April 16, 2001

Mr. James F. Klapproth, Manager
Engineering & Technology
GE Nuclear Energy
175 Curtner Ave
San Jose, CA 95125

SUBJECT: NEDC-32938P, "GENERIC GUIDELINES FOR GENERAL ELECTRIC BOILING WATER REACTOR THERMAL POWER OPTIMIZATION" - REQUEST FOR ADDITIONAL INFORMATION (TAC NO. MA9537)

Dear Mr. Klapproth:

By letter dated July 11, 2000, GE Nuclear Energy submitted for staff review Topical Report NEDC-32938P, "Generic Guidelines for General Electric Boiling Water Reactor Thermal Power Optimization." The staff has completed its preliminary review and has identified a number of items for which additional information was needed to continue its review.

Individual submittals for the responses to questions from either the Plant Systems Branch, the Reactor Systems Branch, or the Mechnical Engineering Branch would be welcomed to minimize delay. If you have any questions, please call me at (301) 415-3016.

Sincerely,

/RA/

Robert Pulsifer, Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 710

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

TOPICAL REPORT NEDC-32938P, "GENERIC GUIDELINES FOR GENERAL ELECTRIC

BOILING WATER REACTOR THERMAL POWER OPTIMIZATION"

PROJECT NO. 710

PLANT SYSTEMS BRANCH

1. Address the adequacy of the following systems and items:

   a. Residual heat removal system - containment spray cooling mode
   b. Residual heat removal system - fuel pool cooling assist mode
   c. Fire protection system
   d. Main steam isolation valve leakage control system
   e. 10 CFR 50 Appendix J testing for containment
   f. Moderate energy line break
   g. Auxiliary steam
   h. Instrument air
   i. Service air
   j. Diesel generator and its associated supporting systems

2. Items that need to be verified by each plant should be listed as items addressed in the TSAR (Appendix A). This includes, but may not be limited to, the turbine building heating, ventilation, and air conditioning (HVAC) and Appendix R fire event.

3. In Table J-2, the residual heat removal system - suppression pool cooling mode refers to Section 5.6.4 and Appendices D and L. However, Section 5.6.4 only discussed low pressure coolant injection mode and shutdown cooling mode, and Appendices D and L only had a line item for operator action to activate the suppression pool cooling mode.

   a. Address the adequacy of the system.

   b. Is the suppression pool cooling mode ever automatically actuated?

4. Section 5.11.8 states that the EQ has been evaluated and there is not a significant change because of the small changes. However, for EQ the conclusion was that plant specific verification would be needed. Why is plant specific verification not needed for high energy line break?

REACTOR SYSTEMS BRANCH

5. It is stated in the topical report that no plant modification is expected to be required for the thermal power optimization (TPO), with the exception of some minor setpoint changes and ARM re-scaling (Section 4.4). What about installation of improved feedwater flow meter?

6. Is the TPO topical report intended for implementation only by plants which have installed improved feedwater flow meters? This requirement should be stated explicitly in the topical report.

7. What plant specific justification of improved feedwater flow meter accuracy will be provided to support TPO power uprate requests?

8. It is stated in the topical report that final feedwater temperature reduction (FFWTR) would not be included in the uprate application if not previously licensed. Is this also the case for extended load line limit analysis (ELLLA), maximum extended load line limit analysis (MELLLA), increased core flow (ICF) and maximum extended operating domain (MEOD)?

9. Section 5.0, Scope, page 5-1: The last sentence of the 5th paragraph should state "Systems and components ... "

10. Section 5.0, Scope, page 5-1: The last sentence of the 6th paragraph states that "... these tasks will not be included in the TSAR **OR** the TSAR will only include confirmation of the applicability of the generic conclusions." Confirmation of plant specific applicability should be provided in the TSAR for all generic analyses conclusions.

11. Section 5.1, Reactor Operating Conditions, page 5-2: In the second paragraph, it is stated that "Operating pressure **IS EXPECTED TO BE** controlled to be the same as the pre-uprated operating pressure." Clarify this statement. It is our understanding that the TPO uprates will not result in any increase in operating pressure.

ECCS-LOCA Performance Analyses:

12. What power level is assumed in the pre-TPO nominal/upper bound SAFER/GESTR-LOCA analyses?

13. Section 5.3.1, ECCS-LOCA Performance Analyses, page 5-4: In the third paragraph, it is stated that "For plants near the upper bound PCT limit, plant-specific evaluations will be performed ..." Define the word "near" in this statement. Also, it is stated that "These results, if needed, will be included in the plant-specific TSAR." Define the phrase "if needed" in this statement.

14. What will the analysis of record be for plants determined to have adequate margin to the upper bound PCT and thus not preforming plant-specific calculations of the nominal/upper bound PCT as proposed in the topical report?

15. There are only four plants listed in Table D.1. Justify that the projected TPO ΔPCT for plant A is bounding.

16. Justify the extrapolation of ΔPCT for larger power uprates to estimate the ΔPCT for 1.5 percent uprates.

17. Table D.1 only provides the pre- and post-uprate nominal PCT. Is the Δupper bound PCT the same as the Δnominal PCT for pre- and post-uprate?

18. Section L.3, Evaluation of ATWS, page L-1: It is stated in the first paragraph that "If the TPO plant shows that it currently has sufficient margin for the projected changes of the peak parameters..." Define the word "sufficient" in this statement.

19. Table L-3: Provide justification that the data provided in this table is bounding, and justify the extrapolation of Δpeak pressure and Δpeak pool temperature for larger power uprates to estimate the Δpeak pressue and Δpeak pool temperature for 1.5 percent uprates.

20. Table E-2, page E-8: Verify that the OLMCPR for Plant "E" decreased post-uprate.

21. Will this topical report be applied to plants using fuel and/or methodologies provided by vendors other than GE?

MECHANICAL ENGINEERING BRANCH

22. In reference to Section 5.5.1 and Appendix I, clarify whether the TPO evaluation is performed for 1.5 percent increase of the plant current (or original?) rated power and limited to conditions: (1) no increase in the reactor pressure or operating temperature; (2) no increase in maximum core flow rate; (3) steam flow increase <2 percent; and (4) feedwater temperature increase of <2°F and the recirculating temperature increase of <1°F.

23. In reference to Section 5.5.6, provide a detailed discussion of the impact of the 1.5 percent power uprate on the design basis analysis of the control rod drive mechanisms (CRDMs). Confirm whether the CRDMs structural integrity needs to be addressed in the TPO plant specific safety evaluation.

24. In Section 5.5.2, provide a discussion on the effects of 1.5 percent power uprate on NSSS pipe supports, nozzles, penetrations, guides, valves and pumps, heat exchangers, and anchors of the main steam, feedwater and recirculation piping systems.

25. In Section 5.10.10, it is stated that similar to NSSS piping, evaluations are expected to show that the effect of TPO uprate will be acceptable for BOP piping. Please discuss the impact of TPO on pipe break locations and pipe whip restraint hardware capabilities to demonstrate acceptability. Confirm that the TPO plant specific safety evaluation will include these evaluations and other reviews for safety-related safety/relief valves, air-operated valves, motor-operated valves (MOVs) associated with Generic Letter (GL) GL 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," and impact of TPO on programs associated with GL 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," and GL 96-06, "Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions."

26. Table I-1 provides pressure drops of internal components for normal operating condition for the original, power uprate and TPO operations. Please provide stresses and allowables for each critical components due to the pressure drop loading shown in Table I-1.