

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

MEMO FOR: Joseph Holonich, Director

HLPD

FROM:

Philip S. Justus, Sr. On-site Licensing Rep.

HLPD

DATE:

SEPTEMBER 20, 1993

SUBJECT: REPORT ON

REPORT ON MONTHLY MEETING OF YUCCA MOUNTAIN PROJECT

PROJECT MANAGERS AND TECHNICAL PROJECT OFFICERS (TPO)

HELD IN LAS VEGAS, NV 17 SEPTEMBER 1993

To expedite transmittal to HQ of information received by ORs at TPO meetings, from time to time, I'll package the meeting handouts and send them separately from my monthly reports. This report reflects discussions held and OR's observations of the TPO Meeting presentations. The Agenda (Enclosure 1) shows the order of presentations.

- 1) PROJECT STATUS REPORT HIGHLIGHTS C.GERTZ (Enclosure 2)
 - * TBM will operate on 2 shifts in FY94, 3 in FY95
 - * TBM Step 1- April94: start assembling front end of TBM train at North Portal pad
 - * TBM Step 2- 'Walk' front end of train into starter tunnel, set it up, test it; begin assembling rest of train
 - * TBM Step 3- July94: start boring, mucking, mapping from platform; complete assembling TBM train elements on pad
 - * TBM Step 4- Hookup entire TBM train in tunnel
 - * TBM Step 5- September94: continue boring, mucking, mapping to Bow Ridge Fault, about 650 ft underground by end of FY94
 - * TBM Step 6- Hookup conveyor system; continue boring. mucking, mapping
 - * TBM Step 7- FY95 three shifts; about 2000 ft excavated by end of 1st qtr FY95 (incl. 200 ft starter tunnel).
- 2) ESF STATUS REPORT HIGHLIGHTS Wm.SIMECKA (Enclosure 3)
 - * Completed 61m (200 ft) starter tunnel 9/9/93
 - * Complete drainage channel above highwall by 9/30/93
 - * Start test alcove at 140 ft., north side by 9/30/93
 - * TBM work stops if alcoves excavated by drill & blast, but newly invented cutters might allow machine excavation of alcoves simultaneously with tunnel

230028

9309240243 930920 PDR WASTE Executade Pareso ON JAKET 9/17/93 TPO MTG WM-11 /

- 3) SBT STATUS REPORT HIGHLIGHTS R.DYER (Enclosure 4)
 - * C-Well pad on hold for clean up old hydrocarbon spills
 - * Completed geologic mapping, photography, sampling 9/10/93
 - * Tests in first alcove described in 8.3.1.2.2.4. Radial BH tests to be conducted in rear, hydrochemical tests nearer main tunnel
 - * Completed unsaturated zone infiltration BHs 8/27/93
 - * Completed UZ-16 geophysics logging 8/93
 - * Completed 4 trenches in Solitario Canyon 8/31/93; mapping underway
 - * Ghost Dance Fault excavation along Antler Ridge not feasible by ripping, going to pavement clearing methods
 - * New shallow seismic reflection survey planned to cross Ghost Dance Fault from near WT-2 to UZ-16, FY94
 - * Planning 3 NRG-8 BHs
 - * Nine Study Plans are in DHLWM for review, currently.
- 4) FRAN RIDGE LARGE BLOCK EXPERIMENT REPORT HIGHLIGHTS W.L.Clarke (unscheduled LLNL Video shown, no handouts)
 - * Video of walls of 4ft \times 4.5ft \times ^2in saw test-cuts at Fran Ridge affirmed feasibility of method and conductivity of existing fractures.
- 5) THERMAL LOADING STUDY STATUS S.SATTERLY (Enclosure 5)
 - * Delayed report from 9/93 to 12/93 that will discuss narrowing options of thermal loading, i.e., what is too hot, what is too cold.
- 6) 801 COMMITTEE INTERACTIONS STATUS R.DYER (Enclosure 6)
 - * DOE expects to have draft of its input positions 10/15/93
- 7) UZ-14 FLUIDS STUDY STATUS R.LUCKEY (Enclosure 7)
 - * Fluid encountered at 1256.6-1258.5ft on 7/30/93 has a component (polymer drilling fluid mixed with J-13 water) that was introduced in BH G-1 1000ft southeast of UZ-14 in Mar-Aug 1980 when 2.4 million gallons were 'lost' in the hole
 - * Fluid encountered at 1256.6-1258.5ft is same as fluid in UZ-1, about 90 ft from UZ-14, encountered in UZ-1 in Apr-Jul 1983 at 1256ft depth
 - * Fluids in UZ-14 could be either: a) G-1 drilling fluid only; b) G-1 drilling fluid-contaminated perched water; c) G-1 drilling fluid-contaminated water table water
 - * Grouted UZ-14 leaky interval with concrete; continuing drilling TD=2000ft; continue to analyze water, esp. C14
- * Transmissivity of leaky zone ranges from 6-10ft-squared/dy Enclosures: As stated

AGENDA

YUCCA MOUNTAIN PROJECT - PROJECT MANAGER'S/TPO MEETING SEPTEMBER 17, 1993, FRIDAY **SAIC CONFERENCE ROOM 450**

TIME	WHAT	WHO	EXPECTED OUTCOME
9:00-9:15	Welcome & Introductions o Review Agenda	C. Gertz	
9:15-10:00	Status of Yucca Mountain Site Characterization Project	C. Gertz	Understand Current Status of Program and Project
10:00-10:15	Status of Design and Construction Effort Supporting the Exploratory Studies Facility (ESF)	W. Simecka	Understand Current Status of ESF Design and Construction Effort
10:15-10:30	Status of Site Characterization Testing Program and Preparation and Approval of Study Plans(SPs)	R. Dyer	Understand Current Status of Testing Program and SPs
10:30-10:45	BREAK		
10:45-11:00	Status of Mined Geological Disposal System (MGDS) Thermal Loading Study	W. Simecka	Focus the Range of MGDS Thermal Loading Options
11:00-11:15	Status of Interactions With the National Academy of Sciences (NAS) on the Energy Policy Act of 1992, Section 801, Nuclear Waste Disposal	R. Dyer	Understand Current Status of Interactions With the NAS
11:15-11:30	Current Understanding of Water Encountered During Drilling of the UZ-14 Drillhole	R. Luckey	Updated Information on Water Found in the UZ-14 Drillhole
11:30	ADJOURN FOR LUNCH		

all: W.L. Clarke LLNL ON LBE

Nach Meth Mether Ath 9/20/93.

TPO MEETING

PRESENTED BY

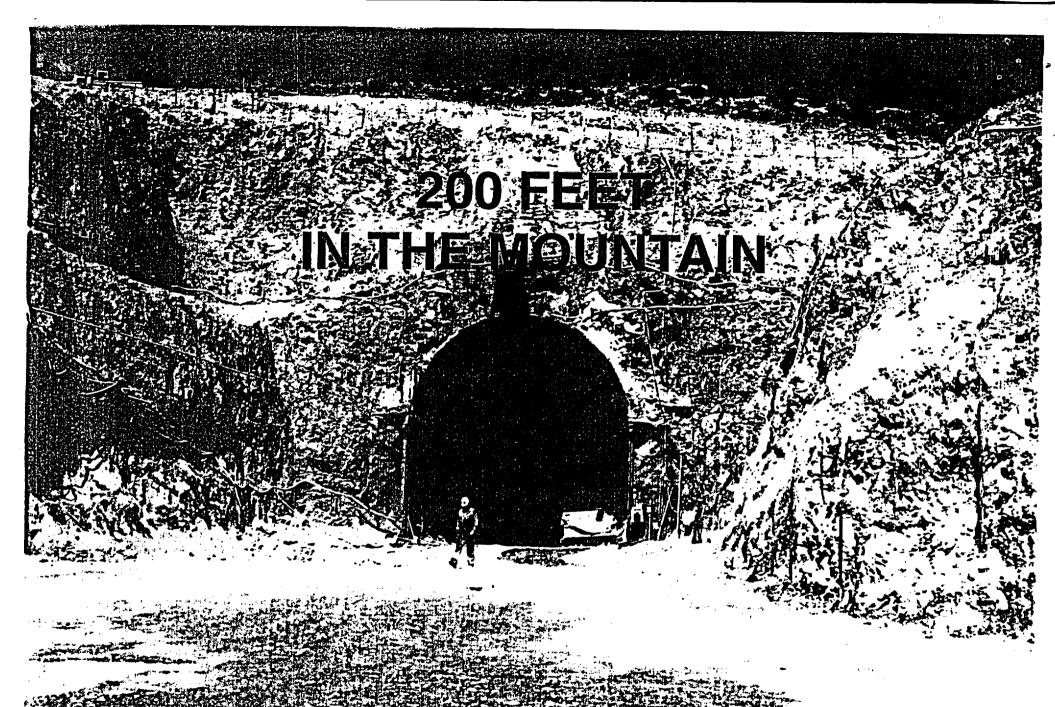
CARL GERTZ PROJECT MANAGER

SEPTEMBER 17, 1993

102

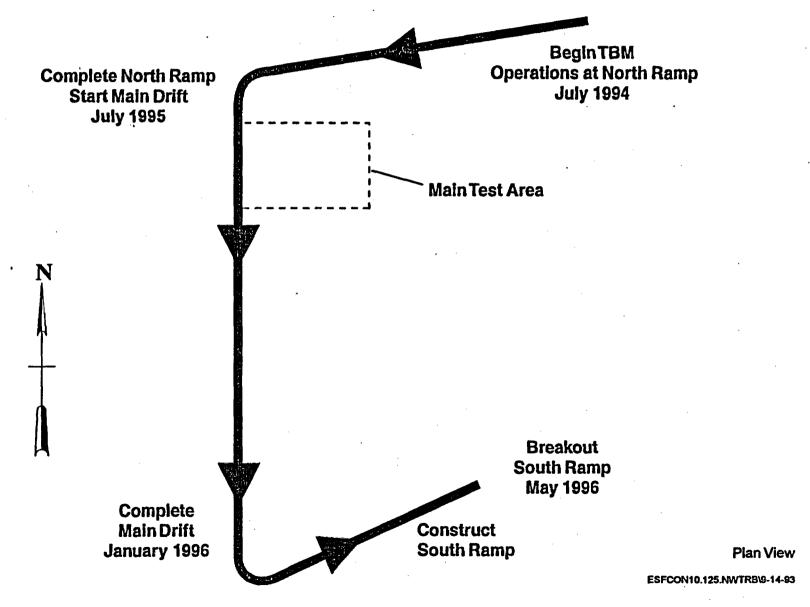
TPO AGENDA

- 200 ft in the mountain
- New Work Summary
- Budget Hearing
- FY94 Workscope and Priorities
- News Release
- 8/10/93 Stakeholder's Meeting
- Edison Electric Institute (EEI) 9/15/93
- 801 Meeting
- Progress Report
- HQ & YMP Team Building Activities
- Upcoming Events
- Video



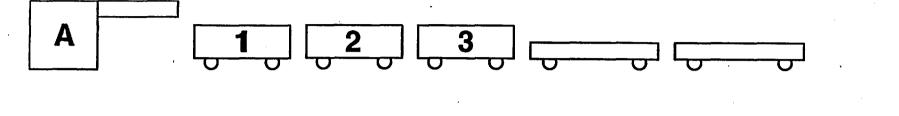
3 WEEKS AHEAD OF SCHEDULE

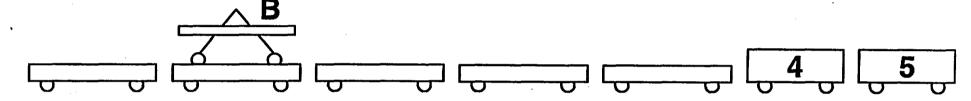
INITIAL 5-MILE RAMP/DRIFT LOOP WILL PROVIDE EARLY SITE SUITABILITY INFORMATION



TBM SETUP & INITIAL OPERATIONS

TBM CONFIGURATION



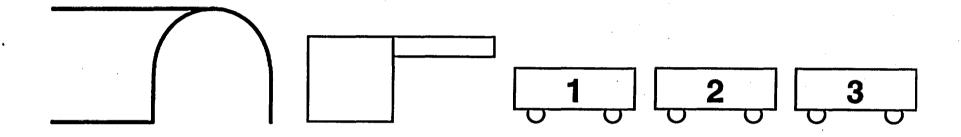


A - Cutter Head

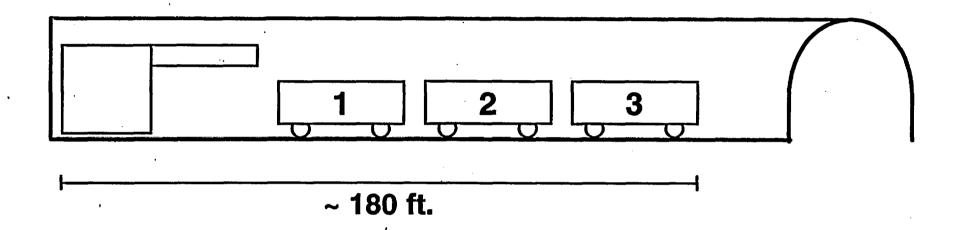
Car # Function/Contents

- 1 Transformers, Spare Cutter Rack,
- 2 Lunch Room, Toilet, First Aid Room
- 3 Shop Area
- B Mapping Platform on Trailing Floor Sections
- 4 Cable Storage, Ventline Cartridge, Conveyor Tailpiece,
- 5 Rock Bolt, and miscellaneous storage

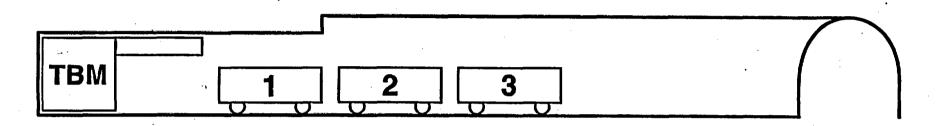
Estimated total length = \sim 450 ft.



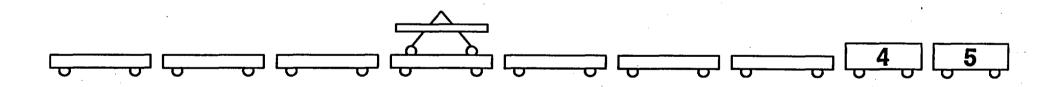
Receive and assemble TBM through car 3 outside portal - 10 weeks (2 shifts)



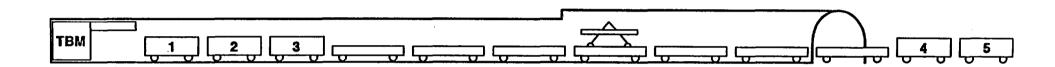
- Walk TBM to face, complete hookups and test
- Start assembly of cars #4, #5 outside of portal



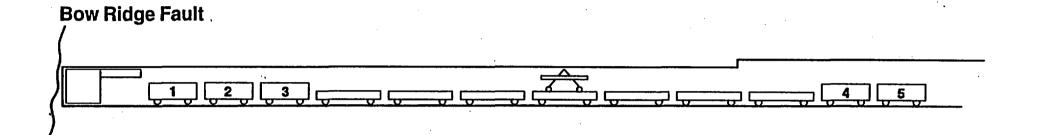
Excavate 100 ft. to station 3 + 00. Muck removal using muck cars



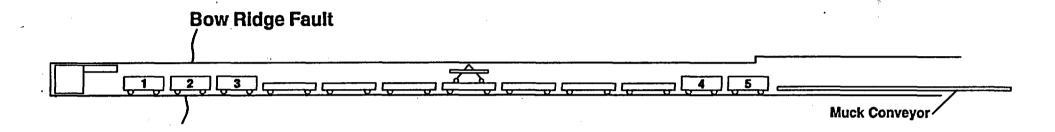
Complete assembly of cars 4, 5, mapping gantry and trailing floor outside of portal



Hookup complete TBM train

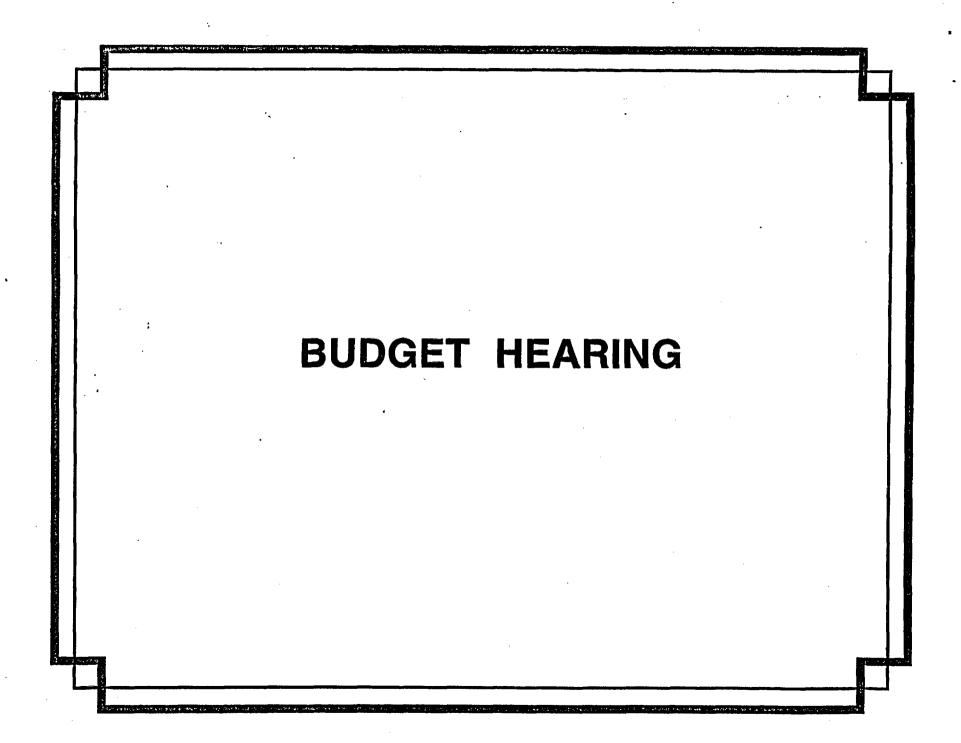


Excavate to station 6 + 20. Muck removal using muck cars



Excavate to station 8 + 50, muck removal using muck cars, hookup conveyor system

- Assume full TBM operations in FY95
- Staged increase to 3 shift operations



BUDGET HEARING

- The full Senate Appropriations Committee is scheduled for the Bill on 9/22/93

Compliance

- Maintain sound worker safety and environmental programs supporting field activities and construction
- Assure continued implementation of QA program through audits & surveillances

(CONTINUED)

Exploratory Studies Facility

- Procure equipment required to start TBM operation: 69kV power line; muck handling system; underground ventilation equipment; stand-by generators & mine power equipment; and TBM service equipment
- Construct ~150 meters in ESF north ramp
- Initiate testing in north ramp
- Procure permanent tracer injection system for service water

(CONTINUED)

FY 1994 Goal

- Get the 25-foot Tunnel Boring Machine (TBM) operational
 - TBM to arrive in April
 - Operation begin in July
 - Debugging and excavating 450 feet by end of September 1994
 - 2000 feet excavated by end of December 1994 (TBM average 50-100 feet per day)

YMP FY 1994 MAJOR DELIVERABLES

	PLANNED PLETION DATE
 Complete design of north ramp (Package 2) 	Mar 1994
 Receive 50-60 truckloads of TBM and TBM support equipme 	nt Apr 1994
Start TBM operations	Jul 1994
Excavate 150 meters of north ramp	Sep 1994
 Complete design of north portal surface facilities (Package 1) Sep 1994
 Complete design of north ramp extension (Package 8B) 	Sep 1994
 Complete 2 UZ holes using LM-300 drill rig 	Sep 1994
• Start Systematic Drilling Program and complete 2 SD boreho	ies Sep 1994
 Complete 1 north ramp and 3 south ramp boreholes 	Sep 1994
 Submit topical report on Seismic Hazard methodology to NR 	C Nov 1993
 Combine Participant 1993 TSPA products into DOE TSPA position document 	Mar 1994

DOE NEWS RELEASE



NEWS

NEWS MEDIA CONTACT: Joanne L. Johnson, 202/586-5810 FOR IMMEDIATE RELEASE September 10, 1993

DR. DANIEL DREYFUS NOMINATED FOR DIRECTOR OF THE OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

President Clinton today nominated Dr. Daniel Dreyfus for the position of Director for the Office of Civilian Radioactive Waste Management at the U.S. Department of Energy. Dreyfus is currently serving as a special assistant to the Secretary of Energy.

Upon Senate confirmation, Dr. Dreyfus will be responsible for the program established by the Congress to oversee the federal responsibility for the long-term storage and ultimate disposal of spent nuclear fuel from commercial powerplants and high level radioactive waste from the operations and cleanup of the nuclear weapons program facilities.

Dr. Dreyfus is currently Special Assistant to the Secretary of Energy. Prior to joining the Secretary's staff, he was Vice President, Strategic Planning and Analysis, for the Gas Research Institute. He also served as President and CEO of Gas Technology Information, Inc. He has held engineering and management positions in industry and in the Executive and Legislative Branches of the federal government, including 14 years as professional staff member and Staff Director of the Senate Committee on Energy and Natural Resources.

Dr. Dreyfus has authored numerous technical reports and papers on natural resources, environmental, and energy topics. He received degrees of Bachelor of Civil Engineering and Master of Engineering Administration from the George Washington University and Doctor of Philosophy from the American University.

Dr. Dreyfus is married to the former Josephine Sime, has five children, and is a resident of McLean, Virginia.

-DOE-

R-93-182

8/10/93 STAKEHOLDER'S MEETING

OCRWM WORKSHOP ON DEVELOPING A CONSULTATIVE PROCESS AUGUST 10, 1993, LAS VEGAS, NEVADA

General Observations

- Approximately 175 stakeholders attended daylong workshop and an additional 75 attended during the evening
- Groups were able to focus on process an identify and recommend a broad range of options (although certainly no consensus was reached on any particular process)
- Participants were pleased that the Department provided this opportunity to involve stakeholders in the process

OCRWM WORKSHOP ON DEVELOPING A CONSULTATIVE PROCESS

(CONTINUED)

Specific comments of Workshop Participants

- A timely response by DOE to stakeholders on how their input was or was not used should be incorporated into all public involvement activities
- Lack of trust and confidence in DOE was expressed. However, it appears there is a willingness to talk and a hopefulness that the new Secretary will bring real change
- Citizen groups stated they believe DOE should conduct these types of meetings on Saturday so that people who work can attend
- Concern widely expressed by citizens groups that they want to be involved in transportation decisions

OCRWM WORKSHOP ON DEVELOPING A CONSULTATIVE PROCESS

(CONTINUED)

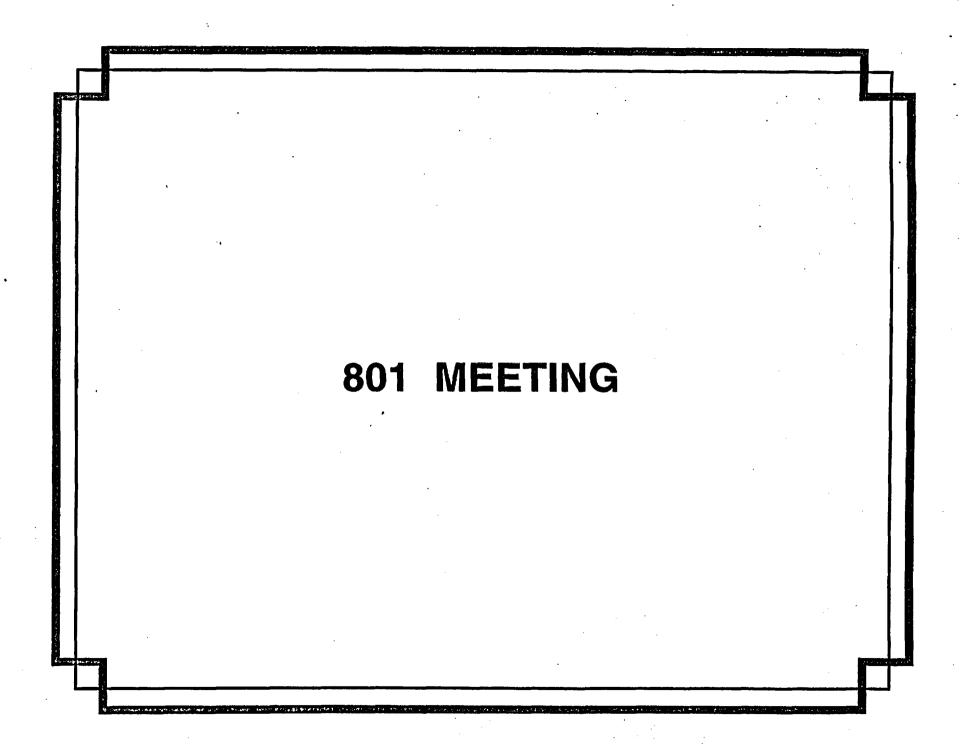
Next Steps and Follow-up

- August 27, Draft summary report to workshop participants
- September 10, Participants comments back
- September 17, Summary Report to Lake Barrett
- September 24, Final Report distributed to workshop participants with cover letter from Lake Barrett

EDISON ELECTRIC INSTITUTE 9/15/93

YUCCA MOUNTAIN AGENDA SEPTEMBER 15, 1993 EEI-HIGH LEVEL WASTE WORKING GROUP MEETING

1:00 - 2:00 pm	Yucca Mountain Policy, Progress, & Politics	C. Gertz
2:00 - 2:15 pm	Progress of Institutional Programs	A. Robison
2:15 - 2:45 pm	Progress of Engineering & Construction Programs	B. Simecka
2:45 - 3:15 pm	Progress on Surface Based and Regulatory Programs	R. Dyer
3:15 - 3:30 pm	Break	
3:30 - 3:45 pm	Progress on Environmental Programs	W. Dixon
3:45 - 4:00 pm	Progress on Project Control	V. lorii
4:00 - 4:10 pm	QA Update	D. Spence
4:10 - 4:25 pm	Progress on Cost Reduction	M. Blanchard
4:25 pm	Open Discussion	All
5:00 pm	Adjourn	All
6:00 pm	Informal Dinner at Jeromes	All



801 MEETING

August 26-27 meeting of the National Academy of Sciences Committee on Technical Bases for Yucca Mountain Standards

- The discussions emphasized the uncertainties inherent in the prediction of health effects to people in the far future.
- Contractors for the Electric Power Research Institute proposed a "probabilistic biosphere" model that would consider various future scenarios and weight calculated doses by the estimated probabilities of those scenarios.
- Some of the NAS committee members expressed considerable interest in an individual radiation dose below which health effects are neglected.
- No consensus emerged among the committee members on the appropriate form for a standard.

PROJECT MANAGER'S PROGRESS REPORT

PROJECT MANAGER'S PROGRESS REPORT - PART 1

- **Identifiers:**
- **Project Title/Number** 1a. Yucca Mountain Site Characterization Project

Reporting Period thru Sept. 1993

- 1c. Managing DOE Field Location Yucca Mountain Project Office (YMPO)
- 1d. Project Sponsor/Program Office Contact Lake H. Barrett, Acting Director, Office of Civilian Radioactive Waste Management
- **Project Manager** Carl P. Gertz. Project Manager Yucca Mountain Site Characterization **Project Office** (702) 794-7920
- **Performing Organizations** Lawrence Livermore National Laboratory Los Alamos National Laboratory Raytheon Services, Nevada Reynolds Electrical & Engineering Co., Inc. Sandia National Laboratories Science Applications International Corporation TRW Environmental Safety Systems, Inc. U.S. Geological Survey

- **Project Manager's Personal Assessment:** 2.
- 2a. Summary Status

Satisfactory



Minor Concern



Major Concern



COST **SCHEDULE** TECHNICAL **OVERALL PROJECT**

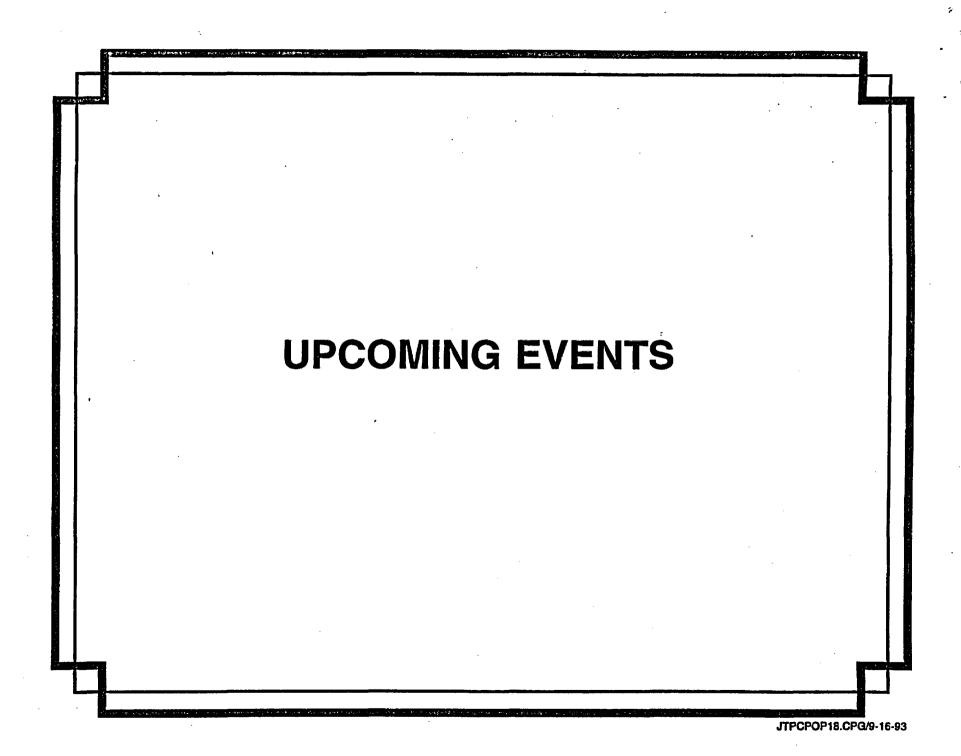


Period



This Period

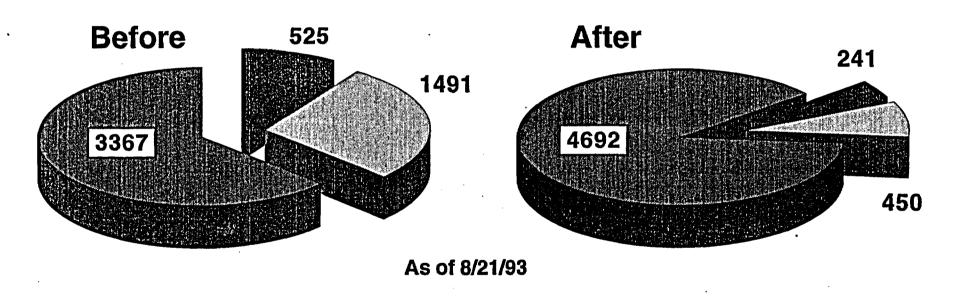
HQ AND YMP TEAM BUILDING ACTIVITIES

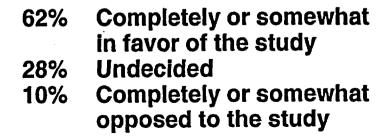


UPCOMING EVENTS

 Nuclear Waste Technical Rev Board (NWTRB) Full Board N Las Vegas, NV 	
 Advisory Council on Nuclear (ACNW) 	Waste 10/28-29/93
 Public Update Meetings 	
- Pahrump	11/8/93
- Las Vegas	11/9/93
- Reno	11/10/93

POST-TOUR SURVEYS REVEALED 88% OF PUBLIC TOUR ATTENDEES FAVOR THE STUDY OF YUCCA MOUNTAIN





88%	Completely or somewhat
	in favor of the study
8%	Undecided
4%	Completely or somewhat
	opposed to the study

YUCCA MOUNTAIN NEWS ITEMS

TODAY'S DATE IS: September 17, 1993

1. WASTE WALK Las Vegas Sun, 9/16/93

NEVADA NEWSPAPER SOURCES:	CIRCULATION:	
Las Vegas Review-Journal	140,500 Daily	208,789 Week
Las Vegas Sun	34,011	208,789
Henderson Home News		16,000
Austin Reese River Reveille		500
Death Valley Gateway Gazette		5,500
Elko Free Daily Press	6,700	
Eureka Sentinel		500
Lincoln County Record		1,500
Mason Valley News		3,850
Moapa Valley Progress		2,800
Pahrump Valley Times		5,500
Record Courier (Gardnerville)	7,000	7,000
Tonopah Times		3,000
Reno Gazette-Journal	67,104	83,490
Carson City Nevada Appeal	11,500	12,520
Sparks Tribune	7,000	10,000
Ely Daily Times	2,392	2,600
Inyo Register		3,000

For further information or assistance please contact: Corey Lieber, Institutional and External Affairs, SAIC, phone (702) 794-7246, FAX (702) 794-7623

■ WASTE WALK - Wanted: 200 walkers to help raise \$10,000 and spread the word that Nevada is not a wasteland. Citizen Alert's fifth annual Walk Against Waste is scheduled from 1 to 3 p.m. Oct. 17 after a noon rally. The 10-kilometer walk-a-thon starts at the Valerie Pida Plaza, north of UNLV's Moyer Student Union. The funds raised will benefit Citizen Alert's educational program about Yucca Mountain, the lone site under study by the Department of Energy as a possible national high-level nuclear dump. Each walker who raises \$15 or more will receive a free T-shirt.

TPO MEETING

STATUS OF ESF

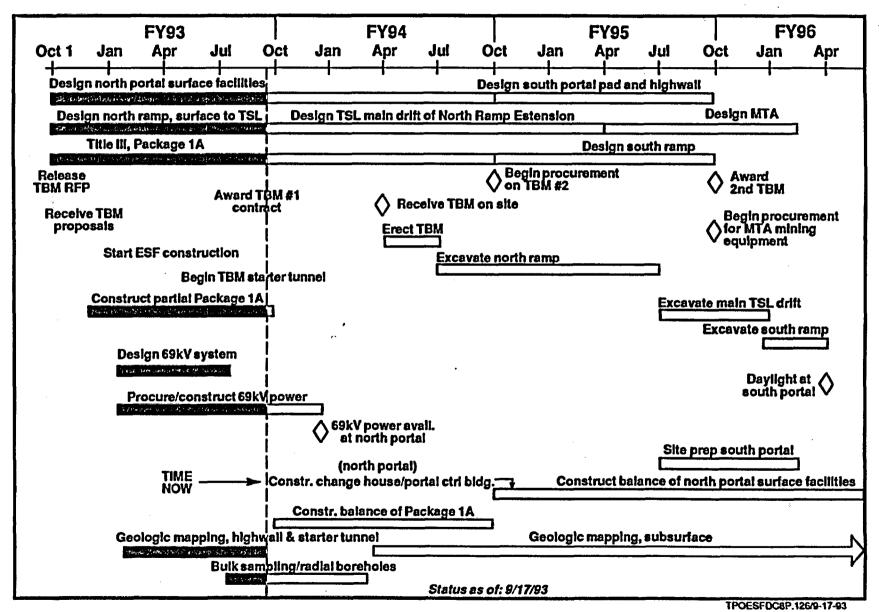
PRESENTED BY

DR. WILLIAM SIMECKA

DIRECTOR, ENGINEERING AND DEVELOPMENT DIVISION YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

SEPTEMBER 17, 1993

PLANNED ESF DESIGN/CONSTRUCTION ACTIVITIES FY 93 - 96



ESF DESIGN MILESTONES

Milestone/Activity	<u>Planned</u>	Expected
Start Title II design activity Packages 1 and 2	10/1/92	10/1/92(A)
Start 50% review, Package 1B	4/12/93	4/12/93(A)
Start 50% review, Package 2	4/22/93	4/19/93(A)
Start 90% review, Package 2A	7/19/93	7/19/93(A)
Start 90% review, Package 1B	8/11/93	8/2/93(A)
Start 90% review, Package 2B	11/15/93	11/15/93(E)
Start 90% review, Package 2C	2/21/94	2/21/94(E)

ESF CONSTRUCTION MILESTONES

Milestone/Activity	<u>Planned</u>	Expected
Submit recommended ESF underground construction subcontractor to DOE for approval (award)	9/15/92	1/29/93(A)
Release TBM RFP	11/16/92	12/16/92(A)
Start ESF site preparation	11/30/92	11/30/92(A)
Hold TBM pre-bid meeting	1/6/93	1/7/93(A)

ESF CONSTRUCTION MILESTONES

(CONTINUED)

Milestone/Activity	<u>Planned</u>	Expected
Receive proposals for 1st TBM	2/9/93	2/9/93(A)
Start excavation of North Ramp starter tunnel	4/2/93	4/2/93(A)
Award TBM contract	4/15/93	5/27/93(A)
Award underground construction contract	10/15/92	8/2/93(A)
Complete 61 meters (200ft) starter tunnel	6/20/93	9/9/93(A) 3 webs a head
Complete excavation of first test alcove	10/29/93	10/29/03(E)

ESF ACCOMPLISHMENTS

- Construction
 - Completed excavation of Starter Tunnel
 - Started construction of 69kV power system
- Design
 - Started 90% Design Review for Package 1B (M&O)

ESF PLANNED ACTIVITIES FOR BALANCE OF FY93

Construction

- Complete installation of ground control in Starter Tunnel
- Initiate excavation of Test Alcove in Starter Tunnel
- Complete drainage channel
- Continue power upgrades to North Portal Pad

Design

- Complete 90% Design Review of Package 1B and commence process to issue package to REECo
- Prepare for 90% Design Review of Package 2B
- Process CR for revised ESF layout

ESF PLANNED ACTIVITIES FY94

- Procure and install water system
- Procure and install sanitary sewer system
- Procure and install subsurface waste system
- Procure and install surface conveyor system
- Prepare partial of muck storage area
- Prepare and install compressed air system
- Prepare and install electrical distribution system
- Upgrade 69kV system
- Erect Switchgear building
- Receive and set up Tunnel Boring Machine

ESF PLANNED ACTIVITIES FY94

(CONTINUED)

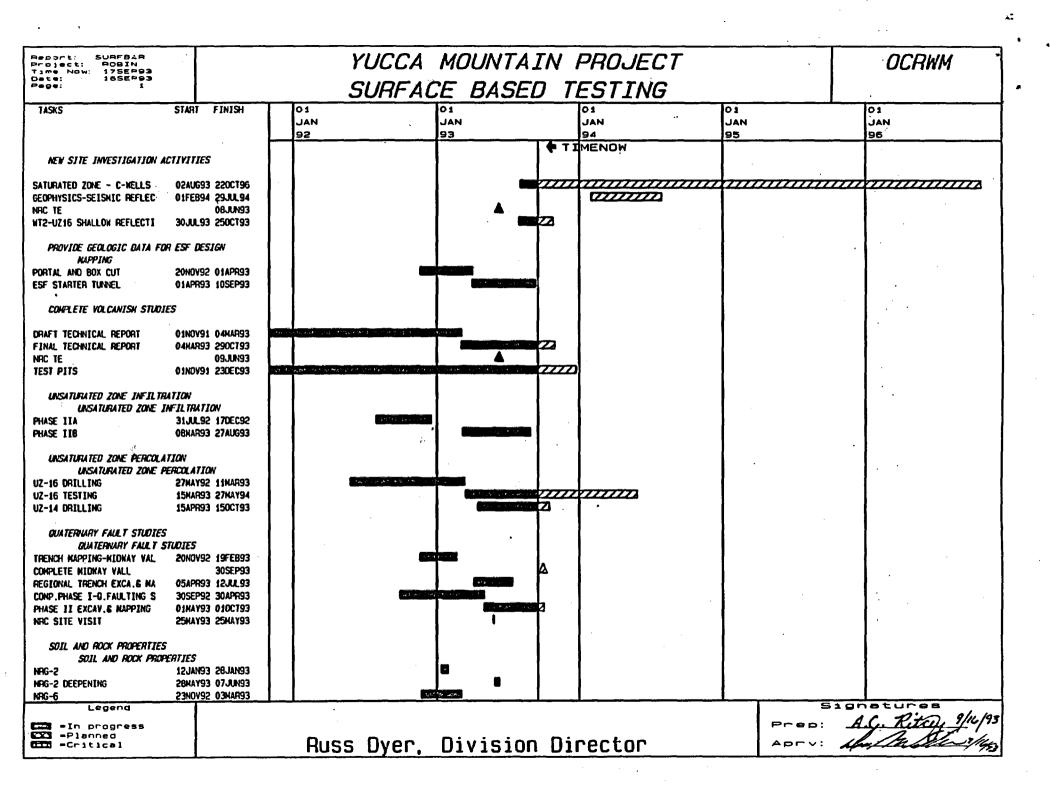
- Bring on Tunnel Boring Machine (TBM) operating contractor
- Operate TBM for approximately 3 months
- Install subsurface utilities
- Procure spares for TBM
- Procure and install rail system
- Complete design of Package 1, 2 and 8B (North Ramp extension)
- Start design of Package 8A (TSL Main Drift)
- Continue design of Integrated Data System (IDS) and install instrumentation
- Continue development of equipment (Colorado School of Mines)

TPO MEETING

FY 93 SEPTEMBER STATUS SURFACE BASED TESTING PROGRAM

PRESENTED BY
DR. J. RUSSELL DYER, DIRECTOR
REGULATORY AND SITE EVALUATION DIVISION

September 17, 1993



YUCCA MOUNTAIN PROJECT SURFBAR ROBIN 175EP93 Report: Project: Time Now: Dete: Page: **OCRWM** SURFACE BASED TESTING TASKS START FINISH JAN JAN JAN JAN JAN 93 92 95 96 TIMENOW NRG-3 **OBMAR93 30NAR93** 20APR93 20NAY93 NRG-5 NRG-5 DEEPENING 28NAY93 09JUN93 12MAY93 21MAY93 NRG-2A 20JUL93 27AUG93 NRG-28 NRG-4 15JUN93 19JUL93 Legend -In progress -Planned Russ Dyer, Division Director Critical

Site Characterization Field Activities in Progress

SCP ACTIVITY	TITLE	ACTIVITY
8.3.1.3.2.1	Mineralogy, Petrology, and Rock Chemistry of Transport Pathways	Outcrop Sampling
8.3.1.3.2.2	Mineralogic and Geochemical Alteration	Outcrop Sampling
8.3.1.4.2.2	Structural Features Within Site Area	Surface & ESF Mapping
8.3.1.8.5.1	Characterization of Volcanic Features	Test pits, Trenching
8.3.1.14.2	Soil and Rock Properties of Potential Location of Surface Facilities	Test pits, trenching, ramp exploration holes
8.3.1.17.4.2	Location and 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 and Meteorological Monitoring for Regional Hydrology	On-going measurements
8.3.1.2.1.2	Runoff and Streamflow	Ongoing measurements

Site Characterization Field Activities in Progress continued

SCP ACTIVITY	TITLE	ACTIVITY
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	CI-36 measurements
8.3.1.2.2.3	Percolation in the Unsaturated Zone	UZ drilling/testing
8.3.1.2.6	Gaseous Phase Movement in the 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	On-going monitoring
8.3.1.2.3.2	Saturated Zone Hydrochemistry	On-going monitoring
8.3.1.15.1.8	In Situ Design Infiltration	Construction monitoring/ testing

C-WELL TESTING Study Plan: 8.3.1.2.3.1

Status: Environmental cleanup of oil spills on pad

continues, hydrocarbon sample analysis in

progress

Preparation of pad prior to packer installations

and open hole testing (Phase I) on hold until

environmental cleanup is complete

Concerns: Resolution of National Electrical Code

concerns on pump grounding and wiring

Planned Activities: USGS letter on pump concerns received

Undertake actions on pump based on resolution

of NEC concerns

GEOPHYSICAL REFLECTION SURVEY SP: 8.3.1.4.2.1

Planned start date:

Postponed to FY 1994

Status:

Contract bids came in over budget; activity

postponed to FY 1994

Concerns:

Ability to develop RFP for FY 1994

contract as soon as possible; availability of funds in FY 94

Solutions:

Encourage USGS to expedite development of RFP; identify additional FY 1994 funds for seismic line,

address impacts of potential test delay

ESF TESTING

Status:

All phases of excavation completed to approximate Station 1+94 as of September 10, 1993

Geologic mapping, photography, line surveys and sampling were completed September 10, 1993. Grouting of rockbolts in progress.

Selection of Starter Tunnel Testing Alcove at Station 1 + 40

Planned Activities:

- Planning Underway
 Hydrochemistry Tests in the ESF
 Radial Borehole Tests in the ESF

 - Hydrologic Properties of Major Faults Encountered in the ESF

EXAMPLE OF SAMPLE LOCATION TRACKING IN THE ESF

Date	Location	Sample Number	Participant
9/9/93	Left Rib CS 1+12 - CS 1+16, 3 feet above invert	SPC 00501000	S. Levy
9/9/93	Right Rib CS 0+86, 12 feet above invert	SPC 00500783	Vaniman
9/9/93	Left Rib CS 0+81, 3 feet above invert	SPC 00500784	Vaniman
9/10/93	Left Rib CS 1+53.5, 5 feet above invert	SPC 00500793	S. Levy
9/10/93	Right Rib CS 1+05, 2 feet above invert	SPC 00500794	Carlos
9/10/93	Right Rib CS 1+80, 3 feet above invert	SPC 00500795	Beason
9/10/93	Left Rib CS 1+44, 1-2 feet above invert	SPC 00500796	S. Levy
9/10/93	Face Rib CS 1+95, 7 feet above invert	SPC 00500797	J. Whelan
9/10/93	Face Rib CS 1+95, 7 feet above invert	SPC 00500800	Vaniman

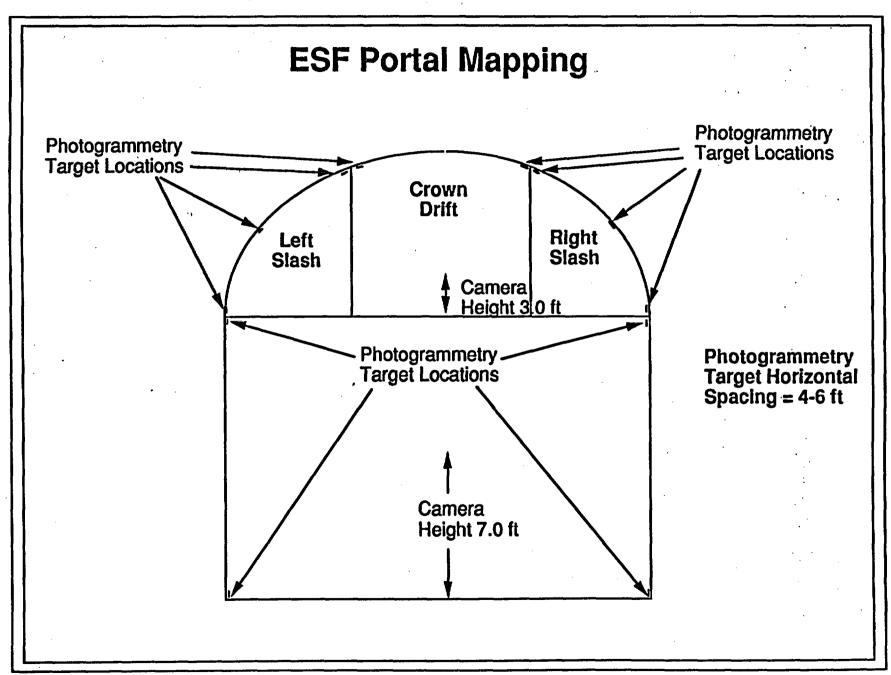
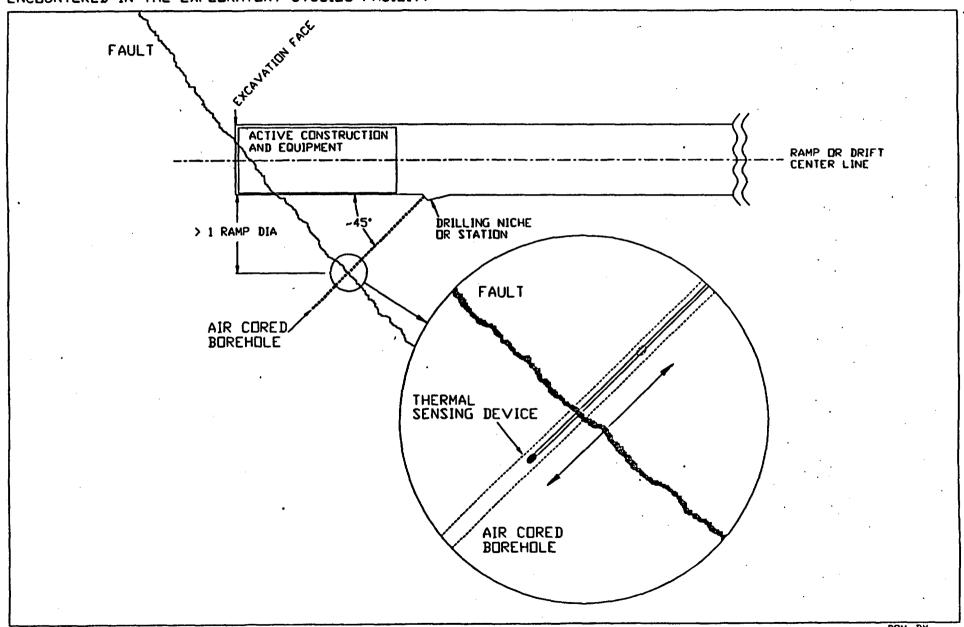


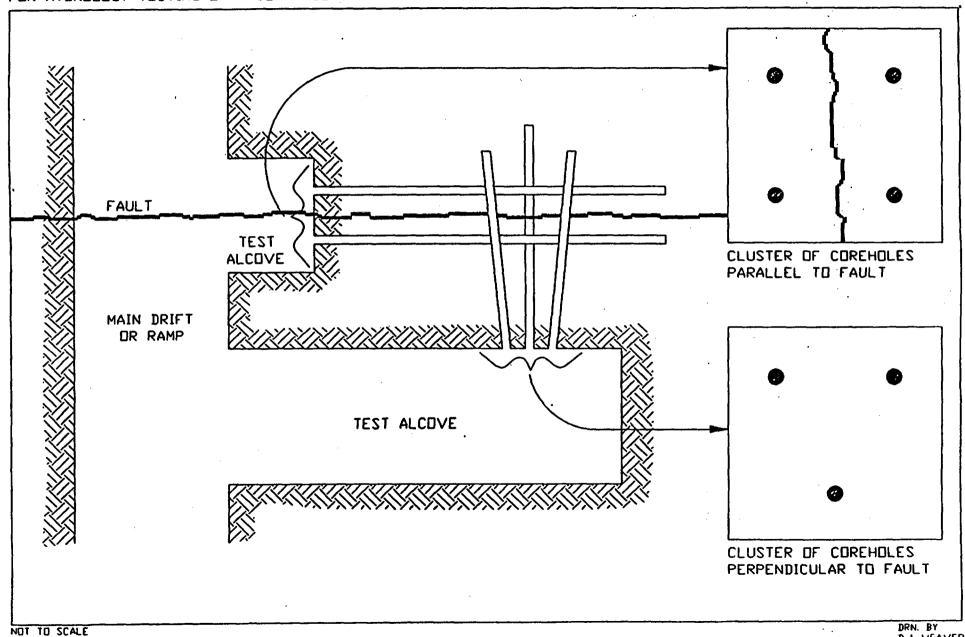
ILLUSTRATION: HYDROLOGIC PROPERTIES OF MAJOR FAULTS ENCOUNTERED IN THE EXPLORATORY STUDIES FACILITY



NOT TO SCALE
ADMINISTRATIVE USE ONLY

DRN. BY
D.J. WEAVER
GEDFAUL I BVG
5/19/93

ILLUSTRATION: IDEALIZED CONFIGURATION OF ALCOVES FOR HYDROLOGY TESTING OF MAJOR FAULTS



NOT TO SCALE ADMINISTRATIVE USE ONLY

D.J. VEAVER HEALCV.DVG 5/19/93

ESF Testing Planning Prioritization

ESF TEST PLANNING-PHASE I

TCO Test Event Name	Test Name(SCP Activity)	WBS Number SCP Number	Construction or Deferred	Start Date in Field
Geologic Mapping - North Portal Wall and Slot	Underground Geologic Mapping	1.2.3.2.2.1.2 8.3.1.4.2.2 R2	Construction	Ongoing (Feb 1993)
ESF TEST PLANNING-PH/	ASE II			
Geologic Mapping - Starter Tunnel	Underground Geologic Mapping	1.2.3.2.2.1.2 8.3.1.4.2.2 R2	Construction	April 2, 1993
Perched Water - Starter Tunnel (contingency)	Perched Water Testing in the ESF	1.2.3.3.1.2.4 8.3.1.2.2.4 R1	Construction	Contingency April 2, 1993
Consolidated Sampling - Starter Tunnel	Matrix Hydrologic Properties Testing	1.2.3.3.1.2.3 8.3.1.2.2.3	Construction/ Deferred	May 3, 1993
	History of Mineralogic and Geochemical Alteration of YM	1.2.3.2.1.1.2 8.3.1.3.2.2	Construction/ Deferred	May 1993
	Chloride and Chlorine-36 Measurements of Percolation at Yucca Mtn	1.2.3.3.1.2.2 8.3.1.2.2.2 R1	Construction/ Deferred	May 1993
Construction Monitoring - Starter Tunnel	Evaluation of Mining Methods	1.2.4.2.1.1.4 8.3.1.15.1.8	Construction	April 2, 1993
	Monitoring of Ground Support Systems	1.2.4.2.1.1.4 8.3.1.15.1.8	Construction	April 22, 1993

ESF Testing Planning Prioritization continued

ESF TEST PLANNING--PHASE IIA

TCO Test Event Name	Test Name(SCP Activity)	WBS Number SCP Number	Construction or Deferred	Start Date in Field
Radial Borehole Testing	Radial Borehole Tests in the ESF	1.2.3.3.1.2.4 8.3.1.2.2.4	Deferred	Nov 1993
Hydrochemistry Testing	Hydrochemistry Tests in the ESF	1.2.3.3.1.2.4 8.3.1.2.2.4	Deferred	Nov 1993
Hydrologic Properties of Major Faults	Hydrologic Properties of Major Faults Encountered in the ESF	1.2.3.3.1.2.4 8.3.1.2.2.4	Construction/ Deferred	TBD

VOLCANISM STUDIES

SP: 8.3.1.8.1.1 and 8.3.1.8.5.1

Status:

LANL Technical Report (draft) completed 3/4/93 --

final report due 10/30/93

Worked with Golder Assoc. on Risk Assessment

Paper

Effects Studies underway

Geophysics review underway: External consultant

George Thompson--Stanford University

Study Plan 8.3.1.8.1.2 submitted

Concerns:

Geochronology Problems nearly resolved

Magma Chambers--Teleseismic Tomography

Solutions:

Continue Geochronology Program--Lathrop

Wells Study Complete, Starting Sleeping

Butte/Crater Flat

Planned Activities:

Complete final LANL technical report - 10/93

UNSATURATED ZONE NATURAL INFILTRATION

SP: 8.3.1.2.2.1

Status:

Completed twelve Phase 2 boreholes (N-31, N-32, N-63, N-33, N34, N-57, N-58, N-59, N-61, N-35, N-62, N-39) as of 8/27/93

N-39 completed 8/27/93

Planned Activities:

None - Program is complete

UNSATURATED ZONE PERCOLATION **USW UZ-16**

Status:

Completed Drilling March 11, 1993 TD 1686.16'

Testing Underway:

-- CO₂, CH₄, SF₆, C14 and C13/12 samples taken, little SF₆ in the gas, CO2 and CH4 levels were slightly elevated indicating atmospheric contamination of downhole gases

-- Neutron log completed for baseline information

-- Gas composition changes monitored

-- Caliper, Resistivity, Neutron, Gamma-gamma and magnetic logs completed

-- Air flow survey measurements completed with anamometers -- Downhole air flow testing at various depths

-- Geophysical logging completed August, 1993 -- Zero offset and walk-away Vertical Seismic Profiling (VSP) using clamped geophones completed August, 1993

Planned **Activities:** Continue Testing

Planning continues for walk-away VSP, using grouted geophones;

May, 1994 test date expected

UNSATURATED ZONE PERCOLATION **USW UZ-14**

Status:

Drilling Started April 15, 1993

Core Depth as of September 15, 1993 -

1282.00

Perched water encountered, tested, and

cemented

Packer installed and perched water sealed

off September 13, 1993

Planned Activities:

Complete borehole to ~2,000' TD

Evaluate perched water/drilling fluid

Borehole geophysical logging is to be conducted after well reachs TD

MIDWAY VALLEY SP 8.3.1.17.4.2

Status:

Field data collection is complete

Planned Activities:

Complete Midway Valley final report by December, 1994

QUATERNARY FAULTING - REGION SP: 8.3.1.17.4.3

Status:

Preparation of strip map along Bare Mountain fault is complete

Mapping of Furnace Creek fault is in

progress

Planned Activities:

Trench BMT-1 and Test Pits 8 and 9 to be

excavated late September, 1993

QUATERNARY FAULTING - SITE AREA SP: 8.3.1.4.2.2

Status:

Mapping of trenches and cleared exposures along Paintbrush Canyon fault, Stagecoach Road fault, and Solitario Canyon fault near completion

Four excavations along Solitario Canyon fault and its southern splays were completed August 31, 1993; mapping is in progress

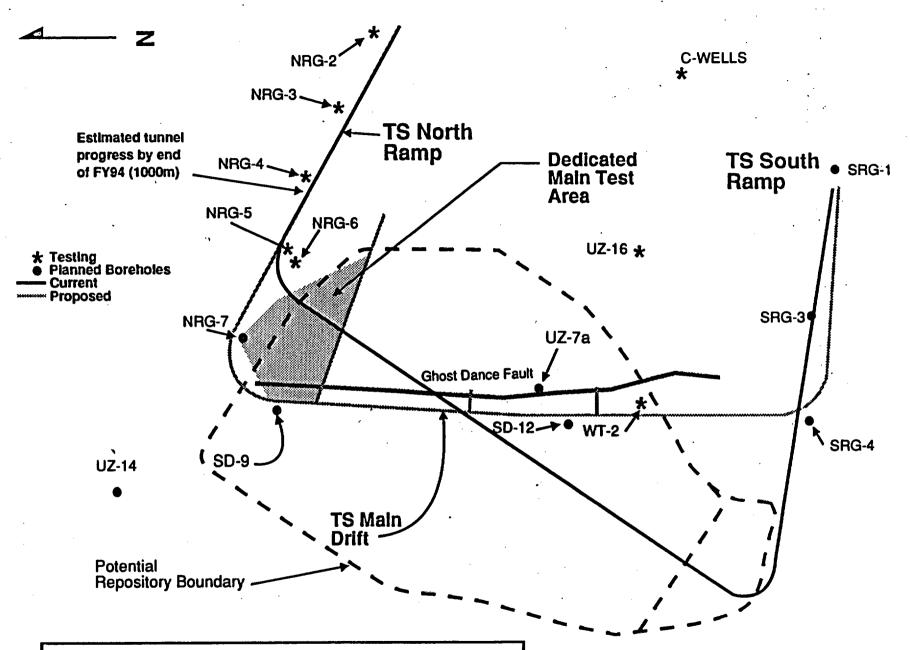
Planned Activities:

Finalize trench logs for FY 1993

excavations

Plan excavations for FY 1994 Ghost

Dance fault evaluation



Current & Proposed ESF Alignment and FY 1994 Proposed Drilling and Testing Programs

SOIL AND ROCK PROPERTIES RAMP BOREHOLES SP: 8.3.1.14.2

Status:

NRG-2B TD at core depth of 329.46' September 14, 1993, penetration resistance tests performed in invert area of proposed tunnel

Geophysical logging for North Ramp boreholes and USW-WT2 to be completed October, 1993

Planned Activities:

Evaluate results of NRG-2B and discuss with designers

NRG-7 Borehole sited, pad planning complete, pad preparation to start week of September 20, 1993

SD-12 Borehole sited, pad planning complete, pad preparation to start week of September 20, 1993

GEOLOGIC STUDIES SP: 8.3.1.4.2.2

Ghost Dance Fault

Status:

Road cut excavation started September 13, 1993,

D-10 bulldozers cannot rip rock

Planned Activity

Clear and prepare as pavements and conduct

geologic mapping

Related New Activities:

Preparing shallow reflection seismic profile

(5,000' - 6,000') for road extending west of USW-WT2 to UE-25 UZ-16, to define

character of Ghost Dance fault at repositorylevel depths. Anticipated start date October

25, 1993.

VSP completed in WT2 and UZ-16; good

velocity and stratigraphic control for

interpretation

STUDY PLAN STATUS

	Initial Plans	Major Revisions
Not Submitted to YMPO	38	0
In Screening Review	0	0
In Project Office Review	0	1
Awaiting Comment Resolution	6	3
In Project Office Verification Audit	3	1
Awaiting Project Office Approval	1	0 .
Awaiting Submission to the NRC	· 1	1
NRC Phase 1 Review	9	3
NRC Acceptance	46	. 5
Total:	104	.14

TPO MEETING

MGDS THERMAL LOADING STUDY

PRESENTED BY

DR. WILLIAM B. SIMECKA
DIRECTOR, ENGINEERING & DEVELOPMENT DIVISION

SEPTEMBER 17, 1993

INTRODUCTION

- "Repository-Induced Thermal Loading of the host rock, surrounding strata and groundwater system may be one of the most important GROA (MGDS) design parameters" (NUREG 1466).
- Aggressive effort to address Thermal Effects:
 - Effects on Natural and Engineered Barrier System
 - Plan to demonstrate compliance with 10 CFR 60 coupling of Thermal-Mechanical-Hydrological-Chemical Processes
 - A Systems Analysis Approach
- This briefing provides a status of the FY93 MGDS Thermal Loading Study.

PROGRESS UPDATE

- Reevaluation of Site Characterization Plan Thermal Goals completed
 - Report Completed and Peer Reviewed
 - Formal Review (AP 1.3) initiated
- Thermal Loading Calculations Underway
 - LLNL Far Field calculations nearly complete
 - SNL Near Field calculations ongoing

ON-GOING ACTIVITIES

- Evaluation of Data and Analyses
 - Examining Postclosure Performance
 - Preclosure Safety and Operability
 - Thermal-Mechanical calculations
 - Geochemical evaluations by LANL
 - Cost Data
- Study Report preparation initiated
- Study Deliverable delayed to December 23, 1993; requested by M&O

AGENDA

YUCCA MOUNTAIN PROJECT - PROJECT MANAGER'S/TPO MEETING SEPTEMBER 17, 1993, FRIDAY

SAIC CONFERENCE ROOM 450

TIME	WHAT	WHO	EXPECTED OUTCOME
9:00-9:15	Welcome & Introductions o Review Agenda	C. Gertz	
9:15-10:00	Status of Yucca Mountain Site Characterization Project	C. Gertz	Understand Current Status of Program and Project
10:00-10:15	Status of Design and Construction Effort Supporting the Exploratory Studies Facility (ESF)	W. Simecka	Understand Current Status of ESF Design and Construction Effort
10:15-10:30	Status of Site Characterization Testing Program and Preparation and Approval of Study Plans(SPs)	R. Dyer	Understand Current Status of Testing Program and SPs
10:30-10:45	BREAK		
10:45-11:00	Status of Mined Geological Disposal System (MGDS) Thermal Loading Study	W. Simecka	Focus the Range of MGDS Thermal Loading Options
11:00-11:15	Status of Interactions With the National Academy of Sciences (NAS) on the Energy Policy Act of 1992, Section 801, Nuclear Waste Disposal	R. Dyer	Understand Current Status of Interactions With the NAS
11:15-11:30	Current Understanding of Water Encountered During Drilling of the UZ-14 Drillhole	R. Luckey	Updated Information on Water Found in the UZ-14 Drillhole
11:30	ADJOURN FOR LUNCH		

all: W.L. Clarke LLNL ON LBE

PROJECT MANAGER'S/TPO MEETING

STATUS OF INTERACTIONS WITH THE NATIONAL ACADEMY OF SCIENCES (SECTION 801 OF ENERGY POLICY ACT)

PRESENTED BY

J. RUSSELL DYER
DIRECTOR, REGULATORY AND SITE EVALUATION DIVISION

SEPTEMBER 17, 1993

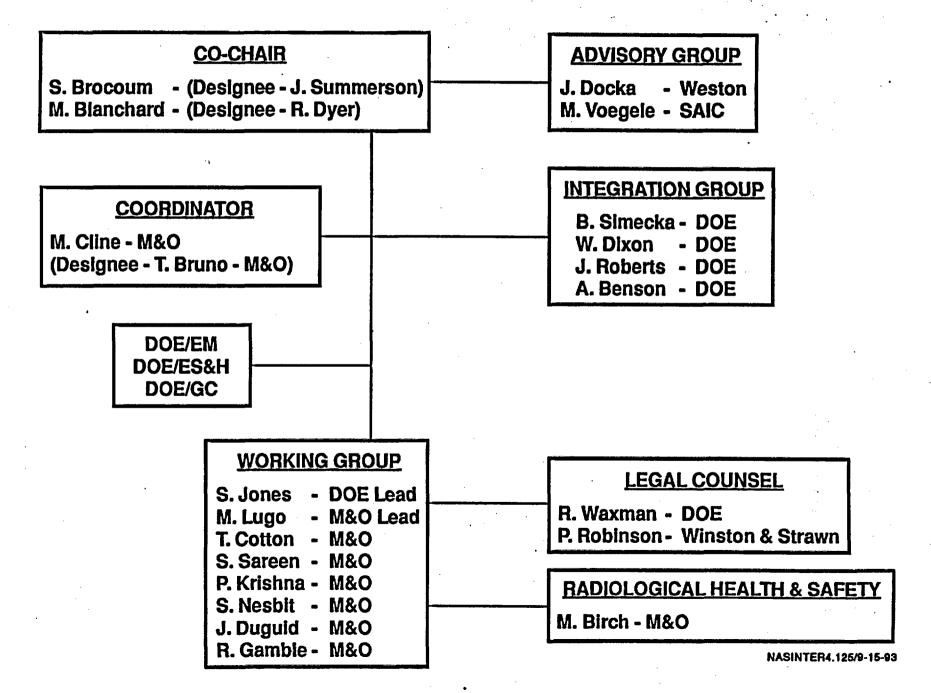
BACKGROUND

- Section 801 of Energy Policy Act of 1992 requires:
 - The National Academy of Sciences (NAS) to conduct a study on health-based standards and provide recommendations to EPA
 - EPA to establish new standards, consistent with the NAS recommendations, to apply to Yucca Mountain
 - The NRC to revise its regulations, consistent with the NAS recommendations and EPA standards
- The NAS has initiated its study under the Committee on Technical Bases for Yucca Mountain Standards

DOE PLANS FOR INTERACTIONS

- DOE is committed to actively support the Committee
 - DOE has designated a technical liaison representative, and established a working group
 - As requested by the Committee, DOE has identified issues to be evaluated by the Committee
 - DOE will develop positions and recommendations on issues for presentation to the Committee
 - DOE will provide information to the Committee, when requested, to support the Committee's evaluations
- DOE will participate, where appropriate, in activities conducted by the EPA, NRC, and other stakeholders

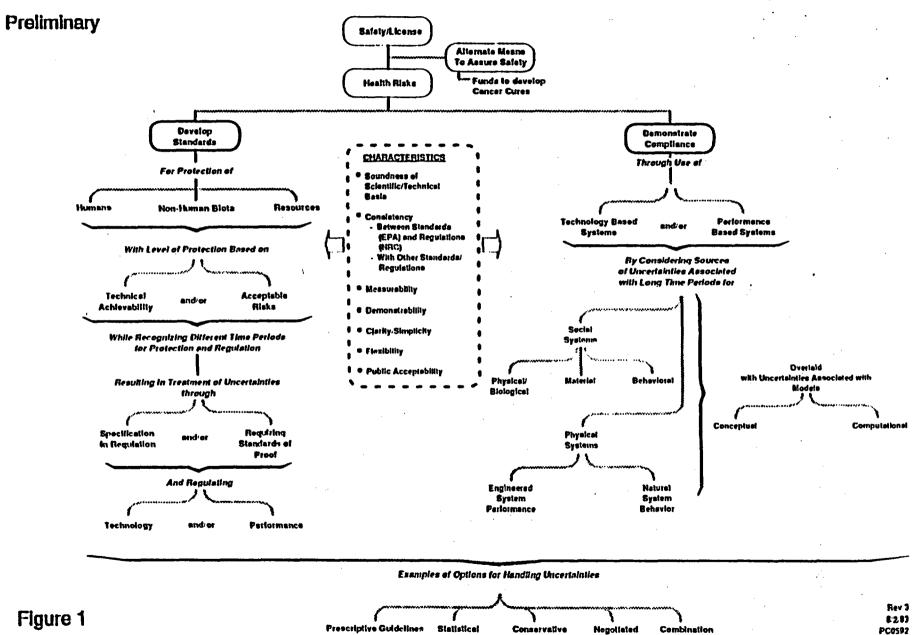
DOE TASK FORCE



801 Issues Framework

Office of Civilian Radioactive Waste Management

Department of Energy



Quantification of

Uncertainty

Deterministic

Compliance

In Standards

ISSUES

- 1. How much applicability beyond Yucca Mountain should the regulations have?
- 2. What should be the basis for protection of public health and safety?
- 3. What is the appropriate timeframe for regulations?
- 4. How should protection and compliance standards be expressed?
- 5. How should uncertainty be treated in protection and compliance standards?
- 6. What is the scientific basis for the prediction of human behavior, and how should such behavior be accounted for in the regulations?
- 7. How can consistency be ensured between the EPA standard and the NRC regulations?

WORKING GROUP SCHEDULE

Informal Briefings

- NAS	7/23/93
- EPA	8/19/93

Preliminary Draft Positions on Issues 10/15/93

Final DOE Positions on each Issue 1/28/94

WORKING GROUP SCHEDULE

(CONTINUED)

Preliminary Draft Position on Structure of EPA Standard

2/15/94

Final DOE Position on EPA Standard

4/29/94

NATIONAL ACADEMY OF SCIENCES SCHEDULE

 Committee Meeting (Views on regulations/issues)

May 27-29, 1993

 Committee Meeting (Health-based standards, dose-response relationships)

August 26-27, 1993

 Committee Meeting (Repository performance) November 9-10, 1993

Committee Meeting (Human instrusion).

December 16-17, 1993

NATIONAL ACADEMY OF SCIENCES SCHEDULE

(CONTINUED)

•	Committee Meeting
	(Topic TBD)

February 7-8, 1994

 Committee Meeting (Topic TBD) **April 28-29, 1994**

 Draft Committee Report (not public draft) **June 1994**

Review (Internal to NAS)

Fall 1994

 Final Report (Public Document) December 1994

FLUID ENCOUNTERED IN USW UZ-14

by
Richard R. Luckey
and
Joseph P. Rousseau

U.S. Geological Survey



Yucca Mountain Project
TPO Meeting
September 17, 1993

USW UZ-14

- Fluid encountered 7/30/93 at 1,256.6 1,258.5 ft.
- Fluid in lower nonlithophysal unit of Topopah Spring
- Static fluid level about 1,250 ft.
- Fluid bailed for chemical analysis
- Hydraulic tests conducted Aug. 17-27, 1993



USW G-1

Approximately 1,000 ft. SE of UZ-14

- Drilled Mar.-Aug., 1980 with polymer drilling fluid (made with J-13 water)
- Circulation rarely maintained
- 2.4 Million gallons of drilling fluid lost



USW H-1

- Less than 1,500 ft. ESE of G-1
- Drilled Sept.-Nov., 1980 with air-foam
- TV log showed some dripping water in Topopah
 Spring and Calico Hills



USW UZ-1

- Drilled April-July, 1983 with air
- Fluid encountered at about 1,256 ft.
- Final fluid level at about 1,251 ft.
- Fluid sample collected and analyzed
 - contained G-1 polymer



UZ-14 Hydraulic Tests

- #1 8/17/93 13.2 hours 0.91 gal./min.
 - * Water level monitoring tube plugged with mud
- #2 8/19/93 13.0 hours 0.90 gal./min.
 - * Good test
- #3 8/23/93 9.3 hours 1.87 gal./min.
 - * Ended prematurely excessive drawdown
- #4 8/24/93 66.8 hours 0.93 gal./min.
 - * Good test



UZ-14 Hydraulic Tests

Starting Water Level: 1,250.05 ft. 8/17/93

• Total Pumpage: 6,190 gal. in 4 tests

Total Time pumped: 102.2 hours in 4 tests

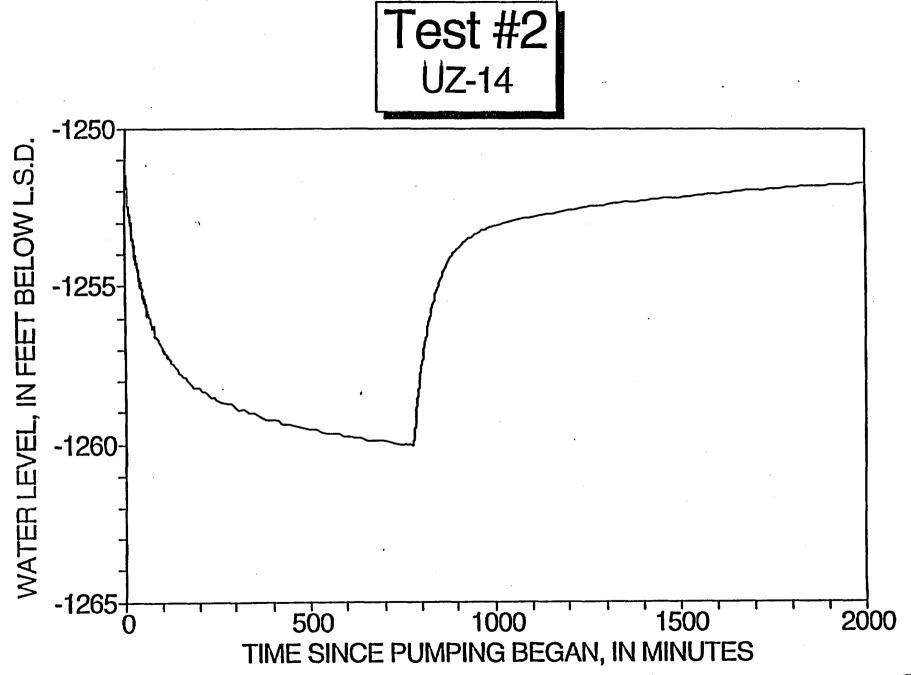
Final Water Levels: 1,252.41 ft. 8/30/93

1250.98 ft. 9/7/93

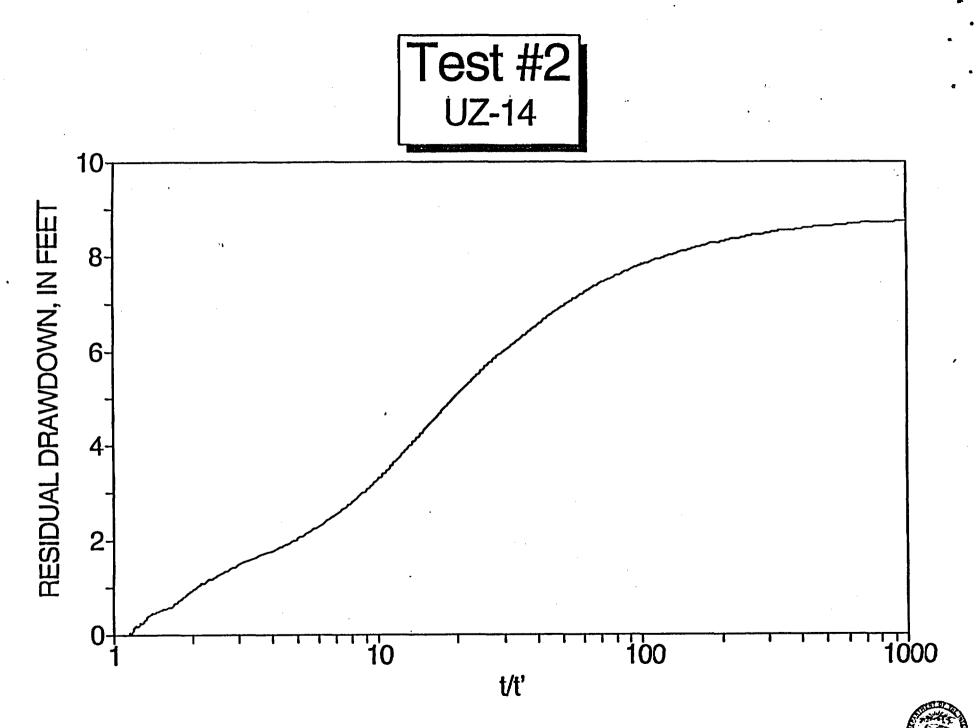
1250.71 ft. 9/10/93

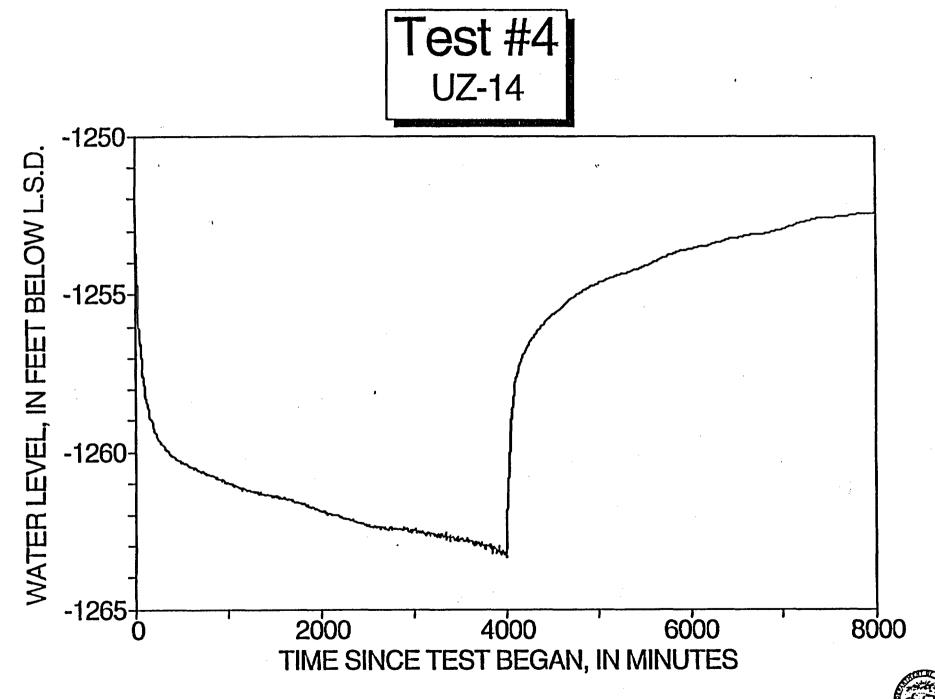
Probably full recovery by 9/17/93

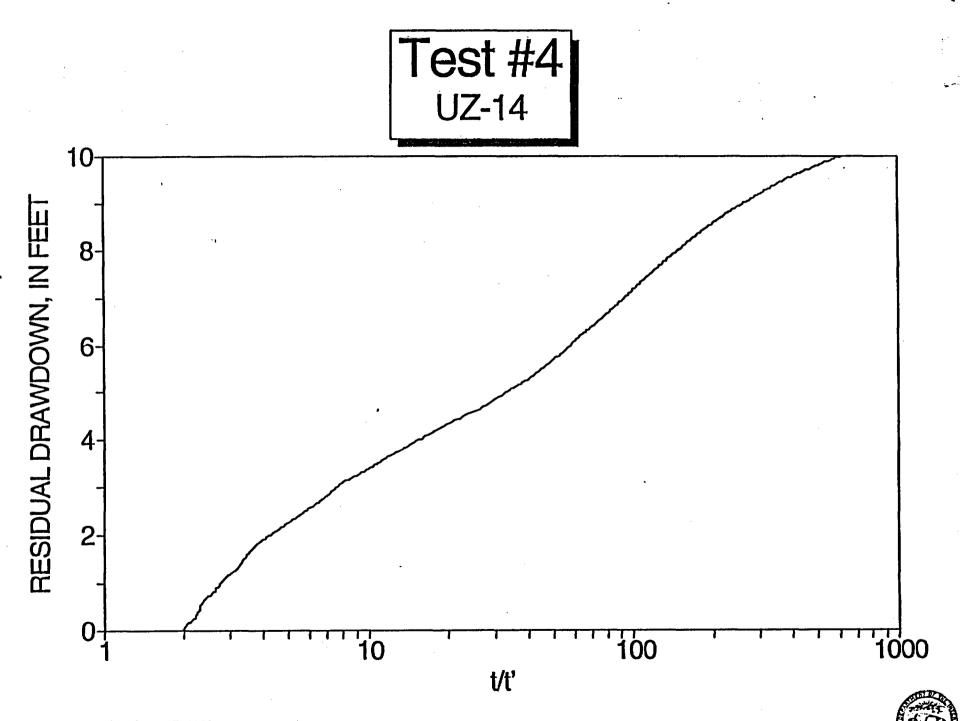












Transmissivity Estimates

Bailer Test (recovery):

7 ft.²/day

* In core track

Test #2 (drawdown):

6 ft.²/day

Test #2 (recovery):

6-10 ft.²/day

Test #4 (recovery):

8-10 ft.2/day



Hydraulic Tests Summary

- Test results consistent with each other
- No boundary effects seen
- No residual drawdown



Chemical Evidence

- G-1 polymer detected (low concentration in UZ-14)
- Total organic carbon concentration very high
- Tritium at background levels (water >100 years old)
- Carbon-14 uncorrected age in UZ-1 of 3,600 yr. [J-13 about 9,900, 29a #1 about 3,800 yr]. No C-14 results yet for UZ-14
- CO₂ increasing in lower zone of UZ-1



Conclusions

- Fluid in UZ-14 same fluid as in UZ-1
- Possible interpretations (Whitfield on UZ-1)
 - * Fluid is only degraded G-1 drilling fluid
 - * Fluid is contaminated perched water
 - * Fluid is contaminated water table
- No interpretation can be eliminated based on current understanding



Prognosis

- Deepening UZ-14 will resolve if fluid is at water table
- Further chemical analyses will be done with hope that it will help further resolve issue. Carbon-14 may be best hope for resolving issue.
- Perhaps will be unable to determine if natural perched water is involved
- By end of planned drilling program, should know if perched water is rare or common

