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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. 104 Related to ESBWR Design Certification Application –
Environmental Qualification – RAI Numbers 3.11-13 and 3.11-14**

Enclosure 1 contains GEH'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

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Reference:

1. MFN 07-409, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 104 Related to ESBWR Design Certification Application*, July 18, 2007

Enclosure:

1. MFN 07-474 – Response to Portion of NRC Request for Additional Information Letter No. 104 Related to ESBWR Design Certification Application – Environmental Qualification – RAI Numbers 3.11-13 and 3.11-14

cc: AE Cubbage USNRC (with enclosures)
DH Hinds GEH (with enclosures)
RE Brown GEH (w/o enclosures)
eDRF 0000-0073-5325

Enclosure 1

MFN 07-474

**Response to Portion of NRC Request for
Additional Information Letter No. 104
Related to ESBWR Design Certification Application
Environmental Qualification
RAI Numbers 3.11-13 and 3.11-14**

NRC RAI 3.11-13

Regulatory Guides (RGs) listed in DCD Tier 2, Section 3.11 (4) did not include RG 1.97. Will the environmental qualification program meet the guidance of RG 1.97 as required by 10 CFR 50.49? If yes, please include reference to this RG in the DCD.

GEH Response

The environmental qualification program will meet the guidance of RG 1.97. RG 1.97 will be added to DCD Section 3.11.

DCD Impact

DCD Tier 2, Section 3.11 (4), will be changed as shown in the attached markup.

NRC RAI 3.11-14

Will the equipment qualification program meet the guidance of NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment?" If yes, please include it as a reference in the DCD.

GEH Response

The environmental qualification program is based upon conformance with NRC approved final rule for electric equipment qualification, 10 CFR 50.49, which superseded NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment".

DCD Impact

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

- g. IEEE-627-1980 (R1996) "Standard for Design Qualification of Safety Systems Equipment Used in Nuclear Power Generating Stations."
 - h. IEEE-638-1992 "Standard for Qualification of Class 1E Transformers for Nuclear Power Generating Stations."
 - i. IEEE-649-1991 (R2004) "Standard for Qualifying Class 1E Motor Control Centers for Nuclear Power Generating Stations."
 - j. IEEE-650-1990 (R1998) "Standard for Qualification of Class 1E Static Battery Chargers and Inverters for Nuclear Power Generating Stations."
 - k. IEEE-382-1996 (R2004) "Standard for Qualification of Actuators for Power Operated Valve Assemblies with Safety-Related Functions for Nuclear Power Plants."
 - l. IEEE-381-1977 (R1984) "Standard Criteria for Type Tests of Class 1E Modules used in Nuclear Power Generating Stations."
 - m. IEEE-572-1985 (R2004) "Standard Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations".
 - n. IEEE-634-2004 "Standard Cable-Penetration Fire Stop Qualification Test".
- (3) American Society of Mechanical Engineers (ASME):
- a. ASME B&PVC Section III-2001 "Rules for Construction of Nuclear Power Plant Components."
 - b. ASME NQA-1, Addenda NQA-1a-1999 "Quality Assurance Requirements for Nuclear Facility Applications."
- (4) U.S. Nuclear Regulatory Commission (NRC) Regulatory Guides:
- a. Regulatory Guide 1.63-1987 "Electric Penetration Assemblies in Containment Structures for Nuclear Power Plants."
 - b. Regulatory Guide 1.73-1974 "Qualification Tests of Electric Valve Operators Installed Inside the Containment of Nuclear Power Plants."
 - c. Regulatory Guide 1.89-1984 "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants."
 - d. Regulatory Guide 1.131-1977 "Qualification Tests of Electric Cables, Field Splices and Connections for Light-Water-Cooled Nuclear Power Plants."
 - e. Regulatory Guide 1.153-1996 "Criteria for Safety Systems."
 - f. Regulatory Guide 1.183-2000 "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactor."
 - g. Regulatory Guide 1.97-2006 "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants."

The general requirements for environmental design and qualification used to implement the relevant requirements of 10 CFR 50.49; General Design Criteria 1, 2, 4 and 23; and Quality Assurance Criteria III, XI, and XVII are as follows: