



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 17 1982

MEMORANDUM FOR: The Atomic Safety & Licensing Board for
Shoreham Nuclear Power Station

The Atomic Safety & Licensing Appeal Board for
Summer Nuclear Station No. 1

FROM: Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing, NRR

SUBJECT: BOARD NOTIFICATION - USGS POSITION ON THE CHARLESTON
EARTHQUAKE (Board Notification 82-122)

We have recently received the enclosed letter from the U. S. Geological Survey (USGS) (Letter, James F. Devine to Robert E. Jackson, November 18, 1982) which clarifies previous recommendations made by the USGS to NRC regarding the reoccurrence of the 1886 Charleston-type earthquake. This clarification has been provided after lengthy deliberations by the USGS. The possibility of this clarification was identified in SECY-82-53.

For the purpose of licensing of facilities in the Southeastern U. S., the NRC has taken a position, based primarily on the advice of the U. S. Geological Survey (USGS), that any reoccurrence of the 1886 Charleston, S. C. earthquake (Modified Mercalli Intensity (MMI) X, estimated Magnitude about 7) would be confined to the Charleston area. That is, the Charleston earthquake is assumed to be associated with a geologic structure in the Charleston area. Nuclear power plants in the region east of the Appalachian Mountains are, therefore, usually controlled in their seismic design, according to Appendix A to 10 CFR Part 100, by the maximum historical earthquake not associated with a geologic structure. This controlling earthquake is typically an MMI VII or VIII.

The position recently received from the USGS clarifies their original recommendation and indicates that:

"Because the geologic and tectonic features of the Charleston region are similar to those in other regions of the eastern seaboard, we conclude that although there is no recent or historical evidence that other regions have experienced strong earthquakes, the historical record is not, of itself, sufficient grounds for ruling out the occurrence in these other regions of strong seismic ground motions similar to those experienced near Charleston in 1886. Although the probability of strong ground motion due to an earthquake in

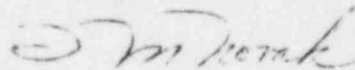
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any given year at a particular location in the eastern seaboard may be very low, deterministic and probabilistic evaluations of the seismic hazard should be made for individual sites in the eastern seaboard to establish the seismic engineering parameters for critical facilities."

Based on our discussions with USGS senior personnel, this clarification is not intended to recommend that we categorically consider a Charleston-type event in the seismic design of all nuclear plants in the eastern seaboard of U. S. The USGS does believe, however, that an earthquake of this size should not be categorically ruled out at locations away from Charleston based solely on the statement in the December 30, 1980 USGS letter which states, "Consequently, earthquakes similar to the 1886 event should be considered as having the potential to occur in the vicinity of Charleston and seismic engineering parameters should be determined on that basis." Instead, this clarification provides guidance that indicates that such a conclusion should be reached only after deterministic and probabilistic evaluations of the seismic hazard for individual sites have been made.

We have reported this information to the Commissioners in a November 18, 1982 memorandum to the Commissioners from the Executive Director for Operations, entitled, "Clarification of U. S. Geological Survey Position Relating to Seismic Design Earthquakes in the Eastern Seaboard of the United States," along with a recommended plan to deal with this clarification (enclosed) and met with the Commission on November 19, 1982. Our evaluation of the significance of this clarification is underway. We will inform the appropriate Boards regarding any significant changes in the staff's position as a result of the evaluation.



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Enclosure:
As stated

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