



HITACHI

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Security Notice

This letter forwards Security-Related information in accordance with 10 CFR 2.390. Upon removal of Enclosure 3, the balance of this letter may be considered non-Security-Related.

MFN 08-704

Docket No. 52-010

September 30, 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. 218 - Related to ESBWR Design Certification Application – Radiation Protection - RAI Numbers 12.4-35, 12.4-37, and 12.4-39**

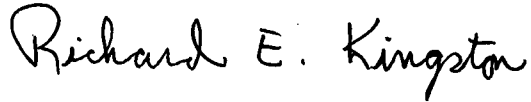
The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to a portion of the U.S. Nuclear Regulatory Commission Request for Additional Information (RAI) sent by NRC Letter 218 (Reference 1). The GEH response to RAI Numbers 12.4-35, 12.4-37, and 12.4-39 is addressed in Enclosure 1. Enclosure 2 contains DCD Tier 2 Markups that are not security-related.

Enclosure 3 contains Security-Related DCD Figures identified by the designation "{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}". GEH hereby requests this information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390. No public version of these security-related DCD Markups are provided in these RAI responses since they would be blank pages with only figure titles and figure numbers; however, DCD Tier 2, Revision 6 will contain public versions of these figures.

DO68
HRO

If you have any questions about the information provided here, please contact me.

Sincerely,



Richard E. Kingston
Vice President, ESBWR Licensing

Reference:

1. MFN 08-221, *Letter from the U.S. Nuclear Regulatory Commission to Robert E. Brown, Request for Additional Information Letter No. 218, Related To ESBWR Design Certification Application*, dated July 1, 2008

Enclosures:

1. Response to Portion of NRC Request for Additional Information Letter No. 218 - Related to ESBWR Design Certification Application – Radiation Protection - RAI Numbers 12.4-35, 12.4-37, and 12.4-39
2. Response to Portion of NRC Request for Additional Information Letter No. 218 - Related to ESBWR Design Certification Application – Radiation Protection - RAI Numbers 12.4-35, 12.4-37, and 12.4-39 - DCD Tier 2 Markups - Non Security-Related
3. Response to Portion of NRC Request for Additional Information Letter No. 218 - Related to ESBWR Design Certification Application – Radiation Protection - RAI Numbers 12.4-35, 12.4-37, and 12.4-39 - DCD Tier 2 Markups - Security-Related Information - Withhold Under 10 CFR 2.390

cc: AE Cubbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0089-9003

Enclosure 1

MFN 08-704

**Response to Portion of NRC Request for
Additional Information Letter No. 218
Related to ESBWR Design Certification Application
Radiation Protection
RAI Numbers 12.4 35, 12.4-37 and 12.4-39**

NRC RAI 12.4-35

NRC Summary:

Modify Tables 12.3-2 through 12.3-6 for clarification.

NRC Full Text:

The following comments pertain to Tables 12.3-2 through 12.3-6:

- a) *In Table 12.3-6 there appears to be an extra column at the end of the table that is not needed. Delete this extra column.*
- b) *Add footnotes to Tables 12.3-2 through 12.3-6 stating that the monitoring ranges corresponding to the letters shown in the "Monitoring Range" column of each of these tables are provided in Table 12.3-7.*

GEH Response

- a) The extra column in DCD Revision 6 Table 12.3-6 has been removed as shown in the Enclosure.
- b) The requested footnote has been added to the DCD Revision 6 Tables 12.3-2 through 12.3-6 as shown in the Enclosure.

DCD Impact

DCD Tables 12.3-2 through 12.3-6 will be updated for Revision 6 as reflected in the attached markup.

NRC RAI 12.4-37

NRC Summary:

Correct data entry in Table 12.3-14.

NRC Full Text:

In Table 12.3-14 under "Mission at 72 hours to room 1313" modify the entry under the column "Time (min)" (for the row labeled "Remote shutdown control panel room division 1") to read "0.68 + 5(1)".

GEH Response

The subject line item (Remote shutdown control panel room division 1) in DCD Revision 6 Table 12.3-14 has been modified to read "0.68 + 5(1)" as shown in the Enclosure.

DCD Impact

DCD Table 12.3-14 will be updated in Revision as reflected in the attached markup.

NRC RAI 12.4-39

NRC Summary:

Add room numbers to Figures 12.3-51 (a-d)

NRC Full Text:

Modify Figures 12.3-51 (a-d) (Post-Accident Radiation Zones Electrical Building) so that these figures include the individual room identification numbers

GEH Response

The individual room identification numbers for the Electrical Building have been added to DCD Revision 6 Figures 12.3-51 (a-d) (Post-Accident Radiation Zones Electrical Building) as shown in the Enclosure.

DCD Impact

DCD Figures 12.3-51a, 12.3-51b, 12.3-51c, and 12.3-51d will be updated as reflected in the attached markup.

Enclosure 2

MFN 08-704

**Response to Portion of NRC Request for
Additional Information Letter No. 218
Related to ESBWR Design Certification Application
Radiation Protection
RAI Numbers 12.4 35, 12.4-37 and 12.4-39
DCD Tier 2 Markups – Non-Security-Related**

Table 12.3-2
Area Radiation Monitors for Reactor Building

ARM No.¹	Description & Location	Figure No.	Monitoring Range³
1	Refueling Floor Area #1, EL 34000	12.3-31	H
2	Refueling Floor Area # 2, EL 34000	12.3-31	H
3	New Fuel Buffer Pool, EL 27000	12.3-30	H
4	New Fuel Buffer Pool, EL 27000	12.3-30	H
17	RWCU/SDC Pump, EL -11500	12.3-23	H
18	RB Sump Pumps, EL -11500	12.3-23	H
19*	RWCU/SDC Train A Heat Exchanger, EL -11500	12.3-23	H
20*	RWCU/SDC Train B Heat Exchanger, EL -11500	12.3-23	H
21	RB Lower Equipment Hatch, EL -6400	12.3-24	M
22	RB Lower Personnel Hatch, EL -6400	12.3-24	H
23	RB FMCRD HCU Room B, EL -6400	12.3-24	M
25	RB FMCRD HCU Room D, EL -6400	12.3-24	M
27	RB RWCU/SDC Filter Demineralizer Area EL -1000	12.3-25	H
28	RB Radiological Control Area Entrance, EL 17500	12.3-29	M
29	RB H2/O2 Monitoring (CMS), EL 13570	12.3-28	H
30	RB H2/O2 Monitoring (CMS) Panel, EL 13570	12.3-28	H
31	Instrument Rack Area #1, EL -11500	12.3-23	H
32	Instrument Rack Area #2, EL -11500	12.3-23	H
33	Instrument Rack Area #3, EL -11500	12.3-23	H
34	Instrument Rack Area #4, EL -11500	12.3-23	H
35	Instrument Rack Area #5, EL -11500	12.3-23	H
36	Instrument Rack Area #6, EL -11500	12.3-23	H
37	Instrument Rack Area #7, EL -11500	12.3-23	H
38	Instrument Rack Area #8, EL -11500	12.3-23	H
39 ²	IFTS Maintenance Room (Multiple), EL 17500	12.3-29	H
40	Fuel Handling Machine, EL 34000	12.3-31	H
41	RB Remote Shutdown Panel A Area, EL -1000	12.3-25	H
42	RB Remote Shutdown Panel B Area, EL -1000	12.3-25	H

¹ Note: Numbers 5 through 16, 24 and 26 not used.

² Utilizes auxiliary units.

³ The monitoring ranges corresponding to these alphabetical designations are provided in Table 12.3-7.

* ARMs located in accessible areas where abnormal plant evolutions or anticipated operational occurrences can potentially result in dose rate increases of 1mSv/hr (100 mrem/hr) or more.

Table 12.3-3
Area Radiation Monitors for Fuel Building

ARM No.¹	Description & Location	Figure No.	Monitoring Range²
1	FB Spent Fuel Floor, EL 4650	12.3-26	H
2	Fuel Handling Machine, EL 9060	12.3-27	M
3	FB Fuel Transfer Cask Area, EL 4650	12.3-26	H
5	FB FAPCS Heat Exchangers, EL -11500	12.3-23	H
6*	FB FAPCS Backwash Transfer Pumps, EL -11500	12.3-23	H
9	FB Sump Pumps, EL -11500	12.3-23	H
10	FB FAPCS Heat Exchangers, EL -11500	12.3-23	H
10a	FB Ground Grade Access Pathway, EL 4650	12.3-26	M
11	FB Wash Down Bay Entry Door, EL 4650 (Truck)	12.3-26	H
12	FB IFTS Fuel Building Isolation Valve Room (INSIDE) EL 4650	12.3-26	H

¹ Note: Numbers 4, 7 & 8 not used.

² The monitoring ranges corresponding to these alphabetical designations are provided in Table 12.3-7.

* ARMs located in accessible areas where abnormal plant evolutions or anticipated operational occurrences can potentially result in dose rate increases of 1mSv/hr (100 mrem/hr) or more.

Table 12.3-4

Area Radiation Monitors for Radwaste Building

ARM No.	Description & Location	Figure No.	Monitoring Range ¹
1	RW Electrical Panel Area, EL - 9350	12.3-39	H
2	RW Control Room, EL-2350	12.3-40	H
3	RW Resin Pump, EL - 9350	12.3-39	H
4	RW Resin Transfer Pump Room, EL-2350	12.3-40	H
5	RW Trailer Access Area, EL 4650	12.3-41	H
6*	RW Liquid Radioactive Waste Treatment Area, EL 4650	12.3-41	H
7*	RW Wet Solid Radioactive Waste Treatment Area, EL 4650	12.3-41	H
8*	RW Dry Solid Waste Treatment Area, EL 4650	12.3-41	H
9*	RW Packaged Waste Staging Area, EL 4650	12.3-41	H

¹ The monitoring ranges corresponding to these alphabetical designations are provided in Table 12.3-7.

* ARMs located in accessible areas where abnormal plant evolutions or anticipated operational occurrences can potentially result in dose rate increases of 1mSv/hr (100 mrem/hr) or more.

Table 12.3-5
Area Radiation Monitors for Turbine Building

ARM No.¹	Description & Location	Figure No.	Monitoring Range²
1*	Main Condenser Vault Area EL -1400	12.3-32	M
2*	Feedwater Heater Drain Cooler 1 A/B/C Room EL 12000	12.3-34	M
3	H ₂ and O ₂ Analyzer Room B EL 4650	12.3-33	M
4	Condensate Pump Room EL -1400	12.3-32	M
5*	Low Pressure Heater Area EL 20000	12.3-35	M
6*	Feedwater Heater 4 and Feedwater Storage Tank Room, EL 28000	12.3-36	M
7*	Turbine Building Steam Tunnel EL 20000	12.3-35	M
8*	Condensate Drain Tank and Steam Jet Air Ejector / H ₂ Recombiner and Cooler Room B EL 4650	12.3-33	M
9*	Steam Jet Air Ejector/H ₂ Recombiner and Cooler Room A EL 4650	12.3-33	M
10*	Feedwater Heater 5B and 6B Room EL 12000	12.3-34	M
11	Condensate Filter Access Hatch Room EL 6000	12.3-33	M
12	Corridor/Turbine Building Operating Floor EL 28000	12.3-36	M
13	Corridor/Turbine Building Operating Floor EL 28000	12.3-36	M
14	Crane Travel Area EL 35000	12.3-37	M
15	Equipment Main Access Area, EL 4650	12.3-33	M
16	RCCWS Pump/Exchanger Room A EL 4650	12.3-33	M
17*	Offgas Charcoal Adsorber Room Vessel Vault EL -1400	12.3-32	M
18	Condensate Pleated Filter Valve/Condensate Filter Transfer Pumps/Condensate Flow Control Valve Station Room EL -1400	12.3-32	M
19	Condensate Pleated Filter Valve/Condensate Filter Transfer Pumps/Condensate Flow Control Valve Station Room EL -1400	12.3-32	M
20	Condenser Sampling Pump Room A Sample Room Area EL -1400	12.3-32	M
21	Condenser Sampling Pump Room B EL -1400	12.3-32	M
22	Condensate Deep Bed Demineralizer Valve Room, EL 7650	12.3-33	M
23	H ₂ and O ₂ Analyzer Room A, EL 4650	12.3-33	M
24*	Feedwater Heater 5A and 6A Room EL 12000	12.3-33	M
25*	Feedwater Heater 7B Room EL 20000	12.3-35	M
26*	Feedwater Heater 7A Room Area A, EL 20000	12.3-35	M
27	Turbine Bldg Sampling/Drain Sump C, EL -1400	12.3-32	M
28	Corridor/Exhaust Duct Area EL 35000	12.3-37	M
29	RCCWS Pump/Exchanger Room BEL 4650	12.3-33	M
30*	Main Condenser Vault Area, EL -1400	12.3-32	M

¹Note: Numbers 1, 3, 8, 11, 12, and #14 utilize auxiliary units.

²The monitoring ranges corresponding to these alphabetical designations are provided in Table 12.3-7.

ARM No. ¹	Description & Location	Figure No.	Monitoring Range ²
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*ARMs located in accessible areas where abnormal plant evolutions or anticipated operational occurrences can potentially result in dose rate increases of 1mSv/hr (100 mrem/hr) or more.

Table 12.3-6

Area Radiation Monitors for Control Building

ARM No.	Description & Location	Figure No.	Monitoring Range ¹
1.	Main Control Room, EL -2000	12.3-25	H

¹The monitoring ranges corresponding to these alphabetical designations are provided in Table 12.3-7.

Table 12.3-14
Reactor Building Post Accident Access Area

Way	Room	Walked distance (m)	Time (min)	Dose (mSv)
Mission at 72 hours to room 1341: Electrical equipment division 4				
Lobby	--	21.49	0.39	3.25E-04
Corridor 1	--	37.76	0.69	1.06E-03
Stairs 2	--	27.71	0.92	9.69E-04
Corridor 2	--	17.28	0.31	3.11E-04
Clean personal access tunnel	9101	35.22	0.70	8.49E-04
Electrical Equipment Division 1	1311	30.33	0.55	9.25E-02
Electrical equipment division 4	1341	70.94	1.29 + 5 (1)	1.08E+00
Electrical Equipment Division 1	1311	30.33	0.55	9.25E-02
Clean personal access tunnel	9101	35.22	0.68	8.27E-04
Corridor 2	--	17.28	0.31	3.11E-04
Stairs 2	--	27.71	1.12	1.19E-03
Corridor 1	--	37.76	0.69	1.06E-03
Lobby	--	21.49	0.39	3.25E-05
(1) 5 minutes time of operation is assumed			Total dose:	1.27E+00
Way	Room	Walked distance (m)	Time (min)	Dose (mSv)
Mission at 72 hours to room 1313: Remote shutdown control panel room division 1				
Lobby	--	21.49	0.39	5.86E-04
Corridor 1	--	37.76	0.69	8.46E-04
Stairs 2	--	27.71	0.92	7.41E-04
Corridor 2	--	17.28	0.31	2.24E-04
Clean personal access tunnel	9101	35.22	0.70	8.49E-04
Electrical equipment division 1	1311	26.80	0.49	8.17E-02
Remote shutdown control panel room division 1	1313	9.92	0.68 + 5 (1)	4.07E-01
Electrical equipment division 1	1311	26.80	0.49	8.17E-02
Clean personal access tunnel	9101	35.22	0.68	8.27E-04
Corridor 2	--	17.28	0.31	2.24E-04
Stairs 2	--	27.71	1.12	9.07E-04
Corridor 1	--	37.76	0.69	8.46E-04
Lobby	--	21.49	0.39	5.86E-04
(1) 5 min time of operation and 0.5 min for opening the door are assumed			Total dose:	5.77E-01