Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 98608
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AUG 12 1994

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HQ (RW-1) FORS

YUCCA MOUNTAIN SITE CHARACTERIZATION OFFICE WEEKLY HIGHLIGHTS FOR THE WEEK ENDING JULY 29, 1994 (SCPB: N/A)

I. FORECAST SIGNIFICANT EVENTS

Concurrence of Progress Report 10 by the U.S. Department of Energy/Headquarters is expected by August 19, 1994.

The annotated outline of the second Seismic Topical Report is scheduled for transmission to the U.S. Nuclear Regulatory Commission by August 12, 1994.

Exploratory Studies Facility

Continue two shift, six days-a-week assembly of the tunnel boring machine. Begin installation of the vent and laser guidance systems.

Design

Complete the U.S. Department of Energy Acceptance Review and the baselining of Design Package 2C drawings and specifications by the Civilian Radioactive Waste Management System Management and Operating Contractor Change Control Board.. Continue comment resolution for Design Package 1D. Continue design activities for Design Package 8A and the Integrated Data Control System.

II. CRITICAL ITEM STATUS - YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

A. Suitability and Licensing

Progress Report 10 was transmitted to U.S. Department of Energy/Headquarters for their concurrence on Tuesday, July 26, 1994.

Suitability and Licensing staff participated in the July 26, 1994, U.S. Department of Energy/Headquarters/U.S. Nuclear Regulatory Commission Management meeting in Rockville, Maryland. Various management issues were discussed, including the Proposed Program Approach, organizational changes, and the status of submittals and reviews. Staff also presented a briefing on the status and schedule of the U.S. Department of Energy topical reports related to seismic hazards and seismic design.

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B. Exploratory Studies Facility

Construction of a drill pad for Borehole SD-7 should be completed. Drilling will continue at Boreholes SD-9 and SD-12. Borehole workovers in preparation for testing may continue. Cleaning of the Ghost Dance Fault trenches to prepare them for geologic logging may start. Air permeability testing will continue in borehole UE-25 NRG-7/7A. The bottom of the borehole is in the Calico Hills tuff (CHn_1) unit.

Continue installing ventilation in the test alcove. Installing rock bolts to reinforce the brow of the starter tunnel face.

The following milestone represents the near-term plan for Exploratory Studies Facility activities: Begin tunnel boring machine operations on August 8, 1994

1. Construction

Regarding Job Package 92-20, Exploratory Studies Facility North Portal Pad and Facilities, continued two shift, six days-a-week assembly operations of the tunnel boring machine. Continued testing hydraulic/lube and electrical circuits. Completed movement of the tunnel boring machine forward to the Starter Tunnel face. Electrical and hydraulic connections to tie in gantry car 5 are in process.

Completed the concrete pour for the camelback base at the muck car dump. Continue installation of the tripper at the muck car dump.

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

Backfilling duct bank trenches and pulling wire continues. Completed concrete pour for the switchgear building cable trench.

2. Design

Continued efforts to complete U.S. Department of Energy Acceptance Review and baselining of Design Package 2C drawings and specifications by the Civilian Radioactive Waste Management System Management and Operating Contractor Change Control Board. Conducted a 90 percent Design Review Meeting for Design Package 1D and began comment resolution. Continuing design activities for Design Package 8A and the Integrated Data and Control System.

C. Site Characterization Testing

Exploratory drilling operations progress is summarized as follows:

Borehole	Current Ream Depth 07/29/94	Total Planned Depth 07/29/94	Current Core Depth
SD-9	453.9 meters (1489.2 feet)		646.2 meters (2,120 feet)
SD-12	366.0 meters (1200.8 feet)	361.6 meters (1186.3 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_2) unit.

Regarding Job Package 94-06, SD-9 borehole, the most recent water level measurement was 447.0 meters (1466.5 feet) below ground level on July 25, 1994 (the U.S. Geological Survey interprets this to be perched water). The (6-inch diameter) borehole is now being reamed out to 8.5 inch diameter. Reaming progressed to 131.4 meters (431.0 feet) by the end of the reporting period.

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, auger soil sampling progressed to a depth of 49.5 meters (162.4 feet). At 162.4 feet, drilling problems occurred forcing abandonment of SR-1. The CME 850 drilling rig was moved over approximately 10 feet and began drilling a new hole designated Borehole SR-2. Drilling on Borehole SR-2 progressed to 15.5 meters (50.7 feet) by the end of the reporting period.

Performed field check of 12 noncompliant surface boreholes in response to Corrective Action Request YM-94-023.

Conducted core examinations at the Sample Management Facility for scientists from the U.S. Geological Survey and Sandia National Laboratories. Created 55 specimens from core samples for analysis by Principal Investigators.

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

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	Cl-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

1. Large Block Test

   Excavation will continue at the Fran Ridge test block.

2. Site Characterization Plan/Study Plan Status

   Study Plan 8.3.1.5.1.1, "Characterization of Modern Regional Precipitation," was approved by the Yucca Mountain Site Characterization Office.

STUDY PLAN BREAKDOWN

	Initial Plans	Major Revisions
Not Submitted to Yucca Mountain Site Characterization Office	32	0
In Screening Review	0	0
In Yucca Mountain Site Characterization Office Review	1	0
Awaiting Comment Resolution	4	6
In Verification Audit	4	0
Awaiting Yucca Mountain Site Characterization Office Approval	1	0
Awaiting Submission to U.S. Nuclear Regulatory Commission	1	0
Awaiting U.S. Nuclear Regulatory Commission Initial Review	11	7
Accepted by U.S. Nuclear Regulatory Commission	50	6
Totals	104	19
Total Submitted to U.S. Nuclear Regulatory Commission	59	12

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

Environmental Safety and Health Programs

Twenty-six environmental compliance and safety surveillances were conducted at the Yucca Mountain site ensuring compliance with permit and programmatic requirements.

III. GENERAL INFORMATION ITEMS

Site Suitability and Licensing staff participated in a second teleconference with the U.S. Nuclear Regulatory Commission to develop the final agenda for the U.S. Department of Energy/U.S. Nuclear Regulatory Commission Technical Exchange Meeting scheduled for August 23, 1994, to discuss coupled thermal-hydrologic mechanical-chemical processes.

Site Suitability and Licensing staff gave a presentation July 28, 1994, to the Program Review Board videoconference on Potential Impacts to Project Activities resulting from the National Academy of Sciences study of standards for Yucca Mountain.

Regarding Lawrence Livermore National Laboratory Special Studies, a repository scale thermal-hydrological model was used to investigate the sensitivity of the relative humidity and temperature at various locations in the repository to the gas-phase diffusion efficiency. In general, for the factor of 10 range of diffusion investigated, the effect on temperature and relative humidity behavior is relatively minor. Rewetting the reduced-relative humidity zone (also called the dry-out zone) back to humid conditions, is affected by gas-phase rewetting driven primarily by the binary diffusion of air and water vapor, and by liquid-phase rewetting driven primarily by gravity drainage in fractures and matrix imbibition. Gas-phase rewetting is likely to be the dominant rewetting mechanism as the reduced-relative humidity zone rewets to a value of about 70 to 80 percent. Subsequent rewetting back to ambient relative humidity conditions (98.4 percent) is dominated by liquid-phase rewetting.

Los Alamos National Laboratory staff prepared for the August 1, 1994, fiscal year 1996 Office of Management and Budget Submission Proposal Kick Off Meeting. Preparations also began for the upload of Proposed Program Approach fiscal year 1995 to the Planning and Control System for completion by August 11, 1994.

Los Alamos National Laboratory Mineral-Petrology personnel spent much of this week providing additional input concerning the fiscal year 1995 budget that includes a detailed breakdown of costs for each summary account and a justification of the costs. Also included is a list of all proposed milestones for each summary account.

At Los Alamos National Laboratory, five thin sections were prepared of a calcite deposit from the unsaturated zone in core USW G-1. These thin sections will be used in microautoradiography and trace mineral studies, but they are being characterized optically before exposure to radionuclide-bearing solutions. This particular sample, from a 425.5-425.7 foot depth, has a variety of opaline intergrowth within the calcite allowing comparison of the response to microautoradiography of both of these minerals.

Los Alamos National Laboratory staff continued the ongoing characterization study of water behavior in smectite. The last of the K-exchanged smectites (SHCa-1, SWy-1, and API-21) were analyzed by X-ray powder diffraction under varied conditions of relative humidity (from 0-100 percent relative humidity and back to 0 percent relative humidity). Additionally, three smectites (Na-, Ca-, Succor Creek, OR) were also analyzed on the thermogravimetric analyzer to obtain water sorption/desorption isotherms going from 0-100 percent relative humidity and back to 0 percent relative humidity. These results will be presented at the 31st Annual Meeting of the Clay Mineral Society in August 1994. Preparation of the presentation is about 90 percent complete.

Los Alamos National Laboratory continued measuring reference intensity ratio (RIR) standards on the Idaho National Engineering Laboratory, Idaho Falls, Idaho, diffractometer to determine if the system can be used for quantitative X-ray powder diffraction analyses on tiny amounts of samples (several mg in weight). All of the feldspar standards have now been run and calibration intensity/RIR curves are being formulated. The Idaho National Engineering Laboratory system appears to provide satisfactory quantitative results for the silicate and carbonate minerals analyzed thus far and provides excellent results for minerals prone to preferred orientation due to the sample randomization provided by the spinning capillary mount.

Los Alamos National Laboratory completed thermogravimetric studies of four samples of smectite, each of which was cation-exchanged to provide a Ca, Na, and K end-member. These thermogravimetric studies were conducted at room temperature and consisted of a record of the amount of water in the clay as the relative humidity increased from 0-100 percent and decreased back to 0 percent with the humidity changing continuously at 4.1 minutes per percent humidity change.

The U.S. Geological Survey staff continued revision of the solicitation for seismic reflection profiling and reviewed the work program controlling drilling of deep shotholes. Details were provided for the revised design for seismic acquisition for consideration of waste isolation concerns.

U.S. Geological Survey staff determined contacts in Borehole USW SD-9 from 1781.4 meters (543 feet) to 4878.5 meters (1487 feet), the deepest core available for viewing. A table of contacts was prepared for SD-9 from the surface to the base of the Paintbrush Group and forwarded for review. Continued to prepare a graphical lithologic log for borehole SD-9 by describing units from about 918.6 meters (280 feet) to about 2952.7 meters (900 feet). Continued to compile observations into graphical format.

U.S. Geological Survey staff continued to prepare a graphical lithologic log for borehole USW SD-12 describing units from 951.4 meters(290 feet) to about 2460.6 meters (750 feet). Continued to compile observations into graphical format.

The U.S. Geological Survey staff participated in a review and quality check of the Upper Paintbrush Canyon measured stratigraphic section. Began thin section examination of the Solitario Canyon measured section. General descriptions and those characteristic petrographic features above and below lithologic contacts are being identified.

Staff also created a structure contour map for the base of the Tiva Canyon Tuff for the fault block that contains Isolation Ridge. Three tables and three map figures were created to portray fault geometry methodology and results, and the section regarding faults was written for the documentation of the Revision 1.5 site-scale model. An isopach map based on recently-acquired borehole data for Borehole UZN-11 was revised.

Source data was documented for all borehole data for the documentation of the Revision 1.5 site scale model.

U.S. Geological Survey staff measured water levels in Borehole USW SD-9.

Borehole USW UZN-7 Artificial Infiltration experiment began.

The U.S. Geological Survey staff started installing Air-K testing equipment in Alcove 1 of the Exploratory Studies Facility.

Air permeability testing was conducted in Borehole NRG 7/7A.

The U.S. Geological Survey was represented at the Office of Civilian Radioactive Waste Management System Records Manager's Council. Of most impact on the investigators is a change that cited references will probably not need to have accession numbers included within the publication or its records package.

The seismic develocorder film is being prepared for its cleaning and duplication of the film that will begin next week.

Technical and Management Support Services staff submitted a draft for internal Study Plan 1.35 review of Yucca Mountain Administrative Procedure 12.20, "Operation and Maintenance of Exploratory Studies Facilities Test Equipment."

Technical and Management Support Services staff performed a Quality Assurance Procedure 6.2 review of six as-built drawings for surface-based testing borehole access roads and pads.

IV. PUBLIC OUTREACH AND INSTITUTIONAL ACTIVITIES

A general Yucca Mountain Site Characterization Project overview on completed and ongoing scientific work was presented to 60 people at the preaudit conference on July 25, 1994, in Las Vegas, Nevada. A general project overview was also given to 20 people at the International Conference on Accelerator-Driven Transmutation Technologies and Applications, July 26, 1994, in Las Vegas and a tour for this group was conducted on July 27, 1994.

The Yucca Mountain Speaker Series, "Rain or Shine, Have We Got Some Weather for You," was presented July 26, 1994, at the Las Vegas Yucca Mountain Science Center where approximately 30 people attended.

Two educational presentations on "Gee Whiz Science" were presented: one to 12 students of 4-H T. E. C., July 27, 1994; and the other to 60 students at Ruby Thomas Elementary School, July 28, 1994, in Las Vegas.

A Public Open House tour of Yucca Mountain was coordinated and conducted on July 23, 1994, for approximately 80 people. Tour participants visited both of the Las Vegas Yucca Mountain Science Centers, the Field Operations Center, two laboratories, the crest of Yucca Mountain, and the Exploratory Studies Facility north portal area, where completion of the tunnel boring machine assembly is being performed.

Yucca Mountain Site Characterization Project staff provided logistic and communications support for the Office of Civilian Radioactive Waste Management Education Teleconference held on July 29, 1994. The support included coordination at the Sample Management Facility for satellite transmission equipment, camera positions, file video, and interviews with project scientists. The staff also supported a live news feed from the Exploratory Studies Facility for local television station, KVBC-TV Channel 3.

Yucca Mountain Site Characterization Project and Office staff attended a formal interactions meeting with Nye County, Nevada, on July 26, 1994, in Las Vegas, and the State, Tribal and Local Government Coordination Group meeting, on July 28, 1994, in Tonopah, Nevada. Staff also attended the National Conference of State Legislators meeting, July 25-27, 1994, in New Orleans, Louisiana.

The Office of External Affairs staff completed 35 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.

Date	Event	Location	Yucca Mountain Site Characterization Project Contact
A. Stakeholders' Meetings			
No significant meetings to report.			
B. U.S. Department of Energy/Headquarters Meetings			
No significant meetings to report.			
C. Civilian Radioactive Waste Management System Management and Operating Contractor/U.S. Department of Energy Meetings			
No significant meetings to report.			
D. Internal and U.S. Department of Energy/Nevada Operations Office (NV) Meetings			
Wednesday, August 17	NV Managers Monthly Program Review	Las Vegas, NV	R. Nelson
E. U.S. Nuclear Regulatory Commission Interactions			
Tuesday, August 23	Technical Exchange: Field Heater Experiments Associated with Coupled THMC Processes	Las Vegas, NV	T. Bjerstedt
F. Nuclear Waste Technical Review Board Interactions			
No significant interactions to report.			

	Date	Event	Location	Yucca Mountain Site Characterization Project Contact
G.	Advisory Committee on Nuclear Waste Interactions			
	Wednesday-Thursday August 17-18	67th Advisory Committee on Nuclear Waste Meeting - Topics (TBD)	Bethesda, MD	A. Gil
H.	National Academy of Sciences Interactions			
	No significant interactions to report.			
	Date	Event	Location	Speaker
I.	State and Public Interactions			
	Tuesday, August 2	City of Las Vegas High-Level Waste Committee Meeting - Project Update	Las Vegas, NV	B. Nelson
	Thursday, August 4	American Public Works Association - Project Update with emphasis on Transportation	Las Vegas, NV	P. Standish
	Tuesday, August 9	Griffith United Methodist Men's Group - General Overview	Las Vegas, NV	L. Cuba
J.	Educational Interactions			
	Tuesday, August 2	Frontier Girl Scouts - Artifacts	Las Vegas, NV	R. Arnold
	Wednesday, August 10	4-H T.E.C. - "Yucca Mountain Johnny"	Las Vegas NV	J. Hartley

	Date	Event	Location
K.	Exhibits Scheduled		
	Thursday, August 11	Business Expo Mixer	Las Vegas, NV
	Thursday-Saturday, August 11-13	Nevada League of Cities	Elko, NV
	Friday-Sunday, August 12-14	Eureka County Fair	Eureka, NV
	Saturday, August 13	Fallon Air Show	Fallon, NV
	Date	**Event**	**Escorts**
L.	Tours Scheduled		
	Monday, August 1	High-Country News	J. Peck S. Richardson
	Tuesday, August 2	University of Missouri	TBD
	Friday, August 5	Georgia Power	TBD
	Monday, August 8	DOE Management Intern Development Program	TBD
	Friday, August 12	Energy and Minerals Field Institute/Colorado School of Mines	R. Dyer
	Tuesday, August 16	Office of the Nuclear Waste Negotiator	R. Dyer

Robert M. Nelson, Jr.
Acting Project Manager

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