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Subject: **Response to Portion of NRC Request for Additional Information
Letter No. 97 Related to ESBWR Design Certification Application -
Technical Specifications - RAI Numbers 16.2-141, 16.2-147, and
16.2-148**

Enclosure 1 contains GE-Hitachi Nuclear Energy's (GEH'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,



James C. Kinsey
Project Manager, ESBWR Licensing



References:

1. MFN 07-292, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 97 Related to ESBWR Design Certification Application*, May 10, 2007

Enclosures:

1. MFN 07-476 – Response to Portion of NRC Request for Additional Information Letter No. 97 Related to ESBWR Design Certification Application - Technical Specifications - RAI Numbers 16.2-141, 16.2-147, and 16.2-148

cc: AE Cabbage USNRC (with enclosures)
DH Hinds GEH (with enclosures)
RE Brown GEH (w/o enclosures)
eDRFs 73-0651, 73-1070

Enclosure 1

MFN 07-476

**Response to Portion of NRC Request for
Additional Information Letter No. 97
Related to ESBWR Design Certification Application
- Technical Specifications -
RAI Numbers 16.2-141, 16.2-147, and 16.2-148**

NRC RAI 16.2-141

SRNM instrumentation is required to be operable by LCO 3.3.1.6, "Startup Range Neutron Monitor Instrumentation," and LCO 3.3.1.4, NMS Instrumentation. The applicability requirements for both LCOs include Mode 6; however, surveillance requirements for these LCOs are not comparable. Explain the reasons for duplicating instrumentation requirements. Revise the TS to eliminate duplicate applicabilities. In terms of compliance with 10 CFR 50.36 and the instrumentation design basis, explain why LCO 3.3.1.4 Channel Calibrations require testing in accordance with the Setpoint Control Program whereas, LCO 3.3.1.6 does not.

GEH Response

The requirements of the two subject Specifications are distinctly different. DCD Tier 2, Chapter 16B, Bases for LCO 3.3.1.6, "Startup Range Neutron Monitor (SRNM) Instrumentation," states "For an SRNM channel to be considered OPERABLE, it must be providing neutron flux monitoring indication." There are no automatic trip functions required by Specification 3.3.1.6. The purpose for the indication function is also stated in the Bases as "The SRNMs provide monitoring of reactivity changes during fuel or control rod movement and give the control room operator early indication of unexpected subcritical multiplication."

In contrast, DCD Tier 2, Chapter 16B, Bases for LCO 3.3.1.4 "Neutron Monitoring System (NMS) Instrumentation," describe requirements for automatic trip functions:

"The SRNM subsystem will generate a scram trip signal to prevent fuel damage in the event of any abnormal positive reactivity insertion transients while operating in the startup power range. This trip signal is to be generated for either an excessively high neutron flux level or for an excessive neutron flux increase rate, i.e., short reactor period."

The numbers of channels required to be operable, as well as the requirements comprising that operability, differ for each of these SRNM Specifications, which also differ in what Mode 6 conditions are applicable. The functional instrument requirements are not duplicated in these Specifications.

Given the stated requirements for the SRNM function in these separate Specifications, the Channel Calibration requirements also differ between these Specifications. LCO 3.3.1.4 calibrations encompass the trip setting for the Reactor Protection System operability. The calibration for LCO 3.3.1.6 involves no trip setting, no allowable value, and no as-found or as-left tolerance. The calibration is related to proper adjustment of the indication over the expected range of indication. As such, the Setpoint Control Program requirements are not applied to LCO 3.3.1.6 and the indication-only function required by that Specification.

DCD Impact

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

NRC RAI 16.2-147

Provide data to show that the self test report meets the requirements of a Channel Check without performing the required comparison of the parameter.

GEH Response

DCD Chapter 16B provides discussions of the instrumentation self-test feature in the Bases for Channel Check, Channel Functional Test, and Logic System Functional Test Surveillance Requirements (SRs). The discussions of the self-test feature provide one method of meeting the SR; however, other alternatives for acceptable performance are not similarly discussed. This level of procedural detail is not typically presented in the Technical Specifications Bases. The Technical Specifications Bases are intended to discuss and clarify the requirements stated in the Technical Specifications. Details of how a surveillance is performed are provided and controlled in the implementing procedures. Therefore, the Chapter 16 Bases will be revised to delete reference to self-test as a method for meeting the Surveillance Requirement.

DCD Impact

The discussions of the following SRs in DCD Chapter 16B will be revised to delete reference to the instrumentation self-test feature: SR 3.3.1.1.1, SR 3.3.1.1.2, SR 3.3.1.2.1, SR 3.3.1.4.1, SR 3.3.1.4.3, SR 3.3.1.5.1, SR 3.3.1.6.1, SR 3.3.1.6.3, SR 3.3.1.6.5, SR 3.3.1.6.6, SR 3.3.5.1.1, SR 3.3.5.1.2, SR 3.3.5.2.1, SR 3.3.5.3.1, SR 3.3.5.3.2, SR 3.3.5.4.1, SR 3.3.6.1.1, SR 3.3.6.1.2, SR 3.3.6.2.1, SR 3.3.6.3.1, SR 3.3.6.3.2, SR 3.3.6.4.1, SR 3.3.7.1.1, SR 3.3.7.1.2, and SR 3.3.7.2.1.

NRC RAI 16.2-148

Provide data to show that the self test report meets the requirements of a Channel Functional Test without performing a test to inject a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY.

GEH Response

DCD Chapter 16B provides discussions of the instrumentation self-test feature in the Bases for Channel Check, Channel Functional Test, and Logic System Functional Test Surveillance Requirements (SRs). The discussions of the self-test feature provide one method of meeting the SR; however, other alternatives for acceptable performance are not similarly discussed. This level of procedural detail is not typically presented in the Technical Specifications Bases. The Technical Specifications Bases are intended to discuss and clarify the requirements stated in the Technical Specifications. Details of how a surveillance is performed are provided and controlled in the implementing procedures. Therefore, the Chapter 16 Bases will be revised to delete reference to self-test as a method for meeting the Surveillance Requirement.

DCD Impact

The discussions of the following SRs in DCD Chapter 16B will be revised to delete reference to the instrumentation self-test feature: SR 3.3.1.1.1, SR 3.3.1.1.2, SR 3.3.1.2.1, SR 3.3.1.4.1, SR 3.3.1.4.3, SR 3.3.1.5.1, SR 3.3.1.6.1, SR 3.3.1.6.3, SR 3.3.1.6.5, SR 3.3.1.6.6, SR 3.3.5.1.1, SR 3.3.5.1.2, SR 3.3.5.2.1, SR 3.3.5.3.1, SR 3.3.5.3.2, SR 3.3.5.4.1, SR 3.3.6.1.1, SR 3.3.6.1.2, SR 3.3.6.2.1, SR 3.3.6.3.1, SR 3.3.6.3.2, SR 3.3.6.4.1, SR 3.3.7.1.1, SR 3.3.7.1.2, and SR 3.3.7.2.1.