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 HOLONICH, J. Repository Licensing & Quality Assurance Project Director

SUBJECT: Forwards Ofc of Geologic Disposal Weekly Highlights for wk ending 930402.

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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: APRIL 13, 1993
SUBJECT: OFFICE OF GEOLOGIC DISPOSAL (OGD) WEEKLY HIGHLIGHTS FOR THE
WEEK ENDING APRIL 2, 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
Enclosures as stated

NOTE TO CHARLOTTE: Also enclosed please find "Revised Elevation of the Exploratory Studies Facility/Potential Repository Interface Drawings", (YMPO, Petrie), and "Core Evaluation to Determine Contacts Between Termal-Mechanical Units TSw1 and TSw2". (SAIC, Peck).

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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

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

OFFICE OF GEOLOGIC DISPOSAL (OGD) WEEKLY HIGHLIGHTS FOR THE WEEK ENDING
APRIL 2, 1993

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

A. Site Characterization Planning

Field Operations

The Site Manager and Field Operations Center (FOC) staff participated in and provided logistical support for four major tours this reporting period.

As of March 26, 1993, the depth cored at NRG-3 was 263.90 feet with the 5 1/2-inch Odex casing at 250.28 feet.

On March 29, 1993, Reynolds Electrical & Engineering Co., Inc. (REECo) Drilling Department mobilized and transported the LM-300 drill rig from UZ-16 to the UZ-14 drill pad site. Drilling is expected to begin on April 8, 1993.

On Job Package 92-20, Exploratory Studies Facility (ESF) North Portal Pad and Facilities, REECo continues the following activities: excavation of Phase IV of the box cut, hauling of fill from Borrow Pit 1 to the ESF to obtain final grade elevation, excavation of the north drainage channel, and installation of a liner and sand pad at the rock storage area.

Sample Management Facility

Processing was completed and 39 specimens from NRG-6 and NRG-2 were shipped for Sandia National Laboratories (SNL). Processing of 23 specimens from UZ-16 was completed for Los Alamos National Laboratory (Los Alamos).

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The prognoses on UE25 SRG-1 and UE25 NRG-2a were completed.

Work continued on the geophysical cross section including USW UZ-14 to determine subsurface geological conditions.

Processing of all cuttings from UZN-61 and UZN-62 were completed and processing of cuttings from UZ-16 continued.

Regulatory Interactions

Site Characterization Progress Report (PR)

Input for PR 8 is expected from the participants and the U.S. Department of Energy (DOE)/Headquarters (HQ) by March 30, 1993. The review draft PR 8 is scheduled to be submitted on April 30, 1993.

Technical Analysis

Performance Assessment (PA) staff prepared and presented a summary of the Carbon 14 issue to staff of the Inspector General's office. The PA staff from all participants involved in waste package and source term evaluation met at Pacific Northwest Laboratories to discuss specifications for the next generation Engineered Barrier Systems PA code. Work continued on studies for the thermal loading analysis and the second iteration of Total System Performance Assessment (TSPA2). Three waste isolation evaluations are in progress and the plan for analyses supporting identification of natural barriers important to waste isolation is being revised. Technical Data Management personnel conducted technical data workshops at Los Alamos and Albuquerque, New Mexico.

ESF Task Force Activities

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

Award Tunnel Boring Machine (TBM) Contract	April 1993
Start Excavating TBM Launch Chamber	April 2, 1993
Award Subcontract for Underground Construction	June 1993

Site Characterization Plan (SCP)/Study Plan (SP) Status

The U.S. Nuclear Regulatory Commission (NRC) completed Phase I review of SP 8.3.1.9.2.1, "Natural Resource Assessment of Yucca Mountain, Nye County, Nevada."

STUDY PLAN BREAKDOWN

In Screening Review	0
In Yucca Mountain Site Characterization	
Project Office (YMPO) Review	3
Awaiting Comment Resolution	13
Awaiting Author Revision	4
In YMPO Verification Audit	3
Preparing to Submit or Awaiting YMPO Approval	1
Awaiting Submission to the NRC	1
NRC Phase 1 Review	16
NRC Acceptance	40
Total	81

SCP/SP Status:

Total SPs Assigned to Cover 106 Studies	104
SPs Not Yet Submitted for Review	36
SPs Submitted for Initial Review	68
Revised SPs Submitted for Review	6
Revised ESF SPs Submitted for Review	7
Total SPs Submitted for Review	81

State of Nevada Comments Status:

Received Comments from the State of Nevada	18
Responses Transmitted to the State of Nevada	12

NRC Comments Status:

Received Comments from NRC	19
Responses Transmitted from OGD to DOE/HQ	18

B. Project Planning and Control

The staff supported the YMPO Monthly Management Meeting on April 2, 1993, and the Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O) Monthly Management Review on March 31, 1993. The Planning and Control System (PACS) schedule, cost reports, graphs, and Variance Analysis Reports were produced and distributed. Presentations regarding work breakdown structure (WBS) 1.2.9 and 1.2.15 were prepared for Vincent Iorii, YMPO, to present at the YMPO Monthly Management Meeting.

Revision 2 of the fiscal year (FY) 1993 Project Cost and Schedule Baseline Document has been completed, which incorporated approved changes to the baseline.

A Cost/Schedule Change Request was prepared to include capital equipment planning in the FY 1993 Cost and Schedule Baseline Document.

An audit was conducted of the participants' Capital Equipment Requirement plans for FY 1993 to determine the lowest level participant WBS requirements.

A schedule was prepared for revision to the PACS System Description.

Schedule templates for UZ-14 and C-Well were developed and coordinated.

An in-depth testing of the APECS software was provided in preparation of the VAX upgrade to VMS 5.5.

C. Quality Assurance (QA) Implementation

All preparations and checklists have been completed for the YMPO audit to be conducted during the week April 5-9, 1993. Eight observers are expected: three from the NRC, one from the State of Nevada, one from the County, two from the Office of Civilian Radioactive Waste Management (OCRWM) Office of QA, and one from the NRC/Las Vegas.

Performed surveillance 93-020 of the CRWMS M&O/TRW/Las Vegas on the Controlled Document Information System.

Nine Technical Directives providing the QA requirements to affected organizations were approved.

The Yucca Mountain Quality Assurance Division (YMQAD) initiated the remaining Document Action Requests (DAR) for the new Quality Assurance Requirements and Description (QARD) and provided these DARs to the QARD Implementation Team.

YMQAD provided a list of subject matter experts and QA reviewers (required to revise procedures) to the QARD Implementation Team.

Determination of Importance and Grading Enhancement

Quality (O) List and O-List Procedure Development

Per YMPO direction, Draft D of Implementing Line Procedure 1.3/Office of the Project Manager has been drafted and submitted to reviewers for acceptance.

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Management Control (MC) List and Procedure Development

Administrative Procedure (AP) 5.40, MC Requirements List Development, remains in the approval cycle. The subject matter expert is determining the training approach.

Implementation

The CRWMS M&O has revised the ESF Starter Tunnel Determination of Importance package based on YMPO acceptance of Assessment Team (AT) comments. However, the revision does not resolve all AT comments. Discussions with YMPO and CRWMS M&O are on-going.

The AT Classification of Items Management Plan is being revised to reflect on-going and planned activities until AP 6.17Q is canceled.

D. Public Outreach and Institutional Activities

The Twenty-fifth Public Open House tour of Yucca Mountain, Nevada, was conducted on March 27, 1993, for 277 people. Tour participants visited the Las Vegas Yucca Mountain Information Office (YMIO), the FOC, two laboratories, the LM-300 drill rig, and the top of Yucca Mountain. They also drove through Midway Valley to view the ESF North Portal construction.

Several educational presentations were provided this week. These included an environmental presentation by Kent Wirtz, Technical and Management Support Services (T&MSS), to 40 students at Burkholder Middle School in Henderson, Nevada, on March 29, 1993; a Native American Indian Culture presentation by Richard Arnold, a consultant, to 30 students at Walter Bradkin Elementary School in Las Vegas, Nevada, on March 29, 1993; and a geology presentation by Linda Linden, T&MSS, to 150 students at Orr Junior High School in Las Vegas on March 31, 1993.

General project overview presentations were provided by Gregory Fasano, T&MSS, to 45 students at Henderson Community College in Henderson on March 31, 1993, and by April Gil, YMPO, to 35 students at Joe Mackey Sixth Grade Center in Las Vegas on April 2, 1993. A general overview presentation was given by A. C. Robison, YMPO, to ten people participating in the Teachers Critical Thinking Workshop on March 29, 1993, at the YMIO.

A tour to Yucca Mountain was conducted on March 29, 1993, for approximately 100 guests from Eureka and White Pine counties. Other special tours were conducted on March 31, 1993, for five guests from Greenpeace and on April 1, 1993, for approximately ten French Radiation Waste Regulatory Agency representatives and guests.

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The Institutional and External Affairs (IEA) staff attended the Nevada Assembly Ways and Means Committee hearings in Carson City, Nevada, on March 29, 1993.

The IEA staff accompanied local television talk show hosts on a tour of Yucca Mountain on March 31, 1993. Approximately 20 people went on the tour. Another tour of Yucca Mountain was conducted on April 1, 1993, for 120 students from Orr Junior High School in Las Vegas.

The IEA staff produced a six-minute video with no narration to support the Yucca Mountain Site Characterization/ESF exhibit at the Nevada Capitol, April 5-16, 1993. The tape depicts the ESF design, groundbreaking, and current surface work for the ESF North Portal pad.

II. ANALYSIS & VERIFICATION DIVISION

Review of the Mined Geologic Disposal System (MGDS) Annotated Outline (AO) was initiated. Review comments are due to RW-30 on April 7, 1993.

The staff participated in the Defense Waste Processing Facility and West Valley Demonstration Project Technical Review Group meeting in Denver, Colorado, March 30-April 1, 1993.

Reviews of Monitored Retrievable Storage AO plans on Transportation Physical Protection, and Material Control and Accountability were initiated. Comments are due on April 14, 1993.

The staff participated in the Edison Electric Institute/UWaste Universal Container System Concept Paper review, including a comparison with CRWMS M&O's Multi-Purpose Canister Implementation Plan. Comments are due on April 16, 1993.

MGDS

Preparation of the Executive Summary and Chapter 1 of PR 8 began.

The third draft of the Top-Level Repository Program Convergence Strategy, due on March 29, 1993, was prepared.

Bullets for RW-1 on Rationale for Underground Exploration were prepared.

Occurrence Reporting Processing System (ORPS)

The staff responded to action items from the ORPS implementation meetings March 11-12, 1993, in Las Vegas as follows: prepared revised ORPS Authority File hierarchy; prepared new listing of OGD-funded facilities applicable to ORPS; assisted Dean Stucker, YMP/HQ, in

preparation of a master viewgraph set for use in the March 31, 1993, ORPS briefing in Las Vegas; and prepared implementation progress memorandum (and draft memorandum) for Stephan Brocoum, YMP/HQ.

III. GENERAL INFORMATION ITEMS

CRWMS M&O

Comments were provided on the draft DOE Environmental Restoration and Waste Management Five-Year Plan for FY 1994-1998.

The management review of the Licensing Strategy Report by the participants, YMPO, and DOE/HQ has been completed. A presentation of the report was delivered to Project Manager Carl Gertz.

Lawrence Livermore National Laboratory

Regarding WBS 1.2.2.2.5 (Characterization of the Effects of Man-Made Materials on Chemical & Mineralogical Changes in the Post-Emplacement Environment), the search of the GEMBOCHS thermodynamic data base that supports the EQ3/6 codes for aqueous species, glass, and solids that contain carbon has been completed. The search for organic compounds was expanded in recognition of the important role that carbon-bearing compounds play in the following three mechanisms, all of which may operate within the ESF and the potential repository site:

1. Aerobic microbial degradation of hydrocarbon compounds may increase carbonate species and thus significantly alter pH.
2. Abiotic thermal degradation of organic compounds may generate large amounts of carbon dioxide that may also significantly alter pH.
3. Carbonate complexation.

These mechanisms are particularly important to the determination of spent nuclear fuel solubility.

Los Alamos

Steve Chipera completed sonic disaggregation and centrifugation for a large clay sample from a lithophysal pocket exposed in the portal for the North Ramp ESF Starter Tunnel. An exceptionally pure smectite was obtained from the finer size fractions. This pure clay, from approximately 16 meters depth, may provide constraints on particulate transport mechanisms in the upper part of Yucca Mountain.

David Vaniman prepared sample resumed for calcite studies from core UE25 UZ-16. Calcite separates were being prepared for comparison of shallow fine-grained calcite with the deeper coarse-grained calcite of the unsaturated zone.

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Julie Canepa, Loretta Lopez, and Roger Eckhardt met in Los Alamos with Ardyth Simmons, YMPO, and Robert Lewis, CRWMS M&O, about the method of submitting data to the Automated Technical Data Tracking System data base.

SNL

The QA staff conducted an evaluation of the SNL Primary Standards Laboratory (PSL) March 22-25, 1993. This evaluation was conducted to determine whether the PSL quality system meets requirements that are specified in the OCRWM QARD. If so, the PSL will be identified as a qualified supplier for OCRWM and YMPO contractors. The evaluation was conducted concurrently, and in conjunction with, a similar evaluation being conducted by EG&G Energy Measurements, Inc.

As part of ongoing efforts to characterize unsaturated flow in fractures and test the validity of current models, an experimental process for testing flow in individual fractures is being developed. A methodology for producing epoxy casts of natural fractures is being developed. These casts allow direct observation two-phase flow and measurement of pertinent two-phase properties. The process has been tested in a natural tuff fracture collected from the Bandelier Formation near Los Alamos in New Mexico. Previously prepared silicon rubber negative replica of the fracture were used to create a clear epoxy replica of the original fracture. To eliminate long wavelength disturbances in the aperture field that may be artifacts of the replication process, the fracture cast was mounted in a test cell allowing application of a confining pressure. Further refinement of the measurement of two-phase flow properties of the fracture are currently underway.

T&MSS

The QA staff prepared a Supplier Evaluation Report and issued the audit report associated with the periodic qualification of Teledyne Isotopes. The staff is preparing for a corrective action follow-up on Climatronics who provides meteorological equipment. Seven quality-related inspections were conducted last week.

The quarterly Quality Trend Analysis Report is being prepared for issuance in April 1993.

U.S. Geological Survey (USGS)

The saturated zone staff removed water-level access tubes and the large packer from Well USW H-5 to clear an obstruction in one tube. The packer appeared to no longer be properly seated and the access tubes were in poor shape. A composite water-level measurement was made to compare with early 1980 measurements. A new packer was reset higher in the well and the access tubes were replaced. Manual water-level measurements were made in the two new zones of the well.

The unsaturated zone staff made a field check of existing unsaturated zone boreholes to determine which boreholes were responding to barometric pressure changes. The data will be used to develop a plan for future gas sampling to support the hydrochemistry gaseous phase study.

The U.S. Bureau of Reclamation staff completed mapping of the North Portal cut. The exposed lithology is the upper lithophysal unit of the Tiva Canyon Member to the bottom of the cut. An offset fault with approximately 6 feet of disruption occurs in the back of the cut. Two other faults also were mapped in the cut with offset ranging from 60 to 100 feet. Most mapped discontinuities in the portal cut exhibit the orientation noted above.

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>
<u>A. DOE/HO Meetings</u>			
Friday, April 16	Followup to Quarterly for CRWMS M&O and OCRWM	Vienna, VA Televideo	C. Gertz
<u>B. CRWMS M&O/DOE Meetings</u>			
Friday April 2	YMP Monthly Management Meeting	Las Vegas, NV	C. Gertz
Friday, April 30	CWRMS M&O Program Review	Las Vegas, NV	C. Gertz
<u>C. Internal and DOE Nevada Field Office (DOE/NV) Meetings</u>			
Wednesday, April 21	DOE/NV Monthly Program Review	Las Vegas, NV	C. Gertz
<u>D. NRC Interactions</u>			
Monday, May 3	Management Meeting on Topical Report (P)	Las Vegas, NV	T. Bjerstedt

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>YMPO Contact</u>
D. <u>NRC Interactions</u> (Continued)			
Tuesday- Monday, May 17	NRC Site Visit (P) Technical Exchange - Program Planning and Integration (P)	Las Vegas, Video- Conference	T. Bjerstedt L. Desell T. Bjerstedt
Tuesday, May 18	Technical Exchange - OCRWM Technical Baseline Documents (P)	Video- Conference	L. Desell T. Bjerstedt
Wednesday, May 25-26		NV	
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
E. <u>Nuclear Waste Technical Review Board (NWTRB) Interactions</u>			
Monday April 19	NWTRB Environment and Public Health Panel - Site Tour (P)	Las Vegas, NV	J. Cooper
Wednesday- Thursday, April 21-22	NWTRB Full Board Meeting (P)	Reno, NV	J. Cooper
May TBD	NWTRB Environment and Public Health Panel (P)	Las Vegas, NV	J. Cooper
Tuesday- Saturday, June 1-12	NWTRB International Trip	TBD	J. Cooper

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>YMPO Contact</u>
E. <u>NWTRB Interactions (Continued)</u>			
Monday- Thursday, July 12-15	NWTRB Full Board Meeting (P)	Denver, CO	J. Cooper
Tuesday- Friday, October 19-22	NWTRB Full Board Meeting (P)	Las Vegas, NV	J. Cooper
F. <u>Advisory Committee on Nuclear Waste (ACNW) Interactions</u>			
Wednesday- Thursday, April 28-29	ACNW 53rd Meeting (P)	Bethesda, MD	A. Gil
Wednesday- Thursday, May 19-20	ACNW 54th Meeting (P)	Bethesda, MD	A. Gil
Wednesday- Thursday, June 23-24	ACNW 55th Meeting (P)	Canada	A. Gil
Wednesday- Thursday, July 21-22	ACNW 56th Meeting (P)	TBD	A. Gil
Wednesday- Thursday, August 25-26	ACNW 57th Meeting (P)	TBD	A. Gil
Wednesday- Thursday, September 22-23	ACNW 58th Meeting (P)	TBD	A. Gil
Wednesday- Thursday, October 27-28	ACNW 59th Meeting (P)	Las Vegas, NV	A. Gil
Monday- Tuesday, November 22-23	ACNW 60th Meeting (P)	TBD	A. Gil
Wednesday- Thursday, December 15-16	ACNW 61st Meeting (P)	TBD	A. Gil

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
G. <u>State and Public Interactions</u>			
Sunday, April 4	YMIO Family Day	Las Vegas, NV	T. Kaish/ Various External Speakers
Wednesday, April 7	Pahrump Lions Club	Pahrump, NV	P. Carmack
Saturday, April 10	Girl Scouts Geology Workshop	Las Vegas, NV	E. Harle
Monday, April 12	Cactus Water & Energy Conservation Society	Las Vegas, NV	P. Standish
Tuesday, April 13	Burkholder Middle School	Henderson, NV	J. Blink
Tuesday, April 13	Sandy Valley Elementary	Sandy Valley, NV	A. Gil
Thursday, April 15	Centel Managers Group	Las Vegas, NV	P. Standish
Thursday, April 15	Teamsters Local 14	Las Vegas, NV	K. Beall
Thursday, April 15	Sandy Valley Elementary	Sandy Valley, NV	J. Blink
Thursday, April 15	American Nuclear Society/American Society of Mechanical Engineers	New York, NY	C. Gertz
Thursday, April 15	Fay Herron Elementary	North Las Vegas, NV	J. Hartley
Friday, April 16	Mt. Charleston Elementary	Mt. Charleston, NV	J. Cooper
Friday, April 16	Tonopah Elementary	Tonopah, NV	J. Blink

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
G. <u>State and Public Interactions</u> (Continued)			
Monday, April 19	Charlotte Hill Elementary School	Las Vegas, NV	J. Blink
Monday, April 19	Orr Junior High School	Las Vegas, NV	A. Gil
Tuesday, April 20	Burkholder Middle School	Henderson, NV	K. Olsson T. Pysto
Thursday, April 22	DOE 20th Annual Science Now	Las Vegas, NV	A. Robison
Saturday, April 24	Boy Scouts Atomic Energy Merit Badge Workshop	Las Vegas, NV	E. Harle
Sunday, April 25	Yucca Mountain Lecture Series (P)	Pahrump, NV	R. Arnold
Monday, April 26	Fellowship Conference	Las Vegas, NV	C. Gertz
Tuesday, April 27	Yucca Mountain Lecture Series (P)	Las Vegas, NV	R. Arnold
Wednesday, April 28	Ruthe Deskin Elementary	North Las Vegas, NV	R. Arnold
Thursday, April 29	Booker Sixth Grade Center	TBD	K. Ostler
Thursday, April 29	Orr Junior High School	Las Vegas, NV	R. Arnold
Friday, April 30	Twin Lakes Elementary	Las Vegas, NV	T. Kaish
Friday, April 30	Mt. Charleston Elementary	Mt. Charleston, NV	T. Geer
Tuesday, May 4	Underground Structures, Colorado School of Mines	Golden, CO	C. Gertz

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
G. <u>State and Public Interactions</u> (Continued)			
Thursday- Friday, May 6-7	Roy Martin Middle School	Las Vegas, NV	A. Gil
Saturday, May 8	Girl Scouts	Las Vegas, NV	T. Pysto
Saturday, May 8	Boy Scouts Atomic Energy Merit Badge Workshop	Las Vegas, NV	E. Harle
Tuesday, May 11	Lomie Heard Elementary	Las Vegas, NV	R. Arnold
Wednesday, May 19	International Right of Way Association	Las Vegas, NV	G. Fasano
Wednesday, May 19	Sunrise Acres	Las Vegas, NV	K. Grassmeier
Friday, May 21	Orr Junior High School	Las Vegas, NV	A. King
Saturday, May 22	President's Tea of the Sunrise Council (PTA)	Henderson, NV	E. Harle A. Gil
Sunday, May 23	Yucca Mountain Lecture Series (P)	Beatty, NV	J. Weigand
Tuesday, May 25	Yucca Mountain Lecture Series (P)	Las Vegas, NV	J. Weigand
Wednesday, May 26	Sandy Valley Elementary	Sandy Valley, NV	J. Cooper
Monday, June 14	Rapid Excavation & Tunneling Conference	Boston, MA	C. Gertz
Wednesday, June 16	Palo Verde Generating Station	Phoenix, AZ	G. Fasano E. Harle

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Speaker</u>
G. <u>State and Public Interactions</u> (Continued)			
Sunday, June 20	Vanishing Desert Greater Opportunity Group	Las Vegas, NV	A. Gil
Sunday, June 20	Yucca Mountain Lecture Series (P)	Pahrump, NV	W. Dixon
Tuesday, June 22	Yucca Mountain Lecture Series (P)	Las Vegas, NV	W. Dixon
Tuesday- Friday, August 17-20	Second International Mixed Waste Symposium	Baltimore, MD	C. Gertz
Sunday, September 26	Children's Discovery Museum	Las Vegas, NV	R. Arnold
Monday- Wednesday, September 27-29	Industrial & Engineering Chemistry Division Symposium	Atlanta, GA	C. Gertz
<u>Date</u>	<u>Event</u>	<u>Location</u>	
H. <u>Exhibits Scheduled</u>			
Thursday- Sunday, April 15-18	Clark County Fair (P)	Logandale, NV	
Sunday- Wednesday, April 18-21	B&W Fuel Company Industry Conference	Williamsburg, VA	
Saturday, April 24	Public Open House (P)	Las Vegas, NV	
Saturday, April 24	Earth Day/Earth Fair	Las Vegas, NV	
Sunday- Wednesday, April 25-28	American Association of Petroleum Geologists	New Orleans, LA	

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<u>Date</u>	<u>Event</u>	<u>Location</u>
H. <u>Exhibits Scheduled</u> (Continued)		
Monday-Friday, April 26-30	International High-Level Radioactive Waste Management Conference	Las Vegas, NV
Tuesday, May 4	American Nuclear Energy Council (ANEC)	Washington, DC
Monday, May 10	Public Update Meeting (P)	Las Vegas, NV
Tuesday, May 11	Public Update Meeting (P)	Beatty, NV
Thursday, May 13	Public Update Meeting (P)	Reno, NV
Wednesday, May 19	Public Open House (P)	Las Vegas, NV
Wednesday-Friday, May 19-21	Geological Society of America 1993 Combined Cordilleran & Rocky Mountain Section Meeting	Reno, NV
Saturday, June 19	Public Open House (P)	Las Vegas, NV
Saturday, July 24	Public Open House (P)	Las Vegas, NV
Saturday, August 21	Public Open House (P)	Las Vegas, NV
Saturday, September 25	Public Open House (P)	Las Vegas, NV

<u>Date</u>	<u>Event</u>	<u>Escorts</u>
I. <u>Tours Scheduled</u>		
Tuesday, April 6	Desert Newcomers	TBD
Tuesday, April 6	Barry Gale and Andrew Gray, DOE/HQ	TBD

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<u>Date</u>	<u>Event</u>	<u>Escorts</u>
I. <u>Tours Scheduled</u> (Continued)		
Wednesday, April 7	Mineral County	TBD
Thursday, April 8	ANEC	TBD
Tuesday, April 13	Kenny Guinn Junior High School	TBD
Friday, April 16	Our Lady of Las Vegas	TBD
Friday, April 16	University of Nevada, Reno- Mackey School of Mines	M. Powell
Monday, April 19	NWTRB	TBD
Tuesday, April 20	Round Mountain High School	TBD
Friday, April 23	OCRWM Field Test Teachers	TBD
Saturday, April 24	Public Open House (P)	Various Escorts
Monday, April 26	High-Level Waste (HLW) Conference	TBD
Monday, April 26	Hydrology Field Trip	A. Flint
Tuesday, April 27	HLW Conference Spouses	TBD
Thursday, April 29	Lander County	C. Binzer
Saturday, May 1	Teacher Workshop and Occidental College	M. Powell A. Gil
Monday May 3	Institute of Shaft Drilling Technology	TBD

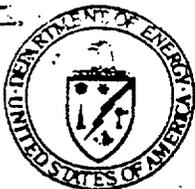
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<u>Date</u>	<u>Event</u>	<u>Escorts</u>
I. <u>Tours Scheduled</u> (Continued)		
Wednesday, May 5	USGS Headquarters	B. Craig
Thursday, May 6	Pahrump Junior High	TBD
Monday, May 10	Los Alamos	TBD
Monday, May 10	DOE Contractor Classification Officers Meeting	TBD
Friday, May 14	National Association of Regulatory Utility Commissioners	TBD
Wednesday, May 19	Public Open House (P)	Various Escorts
Saturday, June 19	Public Open House (P)	Various Escorts
Monday, June 21	Girl Scouts Wider Opportunity Program	TBD
Saturday, July 24	Public Open House (P)	Various Escorts
Tuesday, August 17	Senior Tripsters	TBD
Saturday, August 21	Public Open House (P)	Various Escorts
Saturday, September 25	Public Open House (P)	Various Escorts


 Carl P. Gertz
 Project Manager

YMP:VFI- 3518



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

WBS 1.2.6

QA: N/A

OCT 10 1991

Richard L. Bullock
Technical Project Officer
for Yucca Mountain
Site Characterization Project
Raytheon Services Nevada
101 Convention Center Drive
Phase II, Suite P-250
M/S 519
Las Vegas, NV 89109

DATE AUTHENTICATED _____

AUTHENTICATED _____

- TITLE/SUBJECT ACCEPTABLE AS IS
 OTHER TITLE/SUBJECT (PLACE ON RECORD)
 COPY TO YMP CRF

FILE CODE _____

TOTAL NO. OF PAGES _____

REVISED ELEVATION OF THE EXPLORATORY STUDIES FACILITY (ESF)/POTENTIAL
REPOSITORY INTERFACE DRAWINGS

Based on the two enclosures, please have the elevation of the north ESF main test level raised by approximately 42.4 meters (140 feet) as input to engineering calculations to determine the fit of all related items in the ESF Title I drawings and the ESF/repository interface drawings. Also, needed, are the input calculations to generate new drawings, where required. Please note that wherever a change in any drawing or text appears due to this change, it must be annotated as a discrepancy from the baseline and subject to validation from the field testing program or otherwise. Any necessary design "holds" should also be noted and activated. In addition, you are requested to provide for the analysis (trade study) which provides the basis for this change. Justification for this and any other change to Revision 1 of the Design Summary Report must be provided to and approved by the Yucca Mountain Site Characterization Project Office Change Control Board prior to construction.

If you require further information or have any questions, please contact Michael O. Cloninger at 794-7847.

Edgar H. Petrie, Acting Director
Engineering & Development Division

EDD:MOC-177

Enclosures:

1. YMP Record of Verbal
Communication
2. Ltr 9/13/91 Blejwas to Petrie

cc w/encls:

T. E. Blejwas, SNL, 6310, Albuquerque, NM
J. K. Clark, TESS, Las Vegas, NV
R. F. Pritchett, REECO, Las Vegas, NV



Raytheon Services Nevada

DATE: 09-16-91
 TIME: 11:15 a.m.

YMP RECORD OF VERBAL COMMUNICATION

FROM: M. O. Cloninger of DOE/YMP
 TO: B. T. Stanley of RSN
 SUBJECT: Revised Elevation of the ESF/Potential Repository
Interface Drawings

- By Telephone
- By Radio
- In Person

Received the following: INSTRUCTIONS AUTHORIZATION INFORMATION

Issued the following:

REF: Sandia National Laboratory (SNL) letter, LES: 6310A, to Edgar H. Pietrie, from T. E. Blejwas, preliminary draft, undated.

As per our conversation, based on the information contained in the above-referenced letter, the A/E will select an initial elevation increase of 140 feet for the TS North Ramp entry into the proposed repository boundary. This will raise the elevation from the current 3,100 feet to a new value of 3,240 feet. Repository interface drawings will be revised accordingly. It is recognized that this is a preliminary assumption, and is subject to future refinement resulting from engineering changes and/or field validation.

ACTION COPIES	DRC Files	SIGN OFF & DATE
Brian Lawrence/PBQD		DOE <u>M. O. Cloninger 09/16/91</u>
		USER <u>B. T. Stanley 9-16-91</u>
		REECO
		RSN
		OTHER
DISTRIBUTION		OTHER
R. L. Bullock		OTHER
J. D. Grenia		OTHER

Sandia National Laboratories

Albuquerque, New Mexico 87185

SEP 13 1991

WBS 12147

QA: NA

Edgar H. Petrie, Acting Director
Engineering & Development Division
Yucca Mountain Site Characterization
Project Office
U.S. Department of Energy
P.O. Box 98608
Las Vegas, NV 89193-8608

Dear Ted:

Subject: Preliminary Recommendation for the Revised Elevation at the
Transition Between the Exploratory Study Facility (ESF) TS North
Ramp and the Main Test Level

A meeting was held September 4 at Raytheon Services Nevada (RSN) to develop a preliminary recommendation for the floor elevation of the ESF and potential repository at the point of transition from ESF TS North Ramp to the main test level (see Attachment 1 for list of attendees). The evaluation was conducted using the revised elevations for the TSw1/TSw2 contact provided by the Sample Overview Committee (see Table 1) and the IGIS products constructed using this revised interpretation of existing core. The principal criteria applied for selecting the revised elevation were: (1) to consider the performance and engineering implications of changing the elevation, as detailed in the ESF-Alternatives Study (ESF-AS) Report; (2) to ensure the capability to maintain flexibility throughout the ESF design process so that the repository design features considered in the ESF-AS would not be precluded from incorporation into a future potential repository design; and (3) the transition between the access and main test level would occur in TSw2.

The evaluation resulted in a preliminary recommendation for the excavation limits at the transition that ranges from a maximum elevation of 3281' to a minimum elevation of 3100' (Table 1). All members of the evaluation team concurred that a range is preferred at this time to allow flexibility in design. The maximum elevation was established using the guidelines in Rautman et al (1987; SAND86-2157) and the Reference Information Base (Section 2.3.1) for the boundaries of the underground facility (i.e., 5m beyond the mined openings). The minimum elevation is based on the elevation proposed in the SCP-CDR (MacDougall et al; 1987; SAND84-2641). The range is intended to allow a design that incorporates the conclusions in the ESF-AS as they relate to performance (i.e., a thicker section overlying the water table and the ability to adequately isolate major structural features) and to design (i.e., minimize grades, proceed with a single-level or multiple-level ESF). This is intended as a preliminary recommendation which may change as the Title II design proceeds and as

E. H. Petrie

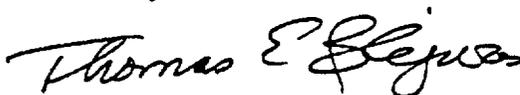
-2-

confirmatory drilling is conducted to better delineate the exact elevation of the TSw1/TSw2 contact at the north transition. It is important to recognize that additional repository design studies will need to be conducted before a final transition elevation can be selected. This is necessary to ensure that any future repository design will properly interface with the elements constructed as part of the ESF.

In addition, we have identified two borehole locations that would provide important data to better refine this elevation (see Attachment 2). One borehole is located in the north, one borehole is located in the south, each helping to define the elevation for the transition between ESF accesses and the main test level. We will continue to work with the Site Investigations Branch to integrate our requests for "confirmatory" information with their scheduled drilling program.

As new site characterization data become available we will continue to refine and update the IGIS models incorporating the TSw1/TSw2 units and to interact with the design team to prepare a final recommendation for the main test floor elevation. If you have any questions please contact L. E. Shephard (FTS 844-3604).

Sincerely,



Thomas E. Blejwas
Technical Project Officer
Yucca Mountain Project

LES:6310A:es

Attachments as stated

Copy to:

YMP	M. O. Cloninger	RSN	Bruce Stanley
YMP	J. M. White	RSN	B. Kennedy
YMP	J. R. Dyer	RSN	D. Coppage
YMP	D. Dobson	SAIC	B. Simecka
YMP	D. Williams	SAIC	J. Weaver
M&O	J. McCleary	TMSS	J. D. Waddell
M&O	K. Bhattacharyya	6310	T. E. Blejwas, Actg.
M&O	J. Clark	6310A	L. E. Shephard
M&O	D. Schutt	6313	M. L. Jones
PB	J. B. Copeland	6313	L. S. Costin
PB	B. W. Lawrence	6315	C. A. Rautman

**Table 1: Summary of Information Used to
Support Preliminary Recommendation for
Transition Elevation Between ESF Access 1
and the Main Test Level**

- Revised Elevation of TSW1/TSW2 3298 feet
Contact at Transition Based on
Sample Overview Committee Input
(IGIS Product SAN0022)

- Maximum Elevation for Transition 3281 feet
that coincides with Elevation of
the proposed boundary of the
Underground Facility using
guidelines, Rautman et al. (1987)
and the Reference Information Base
(Section 2.1.3; page 1 of 4).

- Elevation of Potential Repository 3100 feet
Floor specified in SCP-CDR at
Point 5 (Reference SAND84-2641;
Figure 4-26).



Science Applications International Corporation

WBS #1.2.3

QA: N/A

May 15, 1991

David C. Dobson, YMP, NV
J. Russell Dyer, YMP, NV

CORE EVALUATION TO DETERMINE CONTACTS BETWEEN THERMAL-MECHANICAL UNITS TSW1 AND TSW2

Reference: (1) Letter, Gertz to TPOs, dtd. 4/23/91
(2) Letter, Clanton to SOC Members, dtd. 4/29/91

The evaluation of core was undertaken as part of the regularly scheduled Sample Overview Committee Meeting held at the Sample Management Facility on May 7, 1991. The criteria under which the evaluation was performed are shown in Enclosure 1.

The following people served as core evaluators: Chris Rautman, Sandia National Laboratories (SNL); David Vaniman, Los Alamos National Laboratory (LANL); Rick Spengler, U.S. Geological Survey (USGS); Uel S. Clanton, Department of Energy, Yucca Mountain Site Characterization Project (DOE/YMP); and John Peck, Technical and Management Support Services/Science Applications International Corporation (T&MSS/SAIC). The following people served as observers during the evaluation:

Stephen Bolivar, LANL
Albert C. Williams, DOE-Quality Assurance
W. Arch Girdley, DOE/YMP
Donna Sinks, T&MSS/SAIC
Jim McCormick, Raytheon Services Nevada
John Davis, T&MSS/SAIC
Robert Saunders, T&MSS/Westinghouse
Chris Lewis, T&MSS/Harza
Wunan Lin, Lawrence Livermore National Laboratory
John A. Hartley, T&MSS/Harza
Chris Weiss, T&MSS/SAIC

Core from the following boreholes was examined during the evaluation: UE25-a#1, UE25-a#7, USW G-4, USW GU-3, and USW G-1. Core which spanned the contact intervals previously designated by SNL (Ortiz et al., 1985) for units TSW1 and TSW2 was examined as well as contacts defined by the USGS (numerous reports) between the upper lithophysal and middle non-lithophysal units of the Topopah Spring Member of the Paintbrush Tuff. The evaluation showed

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clearly that contacts chosen by Ortiz et al. (1985) from interpretation of borehole logs in two boreholes (USW G-1 and UE25-a#1) were not stratigraphically consistent with contacts chosen in other boreholes or in outcrop. The evaluation further determined that the contact between the upper lithophysal and middle non-lithophysal units of the Topopah Spring Member is readily recognizable in all the boreholes examined and is coincident with the contact between the TSw1 and TSw2 units chosen by Ortiz et al. except for those two holes mentioned previously.

The evaluators were asked to independently choose the contact depth in all five boreholes for the contact between the upper lithophysal and middle non-lithophysal units. This contact is recommended by the evaluation team to be recognized as the contact between thermal-mechanical units TSw1 and TSw2. The tabulation below gives the depth and elevation of the contact in each borehole established by consensus of the evaluators.

BOREHOLE	DEPTH	ELEVATION
UE25-a#1	650 ft	3314 ft
UE25-a#7	775 ft*	3308 ft**
USW G-4	680 ft	3487 ft
USW GJ3	720 ft***	4137 ft
	690 ft***	4167 ft
USW G-1	715 ft	3634 ft

*depth in borehole not corrected for true vertical depth (borehole drilled at 26 degree angle from vertical)

**true elevation corrected for 26 degree angle

***two contacts chosen to envelope a 30-ft transition zone (both values to be used to check model sensitivity)

Elevations were derived by subtracting the depth from ground elevations recorded in Fenix and Scisson, Inc. report DOE/NV/10322-24, 1987 for the five boreholes from which core was examined.

The evaluation team concluded that the contact of the TSw1/TSw2 units is a consistent lithologic contact. It is easily recognized in the core samples, is correlatable across the repository block from north to south and from west to east, and corresponds to the lithologic contact recognized by the USGS as the base of the upper lithophysal unit of the Topopah Spring Member. It meets the criteria used for the evaluation.

We recommend that the elevations of the contact determined by the evaluation team be used by SNL as revised input to its three-dimensional model of reference thermal-mechanical stratigraphy at Yucca Mountain.

This evaluation was carried out under BTP-RSE-001. The disclaimer in Enclosure 1 needs to be made a part of the record wherever the data resulting from this evaluation are used.



John M. Peck, Responsible Staff Member



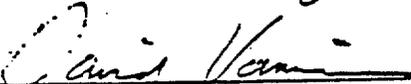
Uel S. Stanton, Evaluator



Chris Rautman, Evaluator



Rick Spengler, Evaluator



David Vaniman, Evaluator

JHP-BP-L91-9642

4. RESULTS OF EVALUATION

QUANTITATIVE ESTIMATES OF ROCK PROPERTIES SUCH AS COMPETENCE, DEGREE OF FRACTURING, DENSITY, HARDNESS, RELATIVE ABUNDANCE OF VOID SPACE, ETC. MAY BE USED AS SUPPORTIVE EVIDENCE TO LOCATE THE CONTACT, BUT THE CONTACT PLACEMENT SHALL BE MADE USING SPECIFIC VISUAL FEATURES WHICH CAN BE CORRELATED FROM CORE TO CORE

ESTABLISHMENT OF THE CONTACT CHOSEN IDENTIFIABLE ONLY THROUGH LABORATORY ANALYSIS SHALL NOT BE USED IN THE MINERALOGICAL FEATURES, MICROSTRUCTURE, OR OTHER CHARACTERISTICS

THE CONTACT CHOSEN MUST BE ABLE TO BE DEFINED CONSISTENTLY AMONG THE FOUR BOREHOLES ON VISUALLY IDENTIFIABLE FEATURES READILY APPARENT TO ALL EVALUATORS

THE CONTACT CHOSEN MUST HAVE A CONSISTENT AND RECOGNIZABLE STRATIGRAPHIC RELATIONSHIP TO UNIT CONTACTS DEFINED BY THE USGS

THE CONTACT CHOSEN MUST BE CONSISTENT WITH CRITERIA USED PREVIOUSLY BY SANDIA FOR CHOOSING CONTACTS

3. CRITERIA

CORE FROM THE FOUR BOREHOLES WILL BE EXAMINED BY THE EVALUATORS TO VERIFY CONTACTS CHOSEN PREVIOUSLY AND REACH CONSENSUS ON THE PLACEMENT OF THE CONTACT BETWEEN UNITS TSW1 AND TSW2 USING THE BACKGROUND INFORMATION AS BASIS FOR THE CHOICE OF CONTACT.

A ROUNDABLE DISCUSSION WILL SERVE TO CLARIFY THE DIFFERENCES, IF ANY, BETWEEN DEFINITION OF CONTACTS CHOSEN BY THE USGS FOR STRATIGRAPHIC PURPOSES AND CONTACTS CHOSEN BY SANDIA FOR MODELING AND ENGINEERING PURPOSES

A SHORT PRESENTATION WILL BE GIVEN BY A USGS REPRESENTATIVE REGARDING THE STRATIGRAPHIC SUBDIVISIONS OF THE TOPPAH SPRINGS BASED ON USGS STUDIES AND THE RECOGNITION OF CONTACTS AMONG THOSE UNITS

A SHORT PRESENTATION WILL BE GIVEN BY THE SANDIA REPRESENTATIVE REGARDING THE DEFINITION OF THERMAL-MECHANICAL UNITS OF THE TOPPAH SPRINGS STRATIGRAPHIC UNIT AS BACKGROUND INFORMATION.

2. APPROACH

THE PURPOSE OF THIS EVALUATION IS TO REACH CONSENSUS ON THE PLACEMENT OF THE CONTACT BETWEEN THERMAL-MECHANICAL UNITS TSW1 AND TSW2 IN FOUR BOREHOLES WHICH HAVE CORE AVAILABLE TO OBSERVE IN THE STRATIGRAPHIC INTERVAL IN QUESTION

1. PURPOSE

CRITERIA FOR EVALUATION

CORE EVALUATION MEETING
MAY 7, 1989

THE CONTACT EVALUATION SHOULD RESULT IN A CONSENSUS CONCERNING THE LOCATION OF THE CONTACT BETWEEN TSW1 AND TSW2. THE POSITION OF THE POTENTIAL REPOSITORY HORIZON WITHIN THE TWS2 UNIT WILL BE REEVALUATED BY SANDIA BASED ON THE RESULTS OF THE EVALUATION. THE RESULTS WILL BE DOCUMENTED AND SENT TO SANDIA AS INPUT FOR RECOMMENDING A POTENTIAL REPOSITORY HORIZON.

NOTE: IT IS RECOGNIZED THAT THE CORE BEING EXAMINED IS NOT QUALIFIED FOR USE IN A LICENSING PROCESS. HOWEVER, THE RESULTS OF CORE EXAMINATION SHALL BE DEEMED AS CORROBRATIVE EVIDENCE WHICH MAY BE USED IN DEFINING PRELIMINARY RECOMMENDATIONS SUBJECT TO LATER VERIFICATION. ALL ELEVATIONS OF CONTACTS DETERMINED BY THIS EVALUATION SHOULD BE CONSIDERED APPROXIMATE ONLY, PROBABLY WITHIN A RANGE OF PLUS OR MINUS 10 FEET.