HITACHI

GE Hitachi Nuclear Energy

James C. Kinsey
Vice President, ESBWR Licensing

PO Box 780 M/C A-55
Wilmington, NC 28402-0780
USA

T 910 675 5057
F 910 362 5057
jim.kinsey@ge.com

MFN 07-263, Supplement 1

Docket No. 52-010

February 25, 2008

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Response to Portion of NRC Request for Additional Information Letter No. 90 Related to ESBWR Design Certification Application – Licensing Topical Report (LTR), NEDE-33279,"ESBWR Containment Fission Product Removal Evaluation Model" October 2006 – RAI Number 15.4-20S01**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent by NRC letter dated January 30, 2007 (Reference 1). GEH responded to RAI 15.4-20 via Reference 2. The GEH response to RAI Number 15.4-20S01 is addressed in Enclosure 1.

Please note that GEH is not re-transmitting the "Nodalization of Main Steam Line, Main Steam Drain Line and Main Condenser". The Main Steam Pipe Diameter has changed to 30 inches (reflected in the response). GEH is currently evaluating the effect of increase steam line diameter on our previous evaluation and will provide that evaluation when it's available. We believe the attached information is sufficient for the NRC's review.

D068
NRO

If you have any questions or require additional information, please contact me.

Sincerely,

James C. Kinsey

James C. Kinsey
Vice President, ESBWR Licensing

Reference:

1. MFN 07-084 – Letter from US Nuclear Regulatory Commission (NRC) to David H. Hinds, *Request for Additional Information Letter No. 90 Related to ESBWR Design Certification Application,* dated January 30, 2007
2. MFN 07-263 – Letter from James C. Kinsey to U.S. Nuclear Regulatory Commission, Response to Portion of NRC Request for Additional Information Letter No. 90 Related to ESBWR Design Certification Application – Licensing Topical Report (LTR), NEDE-33279,"ESBWR Containment Fission Product Removal Evaluation Model" October 2006 – RAI Number 15.4-20

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 90 Related to ESBWR Design Certification Application, dated January 30, 2007 – Licensing Topical Report (LTR), NEDE-33279, "ESBWR Containment Fission Product Removal Evaluation Model" October 2006 – RAI Number 15.4-20S01

cc: AE Cubbage USNRC (with enclosure)
GB Stramback GEH/San Jose (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
eDRF 0000-0067-9823, Revision 1

Enclosure 1

MFN 07-263, Supplement 1

Response to Portion of NRC Request for Additional Information Letter No. 90 Related to ESBWR Design Certification Application

Licensing Topical Report (LTR), NEDE-33279,"ESBWR Containment Fission Product Removal Evaluation Model" October 2006

RAI Numbers 15.4-20 S01

NRC RAI 15.4-20:

Question Summary: Provide additional information concerning the main steam lines

Full Text: The General Electric Licensing Topical Report, NEDE-33279,"ESBWR Containment Fission Product Removal Evaluation Model, October 2006,"(LTR), Appendix A, "LOCA Dose Assumptions," note 2, states that main steam line and main steam drain line data are not provided because fission product deposition in these lines are not credited. To perform an independent confirmatory radiological consequence analysis on this release pathway, the staff needs following information:

(1) main steam pipe diameter, length (horizontal), and volume between MSIVs, drain line valves, and drain line header to the condensers,

(2) outside diameter and thickness for the main steam lines, main steam drain lines, steam drain header to the condensers,

(3) insulation thickness, and

(4) steam pressure and temperature in the main steam lines, steam drain lines, steam drain header to the condensers.

GEH Response:

1. a) Main Steam Pipe Diameter: 711.2 mm; Length = 230000 mm (from RPV to Common header –all 4 lines inclusive)

   b) Vol. between MSIVs: 10.64 m^3 (total for 4 MS-lines)

   c) Vol. between drain line valves: 0.40 m^3

   d) Vol. between Drain Line Header to the Condenser: 0.44 m^3

2. a) Main Steam O.D. =711.2 mm ; Thickness = 36.83 mm

   b) Main Steam Drain Line (Piping consists of 3"S8Ô and 2"S 80)

   c) Steam Drain Header to Condenser: 41500 mm

GEH Response (Cont'd):

3. Insulation Thickness:
   a) MS Lines =114 mm;
   b) Drain Lines = 88.9 mm

4. a) Main Steam lines Steam Design Pressure: 8620 kpa
   b) Main Steam lines Steam Design Temperature: 302°C
   c) Main Steam lines Operating Pressure: 7170 kpa
   d) Main Steam lines Operating Temperature: 288°C
   Notes:
   i. Pressure and Temperature for the Main Steam Drain Lines are same as the MS lines.
   ii. All values provided in the response are the estimated values only.

DCD Impact:

No DCD changes will be made in response to this RAI.

NRC RAI 15.4-20 S01:

Please revise the response to RAI 15.4-20 so that it is consistent with SECY-96-089, "Final Policy Statement - Conversion to the Metric System" (i.e., include both SI Units and English Units). Staff expects all SI Units to be also expressed in English Units, except perhaps the isometric drawings attached to Enclosure 2 of the response. Also, the electronic version of the isometric drawings, sent as a courtesy via e-mail, were poor quality and difficult to read. In your re-submittal, please ensure staff receives a high quality copy of these isometric drawings. Staff further notes that the request to be consistent with SECY-96-089 has been communicated to GE on numerous occasions. Most recently during the Audit in May 14 and 15, 2007, as documented in the Audit Report, Audit of General Electric's (GEs) Economic Simplified Boiling Water Reactor (ESBWR) fission product removal in the ESBWR containment and confirmatory dose rate calculation. (ML071580274)

GEH Response:

The information contained in the initial response to RAI 15.4-20 is now provided in both SI and English units. A better quality electronic file of the Main Steam Isometric was previously provided shortly after MFN 07-263 dated July 24, 2007 was submitted, and the Staff indicated that it was legible and acceptable to leave the isometric in metric units.

Requested Items	Data
Main Steam Pipe Diameter	762 mm (30")
Pipe Length (4 Lines)	230000 mm (755')
Volume between MSIVs (4 Lines)	12.24 m^3 (432 ft^3)
Volume between Drain line valves	0.40 m^3 (14.12 ft^3)
Volume between the Drain Line Headers & Condenser	0.44 m^3 (15.5 ft^3)
Main Steam OD	762 mm (30")
Pipe Thickness	38.684 mm (1.523")
Main Steam Drain line Schedules	3"sch 80 and 2"sch 80
Length of Pipe from Steam drain Header to Condenser	41500 mm (136.15')
Insulation Thickness:	
MS lines	114 mm (4.5")
Drain Lines	88.9 mm (3.5")
Main Steam Line Design Pressure	8620 kpa (1250 psi)
Main Steam line Design Temperature	302°C (575°F)
Main steam line Operating Pressure	7170 kpa (1040 psi)
Main steam line Operating Temperature	288°C (550°F)

Units are in SI and English Systems.

Notes:

iii. Pressure and Temperature for the Main Steam Drain Lines are same as the MS lines.

iv. All values provided in the response are the estimated values only.

DCD Impact:

No DCD changes will be made in response to this RAI.