

U.S. NUCLEAR REGULATORY COMMISSION
ON-SITE LICENSING REPRESENTATIVE REPORT
NUMBER OR-98-03

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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

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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 May 1 through June 30, 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 The current listing and status of the NRC QA Open Items is provided in Enclosure 1.
- o On May 6, 1998, the NRC Division of Waste Management staff held a QA meeting/video conference with DOE management staff to address QA issues identified in several OR reports and subsequently by the State of Nevada in a letter to NRC dated April 14, 1998. The meeting was held at NRC Headquarters in Rockville MD, with video conference participation in Las Vegas, NV, and San Antonio, TX. Representatives from the Nuclear Waste Technical Review Board, Nye County, NV, Clark County, NV, the State of NV, and Las Vegas news media were also in attendance at this meeting.

Enclosure 2 provides the agenda and issues discussed. In response to the above subject matter, DOE provided tentative time frames in which they intended to correct and close these open items. NRC management also will schedule a meeting with DOE QA management every six months as a minimum to monitor and discuss QA issues.

The details of this meeting are documented in a June 1, 1998, NRC letter to L. Barrett from J. Greeves.

- o Commensurate with the intent stated at the May 6, 1998, NRC/DOE meeting, on June 25, 1998, the NRC Director of the Division of Waste Management and ORs met with the DOE QA Management and M&O staff, to discuss the status of the corrective items of the issues discussed at the May 6, 1998, meeting and the June 1, 1998, NRC letter to L. Barrett from J. Greeves. The representative from Clark County also attended this meeting.

DOE explained the QA organizational hierarchy and interfaces with the various participants in addition to stationing QA representation at the various national laboratories, M&O engineering location, and Yucca Mountain ESF. The total DOE QA staff is 11 including administrative support and the DOE Concerns Program. DOE QA contractor staff total is approximately 80 personnel.

The first item of discussion was the length of time to close deficiencies (NRC Open Item 98-1). An effort is underway to categorize deficiencies relative to their order of requiring immediate corrective action based on their importance to waste isolation and radiological health and safety. Once this effort was completed, DOE initiated actions for closure. An effort was underway to revise the process to expedite closure based on the importance of the deficiency to site characterization and waste isolation. DOE did take the NRC suggestion discussed at the May 6, 1998, meeting into consideration but is currently considering elevating deficiencies open upwards of 100 days for further action to the Yucca Mountain Site Characterization Project Manager. Those deficiencies that remain open in excess of one year will be elevated to the DOE (Acting) Director of the Office of Civilian Radioactive Waste Management for further action. In addition, a member of the DOE Office of QA has been tasked to track all deficiencies to expedite closure in a timely manner. The NRC Director requested if this system becomes finalized, to be placed on distribution (via letter) for any reports elevated to the DOE (Acting) Director. The NRC Director also requested DOE to provide a briefing on the progress of this matter at the next NRC/DOE Management meeting.

For increased deficiencies in scientific notebooks (NRC Open Item 98-2), the NRC Director commented that this deficiency surfaced in the late 1980's and inquired as to why this was occurring again. DOE commented that they were also concerned and that a series of meetings were being scheduled to determine the extent of the problem. DOE indicated that in part, the problem could be attributed to recent changes in the manner in which the laboratories are being managed or in the manner in which training is being implemented. DOE may consider implementing an independent checking system for scientific notebooks similar to that presently implemented for the design process. Another corrective action will be to develop a project wide scientific notebook procedure to be used by all participants to assure consistency. Also, DOE will look into the type of information being entered into scientific notebooks and determine whether all of the information is needed and is of value to the final product. The NRC Director requested to be briefed on the progress for improving scientific notebook documentation at the next NRC/DOE Management meeting with attention given to any adverse effects

on the soon to be released DOE Viability Assessment. An explanation and demonstration of the nearly completed revised trending system was given to the NRC Director. This represents a significant improvement over the previous trending system and has the ability to detect adverse patterns in a more timely manner. The NRC Director requested that this newly revised trending system be discussed at the next NRC/DOE Management meeting.

In the area of deficient suppliers (NRC Open Item 97-2), DOE QA Management has met with DOE and M&O upper management and is proposing to centralize the procurement function under a single entity. In doing so, procurements will receive a consistent QA and technical review to assure all procurement requirements have been specified and that only qualified suppliers are utilized. DOE is presently reviewing all deficient suppliers to determine the extent and effect of the applicable deficiency and its impact on data being qualified. A sample of deficient suppliers from the OR list was selected to determine what the outcome of the DOE review revealed. The NRC Director requested that this area be addressed at the next NRC/DOE Management meeting.

NRC indicated that they had accepted Revision 8 to the DOE QARD which includes the DOE position on data qualification. However, an NRC staff member has noted 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 is currently under review by the NRC Management Board.

DOE has initiated a work effort to produce the final report from Los Alamos National Laboratory to resolve NRC Open Item 96-2 on level of quality of work products. The final report is expected to be completed prior to the end of the current fiscal year. Upon completion, the report will be forwarded to NRC for review and possible closure of this open item.

The M&O line organization performed two vertical slice reviews late last 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 is being developed by the line organization to respond to the DOE recommended corrective actions. The intent of this plan will be to look at identified documents for identified deficiencies and analyze the problem. It is anticipated that the full resolution will extend past the Viability Assessment submittal. The NRC Director requested that as this plan becomes finalized, including steps to be taken post Viability Assessment, that it be discussed at a future meeting.

- o On May 8, 1998, DOE issued a Stop Work Order (SWO) to the Civilian Radioactive Waste Management System Management and Operating Contractor to forward to their subcontractor Kiewit/Parsons Brinkerhoff at the Yucca Mountain ESF. The SWO was issued to cease water usage within the Enhanced Characterization Repository Block and ESF because the use of excess water may have an adverse impact on scientific investigation activities. The management of water usage and measurement

/accountability has been determined to be inadequate to offer appropriate levels of protection to prevent potential adverse impact on scientific studies. This represented a significant breakdown in established QA program controls.

A "get well" plan was established to address the immediate problems and properly document and control water usage. The plan was partially implemented on May 11, 1998, and a walkdown was performed to allow a portion of the SWO to be lifted and have certain work continue. The plan was fully implemented and the SWO was lifted May 22, 1998, and the tunnel boring machine resumed excavation on May 26, 1998.

- o A public meeting was held by NRC in Las Vegas, NV, on May 13, 1998, at the University of NV/Las Vegas. This meeting was held in response to a request from a member of the Nevada Nuclear Waste Task Force. The purpose of this meeting was to inform the public of the status of its pre-licensing review of a possible high-level radioactive waste repository that DOE may build and operate at Yucca Mountain, and NRC's views on key technical issues important to licensing. After the NRC overview, the meeting was opened for a series of questions from the public and interested organizations.
- o From May 18-22, 1998, the OR observed the DOE performance-based QA audit of Lawrence Berkeley National Laboratory (LBNL) at Berkeley, CA. The purpose of this audit was to focus on the processes and controls related to LBNL activities supporting Work Breakdown Structure 1.2.3.3.1.2.4, "Percolation in the Unsaturated Zone - ESF Study," Milestone SP33PLM4, "Seepage Test Input to Unsaturated Zone Model," and Milestone SP33PBM4, "Draft Report Fracture Flow and Seepage Test in the ESF," and the QA Program Elements directly related to Milestone deliverables.

The audit was performed in a professional manner and the audit team was well prepared and demonstrated a sound knowledge of the DOE and LBNL QA and technical programs. The results of this observation will be documented in a separate NRC Observation Audit Report to be issued at a later date.

- o On September 9, 1997, the 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. Resolution is still in process. 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 In 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. At the time of this material being released, 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 have been 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. The OR has recommended to NRC Management that this matter be further discussed at the next NRC/DOE technical meeting. This draft guidance is also under review and consideration by the ASME/NQA Program Management Processes Subcommittee.

- o The regularly scheduled QA meeting between the ORs and DOE QA Management and staff was held on June 9, 1998. Enclosure 3 provides the agenda of the subject matter discussed at this meeting. The results of this meeting pertaining to the status of Open Items have been factored into Section 3.0 above and Enclosure 1.

- At this meeting, it was pointed out to DOE that as a result of the OR observing the DOE audit of LBNL and review of recent deficiency reports, there appeared to be a potential pattern or trend of increased findings in the planning effort. Work planning is a requirement of Section 2.2.5 of the DOE Quality Assurance and Requirements Description (QARD) and QARD Supplement III Section III.2.1 for scientific investigations. DOE pointed out that using the revised draft trending program, they had substantiated planning as a deficient area. Deficiency Report (DR) LVMO-98-D-027 documents inadequacies for planning scientific investigations and Corrective Action Request VAMO-98-C-005 documents inadequacies for procurement efforts including planning. From these two deficiency reports, the planning process does not appear to be well defined, well documented, and does not always identify the specific deliverables. Since DOE has recognized and documented problems associated with planning, the OR will track the deficiencies and report on the corrective actions in subsequent OR reports.

- The status of a response (if any) 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, was discussed. The DOE QA Director intended to check with DOE Headquarters Management (who has the lead for this) and inform the OR of the status on this matter.

- Revisions to the trending program by the DOE Office of QA are progressing and a draft of this plan is expected to be ready for DOE review and comment in late June 1998. From the limited briefings obtained by the OR, the revised plan appears to be a substantial improvement in detecting adverse trends and conditions in a more timely manner.

- The OR requested the DOE Yucca Mountain Site Characterization Office QA Lead for procurement at her convenience, to arrange for a briefing of M&O procurement

process for a better understanding. This request was initiated in view of the recent problems that have surfaced in the procurement, planning and supplier areas.

- o In a March 16, 1998, letter from M. Bell to A. Brownstein, NRC documented its acceptance of Revision 8 to the QARD. A portion of this revision pertained to clarifying the methodology for data qualification in response to the NRC August 19, 1998, letter from J. Austin to S. Brocoum on this matter. To implement the QARD requirements for data qualification, a procedure is being prepared and is expected to be ready for DOE review by the end of June 1998. When the procedure is finalized, the OR will transmit it to NRC headquarters staff for review to assure consistency with the NRC position.

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. This cross-drift will allow the collection of additional scientific and engineering data at the potential repository block to support the characterization of Yucca Mountain. In February 1998, constructors completed the excavation of a 27 meter starter tunnel for the Tunnel Boring Machine (TBM). In March 1998, the TBM started excavating a five meter diameter drift that will extend over 2500 meters southwest across the repository block and through the Solitario Canyon fault. On June 29, 1998, this excavation had advanced to cross-drift station 7+25.5 meters (See Enclosure 4). This excavation is expected to be completed in September 1998.

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 June 28, 1998, approximately 52,700 gallons (199,486 liters) of water has been applied at the surface and 1638 gallons (6200 liters) collected in the alcove. 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 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, three boreholes have been dry-cored to depths ranging from 20 feet (6.2meters) to 191.4 feet (58.3 meters) to provide a complete stratigraphic section of the Paintbrush non-welded tuff (PTn). Core samples from these boreholes will be used for

PTn lateral diversion studies and to further characterize the hydrologic properties of this unit.

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 will be monitored by approximately 4000 sensors positioned in 147 radial boreholes around the heated drift. A data collection system records measurements from these sensors. On June 30, 1998, sensors in the heated drift recorded the following preliminary temperatures: canister temperature of 138.3 degrees centigrade, rock-mass surface temperature of 122.2 degrees centigrade, and air temperature of 125.6 degrees centigrade.

Over this reporting period, scientists conducted a one day Plate Loading Test immediately outside the Heated Drift to measure ambient rock mass conditions. This test is designed to measure the rock mass modulus under changing thermal conditions. Rock mass modulus is a measure of how the rock deforms and is used in models describing stability of underground openings. This test is expected to be conducted annually through the heat up phase of this test.

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. 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 1 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.

In July 1998, a fracture-matrix interaction test is expected to be conducted in this alcove. Six boreholes have been dry drilled to a depth of 5 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 will be 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 similar test will also be conducted in Alcove 4 in the Paintbrush nonwelded tuff. The results of these tests are expected to be documented in the Fall 1998 time frame.

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 1 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.

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. Since December 1997, investigators have conducted a series of tests which entail the release of aqueous dyes from radial boreholes above this niche. In each test, a known amount of dye is released and seepage into the niche collected and monitored. This test is repeated by varying the type and amount of fluid injected to determine the point at which seepage is no longer detected. Seepage testing is now complete and investigators have installed moisture monitoring equipment in this niche and closed the niche to monitor in-situ moisture conditions.

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. Air permeability testing was conducted in the footprint of Niche #4 via seven pre-

construction boreholes. Niche #4 is expected to be excavated in July 1998.

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. The block will be dismantled following cool-down to analyze the heating and cooling effects on the rock mass.

Borehole Testing:

The location of boreholes referenced in this section are provided in Enclosure 5.

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, were injected in C-3 at the same time. Tracer breakthrough in C-2 occurred approximately 40 hours after injection in C-3. The concentration curve continues to rise from water samples collected 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). On May 28, 1998, the water level in the borehole was measured at 2,146 feet (654.1 meters).

SD-6:

This borehole is intended to assist in characterizing the geology and hydrology in the western portion of the proposed repository. Drilling initiated on November 18, 1997. Drilling and coring advanced and water was first encountered at a depth of 2541 feet (775 meters).

WT-3 and WT-17:

In April 1998, a nonmetallic pump was used to collect groundwater samples from these boreholes for measurements of EH (oxidation/reduction potential) and PH for modeling the potential transport of radionuclides. This testing continued over this reporting period. A report documenting the initial results of this testing is expected to be submitted to DOE in August 1998 time frame.

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. Constructors have completed the excavation of a 72.5 meter main drift and 19 meter test alcove approximately 58 meters down the main drift. This test is designed to proceed in phases. Phase I and II tracer injection and collection boreholes have been completed (See Enclosure 6). The Phase I tracer test started and breakthrough of fluorescein tracer was detected on June 16, 1998, in Phase Ib collection borehole #6. This tracer traveled approximately 36 centimeters from Phase Ib injection borehole #5 to Phase Ib collection borehole #6 in a period of one month. Phase I testing will provide preliminary results applicable to Phase II testing which is planned to start in late July 1998.

5.0 GENERAL

1. Appendix 7 Site Interactions

- o Attended (part time) a meeting with a representative from the NRC Engineering and Geosciences Branch in Las Vegas, NV, June 8-10, 1998. The purpose of this meeting was to gather information for preparation of Issue Resolution Status Report for Repository Design and Thermal-Mechanical Effects Key Technical Issue.
- o Representatives from the Center for Nuclear Waste Regulatory Analyses visited the Yucca Mountain site June 25-July 1, 1998. The purpose of this visit was to collect data in support of the NRC Key Technical Issue on Structural Deformation and Seismicity. Site activities included: 1) collection of rock samples from faults both at the surface and in the ESF; 2) scaling of fault displacement at Yucca Mountain; 3) mapping the distribution of fractures on Live Yucca Ridge; 4) gathering fracture data along scanlines at Line Yucca Ridge and north branch of Split Wash; and 5) examining faults at Pahute Mesa as potential analogs for Yucca Mountain faults.

2. Other

- o Attended the Nuclear Waste Technical Review Board Meeting held in Las Vegas, NV, on June 24, 1998.
- o Attended the NRC/DOE Quarterly Technical Videoconference Meeting in NRC Headquarters in Washington, DC, and the DOE office in Las Vegas, NV, on June 18, 1998. Enclosure 7 provides a listing of the agenda 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 will remain open until NRC determines whether the NRC guidance in NUREG-1298, "Qualification of Existing Data for High-Level Nuclear Waste Repositories," requires a revision.

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 was 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. 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% of CARs required an extension. 55% 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.

- 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.

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 is developing an action plan to evaluate and address this open item. 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/DOE QUALITY ASSURANCE MEETING

May 6, 1998

VideoConference, Hillshire Blue Room and NRC Headquarters, T2B5

3:00 EST INTRODUCTORY REMARKS

Bell/Horton

QA ISSUES FROM MARCH 17, 1998 OR REPORT

- Length of Time to Close Deficiencies (NRC Open Item 98-1) **DOE**
- Increased Deficiencies In Scientific Notebooks (NRC Open Item 98-2) **DOE**
- Trending Program **DOE**
- DOE QARD Supplement 1 Guidance (NRC Closed Item 97-1) **NRC**
- Deficient Suppliers - Validity and Quality of Supplier Data
And Products Questionable (NRC Open Item 97-2) **DOE**
- Data Qualification (NRC Closed Item 96-1) **NRC**
- Level of Quality of Work Products (NRC Open Item 96-2, since 10/24/96) **DOE**
- Length of time to close USGS Technical Program Effectiveness
(NRC Closed Item 95-1) **DOE**

OTHER QA ITEMS OF INTEREST

- Length of Time to Issue FY98 CARS **DOE**
 - Criterion XVII of App. B to 10 CFR Part 50 requires that deficiencies are promptly identified. Of the 7 CARS issued to date
 - CAR-002 - 110 DAYS TO ISSUE
 - CAR-003 - 79 DAYS TO ISSUE
 - CAR-004 - 48 DAYS TO ISSUE
- September 1997, NRC requested information to close SCP Question 55 and SP 8.3.1.5.2.2 comments **DOE**
- DOE QA reorganization was effective March, 1998. After 3 requests, NRC still waiting functions of positions **DOE**
- Graded QA **NRC**
- UZ Flow Model Vertical Slice Report Findings (New NRC Open Item 98-3) **DOE**

SCHEDULE BI-ANNUAL QA MEETING

NRC/DOE

6:00 EST ADJOURN

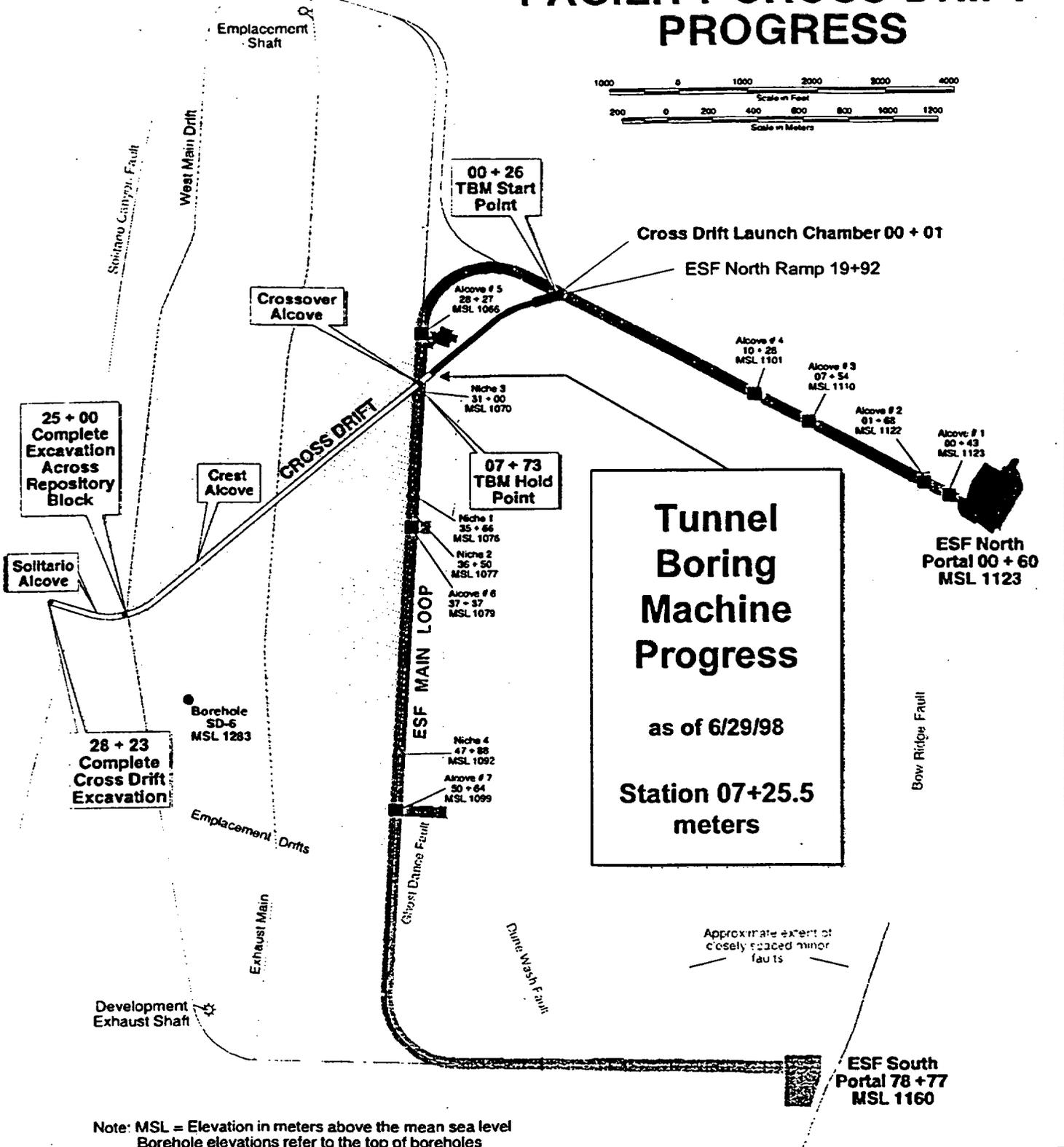
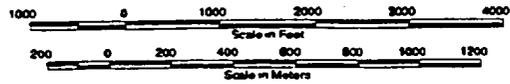
JUNE 4, 1998

AGENDA FOR JUNE 9, 1998 MONTHLY NRC/DOE OR QA MEETING

- o DISCUSSION OF RESTRUCTURING OPEN ITEMS CLASSIFICATION (NRC/DOE)
- o STATUS OF OPEN ITEMS (DOE)
 - LEVEL OF QUALITY OF WORK PRODUCTS (96-2)
 - VALIDITY AND QUALIFICATION OF SUPPLIER DATA (97-2)
 - DEFICIENCIES NOT BEING CLOSED IN A TIMELY MANNER (98-1)
 - INCREASED DEFICIENCIES PERTAINING TO SCIENTIFIC NOTEBOOKS (98-2)
 - UZ FLOW AND WASTE DEGRADATION VERTICAL SLICES (98-3)
- o STATUS OF OPEN ITEMS (NRC)
 - DATA QUALIFICATION (96-1)
- o STATUS/PROGRESS/PROBLEMS (IF ANY) ON DATA QUALIFICATION IMPLEMENTING PROCEDURE(S) (DOE)
- o POTENTIAL PATTERN OF INCREASED FINDINGS IN THE PLANNING EFFORT (REF: QARD SECTION 2.0, PARAGRAPH 2.2.5, AND SUPPLEMENT III, PARAGRAPH III.2.1 (NRC/DOE))
- o GRADED APPROACH - CITED LITERATURE ASPECT (NRC)
- o DOE ACTIVITY/DECISION (IF ANY) IN RESPONSE TO NOVEMBER 29, 1997, 10 CFR PART 21 LETTER (M. BELL TO A. BROWNSTEIN) (DOE)
- o ANY FURTHER RESPONSE TO PEER REVIEW PANEL STATEMENT "THE QUALITY ASSURANCE REQUIREMENT ON LABORATORY EXPERIMENTAL PROGRAMS APPEARS TO HAVE HAD A LARGE NEGATIVE IMPACT ON THE DEVELOPMENT OF NEEDED EXPERIMENTAL DATA." (REF: JULY 28, 1997, LETTER FROM D. HORTON TO D. FAUST) (DOE)
- o PROGRESS IN REVISED TRENDING PROGRAM (DOE)

CC: C. GLENN
D. HORTON
R. CLARK

EXPLORATORY STUDIES FACILITY CROSS-DRIFT PROGRESS



Tunnel Boring Machine Progress
as of 6/29/98
Station 07+25.5 meters

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 future construction and related activities
 - GREEN - Faults

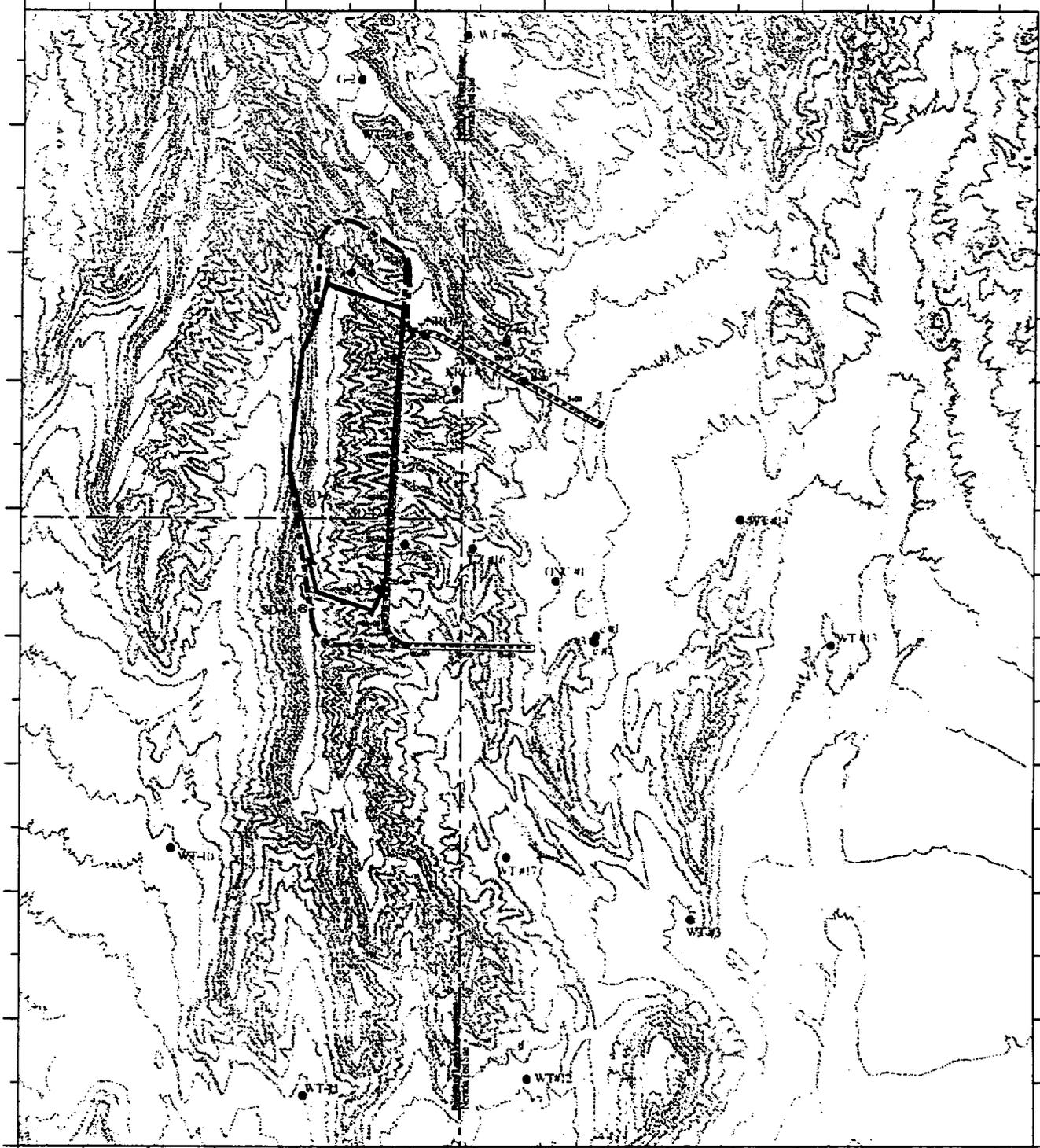


Yucca Mountain Site Characterization Project

MTS:MKJ GIS_CrossDriftRev6.ppt 6/29/98 YMP-98-089.0

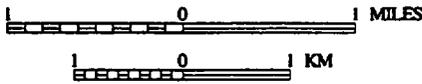
E547500ft E552500ft E557500ft E562500ft E567500ft E572500ft E577500ft E582500ft

N77000ft
N77200ft
N77400ft
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N78200ft
N78400ft
N78600ft
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N79000ft



Legend

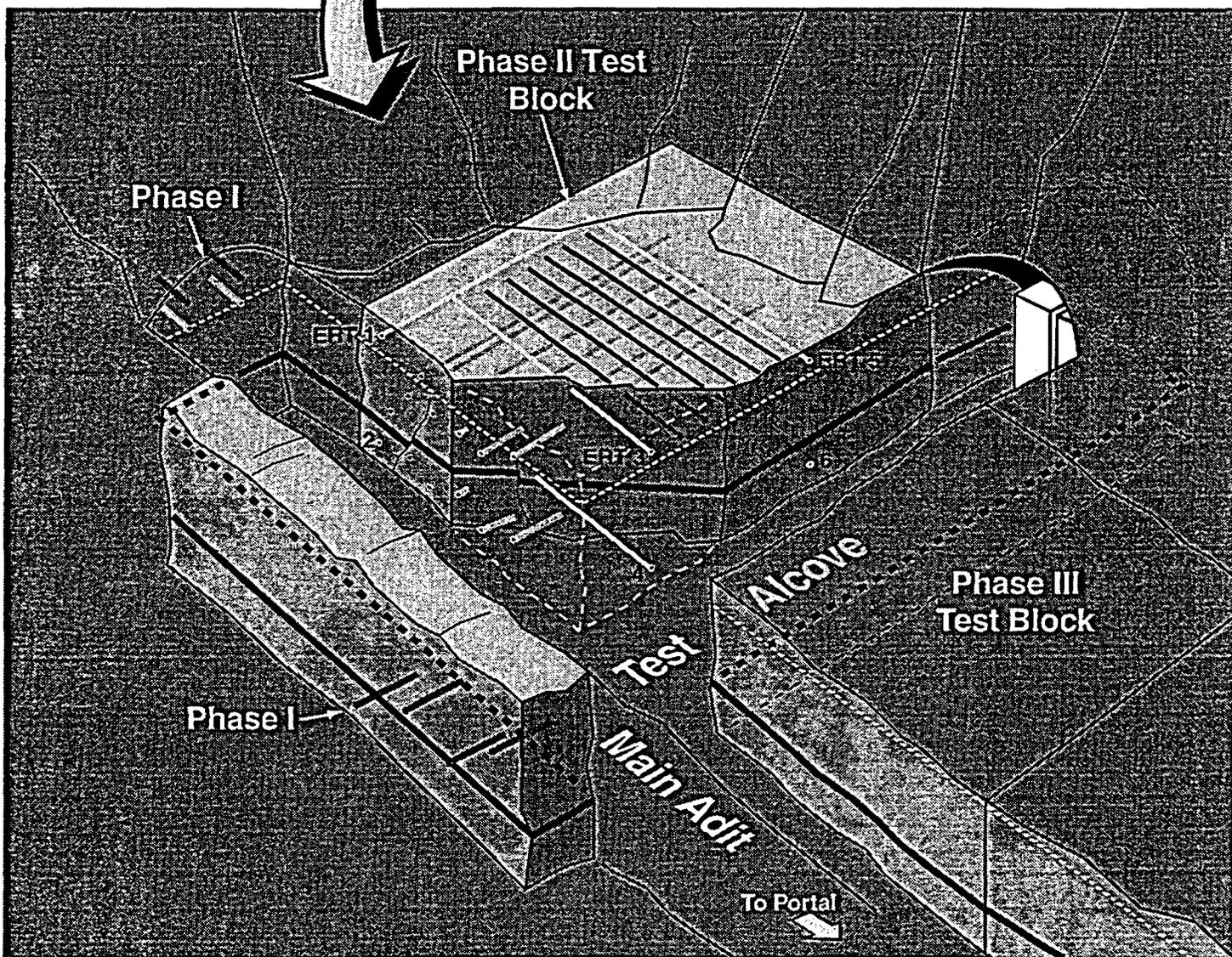
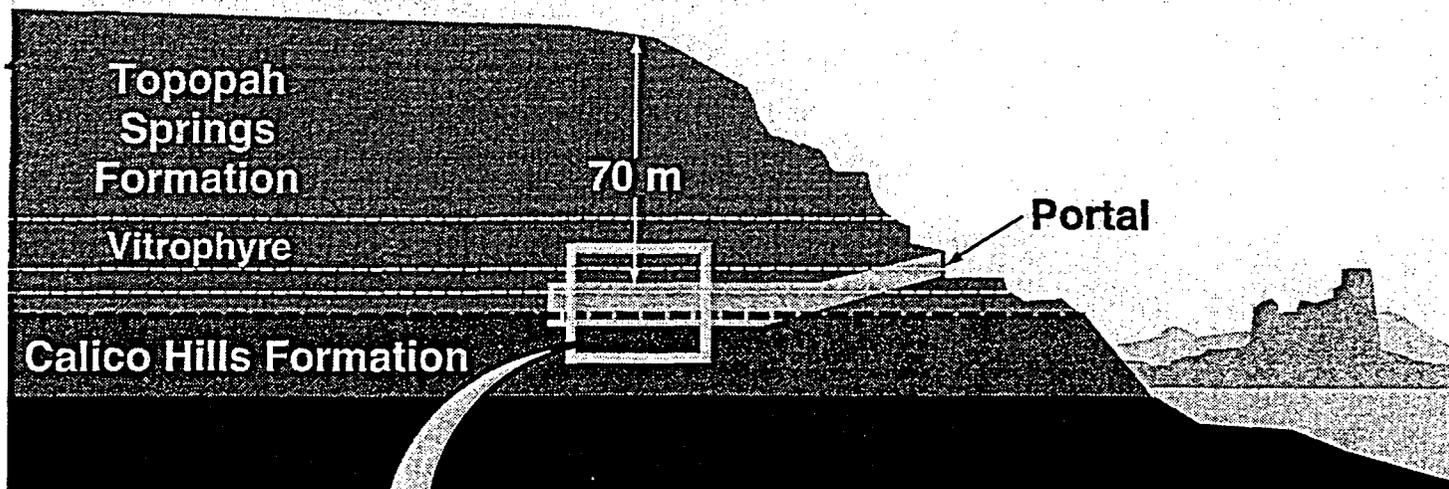
- Existing Borehole
- ⊗ Planned Borehole
- Proposed Waste Emplacement Area
- - - Proposed Repository Block
- == ESF Tunnel
- Reference Tic Interval 100 Meter
- Contour Index Interval 100 Feet
- Contour Interval 20 Feet



**Yucca Mountain Site
Characterization Project**

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

Southern Busted Butte UZ Transport Test



AGENDA

DOE/NRC QUARTERLY TECHNICAL MEETING
(Video Conference - Hillshire Blue Room)
Las Vegas, Nevada
June 18, 1998
8:00 a.m. to 12:00 noon
(Pacific Daylight Time)

8:00 a.m.	Opening Remarks	DOE, NRC, NV, AUG
8:10 a.m.	Status/Updates <ul style="list-style-type: none">• Cross-Drift Excavation• Alcove #1 Testing• Busted Butte• Site Geologic and Hydrogeologic Framework Models	DOE
9:00 a.m.	<ul style="list-style-type: none">• Seismic Design Basis Inputs Report• Seismic Topical Report III• Deterministic Seismic Hazard Analysis Report	
9:30 a.m.	Break	All
9:45 a.m.	Total System Performance - Viability Assessment: Rev. 00 to Rev. 01 Changes in the TSPA-VA Base Case	DOE
11:00 a.m.	Follow-up from December QTM	NRC
11:30 a.m.	Closing Remarks and Discussion	DOE, NRC, NV, AUG
12:00 noon	Adjourn	