



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

October 11, 1989

Mr. James M. Taylor, Acting Executive Director
for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Taylor:

SUBJECT: PROPOSED RESOLUTION OF GENERIC ISSUE 135, STEAM GENERATOR AND
STEAM LINE OVERFILL ISSUES

During the 354th meeting of the Advisory Committee on Reactor Safe-
guards, October 5-6, 1989, we met with representatives of the NRC staff
and discussed proposed actions for resolving Generic Issue 135. We also
had the benefit of the document referenced.

As currently defined by the staff, this issue involves steam generator
overflow events resulting from steam generator tube ruptures. The staff
review has dealt almost exclusively with Westinghouse plants. We
believe that the staff's proposed resolution is incomplete because it
has not addressed the following matters:

- (a) The behavior of Combustion Engineering and Babcock & Wilcox plants
during steam generator overflow events, and
- (b) For overflow events, water may enter the auxiliary feedwater
turbine steam supply line. If the steam supply valve to the
turbine is opened, the resulting water slug could cause a rupture
of the pressure boundary and the release of steam into the aux-
iliary building.

Sincerely,

Forrest J. Remick
Chairman

Reference:

Memorandum dated August 14, 1989 from R. Wayne Houston, Office of
Nuclear Regulatory Research, for R. F. Fraley, ACRS, Subject: Reso-
lution of Generic Issue 135, "Steam Generator and Steam Line Overflow
Issues," w/enclosures.

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APPENDIX A
FUTURE AGENDA

JANUARY 24-26, 1990 (tentative agenda)

Meeting with the Commissioners (Open)

Anticipated and Unanticipated Processes and Events (Open) - The Committee will review the revised rule being prepared by the NRC staff concerning the considerations of anticipated and unanticipated processes and events for the proposed high-level waste repository.

IAEA Safety Principles and Technical Criterion (Open) - The Committee will be briefed on "IAEA Safety Principles and Technical Criterion for the Underground Disposal of High-Level Radioactive Wastes", and the NRC staff position paper on this standard.

Definition of Substantially Complete Containment (Open) - The Committee will be briefed by the NRC staff on the Substantially Complete Containment Definition.

Seismic Hazards (Open) - The Committee will be briefed by the NRC staff on the Branch Technical Position on seismic hazards.

Site Characterization Plan (Open) - The Committee will be briefed by representatives of DOE on the semiannual SCP progress report.

Storage of Spent Nuclear Fuel (Open) - The Committee will be briefed by the NRC staff on the storage of spent nuclear fuel in NRC approved casks at commercial nuclear power plant sites (final rule for information and comment)

Technical Position on Waste Forms (Open) - The Committee will be briefed by the NRC staff on modifications to the LLW Waste Form Technical Position

MRS Commission Recommendations (Open) - The Committee will be briefed by representatives of the MRS Commission on their position report.

American Society for Testing Materials (Open) - The Committee will be briefed on the radioactive waste activities of ASTM.

Committee Activities (Open) - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.

FEBRUARY 21-23, 1990 (tentative agenda)

Committee Activities (Open) - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.

MARCH 21-23, 1990 (tentative agenda)

Pathfinder Atomic Power Plant Dismantlement (Open) - The Committee will be briefed on the NRC staff's finding in their Safety Evaluation Report.

Committee Activities (Open) - The Committee will discuss anticipated and proposed Committee activities, future meeting agenda, and organizational matters, as appropriate.



UNITED STATES
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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: DRAFT TECHNICAL POSITION ON TECTONIC MODELS IN THE ASSESSMENT OF PERFORMANCE OF HIGH-LEVEL RADIOACTIVE WASTE REPOSITORIES

During its 13th meeting, September 13-15, 1989 and 14th meeting, October 11-13, 1989, the Advisory Committee on Nuclear Waste met with representatives of the NRC staff to discuss the subject draft Technical Position on Tectonic Models (referenced). This matter was also discussed with staff representatives during an ACNW Working Group meeting on October 10, 1989. On the basis of these discussions and our review of the draft report, we offer the following comments.

Although the preparation of this draft Technical Position has resulted in certain benefits, including promotion of discussion on related issues, helping the NRC staff to formulate its positions, and assisting in a better understanding of certain issues, there is still a need to better justify the reasons for issuing the document and to demonstrate how it and other related reports are to be integrated. There are at least two options for proceeding with this matter in order to transmit the views of the NRC staff to DOE. These include summarizing the staff's views in a Technical Position considerably improved from the one proposed or expressing the staff's position in the form of a guidance letter.

Our comments regarding the adequacy of the proposed Technical Position are as follows:

1. The proposed draft Technical Position is unnecessarily terse. Additional discussion is needed to avoid misunderstandings. For example, further treatment is needed on the development and application of tectonic models in the evaluation of a proposed geologic repository. Specific subjects to be addressed should include:
 - a. The explicit use of models in performance allocation and performance assessment,
 - b. The development of broad-based criteria by which tectonic models can be evaluated, and
 - c. The relative role of deterministic and probabilistic methods for assessing processes and events as they relate to, and are developed from, tectonic models.

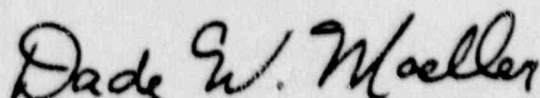
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October 18, 1989

2. There are many words and phrases in the draft Technical Position that need to be clarified and/or defined to assist in making the Technical Position effective. These include a wide range of terms, such as a "relatively short period of time," "over long times," "full range" of tectonic models, and "bounding values." There should also be a major effort to ensure that the definitions of certain scientific terms being proposed by the NRC staff for guidance purposes are compatible with the technical definitions currently in use within the professional geosciences community.
3. Although the NRC staff has indicated that they are scheduled to complete and issue this Technical Position by the end of this calendar year, we are not convinced of the necessity for meeting this timetable. Our position is based, in part, on the fact that rulemaking is underway to clarify the meaning and applications of anticipated and unanticipated processes and events. The outcome of the rulemaking could have an impact on the development of this Technical Position. If, however, there is a need to issue the Technical Position by the indicated date, we will make ourselves available to review and comment on a revised draft. Because of the extensive changes that we believe are necessary, a follow-up review by the ACNW should be scheduled.

We hope these comments will be helpful, and we look forward to having an opportunity to review and comment on the revised report.

Sincerely,



Dade W. Moeller
Chairman

Reference:

Memorandum dated July 24, 1989 to ACNW Members from S. J. S. Parry, ACRS, with attached "Technical Position on Tectonic Models in the Assessment of Performance of High-Level Radioactive Waste Repositories" (Predecisional)



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October 18, 1989

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

Dear Chairman Carr:

SUBJECT: DRAFT STAFF TECHNICAL POSITION ON THE DESIGN OF EROSION PROTECTION
COVERS FOR STABILIZATION OF URANIUM MILL TAILINGS SITES

During its 14th meeting, October 11-13, 1989, the Advisory Committee on Nuclear Waste met with representatives of the NRC staff to discuss the subject Draft Technical Position (referenced). On the basis of these discussions, we offer the following comments:

1. The Draft Technical Position being proposed by the NRC staff acknowledges that the procedures for prevention of erosion (described in the position) may increase the probability for increased infiltration of water which, in turn, could lead to groundwater contamination. While the NRC staff cautions that "The decision to use a particular reclamation strategy should consider all the possible failure modes with respect to all applicable EPA and NRC standards," they also state that "The 'systematic' process to address certain design aspects, other than the surface water erosion considerations for cover designs, is beyond the scope of this Staff Technical Position and is, therefore, not addressed." In addition, they state that "addressing only the concerns and criteria detailed in this position may not be sufficient to address the other features necessary to comply with other applicable regulations and standards."

We find this limited approach disturbing and unsatisfactory. We believe it would be better to employ a systems approach to the problem of stabilizing uranium mill tailings, wherein all related aspects of regulatory concerns would be taken into consideration. Alternatively, the Technical Position should identify and limit those activities pertinent to stabilization that could result in violations of other regulations. We believe the Technical Position should be rewritten to reflect these comments.

2. There is inadequate justification for the exemptions that the NRC staff is willing to grant for difficulties in meeting the standards for the control of uranium mill tailings. For example, where designing for the Probable Maximum Flood or Probable Maximum Precipitation is "impracticable," the staff will accept the Standard Project Flood. Where the provision of combined stable soil top slopes and/or rock-protected side slopes is "excessively costly," other approaches may be acceptable. We believe that additional discussion of and justification for these positions needs to be provided.

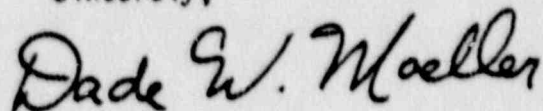
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October 18, 1989

3. Lastly is the matter of performance assessment and/or the determination of compliance with the NRC regulations. For example, the Technical Position states that the limit of 20 picocuries per square meter per second for radon-222 releases is for a value "averaged over the entire surface of the disposal site and over at least a one-year period, for the control period of 200 to 1000 years." The criteria for determining the numbers and frequency of the required measurements should be specified. Additional discussion and clarification of this and other aspects of the Technical Position to ensure compliance with NRC regulations are needed.

In summary, while the Draft Technical Position provides a considerable amount of explanation with respect to details of the various alternatives for the designs of covers for the control of uranium mill tailings, certain fundamental aspects of the philosophy and justification for the approaches being taken are lacking. We believe that additional discussion of these broader aspects is necessary and justified.

Sincerely,



Dade W. Moeller
Chairman

Reference:

U.S. Nuclear Regulatory Commission, "Draft Staff Technical Position, Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites," dated August, 1989 (Predecisional)



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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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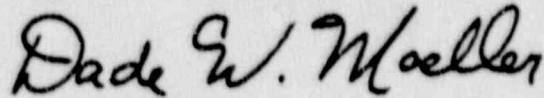
The Honorable Kenneth M. Carr

- 2 -

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,

A handwritten signature in cursive script that reads "Dade W. Moeller". The signature is written in dark ink and is centered on the page.

Dade W. Moeller
Chairman



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October 18, 1989

The Honorable Kenneth M. Carr
Chairman
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Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: PATHFINDER ATOMIC POWER PLANT DISMANTLEMENT

During its 13th meeting, September 13-15, 1989, the Advisory Committee on Nuclear Waste met with representatives of the NRC staff to discuss the proposed dismantlement of the Pathfinder plant. This was also a subject of discussion among the Committee members during our 14th meeting, October 11-13, 1989. On the basis of these discussions, the following comments are provided.

Because the criteria that are established during the dismantlement of the Pathfinder plant may become precedents for similar operations in the future, we believe it is important that care be taken in their formulation. In this regard, we offer the following preliminary suggestions and/or recommendations:

1. Evaluation of the dismantlement operation should be based on a systems approach. That is to say, consideration should be given to ways in which the associated regulatory criteria can help minimize the volumes of waste generated, as well as facilitate their handling, transport, and disposal.
2. Overall, the criteria should be as nonprescriptive as possible; acceptable levels of residual contamination should be clearly defined and justified; and the establishment of overly restrictive limits (for example, at the level of "no detectable activity") should be avoided. One consideration in the establishment of residual radionuclide limits should be the potential for long-term contamination of groundwater.
3. The assumption should be made that the site on which the dismantled facility was located may some day be released for use by members of the public. For this reason, exposures well in excess of an occupational time of 2,000 hours per year should be considered.
4. To the extent practical, maximum benefit should be taken of the experience gained in the decommissioning of related facilities, such as the Shippingport Atomic Power Station.
5. Although adequate quality assurance (QA) conditions should be required, including confirmation that representative samples are collected for evaluating specific conditions, care must be taken to avoid burdening licensees with excessive QA requirements.

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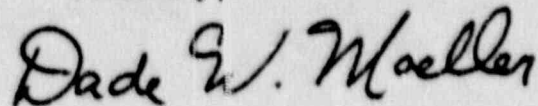
The Honorable Kenneth M. Carr

- 2 -

October 18, 1989

We look forward to follow-up meetings with the NRC staff after issuance of the Safety Evaluation Report on the dismantlement of the Pathfinder plant.

Sincerely,

A handwritten signature in cursive script that reads "Dade W. Mceller". The signature is written in dark ink and is positioned above the typed name and title.

Dade W. Mceller
Chairman



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October 18, 1989

Mr. James M. Taylor
Acting Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Taylor:

SUBJECT: LOW-LEVEL WASTE PERFORMANCE ASSESSMENT METHODOLOGY

During its 14th meeting, October 11-13, 1989, the Advisory Committee on Nuclear Waste met with representatives of the NRC staff to discuss a report prepared by R. John Starmer, Lynn G. Deering, and Michael F. Weber on a "Performance Assessment Strategy for Low-Level Waste Disposal Sites" (see Reference).

This report is well written and provides guidance on a subject that is fundamental to the conduct of licensing reviews of proposed LLW disposal facilities. To ensure that it receives the attention it deserves, we recommend that the NRC staff consider updating and issuing the report as an NRC technical position, as a guidance letter, or in another suitable form. Revisions should include expression of the dose limits in the report in both International System of Measurement (SI) and English units and should include use of the concept of "effective dose equivalent." The requirements and standards in this report should also be made comparable to those in other related NRC documents. In addition, the issue of how uncertainties should be assessed warrants attention.

The NRC staff reported to us that the resources currently available for this work are minimal. We believe that this effort is important, and we urge that additional resources be made available to support this program.

Sincerely,

Dade W. Moeller

Dade W. Moeller
Chairman

Reference:

Report by R. John Starmer, Lynn G. Deering, and Michael F. Weber during the Tenth Annual DOE Low-Level Waste Management Conference, August 30-September 1, 1988 in Denver, Colorado, "Performance Assessment Strategy for Low-Level Waste Disposal Sites"

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