



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

AUG 16 1994

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

YUCCA MOUNTAIN SITE CHARACTERIZATION OFFICE WEEKLY HIGHLIGHTS FOR THE WEEK
 ENDING AUGUST 5, 1994 (SCPB: N/A)

I. FORECAST SIGNIFICANT EVENTS

Exploratory Studies Facility

Drilling operations will continue at Boreholes SD-9, SD-12, SR-2, and the seismic shothole locations. Excavation will continue at the Fran Ridge test block. Air permeability testing will continue in Borehole UE-25 NRG-7/7A.

Complete resolution of audit findings and initiate U.S. Department of Energy Acceptance Review and the baselining of Design Package 2C drawings and specifications that support Phase 1 tunnel boring machine operations by the Civilian Radioactive Waste Management System Management & Operating Contractor Change Control Board. Continue comment resolution for Design Package 1D. Continue design activities for Design Package 8A and the Integrated Data and Control System.

II. CRITICAL ITEM STATUS - YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

A. Site Characterization Activities

1. Exploratory Studies Facility

Regarding Job Package 92-20, Exploratory Studies Facility North Portal Pad and Facilities, continued two shift, six days-a-week assembly of the tunnel boring machine. Moved the tunnel boring machine forward to approximately 2 meters from the Starter Tunnel face where it will remain until it is cleared to start Phase 1 (initial test excavation) tunnel boring machine operations. Removing transport legs and lifting eyes and checking all systems. Installing the vent system and laser guidance system on the tunnel boring machine.

2. Construction

Began laying rail for the muck car dumping facility.

Continued construction of the subsurface waste water and fire/potable water lines on the North Portal Pad. Installing fire water line.

Continuing construction on switchgear building.

Preparing pad for water supply tanks on Exile Hill and stripping topsoil from the pad extension area.

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The following milestone represents the near-term plan for Exploratory Studies Facility activities: Beginning tunnel boring machine operations August 8, 1994, has been delayed. The revised schedule is being developed for Phase 1 (initial test excavation) tunnel boring machine operations. Initial startup of Phase 1 tunnel boring machine operations is tentatively scheduled for September 8, 1994.

3. Design

Design Package 2C approval and baselining delayed as a result of U.S. Department of Energy audit findings from audit conducted in late July 1994. Design Package 2C is being separated into two packages for U.S. Department of Energy approval and baselining; one to support Phase 1 (initial test excavation) and the remainder to support Phase 2 (operation after tunnel boring machine tail shield clears starter tunnel) tunnel boring machine operations. Continue comment resolution from 90 percent Design Review for Design Package 1D. Continuing design activities for Design Package 8A and the Integrated Data and Control System.

B. Site Characterization Testing

Exploratory drilling operations progress is summarized as follows:

<u>Borehole</u>	<u>Current Core Depth 08/05/94</u>	<u>Current Ream Depth 08/05/94</u>	<u>Total Planned Depth</u>
SD-9	453.9 meters (1489.2 feet)	326.3 meters (1070.2 feet)	646.2 meters (2,120 feet)
SD-12	384.1 meters (1260.8 feet)	382.6 meters (1255.0 feet)	701.04 meters (2,300 feet)

Regarding Job Package 94-04, SD-12 Borehole, the bottom of the borehole is presently in the Topopah Spring (TSw) unit.

Regarding Job Package 94-06, SD-9 Borehole, the original 6-inch diameter hole is still being reamed to 8.5-inch diameter to prepare to set casing and a packer to seal out water entering the hole at a depth of 1,353 feet.

Regarding Job Package 93-15, Borehole NRG-7/7A, gas permeability testing by the U.S. Geological Survey continues.

Regarding progress of the Stagecoach Road Fault, shallow Borehole SR-1 was abandoned after reaching a depth of 49.5 meters (162.4 feet). Drilling of Borehole SR-2 progressed to 67.4 meters (221.0 feet) by the end of this reporting period.

Completed construction of a pad for drilling Borehole USE SD-7.

Drilling started on the first of approximately 20 planned seismic shotholes, each of which will be drilled to a maximum depth of 200 feet.

Conducted 12 core examinations at the Sample Management Facility for scientists from the U.S. Geological Survey and Sandia National Laboratories.

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

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SITE CHARACTERIZATION PLAN ACTIVITY	TITLE	COMMENTS
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

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Excavation will continue at the Fran Ridge test block.

2. Site Characterization Plan/Study Plan Status

One Study Plan, 8.3.1.3.4.1 & 8.3.1.3.4.3, "Batch Sorption Studies and Development of Sorption Models," was approved by the Yucca Mountain Site Characterization Office. Revision 11, effective August 3, 1994, of the Site Characterization Program Baseline has changed the total number of Study Plans in the system. Five Study Plans: 8.3.1.8.2.1, "Analysis of Waste Package Rupture due to Tectonic Processes and Events;" 8.3.1.8.3.1, "Analysis of the Effects of Tectonic Processes and Events on Average Percolation Flux Rates Over the Repository;" 8.3.1.8.3.2, "Analysis of the Effect of Tectonic Processes and Events on Changes in Water-Table Elevation;" 8.3.1.8.3.3, "Analysis of the Effects of Tectonic Processes and Events on Local Fracture Permeability and Effective Porosity;" and 8.3.1.8.4.1, "Analysis of the Effects of Tectonic Processes and Events on Rock Geochemical Properties;" from the original Site Characterization Plan have been combined into one Study Plan, 8.3.1.8.2.1, Revision 1, "Tectonic Effects: Evaluations of Changes in the Natural and Engineered Barrier Systems Resulting from Tectonic Processes and Events." Consequently, the total number of Study Plans has been reduced to 100.

STUDY PLAN BREAKDOWN

	Initial Plans	Major Revisions
Not Submitted to Yucca Mountain Site		
Characterization Office	28	0
In Screening Review	0	0
In Yucca Mountain Site		
Characterization Office Review	0	0
Awaiting Comment Resolution	5	6
In Verification Audit	4	0
Awaiting Yucca Mountain Site		
Characterization Office Approval	0	0
Awaiting Submission to		
U.S. Nuclear Regulatory Commission...	2	0
Awaiting U.S. Nuclear Regulatory		
Commission Initial Review	11	7
Accepted by U.S. Nuclear Regulatory		
Commission	50	6
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Totals	100	19
Total Submitted to U.S. Nuclear		
Regulatory Commission	59	12

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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 31
Responses Transmitted from U.S. Department of Energy
to U.S. Nuclear Regulatory Commission..... 28

C. Environmental Safety and Health Programs

Environmental compliance and safety surveillances were conducted at the Yucca Mountain, Nevada, site ensuring compliance with permit and programmatic requirements.

The U.S. Department of Energy Office of Environment, Safety, and Health approved the issue and distribution of the Yucca Mountain Site Characterization Project Annual Site Environmental Report.

III. GENERAL INFORMATION ITEMS

Regarding Lawrence Livermore National Laboratory Special Studies, repository scale, thermal-hydrological calculations were conducted for six sets of matrix properties: those of the Reference Information Base and for the five sets of Topopah Spring welded tuff properties listed in Pruess and Tsang (1994) and based on Flint et al. (1993). The duration of the boiling period was found to be insensitive to the range of matrix properties considered. Five of the six property sets produced similar relative humidity conditions at the end of the boiling period for three Areal Mass Loadings (55.3, 110.5, and 150 metric tonnes uranium per acre). The sixth property set results in a substantially faster liquid-phase rewetting rate and more humid conditions by the end of the boiling period, particularly for the low thermal load and for the outer 25 percent of the two higher thermal load repositories.

The U.S. Geological Survey staff completed Milestone 3GGU130M (Publication: Lithostratigraphic Criteria) by submitting the following paper to the U.S. Department of Energy for concurrence and to the U.S. Geological Survey Director for approval: "Lithostratigraphy of the Calico Hills Formation and Prow Pass Tuff (Crater Flat Group) in the Vicinity of Yucca Mountain, Nevada."

Completed Milestone 3GGU31AM (Analysis paper: Lithologic Logging - Phase 2) with the submittal of the following data report to the U.S. Department of Energy for concurrence and to the U.S. Geological Survey Director designee for approval: "Summary of Lithologic Logging of New and Existing Boreholes at Yucca Mountain, Nevada, March 1994 to June 1994."

The U.S. Geological Survey staff continued to collect data for the graphical lithologic log of Borehole USW SD-9 in addition to collecting data for the graphical lithologic log of Borehole USW SD-12.

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Staff compared unreviewed USW SD-9 and SD-12 lithostratigraphic data with SD-hole estimates from LYNX models.

Staff created a borehole location map for all 73 boreholes used in the 3-D modeling effort (Revision 1.5). The map includes the major faults, the ramp design, Nevada State Coordinate grid, and topography.

The geochemical data base containing major-, minor-, and trace-element data obtained from deep Boreholes USW G-1 and USW GU-3/G-3 are being assessed with respect to stratigraphic position.

The U.S. Geological Survey continued modeling efforts by completing 6 of 11 surfaces.

The U.S. Geological Survey Hydrologic Investigations Program staff began setting up equipment in Pagany Wash to conduct artificial infiltration experiments.

Staff conducted air permeability testing in USW NRG 7/7A. Installation began of Air-K testing equipment in Alcove 1 of the Exploratory Studies Facility.

The U.S. Geological Survey staff distributed a report entitled "Selected Ground Water Data for Yucca Mountain Region Southern Nevada and Eastern California through December, 1992."

Technical and Management Support Services staff prepared a Functional Requirements Document to Job Packages 94-05 and 94-19.

Technical and Management Support Services staff completed a Records Package and finalized a Table of Contents for Job Package 93-14, "Construction of Drill Pad for Borehole USW NRG-7."

Technical and Management Support Services staff prepared a Field Change Request to Job Package 94-13, "Stagecoach Road Shallow Boreholes," to add a borehole and Job Package 94-13, "Drilling of Seismic Shotholes," to add a safety requirement.

Technical and Management Support Services staff prepared a Table of Contents for Job Package 93-12, "Ghost Dance Fault Roadcuts" and Job Package 94-01, "Quaternary Faulting Within the Site Area: Alice Ridge Trenches."

IV. PUBLIC OUTREACH AND INSTITUTIONAL ACTIVITIES

Two general project overviews were given to 50 guests of the Community Radiation Monitoring Program, August 1, 1994, in Brianhead, Utah; and to 30 people at the City of Las Vegas High-Level Waste Committee meeting, August 2, 1994, in Las Vegas, Nevada. A general project overview with emphasis on transportation was also given to 100 guests of the American Public Works Association, August 4, 1994, in Las Vegas.

An educational presentation on Native American artifacts was given to 80 Frontier Girl Scouts on August 2, 1994, in Las Vegas.

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The Native American Day program, entitled "Visions in Culture," was held July 30, 1994, at the Las Vegas Science Center. As part of the U.S. Department of Energy's effort to preserve Native American culture in the Yucca Mountain Site Characterization Project study area, the event invited the public to see and participate in the making of crafts as produced by Paiute and Shoshone representatives. Announcements produced and placed by project staff included Las Vegas newspapers and 500 fliers distributed by the Yucca Mountain Science Center. Approximately 210 people of all ages attended the event.

A Yucca Mountain Site Characterization Project exhibit was set up and displayed at Dondero Elementary School in Las Vegas on August 4, 1994. Approximately 60 students viewed the exhibit.

Several tours to Yucca Mountain were conducted. These included tours on August 1, 1994, for a guest from High-Country News; on August 2, 1994, for 63 guests from the University of Missouri; on August 3, 1994, for three guests from Environmental Programs; and on August 5, 1994, for five guests from Georgia Power.

In response to an outreach department request, staff provided 20 information cards showing a mock spent-fuel pellet and providing information that compares energy output equivalences from current major energy sources such as coal, oil, uranium, etc. These cards will be used for tours, presentations, and educational programs.

Yucca Mountain Site Characterization Project staff attended the National Association of Counties annual meeting August 1-5, 1994, in Las Vegas.

Staff completed 36 external information requests. This was accomplished by providing written responses to written and verbal queries and/or by supplying existing literature.

V. 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 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>
A.		<u>Stakeholders' Meetings</u>		
		No significant meetings to report.		
B.		<u>U.S. Department of Energy/Headquarters Meetings</u>		
		No significant meetings to report.		
C.		<u>Civilian Radioactive Waste Management System Management and Operating Contractor/U.S. Department of Energy Meetings</u>		
		No significant meetings to report.		

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<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Project Contact</u>
D. <u>Internal and U.S. Department of Energy/Nevada Operations Office (NV) Meetings</u>			
Wednesday, August 17	NV Monthly Managers Program Review	Las Vegas, NV	R. Nelson
E. <u>U.S. Nuclear Regulatory Commission Interactions</u>			
Tuesday, August 23	Technical Exchange: Field Heater Experiments Associated with Coupled THMC Processes	Las Vegas, NV	T. Bjerstedt
F. <u>Nuclear Waste Technical Review Board Interactions</u>			
No significant interactions to report.			
G. <u>Advisory Committee on Nuclear Waste Interactions</u>			
Tuesday- Wednesday, August 16-17	66th Advisory Committee on Nuclear Waste Meeting - Topics (TBD)	Rockville, MD	C. Hanlon
H. <u>National Academy of Sciences Interactions</u>			
No significant interactions to report.			
<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
I. <u>State and Public Interactions</u>			
Tuesday, August 9	Griffith United Methodist Men's Group - General Overview	Las Vegas, NV	L. Cuba
Tuesday, August 23	Yucca Mountain Speaker Series - "The Art of Caving"	Las Vegas, NV	L. Cuba
Saturday, August 27	Stakeholder Meeting - Site Suitability	Las Vegas, NV	J. Summerson S. Brocoum
Tuesday, August 30	Stakeholder Meeting - Site Suitability	Washington, DC	J. Summerson S. Brocoum
J. <u>Educational Interactions</u>			
Wednesday, August 10	4-H T.E.C. - "Yucca Mountain Johnny"	Las Vegas, NV	J. Hartley
Saturday August 27	Discovery Day - Geology	Pahrump, NV	Various YMP Staff