May 7, 2008

Mr. Robert E. Brown
Senior Vice President, Regulatory Affairs
GE Hitachi Nuclear Energy
3901 Castle Hayne Road MC A-45
Wilmington, NC 28401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 188 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Brown:

By letter dated August 24, 2005, GE Hitachi Nuclear Energy (GEH) 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.

RAI 7.2-36 S02, transmitted in RAI letter 149, dated February 8, 2008, has been withdrawn. RAI 7.2-36 S02 is superseded by the enclosed RAI 16.2-156 supplement 1.

If you have any questions or comments concerning this matter, you may contact me at 301-415-6256 or Dennis.Galvin@nrc.gov or you may contact Amy Cubbage at 301-415-2875 or Amy.Cubbage@nrc.gov.

Sincerely,

/RA/

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

Docket No. 52-010

Enclosure:
Request for Additional Information

cc: See next page

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Dear Mr. Brown:

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Dennis Galvin, Project Manager
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cc: See next page

ADAMS ACCESSION NO.: ML081150668 NRO-002

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DATE	04/25/08	04/25/08	04/28/08	05/01/08	05/01/08	
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DATE	04/30/08	05/05/08	04/28/08	05/06/08	05/07/08	05/05/08

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 188 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION DATED MAY 7, 2008

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Requests for Additional Information (RAIs):
ESBWR Design Control Document (DCD) Revision 4

RAI Number	Reviewer	Question Summary	Full Text
16.2-156 Supplement 1 (MFN 08-104, February 8, 2008) Supersedes 7.2-36 Supplement 2	Harbuck C Rhow S	Satisfy the requirement of 10 CFR 50.36(d)(1)(ii)(A).	The ESBWR generic technical specifications bases, Revision 4 of DCD Tier 2, Chapter 16B, state that the nominal trip setpoint (NTSP) meets the definition of a limiting safety system setting (LSSS), which 10 CFR 50.36 defines and requires to be included in technical specifications. General Electric-Hitachi's response to RAI 7.2-36, Supplement 1, indicates that the NTSP is the nominal trip setpoint final ($NTSP_F$), as defined by the setpoint methodology proposed in NEDE-33304P, October 2007. However, the ESBWR generic technical specifications, Revision 4 of DCD Tier 2, Chapter 16, do not include a $NTSP_F$ setting for each instrumentation function, but only include the Allowable Value. Because 10 CFR 50.36(d)(1)(ii)(A) requires the LSSS to be in the technical specifications, and the $NTSP_F$ is the LSSS for an instrumentation function channel, revise the generic technical specifications to include either • the $NTSP_F$ value, in addition to the Allowable Value, or • a setpoint control program (SCP) administrative control specification, acceptable to the NRC staff for meeting 10 CFR 50.36(d)(1)(ii)(A), that requires documenting the $NTSP_F$ value in a SCP-required document for each Technical Specification required automatic protection instrumentation function. The SCP should explicitly include: 1. A statement that the NTSP corresponds to the LSSS. 2. A requirement to calculate LTSP, NTSP, AV, ALT, and AFT in conformance with the setpoint methodology previously reviewed and approved by NRC,

RAI Number	Reviewer	Question Summary	Full Text
			and conditions in the associated NRC staff safety evaluation. (Note: The NRC staff will not approve the methodology unless the methodology allows little variation in the values calculated by different analysts using identical input values (such as uncertainties and channel calibration drift)). 3. The title and date of the approved setpoint methodology document and the title and date of the associated NRC safety evaluation are explicitly stated. (Note: This will ensure that changes to the methodology or deviation from the conditions in the safety evaluation will require a license amendment.) 4. A requirement for a document to contain the values of the current LTSP, NTSP, AV, ALT, and AFT for each Technical Specification required automatic protection instrumentation function, and that the document is controlled under 10 CFR 50.59. 5. A requirement to declare the channel inoperable if as-found setting determined during Channel Calibration is non-conservative to AV. 6. A requirement to evaluate channel functionality if as-found setting determined during Channel Calibration is non-conservative to AFT (with AFT determined as described in RIS 2006-17). 7. A requirement to set the channel within ALT around NTSP (the actual setting, equal to or conservative to the LTSP, which is the LSP defined in RIS 2006-17) at the completion of Channel Calibration. An example of a SCP specification acceptable to the NRC staff is provided in Enclosure 2. The proposed instrumentation design would permit performance of Channel Operational Tests on the ESBWR instrumentation functions; therefore, the example SCP includes the COT in addition to the Channel Calibration. Add COT to generic TS surveillance requirements and its definition from NUREG-1431, Rev 3.1, to generic TS Section 1.1, with corresponding Bases changes.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs and Manuals

The following programs shall be established, implemented, and maintained.

5.5.11 Setpoint Control Program

a. The Setpoint Control Program (SCP) implements the regulatory requirement of 10 CFR 50.36(d)(1)(ii)(A) that technical specifications will include items in the category of limiting safety system settings (LSSS), which are settings for automatic protective devices related to those variables having significant safety functions.

b. The Limiting Trip Setpoint (LTSP), Nominal Trip Setpoint (NTSP), Allowable Value (AV), As-Found Tolerance (AFT), and As-Left Tolerance (ALT) for each Technical Specification required automatic protection instrumentation function shall be calculated in conformance with the instrumentation setpoint methodology previously reviewed and approved by the NRC in NEDE-33304P-A, "GEH ABWR/ESBWR Setpoint Methodology," [Revision #, dated Month dd, yyyy, (MLxxxxxxxxx)], and the conditions stated in the associated NRC safety evaluation, [Letter to GEH from NRC, Title, dated Month, dd, yyyy, (MLxxxxxxxxx)].

c. Performance of a CHANNEL CALIBRATION and a CHANNEL OPERATIONAL TEST surveillance shall include the following:

   1. The as-left value of the instrument channel trip setting shall be the value at which the channel was set at the completion of the surveillance with no additional adjustment of the instrument channel. The as-found value of the instrument channel trip setting shall be the trip setting value measured during the subsequent performance of the surveillance before making any adjustment to the instrument channel that could change the trip setting value.

   2. The as-found value of the instrument channel trip setting shall be compared with the previous as-left value or the specified NTSP. If the as-found value is compared with the specified NTSP to meet this requirement, the following conditions apply:

      i. the setting tolerance band (the specified ALT) must be less than or equal to the square root of the sum of the squares of reference accuracy, measurement and test equipment, and readability uncertainties;

      ii. the setting tolerance band (the specified ALT) must be included in the total loop uncertainty; and

      iii. the pre-defined test acceptance criteria band (the specified AFT) for the as-found value must include either the setting tolerance band (the

specified ALT) or the uncertainties associated with the setting tolerance band (the specified ALT), but not both of these.

3. If the as-found value of the instrument channel trip setting differs from the previous as-left value or the specified NTSP by more than the pre-defined test acceptance criteria band (the specified AFT), when compared in accordance with paragraph c.2 above, then this condition shall be dispositioned by the plant's corrective action program, and the instrument channel shall be evaluated to verify that it is functioning in accordance with its design basis before declaring the surveillance requirement met and returning the instrument channel to service.

4. If the as-found value of the instrument channel trip setting is less conservative than the specified AV, then the surveillance requirement is not met and the instrument channel shall be immediately declared inoperable.

5. The instrument channel trip setting shall be set to a value within the specified ALT around the specified NTSP (a trip setting as or more conservative than the specified LTSP) at the completion of the surveillance; otherwise, the surveillance requirement is not met and the instrument channel shall be immediately declared inoperable.

d. The difference between the instrument channel trip setting as-found value and either the previous as-left value or the specified NTSP, for each Technical Specification required automatic protection instrumentation function shall be trended and evaluated to verify that the instrument channel is functioning in accordance with its design basis.

e. The SCP shall establish a document containing the current value of the specified LTSP, NTSP, AV, AFT, and ALT for each Technical Specification required automatic protection instrumentation function, a record of changes to those values, and references to the calculation documentation. Changes to this document shall be governed by the regulatory requirements of 10 CFR 50.59

DC GE - ESBWR Mailing List (Revised 04/22/2008)

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