December 7, 2006

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 84 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 has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter. This RAI concerns Chapter 11 of the ESBWR Design Control Document and includes RAI questions 11.5-26 through 11.5-36.

To support the review schedule, you are requested to respond to this RAI by January 22, 2006.

If you have any questions or comments concerning this matter, you may contact me at (301) 415-207 or lnq@nrc.gov, or Amy Cubbage at (301) 415-42875 or aec@nrc.gov.

Sincerely,

/RA/

Lauren Quiñones, Project Manager
ESBWR/ABWR Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-0010

Enclosure: As stated

cc: See next page

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ACCESSION NO. ML063400314

OFFICE	NGE1/PM	NGE1/BC
NAME	LQuinones	MShuaibi
DATE	12/07/2006	12/07/2006

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Requests for Additional Information (RAIs)
ESBWR Design Control Document (DCD) Chapter 11

RAI number	Reviewer	Question Summary	Full Text
11.5-26	Singh G	Address locations for control and monitoring of the Process Radiation Monitoring System (PRMS).	Update design control document (DCD) Sections 11.5.3.1 and 11.5.3.2 to describe the location for controls, alarms, and monitoring for the safety related and the non-safety related radiation monitoring systems i.e., state if the controls and displays are located at local panels or if the controls are located in local panels with the displays located in the main control room. If a separate computer system is used for the PRMS then the DCD should describe the computer network and include a preliminary system drawing.
11.5-27	Singh G	Address the applicable revision of the Regulatory Guides in Section 11.5.8.	The references in Section 11.5.8 include the revisions for the ANSI Standards and NUREG-0737, but does not address the applicable revision for the Regulatory Guides (RG). Please update the DCD to include the applicable revision number for the RG.
11.5-28	Singh G	Update references regarding applicability of revision 4 of RG1.97 and IEEE Std. 497-2002.	Revision 4 of the RG 1.97 was issued in June 2006. Per RAI 7.5-5 response, General Electric (GE) has agreed to update the DCD to reflect revision 4 of the RG 1.97 and IEEE Std. 497-2002. The reference documents in Section 11.5.8 and the System Design Basis and Criteria in Section 11.5.2 should be updated to reflect the same.

11.5-29	Singh G	Address the issue of common cause failure.	Paragraph 6.2 of IEEE Std. 497-2002 addresses common cause failures concerning use of common software. It states, “Design of instrumentation using microprocessor based sensors, data acquisition, or display equipment for Type A, Type B, and Type C variables, shall address concerns over the possibility that the use of computer software could result in a common cause failure. Common cause failures for the instrumentation channels shall be addressed at the variable level.” Update DCD Section 11.5.4 to address common cause failure concern as stated in Paragraph 6.2 of IEEE Std. 497-2002.
11.5-30	Singh G	Update section 11.5.2.1 for the design criteria for safety-related systems.	On Section 11.5.2.1 the tenth bullet from top in this paragraph states, “Register full-scale output if radiation detection exceeds full scale;”. Per IEEE Std. 497-2002 type C variables are those variables that provide primary information to the control room operators to indicate the potential for breach or the actual breach of the three fission product barriers (extended range). Further RG 1.97 clarifies under item C.3 that the ranges for type C variables shall have expanded ranges and a source term that consider a damaged core. In light of the above, please clarify if any variables will exceed the range. If so, justify.
11.5-31	Singh G	Clarify inconsistencies between Section 11.5.3.1.4 and Tables 11.5-1 and 11.5-2 in DCD.	The second sentence in the first paragraph in Section 11.5.3.1.4 states that one monitoring channel is provided in each sump drain line. However, Table 11.5-1 lists two channels under the safety related monitors for Drywell Sumps LCW/HCW Discharge. Please update the DCD as needed to clarify this inconsistency.

11.5-32	Singh G	Clarify inconsistencies between descriptions of subsections under sections 11.5.3.1 and 11.5.3.2.	Subsystem descriptions under sections 11.5.3.1 and 11.5.3.2 are not consistent. The description contents vary among the subsections. Some subsections do not describe logic or do not include the alarms description (e.g., 11.5.3.1.5 and 11.5.3.1.6), other sections do not describe the number of channels (e.g., 11.5.3.2.5 and 11.5.3.2.16). DCD descriptions should be consistent and systematic. As a minimum each subsection should either address directly or by reference to the tables (e.g., Table 11.5-1 and Table 11.5-2) the following items: a) system overview description, b) number of paths and monitoring channels per path, c) initiation logic (not required if only one channel exists), d) channel testing, e) ranges, and f) alarms. Clarify inconsistencies between descriptions of subsections under sections 11.5.3.1 and 11.5.3.2.
11.5-33	Singh G	Update DCD to clarify inconsistencies between subsection 11.5.3.2.12 and Table 11.5-1.	Table 11.5-1 lists one channel for Drywell Fission Product (Particulate) and one channel for Drywell Fission Product (Gaseous). First sentence in subsection 11.5.3.2.12 states, “This subsystem, consisting of two channels, continuously monitors noble gases and particulates in the drywell air space under normal operating conditions.” This sentence can be misinterpreted as though each channel monitors gaseous and particulate activity. Update DCD to clarify inconsistencies between subsection 11.5.3.2.12 and Table 11.5-1.

11.5-34	Singh G	Update DCD to clarify inconsistencies between subsection 11.5.3.2.15 and Table 11.5-1 regarding the number of channels for Fuel Building Ventilation Exhaust AHU RMS.	Description in subsection 11.5.3.2.15 states that there are four channels to monitor the radiation level of the air entering the Exhaust Air Handling Unit (AHU). However, Table 11.5-1 lists only two channels under Fuel Building Ventilation Exhaust AHU. Please update DCD to reflect the correct number at both places.
11.5-35	Singh G	Update subsection 11.5.4.1to reflect generation of alarms.	DCD, subsection 11.5.4.1, Basis for Monitor Location Selection lists measurement, monitoring, display and recording functions but not the alarm functions. The alarm function should be included in the DCD. Please update DCD to reflect generation of alarms.
11.5-36	Singh G	Update section 11.5.4 to address accuracy, response time, and reliability of the instruments used for PRMS.	DCD section 11.5.4 should address accuracy, response time, and reliability of the instruments used for PRMS and provide overlapping sensor/instrument ranges if the desired accuracy cannot be achieved with a single sensor/instrument.

ESBWR Mailing List

cc:

Mr. David Lochbaum, Nuclear Safety Engineer
Union of Concerned Scientists
1707 H Street, NW., Suite 600
Washington, DC 20006-3919

Mr. Paul Gunter
Nuclear Information & Resource Service
1424 16th Street, NW, Suite 404
Washington, DC 20036

Mr. James Riccio
Greenpeace
702 H Street, Suite 300
Washington, DC 20001

Mr. Adrian Heymer
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. Paul Leventhal
Nuclear Control Institute
1000 Connecticut Avenue, NW
Suite 410
Washington, DC 20036

Mr. Ron Simard
6170 Masters Club Drive
Suwanne, GA 30024

Mr. Brendan Hoffman
Research Associate on Nuclear Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

Mr, Jay M. Gutierrez
Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

Mr. Glenn H. Archinoff
AECL Technologies
481 North Frederick Avenue
Suite 405
Gaithersburg, MD 20877

Mr. Gary Wright, Director
Division of Nuclear Facility Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Mr. Charles Brinkman
Westinghouse Electric Co.
Washington Operations
12300 Twinbrook Pkwy., Suite 330
Rockville, MD 20852

Mr. Ronald P. Vijuk
Manager of Passive Plant Engineering
AP1000 Project
Westinghouse Electric Company
P. O. Box 355
Pittsburgh, PA 15230-0355

Mr. Ed Wallace, General Manager
Projects
PBMR Pty LTD
PO Box 9396
Centurion 0046
Republic of South Africa

Mr. Russell Bell
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Ms. Sandra Sloan
Areva NP, Inc.
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA 24506-0935

Mr. Robert E. Sweeney
IBEX ESI
4641 Montgomery Avenue
Suite 350
Bethesda, MD 20814

Mr. Eugene S. Grecheck
Vice President, Nuclear Support Services
Dominion Energy, Inc.
5000 Dominion Blvd.
Glen Allen, VA 23060

Mr. George A. Zinke
Manager, Project Management
Nuclear Business Development
Entergy Nuclear, M-ECH-683
1340 Echelon Parkway
Jackson, MS 39213

E-Mail:
tom.miller@hq.doe.gov or
tom.miller@ nuclear.energy.gov
sfrantz@morganlewis.com
ksutton@morganlewis.com
jgutierrez@morganlewis.com
mwetterhahn@winston.com
whorin@winston.com
gcesare@enercon.com
jerald.holm@framatome-anp.com
erg-xl@cox.net
joseph_hegner@dom.com
mark.beaumont@wsms.com
steven.hucik@ge.com
patriciaL.campbell@ge.com
bob.brown@ge.com
david.hinds@ge.com
chris.maslak@ge.com
James1.Beard@ge.com
kathy.sedney@ge.com
mgiles@entergy.com
tansel.selekler@nuclear.energy.gov or
tansel.selekler@hq.doe.gov
Frostie.white@ge.com
David.piepmeyer@ge.com
george.stramback@gene.ge.com
wayne.marquino@ge.com
james.kinsey@ge.com
david.lewis@pillsburylaw.com
paul.gaukler@pillsburylaw.com
john.o'neill@pillsburylaw.com
matias.travieso-diaz@pillsburylaw.com
maria.webb@pillsburylaw.com
roberta.swain@ge.com