



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

June 15, 1983

Honorable Nunzio J. Palladino
Chairman
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: ACRS REPORT RELATED TO THE FINAL DESIGN APPROVAL OF THE GESSAR II
BWR/6 NUCLEAR ISLAND DESIGN

Dear Dr. Palladino:

During its 278th meeting, June 9-11, 1983, the Advisory Committee on Reactor Safeguards completed a limited review of the reference design described in General Electric Standard Safety Analysis Report (GESSAR II) for a Final Design Approval (FDA). GESSAR II provides the safety information for a reference system consisting of a single BWR/6 Mark III nuclear steam supply system, with a rated core thermal power of 3579 MWt, and associated systems and structures, including the reactor building (the shield building and containment), fuel building, diesel generator buildings, control building, auxiliary building, and radwaste building. A Subcommittee meeting was held with representatives of the General Electric Company (the Applicant) and the Nuclear Regulatory Commission (NRC) Staff on April 21-22, 1983 in Santa Monica, California. The full Committee considered this matter during its 277th meeting, May 12-14, 1983. The Committee also had the benefit of the documents referenced.

The Committee has reviewed the GESSAR II FDA application in the context requested by the NRC Staff, that is, as being applicable only to those plants with a viable construction permit (CP) which referenced the Preliminary Design Approval (PDA) in their CP application. Our considerations to date have not developed to the point that we can endorse the use of GESSAR II beyond this scope.

The NRC Staff advised the ACRS that, if the proposed Commission Policy Statement on Severe Accidents and Related Views on Nuclear Reactor Regulation is approved containing its current Section VI on Standardization Policy, the Staff would shortly thereafter consider the GESSAR II design for an interim FDA under Section VI for future CP applications while awaiting completion of Commission action on severe accident policy. This aspect of Section VI is among the several aspects of the proposed Policy Statement which the ACRS does not favor. If the GESSAR II design (or some other proposed FDA) is brought to the ACRS for review in connection with a new plant prior to specific action by the Commission on severe accident policy, the Committee would expect to perform an ad hoc evaluation of such considerations as part of its own review.

It will be necessary for the General Electric Company to maintain vigilance over the interface boundaries between the standard nuclear island and the balance of plant. Efforts to ensure compatibility across these interfaces must be formalized and rigorously applied. The Committee remains interested in the methods used to maintain interface compatibility and wishes to be kept informed.

In spite of many past assurances that stress-assisted corrosion cracking of primary system components was well understood and would be avoided in the future, significant cracking is being observed in many currently operating BWRs. The materials being proposed for this application are supposedly much improved. However, because of actual operating experience to date, we believe that the applicant should maintain a vigorous research program to identify material and water chemistry changes that will control or eliminate the stress-assisted corrosion cracking problem and should closely monitor the performance of functional systems utilizing the newer materials. The Committee wishes to be kept informed.

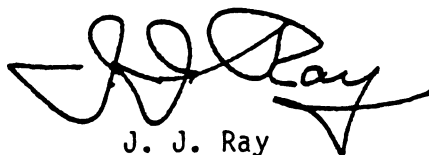
The Committee has in several prior operating license or construction permit reviews noted the importance of assuring that the seismic contribution to risk is acceptably low, with due allowance for lower frequency, more severe earthquakes than the safe shutdown earthquake. This recommendation applies equally well to the GESSAR II design.

The GESSAR II design does not include provisions for coping with the large amounts of hydrogen that would be generated in an accident involving severe core damage. It will be necessary for a utility applicant to make the appropriate provisions as part of the balance of plant.

At this point in the NRC Staff's review, no items remain as Outstanding Issues. There is a set of Confirmatory Issues that await additional documentation. We found no reason to believe that any of these issues will be especially difficult to complete and recommend that they be completed in a manner satisfactory to the NRC Staff.

The Committee believes that, subject to the comments noted above and approval of the balance-of-plant design, the GESSAR II design can be incorporated into those nuclear power plants with a valid CP that referenced the PDA in their CP application.

Sincerely,

A handwritten signature in black ink, appearing to read "J. J. Ray". The signature is stylized and cursive, with a large initial "J" and "R".

J. J. Ray
Chairman

References:

1. General Electric Company Standard Safety Analysis Report, "GESSAR II, BWR/6 Nuclear Island Design," with Amendments through 14.
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Final Design Approval of the GESSAR II BWR/6 Nuclear Island Design," NUREG-0979, dated April 1983.