



United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VA 22092



OFFICE OF THE DIRECTOR

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David L. Meyer, Chief
Regulatory Publications Branch
Division of Freedom of Information
and Publication Services
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Meyer:

Enclosed are comments on the Nuclear Regulatory Commission's (NRC) draft Staff Technical Position Investigations to Identify Fault Displacements and Seismic Hazards at a Geologic Repository. These were prepared by Newell Trask, Water Resources Division headquarters staff; Eugene Roseboom, USGS Director's Office, and myself.

We are sorry we were unable to provide these earlier, but hope that they still may be helpful to you and the NRC staff.

Sincerely,

JAMES F. DEVINE

James F. Devine
Assistant Director for Engineering Geology

Enclosure

Copy To: Ronald L. Ballard, NRC
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Comments on Draft Nuclear Regulatory Commission Staff
Technical Position on "Investigations to Identify Fault
Displacement and Seismic Hazards at a Geologic Repository"

This draft Staff Technical Position (STP) has been improved in that it allows considerably more flexibility to the applicant than the earlier version; and it does not incorporate, as did the earlier version, Appendix A of 10 CFR 100 for nuclear power plants which is largely inappropriate for a geologic repository.

Basically, the STP provides criteria for the applicant to use in deciding what faults to investigate in detail for designing and assessing the performance of a repository. The criteria are deterministic, an approach which the United States Geological Survey (USGS) has endorsed in the past. Deterministic criteria enable the parties to a licensing action to have a relatively clear understanding of what is or is not under consideration.

All faults within the controlled area must be examined to see if they merit detailed investigation according to the criteria discussed below. However, outside the controlled area, only faults relevant to performance and design need to be considered.

After these initial steps, the criteria for determining if detailed investigations are necessary are applied. These criteria seem appropriate. Consistent with 10 CFR 60, which requires that processes operating in the Quaternary Period be addressed, the STP suggests that faults showing Quaternary offset be investigated in detail. This stipulation may result in inclusion of some faults with relatively long recurrence intervals. However, since the time required for maintaining waste isolation is measured in thousands of years, the possibility of unpredictably episodic, or chaotic, behaviour of geologic features over these time periods must be taken into account. Faults that have long been dormant may become active over the next 100,000 years and presently active faults may become quiescent. Thus, a reasonably conservative approach requires that Quaternary faults be investigated in detail if movement on them could affect a proposed repository. The same considerations dictate that faults for which evidence for Quaternary movement is indeterminate should also be investigated if they meet any of the three subcriteria of part 3.1.3 (2).

The applicant will, of course, have to use a probabilistic approach to assessing fault movement in complying with the EPA release standards in 40 CFR 191 in its current form. The combination of deterministic and probabilistic approaches that will eventually be used should provide a clear indication of the likely effects of faulting and seismicity

on repository performance and design. The criteria outlined in this STP are a useful first step.