

FRANKLIN RESEARCH CENTER
DIVISION OF ARVIN/CALSPAN

March 8, 1984⁵

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. M. Carrington (MS-540)
Project Officer

Reference: 1. FRC Project C5506
2. NRC Contract NRC-03-81-130
3. FRC Assignment No. 18
4. FRC Task No. 438
5. TER-5257-316, Design Codes, Design Criteria, and Loadings
Combinations, Yankee Rowe Nuclear Power Station
6. Yankee SEP Integrated Assessment, December 1982

Dear Mr. Carrington:

FRC has conducted a preliminary review of the Licensee's submittal [Ref. 6] concerning Topic III-7.B for the Yankee Rowe Nuclear Power Station. The gist of this response is the Licensee's position that compliance with Systematic Evaluation Program (SEP) Topic III-7.B follows automatically once all other SEP topics have been addressed.

SEP Topic III-7.B is charged with the comparison of structural design criteria in effect when SEP plants were constructed and those in effect today as they apply to Seismic Category I plant structures. Two aspects of these criteria are included within its scope:

1. Analytical design requirements of the major codes for plant building and containments.
2. Load and load combination requirements.

Both of these, somewhat diverse, aspects are included within one SEP topic to provide a mechanism within the SEP where their mutual and concurrent effects upon perceived margins of safety in plant structures may receive attention.

Other related SEP topics address individual aspects of plant structural integrity in detail. For example, Topic III-6 assesses plant seismic integrity; Topics III-5.A and III-5.B assess plant integrity in the event of a LOCA. Neither, however, addresses the possibility and consequence of the simultaneous occurrence of these events. Current design criteria require such consideration. This requirement is embodied in the loading combinations now specified; therefore, its SEP review falls within the scope of Topic III-7.B.

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Another example, which is referred to in Ref. 6, is the extreme environmental snow load. SEP Topic II-2.A identifies on a plant-specific basis the magnitude of this load, but is not charged with assessing the capacity of plant structures to sustain it. This is addressed under Topic III-7.B. Buildings for which this load has been designated Scale A are to be reviewed for their ability to support the designated snow load.

In order that SEP evaluations of the adequacy of plant structures at the Yankee Rowe plant can be completed, we recommend that Yankee Atomic Electric Company be requested to take three actions:

1. Review individually all Seismic Category I structures at the Yankee Rowe plant to see if any of the structural elements listed in Section 13 of TER-C5257-316 occur in their designs. These are the structural elements for which a potential exists for margins of safety to be less than originally computed, due to criteria changes since plant design and construction. For structures which do incorporate these features, assess the actual impact of the associated code changes on margins of safety.
2. Reexamine the margins of safety of Seismic Category I structures under loads and load combinations which correspond to current criteria. Only those load combinations assigned a Scale A or Scale A_x rating in Section 10 of TER-C5257-316 need be considered in this review. If the load combination includes individual loads which have themselves been ranked A or A_x , indicating that they do not conform to current criteria, update such loads.

Full reanalysis of these structures is not necessarily required. Simple hand computations or appropriate modifications of existing results can qualify as acceptable means of demonstrating structural adequacy.

3. Review Appendix A of TER-C5257-316 to confirm that all items listed there have no impact on safety margins at the Yankee Rowe plant.

With respect to this recommendation, the Licensee indicates that the acceptance criteria for structures at the Yankee Rowe plant was described in their reevaluation and retrofit criteria document as including:

AISC, 8th edition

ASME Boiler and Pressure Vessel Code, 1977 [Section not stated; Section III ought to have been used]

ACI 318-1977.

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For Topic III-7.B review, FRC believes the codes listed in Section 9 of TER-C5257-316 to be proper.

Very truly yours,

Thomas C. Stilwell
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TGS:sf

cc: D. Persinko
C. I. Grimes