

July 27, 1995

MEMORANDUM TO: Sher Bahadur, Chief
Waste Management Branch
Division of Regulatory Application, RES

FROM: John H. Austin, Chief
Performance Assessment & Hydrology Branch
Division of Waste Management, NMSS

SUBJECT: CLIMATOLOGICAL RESEARCH PROPOSAL FROM NATIONAL
SCIENCE FOUNDATION

As you are aware, we previously reviewed the subject proposal that was sent to us on May 10, 1995. We advised you that the proposed research was not needed to support the high-level waste program, and that "data needs for the proposed Yucca Mountain high-level waste site should not be used to justify research funding for development or improvement of GCMs [global climate models]." As discussed below, and in a meeting between DWM and RES staff on July 19, 1995, we still advise you not to authorize research funds for this NSF project.

Your reply, sent on July 7th, agrees with our assessment that paleoclimatic data will be central to estimating future climatic conditions at Yucca Mountain. However, we disagree with your conclusion that "because these [paleoclimatic] data are inferred it is difficult to interpret it consistently in the absence of climate models and multi-disciplinary teams which can evaluate the interactions between climate and climatic indicators." We view this quite differently. GCMs have little value outside the context of historic and pre-historic climatological data bases. Calibration of GCMs requires the use of these data bases, and the GCMs themselves can be no more reliable than the paleoclimatic data on which they will be based. The bottom line is that GCMs cannot improve our confidence in the paleoclimatic data from any particular region. In this time of extremely tight budgets, the likely gain for our reviews of the Yucca Mountain site will not be worth the substantial costs you have proposed.

Your July 7th memo states that you have the flexibility to target funding for work directly related to NRC's mission. You noted that "...paleoclimatic data bases are to be developed for use in evaluating the models [GCMs and others] and several of these are targeted for use with a high resolution model of the 'topographically complex' southwestern US." You further state that the Office of RES can focus participation on those data sets and on that specific climate model for the southwestern US, and that NRC would thereby gain access to other global data sets and model results. However, we see little need for these other global data sets and modeling results. Paleoclimatic data from Africa, South America, Australia, or Siberia cannot usefully support site characterization at Yucca Mountain. One of our main concerns is that the NSF project is so broad that it lacks the critical focus we need on the Yucca Mountain area.

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What we do need to directly support NRC's mission in the high-level waste program is a license application review plan to address the climate issues. Under the siting criteria of 10 CFR 60.122, one of the potentially adverse conditions refers to the potential for changes in hydrologic conditions resulting from reasonably foreseeable changes in climate. Such a review plan will include detailed review methods to be used by the NRC staff. The review plan for climatic effects will be jointly developed by DWM and the CNWRA. But we would appreciate input from the Office of RES. It is requested that you identify a member of your staff who can contribute to this effort. The NSF proposal is too general in scope to contribute in any way to developing our review plan.

Finally, the NSF proposal is not directly related to any of the "vertical slice" technical topics that are now used to focus our reviews of DOE's site characterization work at Yucca Mountain. Consequently, we recommend that the funding proposed for this project be redirected to address key technical uncertainties under one of the "vertical slice" topics.

Please contact Neil Coleman at 415-6615 to discuss coordination with DWM on developing license application review plans. If you require further clarification about why we do not support funding for the NSF project, please contact me at 415-7252.

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