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October 23, 1989

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

Dear Sirs:

RE: DRAFT TECHNICAL POSITION ON METHODS OF EVALUATING THE SEISMIC
HAZARD AT A GEOLOGIC REPOSITORY. (FR., Vol. 54, No. 163, August
24, 1989, p. 35266).

The following are the Nevada Agency for Nuclear Projects /
Nuclear Waste Project Office comments on the subject draft
Technical Position. The comments are organized in a format of
General Comments and Specific Comments.

GENERAL COMMENTS:

The draft Technical Position, for the most part, accomplishes
its stated purpose of providing regulatory guidance on appropriate
methodologies that address seismic hazard(s) at a geologic
repository, however, the document contains little to justify its
being titled a Technical Position. In effect, it constitutes a
policy statement by the NRC staff that the methodologies and
principles espoused in 10 CFR Part 100, Appendix A are appropriate
for addressing the earthquake hazards at a geologic repository, and
that the staff will rely on 10 CFR Part 100, Appendix A in its
review of a geologic repository license application. What the
Technical Position does not say (nor should it say) is that only
10 CFR Part 100, Appendix A methodologies are acceptable, or that
the results from following the Appendix A methodologies will be
treated the same way in application to the engineering design
questions.

The Technical Position can be improved in content,
particularly in regard to the critical issue of capable and active

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faults. Given that all capable faults are active faults, yet not all active faults are considered capable faults, a basic question arises regarding the extent to which the existence of capable and/or active faults at a repository site will be acceptable to the NRC staff under any principles, including those espoused in 10 CFR 100, Appendix A. If a site which exhibits both capable and active faults is acceptable to the staff, the extensive studies associated with application of 10 CFR Part 100, Appendix A methodologies will provide little more to license review than some of the information eventually used in a probabilistic seismic hazards analysis. This would serve only to expose (as a matter of interest) the degree to which such faulting was acceptable to the staff, on a probabilistic basis, since acceptability of a site with both capable and active faults had already been established.

While we know of no NRC regulation that prohibits siting a nuclear facility astride a capable fault, it is difficult to believe that the NRC would license a nuclear reactor if it were exposed to such a condition, nor would a prudent utility be likely to seek a reactor licence in close proximity to a capable fault. Furthermore, it is even difficult to conceive of a utility seeking a reactor license for a facility astride an active (Quaternary) fault, in the western U.S., unless possibly there were unequivocal evidence that the fault could be demonstrated as not capable.

Because of the licensing delays that almost certainly will develop if this issue of active and capable faults is not clarified, the NRC should consider providing more specific, early guidance on how known capable and/or active faults underlying, bounding and/or transecting a repository will be considered in meeting the requirements of 10 CFR Part 60. If the existence of capable and/or active faults underlying, bounding and/or transecting a repository is unacceptable to the NRC, as the reactor siting situation might suggest it should be, then potential repository sites where such conditions exist can be removed quickly from further consideration.

SPECIFIC COMMENTS:

Page 2, line 1 - Use of the term "coseismic" is too limiting in the sense that the term could be interpreted to exclude appropriate consideration of synthetic faulting.

Page 2, par. 1, final sentence - A number of terms important to understanding 10 CFR Part 100, Appendix A, 10 CFR Part 60, and their interrelationships, as discussed in this Technical Position, should be included in the glossary, eg. active fault, seismotectonic province, site region, and operations area.

Page 5, par. 1, final sentence - Documentation is provided on how 10 CFR Part 100, Appendix A and 10 CFR Part 40 are linked.

There should be an explanation of why this approach is not taken with 10 CFR Part 60.

Page 5, par. 2, first sentence - It is stated that 10 CFR Part 60 does not specifically rely on 10 CFR Part 100, Appendix A for guidance regarding provisions for dealing with seismic hazards. This is in apparent conflict with the Technical Position, on page 7, which states that the NRC staff will rely on the principles of 10 CFR Part 100, Appendix A in its review of whether the requirements of 10 CFR Part 60 are met. This appearance of conflict should be clarified and resolved.

Page 5, par. 2, first sentence - It is stated that 10 CFR Part 60 does not specifically require the development of a design basis earthquake. However, the Technical Position (page 7) and the following text strongly imply that a design basis earthquake (maximum vibratory ground motion) will be required. This ambiguity should be resolved, and there should be a specific statement of the kind of design basis earthquake (eg. SSE equivalent) that will be required.

Page 7, final sentence - This statement incorporates the 10 CFR 60 requirement to design the operations area in a manner so as to preserve the preclosure option of waste retrieval. Allowing for the existence of capable and active faults within the repository seems to be in direct conflict with this requirement. Designing to accommodate a fault rupture that isolates a part of the subsurface operations area from surface access will present extreme difficulties and likely result in a compromise of safety.

Page 6, par.2, first sentence - This sentence should be rewritten to reflect the 10 CFR Part 60 language regarding selection of the geologic setting and design of the remaining elements. The geologic setting cannot be designed to limit releases to the accessible environment.

Pages 12 and 13 - For purposes of evaluating a geologic repository site, application of the general limitation of investigations of surface faulting to faults only within five miles of the site is arbitrary and excessively restrictive, as it neglects the fact that faults may be linked in space and time, especially over the time period that must be considered. To understand the seismic behavior of a single fault, or set of faults commonly requires a thorough understanding of the entire system of faults, regardless of their exact distance from the site under consideration.

Page 14, par. 1 - It seems a bit cavalier to dismiss so easily the need for determination of an Operating Basis Earthquake (OBE). The text seems to imply that risk to onsite personnel is unimportant and that there is no risk to the public in this context. Simply qualitatively comparing the level of risk of a

repository containment failure to that of a reactor under earthquake conditions does not justify the assumption of no significant consequence. This is especially true, given the allowed possibility of a capable fault within the repository creating a gross and uncontrollable loss of containment.

Page 15, par. 1, first sentence - Underground facilities important to safety should be included among elements that can be affected by faulting in a geologic repository.

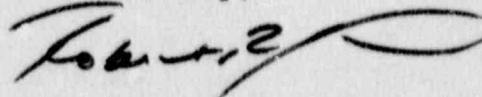
Page A-1 - See earlier comment regarding the Glossary.

Page A-3, par. 1 - At some point in the Technical Position, there should be a clear statement that, in the context of a geologic repository, generalizations regarding whether pre-Quaternary faults are capable faults are an unacceptable basis for excluding the need for rigorous investigation of existing "geologically old" faults.

Page C-1 - The purpose of including an outline of 10 CFR Part 100, Appendix A, without supporting text is not clear. An annotated outline which may include summaries of past experiences (case histories) with 10 CFR Part 100, Appendix A, and references would be much more useful than the bare outline.

We appreciate the opportunity to review and provide comment on the subject draft Technical Position. If there are questions regarding these comments, please do not hesitate to contact this office.

Sincerely,



Robert R. Loux
Executive Director

RRL/CAJ/cs