



THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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MURRAY R. EDELMAN
VICE PRESIDENT
NUCLEAR

September 23, 1985
PY-CEI/NRR-0351 L

Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket Nos. 50-440; 50-441
Pool Dynamic Loads
SER Open Item (9)

Dear Mr. Youngblood:

The purpose of this letter is to provide further information pursuant to our letter dated September 13, 1985 regarding pool dynamic loads. Additional clarifications to Attachment 3 of that letter are enclosed. In Attachment 4 to that letter, "Evaluation of Impact Loads on Short Structures Close to the Pool," we committed to demonstrate that sufficient design margin exists between the original design basis pressure and the impact pressure calculated using the Modified Maise methodology. We have completed our analysis and this letter serves as confirmation that, in all but ten cases where a static analysis with a dynamic load factor was used for the original design load, suitable margins were demonstrated which accommodate the staff's concerns with respect to the conservatism in the Modified Maise methodology. Suitable margins were found for components if a 25% margin was demonstrated for the radial orientation and 100% margin for the circumferential orientation. For those ten components which did not demonstrate the suitable margins a reevaluation is being performed to demonstrate the design is sufficient to accommodate the higher loads. The reevaluation uses radial hydrodynamic mass to calculate the maximum pressure and the versed sine curve to determine the dynamic load factor. This reevaluation will be completed by September 30, 1985. Based on discussions with the staff on September 17, 1985, the information in this letter should enable SER Open Item (9) to be resolved.

If you have any questions, please let me know.

Very truly yours,

Murray R. Edelman
Vice President
Nuclear Group

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cc: Jay Silberg, Esq.
John Stefano (2)
J. Grobe

Boo!
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3B.6 CONTAINMENT

No deviations.

3B.6.1 CONTAINMENT LOADS DURING A LARGE STEAMLINE BREAK (DBA)

GESSAR Figures 3B-2 through 3B-6 are not applicable to Perry. See FSAR Figures 3B-1 through 3B-5.

3B.6.1.1 Compressive Wave Loading

No deviations.

3B.6.1.2 Water Jet Loads

No deviations.

3B.6.1.3 Initial Bubble Pressure

No deviations.

3B.6.1.4 Hydrostatic Pressure

No deviations.

3B.6.1.5 Local Containment Loads Resulting from the Structures at or Near the Pool Surface

Deviation from GESSAR as required by the NRC Draft Acceptance Criteria.

3B.6.1.6 Containment Load Due to Pool Swell at the HCU Floor (Wetwell Pressurization)

The PNPP containment wall design for loads due to pool swell at the HCU floor bounds that of GESSAR II (11 psid). In addition, the Perry HCU floor is approximately 27 feet above the suppression pool surface and has been designed for 10 psid across the total area of the platform (structural steel plus grating). This was reduced from the GESSAR specification due to the Perry HCU floor being 7 feet higher than the GESSAR standard. In addition, a plant unique analysis showed a peak calculated pressure differential equal to approximately 5.4 psid based upon a design open area ratio of 30 percent of the total HCU floor area, (Refs. 2, 3 & 4). GESSAR Figure 3B-58 is not applicable to Perry.

3B.6.1.7 Fallback Loads

No deviations.

3B.6.1.8 Post Pool-Swell Waves

No deviations.

3B.6.1.9 Condensation Oscillation Loads

GESSAR Figure 3B-17 is not applicable to Perry. See FSAR Figure 3B-6 for condensation oscillation loads on containment.

3B.6.1.10 Chugging

No deviations.

3B.8.1.4 Condensation Loads

LOCA condensation-oscillation drag loads are bounded by the PNPP LOCA bubble pressure drag load methodology for piping, or these loads are bounded by the SRV second pop for the strainers. For the columns, condensation-oscillation was included in the original design. (Reference 5)

3B.8.1.5 Chugging

Chugging drag loads are bounded by the PNPP LOCA bubble pressure drag load methodology for piping, or these loads are bounded by the SRV second pop for the strainers. For the columns, chugging was included in the original design. (Reference 5 & 6)

3B.8.1.6 Compressive Wave Loading

No deviations.

3B.8.1.7 Safety/Relief Valve Actuation

The PNPP design basis for safety/relief valve quencher air bubble drag loads is conservatively based on the maximum quencher bubble pressure. A comparison of the PNPP load methodology and the GESSAR II load methodology is given in Section 3B.3.2. of the FSAR.

3B.9 LOADS ON STRUCTURES AT THE POOL SURFACE

As required by the NRC Draft Acceptance Criteria, the Perry analysis used a velocity ranging from zero fps at the pool surface to a maximum of 50 fps as a function of height; instead of the constant 40 fps velocity specified in GESSAR Table 3B-2, to calculate pool swell drag loads.

3B.10 LOADS ON STRUCTURE BETWEEN THE POOL SURFACE AND THE HCU FLOORS

No Deviations.

3B.10.1 IMPACT LOADS

Impact loads are calculated in accordance with GESSAR as modified by the requirements of the NRC Draft Acceptance Criteria.

The design basis for bulk pool swell impact loads on small structures less than 4 ft. long and/or 6 ft. above the pool have been evaluated using an alternative method. (Reference 5 & 6)

3B.10.2 DRAG LOADS

Drag loads are calculated in accordance with GESSAR as modified by the requirements of the NRC Draft Acceptance Criteria. Figure 3B-75 is not used with abscissa values less than unity.

3B.10.3 FALLBACK LOADS

No deviations.

3B.11 LOADS ON EXPANSIVE STRUCTURES AT THE HCU FLOOR ELEVATION.

The loads on the PNPP HCU floor are discussed in Section 3B.6.1.6. The only other expansive structure in Perry in the pool swell region is the steam tunnel, which is designed in accordance with the NRC Draft Acceptance Criteria. (References 1, 3 & 4)

3B.12 LOADS ON SMALL STRUCTURES AT THE ABOVE AND THE HCU FLOOR ELEVATION

Deviation from GESSAR as required by the NRC Draft Acceptance Criteria.

3B.13 REFERENCES

No deviations. Additional PNPP specific references as follows:

1. Draft NRC Acceptance Criteria for LOCA Related Mark III Containment Pool Dynamic Loads Appendix C of Attachment to NRC letter from T.P. Speis, NRC, to H. Pfefferlen, GE, dated October 8, 1982.
2. CEI letter, PY-CEI/NRR-0010L from M. R. Edelman, CEI, to B. J. Youngblood, NRC, dated January 31, 1983.
3. CEI letter, PY-CEI/NRR-0055L from M. R. Edelman, CEI, to B. J. Youngblood, NRC, dated June 20, 1983.
4. CEI letter, PY-CEI/NRR-0123L from M. R. Edelman, CEI, to B. J. Youngblood, NRC, dated July 11, 1984.
5. CEI letter, PY-CEI/NRR-0235L from M. R. Edelman, CEI to B. J. Youngblood, NRC, dated May 16, 1985.
6. CEI letter, PY-CEI/NRR-0336L from M. R. Edelman, CEI to B.J. Youngblood, NRC dated September 13, 1985.