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**Subject: Response to Portion of NRC Request for Additional Information
Letter No. 238 - Related To ESBWR Design Certification
Application – RAI Number 20.0-16 Supplement 1**

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 the Reference 1 NRC letter. GEH response to RAI Number 20.0-16 Supplement 1 is addressed in Enclosure 1.

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

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

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NKO

Reference:

1. MFN 08-643, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request For Additional Information Letter No. 238 Related To ESBWR Design Certification Application 5*, dated August 8, 2008.

Enclosure:

1. MFN 08-850 – Response to Portion of NRC Request for Additional Information Letter No. 238 - Related To ESBWR Design Certification Application – RAI Number 20.0-16 S01

cc: AE Cabbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0092-0104

Enclosure 1

MFN 08-850

Response to Portion of NRC Request for

Additional Information Letter No. 238

Related to ESBWR Design Certification Application

RAI Number 20.0-16 S01

NRC RAI 20.0-16 S01

Provide a listing of the estimated collected doses associated with the leak testing program

In GEH's response to RAI 20.0-16, GEH states (in DCD Tier 2, Table 1A-1) that leakage is reduced to as low-as-practical levels for all required post-accident systems outside the containment that could contain highly radioactive fluid using a program that consists of monitoring drain sumps to ascertain gross leakage, inspecting miscellaneous components for leakage, and performing indirect inspections in situations where it is not possible, practical or permissible to make direct inspections. Provide a listing of the estimated collective doses associated with this leak testing program and verify that the occupational radiation exposures associated with this leak testing program have been accounted for in GEH's dose assessment described in DCD Tier 2, Section 12.4 (including Tables 12.4-1 through 12.4-7).

GEH Response

GEH's response to RAI 20.0-16 (MFN 08-324, dated April 7, 2008) identifies four systems that should be leak tested in accordance with NUREG-0737, Item III.D.1.1:

- Isolation Condenser System (ICS)
- Fuel and Auxiliary Pools Cooling System (FAPCS)
- Containment Monitoring System (CMS)
- Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System

Tables 12.4-2, 12.4-3, 12.4-4, 12.4-6, and 12.4-7 in DCD Tier 2, Section 12.4 already contain the occupational doses associated with the inspection of these systems and leak testing program, as discussed below. Tables 12.4-1 and 12.4-5 are unaffected.

ICS

Leak testing and inspection of ICS is captured in DCD Tier 2, Tables 12.4-2, 12.4-3, 12.4-6, and 12.4-7. Radiation exposures associated with ICS inspection and leak testing activities are covered in these four DCD tables discussed below. ICS is considered to be a passive system (DCD Tier 2, Subsection 5.4.6). DCD Tier 2, Table 12.4-2 provides the occupational dose estimate for passive systems surveillance. DCD Tier 2, Table 12.4-3 contains a line item for routine maintenance of passive system (IC, GDCS, PCCS) valves. DCD Tier 2, Table 12.4-6 includes a line item that provides the occupational dose estimate for inservice inspection of other equipment (passive systems). Lastly, DCD Tier 2, Table 12.4-7 contains line items for other drywell and Reactor Building (RB) outage maintenance including passive systems. Leak testing is performed either during surveillance or maintenance activities.

FAPCS

Leak testing and inspection of FAPCS is captured in DCD Tier 2, Tables 12.4-2 and 12.4-3. Radiation exposures associated with FAPCS inspection and leak testing

activities are covered in these two DCD tables via the surveillance and routine maintenance of FAPCS equipment. An occupational dose estimate for FAPCS surveillances is provided in DCD Tier 2, Table 12.4-2. In addition, routine maintenance doses for FAPCS filters/demineralizers, pumps, motors, and valves are captured in DCD Tier 2, Table 12.4-3. Leak testing is performed either during surveillance or maintenance activities.

CMS

Description of the CMS is in DCD Tier 2, Section 12.3.4. Leak testing and inspection of CMS is captured in DCD Tier 2, Tables 12.4-6 and 12.4-7. Radiation exposures associated with CMS inspection and leak testing activities are covered in these two DCD tables via special maintenance and inservice inspection. In DCD Tier 2, Table 12.4-7, an occupational dose estimate for CMS special maintenance is provided for miscellaneous instrumentation in the primary containment. DCD Tier 2, Table 12.4-6 captures inservice inspection occupational dose estimates for other equipment in primary containment, which includes leak testing any of the CMS equipment.

RWCU/SDC System

Similar to the ICS, leak testing and inspection of RWCU/SDC system is captured in DCD Tier 2, Tables 12.4-2, 12.4-3, 12.4-6, and 12.4-7. Radiation exposures associated with RWCU/SDC system inspection and leak testing activities are covered in these four DCD tables. DCD Tier 2, Table 12.4-2 provides the occupational dose estimate for RWCU/SDC surveillance. In DCD Tier 2, Table 12.4-3 has line items for routine maintenance of RWCU/SDC pumps, motors, and valves. DCD Tier 2, Table 12.4-6 provides the occupational dose estimate for inservice inspection of RWCU/SDC piping and valves. Lastly, DCD Tier 2, Table 12.4-7 contains a line item for RWCU/SDC pump and motor special maintenance. Leak testing is performed either during surveillance or maintenance activities.

DCD Impact

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

No LTR changes will be made in response to this RAI