



GE Energy

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**Subject: Partial Response to NRC Request for Additional Information Letter
No. 6 for the ESBWR Design Certification Application –
Instrumentation and Control Systems – RAI Numbers 7.7-1 and 9.5-1**

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,

David H. Hinds
Manager, ESBWR

Reference:

1. MFN 06-045, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 6 Related to ESBWR Design Certification Application*, January 31, 2006

Enclosure:

1. MFN 06-074 – Partial Response to NRC Request for Additional Information Letter No. 6 for the ESBWR Design Certification Application – Instrumentation and Control Systems – RAI Numbers 7.7-1 and 9.5-1

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MFN 06-074
Enclosure 1

ENCLOSURE 1

MFN 06-074

**Partial Response to NRC Request for Additional Information
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Instrumentation and Control Systems
RAI Numbers 7.7-1 and 9.5-1**

NRC RAI 7.7-1

Address concerns of SRP Section 7.7, Section II. Acceptance Criteria, and provide detailed information for the major design considerations identified in Section III of SRP 7.7, for each of the control systems NOT listed in 7.7.0 of the DCD. Those Control Systems are:

- *Containment / drywell cooling system controls*
- *Heating, ventilating, and air conditioning controls*
- *Atmospheric control system controls*
- *Reactor water cleanup system controls*
- *Service water system controls*
- *Chilled water system controls*
- *Make-up water system controls*
- *Instrument air system controls*

GE Response

The general design bases and acceptance criteria for some of the above control systems are addressed in Sections 1.2.2 and Tables 1.9-7 and 1.11-1 of DCD Tier 2. In addition, the specific system design bases of the appropriate control systems are discussed in the Tier 2 section that are listed below. These control systems will be controlled by a single failure proof DCIS with instrumentation that supports single failure proof for power generation and (where applicable) segmentation into PIP A and B such that either "half" can run independently of the other - complementing both the electrical power sources and physical separation.

The design and acceptance criteria for software based control systems are addressed in DCD Tier 2, Section 7B.

System	DCD Tier 2 Sections	Notes
Containment Cooling System	1.2.2.15; 7.3.2	Part of Passive Containment Cooling System
Drywell Cooling System	1.2.2.15; 9.4.8	
HVAC	1.2.2.16.2; 9.4.	
Atmospheric Control	1.2.2.15; 9.1.5	Part of Passive Containment Cooling System
Reactor Water Cleanup	1.2.2.6.1; 5.4.8	
Service Water	1.2.2.12.7; 9.2.1	
Chilled Water	1.2.2.12.5; 9.2.7	
Make-up Water	1.2.2.12.1; 9.2.3	
Instrument Air	1.2.2.12.9; 9.3.6	

NRC RAI 9.5-1

10 CFR 73.55(e) requires that on site secondary power supply systems for non-portable communication equipment be located in vital areas. The DCD Tier 2 mentions in section 13.6.1 that all vital equipment is located in vital areas to which access is monitored and controlled. However, appropriate clarification is needed, in order to determine if the secondary power supply systems for the non-portable communication equipment are considered as vital. Provide information regarding the location of secondary power supply systems for non-portable communication equipment.

GE Response

As described in ESBWR DCD Tier 2 Rev. 01 Section 9.5.2, the secondary power supply systems for non-portable communication equipment are considered as vital and are located in vital areas such as the MCR and remote shutdown rooms as per 10CFR73.55 requirements. The output / feedback monitoring system monitors the non-portable communication equipment like speaker, sound level meter, etc. The power for the communication equipment is supplied from a non safety-related bus backed by standby on site AC power supply and by the station batteries. Diverse non-class 1E power supplies connected to plant standby generators power the non-portable communication equipment.

The non-portable communication system is not safety-related and is classified as non-class 1E. Failure of any or all of its components does not affect any nuclear safety-related equipment or the capability to safely shutdown the plant.