May 3, 2007

Mr. Timothy O'Neill
Manager, ABWR Projects
General Electric Company
1989 Little Orchard St., M/C 780
San Jose, CA 95125

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED TO ADVANCED BOILING-WATER REACTOR LICENSING TOPICAL REPORT (TAC NO. MD4025)

Dear Mr. O'Neill:

By letter dated December 20, 2006, General Electric Company submitted an Advanced Boiling-Water Reactor (ABWR) Licensing Topical Report (LTR) for U.S. Nuclear Regulatory Commission (NRC) review and approval for a change to the current ABWR certified design, NRC Docket No. 52-001. In order to complete its review, the NRC staff has determined that it will need responses to the enclosed request for additional information (RAI).

In order to support the review schedule, we request that you respond to this RAI within 30 days of receipt. If you are unable to respond within 30 days, please inform us in writing and propose an alternate schedule for responding. If you have any questions, I can be reached at (301) 415-1494 or by e-mail at gfw@nrc.gov.

Sincerely,

/RA/

George Wunder, Senior Project Manager
ESBWR/ABWR Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-001

Enclosure:
As stated

cc w/encl: See next page

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NRO/DE/CIB2 REQUEST FOR ADDITIONAL INFORMATION
GE LICENSING TOPICAL REPORT NEDE-33299P
ABWR WITH ALTERNATE RCIC TURBINE-PUMP DESIGN

1. Section 3.0, “Description of Proposed Departure,” in NEDE-33299P (Revision 0, December 2006), “Advanced Boiling Water Reactor (ABWR) with Alternate Reactor Core Isolation Cooling (RCIC) Turbine-Pump Design,” states on page 2 that a small pump returns leakoff water to the main pump suction lines for the alternate RCIC turbine-pump design. Discuss this leakoff pump, and its design, qualification, and inservice testing (IST) provisions.

2. Section 3.3, “Bearings location,” in NEDE-33299P states on page 3 that the shaft bearings in the alternate RCIC turbine-pump design are in the center between the pump and turbine rotors, and are completely within the single casings. Discuss the IST provisions and vibration monitoring for these bearings.

3. Section 3.4, “Controls,” in NEDE-33299P states on page 3 that control is completely internal to the pump and turbine with fewer control components for the alternate RCIC turbine-pump design. Describe the qualification and periodic testing of the control system.

4. Section 3.6, “Lubrication,” in NEDE-33299P states on page 4 that the pump main process water lubricates the bearings in the alternate RCIC pump and turbine. Discuss the qualification of the bearings for water coolant.

5. Section 3.9, “Maintenance,” in NEDE-33299P states on page 6 that the maintenance scope is reduced with less maintenance time required for the alternate RCIC turbine-pump set. Discuss the periodic maintenance provisions for the alternate design.

6. Section 5.0, “Qualification Information,” in NEDE-33299P provides on pages 6 and 7 a brief outline of the qualification of the alternate RCIC turbine-pump design. Describe the qualification of the alternate design for performance, and dynamic and seismic conditions. Also, describe the environmental qualification method and approach for the electrical and mechanical components (including non-metallic components) for the alternate design.

7. Figure 1, “TWL Type Turbine-Pump Assembly,” on page 11 in NEDE-33299P provides a rough drawing of the alternate RCIC turbine-pump design. Provide a more clear detailed diagram and/or photographs of the alternate design showing the inlet, outlet, connecting lines, and instrument locations.

8. Appendix A, “Description of TWL Type Alternate Design,” to NEDE-33299P provides information on the design of the alternate RCIC turbine-pump design. Describe the quality assurance provisions for the design and manufacture of the alternate design.

9. Appendix A to NEDE-33299P indicates on page A-5 that a solenoid-operated valve (SOV) is connected between the steam pipe from the stop valve to the meter valve and the meter valve outlet to the steam exhaust in the alternate RCIC turbine-pump design. Describe the SOV and the meter valve, and their design, qualification, and IST provisions.

Enclosure

10. Appendix A to NEDE-33299P on pages A-7 and A-8 discusses the steam stop valve and throttle valve for the alternate RCIC turbine-pump design. Discuss the manufacture, size, type, rating, actuator, qualification, setup, IST provisions, and periodic maintenance for these valves. Also, correlate these valves to the numbered valves in plant drawings and Table 3.9-8 on page C-16, "Inservice Testing Safety-Related Pumps and Valves," and the text of the Design Control Document.

11. Appendix A to NEDE-33299P on page A-9 indicates that full pump discharge pressure is led through a solenoid-operated 4-way crossover valve when describing the differential pressure governor for the alternate RCIC turbine-pump design. Discuss the design, qualification, and IST provisions for this valve.

12. Appendix C, "ABWR DCD Tier 1 and Significant Tier 2 Marked Changes," to NEDE-33299P provides proposed changes to the inspections, tests, analyses, and acceptance criteria (ITAACs) to Table 2.4.4 on page C-4, "Reactor Core Isolation Cooling System," based on the alternate RCIC turbine-pump design. Discuss the establishment of ITAACs that reflect the alternate design, such as the design and qualification of the turbine-pump assembly, specific valves, and leakoff pump included in its design.

13. Section 3.9.3.2.1.5, "RCIC Turbine," in Appendix C to NEDE-33299P states on page C-14 that operability under normal load conditions is assured by comparison to operability of similar turbines in operating plants. On page C-11, Appendix C indicates that this statement will be deleted from Section 3.9.2.2.2.7, "RCIC Pump and Turbine Assembly," because of the planned qualification test for the TWL type design. Discuss the plans for qualification of the alternate RCIC turbine-pump design in light of these differences in the DCD sections.

14. Appendix C to NEDE-33299P provides RCIC piping and instrumentation diagrams on pages C-23 and 24 (proprietary information). Provide diagrams of the RCIC system that are more clear regarding the locations of the specific components and instrumentation points.

15. On pages 5-20 to 22, Section 5.4.6, "Reactor Core Isolation Cooling System," in NRC Final Safety Evaluation Report on the ABWR (NUREG-1503) describes the NRC staff review of the RCIC system for the ABWR Design Certification. Identify any technical changes to the description of the RCIC system in this section necessary to reflect the alternate RCIC turbine-pump design.

16. Summarize the consideration of potential adverse flow effects from severe hydrodynamic and acoustic resonance loads on the reactor, steam, and feedwater systems and their components, including design, analysis, and monitoring approach. Discuss the evaluation of the potential impact of such loads on the alternate RCIC turbine-pump design.

cc:

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