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Subject: **Response to Portion of NRC Request for Additional Information
Letter No. 96 – Fire Protection System– RAI Numbers 9.5-44, 9.5-47,
and 9.5-57**

Enclosure 1 contains GHNEA'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

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NRC

Reference:

1. MFN 07-231, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 96 Related to the ESBWR Design Certification Application*, April 12, 2007.

Enclosure:

1. MFN 07-320 - Response to Portion of NRC Request for Additional Information Letter No. 96 – RAI Numbers 9.5-44, 9.5-47, and 9.5-57.

cc: AE Cubbage USNRC (with enclosure)
 BE Brown GHNEA/Wilmington (with enclosure)
 LE Fennern GHNEA/San Jose (with enclosure)
 GB Stramback GHNEA/San Jose (with enclosure)
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Enclosure 1

MFN 07-319

**Response to Portion of NRC Request for
Additional Information Letter No. 96
Related to ESBWR Design Certification**

Fire Protection System

RAI Numbers 9.5-44, 9.5-47, and 9.5-57

NRC RAI 9.5-44

Include a COL Action Item for the Post-Fire Safe Shutdown Circuit Analysis. The following item should be included in the COL Action Items for the ESBWR fire protection program. A detailed description of this aspect of the ESBWR fire protection program is required to adequately determine that the design meets regulatory requirements. However, the final design for this aspect of the program has not been developed sufficiently at the DCD stage to be described in adequate detail to conclude that the design is acceptable. Post-Fire Safe Shutdown Circuit Analysis - The ESBWR post-fire safe shutdown circuit analyses have not been developed for the certified design. These analyses will be developed as part of the plant-specific fire protection program and include final design details, including cable materials, raceway design and configurations for separation of redundant divisions of electrical circuits for post-fire safe shutdown where more than one redundant division is located in the same fire area. A summary description and the results of this circuit analysis should be included in the COL.

GHNEA Response

DCD Tier 2, Revision 3, Subsection 9A.6.4 identifies and discusses the various Special Cases where cables from more than one redundant division are located in the same fire area and require special consideration. The justification provided in Subsection 9A.6.4 is considered acceptable for determining that the design meets regulatory requirements. GHNEA provides the detailed design for these Special Cases. In addition, the COL Applicant is required per C.III.1.9.5 (5) of Regulatory Guide 1.206 to provide the final post-fire safe shutdown analysis. Therefore, GHNEA does not believe a COL Action Item is necessary.

DCD Impact

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

NRC RAI 9.5-47

Include a COL Action Item for Alternative/Dedicated Shutdown instances where exception is taken to the BTP SPLB 9.5-1 requirements for circuit routing and separation in accordance with DCD Section 9.5.1.3. The following item should be included in the COL Action Items for the ESBWR fire protection program. A detailed description of this aspect of the ESBWR fire protection program is required to adequately determine that the design meets regulatory requirements. However, the final design for this aspect of the program has not been developed sufficiently at the DCD stage to be described in adequate detail to conclude that the design is acceptable. Alternative/Dedicated Shutdown - Identify and describe any instances, other than for the main control room fire, where redundant post-fire safe shutdown divisions cannot be separated by a 3-hour barrier, and alternate means of control or indication are credited and exception is taken to the BTP SPLB 9.5-1 requirements for circuit routing and separation in accordance with DCD Tier 2, Section 9.5.1.3.

GHNEA Response

DCD Tier 2, Revision 3, Subsection 9.5.1.3 addresses the circumstances under which an exception to Branch Technical Position (BTP) SPLB 9.5-1 may be taken. As stated in this Subsection, exceptions to the BTP are analyzed and justified on an individual basis. The acceptance criterion is that a single fire cannot degrade the performance of more than one division of safe shutdown equipment controlled from the MCR. Exceptions are presented in DCD 9A.6.4, "Special Cases." GHNEA concurs that if additional exceptions are taken to BTP SPLB 9.5-1 requirements for circuit routing and separation in accordance with DCD Tier 2, Section 9.5.1, additional information will be required to adequately determine that the design meets regulatory acceptance criteria. However, it is GHNEA's position that the following DCD Subsection 9.5.1.12 COL item addresses this issue, "The COL licensee referencing the ESBWR Standard Plant conducts a compliance review of the as-built design against the assumptions and requirements stated in the FHA. Based on this review, the FHA is updated as necessary."

DCD Impact

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

NRC RAI 9.5-57

Update the QA program to include inspection of the FPS (DCD Tier 2, Section 9.5.1.15.9). The activities to which the Quality Assurance (QA) program will be applied should also include inspections of the Fire Protection System (FPS). DCD Tier 2, Revision 3, Section 9.5.1.15.9 does not include this item in describing the application of the QA program to the FPS. Please update the DCD and the QA program accordingly.

GHNEA Response

The applicable guidance for development of Quality Assurance (QA) Programs of applicants with respect to the Fire Protection System (FPS) is presented in Regulatory Position C.4 of Branch Technical Position CMEB 9.5-1, Revision 2 dated July 1981. According to this guidance, QA controls are applicable to the design, procurement, installation, testing, and administrative controls activities for the FPS for safety-related areas. The QA controls for the FPS are described in DCD Tier 2, Revision 3, Subsection 9.5.1.15.9, which is considered to be consistent with the applicable regulatory guidance. The BTP addresses inspections, but the scope is limited to "verifying conformance with documented installation drawings and test procedures." In this context, the definition of "inspections" is more limited in scope than it would be if added to the discussion in 9.5.1.15.9. In addition, the details of the QA Program applicable to the Fire Protection Program are to be provided by the COL Applicant as stated in Subsection 9.5.1.15.9.

DCD Impact

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