

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

TRIP REPORT

SUBJECT: Technical Exchange Meeting Between the Nuclear Waste Technical Review Board's Structural, Geology & Geochemistry Panel on the Calico Hills Risk/Benefit Analysis and Surface Based Testing (SBT) Prioritization.

DOE-NRC Technical Exchange Meeting on the Calico Hills Risk/Benefit Analysis and Surface-Based Testing (SBT) Prioritization.
(20-3702-021-070-001)

DATE/PLACE OF TRIP: October 10-12, 1990 at the Crystal City Marriott and NRC Building, Washington, DC.

AUTHOR: Mikko Ahola and Simon Hsiung

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PERSONS PRESENT: Simon Hsiung, Mikko Ahola, Jaak Daemen

BACKGROUND AND PURPOSE OF MEETING:

The purpose of the meeting on October 11 was to hear DOE's presentation to the Nuclear Waste Technical Review Board's Structural Geology & Geochemistry Panel on the Calico Hills Risk/Benefit Analysis and Surface Based Testing Prioritization. Also, members of the Electric Power Research Institute gave a short presentation on past seismic faulting and volcanism in the Yucca Mountain area, and studies to assess the probability of future occurrences. The final meeting on October 12 consisted of a similar technical exchange between DOE and NRC to provide an opportunity for more informal discussions on topics related to the Calico Hills Risk Benefit Analysis (CHRBA) and Surface-Based Test Prioritization tasks. A copy of the meeting agendas are attached. A copy of the viewgraphs presented by DOE is available from the authors of this trip report.

SUMMARY:

The technical exchange meeting on October 11 between DOE and the NWTRB consisted of presentations on the following topics related to the Calico Hills Risk/Benefit Analysis (CHRBA) and Surface-Based Test Prioritization (SBT):

- 1) Introduction and Status - CHRBA
- 2) Information Needs and Testing Strategies - CHRBA
- 3) Decision Analysis - CHRBA
- 4) Waste Isolation Impact Assessment Calculations - CHRBA
- 5) Update on Progress - SBT
- 6) LM-300 Drill Rig - SBT

DOE stated that a draft report on the CHRBA would be compiled and reviewed by the

end of December 1990. The NWTRB made the following comments and questions in connection with the DOE presentations on the CHRBA and SBT:

* The NWTRB commented that from surface borehole testing it would be difficult to determine both vertical and horizontal flow properties since the faulting is predominantly vertical. They were favorable of underground drifting with angled boreholes to get the various flow properties.

* The board also questioned whether it was possible to perform angle drilling from the surface in order to better characterize the site's vertical features. DOE indicated that it was possible to do, however, their current LM-300 drill rig was designed for vertical holes, with at most a slight deviation from the vertical depending on the design of the drilling pad. DOE indicated that they were conducting drilling tests with the new LM-300 rig at the Apache Leap site in Arizona, and reported very rapid drill bit wear during the dry drilling tests.

* The board commented favorably on the value of testing at analog sites, especially those areas of testing that are not yet well understood. The board also asked a question on the success in determining the unsaturated flow conditions in the N and P tunnels at the Rainier Mesa analog site, and DOE indicated that some success had been achieved.

DOE gave a similar presentation to NRC on October 12 to allow for more informal discussions related to the CHRBA. At the earlier summer meeting, DOE stated that preliminary results of the CHRBA suggested that the Yucca Mountain site was likely to meet the total system performance standard by a wide margin, and that extensive testing within the Calico Hills unit was not likely to change that opinion. During this meeting, DOE recognized that their earlier value of information (VOI) model did not capture all the aspects of the testing value within the Calico Hills unit, and proposed expanding their MUA analysis to include the value of testing. They indicated that their analysis took into account the performance of the whole system. Four different types of flow conditions were used in their calculations, including slow matrix, fast matrix, concentrated fracture, and distributed fracture.

One comment was raised that DOE should consider drifting into a portion of the Calico Hills unit that is below the water table to obtain saturated flow conditions. DOE was also questioned as to what type of flow condition they thought existed at the site, and indicated that the real flow was probably a combination of the four, and that the dominant flow condition was more important. It was pointed out that thermal effects were not included in their flow calculations.

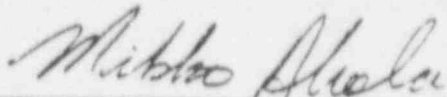
IMPRESSIONS/CONCLUSIONS:

The two day meeting was very informative in learning the current status of DOE's Calico Hills Risk/Benefit Analysis and Surface-Based Test Prioritization. The presentation by DOE to the NRC staff was particularly useful in allowing informal discussions, much of which focused on clarifying the necessary information needed from characterization of the Calico Hills, and the testing strategies to obtain that information.

PROBLEMS ENCOUNTERED: NONE

PENDING ACTIONS: NONE

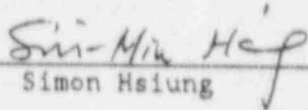
SIGNATURES:



Mikko Ahola

12/10/90

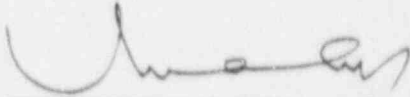
Date



Simon Hsiung

12/10/90

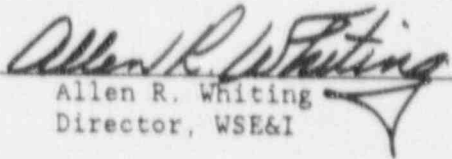
Date



Asadul H. Chowdhury
Manager, RDCO

12/10/90

Date



Allen R. Whiting
Director, WSE&I

12/10/90

Date



1100 Wilson Boulevard, Suite #10
Arlington, VA 22209

Structural Geology & Geochemistry Panel Technical Exchange

Tentative Agenda

October 11, 1996

Crystal City Marriott
Arlington Ball Room
Arlington, Virginia

8:30 a.m.

Introduction

Don U. Deere, Nuclear Waste Technical Review
Board (NWTRB)

Calico Hills Risk/Benefit Analysis

D. Dobson, Yucca Mountain Project Office
(YMPO)

E. Gardiner, Science Application International
Corporation (SAIC)

Robertson, SAIC

H. Call, Applied Decision Analysis Company

E. Hardin, SAIC

- Information needs
- Impacts:
 - Additional input
 - Aggregation Schemes
 - Revisions to decision models
- Waste Impact Model

10:15 a.m.

Break

10:30 a.m.

Surface Based Testing Prioritization

J. Younker, SAIC

- Tests to be prioritized
- Progress to date

(over)

Telephone: 703-235-4473 Fax: 703-235-4499

Dry Drill & Core Recovery Development
U. Clanton, YMPO

- Apache Leap
- LM-300 - Description of potential for modification of slant drilling

12:00 noon

Lunch

1:00 p.m.

EPRI/EHI High-Level Waste Repository Methodology
Robert Shaw, EPRI

3:00 p.m.

Discussion

3:30 p.m.

Adjourn

September 20, 1990

AGENDA

DOE-NRC TECHNICAL EXCHANGE ON THE CALICO HILLS RISK BENEFIT
ANALYSIS AND SURFACE-BASED TEST PRIORITIZATION

October 12, 1990
White Flint Bldg., Rockville MD
Rooms 2F-17 and -21
8:30 AM

PURPOSE: To provide the NRC with the opportunity to extend informal discussion of topics related to the Calico Hills Risk Benefit Analysis (CHRBA) and Surface-Based Test Prioritization tasks.

SCOPE: This technical exchange will focus on (1) discussion of technical input and information needs for decision analysis as part of the CHRBA and (2) providing an update on progress of these two task forces.

<u>Agenda topic</u>	<u>Discussion Leader</u>
Opening remarks	DOE, NRC, State
o Introduction	DOE
Discussion	all
o Calico Hills Risk/Benefit Analysis	
- Status	DOE
Discussion	all
- Rainier Mesa analog	DOE
Discussion	all
- Information needs * testing	DOE
Discussion	all
- Decision methodology * aggregation schemes * VOI analysis * revision to decision model * technical inputs to decision analysis	DOE
Discussion	all

DOE-NRC TECHNICAL EXCHANGE ON THE CALICO HILLS RISK BENEFIT
ANALYSIS AND SURFACE-BASED TEST PRIORITIZATION
(continued)

<u>Agenda topic</u>	<u>Discussion Leader</u>
o Calico Hills Risk/Benefit Analysis (cont.)	
- Review of waste isolation impact assessment approach	DOE
Discussion	all
o Update on progress of Surface-Based Test Prioritization task	DOE
Discussion	all
Final remarks	DOE, NRC, State