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Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
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FIELD TEST COORDINATION REPORT FOR THE WEEK ENDING NOVEMBER 14, 1997

The enclosure lists site characterization field activities that are currently active. Many of these are ongoing monitoring and mapping activities; therefore, only those activities having significant status change are addressed below.

C-HOLE COMPLEX HYDRAULIC INTERFERENCE TESTING

Sampling and analysis of the water pumped from C#3 continues. Pumping was discontinued on November 12, 1997. Current plans are to monitor recovery for approximately 6 weeks. Tracer testing helps to understand flow in the saturated zone and yields data to help model the travel of radionuclides in the saturated zone.

ENGINEERED BARRIER - LARGE BLOCK TEST

Lawrence Livermore National Laboratory (LLNL) continues the thermal testing at the Large Block. The Large Block Test will yield information on movement of water under thermal load, geochemistry of refluxing water, and biological organism (microbe) activity. There were no new temperatures reported this week, but LLNL personnel report that temperatures are hovering near 140°C at the heater plane. Slight adjustments are made to keep the temperature as nearly constant as possible.

TRENCH AND TEST PIT BACKFILLING

Permits for backfilling have been received and backfilling of trenches and test pits is expected to resume following completion of the South Portal road and the access road to the UZ Transport Test at Busted Butte.

BOREHOLE USW WT-24

The Stratmaster drill was set up over the WT-24 borehole and drilling began on Wednesday, July 23, 1997.

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This week, reaming of the borehole to a diameter of 12 inches (0.30 meters) continued to a depth of 1,747.0 feet (532.5 meters). Crews spent the remainder of the week cleaning and conditioning the hole in preparation for installing a pump. Once reaming and cleaning are completed, a pump will be installed for further pump testing. The WT-24 borehole is being drilled to further characterize the so-called high-hydraulic gradient or perched-water body to the north of the proposed repository site.

Borehole UE-25 P#1
No activity.

UZ TRANSPORT TEST AT BUSTED BUTTE

Upgrading of the access road to the site is in progress. The tentative schedule is to begin excavation work on the pad next week and begin drift excavation in December 1997.

EXPLORATORY STUDIES FACILITY (ESF) TESTING

Data collection in support of construction monitoring continues. Geologic mapping is completed.

ESF Alcove 5 (Thermal Testing Facility Access/Observation Drift, Connecting Drift, and Heated Drift):
Installation of instrumentation and final hookup of wiring and electric power is continuing in the Heated Drift Test (HDT). Collection of baseline data started on schedule on Wednesday, November 5, 1997, and is continuing. Final wiring and checking of electrical connections is in progress. Hookup and final testing and programming of the Data Acquisition System is also in progress. Currently, the test is on schedule to be turned on December 8, 1997, and there are discussions about moving the start date ahead to December 3, 1997.

The HDT will heat approximately 15,000 cubic meters of the rock of the repository horizon to a temperature of 100°C or greater in order to investigate the coupled processes under thermal loading.

ESF Alcove 5 (Thermomechanical Alcove):
The Single Heater Test (SHT) started on schedule on August 26, 1996. The heater was turned off at 1:30 p.m. on Wednesday, May 28, 1997. The heater element was removed on Thursday, July 17, 1997. The remaining instruments are being monitored during a six-to-nine month cool

down period. The following temperature readings have been reported from three thermocouple holes parallel to the heater. The holes are at radial distances from the heater of 0.33, 0.67, and 1.48 meters. Each measurement is made at an axial distance along the thermocouple hole that puts the measurements at the mid-length of the heater. These measurements were made on October 10, 1997, and continue to show a slight decrease in temperature.

Radial Distance from Heater Center Point (m)	Temperature in Degrees Celsius
0.33 m	33.4°C
0.67 m	33.6°C
1.48 m	33.9°C

The purpose of this test is to understand heat related processes and measure physical parameters. Some of these processes include heat transfer (conduction and convection), moisture movement, and geochemical changes (water chemistry changes due to heating of the rock). In addition, the results from the SHT will provide guidance for instrumentation and conducting the Drift-Scale Test in Alcove 5. The results will be available for the Viability Assessment (VA) design; specifically, thermal properties, deformation of the rock at elevated temperatures, and performance of rock bolts at elevated temperatures. In addition, the results from the SHT will provide guidance for instrumentation and conducting the Drift-Scale Test in Alcove 5.

ESF Alcove 6 (Northern Ghost Dance Fault Alcove):
Drilling of ESF-NDR-MF#4 began on Friday, October 31, 1997, and progressed to 82.9 feet (25.3 meters) as of the end of this reporting period. The hole is a horizontal hole and is located on the east wall of the drilling area in Alcove 6. The U.S. Geological Survey (USGS) will conduct pneumatic testing in this borehole.

Drilling of borehole ECRB-CWAT#1 began on Friday, October 31, 1997, and progressed to a depth of 79.9 feet (24.3 meters). The hole is located just inside the entrance to Alcove 6 and is being drilled at a slight angle from vertical to angle under the Main Drift. Testing in the completed borehole will investigate the downward travel of traced construction water.

ESF Alcove 7 (Southern Ghost Dance Fault Alcove):
Two bulkheads have been completed in Alcove 7 in the ESF. The USGS is now installing instrumentation to monitor conditions such as humidity, re-wetting of the rock, and possible pulses of water from the upcoming winter rainy season. Once all of the instruments have been installed, the bulkheads will be sealed so natural conditions can be monitored in the alcove without drying effects from ventilation.

Niche Drift Study - Niche #1:
Excavation of the niche started on Wednesday, June 18, 1997, and was completed on June 25, 1997. A permanent bulkhead to prevent moisture loss has been constructed. Currently, the USGS is continuing to install instruments in the niche. The niche is expected to be resealed early next week.

Niche #2:
A system for catching dripping water was fabricated in Niche #2 by Lawrence Berkeley National Laboratory personnel. Injection testing was conducted all week. Traced water was injected in boreholes located about 1 meter above the crown of the niche. Dripping water was collected in the drip collection system. The testing will help in understanding and modeling of flow around underground openings. The configuration of additional boreholes to be drilled in the niche is still under discussion. Drilling of additional holes in the niche may begin in the near future.

Niche studies are part of the Risk Reduction Strategy for VA and focus on unsaturated zone hydrology and hydrochemistry testing.

Moisture Study Boreholes:
No activity this week. Two holes remain to be re-drilled in the North Ramp area. There are also about 10 Moisture Study holes planned along the Main Drift.

If you have any questions, please contact me at 295-7825.

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Field Test Coordination
Assistant Manager for Licensing

AML:DHC-0404

Enclosure:
Site Characterization Field
Activities in Progress

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Records Processing Center = "12"

Site Characterization Field Activities in Progress

SCP ACTIVITY	TITLE	ACTIVITY
8.3.1.3.2.1	Mineralogy, Petrology, and Rock Chemistry of Transport Pathways	ESF Sampling, Borehole Sampling
8.3.1.3.2.2	Mineralogic and Geochemical Alteration	ESF Sampling, Borehole Sampling
8.3.1.4.2.2	Structural Features Within Site Area	Surface & ESF Mapping
8.3.1.17.4.3	Quaternary Faulting Within 100 km of Yucca Mtn.	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 and Meteorological Monitoring for Regional Hydrology	Ongoing Measurements
8.3.1.2.1.2	Runoff and Streamflow	Ongoing Measurements
8.3.1.4.2.1	Characterization of Vertical/Lateral Distribution Stratigraphic Units in Site Area	Core Logging (all boreholes), surfaceof geophysical surveys
8.3.1.2.1.3	Regional Groundwater Flow System	Ongoing monitoring
8.3.1.2.2.1	Unsaturated Zone Infiltration	Shallow borehole neutron logging
8.3.1.2.2.2	Water Movement Tracer Tests	Cl^{36} measurements (SBT drillholes, ESF)

ENCLOSURE

Site Characterization Field Activities in Progress Continued

SCP ACTIVITY	TITLE	ACTIVITY
8.3.1.2.2.4	Characterization of Unsaturated Zone (ESF)	Hydrochemistry/Radial Boreholes testing
8.3.1.2.2.6	Gaseous Phase Movement in the Unsaturated Zone	Pneumatic pathways monitoring
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
8.3.1.4.3.1	Systematic Acquisition of Site Specific Subsurface Information	Core logging
8.3.1.15.1.8	In Situ Design verification	Construction monitoring/testing
8.3.1.9.2.1	Natural Resource Assessment of Yucca Mountain	Rock sampling
8.3.1.3.4.2	Biological Sorption and Transport	Sampling in ESF
8.3.1.19.5.1	Engineered Barrier System Field Tests	Sampling in ESF