ACNWR-0170

May 24, 2001

The Honorable Richard A. Meserve
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Chairman Meserve:

SUBJECT: ADVISORY COMMITTEE ON NUCLEAR WASTE COMMENTS ON ENTOMBMENT

On October 18, 2000, at the 122nd meeting of the Advisory Committee on Nuclear Waste (ACNW), the NRC staff gave a presentation on entombment. The Committee was asked to comment on the staff's regulatory framework for reactor entombment and on the dose reduction contributions that engineered barriers can provide. At the 124th ACNW meeting there were additional discussions between the NRC cognizant engineer and the Committee to clarify issues relating to volume averaging of radioactivity. NRC papers, SECY-99-187 and SECY-00-0129 deal with entombment issues. The staff requirements memorandum relating to SECY-00-0129 requires the staff to proceed with rulemaking on entombment.

RECOMMENDATION

Entombment should not be the subject of a separate regulation but should be included in the larger context of other reactor decommissioning and license termination issues.

DISCUSSION

Reactor decommissioning is regulated by 10 CFR 50.82. In addition, decommissioned reactor sites must meet the criteria for license termination in 10 CFR Part 20, Subpart E. The governing requirements for license termination are that the dose to the public not exceed 25 mrem/year except in special cases and that doses be as low as reasonably achievable (ALARA). Subpart E does not specify what concentration or total amount of radioactivity may remain on site, but rather relates to the potential dose to individuals.

The Committee believes that entombment can be a viable option as a part of reactor site decommissioning. We further believe that entombment is a subissue of the larger issues of reactor decommissioning and license termination and should be addressed by the NRC staff in that context rather than being dealt with separately. We believe that the reactor license termination regulation in Part 50.82 should be expanded to deal with entombment and with other reactor site decommissioning and license termination issues such as the 60-year

decommissioning time limit and rubblization. For those reactor sites where entombment would result in possible short-term exposures exceeding 25 mrem/year, increasing the decommissioning time limit to greater than 60 years, perhaps as much as 300 years, could provide time for adequate radioactive decay to meet the standard.

Engineered barriers at reactor sites offer the possibility of making important contributions to reducing the potential for radiation exposure to the public, not only in the case of entombment but also for rubblization. This would be especially true if the decommissioning time limit were extended. However, the potential dose to the public with any engineered barrier proposal is site-specific and depends on the source term, rainfall, type of soil, and location of groundwater.

The issues associated with reactor decommissioning and license termination provide excellent examples of how risk-informed, performance-based regulations may be used to ensure public safety.

Sincerely,

/RA/

B. John Garrick
Chairman

References:

1. Memorandum dated July 19, 1999, for The Commissioners, from William D. Travers, Executive Director for Operations, NRC, SECY-99-187, Subject: Information Paper on the Viability of Entombment as a Decommissioning Option for Power Reactors.
2. Memorandum dated June 12, 2000, for The Commissioners, from William D. Travers, Executive Director for Operations, NRC, SECY-00-0129, Subject: Workshop Findings on the Entombment Option for Decommissioning Power Reactors and Staff Recommendations on Further Activities.
3. Memorandum (Revised) dated September 5, 2000, from Annette Vietti-Cook, Secretary of the Commission, to William D. Travers, Executive Director for Operations, NRC, Subject: Staff Requirements - SECY-00-0129 - Workshop Findings on the Entombment Option for Decommissioning Power Reactors and Staff Recommendations on Further Activities.