



GE Energy

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**Subject: Response to Portion of NRC Request for Additional Information  
Letter No. 79 – Containment Isolation Function – RAI Number  
6.2-127**

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

If you have any questions about the information provided here, please let me know.

Sincerely,

A handwritten signature in cursive script that reads "Kathy Sedney for".

David H. Hinds  
Manager, ESBWR

DO68

Reference:

1. MFN 06-393, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 79 Related to ESBWR Design Certification Application*, October 11, 2006

Enclosure:

1. MFN 06-473 – Response to Portion of NRC Request for Additional Information Letter No. 79 – Containment Isolation Function – RAI Number 6.2-127

cc: AE Cabbage USNRC (with enclosures)  
GB Stramback/GE/San Jose (with enclosures)  
eDRF 0060-7438

**ENCLOSURE 1**

**MFN 06-473**

**Response to Portion of NRC Request for**

**Additional Information Letter No. 79**

**Related to ESBWR Design Certification Application**

**Containment Isolation Functions**

**RAI Number 6.2-127**

**NRC RAI No. 6.2-127:**

*DCD Tier 2, Revision 1, Section 6.2.4.3.2.2, "Effluent Lines from Containment," under the heading "Process Radiation Monitoring System," states that all of the CIVs are located outside containment "for easy access" and that the "piping to these valves is considered an extension of the containment boundary." These design statements are deficient, as discussed in RAIs 6.2-123 and 6.2-126.*

*Provide in the DCD a detailed description of the Process Radiation Monitoring System's conformance with the guidelines discussed in RAIs 6.2-123 and 6.2-126.*

**GE Response:**

The Drywell Fission Monitoring Radiation Monitoring Subsystem of the Process Radiation Monitoring takes a continuous air sample from the containment drywell, analyzes it, and routes it back to the containment via isolation valves that are located outside the containment. These sample lines are designed in accordance with Regulatory Guide 1.11. The line sizes are approximately 25 mm (1 inch) in diameter (similar to instrument lines) and meet the Quality Group B requirements as identified in DCD Table 3.2-1. There are dual solenoid valves on these lines, two on both inlet and outlet, and they perform the containment isolation function.

Due to the small diameter of these lines, GE considers these lines to be acceptable as they are in accordance with Regulatory Guide 1.11.

**DCD Impact:**

DCD Subsection 6.2.4.3.2.2 will be revised in the next update as noted on the attached markup.

design pressure of the PCCS is greater than twice the containment design pressure and the design temperature is same as the drywell design temperature.

#### **6.2.4.3.2.2 Effluent Lines from Containment**

~~On a system basis~~, Tables 6.2-16 33 through 6.2-45 42 ~~address~~ identify the isolation functions in the effluent lines from the containment.

##### ***Fuel and Auxiliary Pools Cooling System Suction Lines***

The FAPCS suction line from the GDSC pool is provided with two power-assisted isolation valves, one pneumatic-operated inside and one motor-operated outside the containment.

The FAPCS suction line from the suppression pool has one isolation valve outside the containment as the first barrier and the FAPCS piping outside containment as the second barrier. Because the penetration can be under water under certain accident conditions, there can be no isolation valve located inside the containment. The valve is located as close as possible to the containment.

Subsection 9.1.3.3 contains additional information about the containment isolation design for FAPCS including any justifications for deviation from the GDC 56 requirements.

##### ***Chilled Water System***

The CWS effluent lines penetrating the containment each has a air-operated gate valve outside containment and a nitrogen-operated gate valve inside the containment.

##### ***Containment Inerting System***

The penetration of the Containment Inerting System consists of two in-series butterfly isolation valves (normally closed) in parallel with two in-series globe isolation valves. All isolation valves on these lines are outside of the containment to provide accessibility to the valves. The first valve is located as close as practical to the containment. The piping to both valves is an extension of the containment boundary.

##### ***Post-Accident Sampling System***

##### ***Process Radiation Monitoring System***

The penetrations for the fission products monitor sampling lines consist of one sampling line and one return line. Each line uses three globe valves in series. One valve is a mechanical globe valve used for maintenance and is located close to the containment. The other two valves are air-operated solenoid valves and are used for isolation. All three valves are located outside the containment for easy access. ~~The piping to these valves is considered an extension of the containment boundary.~~

##### ***Passive Containment Cooling System***

The passive containment cooling system (PCCS) does not have isolation valves as the heat exchanger modules and piping are designed as extensions of the safety-related containment. The design pressure of the PCCS is greater than twice the containment design pressure and the design temperature is same as the drywell design temperature.