ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
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R. L. Price, Director of Regulation

SEISMIC RESEARCH PROGRAM

The geological and seismological consultants to the ACRS have expressed concern that seismic conditions in the eastern United States are poorly understood and have recommended that emphasis be placed on the early development of information that would aid the AEC Regulatory groups in the determination of conservative parameters for the Safe Shutdown (or Design Basis) Earthquake.

Of course, several broad and comprehensive sets of recommendations for earthquake and earthquake engineering research have been published in recent years. However, these generally would involve considerable financial expenditure to implement and have not yet been pursued. In response to a request by the ACRS for definition of a specific, limited effort which has promise of providing early assistance in the difficult judgment process of determining seismic design parameters, our consultants have recommended that the National Ocean Survey (NOS) and the United States Geological Survey (USGS) be asked to accelerate a task that they have already begun, namely, the preparation and publication of a comprehensive and systematic treatment of the seismic data east of the Rockies, including adjacent parts of Canada. To the extent practical on an expedited time scale, such a study should be correlated with existing tectonic and basement geology maps, and other pertinent geophysical data. The seismicity data should be so presented that not only are all known epicenters available, but also that selected sets of epicenters (such as all those above a certain magnitude) are also readily available. The availability of such a study would not only assist ongoing judgments of seismic design parameters but enable participation by various other groups in the seismic community in the development of a better understanding of tectonic conditions in the eastern United States, and in the application of various statistical methods to the prediction of earthquake recurrence intervals.

The ACRS believes that a better basis for judging seismic design parameters east of the Rockies is important, and that early steps should be taken to expedite completion of the study by NOS and USGS as described above, including the use of AEC financial support, if necessary.

The ACRS consultants have also recommended an accelerated study of the Charleston, South Carolina earthquake of 1886, which is the major seismic event in the populous eastern seaboard of the United States. They believe it very important to reach an early appraisal of the validity of localizing the Charleston event at Charleston or the validity of assuming that the Charleston event could occur at other localities in the Coastal Plain or Piedmont areas of the eastern seaboard. If the latter were proven to be true, it would greatly increase seismic risk throughout this area and result in greater acceleration as a design criterion for the Safe Shutdown Earthquake. The ACRS believes it is desirable, therefore, to establish as soon as practical the geologic and seismological facts of the Charleston event and to assure the early installation of a sufficient number of strong accelerographs in the Charleston area.

Because of the potentially large difference in vibratory motion characteristics of earthquakes east and west of the Rockies, as well as to better establish the nature of several other seismically active areas east of the Rockies, the ACRS consultants recommend and the Committee supports the position that the AEC, through NOS (or perhaps with the cooperation of appropriate universities) accomplish the early installation of strong motion instruments in each of the several other areas of great seismic interest east of the Rockies.

R. F. Fraley
Executive Secretary

cc: G. Seaborg, Chairman, AEC
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