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Subject: **Response to Portion of NRC Request for Additional Information Letter No. 76 Related to ESBWR Design Certification Application - Instrumentation and Control - RAI Numbers 7.3-10 and 7.4-3**

Enclosure 1 contains GE's response to the subject NRC RAIs transmitted via the Reference 1 letter.

If you have any questions or require additional information regarding the information provided here, please contact me.

Sincerely,

/Kathy Sedney for

James C. Kinsey
Project Manager, ESBWR Licensing

D068

Reference:

1. MFN 06-388, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 76 Related to ESBWR Design Certification Application*, October 11, 2006

Enclosures:

1. MFN 07-012 Response to Portion of NRC Request for Additional Information Letter No. 76 Related to ESBWR Design Certification Application - Instrumentation and Control - RAI Numbers 7.3-10 and 7.4-3

cc: AE Cubbage USNRC (with enclosures)
David Hinds GE/Wilmington (with enclosures)
eDRF 0000-0061-0779
0000-0060-5755

Enclosure 1

MFN 07-012

Response to Portion of NRC Request for

Additional Information Letter No. 76

Related to ESBWR Design Certification Application

Instrumentation and Control

RAI Numbers 7.3-10 and 7.4-3

NRC RAI 7.4-3

Update DCD Section 7.4 to describe the "Safe Shutdown" conditions of ESBWR (a passive plant). Discuss how to achieve the safe shutdown conditions either from the main control room or the remote shutdown station.

GE Response

The Safe Shutdown condition is established with the plant achieving the hot shutdown condition. Based on definition of terms provided in Section 1.2.1 of DCD Tier 1 Revision 2, Safe Shutdown, corresponds to a state in which reactivity is maintained to a margin below criticality as defined in the Technical Specifications, core decay heat rate is maintained such that that reactor core or RCS thermal design limits are not exceeded, and site boundary radiation dose limits are maintained in accordance with 10 CFR Part 20.

The Reactor Protection System (RPS) provides automatic and manual capability to shutdown the reactor and achieve safe shutdown. This system and its functions are described in DCD Section 7.2.1. The Standby Liquid Control System (SLCS) is automatically initiated in case of signals indicative of a Loss of Coolant Accident (LOCA) or an Anticipated Transient Without Scram (ATWS), however, the SLCS may be manually initiated if needed as a backup method to achieve and maintain subcriticality as the reactor cools. The SLCS is described in both DCD Section 7.4.1 and Section 9.3.5.2. These systems function automatically or manually from the main control room (MCR) to achieve safe shutdown.

The Remote Shutdown System (RSS) is a safety-related system used to provide operators with the means to safely shutdown the reactor from a place outside the Main Control Room (MCR) if the MCR becomes uninhabitable. RSS provides remote control of the systems that are needed to bring the reactor to a hot shutdown after a scram. Controls on redundant panels are provided for manual reactor scram and manual MSIV isolation.

As described in subsection 7.4.2.2.1 of DCD Tier 2 Revision 2, safety-related Division 1 and 2 VDU's and nonsafety-related VDUs at any of the two Remote Shutdown System (RSS) panels have the same control/display capabilities as the corresponding VDUs at Main Control Room (MCR). In addition, hardwired Division 1 & 2 switches for Manual Scram and Main Steamline Isolation are provided on both RSS panels. Therefore, all requirements to achieve safe shutdown are available at the MCR as well as any of the two RSS panels. The RSS panels meet the requirements of single failure criterion since the panels are redundant in design, and each panel is equipped with the controls/displays of all process systems.

DCD Impact

Since the information requested by this RAI is available in several sections of the DCD as referenced in the response above, update of DCD Tier 2 Section 7.4 in response to this RAI is not required.

NRC RAI 7.3-10

Clarify the discrepancy between Tier 1 and Tier 2 information regarding the nonsafety design basis for ADS

The non-safety design basis for the ADS instrumentation identifies the status of SRVs and DPVs in the main control room. However, the safety requirements of Tier 1, Section 2.1, Nuclear Boiler System, page 2.1-12, identifies indication of the status of these valves as a safety related function.

GE Response

DCD Tier 2, Section 7.3.1.1.1 has been changed in Revision 2 to list the status indication of the SRVs and DPVs under Safety Design Basis.

DCD Impact

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