



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

ACRS- R-0899

October 15, 1980

Mr. William J. Dircks
Executive Director for Operations
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: SEISMIC QUALIFICATION OF AUXILIARY FEEDWATER SYSTEMS

Dear Mr. Dircks:

In a letter to you dated June 10, 1980, the Advisory Committee on Reactor Safeguards expressed its concern that the NRC Staff's level of effort in reviewing the seismic qualification of auxiliary feedwater systems might not be consistent with timely resolution of the matter. We recommended that the necessary manpower be committed to assure completion of the Staff's short-term review in two or three months. We recommended also that the affected licensees perform independent reviews of this matter on the same time scale.

In a memorandum to Chairman Ahearne dated August 27, 1980 Harold R. Denton transmitted a memorandum dated August 8, 1980 from Roger J. Mattson to Darrell G. Eisenhut which described an interim risk study. Mr. Denton stated that the study indicates that the risk to the public health and safety for the next three years is acceptable and that the plants could be permitted to continue to operate during this period. Mr. Denton also stated that a bounding analysis, using conservative assumptions regarding seismic damage to auxiliary feedwater equipment, shows that operation for the next several months would not result in an unacceptable increase in risk to the public.

We continued to review this matter during our 246th meeting, October 9-11, 1980. In our review we had the benefit of a Subcommittee meeting on October 8, 1980.

We offer the following observations and recommendations:

1. The interim risk analysis performed by the Staff is useful. The Committee notes that this study does not appear to have been subjected to independent peer review or given the necessary degree of quality assurance that a risk analysis, which may enter importantly into safety decision making, should receive.

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2. The August 8, 1980 memorandum from Roger Mattson does not provide the expected (or mean) value of risk. Since detailed knowledge of all the components, equipment, and systems important to the auxiliary feedwater function is not available to the Staff, it is not clear that a sound basis exists for the terms "conservative" or "very conservative" which are used in this memorandum. Under these circumstances, it is possible that for one or more of the plants, the risk will be found to be larger than that estimated.
3. The Staff's estimated risks of a seismic event causing a serious accident due to loss of shutdown heat removal capability range from six to fifteen times the estimated risk of core melt due to all causes for the PWR examined in WASH-1400. The Staff has proposed a course of action in terms of these estimated risks which implies a quantitative safety goal and a threshold risk level for certain kinds of action. Such safety goals and action levels may prove to be acceptable to the NRC after review and evaluation. However, we believe that these should not become de facto criteria without the benefit of proper consideration. Furthermore, in the absence of an evaluation of the uncertainties in and the expected value of the risk, the risk estimates presented may not be representative of the actual risk.
4. The risk estimates presented in the memorandum from Roger Mattson of August 3, 1980 are large enough, if accurate, to warrant considerable priority by the NRC and the affected utilities. In particular, efforts should be made to better quantify the risk on a plant specific basis in the next few months. Furthermore, we recommend that each affected licensee be asked to review his specific plant design and to take early remedial measures, as practical, if there is reason to suspect that any important aspect of the auxiliary feedwater system is likely not to perform its function during an earthquake similar to a safe shutdown earthquake for the plant.
5. We agree with the Staff that high priority should be given to resolution of this matter. We expect to continue to follow this subject closely.

Sincerely,

Milton S. Plesset

Milton S. Plesset
Chairman

cc: John Ahearne, Chairman, NRC