

## **Enclosure 1**

### **MFN 14-071 Supplement 1, Revision 1**

### **GEH Response and Revised Supplemental Response to RAI 01.05-1**

#### **IMPORTANT NOTICE REGARDING CONTENTS OF THIS DOCUMENT Please Read Carefully**

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**(Please note that below is GEH's original response to RAI 01.05-1 for convenience)**

**NRC Request for Additional Information 01.05-1:**

*On March 12, 2012, the Commission issued an Order to licensees and holders of construction permits in active or deferred status requiring provisions for reliable spent fuel pool (SFP) instrumentation (EA-12-051 ). This Order stated that the SFP level instrumentation at U.S. nuclear power plants is typically narrow range and, therefore, only capable of monitoring normal and slightly off-normal conditions. The Order also stated that, although the likelihood of a catastrophic event affecting nuclear power plants and the associated SFPs in the U.S. remains very low, beyond design-basis external events could challenge the ability of existing instrumentation to provide emergency responders with reliable information on the condition of SFPs. Reliable and available indication is essential to ensure plant personnel can effectively prioritize emergency actions. The Commission determined that the SFP instrumentation required by the Order represents a significant enhancement to the protection of public health and safety and is an appropriate response to the insights from the Fukushima Daiichi accident. The Commission stated that while this consideration is qualitative in nature, the Commission has long taken the position that the determination as to whether proposed backfits represent a substantial safety improvement may be qualitative in nature. The Commission decided to administratively exempt this Order from the Backfit Rule and the issue finality requirements in 10 CFR 52.63 and 10 CFR Part 52, Appendix D, paragraph VIII. These backfit and issue finality requirements are similar to the provisions in 10 CFR 52.59(b). In addition, the Commission's determination that the requirements of the Order represent a significant enhancement to the protection of the public health and safety and are an appropriate response to the insights from the Fukushima Daiichi accident apply to the ABWR design. Therefore, the Commission's technical basis for administratively exempting itself from the Backfit Rule and the issue finality requirements in 10 CFR 52.63 and 10 CFR Part 52, Appendix D, paragraph VIII , also applies to the ABWR DC renewal application.*

*In SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami" dated February 17, 2012 (ADAMS Accession No. ML12039A103), the Commission was informed of the NRC staff plans to assure that the Commission-approved Fukushima actions are addressed in design certifications prior to certification. This represents the NRC staffs policy of ensuring that design certifications under review address the design-related aspects of Commission-approved Fukushima actions. On March 9, 2012, the Commission approved (with certain modifications), the recommendations of SECY-12-0025 as documented in the SRM on SECY-12-0025 (ADAMS Accession No. ML 120690347).*

*Therefore, consistent with SECY-12-0025 and the Commission's basis for issuing Order EA-12-051, the staff requests GEH to address the design-related aspects of Fukushima Recommendation 7.1 regarding enhanced spent fuel instrumentation as outlined in Attachment 2 of the Order.*

**GEH Response to RAI 01.05-1:**

GEH will include two safety-related wide range spent fuel pool level instruments in the ABWR DCD; and comply with applicable guidance in JLD-ISG-2012-03, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," Revision 0, and NEI 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, 'To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation'," Revision 1.

The GEH ABWR design departs from the guidance of NEI 12-02 (Rev. 1) in the choice of water level nomenclature. In accordance with Human Factors Engineering principles, the ABWR spent fuel pool and RPV water level nomenclature have been made as consistent as possible. Thus, the ABWR DCD will implement spent fuel pool Level 3 at slightly below normal water level, and Level 1 above the top of active fuel.

**Impact on DCD:**

The following ABWR DCD text, tables, and figure are revised as shown on the markups in Enclosure 2:

- Tier 1, Subsection 2.6.2, Figure 2.6.2 and Table 2.6.2
- Tier 2, Chapter 1, Tables 1.8-21 and 1.8-22
- Tier 2, Chapter 3, Table 3.2-1
- Tier 2, Chapter 7, Subsections 7.5.2.1, 7.5.3 and 7.5.4
- Tier 2, Chapter 9, Subsections 9.1.3.2 and 9.1.7
- Tier 2, Chapter 21, Figure 9.1-1 (sheet 1).

**(Please note that below is GEH's supplemental response to RAI 01.05-1 for convenience)**

**NRC Request for Supplemental Information:**

*The DCD mark-ups were missing information like equipment qualification (i.e. temperature, humidity, boiling, dose (with top of fuel uncovered) under the environment of SFP.*

**GEH Response to Request for Supplemental Information:**

As a result of the ABWR DCD Renewal meeting with the US NRC staff on May 7<sup>th</sup>, 2015, GEH has updated the markups in Enclosure 2 to include additional requirements for the SFP instrumentation. GEH ABWR design will depart from the guidance of NEI 12-02 (Rev. 1) and not require the instrument reliability post-accident consider the condition of borated water. BWR spent fuel pools do not use borated water. Also, the COL action item added in the original markups is now listed in Tier 2, Chapter 1, Table 1.9-1.

**Impact on DCD:**

The DCD Tier 2, Chapter 1 Table 1.9-1 is being revised to address the new COL action item. The ABWR DCD R5 revised marked up pages are provided in Enclosure 2.

**Additional NRC Request for Supplemental Information:**

*The DCD mark-up shows the lowest level alarm at top of active fuel and we request that it be changed to the top of the fuel assembly.*

**GEH Response to Additional Request for Supplemental Information:**

As a result of the ABWR DCD Renewal meeting with the US NRC staff on August 13th, 2015, GEH has updated the lowest level alarm to be the top of the fuel assembly bail handle in ABWR DCD Tier 2, Subsection 9.1.3.2. This corresponds to the Level 3 (Level 1 in ABWR, as explained in the original response) range specified in NEI 12-02. Revision 1, as the level where fuel remains covered and actions to implement make-up water addition should no longer be deferred (Section 2.3.3 of NEI 12-02). Level 3 of NEI 12-02 corresponds nominally (i.e., +/- 1 foot) to the highest point of any fuel rack seated in the spent fuel pool. For the ABWR, this is Level 1 and is consistent with the top of the fuel assembly bail handle.

**Impact on DCD:**

The DCD Tier 2, Subsection 9.1.3.2 is being revised to address the change in alarm point. The ABWR DCD R5 revised marked up pages are provided in Enclosure 2.