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MFN 07-276 S01

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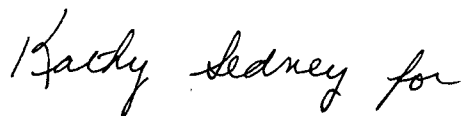
U.S. Nuclear Regulatory Commission  
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**Subject: Response to Portion of NRC Request for Additional Information Letter  
No. 105 Related to ESBWR Design Certification Application, Separation  
Requirements for I&C Cabling, RAI 14.3-80 S01**

Enclosure 1 contains GEH's response to Supplement 1 of NRC RAI 14.3-80, 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  
Vice President, ESBWR Licensing

DO68  
NRO

Reference:

1. MFN 07-460, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 105 Related to ESBWR Design Certification Application*, August 16, 2007

Enclosure:

1. MFN 07-276 S01, Response to a Portion of NRC Request for Additional Information Letter No. 105, Related to ESBWR Design Certification Application, Separation Requirements for I&C Cabling, RAI Number 14.3-80 S01

cc: AE Cabbage USNRC (with enclosures)  
DH Hinds GEH (with enclosures)  
RE Brown GEH (w/o enclosures)  
eDRF 0000-0075-8195

**ENCLOSURE 1**

**MFN 07-276 S01**

**Response to a Portion of NRC Request for,  
Additional Information Letter No. 105,  
Related to ESBWR Design Certification Application,  
Separation Requirements for I&C Cabling**

**RAI Number 14.3-80 S01**

**For historical purposes, the original text of RAI 14.3-80 and the GEH response is included.**

**RAI 14.4-80**

*DCD Tier 1, Revision 1, Section 2.1.2, Nuclear Boiler System, should identify guidelines for identification and physical separation of Class 1E electrical equipment. ITAAC should be created for inspection of Class 1E raceways from the main control room through other areas of the plant. The scope of this inquiry is limited to instrumentation and control (limited energy content cables). However, this should include separation between Class 1E divisions and non-Class 1E equipment.*

**GEH Response**

DCD Tier 1, Subsection 2.1.2 was written to address the mechanical equipment ITACC and was not intended to address or identify the guidelines for identification and physical separation of safety-related electrical equipment in the Nuclear Boiler System. These issues are generic and are applicable to all safety-related electrical systems, and therefore are addressed in the electrical Subsections of Tier 2 and Tier 1.

The following Subsections of DCD Tier 2, specifically discuss the information requested in the above RAI in detail.

Subsection 8.3.1.1.5 “Safety-Related Electric Equipment Considerations” – which provides guidelines utilized for safety-related equipment for “Physical separation and Independence”.

Subsection 8.3.1.3 “Physical identification of Safety-Related Equipment” – which provides the physical identification of “Power, Instrumentation and Control Systems” for “Equipment Identification”, “Cable Identification” and “Raceway Identification”.

Subsection 8.3.1.4 “Independence of Redundant Systems” – which discusses in detail the physical independence (which meets the requirements of IEEE 384, GDC 17, and NRC RG 1.75).

Section 8.3.2 “DC Power Systems” discusses in detail the DC systems, including the physical separation of the equipment, cabling, and instrumentation essential to plant safety.

Tier 1 ITAAC Section 2.13 covers separation and physical independence. For example, see Tier 1 Tables 2.13.1-1, 2.13.2-1, 2.13.3-1, 2.13.5-1, and 2.13.8-1. Section 2.2 addresses any Instrumentation and Control requirements related to these criteria.

**DCD Impact**

No change will be made to DCD Tier 1 or Tier 2, as a result of this RAI.

**RAI 14.3-80 S01**

*The response does not specifically identify the separation requirements for I&C cabling as is requested. General reference to three subsections and one section of Chapter 8 plus the entire section of 2.2, Tier 1 did not specifically answer the RAI. Please identify what those are, then identify where this specific information can be found.*

**GEH Response**

DCD Tier 1, Revision 4, Section 2.1.2, Nuclear Boiler System (NBS) has added an ITAAC (Table 2.1.2-3, Item 6b) to address the separation and independence of the NBS cabling. This ITAAC points to Tier 1, Subsection 2.2.15, for the actual ITAAC definition and Acceptance Criteria. In Subsection 2.2.15, "Instrumentation & Control Compliance with IEEE standard 603," item (3) of the Design Description addresses IEEE-603, Criteria 5.6, Independence. A review of IEEE-603 Criteria 5.6 includes compliance with IEEE-384, "IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits." Also see Table 2.2.15-1, which indicates IEEE-603 Criteria 5.6 applies to the Nuclear Boiler System.

**DCD Impact**

No additional DCD change will be made in response to this RAI.