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MFN 08-433

Docket No. 52-010

April 29, 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. 182 - Related to ESBWR Design Certification
Application – RAI Number 14.2-6 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 14.2-6 Supplement 1 is addressed in Enclosures 1 and 2.

Verified DCD changes associated with this RAI response are identified in the enclosed DCD markups by enclosing the text within a black box. The marked-up pages may contain unverified changes in addition to the verified changes resulting from this RAI response. Other changes shown in the markups may not be fully developed and approved for inclusion in DCD Revision 5.

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

Sincerely,

James C. Kinsey
Vice President, ESBWR Licensing

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NR0

Reference:

1. MFN 08-382, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 182 Related to the ESBWR Design Certification Application*, dated April 11, 2008.
2. MFN 06-413, *Response to Portion of NRC Request for Additional Information Letter No. 50 Related to ESBWR Design Certification Application – Initial Test Program – RAI Numbers 14.2-6 and 14.2-8*. October 30, 2006.

Enclosure:

1. MFN 08-433 – Response to Portion of NRC Request for Additional Information Letter No. 182 - Related to ESBWR Design Certification Application – RAI Number 14.2-6 S01
2. MFN 08-433 – Response to Portion of NRC Request for Additional Information Letter No. 182 - Related to ESBWR Design Certification Application – DCD Markups from the Response to RAI Number 14.2-6 S01

cc: AE Cabbage USNRC (with enclosure)
GB Stramback GEH/San Jose (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)

eDRF 0000-0084-2681

Enclosure 1

MFN 08-433

**Response to NRC Request for
Additional Information Letter No. 182
Related to ESBWR Design Certification Application
RAI Number 14.2-6 S01**

NRC RAI 14.2-6 S01

SLCS room temperature

In the applicant's response to RAI 14.2-6 and 9.3-21 S01, the staff found that the applicant added RTNSS power supplies, Plant Investment Protection (PIP) A and B busses, which supplies power to two redundant heaters used to provide assurance that common mode failure for heating the SLCS accumulator rooms does not occur. In addition, SLCS accumulator room temperature is monitored and alarmed when low.

Since the electrical heaters and the temperature alarms are needed to ensure operability of the SLCS when the temperature falls below 60 F, the staff requests additional information in DCD Subsection 14.2.8.1.3, to ensure that testing of the heaters and temperature alarms in both SLCS accumulator rooms are performed to ensure the SLCS remains operable in cold weather.

GEH Response

GEH agrees to add test requirements to confirm the existence and functionality of the electric room heaters for the SLCS accumulator rooms. However addition of testing for temperature alarms is deemed unnecessary because this testing is covered by the third bullet in DCD Tier 2 Subsection 14.2.8.1.3.

DCD Impact

DCD Tier 2, Subsection 14.2.8.1.3 will be revised in Rev. 5 as noted in the markups in enclosure 2.

Enclosure 2

MFN 08-433

Response to NRC Request for

**Additional Information Letter No. 182
Related to ESBWR Design Certification Application**

DCD Markups from the Response to RAI Number 14.2-6 S01

Verified DCD changes associated with this RAI response are identified in the enclosed DCD markups by enclosing the text within a black box. The marked-up pages may contain unverified changes in addition to the verified changes resulting from this RAI response. Other changes shown in the markups may not be fully developed and approved for inclusion in DCD Revision 5.

14.2.8.1.3 Standby Liquid Control System Preoperational Test

Purpose

The objective of this test is to verify that the operation of the Standby Liquid Control (SLC) system, including accumulator, tanks, control, logic, and instrumentation, is as specified.

Prerequisites

The construction tests have been successfully completed and the SCG has reviewed the test procedure and approved the initiation of testing. The reactor vessel shall be available for injecting demineralized water. Required interfacing systems shall be available, as needed, to support the specified testing and the appropriate system configurations. To prevent actuation of single use squib valves during the logic portion of this testing process, the valve(s) may be isolated electrically to prevent actuation. This isolation, verification of the firing signal during the test, and reconnection process must be controlled within the test document.

General Test Methods and Acceptance Criteria

Performance shall be observed and recorded during a series of individual component and integrated system tests to demonstrate the following:

- Proper calibration of instrumentation;
- Proper operation of instrumentation and equipment in the required combinations of logic and instrument channel trip;
- Proper functioning of instrumentation and alarms used to monitor system operation and availability;
- Proper functionality of redundant accumulator equipment room electric heaters;
- Proper operation of system valves, including timing, under expected operating conditions;
- Proper operation of the nitrogen pressurization system;
- Proper system flow paths and discharge (with demineralized water substituted for the neutron adsorber mixture);
- Proper operation of interlocks and equipment protective devices in valve controls;
- Proper operation of the squib type injection valves; and
- Acceptability of instrument channel response times, as measured from each applicable process variable input signal to the applicable process actuator confirmation signal.

Note: Proper volume and concentration of the neutron adsorber solution (refer to Subsection 9.3.5) will be surveilled prior to entry in the TS mode in which the SLC system is required to be operable.