April 27, 2001

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

SUBJECT: NEDC-32983P, "GENERAL ELECTRIC METHODOLOGY FOR REACTOR PRESSURE VESSEL FAST NEUTRON FLUENCE EVALUATIONS" (TAC NO. MA9891)

Dear Mr. Klapproth:

By letter dated September 1, 2000, GE Nuclear Energy (GENE) submitted for staff review Topical Report NEDC-32983P, "General Electric Methodology for Reactor Pressure Vessel Fast Neutron Flux Evaluations." The staff completed its preliminary review and identified a number of items for which additional information was needed to continue its review. Responses to the initial request for additional information (RAI) dated November 15, 2000, were submitted on December 19, 2000, January 5, 2001, and January 17, 2001, by GENE. On February 12, 2001 additional information was requested and responses were submitted by letters dated March 2 and 14, 2001. However, the staff finds that the responses were not fully responsive. Therefore, the staff is forwarding the attached RAI in order to complete its review. Please provide the requested information so that the review can be completed in a timely manner. Partial submittals would be welcomed to minimize the delay. If you have any questions, please call me at (301) 415-3016.

Sincerely,

/RA by G. Shukla for/

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

NEDC-32983P, "GENERAL ELECTRIC METHODOLOGY FOR REACTOR

PRESSURE VESSEL FAST NEUTRON FLUENCE EVALUATIONS"

PROJECT NO. 710

1. In RAI-2-7, the bias in the fluence calculation is given as -6.4% ± 11.6% based on historical data. In attachment RAI-2-1, this bias is used to adjust the calculated pressure vessel fluence. The 11.6% (one-σ) uncertainty in this bias is substantially larger than the bias itself and does not provide the required level of confidence in the bias estimate and is therefore not acceptable.

2. The entries in the corrected Table 6-1 (Attachment R2.3-1) show wide variations, resulting in a large uncertainty. The number of plants represented in the table entries is small relative to the total number of plants to which the methodology will apply. A larger number of entries of the same quality should reduce the uncertainty.

3. Can you please clarify the last paragraph on page R2-10?

4. In R2-4, Table 1, the cross section uncertainties are estimated to be 10% (one-σ). What analysis has been performed to support this value?

5. In R2-4, Tables 2, 3, 4, 5 and 6, how is the size of the water gap calculated? Does this correlation assume an equivalent cylindrical surface?

6. In the R2-7, adjustment of 15.5% (estimated from Figure 3-5) to account for jet pump shadowing (R18-1), how do you account for the spectrum variation in the back of the pump or pump riser? If Figure 3-4 was used, the value of the adjustment would be higher. What is the justification for using Figure 3-5?

7. In R2-7, the use of engineering judgment as a substitute for BWR-2 data is not an acceptable practice. In view of the lack of C/M surveillance data for BWR-2s, provide justification for the application of the proposed methodology to BWR-2 plants.

8. Provide an explanation for the radially-dependent bias in the benchmark experiment C/M data of Figures 5-4, 5-5 and R9-1. Does this indicate that calculations based on the proposed methodology will over-predict the fluence at locations inside the vessel inner-wall? Provide justification for not including this bias in the calculation methodology. In view of the data in Figure 9-1:

    - Is the proposed bias adjustment indeed applicable to the shroud?
    - Should another bias adjustment be generated?
    - Should the bias adjustment include an axial (z) dependence?