

23 MAR 1987

MAR 23 1987

MEMORANDUM FOR: Robert E. Browning, Director
 Division of Waste Management
 Office of Nuclear Material Safety & Safeguards

FROM: Themis P. Speis, Director
 Division of Safety Review and Oversight
 Office of Nuclear Reactor Regulation

SUBJECT: COMMENTS ON REVISED GENERIC TECHNICAL POSITION:
 GUIDANCE ON SEISMIC AND TECTONIC CONSIDERATIONS
 FOR GEOLOGIC REPOSITORY OPERATIONS AREAS

In response to a memorandum dated March 5, 1987 from Philip S. Justus, Acting Chief of the Geotechnical Branch, Division of Waste Management, I am providing comments on the latest revision to the Generic Technical Position (GTP) on Seismic and Tectonic Considerations for Geologic Repository Operations Areas. The GTP recommends the adoption of Appendix A to 10 CFR 100 (Seismic and Geologic Siting Criteria for Nuclear Power Plants) as a basis for evaluating seismic and tectonic phenomena affecting the high level waste Geologic Repository Operations Area for the period through permanent closure. It also states that the NRC staff will consider alternate methodologies provided that DOE can demonstrate that the provisions of 10 CFR Part 60 can be met.

With respect to the purpose for which it was originally created, we have found that Appendix A is both conceptually and methodologically outdated. It is based on concepts and methods that were believed to be appropriate almost twenty years ago. Since then our knowledge of geologic and seismologic processes and phenomena have increased greatly. For example, Appendix A assigns no role to seismicity in defining tectonic provinces for the purpose of seismic design, it defines a capable fault on the basis of the then perceived limit of radiocarbon dating and makes no mention of the use of probabilistic insight. These and many other shortcomings have been discussed at length in documents such as SECY-79-300 and meetings such as that convened by NRC in October 1986.

In addition to the deficiencies of Appendix A with respect to nuclear power plant issues, its applicability to Geologic Repository Operations Areas needs to be examined. As was indicated in the revised GTP there are differences between the systems and structures of nuclear power plants and Geologic Repository Operations Areas. There are also issues related to a repository, such as the direct effects of faulting, which are not addressed in Appendix A. Most important, however, is the fact that the level of conservatism of any

B704010060 B70323
 CF SUBJ
 L-4-1PT100SIT CF

L-4-1, Pt. 10
 SITE CRITERIA
 A M-12

regulation governing the design of structures, systems and components for a given facility take into account the consequences of the failure of these structures, systems and components. To the extent that this was done in Appendix A, the regulation is geared toward preventing a radioactive release at a nuclear power plant due to seismic failure. It is my understanding that the mode and consequences of the failure of a Geologic Repository Operations Area are substantially different. The use of elements of Appendix A in the regulation of Independent Spent Fuel Storage Installations and Monitored Retrievable Storage Sites may be more a function of perceived convenience than of the consequence of failure. Finally, for the past 15 years Appendix A has been applied and interpreted by the staff, the ACRS, Licensing Boards and Appeals Boards. A determination should be made whether, and to what extent, these past interpretations could limit interpretations or pose problems with respect to its application to Geologic Repository Operations Areas. Although the revised GTP permits reinterpretation of Appendix A, it may be more appropriate to define a new set of guidelines rather than use an outdated one promulgated for a different purpose.

Additional comments on the use of Appendix A in the GTP may be found in my previous memorandum on this issue dated July 9, 1986. Please contact Leon Reiter (x28357) of the Reliability and Risk Assessment Branch for additional clarification.

*Original signed by:
Brian W. Sheron*



Themis P. Speis, Director
Division of Safety Review and Oversight
Office of Nuclear Reactor Regulation

cc: P. Justus

- Distribution
- Central File
- DSRO Chron File (87-16)
- RRAB Reading File
- T. Speis
- B. Sheron
- F. Congel
- R. Barrett
- L. Reiter

* Please see previous concurrence.

OFC	:RRAB:DSRO	:RRAB:DSRO	:RRAB:DSRO	:DD:DSRO	:D:DSRO	:	:
NAME	:*LReiter/am	:*RBarrett	:*FCongel	:BSheron	:TSpeis	:	:
DATE	:03/ /87	:03/ /87	:03/ /87	:03/20/87	:03/20/87	:	:

OFFICIAL RECORD COPY

regulation for a given facility should take into account the consequences of the failure of that facility. To the extent that this was done in Appendix A, the regulation is geared toward a core melt, containment failure and atmospheric release of the radioactive inventory. It is my understanding that the mode and consequences of the failure of a Geologic Repository Operations Area are substantially different. The use of elements of Appendix A in the regulation of Independent Spent Fuel Storage Installations and Monitored Retrievable Storage Sites may be more a function of perceived convenience than of the consequence of failure. Finally, for the past 15 years Appendix A has been applied and interpreted by the staff, the ACRS, Licensing Boards and Appeals Boards. A determination should be made whether, and to what extent, these past interpretations could limit interpretations or pose problems with respect to its application to Geologic Repository Operations Areas. Although the revised GTP permits reinterpretation of Appendix A, it may be more appropriate to define a new set of guidelines rather than use an outdated one promulgated for a different purpose.

Additional comments on the use of Appendix A in the GTP may be found in my previous memorandum on this issue dated July 9, 1986. Please contact Leon Reiter (x28357) of the Reliability and Risk Assessment Branch for additional clarification.

Themis P. Speis, Director
 Division of Safety Review and Oversight
 Office of Nuclear Reactor Regulation

cc: P. Justus

- Distribution
 Central File
 DSRO Chron File (87-16)
 RRAB Reading File
 T. Speis
 B. Sheron
 F. Congel
 R. Barrett
 L. Reiter

OFC	:RRAB:DSRO	:RRAB:DSRO	:RRAB:DSRO	:DD:DSRO	:D:DSRO	:	:
NAME	:LReiter/am	:RBarrett	:FCongel	:BSheron	:TSpeis	:	:
DATE	:03/18/87	:03/18/87	:03/19/87	:03/ /87	:03/ /87	:	:

OFFICIAL RECORD COPY