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November 4, 1983

Mr. Everett A. Wick  
High Level Waste Licensing Management Branch  
Division of Waste Management  
Mail Stop 965 SS  
U. S. Nuclear Regulatory Commission  
Washington, D. C., 20555

WM Record File

A-3168

WM Project 10-11-14  
Docket No. \_\_\_\_\_

PDR [initials]  
LPDR B, H, S

Distribution:

E. Wick

(Return to WM, 273-53)

Dear Mr. Wick:

Review of Site Technical Position STP-20 for a Tuff Repository

I have reviewed the subject document and find it to be a comprehensive specification of what will be required in terms of developmental effort in order to obtain a full understanding of waste form/waste package behavior under repository conditions. Such information will enable DOE to determine whether their package system meets regulatory requirements. Since the listed issues have been previously formulated in NUREG-0960, which we helped prepare, we have no disagreement with the basic contents of the STP. I wish, however, to make the following comments:

- (a) Since the tuff repository will now be located in the unsaturated zone, reference to "water" behavior is not fully appropriate, except for the post-800-year period when steam conditions disappear. For this particular STP, then, one should be careful to outline the issues connected with steam behavior during the first 800 years, since penetration of the packing and container will possibly be by different mechanisms than those appropriate for liquid water. Also, waste form leaching is a liquid interaction which will be different from the mechanism for steam.
- (b) It should be pointed out that DOE may not have to resolve each of the listed issues to demonstrate compliance with 10 CFR 60. They may wish, for example, to provide sufficient data to show that the container itself will meet the 300- 1000-year containment period. Such test data could be based on whole package tests which mock-up prototypic, as well as accelerating conditions, in order to develop a prediction for the container failure time under system conditions. Therefore, a full characterization of the individual package components, together with estimations of synergistic effects, may not be needed since they are automatically integrated into this test procedure.

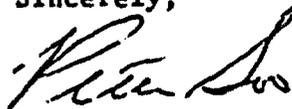
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Quantification of the behavior of each package component would be required if DOE wished to claim credit for water migration time through a packing material, container failure time, and the radionuclide migration time through the packing.

In summary, DOE should be allowed to take "short-cuts" provided that they prove them to give conservative estimates of waste package performance.

Sincerely,



Peter Soo, Associate Division Head  
Nuclear Waste Management Division

PS:gfs

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