



Department of Energy
Washington, DC 20585

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JAN 23 1990

Robert E. Browning, Director
Division of High-Level
Waste Management
Office of Nuclear Material
Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Browning:

This is in response to the Nuclear Regulatory Commission's (NRC) December 4, 1989, letter from R. Browning to S. Rousso which enclosed a letter from the Advisory Committee on Nuclear Waste (ACNW) to NRC Chairman Carr presenting two recommendations concerning implementation of a multidisciplinary systems approach and a small "blue ribbon" peer review panel to effect an early evaluation for potential volcanism at the Yucca Mountain site.

As you know from Mr. Leo Duffy's presentation to the Commission on December 20, 1989, the Department has taken the initiative on early evaluation of the suitability of the Yucca Mountain site and is pursuing an integrated, multidisciplinary systems approach. This approach is being applied to potential volcanism as well as other aspects of site evaluation. The ACNW comments are meaningful and we fully intend to implement the philosophy expressed. We will discuss progress with you as we proceed with an early evaluation of volcanism and other issues related to the Yucca Mountain site.

With respect to the ACNW recommendation concerning a small "blue ribbon" peer review panel, we believe that the Nuclear Waste Technical Review Board (NWTBR) presently serves that function. As you know, the NWTBR was established by the Nuclear Waste Policy Amendments Act of 1987 to evaluate the technical and scientific validity of activities undertaken by the Secretary, including site characterization activities. The NWTBR members were appointed by the President from among persons nominated by the National Academy of Sciences. Each person nominated was required to be eminent in a field of science or engineering, including environmental sciences, and selected solely on the basis of established records of distinguished service. In addition, the NWTBR has the authority to obtain the services of other experts and consultants on a temporary basis. Since being appointed about a year ago, the NWTBR has met frequently with the Department and has conducted field trips to address selected issues, such as volcanism. In particular, the NWTBR technical exchange and field trip on November 20-21, 1989 specifically addressed volcanology. Therefore, the Department does not

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believe that it is necessary to employ a separate panel. We realize that the NRC staff has participated in NWTRB activities and we encourage you to continue this practice.

Please feel free to contact Gordon Appel of my staff on 586-1462 with any questions regarding this correspondence.

Sincerely,



Ralph Stein
Associate Director for Systems
Integration and Regulations
Office of Civilian Radioactive
Waste Management

cc: W. Coons, NWTRB
D. Moeller, ACNW
R. Loux, State of Nevada
M. Baughman, Lincoln County, NV
D. Bechtel, Clark County, NV
S. Bradhurst, Nye County, NV



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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DEC 04 1989

Mr. Sam Rousso, Acting Director
Office of Civilian Radioactive Waste
Management
U. S. Department of Energy
Washington, D.C. 20545

Dear Mr. Rousso:

In an October 18, 1989 letter to U.S. Nuclear Regulatory Commission (NRC) Chairman Carr, NRC's Advisory Committee on Nuclear Waste (ACNW) provided recommendations concerning investigation of potential volcanism at the proposed Yucca Mountain high-level radioactive waste repository site. That letter, which is enclosed for your consideration, contained two recommendations. One is that the investigation of volcanism be undertaken with an integrated, multidisciplinary systems approach. As you know, the NRC staff has previously stressed the need for this kind of approach, not only for studies of volcanism, but as well for investigations of other phenomena at the Yucca Mountain site. In particular, this point was highlighted in the July 31, 1989 letter transmitting the NRC staff Site Characterization Analysis (SCA) to the U.S. Department of Energy (DOE), and in addition was emphasized in several SCA comments. Furthermore, in recent NRC-DOE Technical Exchanges on tectonics the NRC staff has re-emphasized this concern.

The other recommendation is that a "blue-ribbon" peer panel be established to assist in providing guidance on appropriate studies needed to fulfill a systems approach to the investigation of potential volcanism at Yucca Mountain. The NRC recognizes that it is, of course, the responsibility of DOE to utilize whatever mechanisms are necessary to assure that its site characterization program, in the area of volcanism and other areas of investigation, is planned and conducted so that it obtains the information needed to demonstrate compliance with 10 CFR Part 60 requirements. Therefore, I am forwarding the ACNW's suggestion for DOE's consideration.

Because of the importance of the volcanism issue to evaluation of the suitability of the Yucca Mountain site, I would like to be kept informed on an ongoing basis of any new plans or initiatives that DOE is pursuing relative to the investigation of potential volcanism at the Yucca Mountain site. The NRC staff stands ready to interact with DOE as necessary to provide guidance in this or any other area of DOE's site characterization program.

Sincerely,

Robert E. Browning
Robert E. Browning, Director
Division of High-Level Waste Management

Enclosure: As stated

cc: W. Coons, NWTRB
D. Moeller, ACNW
R. Loux, State of Nevada
M. Baughman, Lincoln County, NV
D. Bechtel, Clark County, NV
S. Bradhurst, Nye County, NV
C. Gertz, DOE-NV/YMPO

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

October 18, 1989

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

**SUBJECT: RECOMMENDATIONS DEALING WITH INVESTIGATION OF POTENTIAL VOLCANISM
AT THE YUCCA MOUNTAIN HIGH-LEVEL WASTE REPOSITORY SITE**

This letter is a follow-up to our letter to you of July 3, 1989, regarding the NRC staff's analysis of DOE's Yucca Mountain Site Characterization Plan. In that letter we expressed our concern that early studies at Yucca Mountain should be focused on identifying and evaluating potential problems that may disqualify the site as a high-level waste repository. As a result of that concern and an increasing interest in volcanism as a potential "fatal flaw," an ACNW Working Group on Tectonic Models met on October 10, 1989 with Professor Bruce D. Marsh who is head of the Department of Earth and Planetary Sciences at The Johns Hopkins University and is a recognized expert on volcanic processes. Professor Marsh presented an overview of the state-of-knowledge with regard to volcanogenesis. He made several observations pertaining to the prediction of volcanic hazards in general, and specifically to the work that has been done to date in the southern Basin and Range Province which includes the Yucca Mountain site.

First, he urged that volcanogenesis studies be undertaken in the context of a systems approach that includes integration of geochemical, geologic, tectonic, and geophysical studies of the immediate vicinity of Yucca Mountain aimed specifically at the volcanogenesis problem, as well as more regional studies conducted as part of the general site characterization. This supports our point of view as well as the view of the NRC staff that integration of multidisciplinary data is essential to studying potential geologic processes and events at Yucca Mountain.

Secondly, he suggested that consideration should be given to the establishment of a small, "blue-ribbon" peer panel to examine the state-of-knowledge of volcanogenesis as it pertains to southern Nevada and Yucca Mountain in particular and, based on requirements such as 10 CFR Part 60, to provide guidelines on the appropriate studies to fulfill a systems approach to the investigation of volcanism. This panel, consisting of recognized experts in the germane disciplines, and working under the aegis of the National Research Council or a similar impartial body, could, in a limited period of time, provide a fresh, comprehensive, unbiased approach to the issue of volcanism. The report from this panel could provide the Department of

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The Honorable Kenneth M. Carr

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October 18, 1989

Energy with invaluable guidance on one aspect of their future site characterization activities at Yucca Mountain and would make available to all interested organizations basic information for review and assessment of volcanism at the site. The Committee believes that there is merit to Dr. Marsh's proposal. We recommend that efforts be initiated to follow through on his recommendations. We, of course, are prepared to assist in further developing this suggestion and bringing it to fruition.

Sincerely,

Dade W. Moeller

Dade W. Moeller
Chairman