

MAR 22 1993

NOTE TO: Rex Wescott, HLHP  
 FROM: Charles Interrante, HLGE  
 THROUGH: Rick Weller, HLGE *R.W.*  
 SUBJECT: HLGE MATERIAL SECTION COMMENTS ON PRE-DECISIONAL DRAFT DOCUMENT NRC HIGH-LEVEL RADIOACTIVE WASTE RESEARCH PROGRAM PLAN (NUREG1406).

In response to your request for comments on the subject document, the following are submitted for consideration:

A.0.1.1 line 4: What are "inventories degradation mechanisms?" Perhaps you mean something like the mechanisms of alteration or degradation that are associated with selected HLW materials. This should be clarified.

A.0.1.1 line 9: The expression "solubility of waste form leachates" is not at all clear. I would suggest "solubility of a given species in a leachate" or "solubilities of waste-form species in their leachates."

A.0.1.1 line 14: "transport is a concern of Yucca Mountain" would be stated as a "potential" concern, as there is present uncertainty related to its significance. Bounding calculations may indicate these to be not significant in relation to meeting requirements of 60.113.

You have not explicitly mentioned the behavior of glass in a repository as a research concern. We are concerned about the behavior of glass, the stability and cracking of glass and the leach characteristics over the range of conditions, especially those expected to be present in a Yucca Mountain repository.

All of above comments also apply to your related presentation on page A-9:

A.1.2 lines 1 through 4: While the first sentence is true, some reason for not conducting research would be the thing that the reader expects to see next. However, what is stated next is that "Geochemical modeling studies are providing a better description of Yucca Mountain conditions for future waste package studies." Somehow, the reader is left with a view that either the writer has shifted to a new topic or that Geochemical modeling studies are better than waste form studies. This should be clarified.

A.1.1.a: It is not clearly indicated that the 10CFR 60 does not include host rock in the definition of engineered barrier system (EBS), unless that rock is altered in some way to make it part of the engineered system.

A.1.1.b: For early failures of waste packages, temperatures are high and little or no water is expected to be present. Therefore, dissolution should not be a problem. Please explain the rationale for dissolution studies.

A.1.2: "Geochemical modeling studies" should be changed to "Modeling studies in geochemistry and materials science." This is needed to emphasize that materials problems such as oxidation, fracture, and diffusion, are important to assessments of controlled release.

A.1.2: The particular issue stated in lines 9 to 11 seems out of context: "There is also.... daughters." Prior to this sentence, the discussion is very general. Many issues may have been cited and yet only this one has been, and so, a reason for this citation should be made here, so as to properly introduce it; alternatively, leave out, entirely, this particular statement.

A.2.1 para 2: In the last line of this paragraph, we suggest you change "the scientific point of view" to "our point of view."

A.2.2 para 3, ends with "are not." We suggest you add a sentence, as follows: "A key to the validation of models is the development of a sound scientific basis, an understanding of the various alteration mechanisms over time." A statement of this type would emphasize the importance of the underlying science as it recognizes the futility of attempts to truly validate what you can simulate neither in the laboratory nor in the field -- time barriers may not be hurdled except via science.

A.2.2 para 4 line 2: After "such as" add "in weld metal and in" as both weld metals and HAZ behavior may be important.



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