



Department of Energy

Washington, DC 20585

December 16, 1991

Mr. John J. Linehan, Acting Director
Repository Licensing and Quality
Assurance Project Directorate
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Linehan:

This is in response to the U.S. Nuclear Regulatory Commission (NRC) comment on the U.S. Department of Energy (DOE) Study Plan 8.3.1.17.4.6, "Quaternary Faulting within the Site Area," as conveyed via NRC letter dated October 3, 1991 (Linehan to Shelor).

In its Phase I review, NRC found no objections to the DOE beginning work described in this study plan. The DOE would like to address the aspect of the NRC letter pertaining to the study plan's selected scale for fault mapping. The NRC wanted the DOE to consider mapping faults at a scale of 1:12,000 rather than at 1:24,000 as specified in Section 2.1.2.1 of the study plan.

The primary purpose of mapping faults at 1:24,000 is to highlight their potential interconnectivity. This characteristic is made more apparent at smaller map scales. Producing fault maps at larger scales in a geologic terrain where little bedrock exposure and much alluvial cover exists will not proportionately increase the number or length of known, as opposed to inferred, fault traces that are able to be mapped. Scott and Bonk's 1984 map of the eastern part of the site area will have companion maps to the west and south that are to be published by the U.S. Geological Survey (USGS) at a scale of 1:12,000.

The fault mapping under Study Plan 8.3.1.17.4.6 is being done on 1:12,000 scale aerial photographs and, in some cases, on 1:6,000 scale low sun angle aerial photographs where these are available. This information will then be compiled onto a 1:24,000 base map. The aerial photographs upon which mapping in the field takes place are part of a data records package, according to the USGS study plan technical procedure GP-01, and are not lost to subsequent examination. The USGS believes that there is no loss of information in mapping faults at 1:24,000. This is a pragmatic scale for the area being studied and the ratio of exposed to covered faults. The purpose for specific mapping should be the determinant of an appropriate scale, and not an arbitrary decision to produce uniform mapped products across the

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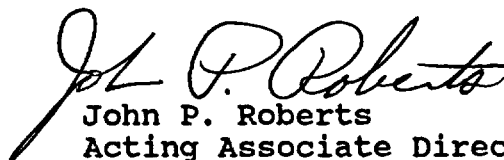
Yucca Mountain Site Characterization Project's (YMP) various field activities.

The NRC letter also mentioned several Site Characterization Analysis (SCA) open items with respect to this question of mapping scale. The implications of SCA Question 1 on the NRC comment on Study Plan 8.3.1.17.4.6 can be addressed herein. The other cited SCA comments, however, have little bearing on the study plan comment. The DOE has reviewed SCA Question 1, the DOE response, and the NRC reaction to our response in the enclosure to the NRC letter to DOE (Bernero to Bartlett; dated July 31, 1991). The DOE still regards its response to SCA Question 1 as adequate for the stated concern.

Although different studies and activities are gathering mappable data that often cover overlapping areas, the scales used for these maps are determined by the purpose for which the data is being mapped. DOE is uncertain of the NRC concept of integration with respect to mapped products. If the NRC concern rests with DOE's ability to depict various data at different scales, then our response to Question 1, which indicates that an Integrated Graphic Information System (IGIS) is being developed, should adequately address the concern. The IGIS will store mapped data in digital format for reproduction at whatever scale is needed. If, however, the NRC perceives that a lack of integration of mapped data exists in the YMP because of the fact that various studies or activities plan to produce or publish maps at different scales, then the DOE is uncertain how to respond to NRC's concern in SCA Question 1. On the basis of our response to SCA Question 1, and the amplification of that response herein, we believe the NRC's concern expressed in Question 1 should be considered closed.

Should you have any technical questions or concerns in this regard, please contact Thomas W. Bjerstedt at (702) 794-7590 or FTS 544-7590. Please address any other questions to Sharon Skuchko of my office at (202) 586-4590.

Sincerely,



John P. Roberts
Acting Associate Director for
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