U.S. NUCLEAR REGULATORY COMMISSION

ON-SITE LICENSING REPRESENTATIVE REPORT

NUMBER OR-97-01

FOR THE REPORTING PERIOD OF DECEMBER 1-31, 1996

AND JANUARY 1-31, 1997

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

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Reviewed and approved by:

John O. Thoma, Section Leader
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REPORT DETAILS

1.0 INTRODUCTION

The principal purpose of the On-Site Licensing Representative (OR) reports is to alert 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. In addition to communication of this information, any potential licensing concerns, or opinions raised in this report represent the views of the ORs and not that of NRC headquarters' staff. The reporting period for this report covers December 1-31, 1996, and January 1-31, 1997.

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 QA, design controls, data management systems, performance assessment, and key technical issue 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 SUMMARY AND CONCLUSIONS

Due to the holiday season and vacation schedules, for reporting purposes, this report will be a combined report for the months of December 1996, and January 1997. The ORs attended a series of important meetings namely, the NRC/DOE Quality Assurance meeting on December 5, 1996, and the Public Hearing Meeting held at the University of Las Vegas, Nevada, on January 23, 1997, for DOE to receive comments on proposed rulemaking to revise and amend the requirements of

Part 960 of Title 10 of the Code of Federal Regulations. The ORs also attended the January 28-29, 1997, Nuclear Waste Technical Review Board (NWTRB) meeting held in Pahrump, Nevada. In this meeting, DOE announced plans to commit $13.1 million in FY 97 for additional work to enhance confidence in products for the Viability Assessment. The ORs have provided a recommendation on how to possibly enhance the communication process between NRC, DOE, NWTRB, and other affected parties by balancing the NWTRB agenda to facilitate all views being presented on a particular issue.

The applicability of Part 21 of Title 10 of the Code of Federal Regulations to the pre-licensing phase of the potential geologic repository for high-level nuclear waste has been questioned by DOE and an inquiry from DOE to NRC is being prepared for a written interpretation.

The excavation progress of the ESF tunnel boring operation advanced at a very reduced rate due to encountering extremely blocky ground during late December 1996, and January 1997.

4.0 QUALITY ASSURANCE, ENGINEERING, AND NRC KEY TECHNICAL ISSUES

Attended the December 5, 1996, NRC/DOE QA Videoconference meeting held in Las Vegas, Nevada, and in Washington, D.C. Enclosure 1 provides the agenda for this meeting. Representatives from NRC, DOE, State of Nevada, NWTRB, and various contractors attended this meeting.

Clarification on several areas relative to the agenda item discussing the DOE 1996 Management Assessment was requested by the OR. The assessment concluded that the QA program was well planned, well documented, and produced meaningful results but there was room for improvement in some areas. The NRC OR questioned whether the assessment group had considered the performance of the U.S. Geological Survey (USGS) QA program effectiveness over the past year in reaching the overall conclusion. The DOE Annual Summary for the Office of Civilian Radioactive Waste Management QA Program (D. Horton to D. Dreyfus letter dated December 12, 1996) noted the USGS QA Program effectiveness being "unsatisfactory" in the areas of Procurement, Control of Purchased Items and Services, and Corrective Action. The OR reports of September 1995, March 1996, April/May 1996, and June 1996, raised concerns from a licensing perspective about the USGS QA Program effectiveness. The assessment team representative at this meeting, indicated the USGS assessment evaluator was not present in order to provide the total information necessary to accurately respond to this inquiry.

A subsequent meeting with a DOE QA representative was scheduled to discuss this matter. The DOE representative indicated that the management representative was aware of the USGS QA deficiencies but concentrated on the corrective actions DOE initiated to correct the USGS QA deficiencies. DOE stated that for future Management Assessment Reports, conditions such as the above will be explained in greater detail to clearly explain the total assessment methodology.

5.0 EXPLORATORY STUDIES FACILITY AND KEY TECHNICAL ISSUES

Exploratory Studies Facility (ESF) Testing:

As of January 31, 1997, the Tunnel Boring Machine (TBM) advanced to station 71+50 meters (23,458 feet). Geologic mapping and photogrammetry progressed approximately to 60+66 meters. Tunnel mappers are also mapping surface features at the ESF South Portal. Over this reporting period, the TBM penetrated two faults, one trending northwest at station 70+58 and a second trending north at station 71+31. Poor ground conditions associated with this latter fault resulted in a significant slow down in the TBM rate of advance. ESF construction and testing activities continue to be focused in Alcoves 5, 6, and 7. However, investigators continue to collect barometric pressure, temperature, and relative humidity data in Alcove 4 and monitor an evaporation test outside Alcove 3. Temperature and relative humidity data also continue to be collected at several locations in the ESF main drift. In addition, tensiometers and heat dissipation probes have been installed in the tunnel wall in the South Ramp to measure dry-out in a section of nonwelded tuffs. There was no new testing activity conducted in Alcoves 1 and 2. Seismographs in Alcoves 1 and 5 continue to monitor seismicity data. The location of alcoves and preliminary tunnel stratigraphy is summarized in Enclosure 2.

Alcove 5 (Thermal Testing Facility Access/Observation Drift, Connecting Drift, and Heated Drift)
The excavation of the Heated Drift Test area using an Alpine Miner was completed to its planned length of 60.5 meters. Drill/blast excavation of the invert in this drift continues. Air permeability testing is being conducted in instrumented boreholes in the Access/Observation Drift to establish baseline conditions for the Heated Drift Test. Other instrument holes that will be used to monitor the Heater Drift Test continue to be drilled. The Heated Drift 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. This test is scheduled to begin in December 1997.

Alcove 5 (Thermalmechanical Alcove)
The Single Heater Test started on August 26, 1996. Instruments in this block of rock are reported to be working properly and the collection of test data continues. On November 30, 1996, preliminary instrumentation measurements in the block indicated a rock mass temperature of 70 degrees centigrade at a distance of 1.5 meters from the midpoint of the heater element. Water collected from a instrumentation hole in November 1996 confirmed anticipated water mobilization from the heat-up of this block. This test is designed to heat approximately 25 cubic meters of rock to 100 degrees or greater to investigate thermomechanical properties of rock in the potential repository horizon. In late February 1997, the DOE contractors expect to issue a status report on test results through November 30, 1996.

Alcove 6 (Northern Ghost Dance Fault Alcove)
Testing in Alcove 6 is designed to investigate the hydrochemical and pneumatic properties of the Ghost Dance Fault. Investigators have completed geothermal logging, gas sampling, and pneumatic monitoring across this fault from a radial borehole in this alcove. Air permeability testing is presently being conducted in this borehole.

Alcove 7 (Southern Ghost Dance Fault)
As of January 31, 1997, the excavation of this alcove using an Alpine Miner had advanced 93 of the 135 meters planned for the start of alcove testing. This excavation is expected to be completed by March 1997.

Surface-Based Testing:

Fran Ridge Large Block Heater Test
Preparations continue for the start-up of the Fran Ridge Large Block Test (LBT) in February 1997. The duration of this test (heat-up and cool-down) is expected to be completed within a time frame of approximately 8 months. Expected rock mass temperatures are projected to be approximately 140 degrees centigrade near the heaters and 60 degrees centigrade away from the heaters. Coupons of candidate waste package materials will be tested and microorganism (cultured in laboratory) will be introduced into the block to evaluate the performance of these materials under this test. The purpose of this test is to gather data to evaluate thermal-hydrologic-mechanical-chemical processes in rock similar to potential repository horizon. This test will investigate: the development of a dry-out region around the heaters and a rewetting front after cessation of boiling; the development of heat pipes and the role of fractures in the reflux of condensed water; and the effects of changes in chemistry and mineralogy and

their effect in hydrology. This test will also help to discriminate among alternate conceptual models.

Borehole Testing:
The location of boreholes referenced in this section is provided in Enclosure 3.

C-Hole Complex
Tracer testing at the C-Hole Complex is conducted in the Bullfrog-Upper Tram interval of the Crater Flat Tuff for the purpose of determining hydrologic properties in the saturated zone. Over this reporting period, conservative (non-sorbing) tracer testing resumed at the C-Hole Complex. On January 9, 1997, investigators injected up to 4 kilograms of the tracer pryidone into borehole C#1 and up to 15 kilograms of the tracer 2,6 difluorobenzoic acid (DFBA) into borehole C#2. Breakthrough of DFBA occurred on January 16, 1997. Peak concentration values of DFBA were measured on January 21, 1997. No breakthrough of the pyridone tracer has been reported. Sampling and analyses of water pumped at C#3 continues.

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

OTHER ACTIVITIES

DOE Reclamation of Trenches and Test Pits
In FY97, DOE plans to backfill and reclaim a number of trenches and test pits in the Yucca Mountain area. These trenches and test pits were excavated for a variety of site characterization activities, including: quaternary faulting studies, volcanic studies, paleoflood studies, and soil/rock testing. YMP investigators have completed and documented their studies on these excavations. NRC will have an opportunity to review the list of trenches and test pits to be reclaimed before these excavations are backfilled.

Recent Reports on Percolation Flux
Various components of unsaturated zone site characterization program contribute to the understanding of percolation flux. Since percolation flux cannot be measured directly, different measurement techniques are used to estimate percolation flux. Two recent Yucca Mountain Project reports provide independent lines of evidence on percolation flux through the potential repository horizon at Yucca Mountain. A brief overview of these reports is provided below.

1. Conceptual and Numerical Model of Infiltration for the Yucca Mountain Area, Nevada

The objective of this study was to (1) develop a conceptual model of infiltration processes at the site; (2) implement the conceptual model in a numerical model; and, (3) evaluate the numerical models ability to explain available hydrologic data.

The report concludes that the processes most important to determining if net infiltration occurs are: timing and amount of precipitation, storage capacity of soil; seasonality and amount of evapotranspiration; and the hydrologic properties of the underlying bedrock, including fracture properties. The report states that the role of faults in near-surface infiltration is more difficult to ascertain. Once initiated under shallow soils, fracture flow can move water quickly through the Tiva Canyon tuff suggesting that there may be no unique fast flow paths through the shallow welded rocks. Investigations also suggest that deeper soils retard the penetration of water and prevent rapid movement into fractures. The fastest pathways into the near surface therefore appears to exist in any fractured rock under shallow soils. According to this study, where faults exist within the Paintbrush nonwelded tuff (PTn), water can quickly penetrate into the underlying Topopah Springs tuff as long as the location of faults is under shallow soils where near-surface fracture flow could be initiated. This report suggests that faults may have little role in increasing surface infiltration, but may play a major role in allowing water to quickly pass through the PTn.

The report notes that infiltration is temporally and spatially variable but averages 4.5 mm per year over study area and 6.5 mm per year over the potential repository area. Temporal and spatial ranges of infiltration are also provided in this report. According to this report, it is not the amount of precipitation alone that determines net infiltration, but also the timing. All data associated with this study that are qualified for use in site characterization are listed in Appendix I of the report.

2. Ages and Origins of Subsurface Secondary Minerals in the ESF

This report states that the percolation flux through the unsaturated zone at Yucca Mountain has been estimated in the range of 0-10 mm per year. Secondary deposits of calcite and opal in fractures and cavities mark the pathways of past percolation. Isotopic dating of these mineral deposits and calculating the volume of water required to form these minerals can provide a basis for estimating future fluxes through a potential repository at Yucca Mountain. This study proposes a deposition model in which mineral

slowly and continuously over geologic time periods. The mineral deposition rate is inferred to be in the range of 1-10 mm per million years. If calcite and opal are assumed to have formed continuously since the emplacement of the host rock, a minimum percolation flux of about 2.1 mm per year is obtained as an average over last 12.7 million years. Surface records indicate that regional climates over the last million years were characterized by wetter and cooler conditions relative to the present climate. However, there is no mineral record suggesting that the deposition of secondary minerals varied greatly over this same time period. This study indicates that this observation suggests that percolation flux through the Topopah Spring tuff may have been buffered from variations in moisture except in zones of high flux.

6.0 GENERAL

1. Meetings/Interactions

- On December 5, 1996, the ORs scheduled a briefing with a DOE representative to obtain the current status of DOE's development in the Licensing Support System (LSS). At the May 1996, LSS Advisory Review Panel (ARP) meeting in Las Vegas, NV, NRC agreed to set up an LSS test bed and electronic forum, "LSSNET," to facilitate communication with interested participants involved in the development of the LSS. DOE indicated that this appears to be working acceptability in addition to communicating with various telephone conversations.

  A proposed computer system has been developed by the Management and Operating Contractor for the development of the license application. This may eliminate the need for the LSS as currently defined. For the purpose of this demonstration, a Table of Contents listed nine broad topics from which the user can initiate a search for the associated documentation. These topics which generally correspond to the major chapter headings in the License Application are: 1) Mined Geologic Disposal System Design, 2) Site Characteristics, 3) Performance Assessment, 4) Radioactive Waste Management, 5) Radiological Protection, 6) Repository Operations, 7) Accident Analyses, 8) Environment, and 9) Socioeconomics. The system focuses on a "hyperlink" connection which is analogous to a key word approach or the methodology used on Internet. Once the topic is selected, it lists a brief narrative of what the topic includes. From this, the user can start to narrow the search down to specifics and begin to view the subject matter such as

procedures, maps, histories, locations, etc. When necessary, the proposed system will refer the user to the applicable portion of the Automated Technical Data Tracking System (ATDT). The ATDT maintains references to data resulting from Yucca Mountain Site Characterization data acquisition and development activities. The ATDT assists the user in the tracking of technical records in the technical data base.

With the above systems, users will have the capability of rapidly moving between the License Application itself and the supporting information. The reviewer can retrieve documents and associated information in full text. Based on this briefing, it appears to the ORs that the development of the LSS is aimed in the proper direction. The ORs recommend that the DOE QA organization be involved in the early development to assure the LSS meets the QA requirements specified in the DOE Quality Assurance and Requirements Document. The ORs also recommend that a presentation be given to the ARP Management Team. DOE is agreeable to this presentation and welcomes feedback early enough in this process to avoid costly revisions. However, development of the total LSS involves several other areas of the NRC including the Office of General Counsel and Office of Information Resources Management which may have concerns above and beyond the ORs.

- The regularly scheduled meeting with W. Barnes (Yucca Mountain Site Characterization Office (YMSCO) Project Manager, YMSCO Deputy Project Manager, YMSCO Assistant Managers, YMSCO QA Manager, and various YMSCO staff (See Enclosure 4 for the subject matter discussed at this meeting).

- An NRC/DOE Exploratory Studies Facility Videoconference Meeting was held on December 16, 1996, in Las Vegas, Nevada and Washington, D. C. The agenda for this meeting is provided in Enclosure 5.

- On January 15, 1997, The Nuclear Regulatory Commission briefed the Department of Energy (DOE) on the content of NUREG/CR-6513, No. 1, "NRC High-Level Radioactive Waste Program Annual Progress Report, Fiscal Year 1996." The briefing, conducted by videoconference, brought together the NRC Headquarters, DOE (Forestall Building), two DOE facilities in Las Vegas, and the Center for Nuclear Waste Regulatory Analyses in San Antonio, Texas. The briefing was to provide a management overview and to clearly define the purpose of the document. The NUREG/CR provides the status of NRC high-level waste work conducted in FY96 and an

assessment of progress toward resolution of the ten key technical issues. The purpose of publishing the material is to document progress and facilitate a dialog between NRC and DOE. NRC management emphasized that NUREG/CR-6513 is not a licensing document; the conclusions are not NRC findings or requirements for future action; and that DOE remains ultimately responsible for developing an integrated safety case and may choose to adopt a different resolution path than NRC. After the briefing, copies of the NUREG/CR were mailed to DOE and placed in the NRC Public Document Room.

- The ORs attended a Public Hearing at the University of Nevada at Las Vegas, on January 23, 1996, on DOE's Notice of Proposed Rulemaking to amend the General Guidelines for the Recommendation of Sites For Nuclear Repositories published in the Federal Register on December 16, 1996. Enclosure 6 provides the agenda for the conduct of this meeting.

  The Public Hearing was held in two sessions; one in the afternoon and the other in the evening. The purpose of the hearing was to receive oral testimony on the proposed revision to the rule and not to debate or refute any comments.

  87 representatives registered for the afternoon session and 19 representatives registered for the evening session. Representation at this hearing consisted of DOE, DOE contractors, NRC, State of Nevada, affected units of local governments, affected Indian tribes, craft unions, members of the press, various interest groups, and individuals representing themselves.

  In general, the following were among the comments expressed during this public hearing; some comments were indirectly related to the proposed rule revision.

  - o Does not fully meet the intent of the Nuclear Waste Policy Act;
  - o Allows performance assessment to substitute for technical factors;
  - o Erodes scientific and public credibility;
  - o The storage and transportation of nuclear waste could have a socioeconomic impact and effect on Nevada's revenue derived from the gaming and tourist industry;
  - o DOE should temporarily store waste and research the aspects of utilizing it in the future;
  - o The Federal Register Notice and local newspaper was

insufficient in adequately notifying all affected individuals and groups;
- o Agree with proposed revision.

DOE emphasized that all comments would be considered in the development of the final rule. Also emphasized was that all comments and questions focusing on the scope and content of the proposed revision will be addressed in the final rulemaking process.

An inquiry from a member of the press was directed to the ORs requesting the NRC reaction or status of review of the proposed rulemaking. The ORs response to this inquiry was that the NRC staff is currently in the process of preparing a paper to inform the NRC Commissioners about the publication of the proposed revised siting guidelines with recommendations on how to provide DOE comments commensurate with the status of the proposed rulemaking.

- The NWTRB held a meeting in Pahrump, Nevada, on January 28-29, 1997. Enclosure 7 provides the agenda for this meeting. The meeting was well attended and the attendance register indicated over 130 individuals attended. The ORs and the NRC Chief of the Performance Assessment and High-Level Waste Integration Branch were in attendance. In addition, DOE, DOE contractors, State of Nevada, affected units of government, members of the press, private interest groups and interested citizens attended this meeting.

The designated NWTRB Chairman opened the meeting with an introduction of the six new designated NWTRB members appointed by President Clinton. Enclosure 8 provides brief biographies of these designated members. The meeting continued with presentations from DOE, NRC, the State of Nevada, affected units of local government, and representatives from the European community on transportation and storage of high-level waste. After each session, members of the audience were given a five minute opportunity to present their views on a particular subject related to the preceding group of presentations. In general, subject matter addressed from the audience ranged from opposition to the storage of spent nuclear fuel, adequacy of the storage containers, alternate methodology for storage and disposal of spent nuclear fuel, and the effects of groundwater flow.

DOE provided an update of program activities. DOE summarized recent organizational changes and noted that their FY97 budget was approved. The new alignment of

the Yucca Mountain Project (YMP) is product based for the development of a Viability Assessment (VA), License Application (LA), and an Environmental Impact Statement (EIS). In 1998, DOE will develop a VA that incorporates a Total System Performance Assessment, repository design, and estimated cost of completing the repository. The repository design will consider four reference waste types: industry spent fuel, Navy spent fuel, DOE spent fuel, and DOE high level waste. Other potential waste types are also being considered. In 1999, DOE plans to complete a draft EIS.

DOE presented a status of project activities. The TBM is expected to be day-lighted in late March 1997. DOE also expects to complete a comprehensive Waste Containment and Isolation Strategy in FY97. Key attributes of this strategy that need to be addressed include: 1) rate of water seepage into the repository; 2) waste package lifetime; 3) rate of radionuclide release from the waste package; 4) radionuclide transport through the engineered and natural system; and 5) dilution in the saturated zone. The YMP is presently considering the types of tests that need to be conducted to address these attributes.

A presentation by the State of Nevada addressed concerns with DOE's proposed changes to 10 CFR 960. The primary concern expressed was tied to the meaning of site suitability. This individual stated that the term suitability in Section 113(b) of the Nuclear Waste Policy Act (NWPA) refers to the requirements for site characterization. This person added that the criteria for site characterization must be the siting guidelines and site suitability is tied to meeting the siting guidelines. In this presentation, this individual pointed out that the siting guidelines represent one portion of the Secretary's recommendation to the President and stated that the Secretary's decision on suitability should be based on an analysis of compliance to the guidelines. This individual also indicated that there is no connection between a VA and the Secretary's recommendation to the President. In closing, this individual stated that proposed changes to 10 CFR 960 do not comply with the NWPA and eliminate consideration of environment, transportation, and socioeconomic factors.

DOE presented information on the development and status of an Interim Storage Facility (Phase 1) Topical Safety Analysis Report (TSAR). This TSAR is being developed to reach regulatory resolution on generic technical issues prior to submittal of a site-specific license

application to NRC. Generic site criteria are intended to bound 48 continental states. The presentation provided an overview of key elements of the TSAR along with a schedule for the completion of this effort.

DOE is planning to commit an additional $13.1 million for FY97 work to enhance confidence in design and TSPA-VA products. DOE stated that hydrologic issues are their main concern. In a presentation on reducing hydrologic uncertainties, DOE outlined plans for reducing hydrologic uncertainties related to their Waste Containment and Isolation Strategy. The key hydrologic uncertainties identified include: percolation flux; fast paths; dilution, transport parameters, and mixing depth; and saturated zone hydrochemistry. DOE described test activities that will be conducted to reduce uncertainties in each of these areas. New activities proposed include: ESF percolation flux and hydrologic niche studies, lateral dispersion testing in the Paintbrush nonwelded tuff, drilling a new borehole in potential repository block, additional C-Hole Complex testing, and aquifer testing in existing site boreholes. The ORs support DOE's decision to conduct additional work to reduce key uncertainties for TSPA-VA and ultimately a license application.

A member of the NWTRB asked if DOE planned to construct an East-West drift across the potential repository block. In recognizing that DOE would likely not have time to construct an East-West drift before the VA, the NWTRB asked if DOE would go to a LA without an East-West drift. A DOE representative responded that there are ways to get the necessary information for an LA without an East-West drift. Another DOE representative indicated that an East-West drift was not needed to address a safety concern. NWTRB responded that deferring an East-West drift until after CA will be too late to get information on parameter values.

On the effects of groundwater flow, an individual from the State of Nevada claimed that groundwater would invade the waste package and ultimately rise to the atmosphere and thereby have catastrophic effects. This issue appears similar to an issue raised in the 1980's time frame whereas the National Academy of Sciences evaluated and appeared to refute this claim on a scientific basis. The OR office contacted the State of Nevada for a copy of the report describing this concern. This report is expected to be published within the next month.

Other than the comments by the audience attendees, the NWTRB agenda is obviously preplanned and agreed to by the NWTRB and DOE. Based on this meeting, there appeared to be instances where this agenda did not lend itself to a total balanced effect. For example, a particular presentation during a planned session would address a specific issue or subject area from the presenter's perspective without the full benefit of other views. In doing so, especially with the varied audience with different disciplines and interests present at the Pahrump meeting, interested individuals may not receive the total picture of what is required or what has been accomplished to date and its effect on safety.

To illustrate the intent of a balanced agenda and its benefits, a presentation could be given by a DOE representative explaining the status and development of its planned potential transportation routes and design of the shipping container for spent nuclear fuel. Next, an appropriate NRC representative could present the regulatory aspects and requirements of what the planned shipping routes would entail along with the design requirements a shipping cask manufacturer would be required to comply with under Federal Law. The next presentation(s) could be offered from interested or effective individuals to explain any concerns with the above subject matter. With a balanced type agenda, the NWTRB and all affected individuals or groups would have the opportunity to thoroughly understand the entire scenario on a given subject and generate constructive or appropriate recommendations. This would also meet the intent of the "transparency" or openness intent of these meetings as expressed at the opening of the NWTRB meeting in Pahrump. However, it is a recommendation and outside observation from the ORs, and it is fully realized that the NWTRB will establish its own agenda which may be affected by travel and budget restraints.

- 2. Appendix 7 Site Interactions

On January 30, 1997, the ORs and the NRC Chief of the Performance Assessment Branch visited the Yucca Mountain Site. The itinerary for this visit is provided in Enclosure 9. There were no outstanding issues raised during this visit.

7.0 REPORTS

Over this reporting period the following reports were received in the NRC Las Vegas office.

U.S. DEPARTMENT OF ENERGY

DOE/EM-0317 ENVIRONMENTAL MANAGEMENT, Progress & Plans of the Environmental Management Program, 11/96

B00000000-01717-5705-00044 REV 01 THERMAL LOADING STUDY FOR FY 1996, VOL. I AND II, 11/8/96 (CRWMS M&O)

LAWRENCE LIVERMORE NATIONAL LABORATORY

UCRL-ID-126039 LITERATURE REVIEW OF INTRINSIC ACTINIDE COLLOIDS RELATED TO SPENT FUEL WASTE PACKAGE RELEASE RATES, 1/97, P. Zhao, S. Steward

LOS ALAMOS

LA-13190 FINAL REPORT ON FEASIBILITY OF REAL-TIME GEOCHEMICAL ANALYSIS AT YUCCA MOUNTAIN, NV, USING LIBS TECHNOLOGY, 1/96, J. Blacic, D. Pettit, D. Cremers

SANDIA

SAND96-1132 SCENARIOS CONSTRUCTED FOR THE EFFECTS OF THE TECTONIC PROCESSES ON THE POTENTIAL NUCLEAR WASTE REPOSITORY AT YUCCA MOUNTAIN, 10/96, G. Barr, D. Borns, C. Fridrich

SAND96-2030 GEOLOGY OF THE USW SD-9 DRILL HOLE, YUCCA MOUNTAIN, NEVADA, 9/96, D. Engstrom, C. Rautman

NUREGS

NUREG-1563 BRANCH TECHNICAL POSITION ON THE USE OF EXPERT ELICITATION IN THE HIGH-LEVEL RADIOACTIVE WASTE PROGRAM, 11/96, J. Kotra, M. Lee, N. Eisenberg, A. DeWispelare

NUREG-1571 INFORMATION HANDBOOK ON INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS, 12/96, M. Raddatz, M. Waters

NUREG/CR-6429 THE ROLE OF ORGANIC COMPLEXANTS AND MICROPARTICULATES IN THE FACILITATED TRANSPORT OF RADIONUCLIDES, 12/96, A. Schilk, D. Robertson, K. Abel, E. Cooper, R. Killey, P. Hartwig, C. Thomas, S. Pratt, P. Vilks, J. Mattie, M. Haas, E. Lepel, R. Matzner, K. King

NUREG/CR-6492 BLT-MS (Breach, Leach, and Transport-Multiple Species) DATA INPUT GUIDE, A computer model for simulating release of contaminants from a subsurface low-level waste disposal facility), 11/96, T. Sullivan, R. MacKinnon, R. Kinsey, A. Aronson, M. Divadeenam

NRC-DOE MEETING AGENDA
HIGH-LEVEL WASTE QUALITY ASSURANCE

- VIDEO CONFERENCE -

DOE Facility, 1551 Hillshire Drive, Las Vegas, Nevada
NRC Facility, 11545 Rockville Pike, Rockville, Maryland

December 5, 1996

OBJECTIVE - Technical meeting leading toward issue resolution for items listed below.

1:00 EST (10:00 PST)	Opening Remarks	DOE, NRC, NV, AULG
1:10 EST	Reorganization of YMSCO and OCRWM QA	DOE
1:20 EST	DOE's 1996 Management Assessment	DOE
1:40 EST	1997 Audit Schedule	DOE
1:50 EST	Capture of records from discontinued activities . . .	DOE
2:10 EST	- Break -	
2:20 EST	Status of DOE Data Qualification Efforts	DOE
2:35 EST	Performance Based Audit Changes	DOE
2:50 EST	NRC QA Plans for FY97 and beyond	NRC
3:00 EST	Trend Analyses (Recent Audit Findings)	DOE
3:20 EST	Status of NRC Open Issues	NRC
3:50 EST	Closing Remarks and Discussion	DOE, NRC, NV, AULG
4:00 EST	Adjourn	

ENCLOSURE 1

ESF TUNNEL STRATIGRAPHY CONTINUED*

STATION	
5+87 to 6+17m	Tiva Canyon crystal poor lower lithophysal zone
6+17 to 7+77m	Tiva Canyon crystal poor lower nonlithophysal zone
7+00m	Fault (~20m? offset)***
	Alcove #3 (centerline station intersection):7+54.
7+77 to 8+69m	Tiva Canyon crystal poor vitric zone
8+69 to 8+72.5m	Pre-Tiva Canyon bedded tuffs
8+72.5 to 8+73.5m	Yucca Mountain Tuff
8+73.5 to 9+12m	Pre-Yucca Mountain bedded tuffs
9+12 to 10+20m	Pah Canyon Tuff
10+20 to 10+51.5m	Pre-Pah Canyon bedded tuffs
	Alcove #4 (centerline station intersection):10+27.8
10+51.5 to 12+00m	Topopah Spring crystal rich vitric zone
12+00 to 17+17m	Topopah Spring crystal rich nonlithophysal zone
17+17 to 17+97m	Topopah Spring crystal rich lithophysal zone
17+97 to 27+20m	Topopah Spring crystal poor upper lithophysal zone
27+20 to 63+08m	Topopah Spring crystal poor middle nonlithophysal zone
	Alcove #5 (centerline station intersection):28+27
35+93m	Sundance fault (most prominent fault plane, minor fracturing reported between Stations 35+85 and 36+40)

Alcove #6 (centerline intersection): 37+37

Alcove #7 (centerline intersection): 50+64

ESF TUNNEL STRATIGRAPHY CONTINUED*

STATION	
57+30	Splay of the Ghost Dance Fault - Offset is approximately 2 meters
63+08 to 64+53	Topopah Spring crystal poor upper lithophysal zone
63+25	Fault with the offset estimated as 3.8 meters
64+53 to 65+13	Topopah Spring crystal rich lithophysal zone
65+13 to 65+23	Topopah Spring crystal rich nonlithophysal zone
65+23	Fault
65+23 to 65+35	Topopah Spring crystal rich lithophysal zone
65+35 to 66+35	Topopah crystal rich nonlithophysal zone
66+35 to 66+40	Topopah Spring vitric zone
66+40 to 66+98	Pre-Pah Canyon bedded tuffs
66+98 to 67+26	Tiva Canyon crystal poor vitric zone
67+26 to 67+62	Tiva Canyon crystal poor lower nonlithophysal zone
67+62 to 67+70	Tiva Canyon crystal poor vitric zone
67+70 to 67+88	Tiva Canyon crystal poor lower nonlithophysal zone
67+88 to 67+91	Dune Wash fault (offset is greater than 10m)
67+91 to 68+47	Topopah Spring crystal poor upper lithophysal zone
68+47 to 68+85	Topopah Spring crystal rich lithophysal zone
68+85 to 69+84	Topopah Spring crystal rich nonlithophysal zone

ESF TUNNEL STRATOGRAPHY CONTINUED*

STATION	
69+84 to 69+96	Topopah Spring crystal rich vitric zone
69+96 to 70+58	Bedded tuffs
70+58	Fault (Offset greater than 10 meters)
70+58 to 71+31?	Topopah Spring crystal poor middle nonlithophysal zone
71+31?	Fault
71+31 to face	Topopah Spring crystal poor upper lithophysal zone?

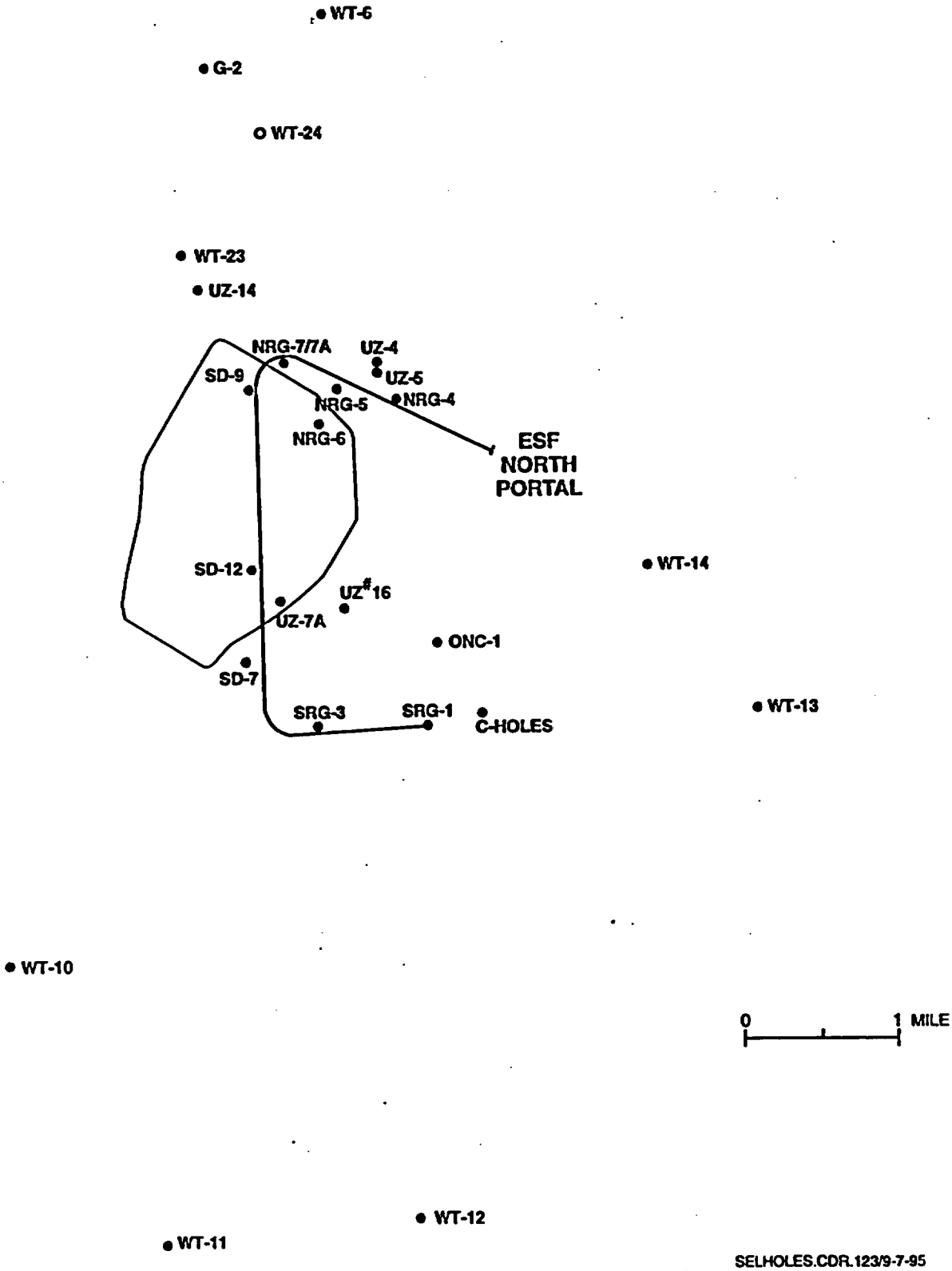
Note: Starting at station 57+02 and ending at 59+80, the crystal poor lower lithophysal zone is exposed in the lower portion of the tunnel (below springline).

* All stations given are referenced to the right springline unless otherwise noted. Station 0+00 is located at coordinates N765352.7, E569814.4.

? Indicates that contact is preliminary and has not been verified by USGS geologists.

*** Only significant faults are noted on the table.

Selected Borehole Locations



ENCLOSURE 3

To: Wesley Barnes, Russ Dyer, Steve Brocoum, April Gil, Thomas Bjerstedt, Tim Hawe, Richard Craun, Dick Spence, Susan Jones, Wendy Dixon, Susan Rives, Jerri Adams, Robert Barton

cc: Ken Ashe, Mike Lugo, Jean Younker, Nora Gilbert, Bertha Terrell

From: Ali Haghi

Date: 01/09/97 04:54:57 PM

Subject: NRC OR MEETING - January 14, 1997

The next NRC OR and DOE meeting is scheduled for Tuesday, January 14, 1997 at 8:30 a.m. in the Room 475, Hillshire Building, Summerlin.

The agenda (provided by Mr. Belke) is as follows:

At start of meeting or at future meetings, consider DOE managers possibly giving a 2-3 minute overview/status of the projects for activities significant to NRC.

1. Questions/possible inconsistencies on recent QA Program Management Assessments. (NRC)

   FY 96 QA Management Assessment by Quality Service Associates.
   December 12, 1996, D. Horton to D. Dreyfus on QA Program deficiencies.
   NRC OR reports of September 1995, March 1996, April 1996, noting USGS problems detected by DOE audits.

2. Data qualification (DOE)

   Was WIPP considered for "lessons learned" aspect as opposed to ESF data qualification?
   Status/progress of Data Qualification Task Force - degree of QA involvement - problems if any; with NRC August 19, 1996, letter on qualification of existing data.

3. Feedback from DOE on impact of NRC reducing QA oversight function (DOE)

4. 10 CFR Part 21 applicability to DOE per NRC Office of General Counsel (OGC). DOE possibly consider requesting official interpretation of regulations from NRC based on preliminary feedback from OR/OGC to determine at what point Part 21 applies. (NRC/DOE)

5. LSS presentation from N. Newbury to ORs positive and will be reflected in next NRC OR report. (ORs will provide feedback from NRC-HQ if available). What degree will QA be involved in future development of this system? (NRC/DOE)

6. Status of OCRWM QA function consolidation effort, transition plan, and expected completion date. (DOE)

7. Status on EPA Rule. (NRC)

8. Expected impact of public reaction to proposed revision to 10 CFR 960. Impact of 12/24/96 Gov. Miller letter to Energy Secretary. (DOE)

9. Suggestions how to improve distribution of NRC HQ documents sent to DOE. Likewise, ORs will offer suggestions how to improve distribution of NRC HQ documents to OR Office and DOE Yucca Mountain Office. (NRC/DOE)

10. Suggestions how to better notify ORs of important meetings such as December DPR meeting, DOE presentation to Nevada Legislative Groups, etc. (DOE)

11. Suggestions how to keep ORs informed of ESF happenings before they become larger problems with NRC HQ. (DOE)

12. NRC developing plan to integrate KTIs to facilitate review process. (NRC)

13. CNWRA and J. Austin January site visits. (NRC)

14. Arrange for ORs, if possible, to attend or obtain, pre-briefing information from DOE on January NWTRB meeting in Pahrump. (DOE)

15. Current status of DOE's waste isolation and containment strategy. (DOE)

16. DOE time frame for completion of all abstractions (conceptual models) for VA-TSPA. (DOE)

17. December 1996 repository design Consulting Board Report referred to formation of Operating Group, with nuclear experience to assist Yucca Mountain Project. What is the status of this group. (DOE)

18. What, if any, new site characterization activities has the YMP approved for FY 1997? (DOE)

19. Any significant change in current scope of Fran Ridge LBT from original scope? (DOE)

20. NRC ORs note recent article on Yucca Mountain. (NRC)

Please call me at 295-4873 or if you have any questions or have any items that you would like to include on this agenda.

PROPOSED AGENDA
DOE-NRC VIDEO CONFERENCE
EXPLORATORY STUDIES FACILITY

December 16, 1996
12:30 — 4:00 p.m. (EST)

NRC:
Two White Flint North, 11555 Rockville Pike, Room T2B5
Rockville, Maryland

DOE:
Summerlin I Facility
1551 Hillshire Drive, Atrium Room, Las Vegas, Nevada

Time	*Subject*	*Lead(s)*
12:30 p.m.	**Opening Remarks**	DOE, NRC, State, AUG
12:40	**ESF Construction Update**	DOE
	- Status of Tunnel and Alcove Construction	
	- South Portal	
	- Ghost Dance Fault	
	- Thermal Test Alcove Construction Methods (Drill & Blast)	
	- Impact of Concrete Lining on Performance	
	- Discussion	All
1:30	**Scientific Studies Update**	DOE
	- Status of Tunnel Mapping	
	- Status of Thermal Tests and preliminary Test Data	
	- Discussion of NRC Concerns from Previous Appendix 7 Meeting	
	- Discussion	All
2:30 — 2:45	**BREAK**	
2:45	**Engineering Design Program**	DOE
	- YMSCO Reorganization and Impact on Design	
	- Potential Change to Repository Footprint	
	- Feedback on DOE's Response to 2/14/95 Letter	DOE/NRC
	- Discussion	All
3:45	**Closing Remarks and Additional Discussion**	All
4:00	**Adjourn**	

ENCLOSURE 5

U.S. DEPARTMENT OF ENERGY (DOE)
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT (OCRWM)
YUCCA MOUNTAIN SITE CHARACTERIZATION OFFICE (YMSCO)

PUBLIC HEARING AGENDA

Notice of Proposed Rulemaking (NOPR)
~~General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories~~
Docket No. RW-RM-96-100
January 23, 1997 - Las Vegas, NV
Afternoon Session: 12:30 p.m. - 4:30 p.m.
Evening Session: 6:00 p.m. - until last speaker finished

Moderator

Stephen Rice	Associate Provost of Research University of Nevada at Las Vegas

DOE Hearing Panel

Carol Hanlon	Presiding DOE Official Physical Scientist, YMSCO
Susan Rives	Chief Counsel, YMSCO
Allen Benson	Director of Institutional Affairs, YMSCO

SCHEDULE OF PRESENTATIONS

Evening Session: 6:00 p.m. - until last speaker finished

Opening Remarks		**Time**
Stephen Rice	Moderator	6:00 p.m.
Carol Hanlon	Presiding DOE Official	

Schedule of Speakers	**Representing (if applicable)**	**Time**
1. Tom McGowan	Self	6:30 p.m.

2. Unscheduled Speakers and Rebuttal/Clarifying Statements

UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD
1100 Wilson Boulevard, Suite 910
Arlington, VA 22209

Agenda

Winter Board Meeting

Bob Ruud Community Center
150 N. Highway 160
Pahrump, Nevada 89048
(702) 727-9991 (Pay phone)
Fax: (702) 727-0345 (Town Hall)

January 28-29, 1997

Tuesday, January 28

8:00 a.m. **Welcome and introductions**
Jared Cohon, Chair
Nuclear Waste Technical Review Board (NWTRB)

8:05 a.m. **Nye County introductions**
Ira Copass
Nye County Board of Commissioners

TOTAL SYSTEM PERFORMANCE ASSESSMENT
(Session chair: Jeffrey Wong, NWTRB)

8:15 a.m. **Traceability and Transparency in Total System Performance Assessment**
Abe Van Luik
Technical Manager for Performance Assessment
Office of Civilian Radioactive Waste Management (OCRWM)

8:55 a.m. *Questions/discussion*

9:15 a.m. **Making Performance Assessments Understandable and Credible**
John Austin
Chief
Performance Assessment and High-Level Waste Integration Branch
U.S. Nuclear Regulatory Commission

9:35 a.m. *Questions/discussion*

9:45 a.m. **BREAK (15 minutes)**

Telephone: 703-235-4473 Fax: 703-235-4495

10:00 a.m. **Changes in the French nuclear waste program due to the 1991 law**
Pierre Barber, Director of International Affairs
French Nuclear Power Generation Agency (ANDRA)
Key objectives of ANDRA's technical program: making them understandable to the public
Gérald Ouzounian, Assistant Manager - Scientific Department, ANDRA

11:00 a.m. *Questions/discussion*

11:15 a.m. **Understanding Risk: Perspectives from the National Research Council Report**
Paul Stern
Study Director
National Research Council

11:35 a.m. *Questions/discussion*

11:50 a.m. **Transparency: How can the public know what the TSPA is and what it means?**
Judy Treichel
Executive Director
Nevada Nuclear Waste Task Force

12:10 p.m. *Questions/discussion*

12:30 p.m. **LUNCH (1 hour)**

TRANSPORTATION
(Session chair: John Arendt, NWTRB)

1:30 p.m. **Privatization Initiative for Transportation Services**
Dwight Shelor
Deputy Director
Office of Waste Acceptance, Storage, and Transportation, OCRWM

2:15 p.m. *Questions/discussion*

2:35 p.m. **Nuclear waste transportation: critical issues**
Robert Loux, Executive Director
Robert Halstead, Transportation Adviser
Nevada Agency for Nuclear Projects
- Rail and highway access
- Outlook for shipments to a repository and/or interim storage facility
- Unresolved safety issues
- State of Nevada recommendations for transportation system development

3:20 p.m. *Questions/discussion*

3:35 p.m.	**Affected units of local government: prespectives on privatization** Russell di Bartolo, Impact Assessment Coordinator Clark County, Nevada Brad Mettam, Yucca Mountain Project Coordinator Inyo County, California James Williams, Nuclear Waste Repository Project Office Nye County, Nevada
4:05 p.m.	*Questions/discussion*
4:15 p.m.	**BREAK (15 minutes)**
4:30 p.m.	**Roundtable discussion** Russell di Bartolo, Clark County James Williams, Nye County Robert Fronczak, Executive Director of Environmental Affairs Association of American Railroads Robert Halstead, Nevada Agency for Nuclear Projects Brad Mettam, Inyo County Fred Millar, Washington D.C. Coordinator Nuclear Waste Citizens' Coalition Dwight Shelor, OCRWM
5:30 p.m.	**Public comments/questions**
6:00 p.m.	**Recess until 8:00 a.m., Wednesday, January 29**

Wednesday, January 29

8:00 a.m.	**Reconvene/session introduction**

UPDATES OF PROGRAM AND PROJECT ACTIVITIES AND INVESTIGATIONS
(Session chair: Jared Cohon, NWTRB)

8:05 a.m.	**Introduction: Status of program activities** Wes Barnes, Yucca Mountain Project Manager Russell Dyer, Yucca Mountain Project Site Characterization Office
8:30 a.m.	*Questions/discussion*

8:45 a.m.	**Nevada concerns with the DOE's proposed new siting guidelines and the viability assessment** Robert Loux, Executive Director Nevada Agency for Nuclear Projects
8:55 a.m.	*Questions/discussion*
9:00 a.m.	**Generic storage analyses: Interim Storage Facility Phase I Topical Safety Analysis Report** Christopher A. Kouts Director Storage and Engineering Technology Division Office of Waste Acceptance, Storage, and Transportation, OCRWM
9:30 a.m.	*Questions/discussion*
9:45 a.m.	**BREAK (15 minutes)**
10:00 a.m.	**Introduction to unsaturated and saturated zone flow and transport models** Dennis Williams, Deputy Assistant Manager for Licensing, OCRWM
10:10 a.m.	**Hydrolic and conservative tracer testing at the C-well complex** M.J. Umari U.S. Geological Survey
10:25 a.m.	*Questions/discussion*
10:35 a.m.	**Transport and reactive tracer testing at the C-well complex** H. J. Turin Los Alamos National Laboratory (LANL)
10:50 a.m.	*Questions/discussion*
11:00 a.m.	**Flow and transport models for Yucca Mountain** Bruce Robinson, LANL
11:30 a.m.	*Questions/discussion*
11:50 a.m.	**Thermal and underground testing update** William Boyle Team Leader, Performance Confirmation, OCRWM
12:20 p.m.	*Questions/discussion*
12:35 p.m.	**LUNCH (75 minutes)**

UPDATES (Continued)

1:50 p.m.	**Nye County Scientific Investigations** Nick Stellavato, On-site geotechnical representative Nye County Parviz Montazer Multimedia Environmental Technology, Inc.
2:10 p.m.	*Questions/discussion*

REDUCING HYDROLOGIC UNCERTAINTIES
(Session chair: Edward Cording, NWTRB)

2:25 p.m.	**Introduction** Edward Cording, NWTRB
2:35 p.m.	**DOE plans for reducing hydrologic uncertainty** Dennis Williams Deputy Assistant Manager for Licensing, OCRWM
3:30 p.m.	*Questions/discussion*
3:45 p.m.	**BREAK (15 minutes)**
4:00 p.m.	**Board comments**
4:20 p.m.	*Questions/discussion*
4:35 p.m.	**Public comments/questions**
5:05 p.m.	**Adjourn**

W. Beckner

Clinton Appoints Chairman and Members to Nuclear ...
OTC 97-01-17 18:40

WASHINGTON, Jan. 17 /U.S. Newswire/ -- President Clinton today announced his intention to designate Jared L. Cohon as Chairman of the Board of the Nuclear Waste Technical Review Board. In addition to announcing the Chairman, President Clinton announced his intention to appoint six new members.

Dr. Cohon of Woodbridge, Connecticut, is currently Dean of the School of Forestry and Environmental Studies at Yale University. Dr. Cohon is an authority in the area of environmental systems and hydrology, and currently serves as a member of the Nuclear Waste Technical Review Board. He received his B.S. in civil engineering from the University of Pennsylvania and his M.S. and Ph.D. in civil engineering from Massachusetts Institute of Technology.

The president is announcing the following individuals as members:

1. Daniel B. Bullen of Ames, Iowa, is Associate Professor of Nuclear Engineering and Director of UTR-10 Nuclear Reactor Laboratory at Iowa State University. Dr. Bullen has previously served as an engineer with Lawrence Livermore National Laboratory. He received his B.S. in engineering science from Iowa State University and his Ph.D. in nuclear engineering from the University of Wisconsin-Madison.

2. Florie A. Caporuscio of Santa Fe, New Mexico, is with Informatics, Inc., and has spent most of his career working on various aspects of the nuclear fuel cycle. Previously, Dr. Caporuscio worked at Los Alamos National Laboratory on the Yucca Mountain Project, and also served as a staff geologist in the Office of Radiation and Indoor Air at the Environmental Protection Agency. He received his B.S. in Geology from the University of Massachusetts and his Ph.D. in geology from the University of Colorado.

3. Norman L. Christensen of Chapel Hill,North Carolina, is the Dean of the Nicholas School of Environment at Duke University. Dr. Christensen, an ecologist, researches the effects of natural and human-caused disturbance on ecosystem structure and process. He has served in a number of advisory roles to the U.S. government, including working with the Forest Service, the National Park Service, the National Science Foundation and the National Aeronautics and Space Administration. Dr. Christensen holds an A.B. and M.S. in biology from Fresno State College and a Ph.D. in biology from the University of California, Santa Barbara.

4. Debra S. Knopman of the District of Columbia, is the Director of the Progressive Foundation?s Center for Innovation and the Environment. Dr. Knopman currently serves as a member of the National Academy of Sciences? Commission on Geosciences, Environment and Resources. Dr. Knopman previously served as Deputy Assistant Secretary for Water and Science at the U.S. Department of the Interior. Dr. Knopman holds a B.A. in chemistry from Wellesley College, a masters in civil engineering from Massachusetts Institute of Technology, and a Ph.D in geography and environmental engineering from Johns Hopkins University.

5. Priscilla P. Nelson of Arlington, Virginia, is Program Director in the Directorate for Engineering at the National Science Foundation, formerly Professor of Civil Engineering

at the University of Texas at Austin. Dr. Nelson has served as a member of the U. S. National Committee for Rock Mechanics, the U. S. National Committee for Tunneling Technology, and the Board on Radioactive Waste Management - all activities of the National Research Council. Dr. Nelson holds a B.S. in geological sciences from the University of Rochester, masters degrees in geology from Indiana University and in structural engineering from the University of Oklahoma, and a Ph.D. in geotechnical engineering from Cornell University.

6. Alberto A. Sagues of Luis, Florida, is a Professor of Civil and Environmental Engineering at the University of South Florida. Dr. Sagues' career includes several years with the Argonne National Laboratory and with the Juelich Nuclear Research Center in Germany. He received his Licentiate in physics from the National University, Rosario, Argentina, and his Ph.D. in metallurgy from Case Western Reserve University.

The board, established in the Nuclear Waste Policy Amendments of 1987, is charged with evaluating the scientific and technical validity of activities undertaken by the U.S. Department of Energy (DOE) in its program to manage and dispose of the nation's spent nuclear fuel and high-level waste. The major task facing members of the Board will be to evaluate the scientific and technical validity of the DOE's site characterization work at the Yucca Mountain site in Nevada. In 1998 the DOE intends to assess the viability of the site as a permanent repository for spent nuclear fuel and high-level waste.

ITINERARY
YUCCA MOUNTAIN SITE VISIT
FOR JOHN AUSTIN
JANUARY 30, 1997

6:00am	Depart Las Vegas
6:00 - 7:15	Travel to Gate 100 for badging
7:15 - 7:30	Badging
7:30 - 8:00	Travel to Field Operations Center (FOC)
8:00 - 8:45	Tunnel training and respirator fit test
8:45 - 9:00	Travel to Exploratory Studies Facility (ESF)
9:00 - 12:00	View ESF
12:00 - 12:15	Travel to Fran Ridge Large Block Heater Test
12:15 - 12:45	View Fran Ridge Large Block Heater Test
12:45 - 1:15	Travel to Yucca Crest
1:15 - 1:45	View features from Yucca Mountain Crest
1:45 - 2:25	Travel to Sample Management Facility
2:25 - 3:00	View Sample Management Facility
3:00 - 3:15	Travel to FOC
3:15 - 3:45	Travel to Gate 100
3:45 - 5:00pm	Return to Las Vegas

* Lunch stop TBD

ENCLOSURE 9