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Subject: **Response to Portion of NRC Request for Additional
Information Letter No. 111 Related to ESBWR Design
Certification Application - Auxiliary Systems - RAI Number
9.1-43**

Enclosure 1 contains GEH's response to the subject RAI transmitted via
Reference 1.

Should you have any questions about the information provided here, please
contact me.

Sincerely,

James C. Kinsey
Vice President, ESBWR Licensing

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HRO*

Reference:

1. MFN 07-556, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 111 Related to the ESBWR Design Certification Application*, October 15, 2007.

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 111 Related to ESBWR Design Certification Application – Auxiliary Systems - RAI Number 9.1-43

cc: AE Cubbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
LE Fennern GEH/San Jose (with enclosure)
GB Stramback GEH/San Jose (with enclosure)
eDRF 0000-0077-8840, Revision 1

Enclosure 1

MFN 08-051

Response to Portion of NRC Request for

Additional Information Letter No. 111

Related to ESBWR Design Certification Application

Auxiliary Systems

RAI Number 9.1-43

NRC RAI 9.1-43

Compliance with the requirements of GDC 61 and GDC 62 for the fuel handling system depends on adherence to the guidance of ANSI/ANS 57.1, 1992. However, Section 9.1.4 does not contain a statement to indicate that the fuel handling system conforms to the industry standards of ANS 57.1 and thereby meets the requirements of GDC 61 and GDC 62. Revise the DCD to address conformance with ANS 57.1 and compliance with GDC 61 and GDC 62 for the fuel handling system.

GEH Response

The DCD will be revised to address conformance with ANS 57.1, thereby meeting the requirements of GDC 61 and GDC 62.

DCD Impact

DCD Tier #2, Section 9.1.4.18 and Table 9.1-5 will be revised in Revision 5, as noted in the attached markup.

- Install reactor vessel insulation;
- Perform in-service leak test (ISLT - Equipment is tagged out and inoperable during this test, which is a critical path item);
- Remove tags and restore valve lineups;
- Install drywell head;
- Flood reactor cavity;
- Perform startup operations check; and
- Check final drywell closeout.

9.1.4.18 Safety Evaluation of Fuel Handling System

Fuel servicing equipment is discussed in Subsection 9.1.4.6 and refueling equipment is discussed in Subsection 9.1.4.5. In addition, the summary safety evaluation of the fuel handling system is described in the following paragraphs.

The refueling machine and fuel handling machine are designed to prevent them from becoming unstable and toppling into pools during a SSE, and interlocks, as well as limit switches, are provided to prevent accidental movement of the grapple mast into pool walls.

The grapple on both the refueling machine and fuel handling machine is hoisted to its retracted position by redundant cables inside the mast and is lowered to full extension by gravity. The retraced position is controlled by both interlocks and physical stops to prevent raising the fuel assembly above the normal stop position required for safe handling of the fuel. The operator can observe the exact grapple position over the core by a display screen at the operator console.

The results of the rack load drop analysis are contained in Reference 9.1-1.

The fuel handling system complies with ~~General Design Criterion 61 of 10 CFR 50 as described in Subsection 3.1.6.2.~~ ANSI/ANS 57.1, Design Requirements for Light Water Reactor Fuel Handling Systems, in order to handle fuel units and control components in a safe and reliable manner, thereby meeting the requirements of General Design Criteria 61 and 62 of 10 CFR 50, Appendix A.

Table 9.1-5
Reference Codes and Standards

Number	Title	Device
ANS-N14.6	Standard for Special Lifting Devices for Shipping Containers Weighing (5 tons) or More for Nuclear Materials	Applicable to any item carrying a heavy load such as the Reactor Building (RB) and Fuel Building (FB) overhead cranes and the refueling and fuel handling machine
ANSI B30.9	Slings	Applicable to the RPV dryer strongback slings.
ANSI B30.10	Hooks	Applicable to the RB and FB overhead cranes.
ANSI B30.2	Performance Standards for Overhead Electric Overhead Traveling Cranes	Applicable to the RB and FB overhead cranes.
ANSI B30.16	Performance Standards for Air Wire Rope Hoists	Applicable to the RB and FB overhead cranes.
ANSI B30.11	Overhead and Gantry Crane	Applicable to the RB and FB overhead cranes.
ANSI/ANS 57.1	Design Requirements for Light Water Reactor Fuel Handling Systems	Applicable to the RB and FB overhead cranes and the refueling and fuel handling machine equipment and tools used to handle fuel and fuel components
CMAA70	Specifications for Electric Overhead Traveling Cranes	Applicable to the RB and FB overhead cranes and the refueling and fuel handling machines.
NUREG-0612	Control of Heavy Loads at Nuclear Power Plants	Applicable to the RB and FB overhead cranes. A portion of the NUREG is applicable to the RPV strongback or dryer strongback interface with the lifting device. Applicable to the hoist on the refueling and fuel handling machines that handles the combined fuel support and control blade grapple. Typically the combined weight of the equipment and tooling exceeds the weight of a fuel assembly.
NUREG-0554	Single Failure Proof Cranes for Nuclear Power Plants	Applicable to the RB and FB overhead cranes. Applicable to the hoist on the refueling and fuel handling machines that handles the combined fuel support and control blade grapple. Typically the combined weight of the equipment and tooling exceeds the weight of a fuel assembly.