Docket 50-263

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

PDR

DEC 19 1975

K. R. Goller, Assistant Director
for Operating Reactors
Division of Reactor Licensing

QUESTION ROUND ONE - MARK I SHORT TERM PROGRAM FINAL REPORT AND PROPOSED LONG TERM PROGRAM (TAR-1989/ORB-3-105 REVISION 1)

PLANT NAMES: Oyster Creek Nuclear Generating Station, Nine Mile Point Unit 1, Pilgrim 1, Dresden Units 2 and 3, Millstone Unit 1, Quad Cities Units 1 and 2, Monticello, Peach Bottom Units 2 and 3, Browns Ferry Units 1, 2 and 3, Vermont Yankee, Hatch Units 1 and 2, Brunswick Units 1 and 2, Duane Arnold Energy Center, Cooper, Fitzpatrick, Enrico Fermi Unit 2, and Hope Creek Units 1 and 2.

DOCKET NOS.: 50-219, 50-220, 50-237, 50-245, 50-249, 50-254, 50-259, 50-260, 50-263, 50-265, 50-271, 50-277, 50-278, 50-293, 50-296, 50-298, 50-321, 50-324, 50-325, 50-331, 50-333, 50-341, 50-354, 50-355, and 50-366.

Responsible RL Branch & Individual: ORB-3, W. Paulsen
Responsible TR Branch & Individuals: MEB, S. Hou & B. D. Liaw
Requested Completion Date: March 15, 1976
Review Status: Awaiting Information

In accordance with your request, the Mechanical Engineering Branch, Division of Technical Review, has reviewed the subject report, including Addendum I. The primary scope of review includes load combinations, methods of analysis, and criteria for evaluating vacuum breaker assembly and piping inside and connected to the torus.

The MEB has directed special attention to the functional operability of piping and components necessary to mitigate the consequence in the event of a loss-of-coolant accident. We have concluded that the licensees have not provided enough information in the report.

The MEB has not attempted to separate the acceptance criteria for short-term and long-term programs at Q1 stage. We will review the licensees' response to the attached list of questions and take a position on each item of concern.

A list of additional information requested is attached.

M. Kehmeny for

R. R. Maccary, Assistant Director
for Engineering
Division of Technical Review

cc w/encl:
R. E. Heineman, TR
G. E. Lear, RL
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W. G. McDonald, MIPC
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MECHANICAL ENGINEERING BRANCH

REQUEST FOR ADDITIONAL INFORMATION

1. Discuss justifications for applying the equivalent static pressure of 25 psi to the vacuum breaker assembly.

2. Verify that the original design functions of the spray header and vacuum breaker air line will not be impaired due to the occurrence of inelastic strain or large displacement during a postulated LOCA. Discuss further the bases for concluding that vacuum breaker nozzles for all plants will withstand the pool swell loads.

3. Identify loading combination criteria and design limits for ECCS piping and mechanical components essential to safety. The functional capability of these components must be maintained under faulted plant conditions.

4. Assess the functional operability of the section of ECCS piping near the torus penetration if the torus supports fail to hold torus in place during pool swell.

5. Describe the earthquake induced sloshing effects on ECCS piping and mechanical components essential to safety. One of the required design considerations is the combined effect of LOCA + SSE loading.

6. Provide adequate details on analysis methods used to calculate the dynamic response. Conservatism should be demonstrated if simplified analyses are used, such as equivalent static or single degree-of-freedom analyses as shown in the short term program final reports.

7. Provide original design criteria for the Section of MSRV line inside the torus. As a minimum, the criteria should include the quality group classification in terms of ASME Code class and/or ANS Safety Class, and stress limits for design and operational conditions.

8. The impact duration was stated to be 15 milliseconds in Subsection 2.2 of Addendum I. However, Figure 2.2-1 and Tables B-2 and B-3 show the duration to be 3.0 milliseconds. Verify that the value used is 15 milliseconds. If the 3.0 millisecond duration is indeed used in both response and parametric analyses, provide the justification for reducing it from 15.0 to 3.0 milliseconds.

9. The maximum stress in the MSRV discharge piping was shown to exceed the minimum yield strength at temperature. Therefore, the calculated displacements may not be realistic. Provide justifications for the conclusion that the function of the piping can be maintained. Also, provide the calculated strains associated with the displacements and stresses shown in Table 2.3-1, Addendum I, and discuss any strain concentration at pipe bends.

10. Provide a summary of calculated stresses and strains at all nodes or elements shown in Figure 2.1-1, Addendum I, for the Peach Bottom Units 2 and 3, including those at restraints; i.e., hangers, vent pipe penetration, and anchor bolts. Also indicate the load-carrying capabilities at all restraints.

11. With respect to the MSRV discharge operation, only Millstone 1, Cooper, Dresden Station 2 & 3, Quad Cities Station 1 & 2, Brunswick, Duane Arnold, and Pilgrim 1 have responded to the NRC letter on September 10, 1975, to show the adequacy of their restraints on MSRV lines inside the torus. Most of these analyses consider only the initial blowdown loads, which is not completely acceptable. The effects due to any bubble formation, bubble oscillation, and sequential operation were not included in the assessment. Provide a definitive test program to obtain load data for use in evaluating the adequacy of pipe restraints in each plant. The test program may consist of tests to obtain load history during a single and a multiple discharging, coupled with direct strain measurements at restraints.