

MAY 19 1993

Mr. Dwight E. Shelor, Associate Director  
 for Systems and Compliance  
 Office of Civilian Radioactive Waste Management  
 1000 Independence Avenue, NW  
 U.S. Department of Energy RW-30  
 Washington, D.C. 20585

Dear Mr. Shelor:

SUBJECT: PROPOSED TOPICS FOR FUTURE INTERACTIONS

Enclosed is the Nuclear Regulatory Commission staff's list of proposed topics for discussion at the June 7, 1993, interactions scheduling meeting. The NRC staff is providing the U.S. Department of Energy (DOE) with this information for its use in preparing for this meeting. The format used to identify the proposed topics is consistent with that agreed upon at previous interactions scheduling meetings. This meeting is scheduled to begin at 8:30 a.m. (PDT), and will be held in conference room 202 of DOE's Yucca Mountain Site Characterization Project Office in Las Vegas, Nevada.

Enclosure 1 is a list of proposed interaction topics that covers the six month period from July to December 1993. These topics include two interactions agreed upon by both NRC and DOE at the previous scheduling meeting that were not scheduled during the last six month time frame, and four additional topics posed by the NRC staff in the areas of projected releases, performance assessment, radionuclide migration, and near-field phenomena. Enclosure 2 represents a list of technical exchanges that NRC staff would like to have scheduled during the next interactions scheduling meeting.

Based on DOE's existing policy of conducting no more than one technical interaction per month, a selection and prioritization process will have to be performed by each agency in order to identify the six most important interactions. By limiting the number of interactions to one per month, DOE is unnecessarily constraining the usefulness of these prelicensing consultations. In order to prevent delaying any of the proposed interactions for an extended period of time, NRC advocates scheduling more than one technical exchange per month. This can be effectively accomplished by scheduling consecutive interactions on successive days at the same location when various meeting topics require staff of similar technical disciplines to be involved.

Although the interactions listed in Enclosure 1 have proposed time frames and locations, definitive dates and locations need to be established for each of the selected technical exchanges at the meeting.

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Mr. Dwight Shelor

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If you have any questions on this subject, please contact the responsible NRC Project Manager, Mr. Robert D. Carlson. He can be reached at (301) 504-2435.

Sincerely,

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Joseph J. Holonich, Director  
Repository Licensing and Quality  
Assurance Project Directorate  
Division of High-Level Waste  
Management  
Office of Nuclear Material  
Safety and Safeguards

Enclosures: As stated

- cc: R. Loux, State of Nevada
- T. J. Hickey, Nevada Legislative Committee
- C. Gertz, DOE/NV
- M. Murphy, Nye County, NV
- M. Baughman, Lincoln County, NV
- D. Bechtel, Clark County, NV
- D. Weigel, GAO
- P. Niedzielski-Eichner, Nye County, NV
- B. Mettam, Inyo County, CA
- V. Poe, Mineral County, NV
- F. Sperry, White Pine County, NV
- R. Williams, Lander County, NV
- L. Fiorenzi, Eureka County, NV
- L. Vaughan II, Esmeralda County, NV
- C. Shank, Churchill County, NV
- E. Holstein, Nye County, NV
- L. Bradshaw, Nye County, NV

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## PROPOSED NRC/DOE INTERACTIONS FOR JULY - DECEMBER 1993

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**Topic:** Exploratory Studies Facility (ESF) Title II Design and Design Control (Technical Exchange)

**Objective:** The objective of this technical exchange is to discuss the Title II design, the design methods and analyses, and the design control process that are being used for the construction of ESF.

**Scope:** The NRC staff has recently expressed to the DOE the need for a better understanding of the ESF design and the design methods and analyses. In addition, NRC staff observations of recent QA surveillances indicated that a better understanding by the NRC staff of the design control process would be useful. During the proposed exchange, the NRC staff would like to gain a better understanding of the following:

- How the ESF design packages will be integrated with each other and the conceptual design of the geologic repository operations area, particularly those parts of the ESF that will be co-located with parts of the repository;
- How design features of the ESF are determined (eg., how are the importance to safety and the design life of systems and structures being determined);
- How design/analysis methods and associated parameters are chosen (eg., for seismic design are pseudo-static analyses sufficient and what is an appropriate design acceleration); and

- How inputs, outputs, and changes in the design are tracked by the design control process, including the following: changes resulting from unanticipated field conditions; tracking the design inputs and outputs to the hierarchy of requirements; and the use, control, and qualification of Reference Information Base data in the ESF design.

**Date:** July

**Place:** Las Vegas, NV

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**Topic:** Glass and Spent Fuel Waste Form Research (Site Visit)

**Objective:** To get an overview of the ongoing research at Argonne National Laboratory (ANL) on simulated high-level waste glasses and spent fuel and tour of related laboratory facilities.

**Scope:** This site visit would focus on DOE's glass waste form research program, and especially the testing and results related to each producer's waste form (ie., West Valley Demonstration Project and the Defense Waste Processing Facility), including the primary parameters affecting waste glass performance. The site visit would also focus on research on radionuclide release rates from exposing simulated spent fuel to repository relevant environmental conditions.

**Date:** August

**Place:** Argonne National Laboratory, IL

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**Topic:** NRC Staff Comments on DOE's Total-System Performance Assessment for Yucca Mountain (Technical Exchange)

**Objective:** To provide an open discussion of the results of NRC scoping review of the Sandia TSPA 1991. Participants will include DOE, NRC, and CNWRA staffs and DOE contractors.

**Scope:** This technical exchange will focus on unique topics such as DOE's use of maximum entropy for determining data distributions (including future uses), the model abstraction process, the radionuclide release model including the "weeps" model, and the scenario methodology. NRC will present comments from NRC's scoping review of the TSPA. These comments will identify issues which require further detailed discussions with DOE, issues for which NRC plans to conduct a more detailed review, and issues requiring additional independent analyses by NRC. DOE should make presentations on the above listed topics and be prepared to discuss the NRC comments. Also, DOE should discuss how the results of site characterization activities are being fed into DOE's performance assessments as well as how site characterization planning and data acquisition is being affected by the performance assessment process and results.

**Date:** September

**Place:** NRC Headquarters, White Flint, MD

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**Topic:** Radionuclide Migration in the Unsaturated Zone  
(Technical Exchange)

**Objective:** To discuss recent advances in experimental and theoretical studies pertaining to the migration of radionuclides through the unsaturated zone at Yucca Mountain.

**Scope:** This technical exchange will focus on processes and conditions that can affect radionuclide mobility in the unsaturated zone of Yucca Mountain. Modeling and experimental studies will be discussed by both DOE and NRC investigators (e.g., CNWRA, LANL, LLNL, and LBL). Topics covering experimental issues will include methods of determining solubility, sorption, and matrix diffusion with special emphasis on simulating geochemical factors affecting mobility under fracture-flow conditions. Topics covering modeling issues will include the adequacy of the minimum  $K_d$  strategy along with alternative strategies considered by DOE in modeling radionuclide migration.

**Date:** October

**Place:** Washington, D.C.

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**Topic:** Near-Field Phenomena Related to Radionuclide Releases From the Engineered Barrier (Technical Exchange)

**Objective:** Discuss past, current and planned experiments, and computer simulations of near-field phenomena for the Yucca Mountain repository, with the emphasis of thermal hydraulics and releases of radionuclides.

**Scope:** This technical exchange will focus on how modelers can capture the near-field phenomena in order to make predictions of performance for the total system. In particular, the exchange will focus on the effects of heat on the saturation of the rock, circulation of air and water vapor, dripping of fractures in the heated zone, changes in water chemistry, interactions of steam and water with components of the engineered barrier, and conceptual models of releases of radionuclides from the engineered barrier under realistic near-field environments. The technical exchange will not emphasize thermal effects on rock mechanics unless tied to release of radionuclides.

**Date:** November

**Place:** NRC Headquarters, White Flint, MD

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**Topic:** Construction of a Complementary Cumulative Distribution Function (CCDF) of Projected Releases (Technical Exchange)

**Objective:** To exchange views on mathematical methods for evaluating uncertainties in projected repository performance (as displayed in a CCDF) and, especially, on the specific types of uncertainties to be included in (or excluded from) a CCDF used to demonstrate compliance with EPA's HLW standards.

**Scope:** This technical exchange will necessarily touch on all major steps in a repository performance assessment, including identification of potentially disruptive processes and events, screening of those processes and events, combination of the processes and events into scenarios, scenario screening, probability estimation, consequence estimation, and combination of the probability and consequence estimates into a CCDF. The major focus of the exchange will be identifying, analyzing, and estimating (quantifying) uncertainties in the probability and consequence estimates and on

incorporation of those uncertainty estimates into a CCDF to show compliance with EPA's HLW standards. DOE and NRC will each present examples illustrating their thoughts on the most appropriate way to construct a CCDF for demonstrating compliance.

Date: December

Place: Washington, DC

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## PROPOSED FUTURE NRC/DOE INTERACTIONS

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**Topic:** DOE Waste Package and Engineered Barrier System (EBS) Development Program (Technical Exchange)

**Objective:** To discuss the status of, and progress to date, of DOE's "Waste Package Plan," and reference EBS design.

**Scope:** This technical exchange would focus on the progress in DOE's implementation of the Waste Package Plan, and the technical approach for the design of the waste package and EBS. Discussion would include waste form characteristics, current waste package/ EBS conceptual design, materials selection, and current waste package program milestones.

**Date:** TBD

**Place:** Lawrence Livermore National Laboratory, CA

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**Topic:** DOE's Program Planning and Integration (Technical Exchange)

**Objective:** To provide NRC a presentation on the processes by which technical guidance and direction are provided to projects by the Office of Civilian Radioactive Waste Management (OCRWM) at DOE Headquarters, and the role that the Systems Planning and Integration Branch plays in integrating development efforts across the four major system elements.

**Scope:** This technical exchange would focus on the extent and functions of the Program Management Systems Manual, the Systems Engineering Management Plan, the Baseline Management Plan, and the Test and Evaluation Master Plan. Systems integration will be discussed in context of Integration Working Group and Interface Control Working Group activities. In addition, DOE will provide a brief presentation on the relationship between the Mined Geologic Disposal System Annotated Outline and the issues resolution initiative, and DOE activities performed under systems engineering.

**Date:** TBD

**Place:** Washington, D.C.

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**Topic:** OCRWM Technical Baseline Documents (Technical Exchange)

**Objective:** Provide NRC staff an opportunity to discuss OCRWM's treatment of NRC requirements contained in 10 CFR Part 60, 71, and 72.

**Scope:** Discussions would focus on OCRWM's technical baseline consisting of Program-Level System Requirements documents and Project-Level Design Requirements documents.

**Date:** TBD

**Place:** Washington, D.C.

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