



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Reply to:
301 E. Stewart Ave., #203
Las Vegas, NV 89101

Tel: (702) 388-6125

TO: Joseph Holonich, Director, HLPD, M/S 4 H 3
FROM: Sr. On-Site Licensing Representatives Office, Las Vegas
DATE: JUNE 11, 1993
SUBJECT: OFFICE OF GEOLOGIC DISPOSAL (OGD) WEEKLY HIGHLIGHTS FOR THE
WEEK ENDING JUNE 4. 1993

Please find enclosed the above-referenced report.

There is nothing requiring specific management attention in the report.

cc: w/enc.: Charlotte Abrams, M/S 4 H 3
Rosetta Virgilio, M/S 3 D 23
Dean Kunihiro, Region 5

JSP:nan
Enclosure as stated

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

WBS 1.2.9.2
QA: N/A

JUN 09 1993

Lake H. Barrett, Acting Director, Civilian Radioactive Waste Management,
HQ (RW-1) FORS

OFFICE OF GEOLOGIC DISPOSAL (OGD) WEEKLY HIGHLIGHTS FOR THE WEEK ENDING
JUNE 4, 1993 (SCP: N/A)

I. CRITICAL ITEM STATUS - YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT (YMP)

A. Site Characterization Activities

Exploratory Studies Facility (ESF)

Construction

Excavation continues on the Tunnel Boring Machine (TBM) Starter Tunnel at the North Portal. The pilot drift is in approximately 30 meters and the north and south slashes are in approximately 14 meters each, as of May 28, 1993. Construction is continuing on surfacing (base course aggregate application) of the North Portal access road.

The following milestones represent the near-term plan for ESF activities:

Award TBM Contract	June 1, 1993
Award Subcontract for Underground Construction	June 1993
Begin 90 percent design review, Package 1B	July 19, 1993
Begin 90 percent design review, Package 2	August 11, 1993
Complete 60 meters of TBM Starter Tunnel	September 15, 1993

Design

The 50 percent management and independent technical reviews of Design Package 1B (Surface Facilities, North Portal) and Design Package 2 (North Ramp - Surface to Topopah Spring Level) are nearing completion. The final comment resolution process is in progress. Design continues on both packages for 90 percent reviews scheduled for July and August 1993.

Field Operations

Right and left slashes have been mapped to 40 feet. Lattice girders are in 34 feet. Geologic mapping is completed to 96 feet on the crown drift. No perched water was encountered.

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On Job Package 92-17, UZ-14 drilling with the LM-300 drill rig, UZ-14 has cored to a depth of 682 feet and reamed to a depth of 672 feet, as of June 3, 1993.

There is slow progress at the NRG-2 due to hard Tiva Canyon Columnar Unit. NRG-2 has cored to a depth of 246 feet and reamed to a depth of 173 feet.

On the NRG-4, drilling operations are expected to commence the week of June 7, 1993. Access road is complete. Work on the pad was expected to begin June 3, 1993.

Completed coring the NRG-5 to a depth of 996 feet. The hammer depth is 1009 feet. The hole will be hammered to basal vitrophyre prior to any further coring.

The Site Manager and Field Operations Center staff participated in and provided logistical support for four tours this reporting period. This included the U.S. Nuclear Regulatory Commission (NRC) site visit.

The final Occurrence Reporting Processing System (ORPS) 2 and 3, (Science Applications International Corporation [SAIC] 92-002 and SAIC 92-003) have been issued.

Sample Management Facility (SMF)

The staff continued to support drilling of USW UZ-14. Drilling Support staff sampled and logged 116.1 feet of core.

The SMF processed 234.1 feet of core from UE25 NRG-2A, UE25 NRG-5, and USW UZ-14. They processed 38.8 feet of cuttings from USW UZ-14 and UE-25 NRG-2A.

A total of 1,200 feet of core from UE-25 NRG-2 and USW UZ-16 were laid out for examinations conducted by Sandia National Laboratories (SNL) and the U.S. Geological Survey (USGS).

A total of 161 specimens were removed from core.

Approximately 50 gallons of hand samples of the Tiva Canyon Unit were collected from the ESF muck pile for public distribution.

Four geotechnicians completed Clark Equipment Lift Truck training.

The 1992 Technical and Management Support Services safety audit responses were submitted. Work orders were submitted for safety modifications to the SMF saw room.

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Site Investigations

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

SCP ACTIVITY	TITLE	COMMENTS
8.3.1.3.2.1	Mineralogy, Petrology & Rock Chemistry of Transport Pathways	Outcrop sampling
8.3.1.3.2.2	Mineralogic & Geochemical Alteration	Outcrop sampling
8.3.1.4.2.2	Structural Features within Site Area	Surface mapping, ESF mapping
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	Test pits, trenching, ramp exploration holes
8.3.1.17.4.2	Location & Recency of Faulting Near Prospective Surface Facilities	Trench mapping
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
8.3.1.17.4.10	Geodetic Leveling	Traversing
8.3.1.17.4.6	Quaternary Faulting within Site Area	Trench mapping
8.3.1.2.1.1	Precipitation & Meteorological Monitoring for Regional Hydrology	Ongoing measurements
8.3.1.2.1.2	Runoff & Streamflow	Ongoing measurements
8.3.1.2.2.1	Unsaturated Zone Infiltration	Drilling/logging of neutron-access holes; ponding tests
8.3.1.2.2.2	Water Movement Tracer Tests	C1-36 measurements
8.3.1.2.2.3	Percolation in Unsaturated Zone	UZ drilling/testing
8.3.1.2.2.4	Characterization of YM Percolation in UZ-ESF Investigation	Perched water
8.3.1.2.2.6	Gaseous Phase Movement in Unsaturated Zone	UZ drilling/testing
8.3.1.2.2.7	Unsaturated Zone Hydrochemistry	UZ drilling/testing
8.3.1.2.3.1	Site Saturated Zone Groundwater Flow System	Ongoing monitoring
8.3.1.2.3.2	Saturated Zone Hydrochemistry	Ongoing sampling
8.3.1.15.1.8	In Situ Design Verification	Construction monitoring/testing

Regulatory Interactions

Participated in the first meeting of the National Academy of Sciences (NAS) Committee on Technical Bases for Yucca Mountain Standards on May 27-29, 1993, in Las Vegas, Nevada. Presentations were made by various project individuals on the history of the repository program, project status, DOE's perspective on health-based standards, and the issues DOE believes the NAS Committee should address.

Mined Geologic Disposal System (MGDS) Annotated Outline (AO)

The MGDS AO, Revision 2, has been sent to the U.S. Department of Energy (DOE)/Headquarters (HQ) for transmittal to the NRC.

Advisory Committee on Nuclear Waste (ACNW) Interactions

The Yucca Mountain Site Characterization Project Office (YMPO) and DOE/HQ (RW-30 and RW-40) are revising an agenda for presentations to the ACNW at their July 21-22, 1993, meeting. The focus of the presentations will be the Engineered Barrier System (EBS) and Multi-Purpose Canister (MPC).

Issue Resolution

The next meeting of the Issue Resolution Steering Group is a videoconference to be held on June 16, 1993, from 8 a.m. to 12 noon, Pacific Standard Time. Topics for discussion include the results of a review of the Office of Civilian Radioactive Waste Management (OCRWM) procedures for possible use for Issue Resolution documents.

Comment resolution is nearing completion for the Calcite-Silica technical paper. Resolution meetings were held on May 17, 1993, and May 24, 1993.

Site Characterization Plan (SCP)/SP Status

No new SPs were approved by YMPO this week.

STUDY PLAN BREAKDOWN

In Screening Review	0
In YMPO Review	3
Awaiting Comment Resolution	6
Awaiting Author Revision	0
In YMPO Verification Audit	10
Preparing to Submit or Awaiting YMPO Approval	1
Awaiting Submission to the NRC	0
NRC Phase 1 Review	11
NRC Acceptance	46
Total	77

SCP/SP Status:

Total SPs Assigned to Cover 106 Studies	104
SPs Not Yet Submitted for Review	40
SPs Submitted for Initial Review	64
Revised SPs Submitted for Review	5
Revised ESF SPs Submitted for Review	8
Total SPs Submitted for Review	77

State of Nevada Comments Status:

Received Comments from the State of Nevada	18
Responses Transmitted to the State of Nevada	18

NRC Comments Status:

Received Comments from NRC	21
Responses Transmitted to NRC	18

B. Project Planning and Control

The DOE Management books for April 1993 Planning and Control System (PACS) cost and schedule status data were distributed.

Comment resolution on Draft A of the PACS System Description began.

A walk-through of the Functional Specification for the Division Directors Work Station was conducted with the Project Control Division Support staff and the Information Management System/Automated Data Processing staff.

The YMPO Monthly Management Meeting was organized and coordinated.

Cost/Schedule Variance Analysis of April 1993 PACS data was completed.

The SRG5/SD11 Drill Hole integrated schedule plan was coordinated.

C. Quality Assurance (QA) Implementation

Los Alamos National Laboratory (Los Alamos) Audit YMP-93-11 was conducted May 24-28, 1993. Three Corrective Action Requests were issued.

USGS Audit YMP-93-10 is scheduled for June 14-18, 1993.

Reynolds Electrical & Engineering Co., Inc. (REECO), Audit YMP-93-12 is scheduled for June 21-25, 1993.

Surveillance 93-025 of REECO Training and Qualification of Personnel is in progress June 2-9, 1993.

Surveillance 93-027 of USGS Measurements of Sub-Surface Moisture Content at the Nevada Test Site (NTS) is scheduled for June 6-11, 1993.

Surveillance 93-026 of USGS Calibration of Measuring and Test Equipment is scheduled for June 29-30, 1993.

Determination of Importance and Grading Enhancement

Implementation

A revision to the Q-List was completed and is in Quality Assurance Procedure 6.2 review. The Management Control-List is in process in the Plans and Procedures Department. The Assessment Team (AT) continued support of ongoing YMP efforts, including monitoring of responses to AT comments on the ESF Starter Tunnel Determination of Importance Evaluations and Raytheon Services Nevada (RSN) classification analyses of roads and pads.

D. Public Outreach and Institutional Activities

Carl Gertz, Project Manager, gave a general project overview to 35 members of the Nevada Association of Fleet Managers on June 3, 1993, in Las Vegas.

II. ANALYSIS & VERIFICATION DIVISION

The staff participated in the Geochemistry Integration Team meeting on June 2, 1993, in Las Vegas.

The staff reviewed and provided comments on "Energy Conservation Design Criteria," the proposed attachment to DOE Order 6430.1. Comments were submitted to RW-13 on June 3, 1993.

Comment resolution and verification review of SP 8.3.1.2.2.9, Revision 0, "Site Unsaturated-Zone Modeling and Synthesis," was completed. Comment resolution and verification review of two SPs were initiated: SP 8.3.1.8.5.2, Revision 0, "Characterization of Igneous Features;" and SP 8.3.1.15.2.2, Revision 0, "Characterization of Site Ambient Thermal Conditions."

MGDS

The staff coordinated the DOE briefing to the NAS in Las Vegas to support NAS "801" activities, briefed the Civilian Radioactive Waste Management Systems Management and Operating Contractor (CRWMS M&O)/Las Vegas personnel on ORPS status and plans, and attended the NRC field trip on faulting at Yucca Mountain, Nevada.

III. GENERAL INFORMATION ITEMS

CRWMS M&O

The staff completed and published the results of an adaption of a SIMM-1 computer simulation model for the assessment of the impact of an MPC on Waste-Handling Building design and operations. Also, the development of a dedicated simulation model was initiated for assessing MGDS throughput using MPCs.

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Lawrence Livermore National Laboratory (LLNL)

Regarding Work Breakdown Structure (WBS) 1.2.2.2.1 (Chemical and Mineralogical Properties of the Waste Package Environment), work on the New Zealand natural analog site continued. A visit there by two LLNL scientists to evaluate potential sites for conducting validation activities using EQ3/6 was completed. Several sites were visited. From those, a prioritized list of site studies has been developed and a draft memorandum describing the site work has been written.

Regarding WBS 1.2.2.3.1.1 (Waste Form Testing - Spent Fuel), the Thermogravimetric Apparatus units have been taken out of storage. Flow meters, thermocouples, and balances are being calibrated. Pumps and seals are being refurbished. Trial runs on unirradiated uranium oxide (UO₂) will be conducted for equipment checkout.

Environmental and management approvals were received on May 24, 1993, to clear the heated Large Block Test area. REECO, completed the clearing and rock surface cleaning on June 2, 1993. A team from LLNL, assisted by Los Alamos, SNL, RSN, and REECO personnel, mapped fractures and selected a test area on June 1-2, 1993.

Los Alamos

Barbara Carlos attended the June 1993 meeting of the Sample Overview Committee in Las Vegas. David Vaniman and Wunan Lin of LLNL examined localities on the flank of Fran Ridge at the NTS on June 1, 1993. In situ tests may be conducted in this area. X-ray diffraction analysis of samples from UE-25 UZ-16 was conducted.

David Bish presented a paper on Rietveld x-ray diffraction analysis at the meeting of the International Committee on Applied Mineralogy in Canberra, Australia.

The following papers were published in the *Materials Research Society Symposium Proceedings, Volume 294*:

1. "Transport of Neptunium Through Yucca Mountain Tuffs," by I. Triay et al.
2. "The Role of Siderophores in the Transport of Radionuclides," by L. Hersman et al.
3. "Surface Discharging Hydrothermal Systems at Yucca Mountain -- Examining the Evidence," by S. Levy.

RSN

The C-Well Complex water discharge design drawings and batch plant location design were completed.

USGS

The staff continued field mapping in Paintbrush Canyon and Fortymile Wash. Added map detail included definition of a mud flow series at the base of Comb Peak, more outcrops in Delirium Canyon, and newly recognized debris- and air-flow deposits which help constrain post-Rhyolite of Calico Hills paleotopography. Work in Fortymile Wash included describing post-Calico Hills and pre-Pah Canyon erosional surfaces and detailed mapping of a major fault.

The new hydrologic data acquisition system to support the collection of data from surface-based boreholes is in place and operational.

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 Interactions are coordinated by the Speakers Bureau; contact Jacqueline Brandt at (702) 794-7896 or Theresa Hirsch at (702) 794-7759 for additional information. Exhibits and Public Update Meetings 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>YMPO Contact</u>
A. <u>DOE/HO Meetings</u>			
No significant meetings to report.			
B. <u>CRWMS M&O/DOE Meetings</u>			
Monday, June 28	Cost Performance Management Meeting	Las Vegas, NV	C. Gertz
Wednesday, June 30	CRWMS M&O Quarterly Integration Meeting	Televideo	C. Gertz
C. <u>Internal and DOE Nevada Operations Office Meetings</u>			
Friday, June 11	Technical Project Officers Meeting	Las Vegas, NV	C. Gertz
Friday, June 11	Planning and Budget Meeting	Las Vegas, NV	C. Gertz
Wednesday, June 16	NV Monthly Program Review	Las Vegas, NV	C. Gertz
D. <u>NRC Interactions</u>			
Monday, June 7	NRC Management Meeting for Interactions Scheduling (P)	Las Vegas, NV	T. Bjerstedt
Tuesday, June 8	Technical Exchange - Geophysics Integration (P)	Las Vegas, NV	T. Bjerstedt
Wednesday, June 9	Technical Exchange - Volcanism (P)	Las Vegas, NV	T. Bjerstedt
Wednesday, July 28	Technical Exchange - ESF Title II Design (P)	TBD	T. Bjerstedt

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>YMPO Contact</u>
<u>E. Nuclear Waste Technical Review Board (NWTRB) Interactions</u>			
Tuesday-Saturday, June 1-12	NWTRB International Trip	United Kingdom, France, Belgium	J. Cooper
Tuesday-Wednesday, July 13-14	NWTRB Full Board Meeting (P)	Denver, CO	J. Cooper
Tuesday-Thursday, September 28-30	NWTRB Joint T&S/EBS Panel Workshop (P)	TBD	J. Cooper
Tuesday-Friday, October 19-22	NWTRB Full Board Meeting (P)	Las Vegas, NV	J. Cooper
Monday-Wednesday, January 10-12, 1994	NWTRB Full Board Meeting (P) (Tentative)	Arlington, VA	J. Cooper
Monday-Wednesday, April 11-13, 1994	NWTRB Full Board Meeting (P) (Tentative)	Reno, NV	J. Cooper
Monday-Wednesday, July 11-13, 1994	NWTRB Full Board Meeting (P) (Tentative)	Denver, CO	J. Cooper
Wednesday-Friday, October 12-14 1994	NWTRB Full Board Meeting (P) (Tentative)	Las Vegas, NV	J. Cooper
<u>F. ACNW Interactions</u>			
Wednesday-Thursday, July 21-22	ACNW 55th Meeting (P)	TBD	A. Gil
Wednesday-Thursday, August 25-26	ACNW 56th Meeting (P)	TBD	A. Gil
Wednesday-Thursday, September 29-30	ACNW 57th Meeting (P)	TBD	A. Gil
Wednesday-Thursday, October 27-28	ACNW 58th Meeting (P)	Las Vegas, NV	A. Gil

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<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>YMPO Contact</u>
F. <u>ACNW Interactions</u> (Continued)			
Monday- Tuesday, November 22-23	ACNW 59th Meeting (P)	TBD	A. Gil
Wednesday- Thursday, December 15-16	ACNW 60th Meeting (P)	TBD	A. Gil
G. <u>NAS Interactions</u>			
Thursday, June 24	NAS Board on Radioactive Waste Management	Las Vegas, NV	C. Gertz
<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
H. <u>State and Public Interactions</u>			
Wednesday, June 9	Transportation Coordination Group	Washington, DC	K. Grassmeier
Thursday, June 10	C. C. Ronnow Elementary School	Las Vegas, NV	J. Hartley
Monday, June 14	Rapid Excavation & Tunneling Conference	Boston, MA	C. Gertz
Tuesday, June 15	Nate Mack Elementary School	Las Vegas, NV	T. Kaish P. Snyder
Wednesday, June 16	Palo Verde Generating Station	Phoenix, AZ	G. Fasano E. Harle
Saturday, June 19	American Nuclear Society (ANS) Teacher Workshop	San Diego, CA	J. Peck
Sunday, June 20	Vanishing Desert Greater Opportunity Group	Las Vegas, NV	A. Gil
Sunday, June 20	Yucca Mountain Lecture Series (P)	Pahrump, NV	W. Dickson
Tuesday, June 22	Yucca Mountain Lecture Series (P)	Las Vegas, NV	W. Dickson
Wednesday, June 23	Citibank Child Care	Las Vegas, NV	R. Arnold
Wednesday, June 23	ANS	San Diego, CA	C. Gertz

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<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
H. <u>State and Public Interactions</u> (Continued)			
Friday, June 25	Diablo Canyon Nuclear Power Plant	Avila Beach, CA	G. Fasano
Wednesday, July 7	University of California, Santa Barbara	Santa Barbara, CA	C. Gertz
Thursday, July 15	Spring Valley Library	Las Vegas, NV	T. Bjerstedt
Monday, July 19	Institute of Nuclear Materials Management	Phoenix, AZ	TBD
Wednesday, July 21	C. T. Sewell Elementary School	Las Vegas, NV	T. Kaish M. Griffin
Wednesday, July 28	ANS Teacher Workshop	Deerfield, MA	J. Peck
Monday, August 2	United States Energy Council on Energy Awareness Energy Information Centers	Chicago, IL	C. Gertz
Thursday, August 12	Second International New Avenues in Risk and Crisis Management Conference	Las Vegas, NV	C. Gertz
Tuesday, August 17	1993 American Institute of Chemical Engineers Summer National Meeting	Seattle, WA	C. Gertz
Wednesday, August 18	Second International Mixed Waste Symposium	Baltimore, MD	C. Gertz
Wednesday- Thursday, September 1-2	C. P. Squires Elementary	N. Las Vegas, NV	R. Arnold
Monday- Tuesday, September 6-7	C. P. Squires Elementary	N. Las Vegas, NV	R. Arnold
Friday, September 10	Public Gas Service Gas Company	TBD	C. Gertz
Sunday, September 26	Children's Discovery Museum	Las Vegas, NV	R. Arnold
Monday, November 15	ANS	San Francisco, CA	C. Gertz

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
H. <u>State and Public Interactions</u> (Continued)			
Sunday, February 27, 1994	Waste Management Symposia	Tucson, AZ	C. Gertz

<u>Date</u>	<u>Event</u>	<u>Location</u>
I. <u>Exhibits Scheduled</u>		
Saturday, June 19	Public Open House (P)	Las Vegas, NV
Saturday, July 24	Public Open House (P)	Las Vegas, NV
Friday- Sunday, August 20-22	Home Show (P)	Las Vegas, NV
Saturday, August 21	Public Open House (P)	Las Vegas, NV
Tuesday- Monday, August 24-30	Nevada State Fair (P)	Reno, NV
Thursday- Tuesday, September 2-7	Elko County Fair (P)	Elko, NV
Saturday, September 25	Public Open House (P)	Las Vegas, NV
Tuesday- Saturday, September 28- October 2	Nevada Library Association	Elko, NV
Friday- Monday, October 1-11	Jaycee State Fair (P)	Las Vegas, NV
Saturday, November 6	Boy Scouts Expo	Las Vegas, NV

<u>Date</u>	<u>Event</u>	<u>Escorts</u>
J. <u>Tours Scheduled</u>		
Saturday, June 19	Public Open House (P)	Various Escorts
Monday, June 21	Girl Scouts Wider Opportunity Program	TBD

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<u>Date</u>	<u>Event</u>	<u>Escorts</u>
J. <u>Tours Scheduled</u> (Continued)		
Tuesday, June 22	NAS	TBD
Friday, June 25	NAS	TBD
Tuesday, July 6	University of Georgia	TBD
Friday, July 16	International Safeguards Group	TBD
Saturday, July 24	Public Open House (P)	Various Escorts
Friday, August 6	Military Order of Laos	P. Karmic
Saturday, August 21	Public Open House (P)	Various Escorts
Monday, September 13	Senior Tripsters	TBD
Thursday, September 23	Waste Package Development Workshop	R. Fish
Saturday, September 25	Public Open House (P)	Various Escorts
Thursday, September 30	League of Women Voters	TBD

YMP:VFI-4439

for

Carl P. Gertz
Project Manager