

MEETING2

- 1 -

OCT 30 1989

Mr. Ralph Stein, Associate Director
for Systems Integration and Regulation
Office of Civilian Radioactive Waste Management
U. S. Department of Energy, RW-24
Washington, D. C. 20545

Dear Mr. Stein:

SUBJECT: LIST OF INTERACTIONS FOR THE UPCOMING INTERACTIONS SCHEDULING MEETING
ON NOVEMBER 7, 1989

The purpose of this letter is to provide you with the list of proposed interactions developed by the staff of the U.S. Nuclear Regulatory Commission (NRC) for discussion at the upcoming interactions meeting scheduled for November 7, 1989. This list is a modification of the list originally provided to you in my letter dated July 21, 1989. The majority of modifications are changes in the months in which the interactions would be held. However, the NRC staff has identified the need for a fourth type of interaction, a technology workshop, and has identified eight new interactions.

As envisioned by the staff, technology workshops would be technical exchanges between the NRC's Office of Nuclear Regulatory Research and those individuals performing the experiments at the U.S. Department of Energy's (DOE's) laboratories. The workshops would take place at the laboratories where the experiments were being done. Participation by NRC's licensing staff would be limited, and the same is anticipated for DOE. The workshops would focus on areas directly related to experimental and analytical work and would not involve discussions on the impact of this work on demonstrating compliance with the regulations or on other licensing issues. Therefore, as with technical exchanges, no formal positions can or will be taken at these technology workshops. Like all interactions between the NRC and DOE, the technology workshops would have to be noticed and open to participation by the other parties in the high-level waste program as well as members of the public to observe. These technology workshops represent half of the additions to the proposed interactions list.

The remaining four interactions are an NRC workshop in the area of substantially complete containment, a new technical exchange on the Mine Safety and Health Administration/DOE Memorandum of Understanding, and two new exchanges on work on the waste forms to be placed in the repository. The NRC workshop is not a new type of interaction between NRC and DOE. Rather it is an internal workshop sponsored by NRC in which DOE, the State of Nevada, and affected units of local governments are invited but not required to participate.

For your convenience, Enclosure 1 is a list of all of the interactions scheduled during the last meeting and their current status; Enclosure 2 is a list of the proposed interactions through September 1990; and Enclosure 3 provides a short description of all of the new interactions proposed by the staff. No descriptions of the existing interactions are provided because discussions for these were contained in my letter of July 21, 1989. At the upcoming interactions meeting, the staff would like to establish firm dates for interactions through at least April 1990 and identify interactions through September 1990.

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If you have any questions on the enclosures, please feel free to contact the NRC staff member responsible for the meeting Mr. Joe Holonich. Mr. Holonich can be reached at (301) 492-3403 or FTS 492-3403.

Sincerely

/s/ by R. Johnson

for: John J. Linehan, Director
Repository Licensing and Quality
Assurance Project Directorate
Division of High-Level Waste Management

Enclosure: As stated

cc: R. Loux, State of Nevada
M. Baughman, Lincoln County, NV
S. Bradhurst, Nye County, NV
D. Bechtel, Clark County, NV
C. Gertz, DOE/Nevada
K. Turner, GAO

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NAME: JHolonich	: RBallard	: JBunting	: MSilberberg	: JLinehan	:
DATE: 10/13/89	: 10/23/89	: 10/24/89	: 10/25/89	: 10/30/89	:

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Enclosure 1
Previously Scheduled Interactions

<u>Date</u>	<u>Interaction</u>	<u>Type</u>	<u>Status</u>
AUGUST			
10 and 11	Core Drilling with Air	Visit	Complete
15	Substantially Complete Containment	Exchange	Complete
30	Tectonics	Meeting	Complete
SEPTEMBER			
21	Calico Hills Plan	Exchange	Need to reschedule.
21	Anticipated and Unanticipated Processes and Events	Exchange	Postponed until April 1990.
26	Tectonics	Exchange	Complete
OCTOBER			
3 and 4	Exploratory Shaft Facility (ESF) - 10 CFR Part 60 Flowdown - Integration with repository	Exchange	Complete
11 and 12	Technical Assessment Review (TAR) of ESF Anomaly	Exchange	Postponed until TAR is issued.
26	Container Material	Exchange	Notice Issued
31, Nov. 1 and 2	Tectonics	Exchange	Notice Issued
31	Interactions Scheduling	Meeting	Rescheduled for Nov. 7, 1989.
NOVEMBER			
7	Interactions Scheduling	Meeting	Notice Issued
8	Data Management	Exchange	Notice Issued

<u>Date</u>	<u>Interaction</u>	<u>Type</u>	<u>Status</u>
15	Performance Assessment Integration into Site Characterization	Exchange	Reschedule to Feb. 1990
28 and 29	Tectonics	Exchange	OK
DECEMBER			
7	ESF Testing and open items	Exchange	Expanded/OK
13	Scenarios Development	Exchange	Reschedule to February 1990 with another exchange.

Enclosure 2
Future Interactions

<u>Date</u>	<u>Interaction</u>	<u>Type</u>	<u>Status</u>
DECEMBER 1989	Container Material	Technology Workshop	New
	Thermohydrology Research	Technology Workshop	New
JANUARY 1990	Performance Assessment Methodology Workshop	Technology Workshop	OK
	10,000 Year Cumulative Slip Earthquake and Seismic Hazard Technical Position	Exchange	OK
	Geochemistry Research	Technology Workshop	New
	Substantially Complete Containment Workshop	NRC Workshop	New
FEBRUARY 1990	Groundwater Travel Time	Exchange	OK
	Construction of a Complementary Cumulative Distribution Function and Scenario Development	Exchange	Expanded/OK
	Investigation, Evaluations and Research Related to Repository Site Sealing	Meeting	OK
	Performance Assessment Integration into Site Characterization	Meeting	Moved from Nov. 1989
MARCH 1990	EBS Performance Assessment Modeling	Exchange	OK
	Significance of Individual Features, Events, and Processes of the Hydrogeologic System in Demonstrating Compliance with 10 CFR Part 60.	Exchange	OK
	Rock Mechanics Research	Technology Workshop	New

<u>Date</u>	<u>Interaction</u>	<u>Type</u>	<u>Status</u>
	Mine Safety and Health Administration Memorandum of Understanding	Exchange	New
APRIL 1990	Waste Package In-Situ Testing	Exchange	OK
	Anticipated and Unanticipated Processes and Events	Exchange	Moved from November 1989
	Validation of Models	Exchange	Moved from March
	Performance Assessment Trip	Visit	Moved from February
MAY 1990	Testing of the Saturated Zone at Yucca Mountain	Exchange	OK
	Formal Use of Expert Judgement	Meeting	OK
JUNE 1990	Core and Drill Hole Logging Waste Form - Spent Fuel	Exchange Exchange	Need to discuss New
JULY 1990	Exploratory Shaft Facility Design and Construction	Exchange	OK
	Retardation Modeling Waste Form - Glass	Exchange Exchange	OK New
AUGUST 1990	ESF Surface Preparation	Exchange	TBD
	Underground Mapping Methods	Exchange	OK
SEPTEMBER 1990	Thermal Effects of Emplaced Hydrologic System	Exchange	OK

Notes to status column

OK = Status was previously discussed and no changes have been identified to date.

TBD = The need for this interaction needs to be reassessed.

New = A new interaction not previously identified.

Expanded = The scope of the interaction has been expanded from what was originally discussed.

ENCLOSURE 3
Descriptions of New Interactions

Technical Area: Rock Mechanics/Design

Technical Exchange

- Compliance with Mining Regulations

The purpose of this interaction would be to discuss issues related to the U.S. Department of Energy's (DOE's) strategy to comply with mining regulations (10 CFR 60.131(b)(9)). The scope should include a discussion of: (1) the existing Memorandum of Understanding (MOU) between DOE and Mine Safety and Health Administration (MSHA); (2) the staff's perspective on the needed controls required to provide reasonable assurance at the time of licensing that all structures, systems, and components can perform their intended function; and (3) the potential need to clarify, reinforce and/or modify certain portions of existing MOU between DOE and MSHA.

Technology Workshop

- Repository Design in Tuff

The purpose of this workshop would be to discuss the in-situ properties of repository tuff and techniques for characterizing such properties. The discussion will include the in-situ properties of tuff and their spatial distribution in the repository domain, correlation of laboratory tuff properties data with field data, critical parameters associated with the pre-closure and post-closure behavior of tuff, evaluation of tuff rock failure criteria, effects of thermal, radiation, and geochemical environments on tuff properties, seismic behavior of joints in tuff, extrapolation of short-term data to long-term data, rock-mass sealing, capabilities and limitations of analytical models/computer codes being used to predict stability of underground openings, and rock excavation techniques.

Technical Area: Materials

Technical Exchange

- Waste Form - Glass

Although much work has been done on possible glass waste forms for radioactive waste from reprocessing spent fuel, certain questions remain. A critical one impacts the decision on when the waste producers plan to begin hot operations. The issue here is the nature of the pour canister and its compatibility with the environment of the Yucca Mountain geologic repository and the material of the disposal container. Other

questions involve product specifications and performance assessment, process control, validation of predictions of long term behavior, glass leaching characteristics, and hot glass sampling.

Technical Exchange

- Waste Form - Spent Fuel

The technical exchange should involve a number of issues pertaining to the topics listed below. The exchange could cover all of the topics or a number of exchanges could be held to discuss the topics in detail.

1. Types of spent fuel, and especially assemblies with defective rods
2. Internal corrosion of fuel rods
3. Scenarios for waste package environment over time
4. Need for long-term corrosion data
5. Carbon-14 releases
6. Spent fuel leaching

At the very least, the discussions should produce statements of specific technical needs.

Technology Workshop

- Waste Package Testing

As a result of the scoping and literature studies performed by the staff in the area of waste package experiments, several technical issues have come to focus. The discussions at this workshop should cover:

1. The use and limitations of electropotentiodynamic test methods in predicting long-term corrosion in materials;
2. The constitution and stability of site-related waters used in testing;
3. Identification and determination of the time-dependent material degradation processes and environmental conditions;
4. The technical basis for the extrapolation of short-term data to long-term prediction;

5. Development of new test methods for obtaining key material performance parameters; and
6. Design criteria/specifications including:
 - a. full scale fabrication techniques
 - b. quality control
 - c. sealing techniques.

The workshop should involve technical experts presenting and discussing the merits of the pertinent research activities underway at the various laboratories. Also, there may be a need to develop new research concepts for some issues. The workshop would provide an opportunity for in-depth technical discussion among the key researchers from the staff, DOE, and their principal contractors.

Technical Area: Hydrologic Transport and Heat Flow

Technology Workshop

- Thermohydrologic Behavior

The purpose would be to exchange technical information on experimental and modeling approaches which are being used to determine the nature of heat and fluid flow in unsaturated media. Investigations of thermohydrological phenomena at scales varying from an individual waste package to the composite effect of all HLW in a geologic repository are of interest. Laboratory and field experiments would be discussed, and would include discussions of instruments and techniques for measurement and visualization of heat and fluid content and flow in synthetic and natural media. The workshop will include a tour of laboratories where examination of pertinent experimental apparatus would occur. Modeling of thermohydrologic phenomena and procedures to integrate modeling with laboratory and field investigations would also be discussed.

This Technology Workshop would include discussions by the Center for Nuclear Waste Regulatory Analyses's (CNWRA's) technical staff performing work on the CNWRA's Thermohydrology Research Project.

Technology Workshop

- Geochemistry Research

The purpose would be to exchange technical information or investigations pertinent to the HLW repository program which are being performed at DOE laboratories in geochemistry, mineralogy, petrography/petrology, sorption experiments, and water-rock interactions. Discussions of past and

present laboratory investigations in these technical areas would occur and the CNWRA's Geochemistry Research Project. It is anticipated that a tour of laboratories supporting investigations in these technical areas would be made, and would include examination of the equipment and techniques used in investigations of water-rock interactions, including sorption experiments. Modeling of geochemical phenomena (e.g., sorption and water-rock interactions) and approaches to integrating modeling with laboratory and field investigations would also be discussed. Mineralogical and geochemical investigations of single mineral phases, particularly geolites, would also be discussed.

NRC WORKSHOP

Technical Area: Materials Engineering

- Substantially Complete Containment

The NRC staff is conducting a technical assessment of the feasibility of developing technical consensus on an approach and strategy for eliminating the regulatory uncertainty attendant in the language "Substantially Complete Containment". The feasibility assessment will include a public workshop to discuss the technical basis for the containment requirement, including what must be done to demonstrate compliance with the rule.