ESBWR DCD SECTION 9

26A6642AY Rev 4 Change List

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
1	S9, entire section	Made editorial changes in numerous locations to remove excessive spacing, correct punctuation, delete repeated words, correct misspelling, and correct grammar. Spelled out acronyms where appropriate. Changed GE to GEH where appropriate.
2	S9.1, entire subsection	Replaced "IC/PCCS" with "IC/PCC" for clarity.
3	S9.1, first sentence	Grammatical. Changed "containers" to "container".
4	S9.1, 2nd & 3rd para	Swapped 2nd & 3rd paragraph for better readability.
5	S9.1, 2nd para	The capability and intent to move new fuel during normal operation was not included in previous revisions. Therefore, a statement about the ability to move new fuel during normal operation was added as a clarification.
6	S9.1, 5th para, 4th sentence	To clarify the statement above, a statement about moving spent fuel being limited to reactor shutdown was added as a clarification.
7	S9.1, 5th para, 9th sentence	Grammatical. Added the word "a".
8	S9.1, 5th para, 10th & 11th sentence	Some sections refer to the ability to store 10 years of spent fuel and other sections refer to 20 years. In actuality both statements are correct. However, to avoid future confusion, an explanation of 10 years versus 20 years of fuel storage was added.
9	S9.1.1.1, Mechanical and Structural Design, 2nd para.	Deleted statement about release of radioactive materials because this subsection covers new fuel storage. Therefore the statement is not applicable to this subsection.
10	S9.1.1.1, Thermal-Hydraulic Design	Deleted subsection. This subsection is not applicable for new fuel.
11	S9.1.1.1, Dynamic and Impact Analysis, 1st & 2nd para	Rewritten in response to RAI 9.1-40.
12	S9.1.1.3, Criticality Control, 1st para, 2nd sentence	Typographical error. Deleted duplicate words "normal or abnormal".

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13	S9.1.1.3, Structural Design, 3rd para	Revised statement regarding fuel-handling procedures to point to subsection 9.1.4.13 as an enhancement. Not a technical change.
14	S9.1.1.3, Structural Design, 3rd para	Added reference to point to Subsection 9.1.6 as an enhancement. Not a technical change.
15	S9.1.1.3, Protection Features, 3rd para	Added reference to point to Subsection 9.1.6 as an enhancement. Not a technical change.
16	S9.1.2.2, 1st para, 2nd sentence	Added reference to ASTM A887 in regard to neutron-absorbing material for clarity.
17	S9.1.2.2, 2nd para	Added reference to point to Reference 9.1-2 as an enhancement. Not a technical change.
18	S9.1.2.4, 2nd para, 4th sentence	Changed future tense "will be" to present tense "are".
19	S9.1.2.4, 3rd para	Additional information provided in response to RAI 9.1-4 S01.
20	S9.1.2.4, 4th para, 1st sentence	Added "at the time of equipment order" for clarification. Not a technical change.
21	S9.1.2.4, 4th para, 2nd sentence	Revised sentence to include reference to 10 CFR 50 Appendix B for clarity.
22	S9.1.2.4, 6th para	Additional information provided in response to RAI 9.1-40.
23	S9.1.2.5, 3rd para	Rewritten in response to RAI 9.1-40.
24	S9.1.2.5, 4th para	Corrected punctuation by adding parenthesis.
25	S9.1.2.5, 4th para	Deleted word "shall" to correct tense.
26	S9.1.2.7, 2nd para, 1st sentence	Deleted erroneous mention of Spent Fuel Pool for clarity. This paragraph describes buffer pool.
27	S9.1.2.7, 3rd para, 1st sentence	Editorial change. Deleted duplicate mention of Spent Fuel Pool.
28	S9.1.2.8, 4th para	Additional information in response to RAI 9.1-40.
29	S9.1.2.8	Format error. Revised subsection heading "Structural Design and Material Compatibility Requirements" to bold text.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
30	S9.1.2.8, 3rd bullet	Deleted inconsequential statement "used for construction" for clarity.
31	S9.1.2.8, 4th bullet	Additional information provided in response to RAI 9.1-40.
32	S9.1.2.8, 6th bullet	Added greater detail to statement regarding Subsection 9.1.3 for clarity. Not a technical change.
33	S9.1.2.8 Summary of Radiological Considerations, 2nd sentence	Added greater detail by changing "published guidelines" to "regulatory limits and in accordance with ALARA principles" for clarity.
34	S9.1.3.1	Rewritten for clarity.
35	S9.1.3.2, System Description Summary, 5th para	Changed future tense "will be" to present tense "are".
36	S9.1.3.2, System Description Summary 7th para	Added definition of normal heat load for clarity.
37	S9.1.3.2, 8th para	Changed "emergency" to "post accident" for consistency. Not a technical change.
38	S9.1.3.2, 11th para	Rewritten for clarity with additional information provided.
39	S9.1.3.2, 12th para	Additional information provided in response to RAI 6.2-131.
40	S9.1.3.2, 14th para	Additional information provided in response to RAI 9.1-42.
41	S9.1.3.2, Detailed System Description, 1st thru 11th para	Rewritten for clarity with additional information provided.
42	S9.1.3.2, Detailed System Description, 3rd para	Added the word "minimizes" for clarity.
43	S9.1.3.2, Detailed System Description, 4th para, 3rd sentence	Changed future tense "will be" to present tense "are".

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
44	S9.1.3.2, Detailed System Description, 6th para, 2nd sentence	Changed future tense "shall be provided" to present tense "includes".
45	S9.1.3.2, Detailed System Description, 9th para, 5 places	Deleted future tense "shall" in 5 places, changed "branch" to "branches" in 2 places within this paragraph and corrected tense by changing "shall have" to "has". Combined with the following paragraph for completion. No technical changes.
46	S9.1.3.2, Detailed System Description, 10th para, 1st sentence	Changed future tense "shall be" to present tense "are".
47	S9.1.3.2, Detailed System Description, 11th para, 1st sentence	Expanded statement on post-accident water supplies to include on-site sources. Revised "emergency" to read "post-accident" for consistency. Not a technical change.
48	S9.1.3.2, Detailed System Description, 12th para	Additional information provided in response to RAI 9.1-11 S01.
49	S9.1.3.2, Detailed System Description, 18th para	Additional information provided in response to RAI 14.3-133.
50	S9.1.3.2, Detailed System Description, 19th para	Rewritten for clarity with additional information provided.
51	S9.1.3.2, Detailed System Description, 19th para, 2nd sentence	Deleted future tense "will".
52	S9.1.3.2, System Operation, 7th para	Expanded statement on FAPCS post-accident water supplies to include on-site sources. Revised "emergency" to read "post-accident" for consistency. Not a technical change.
53	S9.1.3.2, System Operation, 8th para	Rewritten in response to RAI 9.1-20 S01.
54	S9.1.3.2, Spent Fuel Pool Cooling and Cleanup Mode, 4th sentence	Changed future tense "will spill" to present tense "spills". Changed "flow" to "flows".

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
55	S9.1.3.2, Fuel and Auxiliary Pool Cooling and Cleanup Mode, 1st para, 2nd sentence	Added 2nd sentence to clarify system use as an alternate to shut down cooling.
56	S9.1.3.3, Safety Evaluation, 1st para, 2nd bullet	Revised "emergency" to read "post-accident" for consistency. Not a technical change.
57	S9.1.3.3, Safety Evaluation, 2nd para	Additional information in response to RAI 9.1-10 S01.
58	S9.1.3.3, Safety Evaluation, 2nd para	Revised "not provided" to "not credited by FAPCS" in regards to atmosphere clean systems for clarity.
59	S9.1.3.3, Safety Evaluation, 3rd para	Revised "emergency" to read "post-accident" in two places within this paragraph for consistency. Not a technical change.
60	S9.1.3.5, 4th para	Additional information provided for clarity.
61	S9.1.4.5, Refueling Machine, 2nd para, 4th sentence	Changed future tense "will result" to present tense "results".
62	S9.1.4.5, Fuel Handling Machine, 2nd para, 4th sentence	Changed future tense "will result" to present tense "results".
63	S9.1.4.5, Fuel Handling Machine, 2nd para, bullets	Corrected punctuation by deleting semicolons from bullet items.
64	S9.1.4.7, 2nd bullet	Made bullet more general by deleting type of viewing aid. No technical changes were made.
65	S9.1.4.8, Head Strongback/Tensioner, 2nd para, 1st bullet	Changed future tense "will transport" to present tense "transports".
66	S9.1.4.8, Head Strongback/Tensioner, 2nd para, 2nd bullet	Changed future tense "will carry" to present tense "carries".

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
67	S9.1.4.8, Head Strongback/Tensioner, 5th para	Changed future tense "failure will cause" to present tense "failure causes".
68	S9.1.4.10, 1st para 2nd sentence	Deleted sentence, which contained erroneous reference to table 9.1-6.
69	S9.1.4.11, 2nd para	Deleted sentence, which contained erroneous reference to table 9.1-6. Moved remaining sentence into the body of the new 2nd paragraph for better readability.
70	S9.1.4.14, 1st para	Revised 1st paragraph to streamline description of fuel receipt for clarity. No technical changes were made.
71	S9.1.4.15, Vessel Head Removal, 1st para, 3rd sentence	Changed future tense "will cause" to present tense "causes".
72	S9.1.4.15, Chimney Head / Separator Removal, 3rd para	Grammatical. Changed "affected" to "effected".
73	S9.1.4.16, Core Verification	Revised title to delete "and Final Core Audit". Body of subsection re-written to allow for a more general description of core verification. No technical changes were made.
74	S9.1.4.17, Vessel Closure, 2nd para	Editorial change. Deleted term "Safety-Related" (which was used out of context in this paragraph). Added "performed" for better readibility. Not a technical change.
75	S9.1.4.18, 4th para	Rewritten in response to RAI 9.1-40.
76	S9.1.4.19, Inspection, 1st sentence	Punctuation error. Deleted quotation marks.
77	S9.1.5.3, 4th para, 2nd sentence	Changed future tense "Routes will be", to present tense "Routes are".
78	S9.1.5.5, 1st para	Additional information in response to RAI 6.2-102 S01.
79	S9.1.5.6, 1st para	Additional information provided for clarity in response to RAI 6.2-102 S01.
80	S9.1.5.8, 1st sentence	Added reference to COL Subsection 9.1.6 for clarity.
81	S9.1.6-1-H thru 9.1.6-3-H	Rewritten in response to RAI 9.1-2 S01, RAI 9.1-25 S01 & RAI 14.3-92 S01.

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82	S9.1.6-4-A & 9.1.6-5-A	Rewritten in response to RAI 9.1-40.
83	S9.1.7	References 9.1-1 & 9.1-2 added in response to RAI 9.1-40
84	T9.1-3, item 3	Revised "emergency" to read "post-accident" for consistency. Not a technical change.
85	T9.1-3, item 11	Deletion of information in response to RAI 14.3-133.
86	T9.1-4, 1st row	Deletion of information in response to RAI 14.3-133 and RAI 16.2-77.
87	T9.1-4, 5th row	Deletion of information in response to RAI 14.3-133 and RAI 16.2-77.
88	T9.1-4, 10th row	Additional information in response to RAI 14.3-133.
89	T9.1-6	Corrected subsection references in the table to match actual subsections in the text.
90	F9.1-1	Replacement of Figure in response to RAI 14.3-133 & RAI 16.2-46 S01.
91		
92	S9.2.1.1, 2nd para., 1st sent.	Deleted "to the RCCWS and TCCWS" to be consistent with current design.
93	S9.2.1.2, Summary Description, 1st para. 1st sent.	Revised sentence to provide a more accurate and concise description from: "The PSWS rejects heat from Nonsafety-Related components in the reactor and turbine buildings to the environment." To: "The PSWS rejects heat from nonsafety-related RCCWS and TCCWS heat exchangers to the environment."
94	S9.2.1.2, Summary Description, 1st para. last sent.	Revised sentence for clarification of conceptual design information from "The reference design utilizes a natural draft cooling tower for the NPHS and mechanical draft cooling towers for the AHS." To: "The conceptual design utilizes a natural draft cooling tower for the NPHS and mechanical draft cooling towers for the AHS with a crosstie line to permit routing of the plant service water to either heat sink."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
95	S9.2.1.2, Summary Description, new 3rd para.	Added paragraph for clarification of utility requirements regarding items that are conceptual design.
96	S9.2.1.2, Detailed System Description, 2nd para.	Deleted incorrect use of acronym "PSW" throughout paragraph and minor rewording for clarification.
97	S9.2.1.2, Detailed System Description, 6th para., first five sents.	Revised the requirements for the conceptual cooling tower description for consistency with design from" "The AHS provided for each PSWS train is a separate, multi-celled mechanical draft cooling tower with 50% of the cell fans supplied by one of the redundant electrical buses. During a LOPP, the fans are powered from the two Nonsafety-Related standby diesel-generators. The adjustable-speed, reversible motor fan units can be controlled for cold weather conditions to prevent freezing in the basin. A full flow bypass is provided to return water directly to the PSWS basin to allow ease of cold weather startup. The mechanical and electrical isolation of the cooling towers allows maintenance, including complete disassembly, during full power operation." To "The AHS provided for each PSWS train is a separate, multi-celled, 100% capacity mechanical draft cooling tower, with the fans in the tower from each train supplied by one of the two redundant electrical buses. During a LOPP, the fans are powered from the two, Nonsafety-Related standby diesel-generators. Each tower cell has an adjustable-speed, reversible motor fan unit that can be controlled for cold weather conditions to prevent freezing in the basin. A full flow bypass is provided to return water directly to the PSWS basin to allow ease of cold weather startup. Mechanical and electrical isolation allows maintenance on one tower, including complete disassembly, during full power operation."
98	S9.2.1.2, Detailed System Description, 6th para., last sent.	Added COL numbering "(9.2.1-1-A)" to provide reference to the COL Summary subsection.
99	S9.2.1.2, Detailed System Description, 7th para.	Added additional failure condition (passive component) in which the PSWS will function during LOPP for consistency with design.
100	S9.2.1.2, Detailed System Description, 9th para.	Revised verb tense "The PSWS design permits detection and alarming in the MCR of any potential…" To "The PSWS design detects and alarms in the MCR any potential…"

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101	S9.2.1.2, Detailed System Description, last para.	Added paragraph for clarification of utility requirements regarding items that are conceptual design.
102	S9.2.1.2, Operation, 2nd para.	Revised entire paragraph for clarification of operation to provide a more accurate and concise description from: "During normal power operation, two of the four 50% capacity PSWS pumpsare in operation to pump water from the plant service water basin through the PSWS. Heat removed from the RCCWS and TCCWS can be rejected to the main cooling tower or to the PSWS cooling tower." To: "During normal power operation, the cross-tie valves in the PSWS pump discharge header are open, allowing two of the four 50% capacity PSWS pumps to supply water to both PSWS trains. Heat removed from the RCCWS and TCCWS is rejected to the normal power heat sink or to the auxiliary heat sink."
103	S9.2.1.2, Operation, 3rd para.	Revised entire paragraph for clarification of operation from: "Operation of any two of the four PSWS pumps is sufficient for the design heat load removal in any normal operating mode with the exception of the normal cooldown mode, when three pumps are initially required." To "Operation of any two of the four PSWS pumps is sufficient for the design heat load removal in any normal operating mode. During normal and LOPP cooldown mode three pumps can be used for operational convenience to bring the plant to cold shutdown condition in 24 hours."
104	S9.2.1.4, 1st para., 1st sent.	Revised "cooling towers " to "heat rejection facilities" to be more inclusive for all designs.
105	S9.2.1.4, 1st para., 2nd sent.	Added "of construction" to end of sentence to clarify when integrity test is to be performed.
106	S9.2.1.4, 3rd para., last sent.	Revised last two sentences to encompass all tests and conditions from: "Testing is performed to simulate all normal modes of operation to the greatest extent practical. Transfer between normal and standby power source is included in the periodic tests." To: "Testing is performed to simulate the various modes of operation to the greatest extent practical. "
107	S9.2.1.4, last para.	Removed requirement for in-service testing of non-safety valves.

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108	S9.2.1.5, Instrumentation Requirements, 6th para., last sent.	Former last sentence of fourth paragraph within subsection 9.2.1.5 was relocated to this portion of S9.2.1.5 since it is more appropriate in this location.
109	S9.2.1.6	Reorganized subsection to provide for COL numbering.
110	S9.2.1.7	New reference added as appropriate for the subsection.
111	S9.2.1.7	Deleted reference to Chapter 1 Table providing detailed reference information. Non-technical change.
112	S9.2.2.1, 5th para, 2nd sent.	Deleted the words "Standard Plant" to avoid confusion. The whole RCCWS is part of the standard plant. Change made for clarification.
113	S9.2.2.2, Summary Description, 1st para.	Revised "Reactor Building" to "Nuclear Island". Change made for clarification.
114	S9.2.2.2, Summary Description, 2nd para.	Revised sentence to reflect that new diagrams were added to provided additional detail.
115	S9.2.2.2, Detailed System Description, 2nd para., 2nd sent.	Revised "The ESBWR Standard Plant" to "The nominal" to be consistent with Title of Table 9.2-3.
116	S9.2.2.2, Detailed System Description, 5th para., 2nd sent.	Revised sentence to be consistent with revised diagram 9.2-2a from: "Crosstie lines between each train are provided upstream and downstream of the heat exchangers; at the pump…" To: "Crosstie lines between each train are provided at the pump…"
117	S9.2.2.2, Detailed System Description, 4th from last para.	Revised sentence to be consistent with Table 9.2-4 from: "RCCWS pumps' and heat exchangers' sizes, capacities, and types are shown in Table 9.2-4." To: "Table 9.2-4 shows the characteristics of the RCCWS pumps and heat exchangers."

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118	S9.2.2.2, Detailed System Description, 3rd from last para.,	Revised paragraph to reflect actual design from: "Normally, the pumps in each train are powered from independent buses. During a LOPP, the pumps in either train can be powered from the Standby On Site AC Power System." To: "The pumps in each train are powered from separate buses. During a LOPP, the pumps are powered from the two nonsafety-related standby diesel-generators."
119	S9.2.2.2, System Operation, former 3rd para.	Removed paragraph as this relates to normal operation which is already explained. "If any of the redundant users requires cooling in addition to the primary users, additional pumps may need to be started." Change made for clarification.
120	S9.2.2.5, 3rd para., 1st sent.	Revised sentence for clarification from: "The RCCWS heat exchanger isolation valves open automatically upon start of the corresponding PSWS flow." To: "The RCCWS heat exchanger isolation valves operate in coordination with the corresponding PSWS flow."
121	S9.2.3.1, Power Generation Design Bases, 1st para., last sent.	Deleted former last sentence "The MWS equipment sizes are shown in Table 9.2-9." And added to S9.2.3.2 to aid in clarifying conceptual portions of MWS.
122	S9.2.3.2, 1st para., 2nd sent.	Revised "reference" to "conceptual" to aid in clarifying conceptual portions of MWS.
123	S9.2.3.2, 2nd para., 1st sent.	Deleted "In the reference design," from the fist sentence to aid in clarifying conceptual portions of MWS.
124	S9.2.3.2, 2nd para. deleted last sent.	The following sentence was removed since freeze protection is not part of ESBWR Standard Plant and is covered under DCD Subsection 1.2.2.12.16. "Based on local weather conditions, freeze protection is provided for the demineralized water storage tank and piping exposed to freezing conditions."
125	S9.2.3.2, 4th para.	Added "…and provides sizes of…" to sentence since this information was removed in S9.2.3.1 to aid in clarifying conceptual portions of MWS.

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126	S9.2.3.2, new 5th para.	Added paragraph to aid in clarifying conceptual portions of MWS.
127	S9.2.3.2, Demineralization Subsystem , 1st para. new 9th sent.	Added additional details of typical RO effluent process for demineralization to clarify that additional processing is expected.
128	S9.2.3.2, Demineralization Subsystem , new last para.	Added paragraph to aid in clarifying conceptual portions of MWS.
129	S9.2.3.4, 2nd sent.	Revised "operability" to "functionality" since MWS does not have technical specification requirements.
130	S9.2.3.7	Deleted reference to Chapter 1 Tables providing detailed reference information. Non-technical change.
131	S9.2.4, 1st para.	Moved previous 2nd para. to 1st para and revised from: "The COL applicant will provide the design of the potable and sanitary water system that provides sufficient supply and is designed to provide a minimum of 12.6 l/s (200 gpm) of potable water during peak demand periods." To: "The Potable and Sanitary Water Systems design is dependent on the site-specific water pathways. The system is designed to supply up to 12.6 l/s (200 gpm) of potable water during peak demand periods." to explain that Potable and Sanitary Water Systems DCD reference is site-specific, but needs to provide sufficient supply.
132	S9.2.4, 2nd para., new last sent.	Added sentence to ensure proper disposal of sanitation waste per RAI 9.2-8 S01.
133	S9.2.4, last para.	Replaced paragraph to ensure COL applicant will provide design with: "The above conceptual design information for the Potable and Sanitary Water Systems will be replaced with site-specific design information in the COLA FSAR."
134	9.2.5, entire subsection	Revised "IC/PCCS" to "IC/PCC pools" as it is the pools that interface with UHS.
135	9.2.5, entire subsection	Revised "Criterion" to "GDC".

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136	S9.2.5, 1st para., new last sentence	Added sentence to clarify how the UHS meets cooling requirements up to 72 hours. RAI 6.2-102 S01.
137	S9.2.5, 2nd para., 4th sentence	Revised sentence to provide the necessary envelope of the system that meets GDC 2. Per RAI 6.2-102 S01from: "The IC/PCCS meets GDC 2, by compliance with Regulatory Guide (RG) 1.27 Positions C.2 and C.3 by providing a highly reliable source of decay heat." To: "The IC/PCC pools with makeup from the Dryer/Separator Pool and Reactor Well meet GDC 2, by compliance with Regulatory Guide (RG) 1.27 Positions C.2 and C.3 by providing a highly reliable source of decay heat removal."
138	S9.2.5, 2nd para., last sentence	For clarification revised sentence from: "A separate reservoir is not required for the ESBWR Standard Plant" To: "A separate safety-related reservoir is not required".

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139	S9.2.5, re-wrote 4th para.	Revised paragraph to provide clarification to the aspects of UHS meeting GDC 44. RAI 6.2-102 S01 from: "The requirements of Criterion 44 for heat transfer to the ultimate heat sink are met. The ESBWR ultimate heat sink is the IC/PCC pool. In the event of a design basis accident, heat is transferred to the IC/PCC pool(s) through the Passive Containment Cooling System (PCCS). The water in the IC/PCC pool(s) is allowed to boil and the resulting steam is vented to the environment. The PCCS has no active components and requires no electrical motive power or control and instrumentation functions to perform its safety-related function of transferring heat to the ultimate heat sink. Therefore, no credible single failure can prevent the PCCS from performing its safety-related function." To: "The requirements of GDC 44 for heat transfer to the ultimate heat sink are met. The ESBWR ultimate heat sink is the IC/PCC pools. In the event of a design basis accident, heat is transferred to the IC/PCC pool(s) through either the Isolation Condenser System (ICS) or the Passive Containment Cooling System (PCCS). The water in the IC/PCC pool(s) is allowed to boil and the resulting steam is vented to the environment. The IC/PCC pools have no active components and require neither electrical motive power nor control and instrumentation functions to perform their safety-related function of transferring heat to the atmosphere. The connections to the Dryer/Separator Pool are required to ensure sufficient coolant for the initial 72 hours of an accident, however these connections open passively, are redundant, and require no motive power to operate. Therefore, no credible single failure can prevent the IC/PCC pools from performing their safety-related function."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
140	S9.2.5, 5th and 6th para.	Revised 5th and 6th paragraphs from: "The IC/PCC pool is located outside containment and is accessible for periodic inspections. During outages, the IC/PCC pool compartments can be drained to permit inspection of the condensers. PCCS piping inside containment can be inspected during outages. The features of the PCCS meet the requirements of Criterion 45. The design of the PCCS meets the requirements of Criterion 46. Redundancy and isolation are provided to allow periodic pressure testing of the PCCS. As discussed in the evaluation of Criterion 44, the PCCS contains no active components; therefore, functional testing is not necessary. The periodic inspections described in the response to Criterion 45 verify system integrity." To: "The IC/PCC pools are located outside containment and are accessible for periodic inspections. During outages, the IC/PCC pool subcompartments and expansion pools can be drained to permit inspection of the pool liner and components of the ICS and PCCS, including the Dryer/Separator pool connections. The features of the IC/PCC pools meet the requirements of GDC 45. The design of the IC/PCC pools meets the requirements of GDC 46. Functional testing to assure structural leaktight integrity is accomplished by maintaining pool level and monitoring for leaks during periodic walkdowns. As discussed in the evaluation of GDC 44, the IC/PCC pools require no active components aside from the connections to the Dryer/Separator pool that can be periodically inspected or tested during a refueling outage. These inspections and tests combined with periodic inspections described in the response to GDC 45 verify system integrity and operability as a whole." To provide clarification to the aspects of UHS meeting GDC 45 and 46. RAI 6.2-102 S01.
141	S9.2.5, 7th para., 3rd sent.	Revised sentence from: "Subsection 9.5.1.1 discusses the FPS as a backup emergency makeup water source through the FAPCS." TO "Subsection 9.5.1.1 discusses the FPS as a makeup water source through the FAPCS during accident events."

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142	S9.2.5, 7th para., 3rd to last sent.	Revised sentence for clarification of water requirements from: "However, during accident conditions, makeup water quality can meet fire protection water chemistry requirements." To: "However, during accident conditions, makeup water quality as a minimum meets fire protection system or station water system water chemistry requirements."
143	S9.2.5, 7th para., last two sent.	Added two sentences to specify COL requirement.
144	S9.2.5, 8th para., last sent.	Deleted last sentence.
145	S9.2.5.1	Revised COL items to remove details as they are specified in subsection text.
146	S9.2.5.2	Added new references.
147	S9.2.6.1, Safety Design Bases, new 3rd para.	Moved from Power Generation Design Bases.
148	S9.2.6.1, Safety Design Bases, 7th para.	Revised paragraph for readability purposes from: "The CS&TS meets GDC 60 by compliance with RG 1.143 Position C.1.2 for provisions provided to control the release of liquid effluents containing radioactive material." To: "The CS&TS meets GDC 60 by compliance with RG 1.143 Position C.1.2 for provisions to prevent uncontrolled releases of radioactive material."
149	S9.2.6.1, Safety Design Bases, last para.	Revised paragraph to accurately describe SBO requirements for CS&TS from: "The requirements of RG 1.155 are met by providing a design to shut down safely without reliance on offsite or diesel-generator-derived AC power for 72 hours, which exceeds station blackout requirements" To "The SBO requirements of RG 1.155 are met by providing a design to shut down safely without reliance on CS&TS"

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150	S9.2.6.1, Power Generation Design Bases, former 4th bullet	Deleted the following bullet as this provided unnecessary detail for design certification: "Provide one transfer pump sized to meet the requirements for filling the Condensate and Feedwater System in approximately 16 hours plus recirculation of a minimum of 25% of the pump capacity;"
151	S9.2.6.1, last bullet.	The former last bullet was moved from "Power Generation Design Bases" to 3rd paragraph of "Safety (10 CFR 50.2) Design Bases".
152	S9.2.6.2, System Description, 1st para, new 4th and 5th sent.	Added new sentences to specify that CS&TS can be used for ATWSS, but is not relied on in design basis event.
153	S9.2.6.2, System Description, 4th para, new 5th sent.	Added "These design features preclude accidental releases to the environment." In response to RAI 2.4-29 S01.
154	S9.2.6.4, 1st para, 2nd sent	Revised "operability" to "functionality" since CS&TS does not have technical specification requirements.
155	S9.2.6.7	Added new references.
156	S9.2.7, General	Replaced "loop" with "trains" as appropriate to be consistent with current design configuration.
157	S9.2.7, General	Revised various sentences with in appropriate use of "air conditioning units" to "air handling units" for proper component nomenclature.
158	S9.2.7.1, 3rd para., 1st sent.	Revised "CWS" to "NICWS" to be consistent with design per DCD Tier 2 Chapter 19A.
159	S9.2.7.2, 1st para., 2nd sent.	Added "Diesel Generator Building" to list of buildings where chiller removes heat to be consistent with Figure 9.2-3.
160	S9.2.7.2, 1st para., last sent.	Deleted "evaporators" to clarify the RCCW and TCCW fluid is not supplied to the evaporator of the chiller.
161	S9.2.7.2, new 2nd and 3rd para's.	These paragraphs were relocated to the subsection from "Detailed BOPCWS Description" as this information applies to both NI and BOP chilled water systems.
162	S9.2.7.2, 3rd para., deleted 4th sent.	Removed sentence as it provides detailed design not relevant to the DCD.

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163	S9.2.7.2, Detailed NICWS Description, 3rd bullet	Removed "and building supply air units" as there are no other air units beside the RB HVAC AHU's.
164	S9.2.7.2, Detailed NICWS Description, 6th bullet	Revised from "Instrument Air Compressors" to "Service Air Compressors" per engineering change.
165	S9.2.7.2, Detailed NICWS Description, deleted former 8th bullet	Removed "Diesel Generator Switchgear Rooms" as it is not part of the NICWS load.
166	S9.2.7.2, Detailed NICWS Description, 8th bullet	Added "Equipment" to clarify this is not the Control Room.
167	S9.2.7.2, Detailed NICWS Description, last para.	Revised paragraph to change "a dual centrifugal compressor chillers" to "centrifugal chillers" and "and/or by turning one of two compressors on or off." as these design details will be supplied by chiller manufacturer.
168	S9.2.7.2, Detailed BOPCWS Description, 1st para. after 1st set of bullets	Revised paragraph to change "a dual centrifugal compressor chillers" to "centrifugal chillers". Revised paragraphs to delete "and/or by turning one of two compressors on or off.", "through two flow control valves, one per pump/chiller set", and "by the air conditioning units", as these design details are supplied by chiller manufacturer.
169	S9.2.7.2, Detailed BOPCWS Description, former 2nd para. after 1st set of bullets	Deleted the following paragraph as it relates to design details that are not used. "To facilitate control of the BOPCWS, a closed system cooled by the BOPCWS, the Turbine Building Intermediate Chilled Water Subsystem, is installed. This subsystem is comprised of intermediate heat exchangers (plate type), intermediate circulating pumps and one surge tank. The Turbine Building Intermediate Chilled Water Subsystem provides chilled water to several Turbine Building HVAC fan coil units."
170	S9.2.7.2, Detailed BOPCWS Description, former last para.	Deleted the following as it relates to design details not employed. "The BOPCWS loop has an air separator in the chilled water recirculation pump suction with a vent to the surge tank."

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171	S9.2.7.2, System Operation, 3rd para.	Changed "operability" to "functionality" since chilled water system does not have technical specification requirements.
172	S9.2.7.2, System Operation, last bulleted list	The last paragraph which includes the last bulleted list was reorganized by topic for clarity from: "The following actions are required in case of loop isolation signal: • Closing cross-tie isolation valves; • Startup the chillers and pumps on standby; • Startup air conditioning units of NICWS scope; • Startup the second fans in the Drywell Cooling System; The following events require the automatic loop isolation signal; • Chilled water leakage exceeding makeup capacity; system leakages are detected by low level signals in surge tanks; • Loss of Preferred Power (LOPP). LOPP signal generates isolation between NICWS loops; and • During LOPP, the NICWS is automatically powered from two Nonsafety-Related on-site diesel generators To: "The following actions are required in case of a train isolation signal: • Closing cross-tie isolation valves; • Startup the chillers and pumps on standby; • Startup air handling units of NICWS scope; • Startup the second fans in the Drywell Cooling System; The following events require the automatic train isolation signal; • Low level signal in surge tanks (Chilled water leakage exceeding makeup capacity); • Loss of Preferred Power (LOPP) During LOPP, the NICWS is automatically powered from two nonsafety-related on-site diesel generators.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
173	S9.2.7.4, 3rd para., 1st sent.	Deleted "The chillers are tested in accordance with American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 30 (Methods of Testing for Rating Liquid Chilling Packages)." to allow flexibility in the design of chillers.
174	S9.2.7.4, 4th para., former 2nd sent.	Deleted unnecessary detail, "Such leak test connections are isolatable by two valves in series."
175	S9.2.7.4, last para., last sent.	Revised last sentence to relate requirement as part of system design from: "The chilled water is not expected to become radioactive." To: "System design ensures that the chilled water does not become radioactive during normal operation"
176	S9.2.7.5, 3rd para., last sent.	Added "and flow" for additional requirements.
177	S9.2.7.5, 3rd from last para.	To provide broader conditions when isolation is necessary, revised "LOCA signal" to "containment isolation signal".
178	S9.2.8.1, Design Bases, deleted 3rd para.	Removed paragraph concerning RTNSS requirements. TCCWS is not RTNSS per Chapter 19A per RAI 9.2-12 S01.
179	S9.2.8.1, Design Bases, modified 4th para.	Deleted sentence pertaining to meeting the intent of GDC 2 as it pertains to Regulatory Guide 1.29 position C.1 per RAI 9.2-12 S01.
180	S9.2.8.1, Design Bases, deleted 5th para.	Removed paragraph pertaining to GDC 2 as it pertains to Postion C.I and GDC's 44, 45, and 46. There is no requirement for TCCWS to meet these GDC's per RAI 9.2-7 S01.
181	S9.2.8.1, Power Generation Design Bases, last para., last sent.	Revised sentence for clarification from: "…contamination of either RCCWS or PSWS" To: "…contamination between TCCWS and the PSWS"

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182	S9.2.8.2, 2nd para.	Deleted paragraph: "A TCCWS sample is periodically taken for analysis to assure that the water quality meets chemical specifications." Sampling for TCCWS is provided in DCD subsection 9.3.2.
183	S9.2.8.2, last para., last sentence	Deleted "manually" since detail design will provide how corrosion inhibitor is added.
184	S9.2.8.4, Tests and Inspections, 2nd para., 2nd sent.	Revised word "operability" to "functionality", since TCCWS has no operability requirements.
185	S9.2.8.4, Tests and Inspections, 2nd para., last sent.	Moved "to verify the system condition" from end of sentence to beginning of sentence to clarify what the inspections are.
186	S9.2.9	Entire subsection deleted as the Hot Water System will not be part of the ESBWR design per engineering change.
187	S9.2.10, new 1st para.	Added new paragraph to explain that Station Water System DCD reference is conceptual.
188	S9.2.10.1, Power Generation Design Bases, 1st sent.	Revised sentence from: "The Station Water System is designed to provide a supply…" To: "The SWS provides a supply…"
189	S9.2.10.2, 2nd para., last sent	Revised "filters" to "strainers"
190	S9.2.10.2, 3rd para., 1st sent.	Revised sentence from: "The Pretreated Water Supply System filters and chemically pretreats water supplied to the Makeup System …" To: "The Pretreated Water Supply System chemically conditions and filters the water supplied to the Makeup System…"
191	S9.2.10.2, 3rd para., new 4th sent.	Added sentence to provide additional design requirements

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192	S9.2.10.2, 3rd para., 5th sent.	Revised sentence from: "The Pretreated Water Supply System consists of a water source, pumps, filters, chemical treatment equipment, a pretreated water storage tank…" To: "The Pretreated Water Supply System consists of a water source, pumps, strainers, filters, chemical injection equipment, a station water storage tank…"
193	S9.2.10.2, new last para. under Detailed System Description	Added to clarify what is the conceptual design information requirement of COL.
194	S9.2.10.5, 1st para., 2nd sent.	Deleted sentence, as there are no safety-related functions for Station Water System and no safety-related parameters to monitor.
195	S9.2.10.5, 2nd para.	Deleted paragraph as details of Station Water System is provided during site-specific design.
196	S9.2.10.6	Revised COL Information to "None" as this system is conceptual.
197	S9.2.10.7	Added Reference subsection.
198	T9.2-1	Revised Heat Loads under "Normal Operation" to be consistent with current design values.
199	T9.2-1	Added category "Single Train Failure" and respective heat load values to be consistent with current design requirements.
200	T9.2-1	Revised Heat Loads under "LOPP Operation" to be consistent with current design values.
201	T9.2-2	Removed parameters "Total Discharge Head" and "Motor Size" since these are not need for design certification.
202	T9.2-2	For "PSWS Cooling Towers and Basins" removed note "(Conceptual Design Only – Site Specific Portion of PSWS)" and added Note 2 to clarify what is conceptual.
203	T9.2-2	Revised "PSWS Cooling Towers and Basins" parameters "Heat Load Each", "Ambient Wet Bulb Temperature", and "Approach Temperature" to reflect current design values.

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204	T9.2-2	Added Notes 1-4 to provide additional design requirements/conditions of heat rejection facility.
205	T9.2-4	Deleted "Total Discharge Head" and "Motor Size". This information is not needed for design certification.
206	T9.2-6	Deleted "Post Accident Sampling Station flushing" per engineering change.
207	T9.2-7 and T9.2-8	Revised Parameter and the corresponding values of "Organic Impurities (equivalent ΔK (μS/cm)" to "Total Organic Carbon (TOC) (ppb)" to be consistent with standard terminology.
208	T9.2-11	Deleted "dual" from compressor description as this is part of detailed design and chiller mfg. will specifiy compressor type/arrangement.
209	T9.2-11	Deleted entire section concerning Turbine Building Intermediate Chilled Water Subsystem to be consistent with DCD text writeup. The need for this subsystem has not been determined.
210	T9.2-12	Deleted heat load row "Service air compressor intercoolers and aftercoolers" as RCCWS now supports the service air compressors due to design change.
211	T9.2-12	Under "System Parameters" added value for system flow rate to incorporate design details.
212	T9.2-12	Under "Pumps" revised Quantity from "3" to "3x50%" and added value for Capacity Each to incorporate design details.
213	T9.2-12	Under "Pumps" removed line for "Total Discharge Head" as this is not needed for system design certification.
214	T9.2-12	Under "Pumps" removed row for "Motor Size".
215	T9.2-12	Under "Heat Exchange" revised "Quantity" from "4" to "4x50%" to incorporate design details.
216	F92-1	Figure replaced with more detailed diagram.
217	F9.2-2	Figure replaced with more detailed diagrams 9.2-2a and 9.2-2b to add design detail.

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218	F9.2-3	Revised Figure to be consistent with DCD text by removing the Turbine Building Intermediate Chilled Water Subsystem. Also, MOV's revised to AOV's in several places, check valves eliminated and some component descriptions.
219	F9.2-4	Figure revised to remove cooling load for Service Air Compressors per engineering design change. Added redundant vacuum pump coolers and iso-phase bus cooling units.
220	Acronym List	Added "BOPCWS" since this acronym is defined in this Subsection of the DCD.
221		
222	S9.3.1, 1st para. 3rd sent.	Revised sentence to reflect change in response to RAI 9.4-7 from: "The Containment Inerting System and the HPNSS are described in Subsections 9.4.9 and 9.3.8, respectively." To: "The Containment Inerting System is described in Subsection 6.2.5.2 and the HPNSS is described in Subsection 9.3.8."
223	S9.3.1, 1st para. last sent	Added new last sentence to clarify the limit of expected functionality for the compressed gas systems: "Compressed air operated components having safety-related or Regulatory Treatment of Non-Safety Systems (RTNSS) required functions, either have safety-related accumulators or are fail-safe and do not rely on any of the compressed air systems to perform these functions."
224	S9.3.2.1, "Safety (10 CFR 50.2) Design Bases", 1st para., last sent.	Revised sentence for clarity from: "Relative to the Process Sampling System (PSS), this subsection addresses applicable requirements of General Design Criteria as are discussed in Standard Review Plan Section 9.3.2.II." To: "This subsection addresses applicable requirements of General Design Criteria relative to PSS as discussed in Standard Review Plan Section 9.3.2.II."

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225	S9.3.2.1, "Safety (10 CFR 50.2) Design Bases", 1st bullet	Changed invalid reference from: "10 CFR 20.20 & 20.1101(b)" To: "10 CFR 20 & 20.1101(b)"
226	S9.3.2.1, Power Generation Bases, 1st para., 1st sent.	Added "and gaseous" as PSS samples gases as well as liquids.
227	S9.3.2.2, Summary Description, last para., new last sent.	Added sentence to clearly identify COL requirements.
228	S9.3.2.2, Provisions for Obtaining Representative Samples, 5th para.	Added "plateout" as heat tracing prevents this mechanism from occurring.
229	S9.3.2.2, "Turbine Building Sample Station", new last para.	Added new paragraph "A separate sample panel is provided for conditioning and anaylsis of Main Steam system samples."
230	S9.3.2.2, "Radwaste Building Sample Station" 1st para.	Deleted "Fume hoods and ventilation exhausts are provided for grab samples as necessary." As fume hoods are required in more than just Radwaste Building Sample station.
231	S9.3.2.2, "Local Grab Sampling Stations", new bullets.	Added new bullets: Makeup Water System Condensate Storage and Transfer System Equipment Floor Drain System
232	S9.3.2.4	Revised "operability" to "functionality".
233	S9.3.2.6	Added COL numbering.
234	S9.3.3.2, System Description, 7th para.	Revised paragraph to replace "shall".
235	S9.3.3.2, System Operation, 1st sent.	Reworded sentence structure for clarity.
236	S9.3.3.3, new 2nd and 3rd para.	Paragraphs added to provide additional details and requirements for containment isolation functions.

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237	S9.3.3.4, 2nd para., last sent.	Revised sentence to remove the requirements of testing of this activity when monitoring is appropriate from "The EFDS components are tested periodically by normal operation of the equipment." To: "The EFDS functionality is demonstrated by continuous use during normal plant operation."
238	S9.3.3.5, Last para., new 2nd sent.	Added new sentence in order to reference where the requirements for leak detection are specified: "This function is provided by the Leak Detection and Isolation System as described in Subsection 5.2.5."
239	S9.3.3.7, new reference 9.3.3-1	Added new reference 9.3.3-1 "NRC Regulatory Guide 1.29, "Seismic Design Classification".
240	S9.3.5.1, 1st para., 1st sent.	Changed "," to ";".
241	S9.3.5.1, 4th para.	Separated paragraph into two sentences.
242	S9.3.5.1, 6th para., 1st sent.	Added "by".
243	S9.3.5.1, 6th para., 2nd sent.	Changed "capable of being" to "can be".
244	S9.3.5.2, 2nd para., 4th sent.	Rewritten for clarity. No technical change.
245	S9.3.5.2, 3rd para.	Changed "systems" to "interfaces". To make consistent with Table 9.3-4. Also, combined this paragraph with the previous.
246	S9.3.5.2, 4th para.	Revised paragraph to clarify the boundaries on the nitrogen subsystem. This is consistent with design and is not new information. Also, added information from the 6th paragraph of 9.3.5.2.
247	S9.3.5.2, 5th para.	Added information taken from the 6th paragraph of 9.3.5.2. Also, specified that the RBHVAC controls room conditions for clarity. This is consistent with the design and is not new information.
248	S9.3.5.2, 6th para.	Removed paragraph and placed information in paragraphs 4 and 5 of 9.3.5.2

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249	S9.3.5.2, 7th para.	Added information regarding the core bypass spargers for clarity. This is consistent with the design and is not new information.
250	S9.3.5.2, 8th para., 2nd sent.	Added "During an injection" and "in the accumulators" and "of the boron solution" for clarity.
251	S9.3.5.2, 9th para., 2nd & 3rd sent.	Moved sentences to the 10th paragraph of 9.3.5.2.
252	S9.3.5.2, 10th para., 1st sent.	Added "and key locks". Additional information that is consistent with DCD Subsection 7.4.1.2.
253	S9.3.5.2, 11th para., 2nd sent.	Rewritten for clarity. No technical change.
254	S9.3.5.2, 12th para.	Rewritten for clarity. No technical change.
255	S9.3.5.2, 13th para., 3rd sent.	Changed sentence due to DCD Section 7.8 from: "Average Power Range Monitor (APRM)" To: "Startup Range Neutron Monitor (SRNM)".
256	S9.3.5.2, 14th para., 1st sent.	Rewritten for clarity and added ARI as an ATWS mitigation function. This is consistent with DCD Section 7.8 and is not new information.
257	S9.3.5.2, 14th para., 2nd sent.	Added detail regarding manual actuation of SLC, which is supported by DCD Section 7.8.
258	S9.3.5.2, 15th para.	Revised to clarify that the initial injection occurs against elevated vessel pressure and as the vessel pressure lowers, more solution is allowed to enter from the accumulators.
259	S9.3.5.2, 16th para.	Added detail to discuss the operation of the vent valves. This is consistent with the design and is not new information.
260	S9.3.5.3, 1st para.	First sentence was rewritten for clarity. No technical change. Deleted last sentence because information is not relevant to this subsection. Replaced with a new sentence to discuss LOCA. This is consistent with the design and is not new information.

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261	S9.3.5.3, 2nd para., 1st sent.	Rewritten for clarity.
262	S9.3.5.3, 4th para.	Moved Subsection 9.3.5.3, 6th paragraph to here.
263	S9.3.5.3, 5th para., 5th sent.	Added the sentence: "This conservative approach results in a concentration of approximately 1100 ppm of natural boron to be injected into the reactor core to achieve cold shutdown." Additional detail for clarity. This is consistent with the design and is not new information.
264	S9.3.5.3, 5th para., 6th sent.	Added final sentence to discuss the hot shutdown ppm due to less water volume. Additional detail for clarity. This is consistent with the design and is not new information.
265	S9.3.5.3, 7th para., 4th sent.	Changed "of the injection" to "from the core bypass".
266	S9.3.5.3, 10th para., 1st sent.	Changed sentence from: "The safety functions of the SLC system are powered from the Class 120 VAC electrical systems." To: "The safe shutdown functions of the SLC system are powered from the Safety-Related 120 VAC electrical systems through the four divisions of Q-DCIS." Additional details added due to RAI 9.3-36.
267	S9.3.5.5, 13th para., Criterion 26	Changed "represents" to "provides".
268	S9.3.5.5, 13th para., Criterion 27	Changed "could" to "can".
269	9.3.5.3, 14th para., SRP Branch Technical Positions	Changed " inside" to "in" and changed "presented" to "discussed".
270	S9.3.5.4	"Testing and Inspection Requirements" subsection, which was originally part of Subsection 9.3.5.3, has been separated and is now titled Subsection 9.3.5.4. "Instrumentation Requirements" subsection, which was originally titled as Subsection 9.3.5.4 has been changed to Subsection 9.3.5.5. The remaining subsections have been renumbered.

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271	S9.3.5.4, 1st para., 2nd sent.	Rewritten for clarity.
272	S9.3.5.4, 5th para., 1st sent.	Rewritten for clarity.
273	S9.3.5.4, 5th para., 3rd and 8th sent.	Changed "end of life" to "end-of-life". Changed "8" to "eight".
274	S9.3.5.5, 3rd para., 8th sent.	Added sentence: "Temperature of the SLC system rooms is monitored and alarmed." Additional detail for clarity. This is consistent with the design and is not new information.
275	S9.3.6.1, Power Generation Design Bases, 3rd para.	This paragraph was relocated from S9.3.6.2 into S9.3.6.1 as paragraph relates to design.
276	S9.3.6, General Comment	Many small changes to Subsection 9.3.6 to reflect the new arrangement of the IAS as shown in Figure 9.3-3 per engineering change. All changes are a result of this, unless otherwise noted.
277	S9.3.6.2, System Description, 1st para, 1st sent.	Revised sentence from: "The IAS provides…" To: "The IAS makes use of the Service Air System (SAS) compressors to provide…"

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278	S9.3.6.2, System Description, 4th and 5th paras.	Revised paragraphs from: "The IAS is automatically switched to the standby AC power source during a LOPP and is backed up by the Service Air System (SAS) upon low system pressure.The instrument air compressor units are powered from separate electrical buses. Each of the compressors takes suction through an air intake filter/silencer. Each compressor train is equipped with an after-cooler. An air receiver services each air compressor. Air, leaving the air receivers, passes through one of two parallel instrument air filtering and drying trains, and a receiver/surge tank before being distributed to the instrument air piping system. Each train is equipped with redundant prefilters, a regenerative desiccant dryer, and redundant after-filter. Both air compressor trains are connected to a common header, which distributes to the Radwaste Building, Turbine Building and Reactor Building." To: "The IAS is automatically switched to the standby AC power source during a LOPP and is backed up by the Service Air System receivers during a loss of all compressors upon receipt of a low system pressure signal. The SAS compressor units are powered from plant investment protection (PIP) buses A or B. The third compressor is provided the ability to be powered from either PIP bus. The SAS compressors provides compressed air to the IAS via two (2) air receivers. Air, leaving the SAS air receivers, passes through one of two parallel instrument air filtering and drying trains, and an IAS receiver tank before being distributed to the instrument air piping system. Each Instrument Air train is equipped with an air receiver, redundant prefilters, a regenerative desiccant dryer, and redundant after-filter. Both Instrument Air trains are connected to a common header, which distributes to the Radwaste Building, Turbine Building, Fuel Building, Control Building and Reactor Building."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
279	S9.3.6.3, 1st para.	Revised paragraph from: "The IAS is not a safety-related system, however, the IAS incorporates features that ensure its operation over the full range of normal plant operations. If IAS pressure falls below a desired limit, air from the Service Air System (SAS) is automatically added from a tie line. Air receivers and a receiver/surge tank are provided to maintain air supply pressure if all of the IAS and SAS compressors fail. Pneumatically operated devices are designed to fail-safe and do not require continuous air supply under emergency or abnormal conditions." To: "The IAS is not a safety-related system, however, the IAS incorporates features that ensure its operation over the full range of normal plant operations. If IAS pressure falls below a desired limit, air to the SAS loads are automatically isolated. Four air receivers are provided to maintain air supply pressure if all SAS compressors fail."
280	S9.3.6.4, 1st para., 1st sent.	Revised the word "operability" to "functionality" as this is a non-safety system with no tech. spec. requirements.
281	S9.3.6.4, last para.	Revised from: "Additional testing details of IAS are described in Subsection 14.2.8.1.19." To: "Additional testing details of IAS, including pre-operational testing in accordance with RG 1.68.3, are described in Subsection 14.2.8.1.19."
282	S9.3.6.7	Added new references as appropriate to the IAS.
283	S9.3.7, General Comment	Many changes to Subsection 9.3.7 to reflect the new arrangement of the SAS as shown in Figure 9.3-3 per engineering design change. All changes are a result of this, unless otherwise noted.
284	S9.3.7.1, Safety Design Bases, 2nd para., 1st sent.	Deleted "is a Nonsafety-Related system" since it repeats what was stated in 1st paragraph.
285	S9.3.7.1, Power Generation Design Bases, new para's 1 and 2	Added new paragraphs per engineering change: The SAS is designed to provide oil-free, filtered, compressed air to the IAS and for general plant use via service air outlets. The SAS receivers provide a backup air supply to the IAS receivers.

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286	S9.3.7.1, Power Generation Design Bases, last para.	This paragraph was relocated from S9.3.7.2 into S9.3.7.1 for as this item is design bases related.
287	S9.3.7.2, System Description, entire subsection	Many changes to reflect new arrangement of the SAS as shown in Figure 9.3-3 per engineering design change. Removed all references to Breathing Air portions of SAS since this system was eliminated. Breathing Air will be provided by portable equipment per engineering design change.
288	S9.3.7.2, System Description, 7th para.	Revised paragraph from: "Each of the compressors takes suction through an air intake filter/silencer. Each compressor train is equipped with an inter-cooler, after-cooler, moisture separator, and air receiver. Both air compressor trains are connected to a common header that distributes air to the breathing air purifiers, Radwaste Building, Turbine Building, and Reactor Building,. The SAS also serves as a backup to the IAS" To: "Each of the compressors takes suction through an air intake filter/silencer. Each compressor train is equipped with an inter-cooler, after-cooler, and moisture separator. There are two receivers in parallel to provide surge volume and pressure spike dampening. Both air trains are connected to a common header that distributes air to the Electrical Building, Radwaste Building, Turbine Building, Reactor Building, Control Building, Fuel Building, Hot Machine Shop, Cold Machine Shop, and Instrument Air System. The SAS receivers also serve as a backup to the IAS upon loss of air system pressure due to a loss of all compressors"
289	S9.3.7.2, System Description, entire subsection, 3rd from last para.	Revised paragraph in order to provide better description of electrical arrangement due to design change of the SAS from: "The service air compressor units are powered from separate electrical buses of the permanent Nonsafety-Related power distribution system." To: "Two of the service air compressor units are powered from separate PIP buses and the third compressor is powered from either of the PIP buses."
290	S9.3.7.4	Removed Inspection and Testing for breathing air purifiers and associated components per engineering change.
291	S9.3.7.7	Added references as appropriate for Service Air System Subsection 9.3.7.

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292	S9.3.8.1, Power Generation Design Basis, 1st para., 1st sent.	Revised to correct system description and provide flexibility in site-specific details from: "The HPNSS distributes clean, dry, oil-free nitrogen gas…" To: "The HPNSS distributes nitrogen gas…"
293	S9.3.8.1, Power Generation Design Basis, new next to last para.	Added the following to incorporate design details for the system: "No single control or instrumentation failure will prevent the ADS SRV's or IC Isolation Valves (ICIV) from performing their required safety-related function as required. No failure in one branch of the HPNSS prevents the other branch of the HPNSS from performing its function."
294	S9.3.8.1, Power Generation Design Basis, new last para.	Added the following sentence as this requirement is specified in DCD 15A.3.8.2: "No single failure in the High Pressure Nitrogen Supply System nitrogen system can lead to an inadvertant opening of an SRV."
295	S9.3.8.2, Summary Description, 1st para., 2nd sent.	Revised to correct system description and provide flexibility in site-specific details from "The HPNSS also provides bottled high-pressure nitrogen gas that is clean, dry, and oil-free to the NBS…" to "The HPNSS also provides bottled high-pressure nitrogen gas to the NBS…"
296	S9.3.8.2, 6th para., 2nd sent.	Revised sentence from: "Each bottle-rack train consists of 8 or more bottles,…" To: "Each bottle-rack train consists of eight or more bottles,…".
297	S9.3.8.2, 7th para.	Revised paragraph in order to specify the design requirements for safety-related portion from: "The piping and valves of the HPNSS are designed to meet ASME Piping Code B31.1. Its safety class is Nonsafety-Related. " To: "The nonsafety-related piping and valves of the HPNSS are designed to meet ASME Piping Code B31.1 The safety-related portions of valves and piping that provide containment isolation functions are designed to meet ASME Section III, Division 1, NC requirements for Class 2 components."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
298	S9.3.8.4, 2nd para., 1st sent.	Deleted sentence that imposes non-applicable air requirements for nitrogen in order to clarify system requirements.
299	S9.3.8.7, References	Deleted Reference 9.3.8-1 due to change in system requirements.
300	Acronym List	Corrected typo for "ICIV"
301	S9.3.9, entire subsection	Hydrogen Water Chemistry (HWC) is not part of the standard plant. Unless otherwise stated, all changes herein are provided to clarify the conceptual design, the COL Applicant expectations, and provide a better organized Subsection to the DCD.
302	S9.3.9.1, Safety Design Bases, 1st para.	Revised paragraph to delete redundancy unnecessary detail from: "The HWCS is Nonsafety-Related. Therefore, the HWCS has no safety design basis. However, it is required to be safe and reliable, consistent with the requirements for using hydrogen gas." To: "The HWCS is nonsafety-related. Therefore, the HWCS has no safety design basis. "
303	S9.3.9.1, Power Generation Design Basis, 1st para.	Revised former first two paragraphs from: "Provisions are made to permit installation of a system for adding hydrogen to the feedwater at the suction of the feedwater pumps. If experience shows it necessary, a hydrogen water injection system can be added later in plant life. The HWCS utilizes the guidelines in EPRI report "BWR Hydrogen Water Chemistry Guidelines"." To "Provisions are made to permit installation of a system for adding hydrogen into the feedwater at the suction of the feedwater pumps and oxygen into the offgas system. The HWCS utilizes the guidelines in EPRI report "BWR Hydrogen Water Chemistry Guidelines" (Reference 9.3.9-1)."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
304	S9.3.9.2, System Description, 1st para.	Revised paragraph from: "The HWCS, illustrated in Figure 9.3-5, is composed of hydrogen and oxygen supply systems to inject hydrogen in the feedwater and oxygen in the offgas and several monitoring systems to track the effectiveness of the HWCS. " To: "The conceptual design of the HWCS, illustrated in Figure 9.3-5, is composed of hydrogen and oxygen supply systems to inject hydrogen into the feedwater and oxygen into the offgas and includes several monitoring systems to track the effectiveness of the HWCS. The conceptual design of the HWCS will be replaced with site-specific design, if applicable."
305	S9.3.9.2, System Description, new 2nd para.	Added new paragraph "COL Applicant to determine if HWCS is to be implemented (9.3.9-1-A)."
306	S9.3.9.2, System Description, last para.	Revised paragraph from: "The hydrogen and oxygen demand requirements andsupply systems are site dependent and shall be defined by the COL Applicant/Holder at the time of deployment, if implemented. The hydrogen supply system may be integrated with the generator hydrogen supply system (as described in Subsection 10.2.2.2.8)." To: "The hydrogen and oxygen storage facility requirements and appropriate supply system will be provided by the COL Applicant if HWCS is selected to be installed (9.3.9-2-A). The hydrogen supply system may be integrated with the generator hydrogen supply system (as described in Subsection 10.2.2.2.8)."
307	S9.3.9.4, Inspection and Testing Requirements	Revised entire subsection from: "The HWCS, if necessary, can be installed at the connection points provided. The COL Applicant/Holder shall provide the inspection and testing requirements at the time of deployment." To: "The ESBWR Standard Plant design connections for an optional Hydrogen Water Chemistry System are tested and inspected with the feedwater and offgas piping. The HWCS is demonstrated functional by its use during normal operation. The system can be tested to ensure functionality based on manufacturer recommendations."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
308	S9.3.9.6, COL Information, 1st two para.	Revised entire subsection from: "COL Holder will determine Oxygen and Hydrogen demand requirements and supply system, if HWC is implemented. COL Holder will furnish necessary information Test and Inspection when vendor information becomes available. " To: "COL 9.3.9-1-A Implementation of Hydrogen Water Chemistry COL Applicant will determine if HWCS is to be implemented. COL 9.3.9-2 -A Hydrogen and Oxygen Storage and Supply The hydrogen and oxygen storage facility requirements and appropriate supply system will be provided by the COL Applicant if HWCS is selected to be installed." "COL Holder" revised to "COL Applicant" per RAI 9.3-37.
309	S9.3.10, entire subsection	Unless otherwise noted, all changes were made to clarify, correct or update DCD to match current design.
310	S9.3.10, entire subsection	Revised "oxygen concentration" to "dissolved oxygen concentration" through subsection to correct to specifically describe the chemistry parameter.
311	S9.3.10.1, Power Generation Design Basis, new 2nd para.	Added additional function for OIS when HWC is implemented "The OIS is also designed to inject oxygen into the offgas system when Hydrogen Water Chemistry is implemented, to ensure that excess hydrogen in the offgas stream is recombined."
312	S9.3.10.2, 1st para., last sent.	Revised "feedwater" to "feedwater lines".
313	S9.3.10.2, 2nd para., last two sent.	Revised sentences from "An operator can make changes in the oxygen injection rate in response to changes in the condensate / feedwater concentration. An automatic control system is not required because instantaneous changes in oxygen injection rate are not required." To: "An operator can make changes in the oxygen injection rate in response to changes in the dissolved oxygen concentration in the condensate and feedwater systems. An automatic control system is not required because short-term changes in oxygen injection rate are not required."
314	S9.3.10.2, new 3rd and 4th para.	Added paragraphs to provide additional design details for certification.

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315	S9.3.10.2, new 5th para	Added paragraph to identify COL requirement in DCD text to match the COL item in S9.3.10.6.
316	S9.3.10.4, 1st para.	Revised "operable" to "functional" and "operability" to "functionality" since this system has no Tech. Spec. requirements.
317	S9.3.10.6, 1st para.	Revised paragraph from: "The COL applicant shall define site storage requirements." To: "The COL applicant will provide a description of the oxygen storage facility."
318	S9.3.10.7	Added three new references as appropriate for subsection.
319	S9.3.11.1, 2nd para.	Replace 2nd paragraph with "The ESBWR Standard Plant design includes provisions for connecting an optional Zinc Injection System" to provide a concise basis for ZIS and to move details into S9.3.11.2
320	S9.3.11.2, 1st para.	Replaced paragraph to provide details of system.
321	S9.3.11.2, new 2nd para.	Added paragraph to identify COL requirement in DCD text to match the COL item in COL Information subsection.
322	S9.3.11.2, new last para.	Added COL to provide system description if it is determined to be needed.
323	S9.3.11.4, 1st para.	Replaced paragraph to provide accurate account of the expected tests and inspections.
324	S9.3.11.4, new last para.	Added paragraph to identify COL requirement in DCD text to match the COL item in COL Information subsection.

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325	S9.3.11.6, COL Information, 1st and 2nd para.	Revised COL subsection to provide numbering and the verbatim of COL item stated in DCD text for subsection 9.3.11. This change was also made based on the response to RAI 9.3-39 from: "The COL Applicant/Holder shall determine if a Zinc Injection System is required based on the site-specific water quality requirements. COL Applicant/Holder will furnish necessary information on System Description, Test and Inspection when vendor information becomes available." To: 9.3.11-1-A Determine Need for Zinc Injection System The COL Applicant shall determine if a Zinc Injection System is required to be implemented at startup based on plant configuration and material selection. 9.3.11-2-A Provide System Description for Zinc Injection System If a Zinc Injection system is to be installed, the COL Applicant shall include necessary information on System Description, Test and Inspection.
326	S9.3.12.1, 2nd para.	Revised paragraph for consistency with respect to Subsection 10.4.3 from: "…when the main steam or gland steam evaporator steam (refer to Subsection 10.4.3) are unavailable." To: "…when the main steam or gland seal steam (refer to Subsection 10.4.3) is unavailable."
327	S9.3.12.2, General Description, bullets	Added new bullet to be consistent with current design "The Feedwater System to provide hot water during plant startup".
328	S9.3.12.2, General Description, bullets	Deleted bullet to be consistent with current design "Main Condenser to deaerate the condensate in the hotwell during the startup of the plant".
329	S9.3.12.2, General Description, bullets	Deleted bullet "Hot water generator of the Hot Water System (if required)" per engineering change.
330	T9.3-1	Revised table to clarify what samples are grab or continuous. Also added sample requirement for Standby Liquid Control Main Condenser Offgas System.

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331	T9.3-2	Revised "Tanks or Sumps" to just "Sumps" since the term sump, includes tanks.
332	T9.3-3, 1st bullet	Rewritten for clarity. No technical change.
333	T9.3-3, 4th bullet	Rewritten for clarity. No technical change.
334	T9.3-3, 5th bullet	Added, "80 mm" to define the metric units.
335	T9.3-3, 7th bullet	Rewritten for clarity. No technical change.
336	T9.3-4, Title	Changed "Systems" to "Interfaces". "Interfaces" is a more appropriate term for the entries in the table.
337	T9.3-4, 1st bullet	Added, "Safety-Related". Deleted, "Power from the Class 1E" due to a DCD Revision 3 change to remove "Class 1E" and replace with "Safety-Related".
338	T9.3-4, 2nd bullet	Deleted "Initiation". No technical change.
339	T9.3-4, 3rd bullet	Rewritten for clarity. No technical change.
340	T9.3-4, 4th bullet	Deleted statement. No technical basis for this statement.
341	T9.3-5, 1st row	Added, "≤" to clarify the value is a maximum.
342	T9.3-5, 2nd row	Deleted "Approximate" and added "≥" to clarify that the value is a minimum. Also, replaced values due to updated analysis information. This is consistent with DCD Table 15.5-2.
343	T9.3-5, 3rd row	Changed the value to represent injection flowrate (instead of velocity) for both accumulators into the core bypass region. Deleted "Approximate" and added "≥" to clarify that the value is a minimum.
344	T9.3-5, 4th row	Changed the value to represent injection flowrate (instead of velocity) for both accumulators into the core bypass region. Deleted "Approximate" and added "≥" to clarify that the value is a minimum.
345	T9.3-5, 5th row	Deleted, "(per each train)" and added, "(both accumulators)". Updated value to represent both accumulators.

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346	T9.3-5, 7th row	Deleted entry and note (**) because the information is not an ATWS function parameter. The information has been relocated to DCD Subsection 9.3.5.3.
347	T9.3-6	Revised to remove air compressor pressure and temperature requirements.
348	T9.3-7	Revised to remove breathing air purifier requirements.
349	F9.3-1	Replaced figure with an updated version. Changes include: Accumulator pressure and level instrumentation symbols Added accumulator temperature instrumentation Addition of accumulator safety relief valve Addition of accumulator vent valve Mixing pump (class break change, additional valves, relocated pump discharge and suction valves) Removal of pipe specification. Addition of valves to test/vent line Added note for line sizes.
350	F9.3-1a	Replaced figure with an updated version. Changes include: Added note #6 for line sizes. Changed “Spargers in the Core Bypass Region” to “Core Bypass Spargers”.
351	F9.3-2	Deleted since system arrangement has been combined with SAS. See Figure 9.3-3.
352	F9.3-3	Revised title to add “and Instrument Air” per engineering change.
353	F9.3-3	Revised to reflect new system arrangement.

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354	T9.3-8	Revised to be consistent with current system design" - SRV and IC Isolation Valve accumulator recharging from "450 scfm" to "364 scfm". - Normal nitrogen supply from CIS "(Intermittent)" to "(Continuous)". - Bottle initial fill: from "24.92 MPa abs (3615 psia)" to "24.82 MPa abs (3600 psia)". Units from l/min to m^3/min.
355	F9.3-4	Revised continuation label from "CICS" to "CIS" which is the correct acronym for Containment Inerting System.
356	F9.3-5	Revised invalid system acronym form "CUW" to "RWCU" to be consistent with ESBWR Standard Plant.
357		
358	S9.4.1, entire subsection	Revised "AHU" or "air handling unit(s)" to "recirculation AHU" or "recirculation air handling unit(s)" as applicable to clarify the current design.
359	S9.4.1, entire subsection	Removed reference to Hot Water Heating from entire subsection by revising "heating coils" to "heating elements" or similar.
360	S9.4.1, 2nd para., 1st sent	Added "100%" to provide detail of the system design.
361	S9.4.1, 1st bullet, 1st para., 5th sent.	Revised sentence to reflect current design from: "Radiological protection is provided from a redundant set of safety-related Emergency Filter Units (EFU)." To: "Radiological protection is provided by two trains of Emergency Filter Units (EFU)."
362	S9.4.1, 1st bullet, 2nd para., 4th sent.	Added "a division of" to provide additional detail of the design.
363	S9.4.1, 2nd bullet, 1st para., 3rd sent.	Added "internal filters" to provide additional system design detail.
364	S9.4.1.1, Safety Design Bases, 5th bullet	Added "including HEPA and carbon filters" and "system" to clarify what is included with EFU's.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
365	S9.4.1.1, Safety Design Bases, 6th bullet	Revised sentence for clarity from: "Ductwork from the CRHA boundary envelope up to the CRHA isolation dampers and the CRHA isolation dampers; and" To: "Ductwork from the CRHA boundary envelope up to and including the CRHA isolation dampers"
366	S9.4.1.1, Safety Design Bases, 7th bullet	Added new bullet to provide necessary safety design bases for the system concerning tornado dampers.
367	S9.4.1.1, Safety Design Bases, former 7th para.	Deleted "A redundant set of safety-related Emergency Filter Units (EFU) including HEPA and carbon filters serves the CRHA envelope." As it is now captured in 2nd to last paragraph of S9.4.1.1 Safety Design Bases.
368	S9.4.1.1, Safety Design Bases, 3rd from last para.	Added the following description to provide details of powering EFU fan system: "For longer-term operation, from after 72 hrs out to 7 days, a small portable AC power generator that is kept on the plant site can power the EFU fan system"
369	S9.4.1.1, Safety Design Bases, 2nd from last para.	In order to provide the necessary details of the system for certification, the following statements were provided: "Two trains of safety-related EFUs, including HEPA and Carbon filters, serve the CRHA envelop. Redundant fans are provided for each EFU to allow continued operability during maintenance of electrical power supplies."
370	S9.4.1.1, Safety Design Bases, last para., 4th sent.	Clarification of the design is provided by revising the sentence from: "These nonsafety-related MCR DCIS electrical loads automatically de-energize should the redundant CRHA AHUs not be available." To: "These nonsafety-related MCR DCIS electrical loads automatically de-energize after two hours or should the redundant CRHA recirculation AHUs become unavailable."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
371	S9.4.1.2, Power Generation Design Basis, Bullets 13 and former 14	Combined bullets from: "Smoke control in accordance with NFPA 92A guidelines is provided for unsprinklered areas where the FHA identifies a potential for heavy smoke or heat conditions. Additionally, safe egress and safe smoke refuge areas during a fire incident are provided in accordance with NFPA 92A guidelines for building occupants and the fire brigade. NFPA 101 guidelines are utilized for the design and labeling of safe egress routes. Smoke removal meets NFPA 804 with exception to NFPA 804 Sections 8.4.3 (3) and 8.4.3.2. Automatic sprinkler protection is provided for the high density cable tunnels, fuel oil tank rooms, diesel-generator rooms and a significant portion of the turbine building to limit heat and smoke generation. Manual smoke control is provided in accordance with NFPA 804 guidelines for all plant areas by manual actions of the site fire brigade." To: "Smoke control and removal functions are in accordance with NFPA guidelines in Section 9.5 Fire Protection, Subsection 9.5.1.11, Building Ventilation."
372	S9.4.1.2, Detailed System Description, 3rd para., 1st sent.	Revised for clarity from: "…if required, by the existence of a LOCA…" To: "…if required, following the occurrence of a LOCA…"
373	S9.4.1.2, Detailed System Description, 8th para., 3nd sent.	In order to broaden the requirements for EFU's in this subsection the following was revised from: "…emergency and are able…" To: "…emergency or an SBO and are able…"
374	S9.4.1.2, System Operation, 1st para., new 6th sent.	Added the following to describe the purpose of portable AC generator: "For longer term operation, from after 72 hrs out to 7 days, a small portable AC power generator that is kept on the plant site can power the EFU fan system."

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375	S9.4.1.2, System Operation, Normal Operating Mode, 1st Bullet	Revised to reflect current system design from: "Each subsystem of the CBVS is fully operable with one train of its redundant equipment inoperable." To: "Each subsystem of the CBVS is fully operational with one train of its redundant equipment on standby."
376	S9.4.1.2, System Operation, Normal Operating Mode, 2nd Bullet	Added "outside" to specify which AHU operates.
377	S9.4.1.2, System Operation, 11th Bullet, last sent.	Revised sentence to reflect current design from: "…CRHAVS restroom exhaust fan is stopped manually." To: "…CRHAVS restroom exhaust fan is stopped automatically when the close signal reaches the exhaust damper."
378	S9.4.1.2, System Operation, Radiological Event Operation, 1st Bullet, 1st sent.	Revised sentence from: "When AC power is available, an outside air high radiation signal automatically starts an EFU fan and opens the normally closed outside air inlet dampers to the EFU." To: "When AC power is available, an outside air high radiation signal automatically starts one of the EFU fan and opens the isolation dampers down stream from the EFU."
379	S9.4.1.2, System Operation, Radiological Event Operation, 1st Bullet, last sent.	Revised sentence from: "Also, due to the CRHA isolation, the restroom fan is manually stopped." To: "Also, due to the CRHA isolation, the restroom fan is automatically stopped when the close signal reaches the exhaust dampers"
380	S9.4.1.4, Testing and Inspection Requirements, 3rd para., 1st sent.	Revised sentence from: "…ASME AG-1 Code On Nuclear Air And Gas Treatment and/or ASME N510, Testing of Nuclear Air Treatment Systems,…" To: "…ASME AG-1 Code On Nuclear Air And Gas Treatment…" since ASME AG-1 is sufficiently comprehensive.

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381	S9.4.2.1, Power Generation Design Bases, 2nd bullet	The slightly negative pressure ranges were changed from an upper limit of -0.75" wg to an upper limit of –124Pa (.50" wg) to incorporate current design, per RAI 9.4-11 S02 to be submitted.
382	S9.4.2.1, Power Generation Design Bases, 6th & 7th bullets	Revised the two bullets regarding smoke control and removal to one bullet stating: "Smoke control and removal functions are in accordance with the applicable NFPA guidelines specified in Section 9.5 Fire Protection, Subsection 9.5.1.11 Building Ventilation." This points to the portion of the DCD where the smoke control and removal requirements are discussed.
383	S9.4.2.1, Power Generation Design Bases, 13th bullet	Removed "and heating" for consistency with current design per engineering change.
384	S9.4.2.1, Power Generation Design Bases, new bullet	Added the following to incorporate design details: "Provides cooling for FAPCS pump motors, rooms, and/or electrical/instrument panels designed to limit the room/equipment's environmental qualification temperature when the building is isolated."
385	S9.4.2.2, FBGAVS, 1st para.	Added "simplified" to be consistent with Figure title.
386	S9.4.2.2, FBGAVS, 2nd para., 2nd sent.	Removed reference to heating coils and replaced it with heating elements to incorporate design details.
387	S9.4.2.2, FBGAVS, 2nd para., 2nd to last sent.	Revised sentence to be consistent with engineering change from: "The hot water and chilled water systems provide heating and cooling water for the FBGAVS AHUs." To: "The chilled water system provides cooling water for the FBGAVS AHUs."
388	S9.4.2.2, FBFPVS, 2nd para., 2nd sent.	Removed reference to heating coils and replaced it with heating elements to incorporate design details.

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389	S9.4.2.2, FBFPVS, 2nd para., 2nd to last sent.	Revised sentence to be consistent with engineering change from: "The hot water and chilled water systems provide heating and cooling water for the FBFPVS AHUs." To: "The chilled water system provides cooling water for the FBFPVS AHUs.
390	S9.4.2.2, FBFPVS, last para., new last sent.	Added the following to incorporate design details: "Cooling is provided for FAPCS pump motors, rooms, and/or electrical/instrument panels designed to limit the room/equipment's environmental qualification temperature when the building is isolated."
391	S9.4.3, entire subsection	Removed reference to Hot Water Heating from entire subsection per engineering change.
392	S9.4.3, entire subsection	Revised "filtration train(s)" , "filteration" , "HEPA filters" To: "air filteration units (AFU's) throughout entire subsection.
393	S9.4.3, 1st para., 1st sent.	Added text: "is nonsafety-related and…."
394	S9.4.3, 2nd para., 1st sent.	Second paragraph of 9.4.3 changed to "Regarding the ESBWR nonsafety-related RWVS…"
395	S9.4.3.1	Subsection 9.4.3.1 was subdivided to address the "Safety Design Bases" and "Power Generation Design Bases".
396	S9.4.3.1, RWCRVS and RWGAVS, 2nd bullet.	Added Design pressure values into write-up and clarified the allowable range of 0-.50" wg, per RAI 9.4-11 S02. Also, added positive pressure and negative pressure design values in both English and SI units.
397	S9.4.3.1, RWGAVS, Bullets 8 and 9	Revise the two bullets regarding smoke control and removal to one bullet stating "Smoke control and removal functions are in accordance with the applicable NFPA guidelines specified in Section 9.5 Fire Protection, Subsection 9.5.1.11 Building Ventilation." This points to the portion of the DCD where the smoke control and removal requirements are discussed."
398	S9.4.3.2; System Description, RWCRVS; 2nd paragraph, 1st sent.	Changed "100% capacity" to "two 50% capacity exhaust fans" to clarify the current design.

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399	S9.4.3.2, Summary Descripion, Under RWGAVS, 1st para., 3rd sent.	Deleted "…the inlet and outlet of…."
400	S9.4.3.2, System Operations, deleted 2nd para.	Deleted former 2nd paragraph as this information is included in last paragraph of S9.4.3.2.
401	S9.4.3.5, 4th para, last sentence	Added new last sentence to clarify the current design: "The RWCRVS maintains a slightly positive pressure with respect to the RW general areas."
402	S9.4.4, entire subsection	Unless otherwise noted, all changes in Subsection 9.4.4 are provided to either update, clarify or correct the DCD to reflect the current design.
403	S9.4.4	Removed reference to Hot Water Heating from entire subsection per engineering change.
404	S9.4.4 2nd para 3rd bullet, 3rd sent.	Deleted the following text: "The TBVS exhaust system (TBE) filtration units contain medium and high efficiency filters, which remove particulate from the air prior to discharge to the plant vent stack. This system uses high efficiency filters in the TB, which is generally a low contamination area, which meets the intent of GDC 60." AND added: "Exhaust air from low potential contamination areas is exhausted to the plant vent stack, where it is monitored for radioactive contamination. Exhaust air from high potential contamination areas is filtered using High Efficiency Particulate Air (HEPA) filters before being exhausted to the plant vent stack." per RAI 9.4-21.
405	S9.4.4 2nd para 3rd bullet, 5th sent.	Replaced "high efficiency" with "HEPA" and Replaced "assure" with "assist in ensuring".
406	S9.4.4, 3rd bullet, 6th sent.	Added, "high potential contaminated exhaust" prior to subsystems and deleted "high efficiency and" prior to HEPA filtration units for local cleanup…"

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
407	S9.4.4.1, Power Generation Design Basis, Bullets 8 and 9	Revised the two bullets regarding smoke control and removal to one bullet stating: "Smoke control and removal functions are in accordance with the applicable NFPA standards specified in Section 9.5 Fire Protection, Subsection 9.5.1.11 Building Ventilation." This is done to point to the applicable Fire Protection subsection instead of copying it through out the Ventilation section.
408	S9.4.4.2, 4th para., last sent.	Revised pressure range from "less than zero to -0.75" wg" to "less than zero to -124 Pa (-0.50" wg)." Per RAI 9.4-11S02.
409	S9.4.4.2, 6th para., 1st sent.	Deleted "..except lube oil areas..".
410	9.4.4.2; Detailed Description, TBAS, 1st para., 1st sent.	Deleted "constant volume" from first sentence.
411	S9.4.4.2, Turbine Building Exhaust (TBE) Subsystem, first three para's.	Revised first three paragraphs from: "The TBE fans exhaust air from the building clean and low potential contamination areas. The exhaust air is filtered through filters and exhausted through the monitored vent stack. The TBE subsystem is provided with three 50% capacity fans downstream of the filter train. Two fans are normally in operation and one is in automatic standby. A filter bypass is provided to allow purging smoke from Turbine Building in the event of a fire. All three TBE fans can be operated simultaneously to provide maximum smoke removal, if necessary." To: "The TBE fans exhaust air from the building clean and low potential contamination areas. The air is exhausted through the monitored vent stack. The TBE subsystem is provided with three 50% capacity fans. Two fans are normally in operation and one is in automatic standby. All three TBE fans can be operated simultaneously to provide maximum smoke removal, if necessary."
412	S9.4.4.2, Detailed description, TBCE Subsystem, 2nd para, 1st sentence	Changed "filtered" to "passed".

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413	S9.4.4.2, TBLOE, 1st para., 2nd sent.	Changed TBLOE description from: "The TBLOE fans discharge the exhaust air directly to the atmosphere through the plant vent stack, passing first through the air filtration unit of TBE subsystem." To: "The TBLOE fans discharge the exhaust air directly to Turbine Building Exhaust Subsystem."
414	S9.4.4.2, TBLOE, 1st para., 3rd sent.	Revised sentence from: "One fan is designed to continuously exhaust at a constant…" To: "One of the two fans is operated to continuously exhaust at a constant…"
415	S9.4.4.2, Detailed description, TBVS Unit Coolers and Unit Heaters Subsystem, 1st para, 2nd sentence	Added "electric resistance type heaters".
416	S9.4.4.4, 3rd para, 1st sentence	Added "exhaust".
417	S9.4.4.5 Instrument Requirements, 1st sentence	Added "area" after "MCR".
418	S9.4.5	Provided acronym definitions for CRHA, CRHAVS, and EFU.
419	S9.4.6, entire subsection	Unless otherwise noted, all changes in Subsection 9.4.6 are provided to either updated, clarify or correct the DCD to reflect the current design.
420	S9.4.6, fourth bullet	Revised fourth bullet from: "The RBVS does not serve the primary containment except during inerting operations." To: "Containment during inerting and de-inerting operations."
421	S9.4.6.1, Power Generation Design Bases, 4th bullet	The slightly negative pressure ranges were changed from an upper limit of -0.75" wg to an upper limit of -124Pa (-0.50"wg) per RAI 9.4-11 S02.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
422	S9.4.6.1, Power Generation Design Bases, 8th bullet, 2nd and 3rd sent.	Removed the following statements not applicable to RB HVAC: "Additionally, safe egress and safe smoke refuge areas during a fire incident are provided in accordance with NFPA 92A guidelines for building occupants and the fire brigade. NFPA 101 guidelines are utilized for the design and labeling of safe egress routes."
423	S9.4.6.1, Power Generation Design Bases, 9th bullet, 2nd and 3rd sent.	Removed the following statements not applicable to RB HVAC: "Automatic sprinkler protection is provided for the high density cable tunnels, fuel oil tank rooms, diesel-generator rooms and a significant portion of the turbine building to limit heat and smoke generation. Manual smoke control is provided in accordance with NFPA 804 guidelines for all plant areas by manual actions of the site fire brigade."
424	S9.4.6.1, Power Generation Design Bases, 16th bullet	Revised sentence from: "…inlet and outlet of cooling and heating coils to…" To: "…inlet and outlet of cooling coils to…"
425	S9.4.6.1, Power Generation Design Bases, new 22nd bullet	Added new bullet in response to RAI 9.3-21S01: "RBVS maintains SLC accumulator room environmental conditions within technical specification limits including employing two backup heaters per room. PIP A and PIP B busses provide power for these heaters."
426	S9.4.6.1, Power Generation Design Bases, new 23rd bullet	Added the following new bullet: "Provides cooling for CRD and RWCU pump motors, rooms, and/or electrical/instrument panels designed to limit the room /equipment temperature environmental qualification when the building is isolated."
427	S9.4.6.1, Power Generation Design Bases, new 24th bullet	Added the following new bullet: "Maintains Battery room temperatures within a range to maximize output and equipment life."
428	S9.4.6.2, CONAVS, 2nd para., next to last sent.	Added the following new sentence to be consistent with design: "Cooling is provided for CRD and RWCU pump motors, rooms, and/or electrical/instrument panels designed to limit the room /equipment temperature environmental qualification when the building is isolated."
429	S9.4.6.2, REPAVS, 3rd para., new last sent.	Added new sentences to specify how RBVS maintains SLC accumulator room environmental conditions within technical specification limit per RAI 9.3-21 S01.

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430	S9.4.6.2, CLAVS, 2nd para., 3rd from last sent., 2nd from last and last sent.	Revised last three sentences of paragraph to provide detail of maintaining battery room environment: Added the following new 3rd from last sentence: "A minimum exhaust air is continuously extracted from battery rooms in order to keep hydrogen concentration below 2%." Revised 2nd from last sentence from: "The air is then exhausted from the battery rooms by the battery room exhaust fans which discharge directly to the plant vent stack." To: "This extracted air is exhausted from the battery rooms by the battery room exhaust fans which discharge directly to the plant vent stack." Added the following new last sentence: "Battery room temperature is maintained within a range to maximize output and equipment life."
431	S9.4.6.3, Safety Evaluation, new last para.	Added the following paragraph to Safety Evaluation: "RBVS maintains SLC accumulator room environmental conditions within technical specification limits to be consistent with the requirements specified in 9.4.6.1, Safety Design Bases."
432	S9.4.6.5, 1st para.	Deleted the following sentence as URD requirements are not required for design certification: "This meets the URD requirement for local control of the RBVS."
433	S9.4.7, entire subsection	Unless otherwise noted, all changes in Subsection 9.4.7 are provided to either updated, clarify or correct the DCD to reflect the current design.
434	S9.4.7	Removed reference to Hot Water System / Heating from entire subsection. Added term "electric heating element" to clarify the hot water system elimination per engineering change.
435	S9.4.7, 2nd para., 4th bullet, 2nd sent.	Revised sentence to remove URD requirement from: "The ESBWR design is committed to providing a TSC that meets the requirements of Utility Requirement Document (URD) Subsection 4.6.6, which states that a TSC shall be provided that complies with the requirements of NUREG-0696. NUREG-0696 requires…" To: "The ESBWR design complies with the requirements of NUREG-0696, which requires…"

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
436	S9.4.7.1, Power Generation Design Bases, EERVS, new 3rd Bullet	Provided additional requirements for EBVS to maximize battery output and prolong equipment life.
437	S9.4.7.1, Power Generation Design Bases, EERVS, 5th and 6th Bullets	Combined bullets to read the following: "Smoke control and removal functions are in accordance with NFPA guidelines in Section 9.5 Fire Protection, Subsection 9.5.1.11, Building Ventilation." Removed the following statements not applicable to building HVAC: "Additionally, safe egress and safe smoke refuge areas during a fire incident are provided in accordance with NFPA 92A guidelines for building occupants and the fire brigade. NFPA 101 guidelines are utilized for the design and labeling of safe egress routes." "Manual smoke control is provided in accordance with NFPA 804 guidelines for all plant areas by manual actions of the site fire brigade."
438	S9.4.7.1, Power Generation Design Bases, TSCVS, 2nd bullet, 2nd sent.	Revised pressure range Per RAI 9.4-11 S02 from: "…range from greater than zero to +0.75" wg." To: "…range from greater than zero to +124Pa (+0.50" wg)."
439	9.4.7.2; Summary Description	Relocated sentence "All the EBVS equipment is located in the Electrical Building" from DGVS up to 1st paragraph.
440	S9.4.7.2, System Description, EERVS, 1st para.	Deleted "cable spreading", as the 2 Cable Spreading Rooms in the Electrical Building are being struck from the design.
441	S9.4.7.2, System Description, EERVS, 2nd para., 4th sent.	Replaced the following sentence: "The recirculating system includes an AHU with filter, heating and cooling coils and two redundant fans." With: "Each train includes two redundant Air Handling Units (AHUs), each with a filter bank, electric heating coils, water cooling coils, and a fan."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
442	S9.4.7.2, System Operation, Normal Operating Mode, EERVS, 1st para., 1st two sent.	Revised sentences from: "One of the two air supply fans of each train is normally operating to supply filtered, temperature-controlled air to the Electrical Building. The second supply fan is a standby unit that starts automatically upon failure of the operating fan." To: "One of the two supply AHUs in each train is normally operating to supply filtered, temperature-controlled air to the Electrical Building. The second supply AHU is a standby unit that starts automatically upon failure of the operating AHU."
443	S9.4.7.2, System Operation, Normal Operating Mode, EERVS, 2nd ara., new 1st sent.	Added the following new requirement for EERVS: "The battery rooms are maintained at an optimum temperature to maximize output and equipment life."
444	9.4.7.2, Normal Operating Mode, DGVS, 1st para.	Revised sentence for clarity from: "…..by means of" To: "…..through".
445	9.4.7.2 System Operation, Smoke Removal Operating Mode, 2nd para.	Revised sentence from: "Once the fire has been extinguished, smoke removal operation is initiated manually by starting the smoke fans from the MCR" To: "…..by restarting fans as needed from the MCR".
446	9.4.7.2 System Operation, Radiological Event Operation (TSCVS only), 2nd sentence	Added the word "bypass" in the following sentence: "The signal also closes the filtration unit *bypass* damper and the exhaust air dampers."
447	S9.4.7.5, 2nd bullet	Added "and Battery room area" for instrumentation requirements.
448	S9.4.7.6	Remove entire COL section due to Toxic Gas not required for TSC. RAI 9.4-25.
449	S9.4.8 1st and 3rd bullet	Changed DWVS to DCS to conform with MPL 105E3894 r2.

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450	S9.4.8 3rd bullet	Revise "primary containment" to "containment" to delete superfluous adjective.
451	S9.4.8.1, Power Generation, 2nd bullet	Revised sentence to clarify when accelerated drywell cooldown occurs from: "Accelerate drywell cooldown during Loss of Preferred Power (LOPP) the period from hot shutdown to cold shutdown." To: "Accelerate drywell cooldown following a Loss of Preferred Power (LOPP) during the period from hot shutdown to cold shutdown."
452	S9.4.8.2, Detailed System Description, 1st para. last sent.	Added the following new sentence for clarification of design: "The two trains of chill water, the FCU's and the fans are redundant."
453	S9.4.8.2, 2nd para.	Deleted the word "circulating" for clarity.
454	S9.4.8.2, Detailed System Description, 3rd para.	Revised paragraph for clarification of design from: "Each upper drywell FCU has a cooling capacity of 50% of the upper drywell design heat load during normal plant operating conditions. Both FCUs are normally operating. Each FCU comprises a cooling coil and two fans downstream of the coil. Nuclear Island subsystem of CWS train A supplies one FCU, and Nuclear Island subsystem of CWS train B supplies the other. One of the fans operates while the other is on standby status. The fan on standby automatically starts upon loss of the lead fan." To: "During normal plant operating conditions, one fan in each upper drywell FCU is in operation. In this configuration, 50% of upper drywell design heat load is provided per FCU. Each FCU comprises a cooling coil and two fans downstream of the coil. Nuclear Island subsystem of CWS train A supplies one FCU, and Nuclear Island subsystem of CWS train B supplies the other. One of the fans operates while the other is on standby status. The fan on standby automatically starts upon loss of the lead fan in each FCU. Upon loss of one cooling train, both fans in the affected train are secured and the fans in the remaining FCU train are started or continue to operate. During this upset operation, the cooling capacity of the operating FCU increases to twice its normal capacity, with double the airflow, however with an increase in the ambient temperature."

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455	S9.4.8.2, Detailed System Description, 4th para.	Revised 2nd sentence for clarification from: "Return ducts are not provided." To: "Return ducts are also provided." And deleted last sentence which is repeated 3 paragraphs below: "Each FCU is equipped with a condensate collection pan."
456	S9.4.8.2, Detailed System Description, 5th para.	Revised paragraph for clarification of design from: "Each lower drywell FCU has a cooling capacity of 50% of the lower drywell design heat load. Each FCU comprises a cooling coil and two fans downstream of the coil. One of the fans operates while the other is on standby status. The fan on standby automatically starts upon loss of the lead fan." To: "During normal plant operating conditions, one fan in each lower drywell FCU is in operation. In this configuration, 50% of the lower drywell design heat load is provided per FCU. Each FCU comprises a cooling coil and two fans downstream of the coil. Nuclear Island subsystem of CWS train A supplies one FCU, while Nuclear Island of subsystem CWS train B supplies the other. One of the fans operates while the other is on standby status. The fan on standby automatically starts upon loss of the lead fan in each FCU. Upon loss of one cooling train, both fans in the affected train are secured and the fans in the remaining FCU train are started or continue to operate. During this upset operation, the cooling capacity of the operating FCU increases to twice its normal capacity, with double the airflow, however with an increase in the ambient temperature."
457	S9.4.8.2, Detailed System Description, former 6th para.	Deleted the following sentence as details of design to be determined later: "Nuclear Island subsystem of CWS train A supplies one FCU, while Nuclear Island of subsystem CWS train B supplies the other."
458	S9.4.8.2, Detailed System Description, 6th para., 2nd sent.	Revised sentence for clarification of design from: "Return ducts are not provided" To: "Return ducts are also provided"

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459	S9.4.8.2, Detailed System Description, 8th para., 3rd and 4th sent.	Revised sentences for clarification from: "The system is designed so both FCUs in the upper drywell and both FCUs in the lower drywell are always operating during normal plant operation assuming the loss of a single electrical group or failure of any single FCU motor or fan. Upon failure of one FCU, the two fans of the remaining FCU are in service." To: "The system is designed so both FCUs in the upper drywell and both FCUs in the lower drywell are always operating during normal plant operation even upon failure of any single FCU motor or fan. Upon failure of one FCU due to loss of a single electrical group, the two fans of the remaining FCU are in service."
460	S9.4.8.2, Detailed System Description, last para.	Revise "be operable" to "operate" for clarity.
461	S9.4.8.2, System Operation, 1st sent.	Added "(with one fan in service per FCU) for clarification of design.
462	S9.4.8.4, 1st para., last sent.	Deleted sentences as they provided unnecessary detail: "Hydrostatic testing of piping systems is performed at least 1.5 times the design pressure, for a minimum of 30 minutes with no indicated leakage. Pneumatic testing may be substituted for hydrostatic testing in accordance with applicable codes."
463	S9.4.9, Containment Inerting System	The detail and description of CIS has been relocated to Subsection 6.2.5.2 per RAI 9.4-7.
464	S9.4.10.1, HEPA Filters, 1st para., 1st sent.	Corrected acronym "HEPA (High Efficiency Particulate Filter)" to "HEPA (High Efficiency Particulate Air) Filters".
465	S9.4.10.1, HEPA Filters, 2nd para., last sent.	Specified pertinent subsection of the ASME AG-1 by adding, "Section FC, HEPA Filters."

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466	S9.4.10.1, Carbon Adsorbers,1st para.	For clarification component information, revised paragraph from: "Constructed and tested per ASME AG-1 Section FE and RG 1.140. Single assembly, welded construction conforming to IE Bulletin 80-03. Carbon for adsorption filters is tested per ASTM D3803 to meet the requirements of RG 1.140." To: "Carbon Adsorber are constructed and tested per ASME AG-1 Section FE. They are single assembly, welded construction and conform to IE Bulletin 80-03. Carbon for adsorption filters is tested per ASTM D3803 to meet the requirements of RG 1.52 for ESF systems and RG 1.140 for Non-ESF systems."
467	S9.4.10.1, Air Handling Units, 1st sent.	Removed reference to heating coils and added "elements" for AHU due to elimination of Hot Water System under engineering change.
468	S9.4.10.1, Filtration, Air Handling Units, 1st sent.	Removed reference to "ASME N509 –2002 Nuclear Plants Air Cleaning Units and Components." ASME AG-1 2003 can be applied to develop a comprehensive specification for the design, construction, and testing of nuclear air handling equipment.
469	S9.4.10.3, Title	Revised Subsection Title from "Heating Coils" to "Heating Coils /Elements" due to elimination of Hot Water System under engineering change.
470	S9.4.10.3, Heating Coils / Elements, 1st sent.	Revised wording to reflect electric heating elements due to elimination of Hot Water System under engineering change.
471	S9.4.10.3, Heating Coils / Elements, last sent.	Removed reference to AR 410 Forced Circulation Air Cooling and Air Heating Coils for hot water heating coils to reflect electric heating elements due to elimination of Hot Water System under engineering change.
472	S9.4.10.4	Changed the statement from: "…ASHRAE 33, Methods of Testing Forced …" To: "…ASHRAE 33, Methods of Testing Forced Circulation Air Cooling and Air Heating Coils,…".
473	S9.4.10.7	Added subsection 9.4.10.7 for Chapter 9 consistency for COL Information Items.

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474	T9.4-1	Changed 0% Exceedance Values to new values. RAI 2.3-3 S01; DCD Tier 2 Table 2.0-1 and Tier 1 Table 5.1-1.
475	T9.4-2	Added subsection for Outside Air AHU to table to specify the current design parameters.
476	T9.4-4	Removed unnecessary reference to building isolation damper Type from table for clarification and elimination of unneeded detail
477	T9.4-6	Moved RW pressurization values into Table 9.4-6 from footnote below table.
478	T9.4-6	Included English units next to SI.
479	T9.4-7	Provide RWVS design basis or bounding values for parameters that are listed as “established during detailed design” .
480	T9.4-7	Removed incorrectly designated RWCRVS Air Handler description: “Approximately 18.6kW (25 hp)”.
481	T9.4-7	Table 9.4-7 updated “RWGAVS Return/exhaust fan” to“RWGAVS Exhaust Fan” and remove “pressure” from the table AND combined “RWGAVS Supply AHU’s” and “Supply Fans” into common rows deleting redundant data.
482	T9.4-7	Revised “RWCRVS Air Handler” to “RWCRVS Air Handling Units”, added to Associated Quantity “(one running and one standby)”, and Filtration revised from “Low” to “Medium”.
483	T9.4-7	Revised Quantity for RWCRVS Smoke Exhaust Fans from “1 x 100%” to “2 x 50%”.
484	T9.4-8	Added temperature ranges for Battery Room: Nominal 20°C to 22°C (68°F to 72°F) Hi/Low Alarm 18°C (65°F)/ 25°C (77°F)
485	T9.4-10	Removed unnecessary reference to Building Isolation Damper Type from Tables.
486	T9.4-11	Removed unnecessary reference to Building Isolation Damper Type from Tables.

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487	T9.4-11	Added CONAVS normal flow rate into Table 9.4-11 as follows: Supply air handling units: Normal flow – 18,150 l/s (38,458 cfm) per unit AHU Supply fans: Normal flow – 18,150 l/s (38,458 cfm) per fan Exhaust fans: Normal flow – 19,950 l/s (42,272 cfm) per fan
488	T9.4-13	Deleted parameters "Water inlet temperature, Air outlet relative humidity, and Water flow rate" as these values are not necessary for design. Updated Cooling Capacity for FCU for both Upper and Lower Drywell Revised the Number of rows per Coil to No more than 8 each. Revised fan type from "Vaneaxial" to "Vaneaxial or centrifugal with variable speed drive". Edited to incorporate design detail.
489	T9.4-14	Updated all heat loads to current design values.
490	T9.4-15	Remove TB Exhaust High Efficiency and Medium Efficiency Filters.
491	T9.4-15	Added "with Variable Speed Drive" to description of TBCE fans.
492	T9.4-15	Changed "Medium" to "High" Efficiency PreFilter for TBDRE Subsystem.
493	T9.4-15	Add English units (scfm) following the metric values (l/s).
494	T9.4-15, TBE Subsystem	Deleted "Air Filtration Units (AFU)", "Prefilters" and "Filters" from table.
495	T9.4-15, TBCE Subsystem	Replaced "Established during detailed design" with "14,000 l/s (29,665 cfm)" AND replaced "High Efficiency" with "HEPA".
496	T9.4-15, TBLOE Subsystem	Replaced "Established during detailed design" with "4,500 l/s (9,535 cfm)".

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497	T9.4-15, TBDRE Subsystem	Replaced "Established during detailed design" with "1,900 l/s (4,025 cfm)".
498	T9.4-15	Remove TB Exhaust High Efficiency and Medium Efficiency Filters.
499	T9.4-15	Change TB design parameters to 2% Exceedance values T09.04-15;;;26A6427 - 2% Exceedance values.
500	T9.4-15	Added "with Variable Speed Drive" to description of TBCE fans.
501	T9.4-15	Changed "Medium" to "High" Efficiency PreFilter for TBDRE Subsystem.
502	T9.4-15	Add English units (scfm) following the metric values (l/s).
503	T9.4-15, TBE Subsystem	Deleted "Air Filtration Units (AFU)", "Prefilters" and "Filters" from table.
504	T9.4-15, TBCE Subsystem	Replaced "Established during detailed design" with "14,000 l/s (29,665 cfm)" AND replaced "High Efficiency" with "HEPA".
505	T9.4-15, TBLOE Subsystem	Replaced "Established during detailed design" with "4,500 l/s (9,535 cfm)".
506	T9.4-15, TBDRE Subsystem	Replaced "Established during detailed design" with "1,900 l/s (4,025 cfm)".
507	T9.4-16	Add Specific temperature range for EBVS Battery Rooms and put into write-up.
508	T9.4-16, Technical Support Center	Added "minimum" to "+31Pa (0.125" wg) pressure with respect to surrounding areas."
509	T9.4-16	Changed lower temperature range of TSC from 23C to 21C to match current design.
510	T9.4-16	Added Capacities of major air handling equipment for the subsystems of EBVS to the table.
511	F9.4-1	Added "recirculation" to drawing prior to Control Room Habitability Area AHU's in Figure 9.4-1 and added N-2 changes to show 2 EFU fans versus 1 fan as previous.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
512	F9.4-2	Change Recirculation AHU flow typo from 5520 cfm to 5250 cfm and add N-2 changes showing 2 fans for each EFU instead of 1 fan for each EFU and separate filter/fan trains for the Outside AHUs.
513	F9.4-5	Revised to add redundant building isolation valves to incorporate design details.
514	F9.4-6	Revised to add "Fuel Building" to Spent Fuel Storage Pool description for clarification and to incorporate design details. Revised to add redundant building isolation valves to incorporate design details.
515	F9.4-7	The entire figure has been replaced with new, more detailed simplified schematic to show the current design.
516	F9.4-8	Remove "TBE air filtration units" from drawing. Relabeled "contamination area" to "Low Potential Contamination Area" on TBE subsystem. Labeled area upstream of TBCE filter as "High Potential Contamination Area".
517	F9.4-8	Remove "TBE air filtration units" from drawing. Relabeled "contamination area" to "Low Potential Contamination Area" on TBE subsystem. Labeled area upstream of TBCE filter as "High Potential Contamination Area".
518	F9.4-10	Revised figure to show additional damper in series for the building isolation dampers.
519	F9.4-11	Revised figure to show additional damper in series several places.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
520	F9.4-12	Clarified descriptions on drawing for the following: TSC Exhaust Fans (Smoke Removal); EER Battery Room Exhaust Fans; EER Return Fans; DG AHU; DG Electronics Room AHU; DG Power Roof Ventilators (6x20%) to drawing. Heating Water Coils are replaced with Electric Heating Coils. Also matched filter type with Table 9.4-16.
521	F9.4-13	Corrected continuation labels for chilled water interfaces. Revised to "NICWS Train A Supply and Train A Return" and "NICWS Train B Supply and Train B Return" to incorporate design detail.
522	F9.4-14	This figure has been relocated to DCD Chapter 6 per RAI 9.4-7.
523		
524	S9.5.1, entire subsection	Revise "primary containment" to "containment" to delete superfluous adjective.
525	S9.5.1.1, new 2nd, 3rd, and 4th para's.	Added new paragraphs to define the RTNSS requirements applicable to FPS.
526	S9.5.1.1, 3rd from last bullet	Revised bullet to be consistent with design requirements from: "To provide an emergency backup source of makeup water for auxiliary refueling pools and reactor water inventory control through a piping connection to the Fuel and Auxiliary Pools Cooling System (FAPCS)" To: "To provide an post-accident source of makeup water for IC/PCC pools and Spent Fuel Pool through piping connections to the Fuel and Auxiliary Pools Cooling System (FAPCS)"
527	S9.5.1.1, new 2nd to last bullet	Added new requirement based on engineering design requirements.

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528	S9.5.1.4., 1st para., 1st sent.	Revised sentence to be consistent with current design from: "Water for the Fire Protection System is supplied from a minimum of two reliable sources." To: "As identified by Figure 9.5-1, water for the Fire Protection System is supplied from a minimum of two sources: (i) at least one "primary source to the suctions of primary fire pumps and corresponding jockey fire pumps and (ii) at least on "secondary" source to suctions of secondary fire pumps and corresponding jockey fire pumps."
529	S9.5.1.4., 1st para., 3rd sent.	Revised to explicitly identify the source from: "source" To: "primary firewater storage tank"
530	S9.5.1.4., 1st para., 5th sent.	Revised sentence to be more specific of requirements from: "…of 120 minutes. …" To: "…of at least 120 minutes, but not less than 1136 m^3 (300,000 gallons), per NFPA 804. …"
531	S9.5.1.4., 1st para., last sent.	Revised sentence to address the COLA requirements and numbering from: "The COL applicant will provide final quantity and capacity of secondary firewater storage" To: "The COL applicant will provide the capacity of the secondary firewater source (9.5.1-1-A)".

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
532	S9.5.1.4., 3rd para.	Entire paragraph revised to be consistent with current design from: "The primary Seismic Category I, firewater storage tanks provide the required emergency makeup water volume for the IC/PCCS pools and Spent Fuel Pool to the FAPCS for 72 hours after this time on-site or offsite makeup sources can be used. This function of FPS is considered to be RTNSS rather than Safety-related due to being required post 72 hrs. A deviation to this acceptance criterion II.1.a of SRP 9.1.3 (which requires Quality Group C for Fuel pool make up components) will be added for this nonsafety-related make up water RTNSS function from quality group C to D in Table 1.9-9." To: "The primary, Seismic Category I, firewater storage tanks provide post-accident makeup water to the IC/PCC pools and Spent Fuel Pool using FAPCS piping. Post-accident reactor inventory makeup is provided via a dedicated diesel FAPCS pump located in the Fire Pump Enclosure. This portion of the FPS is RTNSS rather than safety-related because the pools have sufficient capacity, such that, makeup is not required until after 72 hours. The primary firewater storage tanks have sufficient capacity to meet the total demand from 72 hours up to 7 days. After 7 days, on-site or offsite makeup sources can be used. A deviation from acceptance criterion II.1.a of SRP 9.1.3 (which requires Quality Group C for Spent Fuel Pool make up components) is provided in Table 1.9-9. This deviation is acceptable because the change from Quality Group C to D invokes RTNSS requirements on the components performing the nonsafety-related makeup water function."
533	S9.5.1.4, new 4th para.	Added new paragraph to provide requirements for system: "Freeze protection is provided for the primary, Seismic Category I, firewater storage tanks and exposed piping."
534	S9.5.1.4, former last para.	Deleted unnecessary detail for certification: "If both primary fire pumps and primary firewater storage tanks are available, make-up water is capable of being provided from both primary fire pumps and primary firewater storage tanks at the same time."
535	S9.5.1.4, Fire Pumps, 1st para., 3rd sent.	Revised to make the statement technically correct from: "…that is farthest from the firewater supply source." To: "…that is the most hydraulically remote from the firewater supply source."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
536	S9.5.1.4, Fire Pumps, 1st para., 6th sent.	Revised COL information item in order to further define the required COL information and numbering from: " The COL applicant will provide the final fire pump flow rate and pump head." To: "The COL applicant shall provide documentation that the secondary fire protection pump circuit design will supply a minimum of 484 m^3/hr (2130 gpm) with sufficient discharge pressure to develop a minimum of 107 psig line pressure at the Turbine Building / yard interface boundary (9.5.1-2-A)."
537	S9.5.1.4, Fire Pumps, 2nd para., 1st sent.	Revised sentence to be consistent with current design from: "For the two secondary fire pumps, the lead fire pump shall be motor-driven and the backup fire pump shall be Non-Seismic (NS) diesel-driven" To: "For the two non-seismic secondary fire pumps, the lead fire pump is motor-driven and the backup fire pump is diesel-driven".
538	S9.5.1.4, Fire Pumps, 2nd para., 2nd sent.	Added additional requirement "or LOPP".
539	S9.5.1.4, Fire Pumps, 3rd & 4th para's.	Removed the word "shall" and corrected verb tense as appropriate.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
540	S9.5.1.4, Fire Pumps, last para.	Revised last paragraph to provide additional design details from: "The fuel oil tanks for the diesel-driven fire pumps have a capacity sufficient to allow operation of the diesel engines for approximately 96 hours before refilling based upon the fuel consumption . and margin criteria provided in NFPA 24" To: "The fuel oil tank for the primary diesel-driven fire pump has a capacity based on supporting the RTNSS function of the fire pump to provide make up water to the IC/PCC pools from 72 hours to 7 days after an accident. Because the flowrate required for performing the RTNSS function is less than the flowrate required for supplying firewater, the diesel-driven pump need not operate continuously to supply the required quantity of make-up water to the pools. The fuel capacity required before tank refilling is based on fuel consumption for injecting the required make-up quantity versus operation of the diesel engine for approximately 96 hours. A fuel oil capacity of 3.79 m^3 (1000 gallons) satisfies this requirement. The fuel oil tank for the secondary diesel driven fire pump has a capacity sufficient to allow operation of the diesel engine for approximately 8 hours before refilling based on fuel consumption at rated pump capacity and margin criteria provided in NFPA 20."
541	S9.5.1.5,1st para.	Added sentence to reference figure location "Figure 9.5-1 provides a simplified diagram of the firewater supply piping."
542	S9.5.1.5,2nd para., 1st sent.	Revised sentence to provide additional details of piping design from: "The firewater supply piping consists of a buried non-seismic, yard main loop and a suspended ASME B31.1, Seismic Category I nuclear island piping loop." To: "The firewater supply piping consists of buried non-seismic piping (yard main loop), suspended non-seismic piping, and suspended ASME B31.1, Seismic Category I piping (nuclear island piping loop)."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
543	S9.5.1.5, 3rd para., 1st sent.	Revised sentence to provided additional details of piping design from: "The yard main loop consists of code compliant material, FM (Factory Mutual) approved for fire main service, with concrete thrust blocks or cement-lined ductile iron piping, in accordance with NFPA 2" To: "The yard main loop piping is made of code compliant material that is in accordance with NFPA 24 and FM (Factory Mutual) approved for fire main service, e.g.; High-Density Polyethylene with concrete thrust blocks or cement-lined ductile iron piping".
544	S9.5.1.5, 3rd para., last sent.	Deleted sentence since COL is no longer needed: "The COL applicant will determine the design characteristics of the yard main loop."
545	S9.5.1.5, 5th para., 1st sent.	Revised for clarity from: "fire" to "yard" and "areas or buildings" to "building or structures".
546	S9.5.1.5, 5th para., last sent.	Revised for clarity: "from the protected buildings" To: "from the buildings and structures protected by fire hydrants"
547	S9.5.1.5, last para., last sent.	Added the word "simplified" and "(9.5.1-4-A)" for clarification of the COL requirement and to provide numbering.
548	S9.5.1.6, 2nd para., 2nd sent.	Removed the words "and hose stations" as these will not be located adjacent to stairwells.
549	S9.5.1.7, Wet Sprinkler System 2nd para., 1st sent.	Deleted the following unnecessary detail: "…an outside screw and yoke valve with a position switch, an alarm check valve assembly,…"

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
550	S9.5.1.9, Water Source, 6th para.	Revised the entire paragraph to better describe design of preaction systems from: "Preaction fire detection systems have 90-hour (minimum) backup battery packs located at the local fire alarm panel (releasing panel). Other fire detection and alarm systems have 24-hour (minimum) backup battery packs located at each local fire alarm panel (supervisory panel) and at the MFAP" To: "Preaction fire detection systems for the nuclear island (NI) have 90-hour (minimum) backup battery packs located at the local fire alarm panel (releasing panel). Preaction fire detection systems for the balane of plant (BOP) areas have 24 hour (minimum) backup battery packs located at the local fire control panel (realsing panel), per NFPA72. The remainder of fire detection and alarm systems have 24-hour (minimum) backup battery packs located at each local fire alarm panel (supervisory panel) and at the MFAP"
551	S9.5.1.10, last para., last sent.	Added "(9.5.1-5-A)" to provide numbering and reference to the COL Summary subsection.
552	S9.5.1.11, last para., last sent.	Revised "Applicant" to "Holder" and added "(9.5.1-6-H)" to provide for clarification and to be consistent with COL Information summary 9.5.1.16.
553	S9.5.1.12, 2nd para.	Revised "FHA" to "Appendix 9A" to clarify where information is located.
554	S9.5.1.12, 5th para.	Revised "licensee" to "Holder", revised verb tense, and added "(9.5.1-7-H)" to provide for clarification and to be consistent with COL Information summary 9.5.1.16.
555	S9.5.1.12, 1st occurrence of Conformance, 2nd para.	Deleted "long term" in two places and deleted last sentence to be consistent with design.
556	S9.5.1.12, 3rd occurrence of Conformance, 1st para., 1st sent.	Added "analyzed and" to provide clarification of seismic support.
557	S9.5.1.13, 1st para., 2nd sent.	Revised "operability" to "functionality" as there are no tech. Spec. requirements.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
558	S9.5.1.14, Instrumentation Supporting Firewater Delivery, 2nd para.	Revised the following to update DCD with current design information from: "The primary motor-driven fire pump is designed to start first, if the primary jockey pump cannot maintain pressure in the system. The secondary motor-driven fire pump is set to initiate second if the secondary jockey pump cannot maintain pressure in the system. The primary Seismic Category I diesel-driven fire pump is set to initiate third and the secondary NS diesel-driven fire pump is set to initiate last if the other fire pumps fail to start or cannot maintain the required pressure. The starting of any fire pump shall depend on the location of the firewater demand. All fire pumps are stopped manually. Any fire pump can be started manually from the MFAP in the MCR or locally." To: "The primary motor-driven fire pump is designed to start, if the primary jockey pump cannot maintain pressure in the NI loop. If pressure is not maintained in the NI loop with the motor-driven fire pump, then the primary Seismic Category I diesel-driven fire pump initiates. The secondary motor-driven fire pump initiates if the secondary jockey pump cannot maintain pressure in the yard loop. If pressure is not maintained in the yard loop with the secondary motor-driven fire pump, then the secondary NS diesel-driven fire pump initiates. All fire pumps are stopped manually. Any fire pump can be started manually from the MFAP in the MCR or locally."
559	S9.5.1.15, 1st para., 1st sent.	Revised: "will" to "does" and "uses" to "and does" per RAI 9.5-51.
560	S9.5.1.15, 1st para., 2nd sent.	Added to end of sentence "and the safe-shutdown capability" per RAI 9.5-52.
561	S9.5.1.15, 1st para., last sent.	Added the following as Programs are required to have milestones and provided COL item number "and a milestone for program implementation. (9.5.1-8-A)".
562	S9.5.1.15.2, 1st para., new last three sent.	Added new sentences per RAI 9.5-55.
563	S9.5.1.15.2, 2nd para., 6th bullet Managing the Plant Fire Brigade	Added "other personnel" to reflect that station personnel other than the fire brigade, have fire training.
564	S9.5.1.15.2, 2nd to last bullet	Added "(9.5.1-9-A)" to provide numbering and to be consistent with COL Information summary 9.5.1.16.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
565	S9.5.1.15.4, Title	Revised Title of subsection from "Fire Brigade" to "On Site Fire Operations Training".
566	S9.5.1.15.4, 1st para.	Revised "Applicant" to "Holder" and added "(9.5.1-10-H)" to provide numbering and to be consistent with COL Information summary 9.5.1.16.
567	S9.5.1.15.4.2, new last para. w/ three new bullets	Added new paragraph and bullets in response to RAI 9.5-55.
568	S9.5.1.15.8, new 3rd para.	Added new paragraph in response to RAI 9.5-56.
569	S9.5.1.15.8, new 5th para., new 2nd sent.	Added new sentences in response to RAI 9.5-56.
570	S9.5.1.15.9, 1st para., 1st sent.	Revised per RAI 9.5-57 from: "…design, procurement, installation, testing, and maintenance of fire protection…" To: "…design, procurement, installation, and testing and the administrative controls of fire protection…"
571	S9.5.1.15.9, 1st para., last sent.	Added "(9.5.1-11-A)" to provide numbering and to be consistent with COL Information summary 9.5.1.16.
572	S9.5.1.16, entire subsection	This subsection was replaced in its entirety to better organize and specify COL information as it relates to Subsection 9.5.1.
573	S9.52, entire subsection	Changed "off-site" to "offsite".
574	S9.5.2, 1st para, new 2nd and 3rd sent.	Added new second sentence, "The communication system allows--- (Reference 9.5.2-3)" and added new third sentence, "This is…system".
575	S9.5.2, 1st para, new 4th sent.	Added new fourth sentence, "Communication used with …(Reference 9.5.2-2)".
576	S9.5.2.1, 3rd bullet	Power Generation Design Bases, in third bullet replaced the word 'operable' with 'functional'.
577	S9.5.2.2, 2nd para., 1st sent.	In beginning of third paragraph in summary subsection, deleted the word "Particular".

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578	S9.5.2.2, former 3rd para.	Deleted the third paragraph "The plant simulator….data communications" in summary subsection.
579	S9.5.2.2, Subtitle under 3rd para.	"In-Plant Page/Party Line (PA/PL)", deleted the word "In".
580	S9.5.2.2, 6th para., last sent.	Under In-Plant Page/Party Line (PA/PL), deleted the last sentence "The block diagrams ….and 9.5.4" of the third paragraph.
581	S9.5.2.2, 8th para.	Under In-Plant Page/Party Line (PA/PL), in the 5th. Paragraph deleted the words "of another unit".
582	S9.5.2.2, 11th para.	Under In-Plant Page/Party Line (PA/PL), in the 8th. Paragraph added the word "in" to read "and <u>in</u> low…areas".
583	S9.5.2.2, Plant Page/Party Line (PA/PL), last para.	In the last sentence under In-Plant Page/Party Line (PA/PL), revised "ring-wired" to read "wired in a ring topology".
584	S9.5.2.2, Subtitle Private Automatic Branch Exchange	"Private Automatic Branch <u>Telephone</u> Exchange (PABX)" Deleted the word "Telephone".
585	S9.5.2.2, Private Automatic Branch Exchange, 1st para.	Under "Private Automatic Branch Telephone Exchange (PABX)", deleted the first sentence "The private ….telephone company" of the first paragraph.
586	S9.5.2.2, Sound Powered Telephone, System, 1st para	Under Sound-Powered Telephone System, added the word "and" in the second sentence of the first paragraph to read" …load centers, <u>and</u> motor control…".
587	S9.5.2.2, Plant Radio System, 1st para	Under Plant Radio System, deleted the words "from any location" from the last sentence of the first paragraph.
588	S9.5.2.2, Plant Radio System, last para.	Under Plant Radio System, rewrote the last paragraph to read "Any portable…..interfere with DCIS function".
589	S9.5.2.2, Evacuation Alarm and Remote Warning System, 4th para.	Under Evacuation Alarm and Remote Warning System, in the fourth paragraph, deleted "(VU)" in both places to read "sound level meter".

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590	S9.5.2.2, Emergency Communication Systems, 2nd para., 1st and 2nd bullets	Under Emergency Communication Systems, deleted "or county specific regulatory agency" from first and second bullets.
591	S9.5.2.2, Emergency Communication Systems, 4th, 5th, and 6th bullets	Under Emergency Communication Systems, corrected third, 4th. 5th.and 6th. bullet to read as follows: "Crisis Management Radio System – Provides communication capability in accordance with the intent of…..". "Fire.Brigade Radio System – Provides communication capability and consists of a base unit, mobile units, and portable units in accordance with…Position…". "Transmission System Operator Communication Link….".
592	S9.5.2.3, 1st para., 1st sent.	In the first sentence, revise " The communications systems are…" to read, "The communication system is…".
593	S9.5.2.3, 1st para., 2nd sent.	In the second sentence, revise " The failure of any communications system…" to read "The failure of any communication system…".
594	S9.5.2.5, Title	Deleted "Unit-Specific".
595	S9.5.2.5.1, 1st COL Item	Renumbered to read "9.5.2.5-1-A".
596	S9.5.2.5.1, 1st COL Item	Replaced the word "shall" with "will" to read " The COL applicant will..".
597	S9.5.2.5.2, 2nd COL Item	Renumbered to read "9.5.2.5-2-A".
598	S9.5.2.5.2, 2nd COL Item	Replaced the word "shall" with "will" to read, " The COL applicant will…".
599	S9.5.3, entire subsection	Replaced "Class 1E" with "Safety-Related.
600	S9.5.3.1, 1st para	Revised the first sentence to read " The safety design bases for the lighting system are as follows:" Reason: The design bases are for the entire system, not just for MCR emergency lighting.

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601	S9.5.3.1, 1st para	First bullet: Revised to read "electrical power for the MCR emergency lighting is provided by safety-related power supplies" Reason: Technical clarification and missing information.
602	S9.5.3.1, 1st para	Moved the description of the second bullet "The normal…design bases" to new fifth bullet and Added new description in second bullet to read "The emergency lighting system components and installation inside and outside the MCR remain functional during design basis events and withstand the seismic loads of a design basis earthquake;" Reason: Important design basis information was missing.
603	S9.5.3.1, 1st para (editorial)	Deleted "and" from end of third bullet.
604	S9.5.3.1, 1st para (editorial)	Added "and" at the end of fourth bullet.
605	S9.5.3.2, last bullet	Rewrote the sixth bullet to read "Either incandescent lamps or LED …..Reactor Building." Reason: To allow flexibility during detail design.
606	S9.5.3.3, 1st para, last sent.	Added "Ref: 9.5.3-1" at end of first paragraph. Reason: Reference number was missing.
607	S9.5.3.3, 2nd para.	Deleted reference to figures in the second paragraph to read, "The plant lighting systems are composed of the following:" Reason: In general, figures are provided to augment and clarify the description in DCD text. It is not a procedural requirement. These deleted figures were not providing any additional information or clarification that is not already described in the text. Furthermore, GE wishes to maintain flexibility for future detail design.
608	S9.5.3.3.1, 5th para.	In the beginning of fifth paragraph, added " high-intensity discharge" Reason: Defined acronym.
609	S9.5.3.3.3. 1st para.	Added, " The emergency lighting is integrated….lighting fixtures" at the end of first paragraph. Reason: Based on engineering judgment.

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610	S9.5.3.3.3, 2nd para.	Added "Nonsafety-related" at the beginning of second bullet. Reason: Missing safety classification.
611	Sub section 9.5.3.3.3.1, entire subsection	Rewrote the entire paragraph for clarification as follows: (Ref: NRC RAI 9.5-61,63) "9.5.3.3.3.1Control Room Emergency Lighting The control room emergency lighting power is supplied from the four divisions of 72-hour safety-related Uninterruptible AC power supply system (UPS). The safety-related UPS and the MCR emergency lighting circuitry is isolated by a series of circuit breakers that are coordinated for isolation. Raceways carrying cables to the lighting fixtures as well as the lighting fixtures for both standby and emergency lighting inside the MCR utilize Seismic Category I supports. Both the standby and emergency lighting fixtures are nonsafety-related. Cables used in the main control room are safety-related. The MCR emergency lighting complies with the human factor requirements by utilizing semi-indirect, low-glare lighting fixtures." Reason: Technical clarification and NRC RAI. However, the response to NRC RAI # 9.5-63 will be withdrawn to re-classify lighting fixtures inside MCR as non-safety related.
612	9.5.3.3.3.2, 1st para	In second bullet, replace BTP SLPB 9.5-1 with Reg. Guide 1.189 and deleted "Two hour rated units as a minimum are used in other areas of the plant." ((Ref: NRC RAI 9.5-58) Reason: Incorrect document reference.
613	9.5.3.3.3.2, 3rd para., 1st sent.	Deleted " Emergency exit lighting…light units" at the beginning of third paragraph and replaced with " In addition to the lighting……exit light units." Reason: Rewrote for clarification.
614	9.5.3.3.3.2, last para., (editorial)	Added "such that" in the first sentence of the last paragraph to read "…AC power, <u>such that</u> the….".

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615	9.5.3.3.3.3, 1st para	Added new paragraph 9.5.3.3.3.3 to address panel lighting as follows: "9.5.3.3.3.3 Panel Lighting (Ref: NRC RAI 9.5-64) Panel lighting is designed to provide lighting for interior maintenance of the panels as described below. Panel lighting consists of lighting fixtures located inside the Wide Display Panel in the main control room. The fixtures are powered from nonsafety-related power source and are normally off. Raceways carrying cables up to the lighting fixtures as well as the lighting fixtures are supported by Seismic Category I support." Reason: Response to NRC RAI # 9.5-64.
616	9.5.3.4, 1st para.	Revised the first sentence in the first paragraph to read, "The plant lighting system is nonsafety-related". Deleted the second sentence in its entirety. Reason: Rewrote for technical clarification.
617	9.5.3.4, 3rd para.	Deleted the last sentence "The security….generators" of the third paragraph. Reason: Security related information needs to be deleted.
618	9.5.3.4, last para. (editorial)	Revised "Nonsafety-Related" to read "nonsafety-related" in the third paragraph.
619	9.5.3.6, Title	Deleted "Unit Specific" from the heading.
620	S9.5.4, entire subsection	Unless otherwise noted, all changes were made to clarify, correct or update DCD to match current design.
621	S9.5.4.1, Safety Design Bases, new 2nd and 3rd para.	Added new paragraphs to detail the RTNSS requirements for diesel generator fuel oil storage and transfer system per RAI 22.5-4.
622	S9.5.4.1, Power Generation Design Bases, last bullet	Revised bullet to add: "…..and the diesel-engine driven Fire Protection System pump."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
623	S9.5.4.2, 1st para.	Paragraph revised from for clarification of diesel manufacturer design from: "The system is designed and supplied per a Diesel Generator equipment specification. The DG fuel oil system from the fuel oil day tank to the engine equipment is manufacturer provided. (See Subsection 9.5.4.6 for COL information)" To: "The diesel generator manufacturer supplies the design of the system from the fuel oil day tank to the engine."
624	S9.5.4.2, Summary Description, 2nd para., 1st sent.	Revised sentence from: "…tanks, fuel oil transfer pumps, strainers/filters, oil purifier, instrumentation and controls, and the necessary…" To: "…tanks, fuel oil day tanks, fuel oil transfer pumps, strainers/filters, oil purifier or tank connections for tying in a purification system, instrumentation …"
625	S9.5.4.2, Summary Description, 2nd para., new 2nd and 3rd sent.	Added new sentences to provide details of system design in order to meet RTNSS requirements for redundancy and separation.
626	S9.5.4.2, Summary Description, last para.	Revised paragraph to add: "…and diesel-engine driven Fire Protection System pumps."
627	S9.5.4.2, Detailed System Description, 1st para., new 5th sent.	Added new sentence to identify COL requirement in DCD text to match the COL item in COL Information subsection.
628	S9.5.4.2, Detailed System Description, 2nd para.	Added descriptors "booster" to oil pump and "injector" to fuel pump for consistency with Figure 9.5-9.

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
629	S9.5.4.2, Detailed System Description, 3rd para., next to last sent.	Revised sentence to clarify COL information item from: "If piping subject to corrosion, such as carbon steel piping, is utilized, underground portions will be coated in accordance with DCD Tier 2, Chapter 8A." To: "If piping subject to corrosion, such as carbon steel piping, is utilized, corrosion protection for underground portions is provided." And added new sentence to identify COL item and match information in COL Information subsection: "The COL applicant shall describe the material and corrosion protection for the underground piping portion of the fuel oil transfer system (COL 9.5.4-2-A)."
630	S9.5.4.2, Detailed System Description, 4th para., 2nd sent.	Revised sentence to remove incorrectly specified code for this design: "Fuel oil transfer system piping and components up to the engine skid connection are designed and constructed in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, and ASME B31.1 for above ground piping runs." To: "Fuel oil transfer system piping and components up to the engine skid connection are designed and constructed in accordance with industry standards and ASME B31.1, as applicable, for above ground piping runs."
631	S9.5.4.2, Detailed System Description, 4th para., last sent.	Added to sentence: "…and Fire Protection…"
632	S9.5.4.2, Detailed System Description, 5th para., 3rd sent.	Added to sentence: "…or Fire Protection…"
633	S9.5.4.3, last two sent.	Revised last two sentences from "The design incorporates a fuel oil purification system to prevent tank contamination and thus ensure the diesel oil storage tank maintains the fuel at the desired quality." To: "The design incorporates either a fuel oil purification system or tank connections for periodic hookup to a fuel oil purification system. This prevents tank contamination and thus ensure the diesel oil storage tank maintains the fuel at the desired quality."

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634	S9.5.4.4, 2nd para., 1st sent.	Revised word "operability" to "functionality" as this system does not have technical specification requirements.
635	S9.5.4.4, 3rd para., last sent.	Revised last sentence from: "The design incorporates the use of a fuel oil purification system to ensure the diesel oil storage tank maintains the fuel at the desired quality." To: "The design incorporates the use of either a fuel oil purification system or tank connections to tie in a site portable purification system. This is to ensure the diesel oil storage tank maintains the fuel at the desired quality."
636	S9.5.4.6	Rearranged COL items and provided numbering.
637	S9.5.4.7	Deleted reference for ASME Section VIII because it's not specified in this subsection.
638	S9.5.5.1, Safety Design Bases, new 2nd para.	Added new paragraph to detail the RTNSS requirements for diesel generator jacket cooling water system per RAI 22.5-4.
639	S9.5.5.2, 1st para., 1st sent.	Reworded sentence for clarity and replaced with: "The jacket cooling water system design is supplied by the DG manufacturer."
640	S9.5.5.2, 2nd para., last sent.	Revised sentence as there are no required start times for DG from: "…mode to support required engine start times." To: "…mode to support engine start."
641	S 9.5.5.7	Deleted reference for ASME B31.1 as it is not referenced in this subsection.
642	S9.5.6.1, Safety Design Bases, new 2nd para.	Added new paragraph to detail the RTNSS requirements for diesel generator starting air system per RAI 22.5-4.
643	S9.5.7.1, Safety Design Bases, new 2nd para.	Added new paragraph to detail the RTNSS requirements for diesel generator lubrication system per RAI 22.5-4.
644	S9.5.7.2, Summary Description, 2nd para.	Deleted "as part of the engine design."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
645	S9.5.7.2, Detailed System Description, 1st para., last sent.	Revised sentence for clarification from: "The system is manufacturer designed to provide engine lubrication of moving surfaces and to remove engine" to "The system provides engine lubrication of moving surfaces and to remove engine"
646	S9.5.7.2, 4th para., 1st sent.	Remove requirements for TEMA, since the DG manufacturer will supply the design codes or standards.
647	S9.5.7.2, 5th para., 2nd to last sent.	Remove requirements for B31.1, since the DG manufacturer will supply the design codes or standard.
648	S9.5.7.4, 1st para., 1st sent.	Changed the word "operability" to "functionality" since there are no operability requirements associated with this system.
649	S9.5.7.7	Deleted reference for ASME Section VIII and TEMA since they are no longer referenced in this subsection.
650	S9.5.8.1, Safety Design Bases, new 2nd para.	Added new paragraph to detail the RTNSS requirements for diesel generator air intake and exhaust system per RAI 22.5-4.
651	S9.5.8.1, Power Generation Design Bases, 3rd bullet	Added "…ensuring no thermal impact on the building, other systems or material" to provide additional design considerations for the diesel engine exhaust system.
652	S9.5.8.2, 2nd para., 1st sent.	Revised sentence from "The diesel generator manufacturer supplies the DG air intake and exhaust system as part of their engine design." To: "The diesel generator manufacturer supplies the DG air intake and exhaust system."
653	S9.5.8.2, 5th para., new 2nd to last sent.	Added sentence to provide details of exhaust lines detail. "The exhaust lines are appropriately insulated and routed to ensure no negative impact on adjacent equipment, materials or building areas."

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Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
654	S9.5.8.2, 5th para., last sent.	Revised sentence to ensure conditions for combustion are eliminated from: "The engine design provides for crankcase venting." To: "The engine design provides for crankcase venting such that crankcase gases are not mixed with the fresh air intake to eliminate combustion potential."
655	S9.5.8.2, last para.	Deleted the suggestion that diesel engine operates during tornado, which is not required.
656	S9.5.6.2, 6th para., 1st sent.	Revised sentence by supplementing, "or applicable industry standards." to provide flexibility in using other standards.
657	T9.5-2	In order to reflect current design requirements, revised the Secondary storage minimum firewater storage from: "2081.8 m^3 (550,000 gallons)" To: "1135.6 m^3 (300,000 gallons)"
658	F9.5-1	Revised entire figure to be consistent with current design.
659	F9.5-2	Deleted Figure
660	F9.5-3	Deleted Figure
661	F9.5-4	Deleted Figure
662	F9.5-9	Revised figure from: "injector pump" To: "injector fuel pump" and also removed details of the crankcase vent.