Docket No. 50-341

February 21, 1992

Mr. William S. Orser
Senior Vice President - Nuclear
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Dear Mr. Orser:

SUBJECT: FERMI-2 - REQUEST FOR ADDITIONAL INFORMATION UPRATED POWER OPERATION LICENSE AMENDMENT REQUEST (TAC NO. M82102)

In reviewing your September 24, 1991 license amendment request, the NRC staff has determined that additional information is required in order to complete our review. Please provide your response to the questions contained in the enclosure within 30 days receipt of this letter in order for us to maintain our review schedule. For your convenience a copy of this letter and its enclosure have been telecopied to Mr. Glen Ohlermacher of your staff. If you have any questions please contact me at (301) 504-1341.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Please note that as the generic review of this issue parallels the plant specific review for Fermi-2 additional requests for information may be forthcoming.

Original signed by

Timothy G. Colburn, Sr. Project Manager
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosure:
Request for Additional Information

cc w/enclosure:
See next page

OFC	:LA:PDIII-1	:PM:PDIII-1	:D:PDIII-1	:
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Enclosure 1

Request For Additional Information
Fermi-2 License Amendment Request
Re: Power Uprate

Mechanical Engineering Branch

1. (Section 2.5.1) - Discuss the effects of bottom head pressure increase on the structural and functional integrity of the control rod drive system (CRDS) due to power uprate. State the basis of determining the acceptability of the CRDS regarding compliance with the Code, to include not only the Code allowables, but the calculated maximum stresses, deformation, and fatigue for the uprated power conditions, and assumptions used in the calculations.

2. (Sections 3.3.2 and 3.3.3) - Provide a discussion on how the dynamic effects of annulus pressurization (AP), jet reaction (JR) and pipe restraint loads were taken into account for the evaluation of reactor vessel and internals for the power uprate. The discussion should include the impact of uprated AP and JR load time histories additive to seismic dynamic loads, on the motion of the reactor vessel and on the fuel lift. The evaluation did not address the Code used for evaluating stresses and allowables for the reactor vessel and internals. List the maximum stresses and location of highest stressed areas for both the current design and the uprated power conditions.

3. (Section 3.3.3) - 10 CFR Part 50, Appendix A, GDC 15 requires that the reactor coolant system be designed with sufficient margin to assure that the design considerations are not exceeded. For the core spray at the uprated power, the cumulative usage factor (CUF) was stated to be 0.99 which is nearly the limit of 1.0 set forth by Code. However, adequate technical basis was not given for the acceptance of 0.99. Provide detailed discussions regarding the critical location(s) of concern, analysis methodology and assumptions, vibrating inputs and thermal transients, and the edition of Code used in the determination of the cumulative usage factor.

4. (Section 3.5) - It appears that no substantive evaluation regarding the acceptability of the reactor coolant pressure boundary (RCPB) piping systems including main steam, main steam drains, recirculation loop, core spray, standby liquid control, and CRD piping was provided for uprated conditions. Provide a discussion regarding analysis methods and assumptions and compliance with their Code of record. This includes not only the Code allowables, but the calculated maximum stresses and fatigue for normal, upset and faulted conditions.

5. (Section 3.5) - Provide the methodology and assumptions used in the analyses of the reactor core isolation cooling (RCIC), high pressure coolant injection (HPCI), residual heat removal (RHR) and reactor water cleanup (RWCU) systems as related to the snubber reduction effort. The discussion should include damping values used in the dynamic analyses, design response spectra and applicable Code and criteria. This section also implies that snubber reduction will not be implemented on the main steam, main steam drains, recirculation loop, core spray, standby liquid control, and CRD piping systems. Please confirm this understanding.

6. (Sections 3.11.1 and 3.11.2) - State the Code used for the power uprate evaluation of balance-of-plant (BOP) piping and pipe supports including anchorages. List the critical BOP piping systems and components affected by the power uprate. Provide the methodology, assumptions and applicable loads used in the piping and pipe support (including anchorages) analyses. The evaluation should include not only the Code allowables, but the calculated maximum stresses and fatigue for normal, upset and faulted conditions.

7. (Section 10.2.1) - This section only discusses the effects of power uprate on the environmental qualification of equipment, but not dynamic qualification. For safety-related equipment, the dynamic qualification should also be addressed with respect to SRV events, annulus pressurization and jet loads in the context of power uprate.

8. (Section 4.1.2.1) - This section stated that the containment response conditions with power uprate are within the range of conditions used to define the current LOCA loads. However, the conditions were not specifically defined. In addition, Table 4-1 shows that the maximum drywell pressure with the power uprate is bounded by the original USAR pressure value, but the maximum pool temperature with the power uprate is not bounded by the original USAR value for Fermi 2. Please discuss the definition of the conditions mentioned above, for instance the drywell pressure and the suppression pool temperature.

   The evaluation did not address the dynamic effects of the power uprate LOCA loads including the pool swell, condensation oscillation and chugging loads. Please provide such a discussion regarding the peak amplitudes of LOCA load time histories, as well as the dynamic load factor associated with the driving frequencies contained in LOCA forcing functions and the natural frequencies of the structures and components.

9. (Section 4.1.2.2) - Similar to the concern regarding uprated LOCA loads as discussed in Question 8, the SRV dynamic suppression pool loads with the power uprate as compared to the original SRV dynamic analyses for the amplitudes of SRV load time histories as well as the driving frequencies contained in the SRV actuating forcing functions and the natural frequencies of the structures and components need to be discussed.