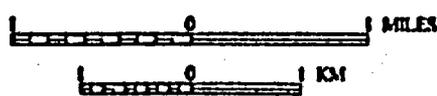
E547500n E551500n E557500n E563500n E567500n E573500n E579500n E583500n

N775000
N770000
N765000
N760000
N755000
N750000
N745000
N740000
N735000
N730000
N725000
N720000



Legend

- Existing Borehole
- Planned Borehole
- Proposed Waste Emplacement Area
- - - Proposed Repository Block
- ESF Tunnel
- Reference Tic Interval 100 Meter
- - - Contour Index Interval 100 Foot
- - - Contour Interval 20 Feet

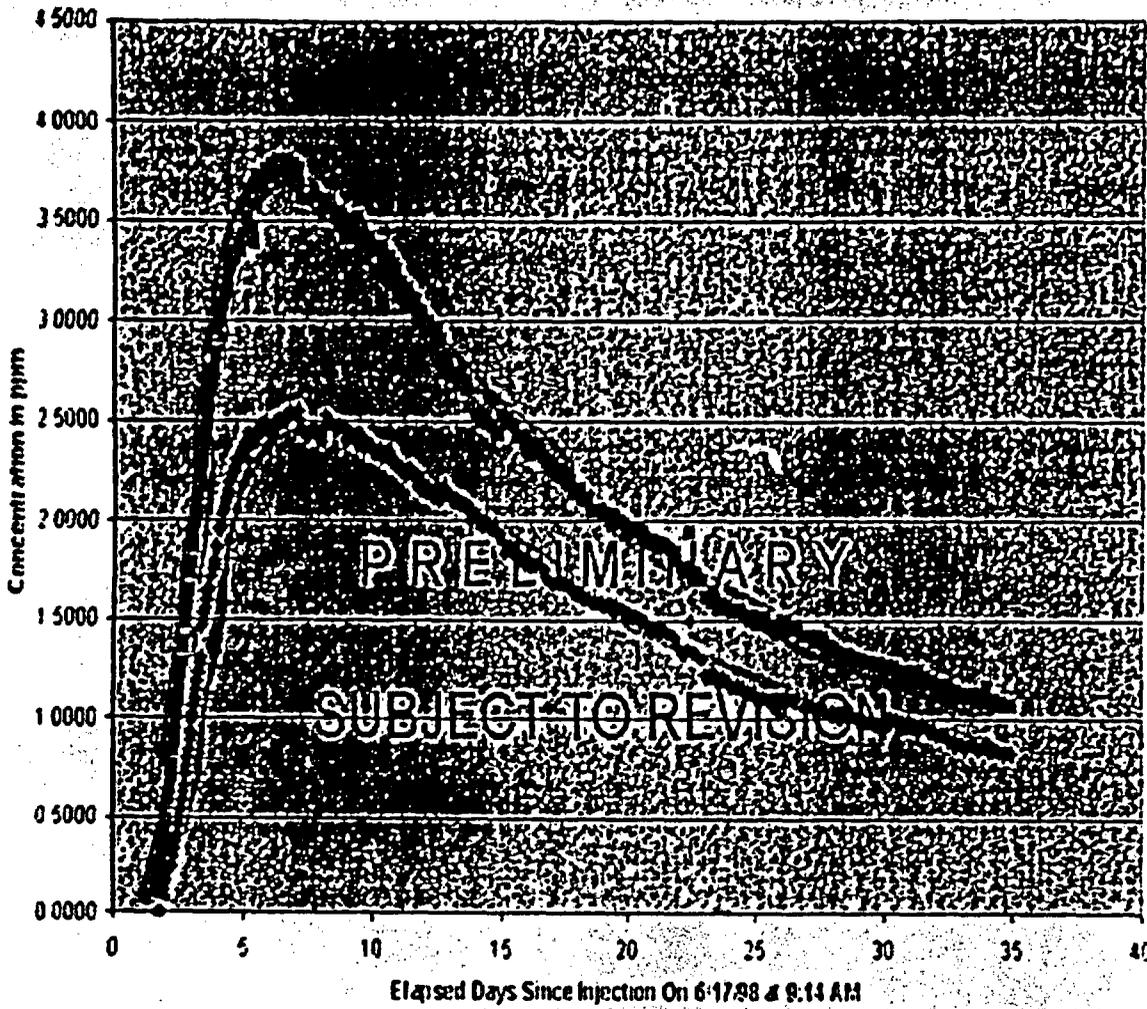


**Yucca Mountain Site
Characterization Project**

**SELECTED BOREHOLES
IN THE VICINITY OF THE
CONCEPTUAL CONTROLLED AREA
Enclosure 3**

Iodide & 2,4,5 TFBA Tracer Test from C#3 to C#2

● Iodide
■ 2,4,5 TFBA



Enclosure 4

AGENDA
Director's Program Review
Wednesday, July 8, 1998
Videoconference Rooms: M&O Contractor (Dunn Loring),
DOE/Forrestal, Room GF-277, and YMSCO Blue Room

<u>Time (PST)</u>	<u>Subject</u>	<u>Presenter</u>
7:00 AM - 7:05 AM	Recognition of Visitors	Conner
7:05 AM - 7:10 AM	Opening Remarks	Barrett
7:10 AM - 7:20 AM	Program Status Overview Program Performance Status	Rousso
7:20 AM - 8:00 AM	YMSCO Overview YMP Performance Measurement	Dyer Kozai
8:00 AM - 8:20 AM	WAST Project Overview WAST Performance Measurement	Shelor Bokhari
8:20 AM - 8:40 AM	Quality Assurance Overview QA Performance Measurement	Horton
8:40 AM - 9:00 AM	Program Management and Administration Overview PM&A Performance Measurement	Rousso Trebules
9:00 AM - 9:10 AM	Review of the Day's Action Items	Conner
9:10 AM - 9:20 AM	Questions from Visitors	All
9:20 AM - 9:35 AM	Lunch at Seats	
9:35 AM - TBD	Executive Session	

AGENDA

NRC/DOE MANAGEMENT MEETING

Video Conference
 Hillshire Blue Room, Las Vegas, Nevada
 NRC Headquarters, Room T2B5
 DOE Headquarters, Room 3E077
 August 19, 1998
 10:00 a.m. to 2:00 p.m. (Pacific Daylight Time)

- | | |
|--|---------|
| • OPENING REMARKS | All |
| • PROGRAM STATUS | |
| Status of NRC/NMSS/DWM Organization | NRC |
| Status of DOE/OCRWM Program | DOE |
| NRC Commission Briefing on HLW Program | NRC |
| Schedule and Status of Regulatory Guidance | DOE/NRC |
| 10 CFR 63 | NRC |
| Issue Resolution Status Reports | |
| - Status and schedule of reports, revisions, and acceptance criteria | NRC |
| - DOE comments and questions on IRSRs | DOE |
| - July 6, 1998 TSPA Letter | NRC |
| Status of VA Product | DOE |
| Commitment Management | DOE |
| Procedural Agreement | DOE/NRC |
| Status of DOE's Decision Documentation Initiative | DOE |
| Follow-up on May 6, 1998 QA Meeting | DOE/M&O |
| Status of Review of Actinide-only Burnup Credit Topical Report | SFPO |
| • CLOSING REMARKS | All |
| • ADJOURN | |

AGENDA

Performance Assessment Peer Review Meeting Friday, August 21, 1998

Mariott Suites
325 Convention Center Drive
Las Vegas, NV 89109
(702) 650-6659

- 8:00 a.m.** **Welcome and Introductory Remarks**
- 8:15** **Overview of TSPA Peer Review**
Chris Whipple, Peer Review Chairperson
- 8:25** **Main findings regarding TSPA as an integrated assessment tool**
Chris Whipple
- 8:40** **UZ infiltration and flow, THMC coupled processes**
Bob Budnitz, Peer Review Panelist/Chris Whipple
- 8:55** **Near-field geochemical environment**
Rod Ewing/Joe Payer, Peer Review Panelists
- 9:20** **Waste package degradation**
Joe Payer
- 9:50** **Waste form mobilization/alteration (including Np solubility,**
secondary alteration phases, colloids, and cladding)
Rod Ewing
- 10:10** **Break**
- 10:30** **UZ transport**
Bob Budnitz/Chris Whipple
- 10:40** **SZ flow and transport**
Chris Whipple/Bob Budnitz
- 10:55** **Biosphere**
Chris Whipple
- 11:25** **Disruptive events and climate**
Bob Budnitz
- 11:40** **Systemic issues & Summary**
Chris Whipple

- 12:20** **Questions from the floor and discussion**
- 1:00** **Lunch**
- 2:00** **Post Closure Safety Case Path Forward**
Jack Bailey, Director, Regulatory and Licensing, M&O
- 3:00** **Repository Design Alternatives**
Dick Snell, Project Manager, LA Reference Design Team, M&O
- 3:30** **Questions from the floor and discussion**
- 4:00** **Closing remarks**
- 4:30** **Adjourn**