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MFN 07-436

Docket No. 52-010

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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. 98 - Protective Coatings and Organic Materials - RAI
Number 6.1-16**

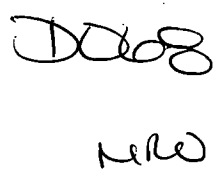
Enclosure 1 contains GEH's response to the subject NRC RAI transmitted via the
Reference 1 letter.

If you have any questions or require additional information, please contact me.

Sincerely,



James C. Kinsey
Project Manager, ESBWR Licensing



Reference:

1. MFN 07-317, Letter from U.S. Nuclear Regulatory Commission to Robert Brown, *Request for Additional Information Letter No. 98 Related to ESBWR Design Certification Application*, May 29, 2007

Enclosure:

1. MFN 07-436 - Response to Portion of NRC Request for Additional Information Letter No. 98 - Related to ESBWR Design Certification Application - Protective Coatings and Organic Materials - RAI Number 6.1-16

cc: AE Cubbage USNRC (with enclosures)
BE Brown GEH/Wilmington (with enclosures)
GB Stramback GEH/San Jose (with enclosures)
eDRF 0000-0071-8747

Enclosure 1

MFN 07-436

Response to Portion of NRC Request for

Additional Information Letter No. 98

Related to ESBWR Design Certification Application

Protective Coatings and Organic Materials

RAI Number 6.1-16

NRC RAI 6.1-16:

DCD, Tier 2, Rev. 3, Section 6.1.3.1, GE stated that the COL Holder will perform the following COL items:

- 1. Indicate the total amount of protective coatings and organic materials used inside containment that do not meet the requirements of ASTM D-5144 and Regulatory Guide 1.54.*
- 2. Evaluate the generation rate, as a function of time, of combustible gases that can be formed from these unqualified organic materials under DBA conditions.*
- 3. Provide the technical basis and assumptions used for this evaluation.*

These COL items should be the responsibility of the COL Applicant and not the COL Holder. Please revise the DCD accordingly.

GEH Response:

The total amounts of organic materials that do not meet requirements cannot be determined at the beginning of the COL Applicant stage. However, the COL Applicant will describe the approach to be taken to identify and quantify all organic materials that exist within the containment building in significant amounts that do not meet the requirements of ASTM D-5144 and Regulatory Guide 1.54, and will provide milestones when evaluations will be complete to determine the generation rate, as a function of time, of combustible gases that can be formed from these unqualified organic materials under Design Basis Accident (DBA) conditions. The evaluations will include the technical basis and assumptions used. DCD Tier 2, Subsection 6.1.3.1, will include these COL Applicant items.

DCD Impact:

DCD Tier 2, Subsection 6.1.3.1, will be revised as shown in the attached markup.

6.1.2.1 Protective Coatings

The use of organic protective coatings within the containment has been kept to a minimum. The major use of such coatings is on the carbon steel containment liner, internal steel structures and equipment inside the drywell and wetwell.

The epoxy coatings are specified to meet the requirements of Regulatory Guide 1.54 and are qualified using the standard ~~ANSI-ASTM~~ tests. However, because of the impracticability of using these special coatings on all equipment, certain exemptions are allowed. The exemptions are restricted to small-size equipment where, in case of a LOCA, the paint debris is not a safety hazard. Exemptions include such items as electronic/electrical trim, covers, face plates and valve handles. Other than these minor exemptions, all coatings within the containment are qualified to Regulatory Guide 1.54 and applicable reference standards including ASTM D-5144.—(See Subsection 6.1.3.1 for COL items.)

6.1.2.2 Other Organic Materials

Materials used in or on the ESF equipment have been reviewed with respect to radiolytic and pyrolytic decomposition and attendant effects on safe operation of the system. For example, fluorocarbon plastic (Teflon) is not permitted in environments that reach temperatures greater than 149°C (300°F), or radiation exposures above 10⁴ rads.

Other organic materials in the containment are qualified to environmental conditions in the containment. (See Subsection 6.1.3.1 for COL items.)

6.1.2.3 Evaluation

For each application, the materials have been specified to withstand an appropriate radiation dose for their design life, without suffering any significant radiation-induced damage. The specified integrated radiation doses are consistent with those listed in Section 3.11.

In addition—since the containment post-accident environment consists of mostly hot water, nitrogen, and steam no significant chemical degradation of these materials is expected, nor should be because of strict application of inspection and testing. Solid debris from the organic materials discussed is not expected to be generated to any significant extent. (See Subsection 6.1.3.1 for COL items.)

6.1.3 COL Information

6.1.3.1 Protective Coatings and Organic Materials

The COL ~~Holder~~ Applicant will

- ~~Indicate the total amount of protective coatings and organic materials used inside the containment that do not meet the requirements~~ Describe the approach to be taken to identify and quantify all organic materials that exist within the containment building in significant amounts that do not meet the requirements of ASTM D-5144 and Regulatory Guide 1.54 as per Subsection 6.1.2.1 and 6.1.2.2.
- ~~Evaluate~~ Provide the milestone when evaluations will be complete to determine the generation rate, as a function of time, of combustible gases that can be formed from these unqualified organic materials under DBA conditions.
- PAs part of these evaluations, provide the technical basis and assumptions used ~~for this evaluation.~~