

Enclosure 1

MFN 15-003

GEH Responses to RAIs 12.02-2 and 12.02-3

NRC Request for Additional Information 12.02-2:

10 CFR 52.59(a) requires, in pertinent part, a finding of compliance with the regulations in effect at the time of original certification in order to issue a renewed design certification. As required by the regulations in effect at the time the ABWR DC was originally issued, the ABWR DC application must contain "[t]he technical information which is required of applicants for construction permits and operating licenses by 10 CFR part 20, part 50 and its appendices, and parts 73 and 100, and which is technically relevant to the design and not site-specific."

10 CFR 52.47(a)(1)(i). In 1997, operating license FSARs were required by 10 CFR 50.34(b)(3) (1997) to include "[t]he kinds and quantities of radioactive materials expected to be produced in the operation and the means for controlling and limiting radioactive effluents and radiation exposure within the limits set forth in part 20 of this chapter."

10 CFR 20.1101(b) (1997) requires that the licensee use, to the extent practicable, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to member of the public that are as low as is reasonably achievable.

The GEH ABWR DCD Section 9.2.9.2 indicates that water can be sent to the condensate storage tank (CST) from several sources that could potentially be contaminated, including the control rod drive system and the radwaste disposal system. However, the DCD does not contain any source term information for the CST nor does it describe any controls to limit effluent releases or radiation exposure from the CST during normal operations or anticipated operational occurrences, as required by 10 CFR 50.34(b)(3) and 10 CFR 20.1101(b).

Therefore, in order to ensure compliance with 10 CFR 52.59 (2014) and 10 CFR 52.47(a)(1)(i), 10 CFR 50.34(b)(3), and 10 CFR 20.1101(b) (1997):

1) Update Chapter 12 of the GEH ABWR DCD to provide source term information (including source geometry) and shielding information for the CST.

2) Update Chapters 11 and 12 of the GEH ABWR DCD, as appropriate, to describe any procedures or engineering controls used to control radioactive effluents and radiation exposure from the CST, such as provisions to prevent CST overflow or design features to contain radioactive material if a leak or overflow were to occur.

3) Update Chapters 11 and 12 of the GEH ABWR DCD, as appropriate, to describe the locations, functions, and design features of piping routed to and from the CST in order to ensure that radioactive effluents and radiation exposure is being adequately controlled. Include any design features to detect or prevent leakage from outdoor pipes in order to ensure control of effluent releases from the site.

4) Update the Chapter 12 radiation zone drawings of the GEH ABWR DCD, to include the location of the CST, including radiation zoning for the CST.

GEH Response to RAI 12.02-2:

The responses provided below address each of the questions in RAI 12.02-2:

1) Update Chapter 12 of the GEH ABWR DCD to provide source term information (including source geometry) and shielding information for the CST.

GEH agrees the absence of the requested information does not comply with 10 CFR 50.34(b)(3) and 10 CFR 20.1101(b). To ensure compliance with regulatory requirements, a combined license (COL) item will be added in Chapter 12 of the GEH ABWR DCD for the COL applicant to provide the condensate storage tank (CST) source term and shielding information. The COL item is used to maintain flexibility in the liquid waste management system design for the COL application. The COL applicant will ensure there is sufficient shielding provided for the CST to ensure a dose rate of $\leq 6 \mu\text{Sv/hr}$ in the area surrounding the CST. Therefore, the area around the CST will be designated as radiation zone designation, A, "uncontrolled, unlimited access".

The COL item described in this response for ABWR DCD Chapter 12 will be added as Subsection 12.2.3.2 in the next revision of the ABWR DCD, including listing the item in Table 1.9-1, as shown in Enclosure 2. In addition, the CST will be added to Table 12.2-5a also as shown in Enclosure 2.

2) Update Chapters 11 and 12 of the GEH ABWR DCD, as appropriate, to describe any procedures or engineering controls used to control radioactive effluents and radiation exposure from the CST, such as provisions to prevent CST overflow or design features to contain radioactive material if a leak or overflow were to occur.

It should be recognized that the COL item being added to the DCD in response to Item 1 constitutes an additional engineered control which ensures the dose rate in the area surrounding the CST will not exceed the upper limit for radiation zone A; which will allow uncontrolled and unlimited access to the area around the CST. Additional procedures and engineering controls already used to control radioactive effluents and radiation exposure from the CST are stated in Chapter 11, Subsection 11.2.1.2 of the GEH ABWR DCD as follows:

Engineered Controls

"The Condensate storage tank, which is located outdoors, has liquid level monitoring with alarms in the control room. The tank overflows, drains and sample lines are routed to the radwaste system. A dike is provided around the tank to prevent runoff in the event of a tank overflow. A drain within the dike is routed to the radwaste system."

The dike prevents leaks or overflows of the CST from reaching the environment and the drain inside the dike ensures any runoff from tank leaks or overflows is processed through the radwaste system to control radioactive effluents from the CST and preclude any uncontrolled releases to the environment. The CST also has the liquid high level alarm to prevent tank overflow. The structure for the transfer pumps will be integrated in the dike, as well as the interface with the pipe chases or guard pipes. This description will be implemented in Chapter 11, Subsection 11.2.1.2 of the next revision of the GEH ABWR DCD as shown in Enclosure 2.

Procedures

In addition, as stated in Table 11.5-4 (Item 4) of the DCD, samples are taken weekly of the CST to evaluate water radioactivity and control the radioactive effluents and radiation exposure from the CST.

3) Update Chapters 11 and 12 of the GEH ABWR DCD, as appropriate, to describe the locations, functions, and design features of piping routed to and from the CST in order to ensure that radioactive effluents and radiation exposure is being adequately controlled. Include any design features to detect or prevent leakage from outdoor pipes in order to ensure control of effluent releases from the site.

The piping associated with the CST is designed to preclude inadvertent or unidentified leakage to the environment. Per DCD Section 12.1.2.2.3, "The piping, where possible, was constructed of seamless pipe as a means to reduce radiation accumulation on the seam."

In addition, the buried portion of the CST piping will be enclosed within a pipe chase or a guard pipe and monitored for leakage.

These features substantially reduce the potential for unmonitored and uncontrolled releases to the environment.

The description of the pipe chase/guard pipe will be implemented in Chapter 11, Subsection 11.2.1.2 of the next revision of the GEH ABWR DCD as shown in Enclosure 2.

4) Update the Chapter 12 radiation zone drawings of the GEH ABWR DCD, to include the location of the CST, including radiation zoning for the CST.

The CST will be radiation zone designation, A, "uncontrolled, unlimited access"; and, therefore, as shown in Enclosure 3, Figure 12.3-50 will be updated to designate radiation zone "A".

Figures 1.2-25 and 12.3-70 in the GEH ABWR DCD will be updated in the next revision of the ABWR DCD as shown in Enclosure 3 to show the CST position consistent with Figure 12.3-50.

Impact on DCD for RAI 12.02-2:

The following subsections, tables, and figures are revised as shown in the attached markups indicated below:

- DCD Tier 2, Table 1.9-1 – Enclosure 2 Markups
- DCD Tier 2, Subsection 11.2.1.2 – Enclosure 2 Markups
- DCD Tier 2, Subsection 12.2.1.2.9.6 (new) – Enclosure 2 Markups
- DCD Tier 2, Subsection 12.2.3.2 (new) – Enclosure 2 Markups
- DCD Tier 2, Table 12.2-5a – Enclosure 2 Markups
- DCD Tier 2, Figure 1.2-25 – Enclosure 3 Markups
- DCD Tier 2, Figure 12.3-50 – Enclosure 3 Markups
- DCD Tier 2, Figure 12.3-70 – Enclosure 3 Markups

NRC Request for Additional Information 12.02-3:

10 CFR 52.57(a) requires that an application for design certification renewal contain all information necessary to bring up to date the information and data contained in the previous application. The NRC staff views this requirement as including the correction of known errors. 10 CFR 52.59(a) also requires, in pertinent part, a finding of compliance with the regulations in effect at the time of original certification in order to issue a renewed design certification. 10 CFR 20.1301(d)(1997) requires that the applicant comply with the standards in 40 CFR Part 190. GEH ABWR DCD Tier 2, Section 12.2.2.4 states, "For complete evaluations for compliance to 40 CFR Part 190, gamma shine evaluations are not contained in this document, since adequate detail for skyshine evaluations from the turbine complex are required in DAC Table 3.2." However, in reviewing Tier 1, Table 3.2, all of the items in Table 3.2 are designated as "Acceptance Criteria", including Table 3.2a, item 4, which is the item in Table 3.2 associated with 40 CFR 190 compliance, instead of "Design Acceptance Criteria". Other DAC in the GEH ABWR DCD specifically include the designation, "Design Acceptance Criteria" in order to differentiate DAC from other types of IT AAC. Please change the designation of Table 3.2a Item 4 to correct this discrepancy.

GEH Response to RAI 12.02-3:

GEH agrees. The designation of Table 3.2a Item 4 has been updated to "Design Acceptance Criteria".

Impact on DCD for RAI 12.02-3:

DCD, Tier 1, Table 3.2a Item 4, is revised as shown in the attached markups (Enclosure 2).