



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON NUCLEAR WASTE  
WASHINGTON, D.C. 20555

ACNWS-0083

PDR 2/26/97

November 6, 1996

The Honorable Shirley Ann Jackson  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Dear Chairman Jackson:

**SUBJECT: SUMMARY REPORT - EIGHTY-SIXTH MEETING OF THE ADVISORY  
COMMITTEE ON NUCLEAR WASTE, SEPTEMBER 24-27, 1996, AND OTHER  
RELATED ACTIVITIES OF THE COMMITTEE**

During its 86th meeting, September 24-27, 1996, held at Hotel San Remo, Chateau 1 and 2, 115 East Tropicana Avenue, Las Vegas, Nevada, the Advisory Committee on Nuclear Waste (ACNW) discussed the following matters.

**HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE**

1. **ACNW Planning Session**

On Tuesday, September 24, 1996, the ACNW members held a planning session to discuss the conduct of Committee activities, procedures, and operations, as well as future priorities for ACNW review.

**Conclusions/Action Items**

The ACNW did not formulate advice to the Commission during this session. Proposed changes to the ACNW priority issues will be discussed with the Commissioners in the near future.

2. **Yucca Mountain Field Trip**

During the morning of Wednesday, September 25, 1996, the Committee visited the Exploratory Studies Facility's tunnel, and participated in a familiarization tour of the tunnel boring machine. Underground site visit stops included several of the test alcoves and observations of ongoing work. In the afternoon, the Committee visited the Amargosa Valley, as well as the Ash Meadows National Wildlife Refuge. The purpose of the afternoon visit was to directly observe agricultural activities and environmental areas which might be affected by the construction of the proposed repository at Yucca Mountain.

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### 3. Flow and Radionuclide Transport at Yucca Mountain

The Committee held an all-day working group session on Flow and Radionuclide Transport at Yucca Mountain on September 26, 1996. This session, chaired by Dr. George M. Hornberger, was directed toward the investigation of the status and results of studies and modeling of radionuclide transport in the saturated and unsaturated zones at Yucca Mountain. A variety of presenters, mostly representatives of national laboratories performing work for the Department of Energy (DOE), briefed the Committee on fracture flow and retardation studies and application to performance assessment (PA). Three main issue areas were discussed: (1) the flow and transport through an interconnected network of fractures such as may occur at Yucca Mountain; (2) the role of geochemical effects on transport modeling including studies of site geochemistry, sorption, solubility, and colloids; and (3) the integration of geochemical data and modeling with hydrologic models and its role in iterative PA modeling.

The discussion of the first issue included presentations on isotopic (Cl-36) evidence for fracture flow at Yucca Mountain, deep percolation and flow modeling at Yucca Mountain, and insights for Yucca Mountain from fracture flow studies at the Apache Leap Research Site. The discussion of the second issue included talks on the near-field chemical effects and impacts on release and transport, the role of fracture coatings in controlling matrix-fracture interactions and radionuclide transport, and the role of colloids in fracture transport and application to Yucca Mountain transport modeling. The discussion of the third issue included presentations on coupled flow and transport modeling for Yucca Mountain and integration of process-level models for flow and transport into total system PA.

#### Conclusions/Action Items

Elements of several issue areas for DOE's Waste Containment and Isolation Strategy and NRC's key technical issues (KTIs) were covered during this working group session. The information provided will be used by the ACNW in evaluating the status of DOE's anticipated degree of reliance on retardation in its assessment of the Yucca Mountain site and will aid in reviewing and evaluating NRC's KTIs. The Committee plans to write a letter to the Commission on the important issues relevant to NRC's review of the DOE program.

### 4. Site Characterization Integration Through the Use of Performance Assessment

The Committee was briefed by a panel on the subjects of integration of site characterization and PA and use of expert judgment in assessing uncertainty in process-level models. The panel of experts included representatives from DOE, Los Alamos, Lawrence Berkeley Laboratory, and the Management & Operations (M&O) contractor. The focus of the session was discussion of DOE's proposed plan for characterizing uncertainties in process-level models through the use of expert judgment, the model

abstraction process, collaboration between scientists and performance assessment analysts, weighting of scenarios, and the treatment and propagation of uncertainty.

#### **Conclusions/Action Items**

The Committee noted that the format used in this panel discussion is useful for the discussion of PA integration issues and that it will continue to use this format in the future. The information and insights obtained from these discussions will be used in the Committee's ongoing review of this issue.

#### **5. Repository Design for Viability Assessment**

J. Bailey, Deputy Operations Manager, Engineering and Integrations, M&O contractor, noted that it was the current intention of DOE to develop, over a 5-year period, a single design, in a level of detail that would be adequate to support the viability assessment, the environmental impact statement, and the license application, but which would not necessarily be complete enough for a facility design. Mr. Bailey discussed the current design schedule, the means of prioritizing the level of detail required at the time of license submittal, and the significance on the design of many of the current issues associated with the viability assessment.

Mr. Bailey also discussed some of the concepts currently being considered insofar as the total site activities are concerned, from the unloading of casks through the eventual placement of the waste containers by means of an emplacement gantry onto support pedestals in the repository disposal drifts. He pointed out, however, that the plethora of as-yet-unresolved issues would undoubtedly continue to result in conceptual changes and subsequent design evolutions.

#### **Conclusions/Action Items**

The Committee will continue to monitor progress in this area, particularly the relevance of the design information insofar as the ability of the NRC staff to provide a technically based recommendation on the eventual DOE license application is concerned.

#### **6. Comments from Interested Parties**

During this portion of the meeting, representatives from Nye County, Nevada, made a presentation to the Committee describing the status of the Nye County work.

N. Stellavato, Nye County Onsite Representative, gave a brief introduction to the Nye County drilling program. He was followed by M. Murphy, Nye County Regulatory Advisor, who presented the goals of the program. The ongoing technical work was described by P. Montazer, Multimedia Environment Technologies, Inc. As a result of activities to date, Nye County representatives believe that Nye County's program had

already provided several unique benefits, which could, if followed, assist in minimizing overall project costs.

In response to a request from the Committee Chairman as to whether there were any further comments from attendees, D. Shettle of Boulder City, representing himself as a private citizen, stated that he believed there were no uninterrupted pathways between the matrix and the fractures, and thus, the physical relationships in this area must be further understood.

### **Proposed Schedule for the 87th ACNW Meeting**

The Committee agreed to consider the following issues during the 87th ACNW Meeting, October 22-23, 1996:

- Decommissioning for Disposals of Radioactive Waste by Land Burial Authorized Under the Former 10 CFR 20.304, and 10 CFR 20.302, and the Current 10 CFR 20.2002 - The Committee will review a draft branch technical position that will provide criteria for screening onsite burials disposed of in accordance with former 10 CFR 20.304 and 10 CFR 20.302 requirements to determine whether further remediation is required.
- Direction-Setting Issue Papers - The Committee will be briefed by the NRC staff on the direction-setting issue papers (produced as part of the agency's strategic assessment of regulatory activities) and will provide comments on those issues for which it believes its review will enhance the strategic assessment process.
- Ethics Training - The Committee will receive its annual ethics training from a representative of the agency's Office of the General Counsel.
- Preparation of ACNW Reports - The Committee will discuss proposed reports, including radionuclide transport at Yucca Mountain, specification of a critical group and reference biosphere to be used in the PA for a nuclear waste disposal facility, consideration of coupled processes (thermal-hydrological-mechanical-chemical) in the design of a high-level waste repository, time of compliance in high- and low-level waste disposal, comments on selected agency direction-setting issue papers, and shallow land burials licensed under the former 10 CFR 20.304 and 10 CFR 20.302 requirements.
- Committee Activities/Future Agenda - The Committee will consider topics proposed for future consideration by the full Committee and the Working Groups. The Committee will discuss ACNW-related activities of individual members.
- Miscellaneous - The Committee will discuss miscellaneous matters related to the conduct of Committee activities and organizational activities and complete discussion of matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

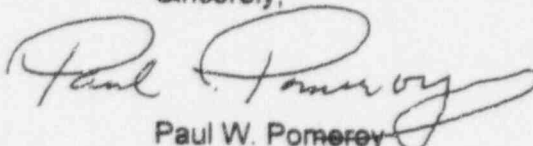
The Honorable Shirley Ann Jackson

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**OTHER RELATED ACTIVITIES OF THE COMMITTEE**

The Committee will meet November 12-13, 1996, for its 88th meeting. The Committee does not plan to meet in December 1996.

Sincerely,

A handwritten signature in cursive script, appearing to read "Paul W. Pomerey". The signature is fluid and extends to the right.

Paul W. Pomerey  
Chairman