



**Department of Energy**  
Office of Civilian Radioactive Waste Management  
Yucca Mountain Site Characterization Office  
P.O. Box 98608  
Las Vegas, NV 89193-8608

JAN 31 1995

Daniel A. Dreyfus, Director, Civilian Radioactive Waste Management,  
HQ (RW-1) FORS

**YUCCA MOUNTAIN SITE CHARACTERIZATION OFFICE WEEKLY HIGHLIGHTS FOR THE WEEK  
ENDING JANUARY 20, 1995 (SCPB: N/A)**

**I. FORECAST SIGNIFICANT EVENTS**

**A. Assistant Manager for Engineering and Field Operations**

Waste Package personnel responsible for long-term criticality control under disposal conditions will meet with Waste Acceptance, Storage, and Transportation personnel responsible for multi-purpose canister criticality issues on January 26, 1995. Primary focus of the meeting will be on the status of burnup credit-related activities.

An Integration Workshop to discuss the multi-purpose canister/Mined Geologic Disposal System design development and interfaces will be held in Las Vegas, Nevada, February 1-2, 1995.

**B. Assistant Manager for Scientific Programs**

No significant forecast events to report.

**C. Assistant Manager for Environment, Safety, and Health**

No significant forecast events to report.

**D. Assistant Manager for Suitability and Licensing**

A U.S. Department of Energy-U.S. Nuclear Regulatory Commission Technical Meeting on Exploratory Studies Facility Design and Construction will be held in Rockville, Maryland, on January 24, 1995. Discussions will include: an Exploratory Studies Facility construction update; a discussion of Exploratory Studies Facility design control and the U.S. Nuclear Regulatory Commission in-field verification; a drilling, testing, and sampling program update; an overview of design progress and design process; an integration of site characterization data into repository design; and the U.S. Department of Energy process for identification and tracking of commitments to the U.S. Nuclear Regulatory Commission.

A U.S. Department of Energy-U.S. Nuclear Regulatory Commission Technical Exchange on Seismic Hazard Assessment and Seismic Design will be held via videoconference on January 26, 1995. Topics will include: U.S. Nuclear Regulatory Commission discussions regarding their response to the U.S. Department of Energy letter of November 9, 1994, on the review of Seismic Topical Report I, and joint U.S. Nuclear Regulatory Commission and U.S. Department of Energy concerns about the annotated outline for Seismic Topical Report II.

JAN 31 1995

The U.S. Nuclear Regulatory Commission will conduct an in-field verification of Management and Operating Contractor design control and quality assurance activities February 6-9, 1995, in Las Vegas.

**E. Assistant Manager for Administration**

No significant forecast items to report.

**F. Office of Public Affairs**

No significant forecast items to report.

**II. CRITICAL ITEM STATUS - YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT**

**A. Assistant Manager for Engineering and Field Operations**

**1. Exploratory Studies Facility**

Tunnel boring machine operations resumed on the first shift of January 17, 1995. Operations were halted for seven and one-half hours on January 18, 1995, to complete the remaining Operational Readiness Review actions and to replace two cutters on the tunnel boring machine head. Operations resumed by the first shift on January 19, 1995, ending at station 1+51.3 meters.

**2. Construction**

A broken rail outside the tunnel was repaired on January 18, 1995. Construction continues on the Switchgear Building foundation and the water supply system. The Change House subgrade fill placement was resumed on January 18, 1995.

**3. Design**

Design Package 1D was submitted for U.S. Department of Energy acceptance review on January 20, 1995. The scheduled release date for construction is January 27, 1995.

**B. Assistant Manager for Scientific Programs**

**1. The following is a listing of site characterization field activities that are currently active:**

The following is a listing of site characterization field activities that are currently active: (The text in this block is extremely faint and largely illegible due to bleed-through from the reverse side of the page. It appears to list various monitoring and data collection activities.)

JAN 31 1995

<b>SITE CHARACTERIZATION PLAN ACTIVITY</b>	<b>TITLE</b>	<b>COMMENT</b>
8.3.1.3.2.1	Mineralogy, Petrology & Rock Chemistry of Transport Pathways	Exploratory Studies Facility sampling
8.3.1.3.2.2	Mineralogic & Geochemical Alteration	Exploratory Studies Facility sampling
8.3.1.4.2.1	Characterization of Vertical/Lateral Distribution of Stratigraphic Units in Site Area	Ongoing core logging
8.3.1.4.2.2	Structural Features within Site Area	Surface and Exploratory Studies Facility mapping
8.3.1.4.3.1	Systematic Acquisition of Site Specific Subsurface Information	Systematic drilling/testing
8.3.1.8.5.1	Characterization of Volcanic Features	Test pits, trenching
8.3.1.14.2	Soil & Rock Properties of Potential Location of Surface Facilities	Trenching and ramp exploration holes
8.3.1.17.4.2	Location & Recency of Faulting Near Prospective Surface Facilities	Trench logging
8.3.1.17.4.3	Quaternary Faulting within 100 km of Yucca Mountain	Surface mapping
8.3.1.17.4.4	Quaternary Faulting in NE-Trending Fault Zones	Surface mapping
8.3.1.17.4.6	Quaternary Faulting within Site Area	Trench logging
8.3.1.2.1.1	Precipitation & Meteorological Monitoring for Regional Hydrology	Ongoing measurements
8.3.1.2.1.2	Runoff & Streamflow	Ongoing measurements
8.3.1.2.1.3	Regional Groundwater Flow System	Ongoing monitoring
8.3.1.2.2.1	Unsaturated Zone Infiltration	Logging of neutron-access holes; ponding tests
8.3.1.2.2.2	Water Movement Tracer Tests	C1-36 measurements (surface-based testing drillholes, Exploratory Studies Facility)
8.3.1.2.2.3	Percolation in the Unsaturated Zone	Unsaturated zone drilling/testing
8.3.1.2.2.4	Characterization of Unsaturated Zone (Exploratory Studies Facility)	Hydrochemistry/radial boreholes testing
8.3.1.2.2.6	Gaseous Phase Movement in Unsaturated Zone	Unsaturated Zone drilling/testing
8.3.1.2.2.7	Unsaturated Zone Hydrochemistry	Unsaturated Zone drilling/testing
8.3.1.2.3.1	Site Saturated Zone Groundwater Flow System	Ongoing monitoring, C-Well testing
8.3.1.2.3.2	Saturated Zone Hydrochemistry	Ongoing monitoring
8.3.1.15.1.8	In Situ Design Verification	Construction monitoring/testing
8.3.4.2.4.4	Engineered Barrier System Field Test	Preparation of Fran Ridge Test Block

JAN 31 1995

2. Site Characterization Plan/Study Plan Status

No study plans were approved by the Yucca Mountain Site Characterization Office.

STUDY PLAN BREAKDOWN

	Initial Plans	Major Revisions
Not Submitted to Yucca Mountain Site Characterization Office .....	26	0
In Screening Review .....	0	0
In Yucca Mountain Site Characterization Office Review .....	2	0
Awaiting Comment Resolution .....	4	3
In Verification Audit .....	3	2
Awaiting Yucca Mountain Site Characterization Office Approval .....	0	0
Awaiting Submission to U.S. Nuclear Regulatory Commission .....	0	0
Awaiting U.S. Nuclear Regulatory Commission Initial Review .....	9	3
Accepted by U.S. Nuclear Regulatory Commission .....	57	11
<b>Totals .....</b>	<b>101</b>	<b>19</b>
<b>Total Submitted to U.S. Nuclear Regulatory Commission .....</b>	<b>66</b>	<b>14</b>

State of Nevada Comments Status:

Received Comments from the State of Nevada .....	32
Responses Transmitted to the State of Nevada .....	32

U.S. Nuclear Regulatory Commission Comments Status:

Received Comments from U.S. Nuclear Regulatory Commission .....	44
Responses Transmitted from U.S. Department of Energy to U.S. Nuclear Regulatory Commission .....	36

3. Yucca Mountain Site Characterization Project geophysical testing groups completed an extensive geophysical logging program in Boreholes UZ-14, G-2, SD-9, and SD-12. Neutron, density, resistivity, natural gamma, formation imager microprocessor (for fracture identification), and directional surveys were acquired during the ten-day logging operation. Tool calibration testing and assessment continued as the Geophysics group ran several types of density/porosity tools in open and cased holes. Determination of the qualitative data reliability for different tools is required for a successful geophysical logging program.

JAN 31 1995

Lawrence Berkeley Laboratory continues data acquisition along the 25-mile repository area high-resolution shallow seismic reflection profiling program. Six of twelve lines were completed on January 20, 1995. The project has added four short lines for pseudo three-dimensional assessment of the Ghost Dance Fault on UZ-7a pad. Gravity and electrical studies along the same lines were initiated during this reporting week.

Lawrence Berkeley Laboratory and the U.S. Geological Survey continued gravity and magnetic data acquisition along the 23-mile long regional "deep" seismic profiles acquired by the U.S. Geological Survey during the fall of 1994.

Bids closed for the manufacturer of a variable speed controller for the C-Well Test on January 13, 1995. There were no bidders. The variable speed controller is needed to control the volume of water pumped during aquifer and tracer testing. Bidding closure was delayed for over two months due to questions from potential bidders. A potential manufacturer, which originally helped design the item but was not included in the bidders' list, was contacted and can manufacture and deliver the variable speed controller in three to four months after award. Paperwork is being prepared to purchase this item under a sole-source contract. Pump tests as the C-Wells were planned to begin in May 1995. This schedule will now slip. Ways to expedite this procurement are being examined and, as a contingency, a pump starter (\$12-20K) may be purchased to facilitate a system shakedown test prior to arrival of the variable speed controller.

C. Assistant Manager for Environment, Safety, and Health

No critical items to report.

D. Assistant Manager for Suitability and Licensing

Staff prepared a revision to the annotated outline for Seismic Topical Report II ("Seismic Design Methodology for a Geologic Repository at Yucca Mountain"). The concurrence process was initiated for the annotated outline that is due to the U.S. Nuclear Regulatory Commission before the videoconference on January 26, 1995.

E. Assistant Manager for Administration

No critical items to report.

F. Office of Public Affairs

No critical items to report.

III. GENERAL INFORMATION ITEMS

A. Assistant Manager for Engineering and Field Operations

Waste Package

A concept for waste packages appropriate for high humidity conditions is being formulated. High humidity conditions at the outer surface of waste packages are expected earlier in the lifetime of a

JAN 31 1995

Daniel A. Dreyfus

-6-

repository designed to minimize near-field temperatures in the rock. Participation by Waste Package personnel continues in support of the Plutonium Disposition project. Information on waste characteristics is expected from Lawrence Livermore National Laboratory to support criticality analyses and other studies related to plutonium containment and controlled release.

An evaluation of the commercial availability of the containment barrier alternative candidate corrosion-resistant material Incoloy 825hMo (high molybdenum version of 825) has led to the conclusion that a more appropriate alternative would be Hastelloy G-30. This alloy is similar to Incoloy 825hMo, but has somewhat higher nickel and chromium content and lower iron content. This alloy, along with other alternative materials, needs to be identified in the next update to the Controlled Design Assumptions document.

**B. Assistant Manager for Scientific Programs**

Presented a final briefing to the DOE Nevada Operations Office on support to the Office of Civilian Radioactive Waste Management, especially the Yucca Mountain Site Characterization Office. This was part of the DOE Nevada Operations Office strategic planning effort. The Assistant Manager for Scientific Programs was co-leader of the team examining support to the Yucca Mountain Site Characterization Office.

An unexpectedly high degree of fracturing was encountered on Borehole SD-7 that resulted in slower progress. The situation was improved by setting temporary protective casing at 77.72 meters (255 feet) on January 10, 1995. Coring penetration rate has averaged 10.49 meters (34.4 feet) per shift for the last four shifts but should increase.

**C. Assistant Manager for Environment, Safety, and Health**

Conducted environmental compliance and safety surveillances at the Yucca Mountain, Nevada, site ensuring compliance with permit and programmatic requirements.

**D. Assistant Manager for Suitability and Licensing**

The Nuclear Safety Research and Review Committee of the U.S. Nuclear Regulatory Commission visited Yucca Mountain on January 19, 1995. Briefings were held at the Exploratory Studies Facility Pad, Trench 14, SD-12, the Ghost Dance fault-pavement, Fran Ridge Large Block Experiment, and the Hydrologic Research Facility.

The 70th Advisory Committee on Nuclear Waste Meeting was held January 18-19, 1995 in Rockville, Maryland. The committee considered the following items: Nuclear Waste Container Materials Research Program presentations from U.S. Nuclear Regulatory Commission staff that included anticipated discussions on topics such as the use of regulatory analysis; the engineered barrier system and the integrated waste package program; the history of ground water travel time; rock mechanics research and technical assistance programs; and a U.S. Nuclear Regulatory Commission Probabilistic Risk Assessment Policy and Implementation presentation followed by a discussion of the policy and its applicability to radioactive waste disposal issues.

JAN 31 1995

The U.S. Department of Energy-U.S. Nuclear Regulatory Commission Management Meeting on Waste Containment and Isolation Strategy was held on January 17, 1995. The topics for discussion were: an update on waste containment and isolation strategy, performance allocation, and U.S. Department of Energy's proposed documentation of the strategy. The U.S. Nuclear Regulatory Commission expressed that the meeting was beneficial toward better understanding of the strategy with regard to the Program Approach and the Five-Year Plan.

Staff participated in the dry run on January 17, 1995, for the Exploratory Studies Facility Technical Meeting to be held on January 24, 1995.

Staff participated in the Mined Geologic Disposal System preparation effort for the February 6, 1995 U.S. Nuclear Regulatory Commission In-Field Verification inspection.

E. Assistant Manager for Administration

No general items to report.

F. Office of Public Affairs

Yucca Mountain Site Characterization Project staff gave two educational presentations, one at Johnson Elementary School in Las Vegas, and one at the Pahrump Yucca Mountain Science Center to 90 people.

A presentation about project funding was given by the Deputy Project Manager to ten members of the Strategic Alignment Team on January 17, 1995, in Las Vegas. Institutional and External Affairs staff provided support for the presentation.

Yucca Mountain Site Characterization Project staff coordinated and conducted three tours of Yucca Mountain for the following: Massachusetts Institute of Technology; members of the U.S. Nuclear Regulatory Commission; and the new Yucca Mountain Site Characterization Project Manager.

Staff completed 39 external information requests by providing written responses to written and verbal queries and/or by supplying available literature.

G. Program Participants

Lawrence Livermore National Laboratory

The Lawrence Livermore National Laboratory Large Block Test was reevaluated in light of Yucca Mountain Site Characterization Office funding decisions. The test will be modified to eliminate the components providing mechanical stress in the block (the frame, bladders, and internal structure). The modified test will primarily study thermohydrological coupling with secondary emphasis on geochemistry and thermomechanical response of a block with lightly loaded surfaces.

JAN 31 1995

IV. UPCOMING EVENTS CALENDAR

Please note that the usage of "(P)" in the calendar indicates that the event is open to the public. Educational presentations and State and Public/Stakeholder Interactions are coordinated by the Speakers Bureau; contact Jackie Brandt at (702) 794-7759 or Lawrence Weekly at (702) 794-7896 for additional information. Exhibits are coordinated by Joanna Magruder at (702) 794-7056, and tours are coordinated by Carleen Hill at (702) 794-7375.

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Yucca Mountain Site Characterization Project Contact</u>
<b>A. <u>U.S. Department of Energy/Headquarters Meetings</u></b>			
No significant meetings to report.			
<b>B. <u>Internal and U.S. Department of Energy/Nevada Operations Office (NV) Meetings</u></b>			
No significant meetings to report.			
<b>C. <u>U.S. Nuclear Regulatory Commission Interactions</u></b>			
Tuesday, January 24	Bi-Monthly ESF Technical Meeting (P)	Rockville, MD	C. Hanlon
Thursday, January 26	Technical Exchange Seismic Hazards Assessment (P)	Videc- conference	T. Bjerstedt
Wednesday, February 8	Bi-Monthly DOE/NRC Management Meeting	Videc- conference	A. Gil
<b>D. <u>Nuclear Waste Technical Review Board Interactions</u></b>			
No significant interactions to report.			
<b>E. <u>Advisory Committee on Nuclear Waste Interactions</u></b>			
Wednesday- Thursday, February 22-23	71st ACNW Meeting NRC Approach to Evaluate Ground Water Travel Time	Rockville, MD	C. Hanlon
<b>F. <u>National Academy of Sciences Interactions</u></b>			
No significant interactions to report.			
<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
<b>G. <u>Public/Stakeholder Interactions</u></b>			
Tuesday, January 24	Yucca Mountain Speaker Series "Oklo - A Natural Fission Reactor"	Las Vegas, NV	P. Kuroda



JAN 31 1995

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
<b>G. <u>Public/Stakeholder Interactions (continued)</u></b>			
Wednesday, February 1	Agency for Nuclear Projects - DOE Plans for Addressing Transportation Risk and Impacts in the YM Site EIS	Las Vegas, NV	W. Dixon
Wednesday, February 15	Nuclear Energy Institute - Project Update	Las Vegas, NV	R. Dyer
<b>H. <u>Educational Interactions</u></b>			
Saturday, January 21	Boy Scouts Nuclear Energy Workshop	Las Vegas, NV	Various
Tuesday, January 24	LESSON Teacher Workshop I	Las Vegas, NV	D. Stewart E. Harle J. Blink J. Sizemore P. Cloke
Wednesday, January 25	O'Callahan Middle School - "Forces"	Las Vegas, NV	J. Blink
Tuesday, January 31	LESSON Teacher Workshop I	Las Vegas, NV	D. Stewart E. Harle J. Blink J. Sizemore P. Cloke
Tuesday, January 31	Johnson Elementary School - Lights	Las Vegas, NV	J. Blink
Tuesday, January 31	J. G. Johnson Elementary School - Native American Update	Las Vegas, NV	R. Arnold
Thursday, February 2	LESSON Teacher Workshop II	Las Vegas, NV	D. Stewart E. Harle J. Blink J. Sizemore P. Cloke
Saturday, February 4	Girl Scouts - Geology Merit Badge Workshop	Las Vegas, NV	YMP Staff
Tuesday, February 7	Twin Lakes Elementary School - Geology	Las Vegas, NV	B. Crowe
Tuesday, February 7	LESSON Teacher Workshop I	Las Vegas, NV	D. Stewart E. Harle J. Blink J. Sizemore P. Cloke

JAN 31 1995

<u>Date</u>	<u>Event</u>	<u>Location</u>
<b>I. Exhibits Scheduled</b>		
Saturday, January 21	Public Open House	Las Vegas, NV
Tuesday- Wednesday January 24-25	Futures Expo	Las Vegas, NV
Tuesday- Thursday, January 24-26	Corporate Facility Management Order, Future Use, and SDP Workshops	Las Vegas, NV

<u>Date</u>	<u>Event</u>	<u>Escorts</u>
<b>J. Tours Scheduled</b>		
Saturday, January 21	Public Open House	Various
Tuesday, January 24	American Glovebox Society	L. Liles P. Standish
Wednesday, January 25	Inyo County	B. Bush J. Peck S. Patrick
Monday, January 30	Senior Tripsters	J. Peck N. Nelson
Friday, February 3	Regulatory Commitment Tracking Group	R. Leonard T. Bjerstedt

*[Handwritten Signature]*  
 Wesley E. Barnes  
 Project Manager

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