

January 15, 2008

Mr. Robert E. Brown
Senior Vice President, Regulatory Affairs
GE-Hitachi Nuclear Energy Americas, LLC
3901 Castle Hayne Road MC A-45
Wilmington, NC 28401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 131 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Brown:

By letter dated August 24, 2005, GE-Hitachi Nuclear Energy Americas, LLC (GEH) submitted an application for final design approval and standard design certification of the economic simplified boiling water reactor (ESBWR) standard plant design pursuant to 10 CFR Part 52. The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed design.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the two enclosures to this letter.

To support the review schedule, you are requested to provide the requested additional information within 45 days of the date of this letter.

If you have any questions or comments concerning this matter, you may contact me at 301-415-2890 or axj2@nrc.gov or you may contact Tom Kevern at 301-415-0224 or tak@nrc.gov.

Sincerely,

/RA/

Andrea Johnson, Project Manager
ESBWR/ABWR Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-010

Enclosure:
Request for Additional Information

cc: See next page

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Senior Vice President, Regulatory Affairs
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Distribution: See next page

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NRO-002

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 131 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION DATED January 15, 2008

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**ESBWR DCD – Radwaste Systems
Requests for Additional Information Relating to
RAIs 11.2-16, 11.4-18, and 11.4-15S01**

RAI Number	Reviewer	Question Summary	Full Text
RAI 11.2-17	Wilson J Li C	DCD, Tier 2, Revision 4, Section 11.2.2.3 does not commit to the tank and vessel codes requirements of DCD, Section 3.2, Table 3.2.1 for the LWMS.	DCD Tier 2, Revision 4, Section 11.4.2.3 for the Pumps section and Tanks section includes the following commitment: "Pump/Tank codes are per the noted requirements of Table 3.2-1 for K20 Solid Waste Management Systems." However, a similar commitment for pump and tank K10 codes for the Liquid Waste Management Systems were not included in DCD, Tier 2, Section 11.2.2.3. Accordingly, revise DCD, Tier 2, Section 11.2.2.3 to include the commitment to meet the tank and vessel code provisions (K10) for the LWMS, as described in DCD, Tier 2, Section 3.2, Table 3.2-1.
RAI 11.2-16S01	Wilson J, Li C Dehmel J	<p>DCD Tier 2, Revision 4, Sections 11.2.2.2 and 11.2.2.3 inconsistently refer to the use of deep-bed and mixed bed ion exchangers.</p> <p>The response to this RAI included a proposed update DCD, Tier 1, Table 2.10.1-2. DCD, Tier 1, Section 2.10.1 and Table 2.10.1-2 are incomplete in describing the functional arrangement and ITAACs of the LWMS.</p>	<p>a. In DCD, Tier 2, Sections 11.2.2.2 and 11.2.2.3, the ion exchange demineralizers are referred to as "Deep-bed ion exchangers" and also as "Mixed bed ion exchangers." Please explain this inconsistency and update DCD, Tier 2, Sections 11.2.2.2 and 11.2.2.3 accordingly. Also, note that the same observation applies to the proposed revision of DCD, Tier 1, Section 2.10.1, which was included in GEH's response to this RAI.</p> <p>b. The response to RAI 11.2-16 included a proposed update DCD, Tier 1, Table 2.10.1-2. A review of Table 2.10.1-2 indicates that Table 2.10.1-2, "ITAAC For The Liquid Waste Management System" Item 1 is incomplete as it does not address the introduction of media into subsystem tanks and vessels. Table 2.10.1-2 should state, under the "Inspections, Tests, Analysis" header, that the inspections of the as-built system, includes the introduction of the appropriate types of filtration and adsorbent media in tanks and vessels to meet or exceed the decontamination factors listed in DCD Tier 2, Table 11.2-3. Accordingly, revise DCD, Tier 1, Table 2.10.1-2 to make this commitment clear.</p>

RAI Number	Reviewer	Question Summary	Full Text
RAI 11.2-18	Wilson J, Li C	DCD Tier 2, Revision 4, Section 11.2, Table 11.2-2c does not include subsystems and subsystem components shown in Figures 11.2-1a, 11.2-1b, and 11.2-4.	DCD, Tier 2, Revision 4, Section 11.2, Table 11.2-2c does not include subsystems and subsystem components shown in Figures 11.2-1a, 11.2-1b, and 11.2-4. Please explain why the Resin Trap for the Equipment Drain Processing System and the Chemical Drain Processing system are not listed on Table 11.2-2c. Update DCD, Tier 2, Table 11.2-2c accordingly.
RAI 11.2-19	Wilson J, Li C	DCD Tier 2, Section 11.2.2.2 and Table 11.2-4 do not address whether the design includes tank cooling or heat exchangers.	The Equipment Drain Collection Tanks have potentially thermally hot inputs, but there are no provisions shown for tank cooling or heat exchangers. Does the Equipment Drain Process Subsystem have temperature limits? Does the time to process maximum input listed on DCD, Tier 2, Table 11.2-4 include additional time to cool the contents of tanks to a temperature suitable for processing? Would elevated temperatures of process streams have detrimental impacts in achieving the decontamination factors listed in DCD, Tier 2, Table 11.2-3? Address the above questions and update DCD, Tier 2, Section 11.2 tables and text accordingly.
RAI 11.2-20	Wilson J, Li C	DCD, Tier 2, Section 11.2.2.2 and associated figures do not identify the disposition of overflows and drain funnels.	DCD, Tier 2, Figures 11.2-1a, 11.2-1b, 11.2-3, and 11.2-4 show overflows and drain funnels with no end dispositions. Revise the above listed figures to provide the disposition or endpoints of these overflows. If it is to a tank/sump, then include sump/tank size, pump flow rate capability, and where the sump/tank will flow or be pumped to, such as which subsystem components. Address the above issues and update DCD, Tier 2, Section 11.2 tables and text accordingly.
RAI 11.2-21	Wilson J, Li C	DCD, Tier 2, Figure 11.2-4 does not identify venting provisions for the Chemical Drain Collection Tank.	A review of DCD, Tier 2, Figure 11.2-4 shows that the Chemical Drain Collection Tank is not equipped with a vent. Accordingly, justify the omission of a vent for this tank or update DCD, Tier 2, Figure 11.2-4 to include a vent in its design.
RAI 11.2-22	Wilson J, Li C	DCD Tier 2, Section 11.2.2.2 and Table 11.2-4 do not specify the expected reverse osmosis reject rate.	DCD, Tier 2, Section 11.2.2.2 and Table 11.2-4 do not provide the expected reverse osmosis reject rate to the Concentrated Waste Tank from the Equipment and Floor Drain Processing Subsystems. Address this omission and update DCD, Tier 2, Section 11.2 text and tables accordingly.
RAI 11.2-23	Wilson J, Li C	DCD, Tier 2, Figures 11.2-1, 11.2-1a, and 11.2-1b indicate an inconsistent number of reverse osmosis (RO) units.	A comparison of DCD, Tier 2, Figure 11.2-1 against Figures 11.2-1a and 11.2-1b indicates an inconsistent number of reverse osmosis (RO) units. Figure 11.2-1 shows one RO unit each for the Equipment Drain Subsystem and Floor Drain Subsystem, while Figures 11.2-1a and 11.2-1b show two

			RO units for each. Accordingly, revise DCD, Tier 2 figures to make the functional arrangements of these subsystems internally consistent in DCD, Section 11.2.
RAI 11.4-19	Wilson J, Li C, Dehmel J	DCD, Tier 2, Figure 11.4-2 does not include sampling points for the wet/solid waste collection subsystem.	DCD, Tier 2, Figure 11.4-2 includes "Sample Point" in the legend box, but none are noted in the system drawing. Provide the technical rationale for not including sampling points. Note that waste products processed by this subsystem will need to be characterized in determining compliance with the waste form characteristics of 10 CFR Part 61.55 and 61.56 and waste acceptance criteria of the radwaste disposal site. If sampling points are not included by design in this subsystem, describe alternate means for sampling waste streams and products from this subsystem in DCD, Tier 2, Sections 11.4.2.2 and 11.4.6 (COL information Item 11.4-3-A, Process Control Program).
RAI 11.4-20	Wilson J, Li C	DCD, Tier 2, Section 11.4 and associated figures apply inconsistent terminologies in describing phase separators.	Throughout DCD, Tier 2, Chapter 11.4, the phase separators are referred to as "Low Activity Phase Separators", but Figure 11.4-1, Solid Waste Management System Process Diagram, refers to the phase separator as "Low Activity <u>Sludge</u> Phase Separators." Address this inconsistency in terminology and revise DCD, Tier 2, Section 11.4 and associated figures accordingly.
RAI 11.4-21	Wilson J, Li C	DCD, Tier 2, Sections 11.4.2.1 and 11.4.2.2 do not include spent charcoal media generated by the Liquid Waste Processing System as an input waste stream to be processed by the wet/solid waste collection subsystem.	In DCD, Tier 2, Section 11.4.2.1, "Summary Description," and Section 11.4.2.2, "Wet Solid Waste Collection Subsystem," the list of wastes that the SWMS processes/collects is incomplete as it does not address spent charcoal media from the Liquid Waste Processing System. Address the omission of spent charcoal media in the listing of wastes and revise DCD, Tier 2, Sections 11.4.2.1 and 11.4.2.2 accordingly.
RAI 11.4-22	Wilson J, Li C	DCD, Tier 2, Section 11.4.2.2 describes the thermal drying unit as optional but does not state whether this subsystem is within the scope of DCD, Tier 2.	The "Thermal Drying Unit" as described in DCD, Tier 2, Section 11.4.2.2 "wet solid waste processing subsystem" and shown on Figure 11.4-3, is listed as an "option." Clarify if this equipment is within the scope of the DCD, Tier 2 and revise DCD, Tier 2, Section 11.4.2.2 accordingly.
RAI 11.4-23	Wilson J, Li C	DCD, Tier 2, Section 11.4.2 and associated figures describe inconsistent system flow paths between the concentrated waste tank the low activity resin holdup	DCD, Tier 2, Figure 11.4-2 shows the Concentrated Waste Tank being pumped to the Solid Waste Processing Subsystem, yet Figure 11.4-3 does not show this input. Figure 11.4-1 shows an input to the Low Activity Resin Holdup Tank from Concentrated Waste, yet Figure 11.4-2 does not show this input. Address these discrepancies in system flow paths and revised

		tank.	DCD, Tier 2, Section 11.4.2 and associated figures accordingly.
RAI 11.4-24	Wilson J, Li C	DCD Tier 2, Table 11.4-1 and Figure 11.4-3 present inconsistent information about the location and number of HIC return pumps.	DCD, Tier 2, Table 11.4-1 lists HIC Return Pumps under Process Equipment, but the function of these pumps is not described nor do they appear on Figure 11.4-3. Provide the information about the function of these subcomponents and revise DCD, Tier 2, Section 11.4.2 and associated tables and figures.
RAI 11.4-25	Wilson J, Li C	DCD, Tier 2, Section 11.4.2 and Table 11.4-1 provide inconsistent information on the number of dewatering equipment fill heads.	DCD Tier 2, Table 11.4-1 lists the quantity of "Dewatering Equipment Fill Heads" as three, with Figure 11.4-3 not providing any further information. Address the differences in the number of fill heads between tables and figures, and revise DCD Tier 2, Section 11.4.2 and associated tables and figures accordingly.
RAI 11.4-26	Wilson J, Li C	DCD, Tier 2, Figure 11.4-2 shows system flow paths with no logical end points to other portions of the subsystem.	In DCD, Tier 2, Figure 11.4-2, the horizontal line coming from the bottom of Phase Separator (A) ends abruptly with no connections to other portions of the system. The vertical line coming from the bottom of the Condensate Resin Holdup Tank, after the second air-operated valve, ends abruptly as well. Address these inconsistencies in system flow paths and revise DCD, Tier 2, Figure 11.4-2 accordingly.
RAI 11.4-27	Wilson J, Li C	DCD, Tier 2, Figure 11.4-3 shows inconsistencies in system flow paths and no logical end points to other portions of the subsystem.	DCD, Tier 2, Figure 11.4-3 describes the function of the "dewatering pump." This pump appears to be drawn backwards in the figure. As drawn, it appears to be pumping from the High and Low Activity Phase Separators into the Liner and Thermal Drying Units. Also, on the dewatering skid drawing, there is an open gate valve with no disposition or connection to other portions of the subsystem. Confirm the flow direction of the dewatering pump, address the inconsistencies in system flow paths, and revise DCD, Tier 2, Section 11.4.2 and Figure 11.4-3 accordingly.
RAI 11.4-28	Dehmel J	DCD, Tier 2, Figure 11.4-2 identifies the presence of radiation monitors, but DCD, Tier 2, Sections 11.4.5, 11.5.3, and 12.3 do not describe such radiation monitors.	DCD, Tier 2, Figure 11.4-2 identifies the presence of 11 radiation monitors (see symbol "RE" in figure), but DCD, Tier 2, Sections 11.4.5, 11.5.3, and 12.3 (Table 12.3-4) do not describe such radiation monitors. The radiation monitors are shown to be mounted on tanks/vessels and subsystem piping. The description and operational functions of the radiation monitors are not described in the proposed revision of DCD, Tier 2, Section 11.4. Confirm whether such radiation monitors are part of the design; if so, provide information about their operational functions; and revise DCD, Tier 2, Sections 11.4.5, 11.5.3, and 12.3, and associated tables and figures.
RAI 11.4-29	Dehmel J	DCD, Tier 2, Figure 11.4-4	DCD, Tier 2, Figure 11.4-4 shows the disposition of dry solid wastes, but it

		<p>identifies a process for the disposition of dry solid wastes. However, the process does not address NRC regulatory requirements on the disposition of low-level radioactive wastes and NRC policy on the release of materials for unrestricted use.</p>	<p>does not address NRC requirements and policy for their disposition.</p> <p>Specifically:</p> <ol style="list-style-type: none"> a. For wastes processed manually, the figure should note that such activities are performed by the COL holder. b. For tools and materials returned to plant, the figure should note that they would be returned for “controlled use” and “uncontrolled use” consistent with the COL holder’s radiation protection program. c. For disposal as regular trash, the figure should note that such dispositions would comply with the NRC policy on non-detectable activity for the release of materials and equipment from nuclear power plants. d. For radioactive waste destined for “DAW Sealand shipments,” the figure should note that the endpoints of such shipments are authorized low-level radioactive waste disposal sites and licensed waste processors. <p>As shown, the figure conveys disposition methods of radioactive materials contrary to Part 20.2001 and NRC policy for the release of materials and equipment from nuclear power plants in unrestricted areas. Accordingly, revise DCD, Tier 2, Figure 11.4.4 by changing the legend or introducing appropriate footnotes to each shown disposition endpoints.</p>
<p>RAI 11.4-15S02</p>	<p>Wilson J, Li C, Dehmel J</p>	<p>The response to this RAI included a proposed update DCD, Tier 1, Section 2.10.2 and Table 2.10.2-2. DCD, Tier 1, Section 2.10.2 and Table 2.10.2-2 are incomplete in describing the functional arrangement and ITAACs of the SWMS.</p>	<p>The response to RAI 11.4-15 S01 included a proposed update of DCD, Tier 1, Section 2.10.2 and Table 2.10.2-2 on the Solid Waste Management System (SWMS). A review of the proposed revision to the associated ITAACs of Table 2.10.2-2 indicates that it is not complete as it does not provide reasonable assurance that the SWMS will be built in accordance with the approved design in accordance with 10 CFR Part 52.47(b)(1). The functional arrangement of the SWMS, as described in the Design Description of Subsection 2.10.2, does not provide adequate information. Provide a process flow diagram showing major equipment and flow path of the SWMS in DCD, Tier 1, Section 2.10.2.</p> <p>Note that the concerns associated with this RAI response also apply to design descriptions, functional arrangements, and ITAACs assigned to the Liquid Waste Management System (LWMS) and Gaseous Waste</p>

			Management System (GWMS). Accordingly, provide process flow diagrams showing major equipment and flow paths of the LWMS and GWMS in DCD, Tier 1, Sections 2.10.1 and 2.10.3, respectively.
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**New Requests for Additional Information Relating to
DCD Tier 2, Revision 4, Sections 11.2 to 11.5**

RAI Number	Reviewer	Question Summary	Full Text
RAI 11.2-24	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.2.2.2 is not specific on the description of process systems used to vent LWMS tanks.	DCD, Tier 2, Revision 4, Section 11.2.2.2 is not specific on the description of process systems used to vent LWMS tanks. The second sentence states that tanks are vented to the atmosphere without noting that before being released to the atmosphere, vents are processed through the radwaste ventilation system. Accordingly, update the text describing system operation so as to be consistent with that of Page 11.2-5 for tanks.
RAI 11.2-25	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.2.2.2 states that “one additional equipment drain collection tank” is shared with the floor drain subsystem, but the discussion fails to note whether this tank is in addition to those listed in Table 11.2-2a.	DCD, Tier 2, Revision 4, Section 11.2.2.2 states that “one additional equipment drain collection tank” is shared with the floor drain subsystem, but the discussion fails to note whether this tank is in addition to those listed in DCD, Tier 2, Table 11.2-2a. Accordingly, update the discussion for the floor (high conductivity) drain subsystem on page 11.2-4 and in Table 11.2-2a to clarify the design status of the additional drain tank.
RAI 11.2-26	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.2.3, radioactive releases, fails to refer to the proper reference for NUREG-0016.	DCD, Tier 2, Revision 4, Section 11.2.3, radioactive releases, fails to refer to the proper reference for NUREG-0016 since Reference No. 11.2-7 cites draft Regulatory Guide (RG) DG-1145 for it. Accordingly, update reference 11.2-7 to include the proper citation of NUREG-0016.
RAI 11.2-27	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.2.3, radioactive releases, fails to refer to Table 11.2-3 as one of the basis of parameters used in calculating annual effluent releases and doses.	DCD, Tier 2, Revision 4, Section 11.2.3, radioactive releases, fails to refer to Table 11.2-3, in addition to DCD, Section 12, as one of the basis of parameters used in calculating annual effluent releases and doses. Accordingly, update the discussion to note that the source term is based, in part, on decontamination factors listed in Table 12.2-3.

RAI Number	Reviewer	Question Summary	Full Text
RAI 11.2-28	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.2.5, instrumentation requirements, refers to the wrong subsection in DCD, Tier 2, Section 11.5 for the LWMS radwaste discharge monitor.	DCD, Tier 2, Revision 4, Section 11.2.5, instrumentation requirements, refers to the wrong subsection in DCD, Tier 2, Section 11.5 for the LWMS radwaste discharge monitor. Accordingly, update DCD, Tier 2, Section 11.2.5 to cite the proper DCD subsection as 11.5.3.2.5 instead of 11.5.3.2.6.
RAI 11.2-29	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.2, Table 11.2-2b and Figure 11.2-4 show an inconsistent number of pumps for the chemical drain system.	DCD, Tier 2, Revision 4, Section 11.2, Table 11.2-2b and Figure 11.2-4 show an inconsistent number of pumps. DCD Table 11.2-2b lists two (2) pumps for the chemical drain system but Figure 11.2-4 shows only one. Accordingly, update the table and figure for consistency in listing the number of pumps.
RAI 11.2-30	Dehmel JC	A review of DCD, Tier 2, Revision 4, Section 11.2, Figures 11.2-1 to 11.2-11.2-4 reveals that legends are missing in explaining the details of the piping drawing for the LWMS.	A review of DCD, Tier 2, Revision 4, Section 11.2, Figures 11.2-1 to 11.2-4 reveals that legends are missing in explaining the details of the piping drawing for the LWMS. Accordingly, revise DCD Tables 11.2-1 to 11.2-4 to include the appropriate sets of legends for the purpose of interpreting system functional operations.
RAI 11.2-31	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.2.3, radioactive releases, does not refer to DCD, Tier 2, Section 9.3.2 for process sampling.	DCD, Tier 2, Revision 4, Section 11.2.3, radioactive releases, does not refer to DCD, Tier 2, Section 9.3.2 for process sampling. Accordingly, revise DCD, Tier 2, Section 11.2.3 for the purpose of referring to the sampling provisions described in DCD Section 9.3.2.
RAI 11.3-4	Dehmel JC	A review of DCD, Tier 2, Revision 4, Section 11.3.1, design bases, reveals that it fails to cite the requirements of Part 20, Appendix B, Table 2 effluent concentration limits for airborne effluents.	A review of DCD, Tier 2, Revision 4, Section 11.3.1, design bases, reveals that it fails to cite the requirements of Part 20, Appendix B, Table 2 effluent concentration limits for airborne effluents. Accordingly, revise DCD, Tier 2, Section 11.3.1 to include the requirements of Part 20, Appendix B, Table 2 effluent concentration limits, in addition to those of Appendix I to Part 50.
RAI 11.3-5	Dehmel JC	A review of DCD, Tier 2, Revision 4, Section 11.3.2.2, component design, indicates inconsistent descriptions of component leak testing methods.	A review of DCD Tier 2, Revision 4, Section 11.3.2.2, component design, indicates inconsistent descriptions of leak testing methods. This section refers to the use of a “soap bubble test” for leak testing, while other sections of the DCD refer to “helium leak testing,” e.g., DCD, Tier 2, Section 11.3.5. Accordingly, revise DCD, Tier 2, Section 11.3 to ensure

RAI Number	Reviewer	Question Summary	Full Text
			consistency in describing the proposed leak testing method.
RAI 11.3-6	Dehmel JC	A review of DCD, Tier 2, Revision 4, Section 11.3.2.2, component design, indicates that it does not commit to the tank and vessel codes requirements of DCD, Tier 2, Section 3.2, Table 3.2.1 for OGS charcoal adsorber vessels.	A review of DCD, Tier 2, Revision 4, Section 11.3.2.2, component design, charcoal adsorber vessels, indicates that it does not commit to the tank and vessel codes requirements of DCD, Tier 2, Section 3.2, Table 3.2.1 for the OGS adsorber vessels. Accordingly, revise DCD, Tier 2, Section 1.3.2.2 to include the commitment to meet the tank and vessel code provisions (K30 for the OGS) as described in DCD, Tier 2, Section 3.2, Table 3.2-1. For consistency, see related code compliance entry in DCD, Tier 2, Section 11.4.2.3.
RAI 11.3-7	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.3.2, releases, does not refer to DCD, Tier 2, Section 9.3.2 for process sampling.	DCD, Tier 2, Revision 4, Section 11.3.2, releases, does not refer to DCD, Tier 2, Section 9.3.2 for process sampling. Accordingly, revise DCD, Tier 2, Section 11.3.2 for the purpose of referring to the sampling provisions described in DCD, Tier 2, Section 9.3.2.
RAI 11.3-8	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.3.6, instrumentation requirements, does not refer to Section 11.5 for the associated process radiation monitoring subsystem.	DCD, Tier 2, Revision 4, Section 11.3.6, instrumentation requirements, does not refer to Section 11.5 for the associated process radiation monitoring subsystem. Accordingly, revise DCD, Tier 2, Section 11.3.6 to include references to the pre- and post treatment offgas radiation monitors and the charcoal vault radiation monitor - see DCD, Tier 2, Section 11.5.3.2. For consistency, see related entry in DCD, Tier 2, Section 11.2.5.
RAI 11.3-9	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.3.9 lists references that are not cited in the text of Section 11.3.	DCD, Tier 2, Revision 4, Section 11.3.9 lists references that are not cited in the text of Section 11.3. The references are Nos. 11.3-4, 11.3-5, 11.3-9, 11.3-10, and 11.3-12. Accordingly, insert the reference citation in the text or delete them from DCD, Tier 2, Section 11.3.9. Similarly, update reference 11.3-10 cited in DCD, Tier 2, Table 11.3-4 since the referenced document is not RG 1.109.
RAI 11.3-10	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.3, Table 11.3-1 does not include the estimated delay time for argon and krypton.	DCD, Tier 2, Revision 4, Section 11.3, Table 11.3-1 does not include the estimated delay time for argon and krypton. Accordingly, revise DCD, Tier 2, Table 11.3-1 to include the delay time for argon and krypton since these parameters form part of the design bases. For consistency, see related entry in this table for xenon.
RAI 11.3-11	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.3, Table 11.3-6	DCD, Tier 2, Revision 4, Section 11.3, Table 11.3-6 provides inconsistent results for Xe-133 releases. Confirm whether the estimated Xe-133

RAI Number	Reviewer	Question Summary	Full Text
		provides inconsistent results for Xe-133 releases.	release is 13.5 Ci or 135 Ci, e.g., possible error in SI to Ci conversion. Accordingly, revise DCD Tier 2, Table 11.3-6 to include the proper estimate of Xe-133 releases.
RAI 11.3-12	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.3, Table 11.3-7 does not provide a reference for the basis of the atmospheric dispersion parameter (X/Q).	DCD, Tier 2, Revision 4, Section 11.3, Table 11.3-7 does not provide a reference for the basis of the atmospheric dispersion parameter (X/Q). Accordingly, revise DCD Table 11.3-7 to include a reference as the basis for the assigned value of 2.0E-03 s/m ³ for the atmospheric dispersion parameter (X/Q).
RAI 11.4-30	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.4.1 refers to the wrong reference for 10 CFR 61 when compared to Section 11.4.7.	DCD, Tier 2, Revision 4, Section 11.4.1 refers to the wrong reference for 10 CFR 61 when compared to Section 11.4.7. Reference 11.4-13 identifies Part 50, Appendix A, GDC 61 rather than 10 CFR Part 61. Accordingly, revise the citation for reference 11.4-13 in DCD, Tier 2, Section 11.4.7.
RAI 11.4-31	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.4.1 refers to a superseded provision of SRP Section 11.4 on the allowable time for the storage of LLW at reactor sites.	DCD, Tier 2, Revision 4, Section 11.4.1 refers to a superseded provision of SRP Section 11.4 on the allowable time for the storage of LLW at reactor sites. The five-year (5) time constraint has been dropped in the current version of Section 11.4 of the SRP (NUREG-0800, March 2007). Accordingly, it is suggested that the discussion be revised and that the reference to the five-year (5) time constraint be deleted from DCD, Tier 2, Section 11.4.1.
RAI 11.4-32	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.4.7 lists reference 11.4-23 (Part 20), but this reference is not cited in the text of Section 11.4.	DCD, Tier 2, Revision 4, Section 11.4.7 lists reference 11.4-23 (Part 20), but this reference is not cited in the text of Section 11.4. Accordingly, confirm whether the citation for reference 11.4-23 needs to be included in the text of DCD, Tier 2, Section 11.4 and revise the text accordingly.
RAI 11.5-48	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.5.2, system design bases and criteria, refers to a prior version of ANSI/IEEE N42-18.	DCD, Tier 2, Revision 4, Section 11.5.2, system design bases and criteria, refers to a prior version of ANSI/IEEE N42-18. DCD, Tier 2, Revision 4, Section 11.5.8, in (reference 11.5-19) cites the 2004 current version of the standard, while DCD, Tier 2, Section 11.5.2 refers instead to the 1980 version. Accordingly, update DCD, Tier 2, Section 11.5.2 to refer to the correct version of the standard, as ANSI/IEEE N42-18-2004.
RAI 11.5-49	Dehmel JC	A review of DCD, Tier 2, Revision 4, Section 11.5.2,	A review of DCD, Tier 2, Revision 4, Section 11.5.2, system design bases and criteria, reveals that it fails to identify how the design of the PRMS

RAI Number	Reviewer	Question Summary	Full Text
		<p>system design bases and criteria, reveals that it fails to identify how the design of the PRMS complies with RG 1.97, Revision 4, SRP Section 7.5, and BTP 7-10 for Type E Variables in assessing airborne effluent concentrations or release rates.</p>	<p>complies with RG 1.97, Revision 4, SRP Section 7.5, and BTP 7-10 for Type E Variables in assessing airborne effluent concentrations or release rates. Note that the staff had closed a prior RAI (No. 11.5-8) based on the understanding that DCD, Section 7.5.3 would address the implementation of Revision 4 of RG 1.97 via the guidance of SRP BTP-7-10, as they relate to Type E Variables. However, a review of DCD, Revision 4, Section 7.5.3 indicates that all requirements have been dropped from the DCD, specifically DCD, Tier 2, Table 7.1-1 excludes the PRMS from the guidance of RG 1.97 and BTP 7-10. Even though SRP Section 7.5.1.3.5 states that compliance with these requirements will be addressed during the detailed design phase, Section 7.5.7 of the DCD does not include any corresponding COL action items. Accordingly, revise DCD, Tier 2, Section 11.5.2 to indicate how the guidance of SRP BTP 7-10 will be addressed for Type E Variables, given that BTP 7-10 states that the ranges and footnotes provided for radiation monitoring equipment in Revision 3 of RG 1.97 (see Table 2 for BWRs) should be applicable and would be acceptable for plants using Revision 4 of RG 1.97. If this provision of SRP BTP 7-10 is not used, then the other provision of BTP 7-10 should be implemented, which states that deviations from either Revision 2 or 3 of RG 1.97 should be supported by analyses demonstrating that the operational range of the radiation monitoring instrumentation would remain functional (on scale) for the expected types of events or accidents.</p>
RAI 11.5-50	Dehmel JC	<p>DCD, Tier 2, Revision 4, Section 11.5.3.1.6 should clarify the origin and radiological status of the water used for the isolation condenser pool.</p>	<p>DCD, Tier 2, Revision 4, Section 11.5.3.1.6 should clarify the origin and radiological status of the water used for the isolation condenser pool. The staff believes that the water used for the isolation condenser pool is clean water supplied by the makeup water system. If this is true, DCD, Tier 2, Section 11.5.3.1.6 should be updated to make this point clear and DCD, Tier 2, Sections 9.2.3 and 5.4.6 should be cited as the basis. If this is not true, please discuss the origin and radiological status of the water used.</p>
RAI 11.5-51	Dehmel JC	<p>DCD, Tier 2, Revision 4, Section 11.5.4.5 refers to NUREG-1301 and -1302 as the basis documents for the offsite</p>	<p>DCD, Tier 2, Revision 4, Section 11.5.4.5 refers to NUREG-1301 and -1302 as the basis documents for the development of the offsite dose calculation manual, but these documents are not included in the references (see Section 11.5.8). Accordingly, update DCD, Tier 2,</p>

RAI Number	Reviewer	Question Summary	Full Text
		dose calculation manual, but these documents are not included in the references (Section 11.5.8).	Section 11.5.8 to include NUREG-1301 and NUREG-1302 as references.
RAI 11.5-52	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.5.4.7 states that analytical sensitivities of “effluent” monitor will be determined, but it should also include “process” monitors in its scope.	DCD, Tier 2, Revision 4, Section 11.5.4.7 states that analytical sensitivities of “effluent” monitors will be determined, but the definition of the PRMS subsystem should also include “process” monitors in its scope. Accordingly, update DCD, Tier 2, Section 11.5.4.7 to include both “effluent and process” radiation monitoring subsystems.
RAI 11.5-53	Dehmel JC	DCD, Tier 2, Revision 4, Section 11.5.4 and Tables 11.5-7 and 11.5-8 need further clarifications for the footnote addressing detection sensitivity.	DCD, Tier 2, Revision 4, Section 11.5.4 and Tables 11.5-7 and 11.5-8 need further clarifications for the footnote addressing detection sensitivity. The footnote (***) states that detection sensitivities will be based on the ANSI/IEEE N42.18 standard, but it should be noted that this standard applies only to instrumentation described as continuous radiation monitors. As can be noted from either table, the presence and concentrations of a number of radionuclides (e.g., Sr-89, Sr-90, etc.) would not be determined by continuous radiation monitoring instrumentation. Accordingly, revise the footnotes (***) in DCD, Tier 2, Tables 11.5-7 and 11.5-8 to include the appropriate references, such as RG 1.21 and 4.15 as the basis of the analytical sensitivities for nuclides that would be analyzed by means other than by the use of continuous radiation monitoring systems.

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