Enclosure 1

MFN 16-065, Supplement 1

GEH's Response to NRC's Request for Supplemental Information covering the Updated Review of USIs, GSIs, GLs, NRC Bulletins and Operating Experience

NRC Request for Supplemental Information:

During the 9/22/2016 public phone call with GEH, the USNRC asked the following questions relating to the GEH response entitled Updated Review of Unresolved Safety Issues (USI), Generic Safety Issues (GSI), Generic Letters (GL), NRC Bulletins and Operating Experience transmitted on MFN 16-065.

1. *In the MNF letter discussion of the review of Applicable Operating Experience on pages 1 and 2 of 5 in Enclosure 1, GEH stated "The review has determined that GEH, by addressing the items previously identified by the USNRC staff (see footnote 1), the applicable operating experience information that impacts ABWR design has been encompassed." The staff requested that GEH add additional explanation of what NRC staff OE information was considered.*

2. *The NRC requested that GEH provide additional information related to the scope of the international ABWR OE review.*

3. *In the markup of DCD tables provided in the response, GEH added new IE Bulletins and Generic Letters to the existing tables. In the comment field of these new entries GEH indicated where the item was addressed in the DCD. In the comments referring the COL Applicant, GEH needs to provide the basis for the determination that the COL Applicant is the correct disposition. The staff asked this information be provided in a supplemental response on the docket and did not need the information to be added to DCD. Also for the items where a location was provided, GEH should ensure that it is a specific location and not a generic Chapter X.*

4. *For New Generic Issue 193 on BWR Suction Strainers, GEH stated that it was Not Applicable to the ABWR but then discussed that ITAAC related to verification of GE-193 would be the responsibility of the COL Holder. The NRC was confused on the "NOT Applicable" statement and questioned the use of ITAAC acceptance criteria to validate a design's, adequate vertical and horizontal separation, which is not documented in the DCD. (After discussion GEH agreed to review wording to more clearly explain what is to be done by the COL Applicant)*

There were two items related to the Generic Letter lists:

5. *GL 92-04 (originally in DCD) does not have a comment that states where it is addressed or if it is a COL item. The NRC staff noted that others were also missing information. The NRC acknowledged that they appear in the certified design so they were pointing it out.*

6. *The staff also requested that GEH review GL 98-02 as it was not in our response.*

GEH Response:

1. GEH proposes adding clarifying text to MFN 16-065 as follows:

   The operating experience review performed by GEH determined that all applicable design issues identified by the review of the US NRC Information Notices from the period of ABWR DCD certification until the middle of 2016 (IN-16-09) have been encompassed in the current work associated with the ABWR DCD renewal. The work associated with ABWR DCD renewal are the 28 items previously identified by the USNRC staff in the letter[1] .

   GEH proposes adding the following supplemental text to MFN 16-065 letter:

   Experiences related to the ABWR licensing effort in the UK were reviewed for applicability to the ABWR Certified Design. The UK Office of Nuclear Regulations (ONR) issued Regulatory Issues (RI) and Regulatory Observations (RO) as a result of the UK's Generic Design Assessment (GDA) of the ABWR during UK licensing review. These RIs and ROs were systematically reviewed and evaluated by ABWR subject matter experts for applicability to the ABWR Certified Design. The conclusion of the evaluation is that none of the RIs and ROs requires a design change to the ABWR Certified Design. The RIs and ROs are either unique to the UK licensing process, are already addressed in the ABWR Certified design, or are the result of unique UK licensing regulations.

   GEH also reviewed the experience of the Kashiwazaki-Kariwa 6/7 startup and Lungmen Unit 1 design and preoperational testing to determine if there were additional changes to the ABWR DCD needed. The GEH engineers that performed the ABWR DCD renewal operating experience task were part of the teams that supported the design work and testing of these sites. The South Texas ABWR COLA submittal was also evaluated and there were no additional changes determined to be required for the renewal application.

   The DCD insert text for Tier 2 Section 1.8.3 has been modified to include this information and is included in Enclosure 2.

2. The previous item response describes the overall international experience review. Below are a few examples of international changes that were incorporated into the renewal submittal:

   An example of a change that resulted from the Lungmen preoperational testing was the modifications to support Item #26 that were made to the Remote Shutdown Panel as part MFN 15-069, Supplement 1. Two examples of the incorporation of Lungmen design experience work into the ABWR DCD renewal were the modification to the containment analysis that was included in ABWR DCD rev 5 and the Containment Overpressure Protection System (COPS) resizing of the rupture disks and discharge pipe (MFN 16-001).

3. Table 1 (below) provides a cross reference to locations for more details on where Generic Letters and Information Bulletins are addressed in the ABWR DCD (see Table

[1]Letter from David B. Matthews (USNRC) to Jerald G. Head (GEH), subject: GE-Hitachi Nuclear Energy – United States Advanced Boiling Water Reactor Design Certification Renewal Application, dated July 20, 2012 (ML12125A385)

1.8-22 comment column). Only items added in MFN 16-065 are addressed in this supplement.

4. GEH has updated Generic Issue 193 item and the proposed revised DCD markup is in Enclosure 2.

5. No changes are proposed because the “Comment” column (Table 1.8-22) is not a required column.

6. The NRC Generic Letter 98-02: Loss of Reactor Coolant Inventory and Associated Potential for Loss of Emergency Mitigation Functions While in a Shutdown Condition was required to be addressed by all holders of operating licenses for pressurized-water reactors (PWRs).

   The ABWR has an automatic isolation of the Residual Heat Removal Shutdown Cooling system on Reactor Pressure Vessel low water level (Level 3) that limits the loss of coolant inventory (ABWR DCD Table 5.2-6).

   In addition, the ABWR ECCS systems do not include a common pump suction header. Each ECCS system and division has a separate connection to the suppression pool for a total of 6 connections (see ABWR DCD Figure 1.2-13i). In addition, the returns to the RPV are separate as shown in the Group Classification and Containment Isolation Diagram (Figure 6.2-38).

Impact on DCD:

The following ABWR DCD Revision 6 markup provided in Enclosure 2 modifies the text to address Operational Experience.

- Tier 2 Subsection 1.8.3
- Tier 2 Subsection 19B.2.77

Table 1 – Additional Generic Letters and Information Bulletins Cross References

GENERIC LETTERS

No.	Issue Date	Title	Comment	Additional Location Details
89-04 Supp. 1	4/4/95	Guidance on Developing Acceptable Inservice Testing Programs	COL Applicant	3.9.7.3
89-10 Supp. 1	6/13/90	Supplement 1 to Generic Letter 89-10: Results of the Public Workshops	COL Applicant	3.9.7.3
89-10 Supp. 3	10/25/90	Generic Letter 89-10, Supplement 3, Consideration of the Results of NRC-Sponsored Tests of Motor-Operated Valves	COL Applicant	3.9.7.3
89-10 Supp. 4	2/12/92	Generic Letter 89-10, Supplement 4, Consideration of Valve Mispositioning in Boiling Water Reactors	COL Applicant	3.9.7.3
89-10 Supp. 5	6/28/93	Generic Letter 89-10, Supplement 5, Inaccuracy of Motor-Operated Valve Diagnostic Equipment	COL Applicant	3.9.7.3
89-10 Supp. 6	3/8/94	Generic Letter 89-10, Supplement 6, Information on Schedule and Grouping, and Staff Responses to Additional Public Questions	COL Applicant	3.9.7.3
89-13 Supp. 1	4/4/90	Service Water System Problems Affecting Safety-Related Equipment	COL Applicant	9.2.17.2, 13.5.3.4
91-15	9/23/91	Operating Experience Feedback Report, Solenoid-Operated Valve Problems at US Reactors	3.9.6.2.3, COL Applicant	3.9.7.3
92-01 Rev. 1 Supp.1	5/19/95	Reactor Vessel Structural Integrity	5.2	5.2.6.2, 5.3.4.1 & 5.3.4.3
92-08	12/17/92	Thermo-Lag 330-1 Fire Barriers	COL Applicant	9.5.1, 9.5.13.7 & 9.5.13.9
93-05	9/27/93	Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation	Chapter 16	16.1.1, 13.5.3
93-06	10/25/93	Research Results on Generic Safety Issue 106, 'Piping and the use of Highly Combustible Gases in Vital Areas"	9.5	9.5.1.2
93-08	12/29/93	Relocation of Technical Specification Tables of Instrument Response Time Limits	COL Applicant	SRs 3.3.1.1.12, 13 & 14
94-01	5/31/94	Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators	COL Applicant	LCOs 3.8.1 and 3.8.2

GENERIC LETTERS

No.	Issue Date	Title	Comment	Additional Location Details
94-02	7/11/94	Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in BWRs	4.4.3.7	
94-03	7/25/94	Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors	5.2.3.4.1	
95-07	8/17/95	Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves	3.9.6.2.3, COL Applicant	3.9.7.3
95-10	12/15/95	Relocation of Selected Technical Specifications Requirements Related to Instrumentation	Chapter 16	16.5.5.2*
96-01	1/10/96	Testing of Safety-Related Logic Circuits	7.1.2.1.6, Chapter 16, COL Applicant	Technical Specification SR 3.3.1.4.4 and 13.5.3.4
96-03	1/31/96	NRC Generic Letter 96-03: Relocation of the Pressure Temperature Limit Curves and Low Temperature Overpressure Protection System Limits	Chapter 16, COL Applicant	5.3.4.3
96-04	6/26/96	Boraflex Degradation in Spent Fuel Pool Storage Racks	16.4.3.1	16.4.3.1
96-05	9/18/96	Periodic Verification of Design-Basis Capability of Safety-Related Power-Operated Valves	3.9.6, 3.9.7.3 COL Applicant	3.9.7.3
96-06	9/30/96	Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions	6.2, 3.11	3.11.1 and 3I
96-06 Supp. 1	11/13/97	Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions	6.2, 3.11	3.11.1 and 3I
98-05	11/10/98	Boiling Water Reactor Licensees Use of the BWRVIP-05 Report to Request Relief from Augmented Examination Requirements on Reactor Pressure Vessel Circumferential Shell Welds	5.3, COL Applicant	5.2.6.2
99-02	06/03/99	Laboratory Testing of Nuclear-Grade Activated Charcoal	16.5.5.2.7	
99-02 Errata	08/23/99	Laboratory Testing of Nuclear-Grade Activated Charcoal	16.5.5.2.7	
03-01	06/12/03	Control Room Habitability	6.4	

*The ABWR DCD TS as part of certification never included the items that the GL is proposing to relocate.

06-02	02/01/06	Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power	8.2, COL Applicant	8.2.4.1 & 8.2.4.3

GENERIC LETTERS

No.	Issue Date	Title	Comment	Additional Location Details
06-03	04/10/06	Potentially Nonconforming Hemyc and MT Fire Barrier Configurations	9.5.13.9, COL Applicant	9.5.1 & 9.5.13.7
07-01	02/07/07	Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients	COL Applicant	8.2
08-01	01/11/08	Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems	5.4.8, 19B.2.2	
16-01	4/7/2016	Monitoring of Neutron-Absorbing Materials in Spent Fuel Pools	16.4.3.1	

Information Bulletins

No.	Issue Date	Title	Comment	Additional Location Details
93-02	05/11/93	Debris Plugging of Emergency Core Cooling Suction Strainers	6C	
93-02 Supp. 1	02/18/94	Debris Plugging of Emergency Core Cooling Suction Strainers	6C	
93-03	05/28/93	Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs	5.2.5.2.1(12)	
94-01	04/14/94	Potential Fuel Pool Draindown Caused by Inadequate Maintenance Practices at Dresden Unit 1	9.1.2 & 9.1.3	
95-02	10/17/95	Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode	6C	
96-02	04/11/96	Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment	9.1.5	
96-03	05/06/96	Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling-Water Reactors	6C	
2005-02	07/18/05	Emergency Preparedness and Response Actions for Security-Based Events	COL Applicant	13.3.1.1, 13.5.3.2
2011-01	05/11/11	Mitigating Strategies	1D, COL Applicant	13.5.2, 13.5.3.1 and 13.5.3.2