August 18, 2006

Mr. David H. Hinds, Manager, ESBWR
General Electric Company
P.O. Box 780, M/C L60
Wilmington, NC 28402-0780

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 52 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Hinds:

By letter dated August 24, 2005, General Electric Company (GE) submitted an application for final design approval and standard design certification of the economic simplified boiling water reactor (ESBWR) standard plant design pursuant to 10 CFR Part 52. The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed design.

The NRC staff identified that additional information was needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter. Question 21.6-53 relates to computational fluid dynamics modeling of the boron flow paths during an anticipated transient without scram (ATWS) event as discussed in NEDE-33083P, Supplement 2, "TRACG Application for ESBWR Anticipated Transient Without Scram Analysis." This question was sent to you via electronic mail on May 30, 2006, and was discussed with your staff during a telecon on June 5, 2006. You provided a partial response to this RAI on July 7,2006 in letter MFN 06-213 and additional response on July 28, 2006, in letter MFN 06-239. This letter acknowledges receipt of your response to all subparts of the RAI.

If you have any questions or comments concerning this matter, you may contact me at (301) 415-4115 or mcb@nrc.gov or you may contact Amy Cubbage at (301) 415-2875 or aec@nrc.gov.

Sincerely,

/RA/

Martha C. Barillas, Project Manager
ESBWR/ABWR Projects Branch
Division of New Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 52-010

Enclosure: As stated

cc: See next page

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cc: See next page
ACCESSION NO. ML062190313

OFFICE	NESB/PM	NESB/BC
NAME	MBarillas	JColaccino
DATE	08/18/2006	08/18/2006

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Distribution for DCD RAI Letter No. 52 dated August 18, 2006

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Request for Additional Information (RAI)
NEDE-33083P, Supplement 2 "TRACG Application for ESBWR Anticipated Transient Without Scram Analysis"

RAI Number	Reviewer	Question Summary	Full Text
21.6-53	Landry R Klein V Parks B Boyd C	Provide additional information to support the staff's CFD modeling of the boron flow paths during an ATWS event	Provide the following additional information to support the staff's computational fluid dynamics (CFD) modeling of the boron flow paths during an anticipated transient without scram (ATWS) event for the ESBWR: A. Material properties for the sodium pentaborate standby liquid control system (SLCS) injection liquid: ρ(T) (density as a function of temperature), C_p (specific heat capacity), k (thermal conductivity), μ (viscosity), and mass diffusivity. Provide the density as a function of temperature. If available, also provide the other properties as a function of temperature. B. Geometry information to include inner radius of core barrel, flow areas for bypass region, flow area and loss coefficients from bypass region through the core support plate along with elevations of holes, flow area and loss coefficients for any flow paths from bypass region to lower plenum or fuel in general along with the elevations. Provide diagrams of the above showing the dimensions of the bypass along with the channel boxes. Supplement your illustrated response to RAI 21.6-29 with dimensions of all the boron flowpaths through the lower tieplates, leakage holes and nose pieces of the fuel channels. C. What is the orientation of the injection nozzles relative to the core? Starting with Fig 4.1-1 of the ESBWR DCD Tier 2, assuming a vertical and horizontal symmetry axes on this figure, what is the location and angle for the injection nozzles relative to these axes? Include a detailed drawing similar to that in Fig 5.1-2 of NEDC-33083P showing the exact location of the nozzles relative to the channel boxes, include dimensions.

Enclosure

cc:

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