



Department of Energy

Washington, DC 20585

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Office of Nuclear Material Safety  
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U.S. Nuclear Regulatory Commission  
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Reference: Ltr, Holonich to Roberts, dtd 10/6/92

Dear Mr. Holonich:

We appreciate your comments on the first report of the Natural Analogue Review Group (NARG) (reference). In particular, we are pleased with the suggestion that natural analogue studies be the topic for a U.S. Department of Energy (DOE)/U.S. Nuclear Regulatory Commission (NRC) Technical Exchange.

To assist NRC in understanding better the purpose for the NARG, some additional details are provided here. The group was convened to obtain the opinions of persons completely outside the Yucca Mountain Site Characterization Project (YMP). It was analogous to a peer review panel, even though it included two persons who have been involved in YMP in order to serve as information sources for the European members. The three European members are the leading international experts in the field of natural analogue studies related to nuclear waste. As such, they brought the internationally recognized perspective on the definition of natural analogues as well as other expertise.

It is clearly important for both DOE and NRC to understand each other's viewpoints concerning natural analogue studies. We regret that some misunderstandings may exist concerning the purpose and intent of the NARG report. We have included a more comprehensive explanation of several issues raised in your letter of October 6, 1992.

In respect to the first item of concern discussed in the subject letter, DOE does not see any inconsistency with 10 CFR Part 60. Sec. 60.21(c)(1)(ii) refers to future conditions. One way of assessing future conditions and changes is to use natural analogues, in the sense defined in the NARG report. DOE fully intends to use natural analogue studies where appropriate, in particular to evaluate the changes in the natural system that will result from "the introduction of a technological system (the

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repository)." The European members of NARG stressed that too broad a definition of "natural analogue" tends to be counter-productive by overlapping into ordinary and traditional geological methods. If the definition is not restricted, almost any natural system could be viewed as a natural analogue. For example, comparison of the volcanic history near Yucca Mountain, Nevada, with volcanic histories elsewhere uses analogies. NARG wished to exclude such traditional common approaches from the definition of natural analogue.

This is not intended to imply that site characterization studies will be any less comprehensive in covering the geological sciences, nor that natural analogue studies are inappropriate for investigating future conditions and changes. Thus, the term, "natural analogue", would apply to assessing the impact of perturbed conditions due to the construction and operation of a repository and to the effectiveness of engineered and natural barriers, but not to the study of a natural system that resembles in some degree the state of geology, geochemistry, hydrology, etc., as they would exist after repository construction and waste emplacement.

In response to the second concern, we wish to emphasize that it was never the intent of NARG to undertake a comprehensive literature review. Rather the purpose of NARG was to provide some general guidance to DOE concerning natural analogues. An attempt was made to refer to other documents wherein more comprehensive sets of references can be found. Indeed the first reference on page one of the NARG report cites the compilation and discussion by Percy and Murphy, which provides an extensive review of the literature. This citation was intended to capture indirectly all of the work done by NRC on natural analogues. In the event that a revision of the report is issued, we will make a concerted effort to recognize specific NRC and Center for Nuclear Waste Regulatory Analyses (CNWRA) studies as appropriate. We do appreciate the enclosure of the listed references. If the NARG report is revised, they will be taken into account.

We fully concur that great care must be taken regarding the study of any site in which both DOE and NRC are involved. NARG recognized that CNWRA was actively involved at Pena Blanca and was interested in studying Santorini. The NARG report, however, was not the right vehicle to discuss implementing a working

relationship between NRC and DOE. There is no intent for DOE to embark on either project without previous consultations with NRC.

If you have any questions, please contact Mr. Chris Einberg of my office at 202-586-8869.

Sincerely,



John P. Roberts  
Acting Associate Director for  
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