U.S. NUCLEAR REGULATORY COMMISSION

ON-SITE LICENSING REPRESENTATIVE'S REPORT

NUMBER OR-98-05

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REPORT DETAILS

1.0 INTRODUCTION

The principal purpose of the On-Site Licensing Representative (OR) reports is to alert 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 September 1 through October 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

- The current listing of the NRC QA Open Items is provided in Enclosure 1 and the status is listed below.

  <u>96-2</u>
  As a result of the LANL audit conducted on 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. On June 15, 1998, the OR was informed that the requested material would be available before the end of FY 98. On September 1, 1998, the OR was informed that the implementing procedure YAP-SIII.1Q (Qualification of Unqualified Data) was being revised and a technical assessment by DOE will be authorized to review the material in question to close this open item. Because of the importance of the subject matter in this procedure, the NRC OR has

requested a copy of the final procedure in order for the NRC technical staff to review the final procedure to assure it meets the intent of the NRC regulations and staff positions. 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.

97-2
As a result of the OR observation of increased deficiencies surfacing during DOE audits/surveillances of its suppliers, the OR questioned 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 indicated 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 on 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. A procedural change is also being developed whereby lengthy times to close deficiencies will be elevated to the DOE OCRWM Director if necessary.

98-2
Recent DOE audits and surveillances indicated an increased pattern or trend in scientific notebook deficiencies. The deficiencies pertaining to scientific notebooks are being evaluated to determine the extent of the appropriate corrective action and extent of required training.

The Project originally planned to develop a consolidated scientific notebook procedure to be used by all participants for control of scientific investigations. Upon further investigation, DOE determined that existing scientific investigation procedures met the requirements of the Quality Assurance Requirements and Description document and therefore decided that implementation of the procedures was the problem.

98-3
The M&O line organization performed two vertical slice reviews late in 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.

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. At the August 19, 1998, NRC/DOE Management meeting, the M&O presentation indicated that their evaluation indicated that processes and work products are generally sufficient to support the Viability Assessment. The NRC OR has not seen the supporting documentation for this determination and in view of the various deficiencies that have surfaced, does not necessarily agree with this conclusion. The basis for questioning the DOE conclusion is that much of the data in the technical data base has been determined to be unqualified, not traceable, inaccurate, or indeterminate as a result of DOE QA audit deficiencies/findings. These findings have been documented on the various DOE audit deficiency forms.

The DOE line organization has developed an action plan to evaluate and address this open item. The ORs will monitor the progress/improvements resulting from this action plan.

- On September 3, 1998, the OR met with a Board Member from the U.S. Nuclear Waste Technical Review Board (NWTRB). The purpose of this meeting was to clarify and explain the QA issues and items raised in recent OR Reports. In general, and in view of recent QA issues that have surfaced, the NWTRB Board member indicated that the Board is having difficulty reconciling the amount of unqualified data in the technical data base used to support the Viability Assessment (VA) with the Board's need to provide its testimony on accuracy and validity of the VA.

- On September 28 through October 2, 1998, the NRC OR and two NRC staff members from the Division of Waste Management 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 submittal, verification, and use of technical data developed for the Yucca Mountain Site Characterization Project. During this audit, a significant Corrective Action Request (CAR LVMO-99-C-001) was issued for data referenced in reports not being traceable to the origin, and the qualification status of referenced data that could not always be determined. In general, technical document reviews do not always ensure the applicability, correctness, technical adequacy, and appropriate compliance with program requirements. The proposed corrective action is to establish a "Tiger Team" whereby a multi-step checking process will review and evaluate a given list of models to evaluate the extent of the deficiency. In the OR's view, the list of the selected models and reports may necessitate a 100% review since the audit team's sample selected

revealed about a 50% defect rate. It is fully recognized that the DOE QA auditors identified this deficiency. However, due to the significance of this deficiency, it will be listed as NRC QA Open Item 98-4 for NRC tracking purposes. The OR will monitor this review and report on its progress in future OR reports. The results of the NRC observation audit will be documented in NRC Observation Report OA 98-03.

In view of this newly uncovered deficiency and other deficiencies listed above, the technical data base and its associated references appear to be questionable as to withstanding and supporting the adjudicatory process associated with the licensing effort. The OR requested that DOE devote an effort to determine collectively, what the overall effect these deficiencies have upon the technical data base and how it will or will not support the validity of the VA and licensing effort. A response to this request was requested by the OR.

- By letter dated August 30, 1998, NRC agreed to Nye County's request that NRC complete a formal review of the Nye County Quality Assurance Program. As part of this review, on September 30, 1998, the OR and an NRC technical member from the Division of Waste Management's Geosciences/Hydrology Section visited the Yucca Mountain Project with particular attention focused on Nye County drilling and monitoring activities. The OR's Report for March/April 1998, reported on the positive aspects on the potential use of data acquired by the Nye Drilling program.

- NRC accepted Revision 8 to the DOE Quality Assurance requirements and Description document in a March 16, 1998, letter from M. Bell to A. Brownstein. Revision 8 included the DOE position on data qualification to meet the NRC position as stated in NRC NUREG-1298, "Qualification of Existing Data for High-Level Waste Repositories." DOE is in process of developing an implementing procedure for the commitment to data qualification in QARD Revision 8. This procedure was originally scheduled for completion by June 1998. The original date has been extended and now this procedure may be completed and available to NRC prior to the end of CY98. 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.

- 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 several times and listed in the OR Report since the original request. The DOE QA Director indicated that 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 appear 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. This open item has since been listed in the Issue Resolution Status Report (IRSR) for the NRC Key Technical Issue on Unsaturated and Saturated Flow Under Isothermal Conditions. Consequently, this item will not be listed in future OR Reports and will be resolved through the IRSR process.

- The DOE response 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 sent to M. Bell from A. Brownstein in a letter dated October 30, 1998.

- The first trending program report was issued July 10, 1998, by the DOE Office of QA. In this report, Section 3.0 A delineates what is termed, "EMERGING ISSUES" one of which recognizes an increase in deficiencies associated with meeting training requirements. Also, based on the DOE audit/surveillance reports the OR office receives, there has been a noted increase in the amount of training deficiencies being documented by the auditors. Numerous Discrepancy Reports have been written to document these deficiencies but there has been no apparent centralized effort to correct this trend. The OR recognizes that the majority of the deficiencies are of a minor nature but nevertheless, keep surfacing. The matter was discussed with DOE QA management and there may be certain generic corrective action issued in the near future to alleviate and correct this trend.

- The regularly scheduled monthly meeting between the OR and DOE Acting QA Director was held on October 19, 1998. The list of agenda items discussed is provided in Enclosure 2. The OR recommended that future DOE audits/surveillances consider incorporating provisions to include pertinent parts on the NRC IRSRs. The QA Director believed that this was being done and will look into this recommendation.

- On Thursday October 14, 1998, an "all hands" meeting was held in three sessions for all project employees. Although the OR did not attend, a copy of the viewgraphs was obtained as well as positive feedback from some of the attendees. Presentations were given by the DOE Project Manager and M&O Assistant General Manager. Basically, these presentations emphasized a larger commitment to quality and the aspects of the nuclear licensing culture. The OR believes the "all hands" meeting subject matter was a commendable effort on behalf of DOE/M&O. However, this effort would have probably been more effective if it had been accomplished earlier in the program in view of the recent quality problems that have surfaced. An overview of this meeting has been requested for the next NRC/DOE QA meeting.

- Attended the American Society of Mechanical Engineers/Nuclear Quality Assurance (ASME/NQA-1) Programmatic Management Processes Subcommittee October 26, 1998, meeting in Las Vegas, NV. The agenda and list of items discussed at this meeting are provided in Enclosure 3. The OR was assigned an action item to draft a summary of the contents in the recently released Regulatory Guide 1.176, dated August 1998, entitled, "An Approach For Plant-Specific, Risk-Informed Decisionmaking: Graded Quality Assurance." The purpose of this draft will be for discussion and possible inclusion into a future nonmandatory appendix in the ASME/NQA-1 Standard.

- The FY 1998 QA Management Assessment (QAMA) report has been completed and documented in the October 23, 1998, memorandum from L. Barrett to DOE management. The basis for this exercise originates from the DOE QARD requirement to

independently perform an annual assessment of the adequacy and effectiveness of the QA program. In general, the assessment, from an executive aspect, reviews the current problems that have recently surfaced. This, coupled with numerous management and staff interviews, allow the QAMA Team members to identify key issues and findings to be brought to the attention of DOE senior management. A summary of these key issues and findings are provided in Enclosure 4. From the OR perspective, the key issues and findings identified are more objective than documented in prior QAMA reports. The recommendations for the issues identified, if implemented, will contribute to not only enhancing the QA effort, but the entire effort for the Yucca Mountain Project. The OR agrees with the QAMA conclusion that the QA program is adequate and effective in identifying problems. The OR also agrees with the QAMA conclusion identified in the key issues and findings, that the implementation of the QA effort needs to be improved.

4.0 EXPLORATORY STUDIES FACILITY AND NRC KEY TECHNICAL ISSUES

Enhanced Characterization of the Repository Block (ECRB)

The excavation of the ECRB or "Cross-Drift" began on December 8, 1997, and was completed on October 13, 1998 (Enclosure 5). 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. Geologic mapping, moisture and construction monitoring continue in the cross-drift. Preliminary cross-drift stationing of selected stratigraphic and structural features encountered is provided below.

Unit/Feature	Stationing (meters)
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 < 5 meters)	11+35
Topopah Spring middle nonlithophysal	10+15 to 14+44
Unnamed fault (strike/dip 170/83W; offset < 5 meters)	13+18
Topopah Spring lower lithophysal	14+44 to 23+26
Unnamed fault (strike/dip 183/62W; offset < 5 meters)	19+52
Unnamed fault (strike/dip 165/75W; offset < 5 meters)	21+54

Unnamed fault (strike/dip 352/75NE; offset > 5 meters)	22+38
Topopah Spring lower nonlithophysal	23+26
Solitario Canyon Fault - Main Splay (strike/dip 190/60NW; offset > 100 meters)	25+83
Topopah Spring upper lithophysal	25+87 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 has 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 in November 1998 using a new series of tracers. A 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 are being used for Paintbrush non-welded tuff (PTn) lateral diversion studies and to further characterize the hydrologic properties of this unit. A report (Milestone SPH271M4) on the initial results of this work was submitted to DOE in September 1998.

In October 1998, DOE initiated a fracture-matrix test in the PTn at Alcove 4. A known quantity of traced water is injected in a radial borehole and released in the rock mass to determine the fraction of water imbibed into the matrix versus the fraction that flows through fractures. As of October 30, 1998, approximately 160 liters (42 gallons) of traced water has been injected into boreholes located a couple meters above a horizontal slot excavated to collect traced water. To date, there has been no breakthrough of traced water.

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 October 30, 1998, sensors in the heated drift recorded the following preliminary temperatures: canister temperature of 152.2 degrees centigrade, rock-mass surface temperature of 140.5 degrees centigrade, and air temperature of 144.4 degrees centigrade. A Drift Scale Test annual report (Milestone SP3330M3) was 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 1 meter wide with a vertical offset of 6 meters. Investigators continue 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 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 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 (Milestone SP33PBM3) on this and other fracture flow and seepage testing in the ESF was submitted to DOE in September 1998.

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. 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.

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 radial boreholes within each of these niches, with subsequent testing and monitoring; 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. These niches have been excavated 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 November 1998, scientists plan to overcore selected boreholes 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 6.

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 reactive and nonreactive tracers (used to simulate radionuclides) within this stratigraphic unit. Nonreactive 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 principal 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 was provided in the OR report for the period of July-August 1998. Monitoring of tracer recovery continues.

On July 31, 1998, investigators initiated a second nonreactive 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. Peak concentration of tracer occurred approximately October 8, 1998. Monitoring of tracer recovery continues.

On September 23, 1998, investigators initiated reactive tracer testing in the Prow Pass Tuff. In this test, a mixture of 33 kg of lithium bromide, 81 kg of lithium chloride, 12 kg of pentafluorobenzoic acid (PFBA) and 52 grams of microspheres was injected in C-3. Three sizes of microspheres were used. Breakthrough and peak concentration of the two smaller sizes of microspheres occurred within 1-2 days of injection. Investigators have seen no breakthrough of the largest size microspheres. Initial breakthrough of reactive tracers occurred on September 23, 1998, and peak concentration occurred on October 3, 1998. Monitoring of tracer recovery continues. To date, tracer testing in the Prow Pass Tuff suggests that fracture flow is the predominant flow mechanism. A report on the results of reactive and nonreactive tracer testing in the Prow Pass Tuff is expected to be submitted to DOE in February 1999.

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. In a September 9, 1998, meeting with DOE management, the ORs inquired about DOE's plans for additional drilling at WT-24 to test the regional aquifer. DOE stated that this testing is planned for FY99.

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. In a September 9, 1998, meeting with DOE management, the ORs inquired about DOE's plans for completing SD-6 to obtain water samples and conduct a pump test in the saturated zone. DOE stated that an effort would be made to recover equipment lost in this borehole. If successful in recovering this equipment, water sampling and hydraulic testing in the saturated zone would be conducted in FY99.

RF-13
This borehole is being drilled at the ESF North Portal to obtain information in support of foundation design for the possible future construction of a waste handling building. On October 30, 1998, drilling and coring progressed to a depth of 225 feet (68.5 meters). This borehole is expected to be drilled to a total depth of approximately 300 feet (91.4 meters).

Pneumatic Testing:
Pneumatic data recording in surface-based boreholes continues, however DOE is currently considering terminating this program. DOE has informed the OR that if the Project decides to terminate this program, the rationale for their decision would be documented. Nye County continues to record pneumatic data in NRG-4 and ONC-1 and in the cross-drift. Nye County is expected to start a new multi-year drilling program before the end of CY98. This program includes approximately 20 wells that will be drilled down gradient of Yucca Mountain. A map showing the location of these wells is attached (Enclosure 7).

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 was completed over this reporting period. 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, investigators imitated preparations for overcoring Phase I injection boreholes to determine tracer migration rates and pathways. A predictive report on the results of Phase I testing was 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 was submitted to DOE in September 1998.

DOE's Proposed FY99 Work Scope

In the OR view, it is not clear that DOE's FY99 budget will address critical information needs that the Project has identified to support License Application (LA). In recent meetings, DOE has identified what it considers are the most important information needs for licensing.

However, as DOE works to finalize their FY99 work scope, there is evidence that high priority testing activities previously identified to support licensing may not be funded in FY99.

In a September 16, 1998, meeting, DOE briefed NRC and other interested parties on the draft LA Plan. The draft LA Plan identifies the remaining scientific and engineering work necessary to submit a docketable LA. In this presentation, DOE prioritized work to address key uncertainties for licensing. For example, the three information needs having the highest priority for LA, included: seepage into drifts, integrity of inner-corrosion-resistant waste package barrier, and transport through the unsaturated zone. In the case of seepage into emplacement drifts, DOE stated that seepage is the principal source of water that may drip onto waste packages, contributing to waste package corrosion and mobilization of radionuclides. DOE added that TSPA sensitivity studies indicate that seepage has high significance to performance of the repository system. In this briefing, DOE identified the work needed to reduce the uncertainty for LA and referred to planned seepage tests in different tuff units which make up over 60 percent of the host rock for potential emplacement drifts. Yet, this testing is not funded in the current version of the FY99 budget. Further, it is not clear if this situation is reflective of how other high priority information and data collection needs may be impacted as DOE finalizes its FY99 work scope.

The OR is concerned that a failure to collect critical data now could potentially weaken the technical basis of DOE's LA. Therefore, with only an 18 month period of data collection remaining, it would appear essential that DOE pursue those activities it has identified as having the highest priority for licensing. NRC Issue Resolution Status Reports provide additional guidance on important information needs for licensing. Ultimately, DOE is expected to document such decisions in the course of developing a LA, including the technical rationale and justification.

5.0 GENERAL

1. Appendix 7 Site Interactions

- Six technical staff from the NRC Division of Waste Management and Center for Nuclear Waste Regulatory Analyses visited the Yucca Mountain Site on October 7, 1998. The purpose of this visit was to obtain an overview of the ESF, Yucca Mountain Crest, and Busted Butte.

2. Other

- The ORs met with the Yucca Mountain Site Characterization Project Manager and staff on September 9, 1998. Enclosure 8 provides the subject matter discussed at this meeting.

- Attended the NRC/DOE September 16-17, 1998, Technical Exchange video conference meetings in NRC Headquarters in Washington, DC, and the DOE office in Las Vegas, NV. The subject matter discussed at these meetings pertained to the DOE license application plan and preparation. Enclosure 9 provides a listing of the agenda items discussed at these meetings.

- Attended the NRC/DOE September 29, 1998, Quarterly Technical video conference meeting. Enclosure 10 provides the subject matter discussed at this meeting.

- Attended the October 22, 1998, video conference meeting with the Affected Units of Local Government.

NRC QA OPEN ITEMS

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

OPEN ITEM NUMBER	SUBJECT MATTER	REFERENCE	STATUS
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 OR 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)
98-4	TRACEABILITY-TECHNICAL DATA	DOE AUDIT M&O-ARP-98-20	98-4

Enclosure 1

NRC OR/DOE QUALITY ASSURANCE MEETING 10/19/98

QA ISSUES IDENTIFIED IN ON-SITE REPRESENTATIVE'S REPORTS

- LENGTH OF TIME TO CLOSE DEFICIENCIES (Open Item 98-1)
- INCREASED DEFICIENCIES IN SCIENTIFIC NOTEBOOKS (Open Item 98-2)
- OVERVIEW OF TRENDING PROGRAM, TRENDS/ISSUES IDENTIFIED TO DATE
- DEFICIENT SUPPLIERS, IMPACT AND CORRECTIVE ACTIONS (Open Item 97-2)
- DATA QUALIFICATION, PROCEDURE DEVELOPMENT
- LEVEL OF QUALITY OF WORK PRODUCTS (Open Item 96-2)
- SCP QUESTION 55/STUDY PLAN 8.3.1.5.2.2 COMMENTS
- GRADED QA OVERVIEW OF ACTIONS/METHODOLOGY
- VERTICAL SLICE REPORTS (Open Item 98-3)

OTHER QA ITEMS

- QA APPLICATION AND IMPLEMENTATION TO TOTAL SYSTEM PERFORMANCE ASSESSMENT AND SOFTWARE QUALIFICATION (VERIFICATION AND VALIDATION)
- PROCESS FOR VERTICAL SLICE SELECTION AND WHAT AREAS ARE PLANNED IN THE NEAR TERM.
- ADEQUACY OF QA APPLICATION TO TECHNICAL DATA BASES TO SUPPORT VA AND LA
- STATUS OF IMPLEMENTATION OF PA TRANSITION PLAN
- TECHNICAL DATA MANAGEMENT SYSTEM
- FY 99 AUDIT SCHEDULE. HOW CRITICAL PORTIONS OF NRC/IRSRs INCLUDED
- PROCESS VALIDATION AND REENGINEERING CONCEPT
- RESPONSE TO NRC PART 21 LETTER
- PVAR EFFORT (PROCESS VALIDATION AND RENGINEERING)

Enclosure 2

October 12, 1998

MEMO TO FILE

Ref: ASME NQA-1 COMMITTEE
PROGRAMMATIC MANAGEMENT PROCESSES SC
OCTOBER 26, 1998 MEETING AGENDA

Holiday Inn Casino Boardwalk, Las Vegas
Meeting begins at 8:30AM

1. Welcome and Call to Order
2. Introduction of Visitors
3. Review of Agenda
4. Approval of Past Minutes
5. Review of Past Action Items
6. Electronic Records White Paper
7. New Inquiries
8. Review of Day & Zimmerman Inquiries from October, '97 meeting
9. NRC Report - Graded Approach
10. Membership Actions
11. Review of Action Items from this Meeting
12. Next Meeting – April 26, 1999 in Washington, DC (Hilton in Crystal City, 2399 Jefferson Davis Hwy, 703-418-6800)

Enclosure 3

Executive Summary

The FY 98 integrated Quality Assurance Management Assessment (QAMA) was initiated on January 6, 1998, by the Director, Office of Civilian Radioactive Waste Management (OCRWM) with approval of the QAMA Plan.

During the remainder of the fiscal year, OCRWM and its seven major participants were assessed according to QA Program requirements. At the conclusion of each assessment, the assessment team briefed senior management of the assessed organization on the results of the assessment. The briefing was followed by a written "interim" report identifying areas needing improvement.

Collectively, the interim reports, along with this report, represent the results of the FY 98 integrated QA Management Assessment. This report covers the OCRWM (HQ and YMSCO) portion of the QA Management Assessment and provides specific recommendations for OCRWM (DOE) management attention.

This executive summary summarizes the results of all assessments and identifies those key issues and findings that should be brought to the attention OCRWM's senior management.

Summary:

- Although several areas needing improvement were identified, OCRWM's overall Quality Assurance Program is adequate and effective. The OCRWM Quality Assurance Program is identifying problems and initiating actions to correct those problems.

Key Issues and Findings:

- To assure program success, there is a need to improve human performance throughout the OCRWM program. Senior managers, mid-level managers, team leaders, and supervisors, (DOE and contractor) should endorse and carry out leadership behaviors that are consistent with those found in organizations where a strong nuclear regulatory culture exists.

- There is a need for the M&O to promote self-identification of problems, improve root cause analysis, and develop more effective corrective actions.

- OCRWM's line organization, particularly at the lower levels, should become more involved in problem identification and resolution.

- M&O award fee criteria need to measure and reward performance for developing quality products as well as developing and implementing cost-effective management systems. DOE appraisals and bonuses should be based on criteria that reward success in achieving quality performance.

- Project planning needs to be improved to assure that critical path tasks through repository opening are clearly defined, that the necessary resources are allocated to these tasks, and that responsibility for completing each task is made. Such a detailed plan covering the time through repository opening does not exist, although the M&O has committed to do so. Short-term crises should not be allowed to prevent this resource-loaded schedule from being completed.

- Leaders with experience in first-of-a-kind NRC licensed projects or other first-of-a-kind engineering or complex technology projects will be required as the Yucca Mountain Project moves from the task of scientific investigation to the final engineering of a repository and preparation of an NRC license application. Reliance solely on existing scientific staff to plan and manage this transition is unlikely to lead to success.

- As the program moves into the engineering and license application phase, the roles and responsibilities of DOE and the respective participants must be clear, and a strong commitment to working as a single team with shared goals should be developed. Today ownership of some of the key functions, such as the procedures program, records management program, scientific investigation program, procurement program, document control program, are not clear to DOE or contractor staff. As part of implementing the new YMSCO organization, a clear statement of the DOE functional ownership roles down to the team leader level as a minimum should be articulated.

- The integration of organizational elements and technical products must be improved Despite repeated attempts to address this issue, there is not a sense of ownership of the integration task by the M&O, and the lack of integration is obvious to independent reviews such as the TSPA-VA peer review panel. DOE and the M&O should work together to assure that integration is performed by the team as work products are planned and prepared.

- Over the next year, a strong emphasis should be placed on resolving a number of key issues that have lingered for years, and likely represent the greatest threats to a successful license application. These issues include documenting key decisions, data qualification, and traceability of data, validation of models and records submittal and retrieval.

- As part of implementing an effective nuclear regulatory culture, the program should stress a performance-based approach to verification, including increasing reliance on performance-based audits and surveillances that add value to work products generated.

The recommendations for the HQ and YMSCO assessment are listed in Appendix D.

The recommendations from the interim reports (major participants) are listed in Appendix E.

APPENDIX D

Final Report Recommendations

This appendix consolidates the recommendations from this report in one location for easy reference by readers.

Recommendation No. 1: OCRWM management should proactively deploy and maintain a nuclear regulatory culture that defines the specific beliefs, behaviors, and assumptions required of the team to support OCRWM's objective for a successful license application. Key actions include: (1) direct the existing task force to develop an action plan that defines the critical actions needed to implement an effective nuclear regulatory culture; (2) assign specific responsibilities to carry out the action plans; (3) provide the necessary resources to implement the plan; (4) review implementation progress on a regular basis during weekly staff meetings, program reviews, etc., to assure that progress is being made; and (5) reward individuals and organizations who lead the way in implementing the culture change.

Recommendation No. 2: When communicating its new organization, OCRWM should clearly define its role and relationship with the M&O with respect to whether it is an overseer, manager, or integrator, taking into account OCRWM's responsibility as the potential licensee.

Recommendation No. 3: OCRWM management should ensure that future award fee criteria measure and reward M&O performance in developing quality products as well as in developing and implementing cost-effective management systems that consistently meet program needs. In addition, all members of the team, including DOE managers and staff, should have clear performance metrics and performance incentives tied to mission success. These metrics should be included in DOE and M&O employee appraisals to create a strong incentive for teamwork and mission success. DOE should assure that evaluation of performance is objective and measurable.

Recommendation No. 4: YMSCO management should give priority for the development of a resource-loaded plan with clear milestones and assignments through repository opening. Clear direction to the M&O regarding the level of detail needed in this plan should also be provided.

Recommendation No. 5: DOE line managers, team leaders, and key personnel should give priority attention to ensuring that key issues are promptly and effectively resolved by the M&O. Each responsible DOE individual should establish clear and measurable goals (e.g., percentage retrievability of records) for the expected improvements over the next year in those areas that have been identified as needing improvement.

Recommendation No. 6: The YMSCO individual responsible for the Records Management Program needs to ensure that timely and effective actions are taken to improve the records management system to the extent that the system adequately supports the licensing process. As part of this effort, consideration should be given to conducting an industry peer review of the OCRWM records management system to: (a) identify any control features contained in successful records management systems that are lacking in the OCRWM approach and (b) establish specific performance metrics for measuring the effectiveness of the OCRWM records management system.

Recommendation No. 7: Each DOE line manager, team leader, and key individual should ensure that timely and effective integration takes place in the products for which they have responsibility. Senior DOE management should ensure that each individual fully understands that the M&O has the first line responsibility for integration and that DOE is responsible for ensuring that integration is taking place and is effective.

Recommendation No. 8: In preparation for moving the Project from the science phase to the engineering phase, YMSCO management should: (a) elevate the role of engineering to make it commensurate with its importance to mission success, and (b) establish and fill key engineering positions throughout the Project with qualified personnel who have engineering experience on first-of-a-kind NRC-licensed projects or with first-of-a-kind engineering on complex technology projects.

Recommendation No. 9: OCRWM management should take actions necessary to ensure that major OCRWM program participants are implementing cost-effective lessons-learned programs, and that the lessons-learned from other programs such as WIPP are analyzed and effectively applied as appropriate.

Recommendation No. 10: OQA should: (a) place particular emphasis on conducting performance-based audits and surveillances in the future; (b) eliminate the routine practice of conducting annual compliance-based audits of each organization, (c) address any remaining compliance-based elements during the performance-based audits (to the extent that these elements need to be evaluated within an organization), and (d) revise the QARD to accomplish this approach if necessary.

Recommendation No. 11: Senior OCRWM management should provide the direction and follow-through to ensure that appropriate OCRWM managers and staff attend the NRC Licensing Process training course.

Recommendation No. 12: The OCRWM individual responsible for the training program needs to restore a sense of urgency between the parties in reaching agreement on QA-related training/qualification issues and ensure that they are addressed in a timely and effective manner.

Recommendation No. 13: The Director, OQA should review the audit process, seek customer feedback as to the value and effectiveness of audits, and determine how the audit process could be improved. The Director, OQA should also continually promote teamwork, and good communications to eliminate any disagreement regrading the validity of deficiencies.

Recommendation No. 14: QATSS should undertake an initiative, with OQA participation, to achieve strengthened leadership, increased communications, clearer definition of roles and responsibilities, stronger team spirit, and greater unity of purpose.

Recommendation No. 15: The QATSS Program Manager should: (a) identify the QATSS customers, (b) meet with these customers to determine the effectiveness of the support provided, (c) determine long-term needs such as staffing requirements, skill mix, and organizational structure, and (d) develop strategies in conjunction with OQA to meet these needs.

APPENDIX E

Interim Report Recommendations

This appendix consolidates recommendations from the seven FY 98 interim reports for the reader's convenience.

Berkeley: None.

Livermore: None

USGS: None

Los Alamos: None

Sandia: None

Kiewit: (1)

Kiewit Recommendation No. 1: Kiewit/PB management needs to take appropriate actions to ensure that work packages and related QA records are promptly and effectively transferred to the M&O.

M&O: (11)

M&O Recommendation No. 1: M&O management should be aware that at the working level there is not widespread acceptance of, or confidence in, recent initiatives. Management should ensure that the DOE initiatives underway to institute a nuclear regulatory culture are pursued with an overriding sense of urgency that prevents them from losing focus and effectiveness with time.

M&O Recommendation No. 2: The M&O should determine why the root causes of significant programmatic issues are not being identified and/or corrected, and determine why management has failed to recognize this as a problem. In addition, the M&O should evaluate recommendations from previous assessments, audits, and reviews to identify commonalities and indicators of emerging broader problems. Issues resulting from this evaluation should be promptly and effectively resolved in a manner that adequately supports the priorities for developing an adequate license application.

M&O Recommendation No. 3: The M&O should develop and institutionalize an effective Lessons Learned program that provides for the planned and timely exchange of lessons-learned information from other similar DOE programs and commercial projects.

In particular, the WIPP lessons-learned in the areas of data control and technical data base management should be strongly endorsed and applied by M&O management. The Lessons Learned Program should be streamlined to avoid unnecessary administrative detail and cost.

M&O Recommendation No. 4: The transmittal of data and technical information (inputs and outputs) between laboratory participants should be controlled. Assumptions used in scientific reports, studies, and models that require subsequent verification should be systematically identified. The control features established for these processes should be standardized among participants to the extent possible.

M&O Recommendation No. 5: The M&O should: (a) identify the remaining data sets not currently in the TDB which are essential to supporting the Site Recommendation and License Application; (b) prioritize the data entry process consistent with the importance of the data to be entered into the TDB; (c) determine the extent to which these essential data sets need to be qualified; and (d) provide M&O senior management with clear visibility regarding the rate of progress for submitting, qualifying, and entering these essential data sets into the TDB. Prompt corrective action should be taken if the data submittal, data entry, or data qualification process bogs down with respect to getting essential data sets into the TDB in a timely manner.

M&O Recommendation No. 6: The corrective action plan for CAR-LVMO-006 should take into account the need to share software among users and reconcile identified errors with all users.

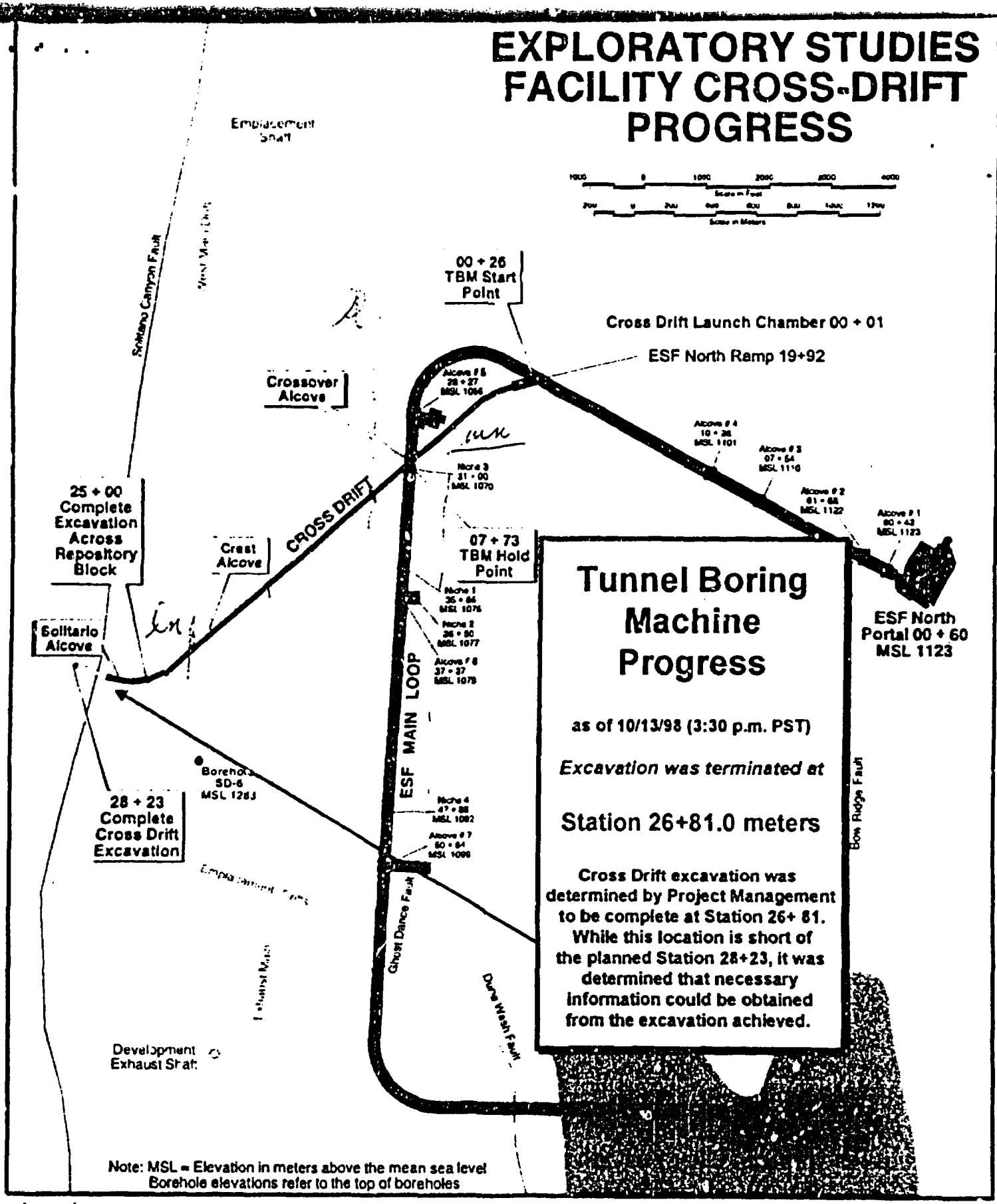
M&O Recommendation No. 7: Senior management should evaluate the scientific planning process to determine if it is adequate to support the program through license application. This evaluation should be coordinated with the Director, Office of Quality Assurance, to factor in plans by OQA to improve the scientific planning process.

M&O Recommendation No. 8: The procedure system should be evaluated from a systems engineering perspective to determine if its shortcomings are a contributing factor to the lack of effectiveness in other programmatic functional areas. The Quality Review Board should also be evaluated to determine if it is effective in terms of adding value to procedure reviews and timeliness of reviews.

M&O Recommendation No. 9: M&O senior management should: (a) evaluate the records submittal process to determine the cause(s) of the problems experienced to date in this area; (b) implement prompt corrective action to achieve a lasting solution to these records problems; and (c) ensure that the corrective actions taken are effective in that all records required to support licensing are consistently submitted to the RPC in a timely and complete manner.

M&O Recommendation No. 10: The M&O should use the Office of Quality Assurance as its direct QA staff as originally intended. Any problems encountered in the process of doing this (e.g., skill mix within OQA does not meet the M&O's needs; responsiveness of the OQA personnel is not adequate) should be immediately brought to the attention of OQA management for prompt resolution. Consideration should also be given to incorporating EA personnel into the line organization, both physically and organizationally.

M&O Recommendation No. 11: M&O senior management should provide the direction (e.g., send a clear message when training is mandatory) and follow up to ensure that all appropriate M&O personnel attend the upcoming NRC Licensing Process training course.



Legend

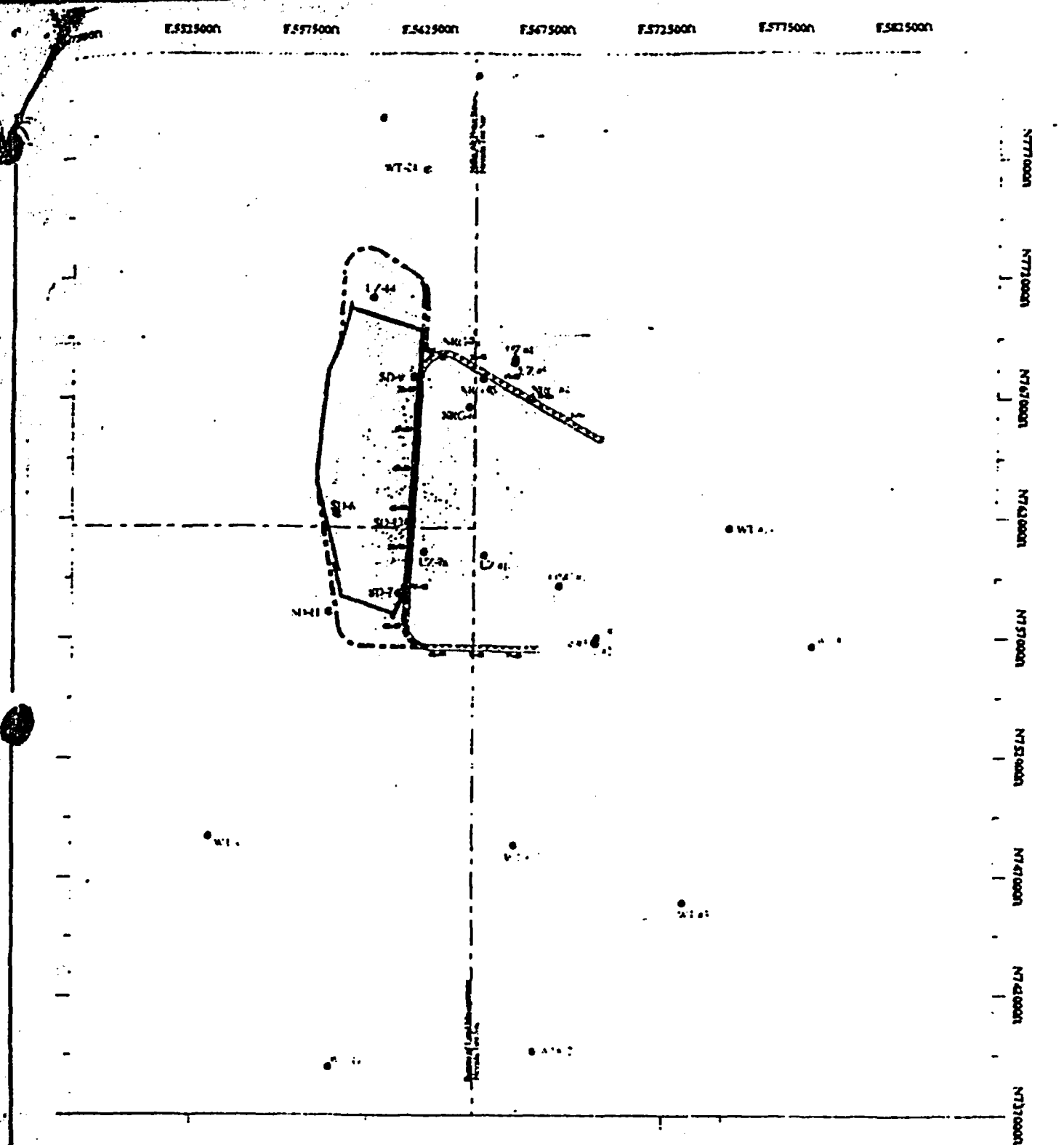
- BLACK / GRAY - Exploratory Studies Facility (ESF) construction and related activities
- RED - Cross Drift Construction
- BLUE - West Main Drift future construction and related activities
- GREEN - Faults

N

Yucca Mountain Site Characterization Project

MTS MJK GIS_CrossDriftRev23.ppt 10/13/98 (G SYMP90089 0.cdr) YMP-98-089 0

Enclosure 5



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

0 MILES

0 KM

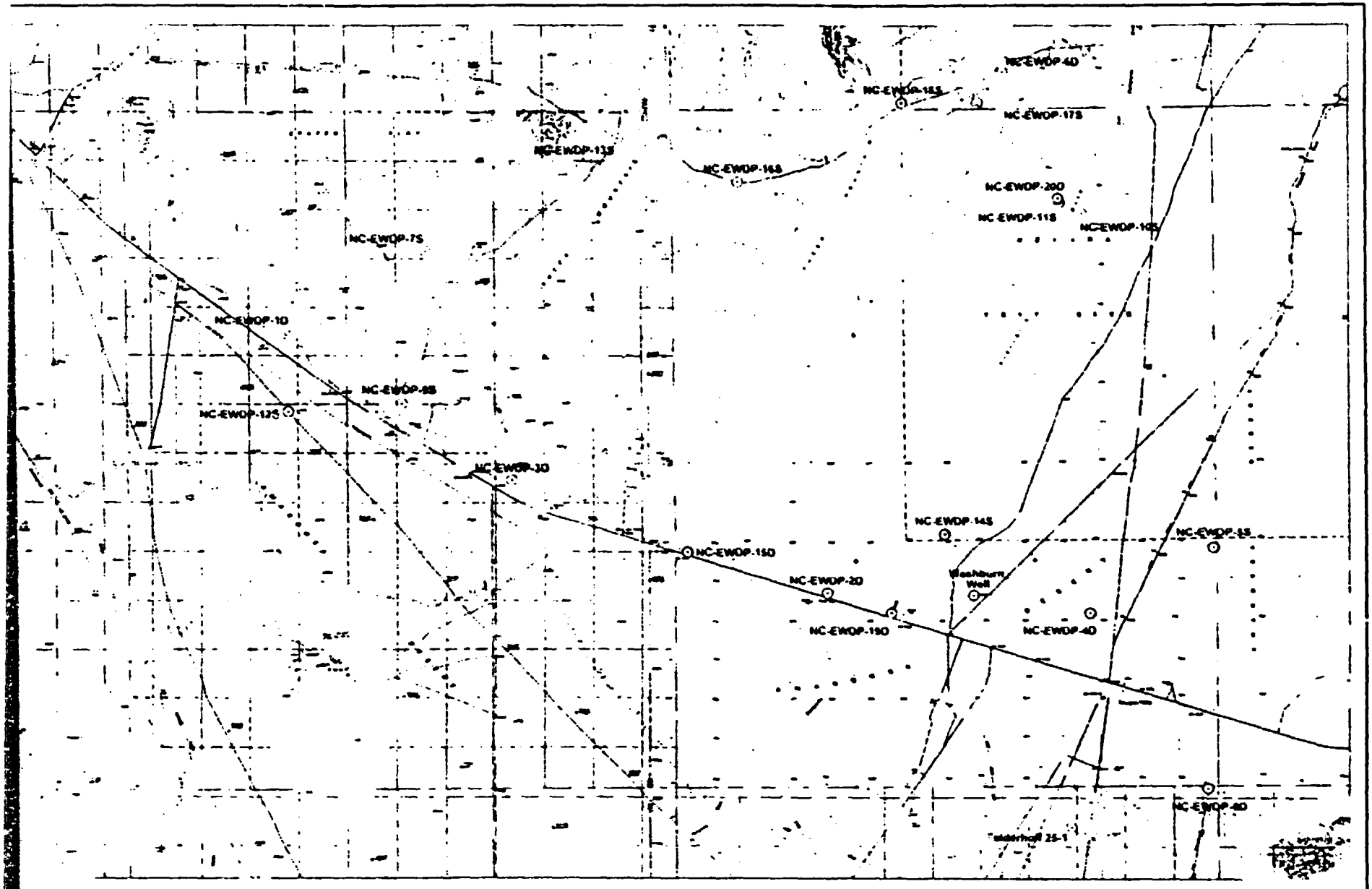
N

Yucca Mountain Site Characterization Project

SELECTED BOREHOLES IN THE VICINITY OF THE CONCEPTUAL CONTROLLED AREA

Enclosure 6

Enclosure 7



NYE COUNTY, NEVADA
EARLY WARNING DRILLING PROGRAM
SITE LOCATIONS

Nuclear Waste Repository Project Office

1 0 1 2
Miles

DISCUSSION ITEMS FOR SEPTEMBER 9, 1998 MEETING WITH R. DYER

- o QUALIFIED DATA VS UNQUALIFIED DATA TBV, TBD
- o SCP QUESTION - RESPONSE
- o MANAGEMENT SUPPORT TO CLOSE OPEN ITEMS E.G., 96-2, 98-2
- o QA OPEN ITEMS - OVERALL DISCUSSION
- o DOE REORGANIZATION - PURPOSE
- o LINE ORGANIZATION ENCOURAGED TO DETECT DEFICIENCIES
- o TRENDING PROGRAM
- o READINESS REVIEWS
- o AUDITS/SURVEILLANCE CONSIDER IRSRs
- o MEETING WITH NWTRB MEMBER
- o NYE COUNTY QA PROGRAM
- o TUNNEL ACCESS FOR HANDICAPPED NRC TECH PERSON
- o PART 60 VS PROPOSED PART 63
- o STATUS OF DOE'S PLAN TO RESPOND TO NWTRB JULY 98 LETTER
- o DOE'S PLANS FOR ADDITIONAL DRILLING/TESTING AT WT-24 & SD-6

Enclosure 8

Technical Exchange
License Application Plan—Viability Assessment Volume 4

September 16, 1998

8:30-8:45	Introductions	
8:45-9:00	Opening Remarks	DOE
9:00-9:30	Introduction	DOE
9:30-10:00	Organization and Rationale of License Application Plan	DOE
10:00-10:15	BREAK	
10:15-11:00	Evolution of the Repository Safety Strategy and its Relation to Preclosure/Postclosure Safety Case	DOE
11:00-11:45	Performance Allocation and Identification of Needed Information	DOE
11:45-12:45	LUNCH	
12:45-2:45	Discussion and Examples of Remaining Technical Work Site Investigation Design (and Design options and Alternatives) Performance Assessment	DOE
2:45-3:00	BREAK	
3:00-3:30	Status of Quality Controls on the Technical Program	DOE
3:30-4:00	Regulatory Program and Path Forward	DOE
4:00-5:00	Concluding Discussions	NRC/DOE

Technical Exchange
Technical Guidance Document for License Application

September 17, 1998

1:00 pm	Opening Remarks	All
	Introduction	DOE
	Role of Technical Guidance Document in License Application	DOE
	Consideration of Part 63 in Technical Guidance Document Development	DOE
3:00 pm	Break	
	Organization and Content in Technical Guidance Document	DOE
	NRC Perspectives	NRC
	Concluding Discussion	All
5:00 pm	Adjourn	

Enclosure 9

PROPOSED AGENDA
DOE/NRC QUARTERLY TECHNICAL MEETING
(VIDEO CONFERENCE)

September 29, 1998
10:00 a.m. to 2:30 p.m (EDT)

Time	*Agenda Item*	*Lead*
10:00 AM	**Opening Remarks**	DOE, NRC NV., AUG
10:15 AM	**Engineering Design Program** o Level of Design Detail for License Application o Thermal-Mechanical Effects on Underground Design, Including Emplacement Drift Backfill	DOE
12:30 PM	**Break**	ALL
12:40 PM	**Radionuclide Transport within Engineered Barrier Systems**	DOE
1: 10 PM	**Scientific Studies Update** o Cross-Drift Excavation o Alcove Testing & Niche Studies o Busted Butte Validation Study o Status of Geophysical Studies	DOE
2:10 PM	**Discussion and Closing Remarks**	DOE, NRC NV., AUG
2:30 PM	**Adjourn**	

Enclosure 10