



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

May 3, 1989

The Honorable Lando W. Zech, Jr.  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: DRAFT TECHNICAL POSITION ON POSTCLOSURE SEALS IN AN UNSATURATED MEDIUM

During its ninth meeting, April 26-28, 1989, the Advisory Committee on Nuclear Waste (ACNW) met with members of the NRC staff to discuss the draft Technical Position on Postclosure Seals in an Unsaturated Medium. Representatives from the U.S. Department of Energy were present at this meeting. We also had the benefit of the document referenced.

On the basis of this review, we offer the following comments:

1. The draft technical position does not deal adequately with factors such as seismicity, tectonics, and long-term changes in geology, hydrology, and climate that might affect seal or barrier performance. Long-term projections on the geology, seismicity, tectonics, and climate of the Yucca Mountain area contain uncertainties and each of these factors could have impacts on the design, location, and performance of the seals. For these reasons, we believe that the draft technical position needs to be expanded to explicitly address these considerations.
2. Backfill materials for shafts and seal cements for boreholes can be selected to have sorptive properties for radionuclides. Such materials would provide added protection against unanticipated events, even if no containment functions are assigned to the backfills and seals. We recommend that the draft technical position include a statement addressing this additional consideration.
3. The draft technical position indicates that the outflow of radioactive gases from the repository could be significant and needs to be prevented. We believe that a rationale to support this position should be provided, as well as some perspective on the significance of this potential release.
4. Whether fracture or matrix flow predominates within the repository is an unresolved issue, and its resolution could have an impact on the method of control of potential releases. Because fracture flow may prove significant, its potential impact on the performance requirements for the barriers needs to be addressed in the draft technical position.

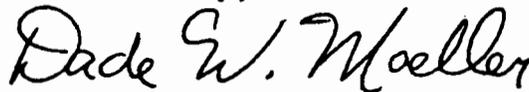
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5. It appears that the closures that the U.S. Department of Energy proposes to install in the Yucca Mountain facility might be better characterized as "barriers" rather than "seals." If appropriate, the title of the draft technical position should be altered to reflect this fact.

The Committee wishes to express concern about the apparent lack of response from the geological community to which the draft technical position was available for review. The NRC should consider implementation of a more active program for soliciting reviews from such groups.

On the basis of our review, we believe that development of the draft technical position is justified. We hope these comments will be helpful.

Sincerely,



Dade W. Moeller  
Chairman

Reference:

Memorandum dated March 31, 1989 from John J. Linehan, NRC, to Richard K. Major, ACNW, Subject: Transmittal of Draft Technical Position on "Postclosure Seals in an Unsaturated Medium"