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MFN 06-085
Supplement 1

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Subject: **Response to Portion of NRC Request for Additional Information Letter No. 15 – Reactor Coolant Pressure Boundary (RCPB) Leakage Detection – RAI Number 5.2-4 S01 – Supplement 1**

Enclosure 1 contains GE's response to the subject NRC supplemental RAI transmitted via the Reference 1 letter. The original RAI response was submitted to the NRC in Reference 2.

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

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Reference:

1. MFN 06-102, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 15 Related to the ESBWR Design Certification Application*, March 30, 2006.
2. MFN 06-085, Letter from David Hinds to the U.S. Nuclear Regulatory Commission, *Partial Response to NRC Request for Additional Information Letter No. 15 Related to ESBWR Design Certification Application – Leak Detection and Isolation System - RAI Number 5.2-4, May 12, 2006.*

Enclosure:

1. MFN 06-085 Supplement 1– Response to Portion of NRC Request for Additional Information Letter No. 15 – RAI Number 5.2-4 Supplement 1

cc: AE Cubbage USNRC (with enclosure)
BE Brown GE/Wilmington (with enclosure)
LE Fennern GE/Wilmington (with enclosure)
GB Stramback GE/San Jose (with enclosure)
eDRF: 0000-0062-2520R1

Enclosure 1

MFN 06-085
Supplement 1
Response to Portion of NRC Request for Additional Information Letter No. 15 Related to ESBWR Design Certification

Reactor Coolant Pressure Boundary (RCPB) Leakage Detection

RAI Number 5.2-4 S01

NRC RAI 5.2-4

In DCD Section 5.2.5.8, it states that procedures are provided to the operator to convert the identified and unidentified leakage into a common leakage rate equivalent. Are the procedures to be generic for the ESBWR design and currently available for audit? Or are the plant-specific procedures to be developed by COL applicants, which should be a COL action item?

GE Response

The procedures to convert different sources of leakage into a common rate equivalent will be provided by COL. This item will be added to the COL area of 5.2.6.

NRC RAI 5.2-4 Supplement-01 Request

GE did not revise Section 5.2.6 to reflect the markup page in its response to the RAI concerning a COL Action Item while the other markup changes in the same response were made in Rev. 2 of DCD.

GE Revised Response

DCD Tier 2, Revision 3, Subsections 5.2.5.8 and 5.2.6 include the changes that make the procedures a COL Action Item.

DCD Impact

The text from DCD Tier #2, Revision 3, Subsections 5.2.5.8 and 5.2.6 are reprinted in the attachment with the changes for this revision highlighted.

5.2.5.8 Regulatory Guide 1.45 Compliance

This Regulatory Guide (RG) specifies acceptable methods of implementing 10 CFR 50, Appendix A, GDC 30 with regard to the selection of leakage detection systems for the reactor coolant pressure boundary.

Leakage is collected separately in drain sumps for identified and unidentified sources in the containment and total flow rate from each sump is independently monitored, thus satisfying RG 1.45, Position C.1.

Leakage from unidentified sources from inside the drywell is collected into the floor drain sump to detect leakage with an accuracy of 3.8 liters/min (1 gpm), thus satisfying R G 1.45, Position C.2.

Three separate detection methods are used for leakage monitoring: (1) the floor drain sump level and pump operating frequency, (2) radioactivity of the airborne particulates, and (3) the drywell air coolers condensate flow rate, thus satisfying RG 1.45, Position C.3.

Intersystem radiation leakage into the Reactor Component Cooling Water System is monitored as described in Subsection 5.2.5.2.2, thus satisfying RG 1.45, Position C.4.

The monitoring instrumentation of the drywell floor drain sump, the air particulate radioactivity, and the drywell air cooler condensate flow rate are designed to detect leakage rates of 3.8 liters/min (1 gpm) within one hour, thus satisfying RG 1.45, Position C.5.

The monitoring instrumentation of the drywell floor drain sump, the air particulate radioactivity, and the drywell air cooler condensate flow rate are classified Class 1E, Seismic Category 1; and designed to operate during and following seismic events. The airborne particulate radioactivity monitor is designed to operate during an SSE event. Thus, RG 1.45, Position C6 is satisfied.

Each monitored leakage parameter is indicated in the main control room and activates an alarm on abnormal indication. Procedures are provided to the operators to determine identified and unidentified leakage to establish whether the leakage rates are within the allowable Technical Specifications. Calibration of each leakage monitoring channel accounts for the necessary independent variables. This satisfies RG 1.45, Position C.7.

The monitoring instrumentation of the drywell floor drain sump, the air particulate radioactivity, and the drywell air cooler condensate flow rate are equipped with provisions to readily permit testing for operability and calibration during plant operation, thus satisfying RG 1.45, Position C.8.

Limiting conditions for identified and unidentified leakage and for the availability of various types of leakage detection instruments are established in the technical specifications. This satisfies Position C.9 of RG 1.45.

5.2.6 COL Unit-Specific Information

Preservice and Inservice Inspection Program Plan

The COL holder is responsible for the development of the preservice and inservice inspection program plans that are based on the ASME Code, Section XI (Subsection 5.2.4).

COL Holder Procedures

Operators will be provided with a procedure to determine the identified and unidentified leakage in order to establish whether the leakage rates are within the allowable Technical Specifications. Operators will be provided with procedures to assist in monitoring, recording, trending, determining the source of leakage, and evaluating potential corrective action.