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September 14<sup>th</sup>, 2001

SEP 26 2001

Mr. Lake H. Barrett  
Office of Civilian Radioactive Waste Management  
Department of Energy  
Washington, D.C. 20585

Dear Mr. Barrett:

I am responding to your request, as forwarded by Mr. Peter Bernstein of the Potomac Communications Group, for my comments and views on whether or not Energy Secretary Abraham should recommend to President Bush that Yucca Mountain be developed to serve as a repository for spent nuclear fuel. I received this request on September 5<sup>th</sup> and note that the deadline for a response is September 20<sup>th</sup>.

At this time, I cannot with confidence judge whether Yucca Mountain warrants further development as a repository for spent nuclear fuel. I note that after 20 years of investigation the important and recently produced documents are still described as a "Preliminary Site Suitability Evaluation." Key conceptual components of the design, such as the temperature regime, have not been explicitly defined. The extended length of the PSSE and hundreds of supporting documents cannot be carefully reviewed during a 30 or even 90 day public comment period. I see only limited evidence of a thorough scientific and engineering review of the entire package of documents.

Considering the importance of this decision, the lack of a clear definition of the design and safety strategy, and the limited time for a careful and thoughtful review, *I recommend that the Secretary's decision be delayed.*

As you know, I have had some experience in reviewing the Yucca Mountain project and have followed its progress during the past few years. I believe that there are a number of important scientific and technical issues that have not yet been resolved. These include but are not limited to:

- \* Long-term performance of the waste package alloy C-22.
- \* The role of colloids in the far-field transport of radionuclides.

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- \* Characterization of the flow paths and the development of improved models of flow in the saturated zone.
- \* Improved models of spent fuel corrosion and radionuclide release.
- \* Analysis of the uncertainty in the performance assessment.
- \* Impact of volcanic activity on repository performance.

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In summary, Yucca Mountain is a site with a complicated geology that will be expected to effectively contain over 20 billion Curies of radioactivity for up to 10,000 years. To proceed without careful attention to and review of the science underlying the total system performance of the Yucca Mountain repository site will seriously jeopardize the development of nuclear power in this country. To pursue a rapid process that does not allow effective public participation and comment will only damage the credibility of the agencies involved in the preparation and review of the license application.

As noted in a recent editorial in *Nature* (August 30, 2001), the Secretary's decision must be based on a solid scientific determination of the safety of the site and a decision process that is fair. A decision at this time would be premature and certainly fails to meet either of these criteria.

*In my view, it is simply not possible to make a credible and informed decision on the suitability of the Yucca Mountain site as a repository for high-level waste at this time.*

These comments are necessarily brief, but they are based on a real effort to understand the scientific and technical basis of the Yucca Mountain project.

Sincerely,

Rodney C. Ewing  
Professor

Cc: S. Abraham, Secretary, DOE  
Bob Card, Under Secretary, DOE

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