ESBWR DCD CHAPTER 9
26A6642AY Revision 4 to Revision 5 Change List

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
1	S9	Global chapter editorial changes to: correct misspelling and grammar; spell out or integrate acronyms where appropriate; and dual dimensioning added for consistency.
2	S9.1, 2nd para., 1st sentence	Revised sentence for clarification from: "The fuel bundle…." To: "The fuel assemblies…."
3	S9.1, 2nd para., 1st sentence	Revised sentence for clarification from: "….in the Spent Fuel Pool or in the Inclined Fuel Transfer System (IFTS) for transfer to the Reactor Building buffer pool." To: "….in the Spent Fuel Pool for transfer to the Reactor Building Buffer Pool via the Inclined Fuel Transfer System (IFTS)."
4	S9.1, 4th para., 1st sentence	Revised sentence to reflect actual design from: "The new fuel storage racks in the buffer pool can store 60% of the total core load of new fuel assemblies." To: "The new fuel storage racks in the buffer pool can store a minimum of 476 new fuel assemblies."
5	S9.1, 4th para., 3rd sentence	Revised sentence for clarification from: "The racks are side loading and are accessed using the refueling bridge." To: "The racks are side loading and are accessed using the refueling machine."
6	S9.1, 5th para., 3rd sentence	Corrected spelling of "reactor."
7	S9.1, 5th para., 11th sentence	Revised sentence for clarification from: "However, the structures (including pool size) and systems are designed for 20 years of operation plus one full core offload." To: "However, the structures (including pool size) and systems are designed for expansion to store spent fuel assemblies resulting from 20 years of operation plus one full core offload."
8	S9.1.1	Numbered subsections as 9.1.1.1 through 9.1.1.7 to provide consistency with other 9.1 sections.
9	S9.1.1.2, 1st para., 1st sentence	Revised paragraph to reflect actual design from: "The new fuel storage racks in the buffer pool can store up to 60% of

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		one full core fuel." To: "The new fuel storage racks in the buffer pool can store a minimum of 476 new fuel assemblies."
10	S9.1.1.2, 2nd para.	Added the paragraph in response to RAIs 9.1-39 and 9.1-33 S01.
11	S9.1.1.3, 1st para., 1st sentence	Revised sentence to reflect actual design from: "The new fuel storage racks contain storage space in the Reactor Building buffer pool in the reactor for 60% of the RPV core capacity of fuel assemblies (with channels) or bundle (without channels)." To: "The new fuel storage racks contain storage space in the Reactor Building buffer pool for a minimum of 476 new fuel assemblies."
12	S9.1.1.3, 1st para., 2nd sentence	Revised sentence to reflect actual design from: "They are designed to withstand all credible static and seismic loadings." To: "They are designed to withstand all credible static and dynamic loadings."
13	S9.1.1.4, 1st para.	Revised the paragraph in response to RAI 9.1-27 S01.
14	S9.1.1.5, 2nd para., 2nd sentence	Revised sentence to correct grammatical error from: "Reference 9.1-1, which provides the documentation for the dynamic and impact analyses." To: "Reference 9.1-1 provides the documentation for the dynamic and impact analyses."
15	S9.1.1.6, 1st para., 1st sentence	Revised sentence to reflect actual design from: "The new fuel storage racks in the Reactor Building buffer pool hold up to 60% of the RPV core capacity of channeled fuel assemblies." To: "The new fuel storage racks in the Reactor Building buffer pool can store a minimum of 476 new fuel assemblies."
16	S9.1.1.7, Criticality Control, 2nd para., 1st sentence.	Revised sentence to include English units for temperature from: "The new fuel storage area accommodates fuel ($k_{inf} \leq 1.35$ at 20ºC in standard core geometry) with no safety implications. " To: "The new fuel storage area accommodates fuel ($k_{inf} \leq 1.35$ at 20ºC

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		[68ºF] in standard core geometry) with no safety implications."
17	S9.1.1.7, Structural Design, 3rd para., 3rd sentence	Revised sentence for clarification from: "See Subsection 9.1.6 for COL information requirements." To: "The COL applicant shall describe the programs that address fuel handling operations (COL 9.1-4-A)."
18	S9.1.1.7, Protection Features of the New Fuel Storage Facilities, 2nd para., 2nd sentence	Revised sentence for clarification from: "….being applied to the fuel bail of the fuel assembly." To: "….being applied to the bail of the fuel assembly."
19	S9.1.1.7, Protection Features of the New Fuel Storage Facilities, 3rd para., 3rd sentence	Revised sentence for clarification from: "See Subsection 9.1.6 for COL information requirements." To: "The COL applicant shall describe the programs that address fuel handling operations (COL 9.1-4-A)."
20	S9.1.2.1, Design Bases	Added section text in response to RAI 9.1-45.
21	S9.1.2.3, 1st para., 1st sentence	Revised sentence for clarification from: "The fuel storage racks provided in the Spent Fuel Pool in the Fuel Building provide for storage of irradiated fuel assemblies resulting from…." To: "The fuel storage racks provided in the Spent Fuel Pool in the Fuel Building provide for storage of 3600 irradiated fuel assemblies, which accommodates the spent fuel resulting from….."
22	S9.1.2.4, 1st para., 1st sentence	Revised sentence for clarification from: "….fuel assemblies (with channels) or bundles (without channels)." To: "….fuel assemblies."
23	S9.1.2.4, 1st para., 3rd sentence	Revised sentence to reflect actual design from: "They are designed to withstand all credible static and seismic loadings." To: "They are designed to withstand all credible static and dynamic loadings."
24	S9.1.2.4, 1st para., 4th sentence	Revised sentence for clarification to be consistent with Chapter 15 from: "The racks are designed to protect the fuel assemblies and bundles from

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		excessive physical damage which may cause the release of radioactive materials in excess of 10 CFR 20 and 10 CFR 100 requirements, under normal and abnormal conditions caused by impact from fuel assemblies, bundles or other equipment." To: "The racks are designed to protect the fuel assemblies from excessive physical damage which may cause the release of radioactive materials in excess of Reg. Guide 1.183 requirements, under normal and abnormal conditions caused by impact from fuel assemblies or other equipment."
25	S9.1.2.4, 6th para., 4th bullet	Revised sentence to reflect actual design from: "Seismic loads;" To: "Dynamic loads (SRSS combination of Seismic, LOCA, SRV loads);"
26	S9.1.2.4, 7th para., 4th bullet	Revised sentence to reflect actual design from: "Dead plus live plus thermal plus seismic loads, and" To: "Dead plus live plus thermal plus dynamic loads, and;"
27	S9.1.2.6, 1st para.	Revised the paragraph in response to RAI 9.1-27 S01.
28	S9.1.2.7, 2nd para., 2nd sentence	Replaced sentence for clarification from: "The amount to be stored is equal to the amount of fuel that may be removed and subsequently returned to the RPV during a typical fuel shuffling activity." To: "These racks can store a minimum of 154 spent fuel assemblies."
29	S9.1.3.1, 1st para., 3rd bullet	Revised sentence for clarification from: "Emergency water supply flow paths." To: "Emergency water supply flow paths to the spent fuel pool and IC/PCC pools."
30	S9.1.3.2, System Description Summary, new 5th para.	Added the paragraph in response to RAI 6.2-140 S01.
31	S9.1.3.2, System Description Summary, 9th para.	Revised the paragraph in response to RAI 9.1-49. Added equivalent values with English units to existing values.
32	S9.1.3.2, System Description Summary,	Revised the paragraph in response to RAI 6.2-122 S01.

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	12th para.	
33	S9.1.3.2, System Description Summary, 13th para., 1st sentence	Revised sentence for clarification from: "With the exception of valves needed to perform accident recovery functions described above, the containment isolation valves are…." To: "The containment isolation valves are…."
34	S9.1.3.2, System Description Summary, 16th para.	Added the paragraph in response to RAI 9.1-42 S01.
35	S9.1.3.2, System Description Summary, 17th para., 1st sentence	Revised sentence to be consistent with design change from: "….have Quality Group B or C and Seismic I classification (Table 9.1-3)." To: "….have Quality Group B or C and Seismic I or II classification (Table 9.1-3)."
36	S9.1.3.2, System Description Summary, 17th para., 3rd sentence	Revised sentence for clarification from: "A Seismic II classification is sufficient for the remaining nonsafety-related piping and components that support accident recovery functions." To: "The remaining nonsafety-related piping and components that support accident recovery functions are Seismic Category II."
37	S9.1.3.2, System Description Summary, 17th para., 2nd sentence	Revised sentence to be consistent with design change from: "A seismic I classification is required for all safety-related functions listed above." To: "A seismic I classification is required for all safety-related functions."
38	S9.1.3.2, Detailed System Description, 6th para.	Revised paragraph in response to RAI 6.2-173.
39	S9.1.3.2, Detailed System Description, 6th para., (excluding change described in Item 37)	Revised to discuss primary and secondary flow paths to RWCU/SDC to be consistent with design changes.
40	S9.1.3.2, Detailed System Description, 7th	Revised sentence to be consistent with design change from: "….drywell spray flow rate must be less than 227 m^3/hr (1000 gpm)."

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	para., 2nd sentence	To: "….drywell spray flow rate must be less than 127 m^3/hr (560 gpm)."
41	S9.1.3.2, Detailed System Description, 7th para., 2nd & 3rd sentences	Revised basis for drywell spray flow rate limit to prevent excessive negative differential pressure on the containment liner and provided location of flow-restricting orifice in the drywell spray discharge line.
42	S9.1.3.2, Detailed System Description, 9th para.	Revised paragraph in response to RAI 6.2-122 S01.
43	S9.1.3.2, Detailed System Description, 10th para.	Replaced paragraph in response to RAI 6.2-122 S01.
44	S9.1.3.2, Detailed System Description, 12th para., 1st sentence	Revised sentence to be consistent with design change from: "Anti-siphoning devices are used…." To: "With the exception of the suppression pool suction line, anti-siphoning devices are used…."
45	S9.1.3.2, Detailed System Description, 12th para., 5th sentence	Added the following sentence to be consistent with design change: "The suppression pool suction line is conservatively designed to preclude a rupture between the pool and the containment isolation valves."
46	S9.1.3.2, System Operation, 8th para., 2nd and 3rd sentences	Added sentences to be consistent with design change: "The secondary injection path using the motor-driven pump in the fire pump enclosure is capable of supplying water at a rate of 90.8 m^3/hr (400 gpm) from the fire protection storage tank at a pressure of 2.61 MPa (379 psig). At a lower pressure of 1.72 MPa (250 psig), the secondary flow path should be capable of supplying water at a rate of 409 m^3/hr (1800 gpm)."
47	S9.1.3.2, System Operating Modes, Low Pressure Coolant Injection (LPCI) Mode, 1st para. 3rd sentence	Added sentence to be consistent with design change: "Alternatively, a separate motor-driven pump in the fire pump enclosure can take suction from the fire protection storage tank and pump water into the reactor vessel via a tie in with the primary LPCI flow path."
48	S9.1.3.3, 1st para., 3rd bullet	Added reference in response to RAI 6.2-122 S01.
49	S9.1.3.3, former 5th, 6th, 7th, 8th para.	Deleted paragraphs in response to RAI 6.2-122 S01.

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50	S9.1.3.2, Water Levels, 2nd para.	Paragraph revised, new sentence added to be consistent with design change.
51	S9.1.3.5, Water Levels, 3rd para., 3rd sentence	Added the sentence in response to RAI 9.1-18 S02. Added equivalent value with English units to shielding level.
52	S9.1.4.1, 3rd para., 1st sentence	Revised sentence for clarification from: "….and lists the safety class, quality group and seismic category." To: "….and lists the safety class, quality requirement and seismic category."
53	S9.1.4.1, 3rd para., 2nd sentence	Revised sentence for clarification from: "Where applicable, Table 9.1-5 identifies applicable ASME, …." To: "Table 9.1-5 identifies applicable ASME,…."
54	S9.1.4.1, 5th para., 1st sentence	Revised sentence to be consistent with design change from: "….are classified as nonsafety-related Seismic Category II, and are constructed in accordance with a supplemental quality assurance program to ensure compliance…." To: "….are classified as nonsafety-related Seismic Category I, and are constructed in accordance with the quality assurance requirements of 10 CFR 50, Appendix B to ensure compliance…."
55	S9.1.4.1, 7th para., 5th and 6th sentences	Revised the sentences in response to RAI 9.1-50.
56	S9.1.4.4, Fuel Building Crane, 1st para., 1st sentence	Revised sentence to be consistent with design change from: "The Fuel Building crane is classified as Seismic Category II to prevent structural failure with SSE loads, leading to degradation of the functioning of a Seismic Category I structure, system, or equipment to an unacceptable level." To: "The Fuel Building crane is classified as Seismic Category I to maintain crane structural integrity."
57	S9.1.4.4, Reactor Building Crane, 1st para., 1st sentence	Revised sentence to be consistent with design change from: "The Reactor Building crane is classified as Seismic Category II to prevent structural failure with SSE loads, leading to degradation of the functioning of a Seismic Category I structure, system, or equipment to an unacceptable level." To: "The Reactor Building crane is classified as Seismic Category I to maintain crane structural integrity."

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58	S9.1.4.5, Refueling Machine, 2nd para., 3rd sentence	Revised the sentence in response to RAI 9.1-50.
59	S9.1.4.5, Refueling Machine, 3rd para., 1st sentence	Revised sentence to be consistent with design change from: "The refueling machine is Seismic Category II." To: "The refueling machine is Seismic Category I."
60	S9.1.4.5, Fuel Handling Machine, 2nd para., 3rd sentence	Revised the sentence in response to RAI 9.1-50.
61	S9.1.4.5, Fuel Handling Machine, 3rd para., 1st sentence	Revised sentence to be consistent with design change from: "The refueling machine is Seismic Category II." To: "The refueling machine is Seismic Category I."
62	S9.1.4.6, Fuel Prep Machine, 1st para., 1st sentence	Revised sentence for clarification from: "….into the spent fuel storage pool racks and for channeling and re-channeling of new and spent fuel assemblies." To: "….into the spent fuel storage pool racks and for re-channeling spent fuel assemblies."
63	S9.1.4.8, Head Support Pedestal	Revised title for clarification from: "Head Support Pedestal" To: "Head Support Pedestals"
64	S9.1.4.8, Dryer and Chimney Head/Separator Strongback	Revised title for clarification from: "Dryer and Chimney Head/Separator Strongback" To: "Dryer/Separator Strongback"
65	S9.1.4.8, Dryer/Separator Strongback, 1st para., 1st sentence	Revised sentence for clarification from: "The dryer and chimney head/separator strongback is a lifting device used for transporting the steam dryer or the chimney head with the steam separators between the reactor vessel and the storage pools." To: "The dryer/separator strongback is a lifting device used for transporting the steam dryer or the steam separators between the reactor vessel and the storage pools."

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66	S9.1.4.8, Dryer/Separator Strongback, 1st para., former 4th sentence	Deleted the following sentence to reflect actual design. "This strongback or a similar device is also used to remove the chimney partition assembly if this option is implemented to facilitate refueling operations."
67	S9.1.4.8, Dryer/Separator Strongback, 2nd para., 1st sentence	Revised sentence for clarification from: "….is capable of carrying the total load (160-ton) and no single…." To: "….is capable of carrying the total load (160-metric ton, 176-ton) and no single…."
68	S9.1.4.8, Head Strongback/Tensioner, 1st para., 1st sentence	Revised sentence to reflect actual design from: "….consisting of a strongback, a four-station rotating frame with stud tensioners, …." To: "….consisting of a strongback, a multi-station rotating frame with stud tensioners, …."
69	S9.1.4.8, Head Strongback/Tensioner, 2nd para., 5th sentence	Revised sentence to reflect actual design from: "The rotating frame positions the four stations of the stud tensioning…." To: "The rotating frame positions the stations of the stud tensioning…."
70	S9.1.4.8, Head Strongback/Tensioner, 2nd para., 2nd bullet	Revised sentence to reflect actual design from: "….when supported on the RPV head on the vessel, carries four stations of stud Tensioners, nut, and washer…." To: "….when supported on the RPV head on the vessel, carries multiple stations of stud tensioners, nut, and washer…."
71	S9.1.4.8, Head Strongback/Tensioner, 5th para., 1st sentence	Revised sentence for clarification from: "….in accordance with American National Standard for Overhead Hoists ANSI B30.16,…." To: "….in accordance with American National Standard for Overhead Hoists ASME/ANSI B30.16,…."
72	S9.1.4.11, 3rd para., 1st sentence	Revised sentence for clarification from: "The under vessel platform…." To: "The under-vessel platform…."
73	S9.1.4.11, 4th para., 1st sentence	Revised sentence for clarification from: "The under vessel platform…."

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		To: "The under-vessel platform…."
74	S9.1.4.12, 3rd para., 1st sentence	Revised sentence for clarification from: "The IFTS has sufficient cooling such that a freshly removed fuel assembly can remain in the IFTS until it is removed without damage to the fuel or excessive overheating." To: "The IFTS has sufficient cooling such that two freshly removed fuel assemblies can remain in the IFTS until they are removed without damage to the fuel or excessive overheating."
75	S9.1.4.12, 4th para., 2nd sentence	Revised sentence for clarification from: "Therefore, the portion of the IFTS transfer tube assembly from where it interfaces with the upper fuel pool, the portion of the tube assembly extending through the building, the drain line connection, and the lower Spent Fuel Pool terminus equipment (tube, valve, support structure, and bellows) are designated as Nonsafety-related and Seismic Category I." To: "Therefore, the portion of the IFTS transfer tube assembly from where it interfaces with the upper fuel pool, the portion of the tube assembly extending through the building, the drain line connection, and the lower tube equipment (valve, support structure, and bellows) are designated as Nonsafety-related and Seismic Category I."
76	S9.1.4.12, 4th para., 3rd sentence	Added sentence for clarification: "The winch, upper upender, and lower terminus are designated as Nonsafety-related and Seismic Category II."
77	S9.1.4.13, 1st para., 3rd sentence	Revised sentence for clarification from: "It depicts, in chronological order, each event and elapsed time estimates based on historical BWR fleet experience." To: "It depicts, in chronological order, each event based on historical BWR fleet experience."
78	S9.1.4.15, Drywell Head Removal, 1st para., 1st sentence	Added sentence for clarification: "The equipment storage pool gate will be installed to facilitate draining of the reactor well."
79	S9.1.4.15, Drywell Head Removal, 1st para., 2nd sentence	Revised sentence for clarification from: "Following drain down of the reactor well and the completion of wall cleaning, the drywell head quick disconnect pins are removed and stored for reinsertion after replacement of the drywell head. The drywell head is lifted by the Reactor Building crane…." To:

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		"Following drain down of the reactor well and the completion of wall cleaning, the drywell head is lifted by the Reactor Building crane…."
80	S9.1.4.15, Dryer and Chimney Head/Separator Removal	Deleted the following title for clarification. "Dryer and Chimney Head/Separator Removal"
81	S9.1.4.15, Fuel Pool Gate Removal	Revised title for clarification from: "Fuel Pool Gate Removal" To: "Removal of Equipment Storage Pool and Buffer Pool Gates"
82	S9.1.4.15, Removal of Equipment Storage Pool and Buffer Pool Gates, 1st para., 1st sentence	Revised sentence to reflect actual design from: "In preparation for spent fuel movement out of the reactor core, the fuel pool and reactor well gates are removed after equalization of water levels between the fuel pool and reactor well." To: "In preparation for spent fuel movement out of the reactor core, the reactor well is flooded and the equipment storage pool and buffer pool gates are removed after equalization of water levels between the pools."
83	S9.1.4.15, Dryer Removal, 1st para., 2nd sentence	Revised sentence for clarification from: "The dryer is lifted from the reactor vessel and transported underwater to its storage location in the D/S pit adjacent to the reactor well." To: "The dryer is lifted from the reactor vessel and transported underwater to its storage location."
84	S9.1.4.15, Chimney Head/Separator Removal	Revised title for clarification from: "Chimney Head/Separator Removal" To: "Separator Removal"
85	S9.1.4.15, Separator Removal, 1st para.	Revised paragraph for clarification from: "Disengagement of all chimney head bolts from the chimney head/separator flanged joint is completed and verified prior to chimney head/separator removal. The chimney head/separator is removed together as an assembly with the lifting rods attached to the separator flange." To: "Disengagement of all separator bolts from the separator/chimney flanged joint is completed and verified prior to separator removal. The separator is removed with the lifting rods attached to the flange."

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86	S9.1.4.15, Separator Removal, former 2nd para.	Deleted the following paragraph to reflect actual design: "The reactor well is then flooded and the water level is raised to the same level as the equipment storage pool. This allows the removal of the pool gate to permit passage of the chimney head/separator assembly in to the storage pool."
87	S9.1.4.15, Separator Removal, 2nd para., 1st sentence	Revised sentence for clarification from: "Lifting of the chimney head/separator assembly is effected by the chimney head/separator strongback suspended from the main crane." To: "Lifting of the separator is effected by the separator strongback suspended from the main crane."
88	S9.1.4.15, Chimney Partition Removal	Added section to be consistent with design change: "Chimney Partition Removal To facilitate efficient movement of fuel, simplify removal/replacement of LPRMs and control rod blades, and reduce core verification time, the chimney partitions shall be removable for refueling. The partitions are lifted from the reactor vessel and transported underwater to their storage location using the partition strongback and the RB crane. Partitions are not required to be removed to perform refueling activities."
89	S9.1.4.16, Core Verification, 1st para., 1st sentence	Revised sentence for clarification from: "….the proper seating condition of each fuel bundle." To: "….the proper seating condition of each fuel assembly."
90	S9.1.4.17, 2nd para., bullets	Revised the bullets to reflect actual design of core restacking.
91	S9.1.4.18, 5th para.	Revised the paragraph in response to RAI 9.1-43 and 9.1-33 S01.
92	S9.1.4.19, Inspection, 1st para., 1st sentence	Revised sentence for clarification from: "The fuel storage racks and refueling machine have additional quality requirements…." To: "The refueling and fuel handling machines have additional quality requirements…."
93	S9.1.4.19, Testing, 1st para., 1st sentence	Revised sentence for clarification from: "Functional tests are performed on refueling and servicing in the shop prior to…." To:

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		"Functional tests are performed on refueling and servicing equipment in the shop prior to…."
94	S9.1.4.19, Testing, former 3rd para.	Deleted the following paragraph for clarification: "Passive components, such as the fuel storage racks, are inspected periodically. Procedures for interim verification of the presence of neutron absorbing material during the life of the plant are provided."
95	S9.1.5.2, 5th para., 2nd sentence	Revised the sentence in response to RAI 9.1-33 S01.
96	S9.1.5.2, 6th para., 2nd sentence	Revised sentence for clarification from: "….ANSI B30….." To: "….ASME/ANSI B30….." in five places.
97	9.1.5.5, Fuel Building Crane, 1st para., 3rd sentence	Revised sentence for clarification and correction from: "The main hook (160-ton) is used to lift…." To: "The main hook (150-metric ton/165-ton) is used to lift…."
98	9.1.5.5, Reactor Building Crane, 1st para., 1st sentence	Revised sentence for clarification from: "….buffer pool deep pit pool for spent fuel storage, the dryer and chimney head/separator, and…." To: "….buffer pool deep pit pool for spent fuel storage, the dryer and separator, and…."
99	9.1.5.5, Reactor Building Crane, 1st para., 3rd sentence	Revised sentence for clarification and correction from: "The main hook (150-ton) is used to lift…." To: "The main hook (160-metric ton/176-ton) is used to lift…."
100	9.1.5.5, Reactor Building Crane, 1st para., 3rd sentence	Added component in sentence to be consistent with design change from: "….dryer, chimney head/separator strongback, and RPV head stud tensioning equipment….." To: "….dryer, separator strongback, chimney partitions, and RPV head stud tensioning equipment….."
101	S9.1.5.6, Lower Drywell Servicing Equipment, 2nd para., 2nd sentence	Revised sentence to reflect actual design from: "The platform rotates 360º in either direction…." To: "The platform rotates 180º in either direction…."

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102	S9.1.5.8, 1st para., 1st sentence	Revised sentence for clarification from: "….and implementation of heavy load handling systems (refer to COL items in Section 9.1.6):" To: "….and implementation of heavy load handling systems:"
103	S9.1.5.8, 2nd para.	Added paragraph for clarification: "The COL applicant will provide a description of the program governing heavy loads handling, and the schedule for implementation (COL 9.1-5-A)."
104	S9.1.5.10, 3rd para., 1st sentence	Revised sentence for clarification from: "….ANSI B30.2." To: "….ASME/ANSI B30.2."
105	S9.1.6	Renumbered COL applicant items to be compliant with current numbering process.
106	S9.1.6, COL Item 9.1-4-A, bullet 5	Added cross-reference in compliance with current process.
107	S9.1.6, COL Item 9.1-5-A, bullet 6	Added cross-reference in compliance with current process.
108	T9.1-1, 2nd row, 1st column, 1st bullet	Revised description for clarification from: "Steam Dryer and Separator Storage Pool" To: "Equipment Storage Pool"
109	T9.1-3, Column 3	Revised column title for clarification from: "Quality Group" To: "Quality Requirement"
110	T9.1-3, Item 14	Revised "Component" and "Safety Class" to be consistent with design change.
111	T9.1-3, Item 15	Revised "Component" to be consistent with design change.
112	T9.1-4, 1st row, columns 1-5	Revised "Principal Components", "Safety Class", "Location", "QA Requirement", and "Seismic Category" in accordance with RAI 9.1-36.
113	T9.1-4, 1st row	Revised QA Requirement from E to B and Seismic Classification from II to I for Fuel Preparation Machine to

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		be consistent with design change.
114	T9.1-4, 5th row, 4th and 5th column	Revised QA Requirement from E to B and Seismic Classification from II to I for Fuel Handling Machine and Refueling Machine to be consistent with design change.
115	T9.1-4, 6th row, 4th column	Revised QA Requirement from E to B to be consistent with design change.
116	T9.1-4, 10th row, 5th columns	Revised "QA Requirement" and "Seismic Category" in accordance with RAI 9.1-35.
117	T9.1-5, rows 2 through 6, column 1	Revised "Number" for clarification from: "….ANSI B30…." To: "….ASME/ANSI B30…."
118	T9.1-5, 7th row, 1st through 3rd columns	Added reference in accordance with RAI 9.1-43.
119	T9.1-6	Added Chimney Partition Strongback as piece of reactor vessel servicing equipment to be consistent with design change.
120	T9.1-7, RPV OPENING/CLOSING OPERATIONS	Added chimney partition removal, storage, reinstallation as task to be consistent with design change.
121	T9.1-7, REFUELING OPERATIONS, New Fuel, former 3rd and 4th rows	Deleted as load is not defined as heavy.
122	T9.1-7, REFUELING OPERATIONS, Spent Fuel, former 1st row	Deleted as load is not defined as heavy.
123	T9.1-8	Table added in accordance with RAI 9.1-10 S02.
124	F9.1-1	Replaced to reflect actual design.
125	F9.1-2	Replaced in accordance with RAI 9.1-35.
126	F9.1-3	Replaced to reflect actual design.
127		

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
128	S9.2.1.1, 2nd para.	Revised entire paragraph to describe the RTNSS requirements by referencing Chapter 19 from: "The PSWS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions to provide post 72-hour cooling. Performance of RTNSS functions is assured by applying requirements for redundant trains, physical and electrical separation of trains, seismic requirements, and ability to withstand category 5 hurricane missiles and flood protection. Appendix 19A provides the level of oversight and additional requirements to meet the RTNSS functions." To: "The PSWS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions are assured by applying the defense-in-depth principles of redundancy and physical separation to ensure adequate reliability and availability as described in Section 19A.8.3."
129	S9.2.1.1, 4th para.	Revised paragraph to further detail the needs of meeting GDC 4 per RAI 9.2-21 from: "The PSWS meets GDC 4 with respect to dynamic effects associated with water hammer. The PSWS is vented at components and high points vents and operation and maintenance procedures are used to assure sufficient measures are taken to avoid water hammer. To: "The PSWS meets the intent of the acceptance criteria of GDC 4 for normal operation, maintenance, and testing. The PSWS meets the intent of the acceptance criteria of GDC 4 with respect to dynamic effects associated with water hammer. The PSWS is vented at components and high points vents and operation and maintenance procedures are used to assure sufficient measures are taken to avoid water hammer. The PSWS also meets the intent of the acceptance criteria of GDC 4 for other dynamic effects, including the effects of missiles, jet impingement, pipe whipping, and discharging fluids, as clarified by the following design considerations: • Pipe routing; • Piping design considerations, such as material selection, pipe size and schedule; • Protective barriers as necessary; and • Appropriate supports and restraints"
130	S9.2.1.1, 6th para.	Revised paragraph concerning GDC's 44, 45, and 46 per RAI 9.2-21 from: "The ESBWR PSWS meets the acceptance criteria of GDC's 44, 45, and 46 by providing the following design considerations:" To:

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"Although the PSWS is a nonsafety-related system, it meets the intent of certain acceptance criteria of GDCs 44, 45 and 46, as clarified by the following design considerations:"
131	S9.2.1.1, 2nd set of bullets, 2nd bullet	Revised bullet to describe what type of failures from: "…assuming a single failure…" To: "…assuming a single active failure…"
132	S9.2.1.2, Detailed System Description, 2nd para., 2nd sent.	Deleted the word "duplex", because duplex strainers are not needed to meet redundancy requirements.
133	S9.2.1.2, Detailed System Description, 2nd para., last sent.	Revised "Manual balancing valves…" to "Flow control valves…" as shown in Figure 9.2-1.
134	S9.2.1.2, Detailed System Description, 3rd para., new 3rd sent.	Added sentence in response to RAI 9.2-23 S01: "The design of the heat rejection facilities and PSWS pumps have sufficient available net positive suction head (NPSH) under worst case conditions."
135	S9.2.1.5, 4th para., last sent.	Revised sentence to provide location of strainer differential pressure indication from: "Pressure drop across the strainer is locally indicated and…" To: "Pressure drop across the strainer is indicated in the MCR and…"
136	S9.2.1.5, 6th para., last sent.	Revised sentence for clarity and consistency with Figure 9.2-1 from: "These flow elements and transmitters in the return headers provide monitoring of PSWS flow…" To: "Flow elements and transmitters in the PSWS provide monitoring of system flow…"
137	T9.2-1	Revised various heat loads to be consistent with the current design.
138	T9.2-2, PSWS Cooling Towers and Basins, Type	Revised "dual" to "adjustable" to allow detail design flexibility.
139	T9.2-2, Strainers, Type	Deleted the word "duplex" because duplex strainers are not needed to meet redundancy requirements
140	T9.2-2, Notes	Deleted Note 4 because it is not applicable.

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"4 – Approach Temperature includes a 1.11°C (2°F) recirculation allowance"
141	F9.2-1	Revised figure to eliminate redundant flow elements in common supply header and to move flow elements in the common return header downstream into the cooling tower risers and cooling tower bypass lines. Revised the duplex strainer to a simplex strainer. Figure is consistent with current design.
142	S9.2.2.1, 2nd para.	Revised entire paragraph referencing Chapter 19 for RTNSS requirements from: "The RCCWS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions to provide post 72-hour cooling to the nuclear island chillers and diesel generators. Performance of RTNSS functions is assured by applying requirements for redundant trains, physical and electrical separation of trains, seismic requirements, and ability to withstand Category 5 hurricane missiles and flood protection. Appendix 19A provides the level of oversight and additional requirements to meet the RTNSS functions." To: "The RCCWS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the defense-in-depth principles of redundancy and physical separation to ensure adequate reliability and availability as described in Section 19A.8.3."
143	S9.2.2.1, 4th para.	Revised paragraph to further detail the needs of meeting GDC 4 per RAI 9.2-21 from: "The RCCWS meets GDC 4 with respect to dynamic effects associated with water hammer. The RCCWS has high point vents and operation and maintenance procedures assure sufficient measures are taken to avoid water hammer." To: "The RCCWS meets the intent of the acceptance criteria of GDC 4 for normal operation, maintenance, and testing. The RCCWS meets the intent of the acceptance criteria of GDC 4 with respect to dynamic effects associated with water hammer. The RCCWS has high point vents and operation and maintenance procedures assure sufficient measures are taken to avoid water hammer. The RCCWS also meets the intent of the acceptance criteria of GDC 4 for other dynamic effects, including the effects of missiles, jet impingement, pipe whipping, and discharging fluids, as clarified by the following design considerations: • Pipe routing; • Piping design considerations, such as material selection, pipe

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		size and schedule; • Protective barriers as necessary; and • Appropriate supports and restraints"
144	S9.2.2.1, 6th para.	Revised paragraph concerning GDC's 44, 45, and 46 per RAI 9.2-21 from: "The ESBWR RCCWS meets the acceptance criteria of GDC's 44, 45, and 46 by providing the following design considerations:" To: "Although the RCCWS is a nonsafety-related system, it meets the intent of certain acceptance criteria of GDCs 44, 45 and 46, as clarified by the following design considerations:"
145	S9.2.2.1, 2nd set of bullets, 2nd bullet	Revised bullet to describe what type of failures from: "…assuming a single failure…" To: "…assuming a single active failure…"
146	S9.2.2.2, Detailed System Description, 5th para., 2nd to last sentence	Revised sentence to allow design detail flexible from: "The heat exchanger outlet isolation valves are automatic." To: "The heat exchanger outlet isolation valves are provided."
147	S9.2.2.5, 2nd para.	Deleted "Local" to allow design detail flexibility.
148	T9.2-3, CWS Heat Load	Added Note 1 to CWS Heat load for Normal Cooldown and Cooldown w/LOPP and added the new note to the bottom of the table in response to RAI 9.2-20: "[1] Total CWS Heat Load shown is applicable to Train A or B, or shared between the two trains."
149	T9.2-3, Various Heat Loads	Various Heat Loads revised to reflect current design values.
150	F9.2-2a	RCCWS flow diagrams revised to reflect current design configuration: • Replaced MOV's with AOV's on Surge Tank Makeup Lines. • Replaced AOV w/bypass with single MOV on Train A&B supply header isolation.
151	F9.2-2b	RCCWS flow diagrams revised to reflect current design configuration: • Changed Process Sampling System Interface lines to the RB/FB Sample Station. • Revised FB Seismic Class break from "NS" to "II".

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
152	S9.2.3.2, 1st para., last two sent.	Revised "shutdown/refueling" to "shutdown/refueling/startup" to better define requirements.
153	S9.2.3.2, Demineralization Subsystem, 1st para., 12th sent.	Revised "pretreated source water storage tank" to "station water storage tank" for design consistency.
154	T9.2-7, Conductivity at 25°C (µS/cm)	Added "*" to match table Notes.
155	T9.2-7, Total Organic Carbon (TOC)(ppb)	Added "**" to match table Notes and revised values to match correct TOC values based on current design.
156	T9.2-7, Table Notes, Note **	Revised "makeup" to "demineralized" to match design nomenclature.
157	T9.2-8, Total Organic Carbon (TOC)**(ppb)	Deleted "**" as notes from previous table, 9.2-7, do not apply to Demineralizer Effluent.
158	S9.2.4	NO CHANGES
159	S9.2.5, Entire Subsection	Revised "Dryer/Separator Pool" to "equipment storage pool" to be consistent with current component naming.
160	S9.2.5, 7th para., former 6th sent.	Deleted sentence as flow rate requirements are now discussed in the 8th paragraph of S9.2.5 per RAI 9.2-19.
161	S9.2.5, 7th para., 2nd to last sent.	Revised "applicant" to "Holder" which is appropriate for the COL item
162	S9.2.5, 8th para., 3rd sent.	Revised sentence to clarify the flow rate requirements per RAI 9.2-19 from: "The evaporation and, therefore, makeup water demand would not exceed the Table 9.5-2 rate beyond 72 hours. " To: "Therefore, the required minimum total makeup water flow rate beyond 72 hours, as well as beyond seven days, into an event, would not exceed the required minimum total makeup water flow rate at 72 hours as shown in Table 9.5-2. The makeup water sources meet the minimum flow rate specified in Table 9.5-2."
163	S9.2.5.1	Revised "applicant" to "Holder" as appropriate for the COL item.
164	S9.2.6.1, 5th para.	Revised paragraph as CS&TS is not required to support CRD operation during ATWS nor is it RTNSS from: "The requirements of GDC 44 are not applicable to the CS&TS Standard

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		Design for the ESBWR. The CS&TS is nonsafety-related and is not required to meet GDC 44 requirements." To: "The CS&TS is nonsafety-related and requirements of GDC 44, 45, and 46 are not applicable to the CS&TS Standard Design for the ESBWR."
165	S9.2.6.1, former 6th para.	Deleted paragraph as GDC requirements are described in the previous paragraph. "The CS&TS meets the requirements of GDC 45 and GDC 46 by providing design provisions to permit inspection and operational testing of components and equipment."
166	S9.2.6.2, 2nd to last para., last sent.	Changed "accidental" to "uncontrolled" to be more consistent with RG 1.143.
167	S9.2.7.1, 2nd para.	Added second paragraph in response to RAI 9.2-21: "The NICWS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the defense-in-depth principles of redundancy and physical separation to ensure adequate reliability and availability as described in Section 19A.8.3."
168	S9.2.7.1, 4th para., 1st two sent.	Added sentences in response to RAI 9.2-21: "The CWS meets the intent of the acceptance criteria of GDC 4 for normal operation, maintenance, and testing. The CWS meets the intent of the acceptance criteria of GDC 4 with respect to dynamic effects associated with water hammer."
169	S9.2.7.1, 4th para., 3rd and 4th sent.	Added sentences in response to RAI 9.2-15 S01: "The potential for water hammer is mitigated through the use of various system design and layout features, such as high point vents, valve cycle times, and surge tanks. Additionally, CWS operation and maintenance procedures incorporate necessary steps, such as proper line filling, to avoid water hammer."
170	S9.2.7.1, 4th para., last sent. and 1st set of bullets	Added sentences in response to RAI 9.2-21: "The CWS also meets the intent of the acceptance criteria of GDC 4 for other dynamic effects, including the effects of missiles, jet impingement, pipe whipping, and discharging fluids, as clarified by the following design considerations: · Pipe routing; · Piping design considerations, such as material selection, pipe size and schedule; · Protective barriers as necessary; and

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		· Appropriate supports and restraints."
171	S9.2.7.1, 5th & 6th para. and 2nd set of bullets	Added sentences in response to RAI 9.2-21: "The CWS meets GDC 5 for shared systems and components important to safety. The CWS Standard Plant design does not share any SSC with any other unit. Although the NICWS is a nonsafety-related system, it meets the intent of certain acceptance criteria of GDCs 44, 45 and 46, as clarified by the following design considerations: · Capability of transferring heat loads from SSCs to a heat sink, via the Reactor Component Cooling Water System (RCCWS) and Plant Service Water System (PSWS), under normal and accident conditions; · Component redundancy so the system remains functional assuming a single active failure coincident with a loss of offsite power; · Capability to isolate components so system function is not compromised; and · Design provisions to permit inspection and operational testing of components and equipment"
172	S9.2.7.1, former last para.	Deleted former paragraph because the new second paragraph of S9.2.7.1 describes RTNSS requirements: "The nonsafety-related portions of NICWS have Regulatory Treatment of Non-Safety Systems (RTNSS) functions to provide post 72-hour cooling for HVAC. Appendix 19A provides the level of oversight and additional requirements to meet the RTNSS functions."
173	S9.2.7.2, 1st para., 2nd sent.	Revised sentence to delete "and Hot Machine Shop" to reflect design change.
174	S9.2.7.2, 1st para., last sent.	Added sentence to reflect actual design: "Cross-tie valves are provided allowing operational flexibility between the systems."
175	S9.2.7.2, 1st bullet	Revised sentence to add details of chillers that apply to both NICWS and BOPCWS from: "The chiller units are packaged designs, including compressor, condenser, evaporator, refrigerant piping, relief valve, instrumentation, controls, and control panel; and" To: "The chiller units are packaged designs, including centrifugal compressor, condenser, evaporator, refrigerant piping, relief valve, instrumentation, pump out unit, oil heater, refrigerant, controls, and control panel. The compressor inlet guide vanes are modulated by the chiller leaving water temperature to regulate the chillers output capacity;

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		and"
176	S9.2.7.2, 3rd para., 2nd sent.	Added sentence in response to RAI 9.2-15 S01: "Surge tanks also provide NPSH to the CWS pumps and maintain system pressure above vapor pressure to mitigate voiding."
177	S9.2.7.2, Detailed NICWS Description, 1st para., 1st four sent.	Revised paragraph to reflect design change that combined passive (piping) portions of NICWS from: "The NICWS consists of two 100% capacity redundant and independent trains (Train A and Train B) with crossties between their chilled water piping. The isolation valves in the crosstie lines upstream and downstream of the evaporators are normally open. Each NICWS train consists of parallel pumps, parallel chillers, one surge tank, an air separator, startup strainer, piping, valves, and instrumentation…" To: "The NICWS consists of two 100% capacity trains (Train A and Train B), with redundancy and independence for active components. Each NICWS train consists of parallel pumps, parallel chillers, one surge tank, an air separator, startup strainer, active valves, and instrumentation. Chilled water is supplied from either train to a common header that distributes chilled water to the NICWS loads throughout the facility via a single piping distribution loop. Individual chillers and pumps are isolable for maintenance and repair…"
178	S9.2.7.2, Detailed NICWS Description, 1st para., last sent.	Revised sentence to meet the current design to clarify there is only one chemical addition tank for both trains from: "A chemical feed tank for each train is installed in parallel with the loads for corrosion inhibitor addition to the chilled water. Each train is powered from separate buses." To: "A chemical feed tank is installed in parallel with the loads for corrosion inhibitor addition to the chilled water. Each train is powered from separate buses."
179	S9.2.7.2, Detailed NICWS Description, 2nd para., 1st three sent.	Deleted sentences as the design features are now discussed in S9.2.7.2, 1st bullet.
180	S9.2.7.2, Detailed BOPCWS Description, last para., 1st sent.	Revised sentence for clarification from: "…independent loop with crossties between the BOPCWS chilled water piping." To: "…independent loop with crossties to the NICWS chilled water piping."
181	S9.2.7.2, Detailed BOPCWS Description,	Deleted former last bullet "Hot Machine Shop HVAC air handling units" from list to reflect design change.

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	bullets	
182	S9.2.7.2, Detailed BOPCWS Description, last para., 1st three sent.	Deleted sentences as the design features are now discussed in S9.2.7.2, 1st bullet.
183	S9.2.7.2, System Operation, 1st para., new last sent.	Added new sentence to provide additional details of chiller operation: "A flow measuring device in the common bypass line monitors the flow rate and its signal is used to control the staging of the chillers."
184	S9.2.7.2, System Operation, 2nd para., 1st sent.	Revised sentence to reflect design change from: "…designed so that failure or malfunction…" To: "…designed so that a single active failure or malfunction…"
185	T9.2-11	Revised note to clarify that some characteristics are typical from: "* The chiller unit cooling capacity and other CWS component design characteristics correspond to CWS chilled water heat load of 19,110 kW (6.5 x 10^7 Btu/hr)." To: "* The number of chillers, chiller unit cooling capacity and other CWS component design characteristics are typical and correspond to CWS chilled water load of 19,110 kW (6.5 x 10^7 Btu/hr)"
186	T9.2-11, Evaporators	Deleted "Inlet" and "Outlet Water Temperature" and replaced with "Chilled Water Temperature, ΔT" to be more concise.
187	T9.2-11, Compressors	Clarified "Power" requirements are "max"
188	F9.2-3	Replaced figure to reflect design change.
189	S9.2.8	No Changes
190	T9.2-12, List of Heat Loads	Revised the following components TCCW system cools to be consistent with current design: Revised from: "Generator stator cooling water heat exchangers, Generator hydrogen coolers, Hydrogen seal oil coolers and Exciter coolers" To: "Generator stator cooling water heat exchangers"

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		Added: "Main Generator hydrogen coolers" Revised from: "Reactor feed pump motor coolers and Auxiliary Steam Drain feed pump" To: "Reactor feedwater pump motor and Adjustable Speed Drive (ASD) coolers " Added: "Reactor feedwater booster pump motor coolers" Revised from: "Auxiliary Steam Drain Cooler" To: " and other miscellaneous coolers"
191	T9.2-12, System Parameters	Removed "Heat Removal Capacity" and "System Flow" as unnecessary design details.
192	T9.2-12, System Parameters	Removed "Capacity Each" as unnecessary design detail.
193	F9.2-4	Replaced figure to reflect current design which includes eliminating cooler bypass lines and moving TCCWS Hx bypass lines connection to downstream of the Hx outlet flow control valve.
194	S9.2.9	NO CHANGES
195	S9.2.10	NO CHANGES
196		
197	S9.3.1	NO CHANGES
198	S9.3.2.1, new last bullet	Added new last bullet per RAI 10.4-15. "EPRI BWRVIP-130: BWR Vessel and Internals Project BWR Water Chemistry Guidelines"
199	S9.3.2.1, new last para.	Added new last paragraph to state the design requirements for Process Sampling System in order to meet post-accident sampling needs. "The design provides the capability to meet the requirements of NEDO-32991-A, "A Regulatory Relaxation for BWR Post-Accident Sampling

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		Stations (PASS)””
200	S9.3.2.7, two new references	Added new references, 9.3.2-11 and 9.3.2-12, to meet the obligations of the new last bullet and last paragraph of S9.3.2.1.
201	S9.3.3.5 3rd paragraph	Changed paragraph from: “High and low level transmitters on each sump start and stop the sump pump automatically. A separate high-high level switch starts the second sump pump and actuates an alarm in the MCR. To: “High and low level signals on each sump start and stop the sump pump automatically. A separate high-high level signal starts the second sump pump and actuates an alarm in the MCR.” Changed to provide clarity.
202	S9.3.4	NO CHANGES
203	S9.3.5.1, 3rd para., new 2nd sent.	Added new sentence to ensure design is consistent with the analysis described in DCD Tier 2, Section 15.4. “The sodium pentaborate in the SLC solution is also credited for buffering to ensure the iodine chemical distribution assumed in the LOCA dose consequence analysis remains valid (Section 15.4).”
204	S9.3.5.2, former 4th para.	Moved paragraph for clarity. It is now the new 5th paragraph.
205	S9.3.5.2, System Operation, 4th para., new 2nd sent.	Added sentence to provide detail of boron solution related to the analysis provided in DCD Tier 2 Subsection 15.4.4.5.2.2: “The boron solution is also credited for buffering the suppression pool such that dissolved iodine does not re-evolve into the containment atmosphere.”
206	S9.3.5.2, System Operation, 5th para., 1st sent.	Removed words “shutdown functional” for clarity as these words are redundant when referring to SLC function.
207	S9.3.5.2, System Operation, 2nd to last para., last sent.	Revised sentence to more accurately reflecting established system design from: “An accumulator vent is also provided, which can be operated via control switches in the main control room to quickly reduce the pressure in the accumulator.”

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		To: "An accumulator vent is also provided, which can be operated via control switches in the main control room to release the residual nitrogen."
208	S9.3.5.2, last para.	Added new paragraph to resolve RAI 9.3-9 S02. "SLC system leakage can be monitored using the accumulator pressure and level instrumentation, which provide alarms for out-of-tolerance process conditions. Frequent alarms that require boron, or nitrogen makeup indicate the possibility of system leakage, and system inspections are performed. Leakage is collected by the SLC system through drains and sent to a stainless steel drum for disposal. In the event of system leakage, or maintenance, the injection line and accumulators are capable of isolation from the reactor and from each other. The various subsystems are capable of isolation from the main system."
209	S9.3.5.3, 12th para., 2nd sent.	Revised sentence to resolve RAI 9.3-42 from: "The overall requirements (Section I) of the GDC are applicable to the system, and the system equipment has been designed and installed in conformance with the presentations in Chapter 3." To: "The overall requirements of GDC 2 and GDC 4 are applicable to the system, and the system equipment has been designed and installed in conformance with the presentations in Chapter 3."
210	S9.3.5.3, 12th para., "Criterion 4"	Added new criterion to resolve RAI 9.3-5 S02. "Criterion 4, Environmental and Dynamic Effects Design Bases: Due to its location inside the Reactor Building, within its own compartment, the SLC system is protected from internally and externally generated missiles. The system piping is routed and analyzed, so that an appropriate distance is provided between it and other high-energy piping. To prevent, or mitigate the dynamic effects of the discharging fluid (i.e. water hammer), the injection line is designed with proper venting. The system components are qualified for the range of environmental conditions postulated for their location."
211	S9.3.5.3, 13th para., "Criterion 26", last sent.	Revised last sentence for clarity from: "…to bring and maintain the core to such critical conditions..." To: "…to bring and maintain the core to subcritical conditions..."
212	S9.3.5.4, 5th & 6th para.	Editorial change that separated the original 5th paragraph into two paragraphs. This created the new 6th paragraph.
213	S9.3.5.4, 6th para., 5th and 6th sent.	Revised sentences for clarity from: "Charging the solution inventory is performed with the accumulator depressurized. Provision is made for a minimum of eight sample

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		withdrawals without a requirement for makeup." To: "Provision is made for a minimum of eight sample withdrawals without a requirement for makeup. Initial charging of the solution inventory is performed with the accumulator depressurized."
214	S9.3.5.5, 3rd para., 2nd & 3rd sent.	Revised sentences to form clear statements concerning operation of the shut-off valves from: "Closure, or override, of the automatic closure can also be initiated manually from the MCR." To: "If necessary, the closure signal can be overridden after the shut-off valves have been closed. Closure of the shut-off valves can also be initiated manually from the MCR."
215	T9.3-3, 1st bullet, 2nd and 3rd sent.	Revised bullet for clarity and provide additional design detail from: "Each accumulator contains at least 7.8 m^3 (2061 gal) of 12.5 weight % of sodium pentaborate and demineralized water. The boron has an enriched ratio of 94% of at least B^{10} isotope against B^{11}" To: "Each accumulator contains at least 7.8 m3 (2061 gal), but not greater than 9.7 m3 (2562 gal), of 12.5 weight % sodium pentaborate and demineralized water solution. The boron has an enriched ratio of at least 94% of B10 isotope against B11"
216	T9.3-5, row 6 and new 5th and 7th rows	Added Equivalent Volumetric Flow Rate and Total Injection Timer per RAI 14.3-196 S01 (Note that a response to this RAI has not been previously submitted.).
217	S9.3.6.1, Design Bases, 4th para., last sent.	Deleted words "Standard Plant" for clarification.
218	S9.3.6.2, 3rd para., last sent.	Added "(or varies speed)" to allow flexibility in the operation of the compressor and changed "air receiver" to "instrument air header"
219	S9.3.6.2, System Description, 4th para. last sent.	Deleted sentence due to design change that includes four (4) compressors with two (2) on each PIP bus. "The third compressor is provided the ability to be powered from either PIP bus."
220	S9.3.6.7	Renumbered references due to duplication of 9.3.6-2.
221	T9.3-6 Instrument Air System Requirements,	Revised the requirements for flowrate to update the design from:

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	Flow Rate:	"22.7 m^3/min (800 scfm), minimum" To: "11.2 m^3/min (396 scfm), nominal"
222	T9.3-6 Instrument Air System Requirements Air dryer outlet:	Change "maximum" to "nominal" to meet the current design.
223	F9.3-3 Service Air and Instrument Air System Simplified Diagram	Revised figure to show a four (4) compressor configuration to be consistent with the current design.
224	S9.3.7.1, 1st para., new 2nd sent..	Added new sentences to provide additional design requirements for the Service Air System as follows: "The containment penetration portion is designed to ASME Section III, Class 2, Seismic Category I."
225	S9.3.7.2, 5th para., 1st sent.	Revised from "three" to "four (4)" air compressors to be consistent with current design.
226	S9.3.7.2, 6th para., 2nd sent.	Added "(or varies speed)" to allow flexibility in the operation of the compressor and change "air receivers" to "instrument air header." for clarification
227	S9.3.7.2, 6th para., last sent.	Revised paragraph to reflect design change from: "The third compressor is available to be used as a standby compressor….." To: "The other two (2) compressors are available to be used as standby compressors……."
228	S9.3.7.2, 7th para., 5th sent.	Deleted "Hot Machine Shop, Cold Machine Shop" for clarification of distribution of Service Air.
229	S9.3.7.2, 9th para	Revised paragraph to reflect current design from: "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." To: "The service air compressor units are powered from the two (2) separate PIP buses. "
230	T9.3-7, Normal Flow Rate	Revised 1st row from "Normal Flow Rate" to "Maximum Flow Rate". Added "One compressor" for clarification of flow rate and changed the value to meet the current design from: "28 m^3/min (1000 scfm)"

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		To: "50.5 m^3/min (1782 scfm)"
231	T9.3-7, Maximum Flow Rate	Added "Two compressors" for clarification of normal flow rate and changed Normal Flow Rate to meet the current design from: "56 m^3/min (2000 scfm)" To: "95.2 m^3/min (3400 scfm)"
232	S9.3.8.1, 2nd para., last sent.	Revised sentence due to design change of the MSIV's from: "Nitrogen loads include the Automatic Depressurization Subsystem (ADS) Safety Relief Valve (SRV) accumulators, the Isolation Condenser (IC) steam and condensate line isolation valve accumulators, the Main Steamline Isolation Valve (MSIV) accumulators, and other pneumatically operated valves." To: "Nitrogen loads include the Automatic Depressurization Subsystem (ADS) Safety Relief Valve (SRV) accumulators, the Isolation Condenser (IC) steam and condensate line isolation valve accumulators and other pneumatically operated valves inside containment."
233	S9.3.8.3, 1st para., 1st sent.	Revised sentence to be consistent with current design. Chapter 1.2.2.12.10 and Table 3.2-1 from: "The HPNSS is not safety-related, however, the system incorporates features that ensure reliable operation over the full range of normal plant operation and with earthquake intensities up to an SSE. " To: "The HPNSS is not safety-related, and is Seismic Category NS except for the safety-related containment penetrations and associated containment isolation valves and piping."
234	S9.3.9	NO CHANGES
235	S9.3.10.2, 1st para., new 1st sent.	Added sentence to provide additional guidelines for OIS per RAI 9.3-38 S01. "The Oxygen Injection System uses the guidelines for gaseous oxygen injection systems in Electric Power Research (EPRI) Report NP-5283-SR-A, "Guidelines for Permanent Hydrogen Water Chemistry Installations 1987 Revision: (Reference 9.3.10-1)."
236	S9.3.10.2, 3rd para., 1st sent.	Revised sentence to provide proper reference name and revision per RAI 9.3-38 S01 from: "The Hydrogen Water Chemistry oxygen injection module is based on

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		the generic Electric Power Research Institute "Guidelines for Permanent BWR Hydrogen Water Chemistry Systems EPRI NP-5283-SR – 1987 Revision."" To: "The Hydrogen Water Chemistry oxygen injection module is based on the generic EPRI NP-5283-SR – A, "Guidelines for Permanent BWR Hydrogen Water Chemistry Installations 1987 Revision.""
237	S9.3.10.7, former 9.3.10-1	Removed reference 9.3.10-1 text "ANSI CGA G4 Oxygen" because it is not applicable to DCD.
238	S9.3.10.7, Reference 9.3.10-2	Corrected name and revision information for Reference Document.
239	S9.3.11	NO CHANGES
240	S9.3.12.2 1st paragraph 3rd bullet	Revised bullet to clarify function from: "The Feedwater System to provide hot water during plant startup" To: " The Feedwater System for pre-heating during plant warmup."
241	S9.3.12.2 component description 1st paragraph 6th bullet	Deleted bullet for clarification.
242	S9.3.12.2 component description 1st para., 7th bullet	Changed from: "Two (2) 50% Continuous Blowdown Flash Tank" To: "One (1) 100% Auxiliary Boiler Blowdown Flash Tank. Design clarification
243	S9.3.12.2 component description 1st para., 8th bullet	Revised 8th bullet from: "Two (2) 50% Steam Separators; and" To: "One (1) 100% Steam Separator"
244	S9.3.12.2 component description, 4th para.	Deleted 1st sentence and change the second sentence for clarity from: "The non-radioactive area of the Equipment and Floor Drain

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		System collects drains from the ABS." To: "The non-radioactive area of the Equipment and Floor Drain System collects drains from the ABS Blowdown Flash Tank."
245	S9.3.12.2, last para.	Revised last paragraph to clarify the sampling requirements from: "The ABS has sample connections to monitor pH, dissolved oxygen and conductivity." To: "The ABS has sample connections to monitor boiler water chemistry. Typical boiler water chemistry process sample parameters are provided in Table 9.3-1."
246	S9.3.12.3, 1st para, last sent.	Revised last sentence in response to RAI 9.3-40, S01 from: "High-energy pipe rupture analysis is not required for the ABS because none of the lines pass through areas where safety-related equipment is located." To: "Failure of the ABS as a result of a pipe break or malfunction of the system will not adversely affect the function or operation of affected safety-related systems due to the fail safe design of the safety-related systems. The safety-related sensors are designed with diversity and defense-in-depth, allowing them to be mounted on or near nonsafety-related systems in the turbine building without the need for physical protection or barriers."
247		
248	S9.4.1, 1st bullet, last sent.	Revised sentence to clarify loss of power operation from: "…EFU is automatically actuated in the event of a loss of electrical power (SBO) or during a radiological event." TO: "… EFU is automatically actuated in the event of a loss of normal AC power or during a radiological event."
249	S9.4.1, 2nd bullet, 3rd sent. and new 4th sent.	Revised sentence and added an additional sentence to clarify design details associated with the "Outside Air Handling Units" from: "The subsystem is made up of two subsets, Set A and Set B, each of which contain two redundant 100% capacity recirculation AHUs and associated fans, and internal filters ductwork."

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		To: "The subsystem is made up of two subsets, Set A and Set B, each of which contain a single AHU enclosure with two redundant 100% capacity supply fans, internal coils and filters and associated return/exhaust fans and ductwork. The AHU subsystems are recirculation type AHUs, that recirculate most of the ventilation air and combine it with a smaller quantity of fresh outside air."
250	S9.4.1, 2nd bullet, 5th sent. and 6th sent.	Revised sentences to remove Roman numerals associated with divisions of DCIS and replaced with standard numeric symbols to agree with standard convention.
251	S9.4.1, 2nd set of bullets, 4th bullet, 2nd sent.	Revised sentence to clarify the signal source that initiates CRHA isolation and satisfies GDC 19 from: "The CRHA is isolated during SBO or LOCA conditions, and the safety-related EFUs provide pressurization and radiologically filtered air." To: "The CRHA is isolated on loss of normal AC power or if high radioactivity is detected in the main control room supply air duct , and the safety-related EFUs automatically start to pressurize and provide radiologically filtered air to the main control room."
252	S9.4.1, 2nd set of bullets, 4th bullet, 6th sent.	Revised the entire sentence for clarification and to reflect design change that added ancillary diesel power for the facility from: "Upon a loss of power, the remaining nonsafety-related heat loads are dissipated for 2 hrs using battery power, and ..." To: "Upon a loss of normal AC power, backup batteries supply N-DCIS power to the Recirculation AHUs, which continue dissipating the remaining nonsafety-related heat loads- for 2 hrs, and which can operate indefinitely thereafter, using the ancillary diesel provided power. If the Recirculation AHUs are not available, safety-related temperature sensors with two-out-of-four logic automatically trip the power to N-DCIS components in the MCR, thus removing the heat load due to these sources."
253	S9.4.1, 2nd set of bullets, 4th bullet, 9th sent.	Changed "SBO" to "Loss of normal AC power" for clarification and consistency.
254	S9.4.1, 2nd set of bullets, 4th bullet, 10th sent.	Deleted sentence since the previous sentences properly define the period in which CRHA passive heat sink temperature rise applies.

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		"This temperature rise limit applies both during the 72 hr passive period, and the duration of any postulated accident."
255	S9.4.1, last bullet , last sentence.	Added the word "capability" at the end of the sentence to define the purpose of the CRHAVS filtration/adsorption.
256	S9.4.1.1, Safety Design Bases, 2nd Para., 1st bullet	Revised sentence to delete "smoke and" to clarify that smoke detection is not a safety-related function as revised under design change.
257	S9.4.1.1, Safety Design Bases, 2nd Para., 2nd bullet	Revised sentence for clarification from: "Isolates the normal CRHA air supply and restroom exhaust, starts an EFU fan, and aligns the air supply through an EFU, upon a high radiation detection signal in the CRHA normal air supply, or upon an extended loss of AC power to support operation of a CRHA normal air supply fan." To: "Isolates the normal CRHA air supply and restroom exhaust, starts an EFU fan, and aligns the air supply through an EFU, upon a high radiation detection signal in the CRHA normal air supply, or upon an extended loss of AC power."
258	S9.4.1.1, Safety Design Bases, 2nd para., former 3rd bullet	Deleted former last bullet to reflect design change requiring manual operator action to isolate the control room upon activation of a smoke alarm in the CRHA air supply: "Isolates the normal CRHA air supply and restroom exhaust upon detection of smoke in the CRHA normal air supply."
259	S9.4.1.1, Safety Design Bases, 3rd Para., 1st Sent.	Revised sentence to change "nonsafety-related" to "safety-related" to reflect actual design for portions of CRHAVS which penetrate the CRHA envelope.
260	S9.4.1.1, Safety Design Bases, 5th para., new 5th bullet	Added bullet in response to RAI 6.4-13: • "All CRHA ventilation penetrations for outside air intake and exhaust openings are provided with tornado and tornado missile protection."
261	S9.4.1.1, Safety Design Bases, 5th para., 6th bullet	Revised bullet in response to RAI 6.4-13 from: "The CBVS outside air intake structures are nonsafety-related and do not require tornado dampers and tornado missile shields." To: "The CBVS outside air intake and return/exhaust openings are provided with tornado and tornado missile protection."
262	S9.4.1.1, Safety Design Bases, 6th Para. and 8th Para. 1st sent.	Revised sentences to clarify loss of power operation by changing "SBO" to "loss of normal AC power."

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263	S9.4.1.1, Safety Design Basis, 7th Para., 1st Bullet	Revised sentence for clarification from: "A normally closed isolation EFU outside air inlet to open." To: "The normally closed isolation dampers downstream of the operating EFU fan to open."
264	S9.4.1.1, Safety Design Basis, 8th para., 3rd sent.	Revised the entire sentence to reflect design change that added ancillary diesels to the facility, and in response to RAI 9.4-31, from: "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." To: "For longer-term operation (post 72 hrs), either of two (2) ancillary diesel generators can power either EFU fan system."
265	S9.4.1.1, Safety Design Basis, 10th para., 2nd sent. and 11th para., 4th sent.	Revised sentences to clarify loss of power operation by changing "SBO" to "loss of normal AC power."
266	S9.4.1.1, Safety Design Basis, 10th para., former 4th and 5th sent.	Deleted sentences to reflect design change that added ancillary diesels to the facility: "These nonsafety-related MCR DCIS electrical loads automatically de-energize after two hours or should the redundant CRHA recirculation AHUs become unavailable."
267	S9.4.1.1, Safety Design Basis, last para., added new 1st three sent.	Created new 11th para. and added sentences to reflect design change that added ancillary diesels to the facility and to reflect actual design in regard to high temperature trip for the MCR N-DCIS loads: "Any time during a loss of normal AC power, once either ancillary diesel generator is available, the power for either Recirculation AHU fan with auxiliary cooling unit can be provided via the ancillary diesel-powered generator. Thus, a Recirculation AHU can operate indefinitely during a CRHA isolation event. If the Recirculation AHUs are not available during the loss of normal AC power, safety-related temperature sensors with two-out-of-four logic automatically trip the power to N-DCIS components in the MCR, thus removing the heat load due to these sources."
268	S9.4.1.1, Safety Design Basis, last para., added new 1st three sent.	Revised sentence in response to RAI 16.0-5 S02 from: "In the event the loss of normal AC power duration extends beyond two hours, the reduced CRHA heat load is passively cooled by the CRHA

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		heat sink, which consists of the internal and external concrete walls, floor, and ceiling, such that the CRHA temperature rise is no greater…" To: "The CHRA heats sinks consist of the following: the CRHA walls, floor, ceiling, and interior walls, and access corridors; adjacent Q-DCIS and N-DCIS equipment rooms and electrical chases; and, CRHA HVAC equipment rooms and HVAC chases. The CHRA heat sinks limit the CRHA temperature rise to no greater…"
269	S9.4.1.1, Safety Design Basis, 11th para., new last sent.	Added sentence in response to RAI 9.4-31. "After 72 hours the EFU maintains the habitability of the CRHA when RTNSS power supplies are available"
270	S9.4.1.1, Safety Design Basis, new last para.	New paragraph incorporating RTNSS requirements in response to RAI 9.4-39 S01 (Note that a response to this RAI has not been previously submitted.): "The CBVS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the defense-in-depth principles of redundancy and physical separation to ensure adequate reliability and availability. In addition, augmented design standards are applied as described in Section 19A.8.3."
271	S9.4.1.2, Summary Description, 1st para., 2nd sent.	Revised sentence to clarify isolation logic from: "The EFUs provide breathing air and pressurization to the CRHA when the CRHA envelope is radiologically isolated." To: "The EFUs provide breathing air and pressurization to the CRHA when the CRHA envelope is isolated due to loss of AC power or high airborne radioactivity."
272	S9.4.1.2, Detailed System Description, 1st para.	Revised figure number from "1.2-3" to "3H-1 Control Room Habitability Area" to reference the correct figure.
273	S9.4.1.2, Detailed System Description	Updated areas found in the CRHA to be consistent with current design by changing or adding the following rooms from: "Shift Supervisor Conference Room (Room 3272)" "Shift Supervisor Conference Room (Room 3273)" "Operator's Area (Room 3270)" "Shift Technical Advisor Office (Room 3271)" To: "Shift Supervisor Office (Room 3272)"

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"Kitchen (Room 3273)" "Admin Area (Room 3270) " "RE/Shift Technical Advisor Office (Room 3271)" "AEO Workshop (Room 3207)" "AHU Room (Room 3208)" "Gallery (Room 3206)"
274	S9.4.1.2, Detailed System Description, 3rd para., 1st sent.	Revised sentence to clarify loss of power operation from: "…72 hours, if required, following the occurrence of a LOCA, Station Blackout (SBO) or a high radiation condition with or without AC power." To: "…72 hours, if required, following the occurrence of a LOCA, loss of normal AC power or a high radiation condition with or without AC power."
275	S9.4.1.2, Detailed System Description, 4th para., new 3rd bullet	Added new bullet to reflect design change that added auxiliary cooling units for the MCR: "One 100% capacity auxiliary cooling unit;"
276	S9.4.1.2, Detailed System Description, 4th para., former 4th bullet (new 5th bullet)	Revised bullet to clarify detail design from: "One 100% capacity safety-related EFU fan; and" To: "Two 100% capacity safety-related EFU fans; and"
277	S9.4.1.2, Detailed System Description, 5th Para., 2nd Sent.	Revised sentence in response to RAI 9.4-29 and 9.4-30 from: "The normal and emergency (EFU) filter unit outside air intake flows are adjusted as required to maintain a 31 Pa (1/8" wg) minimum positive pressure in the CRHA." To: "The normal and emergency (EFU) filter unit outside air intake flows are adjusted as required to maintain a minimum flow of 200 l/s (424 cfm) and, in conjunction with controlled leak path, maintain a 31 Pa (1/8" w.g.) minimum positive pressure in the CRHA."
278	S9.4.1.2, Detailed System Description, 8th para., new 2nd sent.	Revised sentence to clarify loss of power operation by replacing "SBO" with "loss of normal AC power".
279	S9.4.1.2, Detailed System Description, 10th para., new 2nd and 3rd sent.	Added new sentences to reflect design change that added auxiliary cooling units for the MCR: "The nonsafety-related Uninterruptible AC Power Supply System provides power for the CRHA Recirculation AHUs. Each Recirculation AHU is equipped with an auxiliary cooling unit with a cooling coil in

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		the AHU."
280	S9.4.1.2, Detailed System Description, former 10th para., 2nd, 3rd, 4th and 5th sent., new 11th para.	Revised sentences to reflect design change that added ancillary diesels to the facility and auxiliary cooling units for the MCR from: "Furthermore, a Recirculation AHU fan and a chilled water recirculation pump are battery powered during the first two hours of an SBO from the nonsafety-related battery supply. Cooling of the CRHA for the two hour duration during which the nonsafety-related heat loads in the CRHA are powered from the nonsafety-related battery supply is achieved via circulation of chilled water from the Chilled Water Storage Tank to the Recirculation AHU. With AC power available, a Recirculation AHU can operate indefinitely during a CRHA isolation event. If the Recirculation AHUs are not available during the SBO, the nonsafety-related heat loads are automatically de-energized. The nonsafety-related Uninterruptible AC Power Supply System provides power for the CRHA Recirculation AHUs." To (creating new 11th paragraph): "The Recirculation AHU fans and associated auxiliary cooling units are battery powered during the first two hours of a loss of normal AC power from the nonsafety-related battery supply. Any time during a loss of normal AC power, once either ancillary diesel generator is available, the power for either Recirculation AHU fan with auxiliary cooling unit can be provided via an ancillary diesel-powered generator. Thus, a Recirculation AHU can operate indefinitely during a CRHA isolation event. If the Recirculation AHUs are not available during the loss of normal AC power, safety-related temperature sensors with two-out-of-four logic automatically trip the power to N-DCIS components in the MCR, thus removing the heat load due to these sources."
281	S9.4.1.2, Detailed System Description, 12th para., 1st and 2nd sent.	Revised sentences to clarify isolation logic from: "The EFU provides sufficient quality air to maintain positive pressure in the CRHA when the CRHA envelope is radiologically isolated. An EFU is automatically actuated when the CRHA envelope is radiologically isolated." To: "The EFU provides sufficient quality air to maintain positive pressure in the CRHA when the CRHA envelope is isolated. An EFU is automatically actuated when the CRHA envelope is isolated during a loss of AC power or due to high airborne radioactivity."
282	S9.4.1.2, Detailed System Description, 13th para., 1st bullet.	Revised sentence to clarify detail design associated with the "Outside Air Handling Units" from: "Two sets of two 100% capacity supply AHUs;" To: "Two sets of single AHUs with two 100% capacity supply fans;"

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283	S9.4.1.2, Detailed System Description, last para., 5th sent.	Revised "low and high efficiency filters" to "medium efficiency filters" to clarifiy design detail.
284	S9.4.1.2, System Operation, 1st Para., 2nd and 4 Sent.	Revised sentences to clarify loss of power operation by replacing "SBO" with "loss of normal AC power".
285	S9.4.1.2, System Operation, 1st Para., 5th Sent.	Revised sentence in response to RAI 9.4-31 from: "Upon an isolation of the CRHA envelope, the EFU operates indefinitely from an AC power source, or up to 72 hours from the safety-related battery supply." To: "Upon an isolation of the CRHA envelope, the EFU operates and is controlled indefinitely through the Q-DCIS source, or up to 72 hours from the safety-related battery supply."
286	S9.4.1.2, System Operation, former 1st para., 6th, 7th and 8th sent.	Revised sentences to reflect design change that added ancillary diesels to the facility and auxiliary cooling units for the MCR, and in response to RAI 9.4-31, from: "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. Also, Recirculation AHU continues operation to maintain the CRHA environment upon the initiation of a CRHA isolation. A Recirculation AHU operates for the first two hours of a SBO; otherwise certain nonsafety-related heat loads are automatically de-energized." To (creating new 2nd paragraph): "For longer-term operation (post 72 hrs), either of two (2) ancillary diesel generators can power either EFU fan system. Also, a Recirculation AHU continues operation to maintain the CRHA environment upon the initiation of a CRHA isolation. The Recirculation AHU fans and associated auxiliary cooling units are battery powered during the first two hours of a loss of normal AC power from the nonsafety-related battery supply. Any time during a loss of normal AC power, once either ancillary diesel generator is available, the power for either Recirculation AHU fan with auxiliary cooling unit can be provided via the ancillary diesel-powered generator. If the Recirculation AHUs are not available during the loss of normal AC power, safety-related temperature sensors with two-out-of-four logic automatically trip the power to N-DCIS components in the MCR, thus removing the heat load due to these sources."
287	S9.4.1.2, System Operation, former 1st para., former last sent.	Created new 3rd paragraph from former last sentence of 1st paragraph for clarity: "Rooms containing safety-related equipment are passively cooled by heat transfer to the CRHA heat sink for the first 72 hours of a loss of

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		normal AC power to limit the temperature rise to the maximum temperature limits listed in Table 9.4-1."
288	S9.4.1.2, Fire/Smoke Operating Modes, 1st Bullet	Revised bullet to reflect design change for smoke detectors located in the CRHA air supply to provide an alarm only, and to require manual operator action to isolate the control room upon activation of a smoke alarm in the CRHA air supply, from: "Upon detection of smoke in the CRHAVS or the CBGAVS outside air intake, the normal outside air inlet dampers and the CBGAVS exhaust dampers close. Return air is recirculated through the CBGAVS AHU, and the CRHAVS Recirculation AHU continues to operate normally. The CRHAVS restroom exhaust air dampers also close. With the exhaust flow path closed, the CRHAVS restroom exhaust fan is stopped automatically when the close signal reaches the exhaust damper." To: "Smoke detection capability in the CRHAVS or the CBGAVS automatically detects and annunciates upon the presence of smoke. Upon receipt of the outside air intake smoke alarm, MCR operator manual action is required to isolate the CRHAVS or the CBGAVS from the outside air. Return air is recirculated through the CBGAVS AHU, and the CRHAVS Recirculation AHU continues to operate normally. The CRHAVS restroom exhaust fan is stopped automatically when the restroom exhaust air damper close signal reaches the exhaust damper."
289	S9.4.1.2, Fire/Smoke Operating Modes, 2nd Bullet, 1st Sent.	Deleted sentence to reflect design change requiring manual operator action to isolate the control room upon activation of a smoke alarm in the CRHA air supply: "Upon detection of smoke in the CRHAVS or the CBGAVS supply or return air plenum or duct, the subsystem shuts down and the isolation dampers close."
290	S9.4.1.2, Fire/Smoke Operating Modes, 4th Bullet, 2nd Sent.	Deleted the word "Removal" and replaced it with "Purge" to properly identify the component/function.
291	S9.4.1.2, Radiological Event Operation, 1st bullet, 2nd Sent.	Revised sentence for clarification from: "The signal also closes the normal outside air inlet dampers, stops the normal outside air intake fan, and closes the restroom exhaust dampers." To: "The signal also closes the normal outside air isolation dampers, stops the normal outside air intake fan, closes the restroom exhaust isolation dampers and automatically stops the restroom exhaust fan."
292	S9.4.1.2, Radiological Event Operation, 1st	Deleted sentence since this function was added to 2nd sentence of this paragraph:

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	bullet, last Sent.	"Also, due to the CRHA isolation, the restroom fan is automatically stopped when the close signal reaches the exhaust dampers."
293	S9.4.1.2, Radiological Event Operation, 2nd bullet, former 2nd Sent.	Deleted sentence since a loss of AC power or a radiological condition will initiate CRHA isolation, however the plant is not required to cope with a DBA (radiological event) concurrent with a loss of all AC power (SBO): "Detection of an outside air high radiation condition during an SBO initiates redundant signals to lineup and operate the EFU, isolate the normal outside air intake, and isolate the restroom exhaust."
294	S9.4.1.2, Radiological Event Operation, 2nd bullet, 1st and 2nd sent.	Revised sentences to clarify loss of power operation from: "When offsite and onsite AC power is lost (SBO), the CRHA assumes the radiological protection mode of operation. Due to the SBO event…" TO: "On a loss of normal AC power , the CRHA assumes the radiological protection mode of operation. Due to the loss of AC power…"
295	S9.4.1.2, Radiological Event Operation, 2nd bullet, former 5th sent., new 5th and 6th sent.	Revised sentence to reflect design change that added ancillary diesels to the facility from: "The CRHA Recirculation AHUs and chilled water storage tank recirculation pumps remain in operation for two hours powered from the nonsafety-related battery supply." To (creating new 6th sentence): "The CRHA Recirculation AHUs and auxiliary cooling units remain in operation for two hours powered from the nonsafety-related battery supply. At any time during that two-hour period, they can be aligned to an ancillary diesel generator bus and operate indefinitely."
296	S9.4.1.4, 2nd Para., new 2nd Sent.	Added new sentence to specify the requirements for CRHA envelope testing to be consistent with information provided in DCD Tier 1 and Tier 2 chapters: "Preoperational testing to demonstrate the integrity of the CRHA envelope is performed in accordance with ASTM E741."
297	T9.4-1, Design Parameters for the CBVS, CRHAVS and CBGAVS, Outside Air Design Conditions	Deleted the non-coincident wet bulb temperatures from the design parameters for both the CRHAVS and CBGAVS. The 0% exceedance maximum dry bulb temperature with mean coincident wet bulb temperature form the bounding conditions for CRHA heatup analysis. The 0.4, 1.0, and 2.0% dry bulb temperatures and mean coincident wet bulb temperatures are the conditions often used in sizing cooling equipment. This is consistent with guidance provided in ASHRAE Climatic Design Information.

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298	T9.4-1, Design Parameters for the CBVS, CRHAVS and CBGAVS, Inside Design temperatures and humidity	Revised CRHA and Safety-related DCIS rooms "SBO" to "Loss of normal AC power" to clarify loss of power operation.
299	T9.4-1, Design Parameters for the CBVS, CRHAVS and CBGAVS, Inside Design temperatures and humidity	Added a note to CRHAVS Breathing air supply capacity to provide a comparison of personnel used in the design parameters for breathing air and CRHA heatup analysis as follows: " Note: CRHA heatup analysis assumes 5 control room occupants for CRHA thermal loading (Ref. Table 3H-12)"
300	T9.4-2, Major Equipment for CBVS, CRHAVS – Air Handling Units	Added the word "Recirculation" in front of Air Handling Units to provide clarification and deleted "Heating – Smoke Removal Mode" which is being added to a new section called "Smoke Purge Fan." Also renamed "Heating – Normal Mode" to "Heating" for clarification.
301	T9.4-2, Major Equipment for CBVS, CRHAVS – Air Handling Units – Type	Added "auxiliary cooling coil" to table entry to reflect design change.
302	T9.4-2, Major Equipment for CBVS, formerly Outside Air AHU	Revised "Outside Air AHU" to "CRHAVS Outside Air Fan System". Revised from two (2) Outside AHU's to a single "Filter Enclosure Unit" with two (2) medium efficiency filters and two (2) "Supply Fans" to clarify detail design configuration.
303	T9.4-2, Major Equipment for CBVS, CRHAVS	Removed smoke removal mode from the recirculation AHU section and added new section for equipment "CRHAVS Smoke Purge Fan" to provide clarification from : "Heating – Smoke Removal Mode approximately 330,000 watts at Limiting Values approximately 206,000 watts at 1% Exceedance" To (new section): "CRHAVS Smoke Purge Fan "Quantity: 1 – 100% capacity Capacity: Flow – 5000l/s (10600 cfm) Heating – approximately 206,000 watts (703,372 btu/hr) at 1% exceedance "

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304	T9.4-2, Major Equipment for CBVS, CRHAVS	Added new equipment "Auxiliary Cooling Units" to reflect design change: "Quantity: 2 – 100% capacity each Capacity: Cooling ≤ 78,000 watts (22.2 tons)"
305	T9.4-2, Major Equipment for CBVS, CRHAVS – Restroom Exhaust Fan	Removed the word "each" from the quantity and added "(106 cfm)" to incorporate dual units.
306	T9.4-2, Major Equipment for CBVS, CRHAVS – CRHA Isolation Dampers	Revised quantity and type of dampers to reflect design change from: "Quantity: 8 Total, redundant supply, smoke intake, smoke exhaust, and restroom exhaust isolation dampers" "Type: Safety-related Bubble tight, Air operated, fail-closed To: "Quantity: 16 Total, EFU outside air supply, Normal outside air supply, smoke intake, smoke exhaust, and restroom exhaust isolation dampers" "Type: Safety-related Bubble tight, Air operated, Motor operated, fail-closed
307	T9.4-2, Major Equipment for CBVS, CBGAVS Set A	Revised "Supply Air Handling Units" to clarify detail design configuration. "Quantity: 2 – 100% capacity each (per set)" To: "Quantity: 1 – 100% capacity"
308	T9.4-2, Major Equipment for CBVS, CBGAVS Set A and Set B	Revised "Supply Air Handling Units" filter efficiency from "high and low efficiency" to "medium efficiency" to clarify existing design detail.
309	T9.4-2, Major Equipment for CBVS, CBGAVS Set A	Revised "AHU Supply fans" to clarify detail design configuration by adding dual units to flow capacity from: "Quantity: 1 – 100% capacity each per AHU" "Capacity: Flow – 10,300 l/s per unit" To: "Quantity: 2 – 100% capacity each" "Capacity: Flow – 10,300 l/s (21,824 cfm) each"
310	T9.4-2, Major Equipment for CBVS, CBGAVS Set A	Revised "Return/Exhaust fan" to clarify detail design configuration by adding dual units to flow capacity from: "Quantity: 1 – 100% capacity each per AHU"

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"Capacity: Flow – 9,700 l/s per unit" To: "Quantity: 2 – 100% capacity each" "Capacity: Flow – 9,700 l/s (20,553 cfm) each"
311	T9.4-2, CBGAVS Set A and Set B	Revised Type of AHU Supply and Return/Exhaust fans from "variable speed" to "variable frequency" for design clarification.
312	T9.4-2, Major Equipment for CBVS, CBGAVS Set B	Revised "Supply Air Handling Units" to clarify detail design configuration. from: "Quantity: 2 – 100% capacity each (per set)" To: "Quantity: 1 – 100% capacity"
313	T9.4-2, Major Equipment for CBVS, CBGAVS Set B	Revised "AHU Supply fans" to clarify detail design configuration by adding dual units to flow capacity from: "Quantity: 1 – 100% capacity each per AHU" "Capacity: Flow – 9,450 l/s per unit" To: "Quantity: 2 – 100% capacity each" "Capacity: Flow – 9,450 l/s (20,023 cfm) each"
314	T9.4-2, Major Equipment for CBVS, CBGAVS Set B	Revised "Return/Exhaust fan" to clarify detail design configuration by adding dual units to flow capacity from: "Quantity: 1 – 100% capacity each per AHU" "Capacity: Flow – 8,950 l/s per unit" To: "Quantity: 2 – 100% capacity each" "Capacity: Flow – 8,950 l/s (18,964 cfm) each"
315	F9.4-1, CRHAVS Simplified System Diagram	Replaced "Chilled Water Thermal Storage Tank" with two "Auxiliary Cooling Units" to reflect design change. Also added an auxiliary cooling coil in each Recirculation AHU to reflect design change.
316	F9.4-1, CRHAVS Simplified System Diagram	Identify controlled leak flow path in system diagram in response to RAI 9.4-30.
317	F9.4-1, CRHAVS Simplified System Diagram	Added auxiliary cooling units and added cooling coils in each Recirculation AHU to reflect design change.

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
318	F9.4-1, CRHAVS Simplified System Diagram	Added redundant damper isolation and added flexible connection to the EFU Supply to CRHA to reflect design change.
319	F9.4-1, CRHAVS Simplified System Diagram	Revised from two (2) Outside AHU's to a single Outside AHU with two (2) fans to clarify detail design configuration.
320	F9.4-2, CRHAVS Air Flow Diagram	Added redundant damper isolation EFU Supply to CRHA to reflect design change.
321	F9.4-2, CRHAVS Air Flow Diagram	Added an auxiliary cooling coil in each Recirculation AHU to reflect design change.
322	F9.4-2, CRHAVS Air Flow Diagram	Add controlled leak flow path in flow diagram in response to RAI 9.4-30.
323	F9.4-2, CRHAVS Air Flow Diagram	Revised from two (2) Outside AHU's to a single Outside AHU with two (2) to clarify detail design configuration.
324	F9.4-2, CRHAVS Air Flow Diagram	Revised control room layout be consistent with current control room design configuration.
325	F9.4-3, CBGAVS Set A Simplified Diagram	Revised from two (2) AHU's to a single AHU with two (2) fans to clarify detail design configuration.
326	F9.4-4, CBGAVS Set B Simplified Diagram	Revised from two (2) AHU's to a single AHU with two (2) fans to clarify detail design configuration.
327		
328	S9.4.2, 3rd para., 3rd bullet, 2nd sent.	Revised sentence to clarify detailed design from: "The system may direct its exhaust air to the Reactor Building HVAC Purge Exhaust Filter Unit during periods of high radioactivity." To: "The system may direct its exhaust air to the Fuel Building HVAC Purge Exhaust Filter Unit during periods of high radioactivity."
329	S9.4.2, 3rd para., 3rd bullet, 3rd sent.	Revised sentence to clarify detailed design from: "The Reactor Building HVAC Purge Exhaust Filter Unit is designed, tested, and maintained in accordance with Regulatory Guide 1.140." To: "The Fuel Building HVAC Purge Exhaust Filter Unit is designed, tested, and maintained in accordance with Regulatory Guide 1.140."
330	S9.4.2, 3rd para., 4th bullet, 2nd sent.	Revised sentence to reflect design change from: "The system may direct its exhaust air to the Reactor Building HVAC

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		Purge Exhaust Filter Unit during periods of high radioactivity, which provides filtration prior to discharge to the plant stack." To: "The system may direct its exhaust air to the Fuel Building HVAC Purge Exhaust Filter Unit during periods of high radioactivity, which provides filtration prior to discharge to the RB/FB ventilation stack."
331	S9.4.2, 3rd para., 4th bullet, 3rd sent.	Revised sentence to clarify detailed design from: "The Reactor Building HVAC Purge Exhaust Filter Unit is designed, tested, and maintained in accordance with Regulatory Guide 1.140." To: "The Fuel Building HVAC Purge Exhaust Filter Unit is designed, tested, and maintained in accordance with Regulatory Guide 1.140."
332	S9.4.2.1, new 2nd para.	New paragraph incorporating RTNSS requirements in response to RAI 9.4-39 S01 (Note that a response to this RAI has not been previously submitted.): "The FBVS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the defense-in-depth principles of redundancy and physical separation to ensure adequate reliability and availability as described in Subsection 19A.8.3."
333	S9.4.2.1, Power Generation Design Bases, 1st para., 8th bullet	Revised bullet to reflect design change from: "Provides capability to divert exhaust air to the Reactor Building HVAC Purge Exhaust Filter Units." To: "Provides capability to divert exhaust air to the Fuel Building HVAC Purge Exhaust Filter Units."
334	S9.4.2.2, Detailed System Description - FBGAVS, 2nd para., 1st, 2nd and 3rd sent.	Revised sentences for design clarification from: "The FBGAVS is a once-through air conditioning and ventilation system with redundant air handling units (AHUs), exhaust fans and Fuel Building boundary isolation dampers. Each AHU includes filters, heating elements, cooling coils, and an AHU supply fan. Outside air is filtered and heated or cooled prior to being distributed by the AHU in service." To: "The FBGAVS is a once-through air conditioning and ventilation system with air handling unit (AHU), redundant exhaust fans and Fuel Building boundary isolation dampers. The AHU includes filters, heating elements, cooling coils, and redundant AHU supply fans. Outside air is filtered and heated or cooled prior to being distributed by the AHU."
335	S9.4.2.2, Detailed	Revised sentence to reflect design change providing for

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	System Description - FBGAVS, 2nd para., 5th sent.	multiple vent stacks and for clarification from: "The exhaust fan discharges the air to the outside atmosphere through the monitored vent stack where the exhaust air is monitored for radioactivity." To: "The exhaust fan discharges the air to the outside atmosphere through the monitored RB/FB vent stack where the exhaust air is monitored for radioactivity."
336	S9.4.2.2, Detailed System Description - FBGAVS, 2nd para., 6th sent.	Revised sentence to reflect design change from: "The exhaust air may be manually diverted to the Reactor Building HVAC Purge Exhaust Filter Unit." To: "The exhaust air may be manually diverted to the Fuel Building HVAC Purge Exhaust Filter Unit."
337	S9.4.2.2, Detailed System Description - FBGAVS; 3rd para., 2nd sent.	Revised sentences for design clarification from: "The FMCRD recirculation AHU is located in the Fuel Building." To: "The FMCRD maintenance room recirculation AHU is located in the Fuel Building."
338	S9.4.2.2, Detailed System Description - FBGAVS; new 4th para.	Added paragraph for design clarification of RTNSS functions in response to RAI 9.4-39 S01 (Note that a response to this RAI has not been previously submitted.): "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."
339	S9.4.2.2, Detailed System Description - FBFPVS, 2nd para., 1st and 2nd sent.	Revised sentences for design clarification from: "The FBFPVS is a once-through air conditioning and ventilation system with redundant AHUs and exhaust fans. Each AHU includes filters, heating elements, cooling coils, and an AHU supply fan." To: "The FBFPVS is a once-through air conditioning and ventilation system with AHU and redundant exhaust fans. The AHU includes filters, heating elements, cooling coils, and redundant AHU supply fans."
340	S9.4.2.2, Detailed System Description - FBFPVS, 2nd para., 4th sent.	Revised sentence to reflect design change providing for multiple vent stacks and for clarification from: "Air is exhausted from the Spent Fuel Pool, through redundant Fuel Building boundary isolation dampers, to the outside atmosphere through the vent stack." To: "Air is exhausted from the Spent Fuel Pool, through redundant Fuel

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		Building boundary isolation dampers, to the outside atmosphere through the RB/FB vent stack."
341	S9.4.2.2, Detailed System Description - FBFPVS, 2nd para., 5th sent.	Revised sentence to reflect design change from: "During high radiation conditions, the exhaust air may be manually diverted to the Reactor Building HVAC Purge Exhaust Filter Unit." To: "During high radiation conditions, the exhaust air may be manually diverted to the Fuel Building HVAC Purge Exhaust Filter Unit."
342	S9.4.2.2, Detailed System Description - FBFPVS, 3rd para, 1st and 2nd sent.	Revised to reflect FBFPVS exhaust fans are located in the Fuel Building HVAC Equipment Room not in the Reactor Building
343	S9.4.2.2, Detailed System Description - FBFPVS, 4th para., 2nd sent.	Relocated sentences to the appropriate section of FBGAVS. : "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."
344	S9.4.2.2, System Operation, 2nd para., 3rd sent.	Revised sentence for design clarification from: "The redundant AHU and fans are maintained on standby." To: "The redundant supply fan (in each AHU) and exhaust fan are maintained in standby."
345	S9.4.2.2, System Operation, 3rd para., 3rd and 4th sent.	Revised sentences to reflect design change from: "Exhaust air from either subsystem may be manually diverted to the Reactor Building HVAC Purge Exhaust Filter Unit. It is then exhausted to the plant vent stack by the Reactor Building HVAC Purge Exhaust Filter Unit exhaust fan." To: "Exhaust air from either subsystem may be manually diverted to the Fuel Building HVAC Purge Exhaust Filter Unit. It is then exhausted to the RB/FB vent stack by the Fuel Building HVAC Purge Exhaust Filter Unit exhaust fan."
346	S9.4.2.4, 4th para.	Revised paragraph to reflect design change from: "The Reactor Building HVAC Purge Exhaust Filter Unit is tested in accordance with Regulatory Guide 1.140." To: "The Fuel Building HVAC Purge Exhaust Filter Unit is tested in accordance with Regulatory Guide 1.140."
347	S9.4.2.5, 5th bullet, 2nd sent.	Revised "speed" to "frequency" for design clarification.

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348	T9.4-3, FBGAVS	From parameters "Outdoor Design Summer ", deleted "27.8°C (82°F) wb (non-coincident)" as it is not needed for HVAC design, only dry bulb and coincident wet bulb temps.
349	T9.4-4, Supply Handling Units	Revised from "2 - 100% capacity (one running and one standby)" to "1" to clarify detailed design.
350	T9.4-4, AHU Supply Fans & Exhaust Fans	Revised Type from "variable speed" to "variable frequency" for design clarification.
351	T9.4-4	Added new equipment "FB Purge exhaust filter unit" to specify details of design change and clarified filter type efficiency to existing design.
352	T9.4-5	Revised "Supply Handling Units" from "2 - 100% capacity (one running and one standby)" to "1" and clarified filter type efficiency to meet the current design.
353	T9.4-5, AHU Supply Fans & Exhaust Fans	Revised Type from "variable speed" to "variable frequency" for design clarification.
354	F9.4-5	Revised drawing for configuration clarification
355	F9.4-6	Revised drawing for configuration clarification
356		
357	S9.4.3, 2nd para., 3rd bullet, 5th sent.	Revised sentence to reflect design change providing for multiple vent stacks from: "These units exhaust air from the building, which is maintained under negative pressure, to the vent stack." To: "These units exhaust air from the building, which is maintained under negative pressure, to the RWB vent stack."
358	S9.4.3.1, Power Generation Design Bases – RWGAVS, 4th bullet	Deleted "mobile" from radwaste processing systems to be consistent with standard terminology.
359	S9.4.3.1, Power Generation Design Bases – RWGAVS, 5th bullet	Revised sentence to reflect design change providing for multiple vent stacks from: "All exhaust air from the RWGA is discharged to the plant vent stack." To: "All exhaust air from the RWGA is discharged to the RWB vent stack."

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
360	S9.4.3.2, Summary Description – RWCRVS, 1st para., last sent.	Revised sentence to provide better description from: "Conditioned air is supplied to the control room area through ducts, dampers and registers." To: "Conditioned air is supplied to the control room , the electrical equipment room, elevator machine room and HVAC equipment room areas through ducts, dampers and registers."
361	S9.4.3.2, Summary Description – RWGAVS, 1st para.	Revised paragraph for clarification and better description from: "The RWGAVS is a once-through air conditioning and ventilation system to provide filtered and heated or cooled, and humidified air to the RWGA. The RWGAVS supply consists of two 100% capacity AHUs connected to a common supply distribution ductwork and a common outside air intake louver. Isolation dampers are provided at each unit. Each AHU contains filters, cooling and heating coils, a humidifier, a fan, and dampers." To: "The RWGAVS is a once-through air conditioning and ventilation system to provide filtered and heated or cooled air to the RWGA. The RWGAVS supply consists of one AHU with two (2) 100% capacity supply fans, in parallel, connected to a supply distribution ductwork system and an outside air intake louver. Each AHU contains filters, cooling and heating coils, two redundant supply fans, and isolation dampers."
362	S9.4.3.2, Summary Description – RWGAVS, 2nd para., last sent.	Revised sentence to reflect design change providing for multiple vent stacks from: "Each AFU is connected to a common exhaust collection duct and a common exhaust duct discharging to the plant vent stack." To: "Each AFU is connected to a common exhaust collection duct and a common exhaust duct discharging to the RWB vent stack."
363	S9.4.3.2, Detailed System Description – RWVS, 2nd para.	Revised "Filter room" to "Exhaust Filter rooms" for clarification.
364	S9.4.3.2, Detailed System Description – System Operations, 3rd para., 2nd and 3rd sent.	Sentences revised for clarification from: "One 100% supply AHU and two 50% exhaust AFUs operate during normal plant operation. The second AHU and…" To: "One 100% AHU supply fan and two 50% exhaust AFUs operate during normal plant operation. The second AHU supply fan and…"

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
365	S9.4.3.2, Detailed System Description – System Operations, 3rd para., last sent.	Deleted "humidified" to be consistent with design.
366	S9.4.3.5, 4th para., 3rd sent.	Revised sentence for clarification from: "…pressure controller (located on the HVAC board in the RWCR) that modulates airflow by controlling fan speed or adjusting the exhaust fan inlet vanes." To: "…pressure controller (located on the HVAC control panel in the RWCR) that modulates airflow by controlling exhaust fan speed."
367	T9.4-7, RWGAVS "Supply Air Handling Unit" and "Exhaust Fans"	Revised Type from "variable speed" to "variable frequency" for design clarification.
368	T9.4-7, Major Equipment for the RWVS, Supply Air Handling Unit	Revised "Quantity" to "Fans" for clarification and to reflect detail design configuration changes.
369	F9.4-7a	Revised drawing for configuration clarification
370	F9.4-7b	Revised drawing for configuration clarification
371		
372	S9.4.4, 1st para. last sent.	Revised sentence for clarification from: "The various fan-coil units for local area heating and cooling within the Turbine Building are included in the TBVS." To: "The various AHUs (Air Handling Units) for local area cooling within the Turbine Building are included in the TBVS."
373	S9.4.4, 3rd para., 3rd bullet, 2nd sent.	Added "potentially contaminated" to clarify the system design.
374	S9.4.4, 3rd para., 3rd bullet, 3rd and 4th sent.	Revised "plant vent stack" to "TB vent stack" reflect design change providing for multiple vent stacks.
375	S9.4.4.1, new 2nd para.	New paragraph incorporating RTNSS requirements in response to RAI 9.4-39 S01 (Note that a response to this RAI has not been previously submitted.): "The TBVS has Regulatory Treatment of Non-Safety Systems (RTNSS)

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the defense-in-depth principles of redundancy and physical separation to ensure adequate reliability and availability as described in Subsection 19A.8.3."
376	S9.4.4.1, 2nd to last bullet	Revised "fan coil" to "AHUs" and added "Service Air System (SAS) rooms to provide additional design detail.
377	S9.4.4.2, Summary Description, 7th para.	Revised "plant vent" to "TB Vent" to reflect design change providing for multiple vent stacks from:
378	S9.4.4.2, Summary Description, 8th para.	Revised "unit coolers" to "AHUs" to better describe the equipment.
379	S9.4.4.2, Summary Description, last para., 1st sent.	Deleted reference to the codes table in chapter 1 since it is not standard practice from "ASHRAE-15 (Table 1.9-22)" to "ASHRAE-15"
380	S9.4.4.2, Summary Description, last para., last sent.	Revised "ventilation system" to "purge system" to be consistent with design of chiller rooms.
381	S9.4.4.2, Detailed System Description, TBAS, 2nd para., former 3rd sent.	Deleted sentence to be consistent with current design: "On the outlet common duct there is one pneumatically operated damper to maintain the desired negative pressure in the Turbine Building."
382	S9.4.4.2, Detailed System Description, TBAS, last para.	Revised "controllers" to "elements" per the current design.
383	S9.4.4.2, Detailed System Description, TBE, last para., 1st two sent.	Revised sentences to clarify frequency control of TBE fan from: "Each TBE fan is provided with pneumatically operated inlet vanes or variable speed drives and isolation dampers. A flow controller automatically adjusts the pitch or speed of the operating fans…" To: "Each TBE fan is provided with variable frequency drives and isolation dampers. A flow controller automatically adjusts the frequency of the operating fans…"
384	S9.4.4.2, Detailed System Description – Turbine Building Compartment Exhaust (TBCE) Subsystem, 2nd	Revised "plant vent stack" to "TB vent stack" to reflect design change providing for multiple vent stacks.

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	para.	
385	S9.4.4.2, Detailed System Description – TBCE, 3rd para.	Revised "plant vent stack" to "TB vent stack" to reflect design change providing for multiple vent stacks.
386	S9.4.4.2, Detailed System Description – TBCE, 3rd para.	Revised sentences to clarify frequency control of TBCE exhaust fans from: "The two exhaust fans are provided with inlet vanes or variable speed drives and isolation dampers. An airflow controller automatically adjusts the inlet vanes or speed…" To: "The two exhaust fans are provided with variable frequency drives and isolation dampers. An airflow controller automatically adjusts the speed…"
387	S9.4.4.2, Detailed System Description – TBLOE, 1st para.	Added "low efficiency filter" for additional design detail.
388	S9.4.4.2, Detailed System Description – TBDRE, 1st para.	Added "(high efficiency and HEPA)" for additional design detail.
389	S9.4.4.2, Detailed System Description – TBDRE, 2nd para.	Revised paragraph to reflect design change providing for multiple vent stacks from: "…finally released to the atmosphere through the plant vent stack, except during smoke removal." To: "…finally released to the atmosphere through the TB vent stack."
390	S9.4.4.2, Detailed System Description – TBDRE, former last para.	Deleted paragraph as it is not needed for HVAC design "The subsystem includes a 100% capacity filter bypass duct for purging smoke in the event of a fire."
391	S9.4.4.2, Detailed System Description – TBVS, Entire Section	Revised "unit cooler" to "AHU" for design clarification.
392	S9.4.4.2, Detailed System Description – TBVS, 1st para., new last sent.	These AHU's were moved from the RBVS to TBVS as it is more appropriate to be included with TBVS: "The Main Steam Tunnel is provided with 2-100% redundant recirculation air handling units."
393	S9.4.4.2, Detailed	Revised paragraph to provide clarification of cooling loads

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	System Description – TBVS, last para.	from: "…Nuclear Island subsystem of the CWS and Instrument Air System…"" To: "…Nuclear Island subsystem of the CWS, selected electrical equipment rooms and Instrument / Service Air System…"
394	S9.4.4.2, Detailed System Description – Smoke Purge Mode, 2nd para.	Revised paragraph to clarify detailed design smoke control from: "Upon detection of smoke in the TBCE or the TBLOE or the TBDRE subsystems MCR…" To: "During smoke purge operation in the TBCE subsystem, MCR…"
395	S9.4.4.2, Detailed System Description – Smoke Purge Mode, 3rd para., 1st sent.	Added "as well as the TBCE and TBLOE exhaust fans" to clarify detail design.
396	S9.4.4.2, Detailed System Description – LOPP, 1st para.	Revised paragraph for clarification from: "…TBE subsystem remains in operation because they are powered from…" To: "…TBE subsystem remains available for operation because it is powered from…"
397	S9.4.4.2, Detailed System Description – LOPP, last para.	Revised paragraph in response to RAI 9.4-39 S01 (Note that a response to this RAI has not been previously submitted.): "The fan coil units of the RCCWS, Nuclear Island subsystem of the CWS and Instrument Air System rooms also remain in operation." To: "The local AHUs of the RCCWS, Nuclear Island subsystem of the CWS and Instrument / Service Air System rooms and selected electrical equipment rooms also remain in operation."
398	S9.4.4.5, 1st bullet	Changed "indicators" to "elements" to clarify the design.
399	S9.4.4.5, 2nd bullet	Changed "switches" to "signals" to clarify the design.
400	S9.4.4.5, 3rd bullet	Changed "switches" to "transmitters" to clarify the design.
401	S9.4.4.5, 5th bullet	Changed "switches" to "signals" to clarify the design.
402	T9.4-15, TBVS	From parameters "Outdoor Design Summer ", deleted "27.2°C (81°F) wb (non-coincident)" as it is not needed for

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		HVAC design.
403	T9.4-15, TBAS, TBE, TBCE	Revised Fan Type from "Variable Speed" to "Variable Frequency" for design clarification.
404	T9.4-15; Gen. Areas; Max Indoor Temp.	Changed Indoor Maximum Temperature from 49C to 50C (120F to 122F) for DCD consistency
405	T9.4-15; Main Steam Tunnel Recirc AHU	Added Main Steam Tunnel Recirculation AHU information that was moved from T9.4-11.
406	T9.4-15; Misc Equip. Rooms AHUs	Added "Miscellaneous Equipment Rooms AHUs" to be consistent with section 9.4.4 and Figure 9.4-8 TBVS.
407	F9.4-8	Added: "Main Steam Tunnel Recirculating AHU" to figure 9.4-8; relocated them from F9.4-10, as these units are located under TBVS division of responsibility (reference RAI 9.4-45 and 14.3-53) and added clarification of existing design.
408	S9.4.5	NO CHANGES
409	S9.4.6; 1st para.; three bullets	Added "CONAVS", "REPAVS" and "CLAVS" to the end of the three bullets for clarification.
410	S9.4.6; 2nd para.; third bullet	Added clarification "(CONAVS and REPAVS)" to the 4th and 5th sentences AND performed editorial change to the 4th sentence writeup.
411	S9.4.6.1, Safety Design Bases, 1st para., 3rd sent.	Added clarification "(CONAVS and REPAVS subsystems)" to the sentence.
412	S9.4.6.1, Safety Design Bases, 1st para., 4th sent.	Revised sentence to reflect design change from: "The RBVS has nonsafety-related Reactor Building Purge Exhaust Filter Units for mitigating and controlling gaseous effluents from the Reactor or Fuel buildings." To: "The RBVS has nonsafety-related Reactor Building Purge Exhaust Filter Units for mitigating and controlling gaseous effluents from the Reactor Building."
413	S9.4.6, new 2nd para.	New paragraph incorporating RTNSS requirements in response to RAI 9.4-39 S01 (Note that a response to this RAI has not been previously submitted.): "The RBVS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the defense-in-depth principles of redundancy and physical separation to ensure

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		adequate reliability and availability. In addition, augmented design standards are applied as described in Subsection 19A.8.3."
414	S9.4.6.1, Power Generation Design Bases, 1st para., 9th bullet.	Added clarification "(CONAVS and REPAVS subsystems)" to the bullet sentence.
415	S9.4.6.1, Power Generation Design Bases, 1st para., 10th bullet, new 2nd sent.	Added sentence to reflect design change: "After a LOCA, a Reactor Building HVAC Purge Exhaust Filter Unit can be energized to partial re-circulate and partial exhaust the CONAVS area air space."
416	S9.4.6.1, Power Generation Design Bases, 1st para., 4th from last bullet	Revised bullet to reflect design change from: "Provides filtered exhaust capability for the Fuel Building through the Reactor Building HVAC Purge Exhaust Filter Unit" To: "Provides local recirculation AHUs for cooling of the Hydraulic Control Unit area."
417	S9.4.6.1, Power Generation Design Bases, 1st para., 3rd from last bullet, 1st sentence	Revised sentence to avoid referencing technical specification limits from: "RBVS maintains SLC accumulator room environmental conditions within technical specification limits including employing two backup heaters per room." To: "RBVS maintains SLC accumulator room environmental conditions within temperature limits including employing two backup heaters per room."
418	S9.4.6.1, Power Generation Design Bases, 2nd from last bullet, new 2nd sent.	Added sentence to clarify design detail: "The motor cooler heat sink is RCCW while Chilled Water or Direct Expansion units are provided for electrical cabinet cooling."
419	S9.4.6.2, Detailed System Description – CONAVS, 2nd para., 1st sent.	Revised sentence for design clarification from: "The CONAVS is a once-through ventilation system and consists of redundant AHUs; exhaust fans and building isolation dampers." To: "The CONAVS is a once-through ventilation system and consists of the AHU; redundant exhaust fans and building isolation dampers."
420	S9.4.6.2, Detailed System Description – CONAVS, 2nd para., 3rd	Revised sentence for design clarification from: "Each AHU includes filters, heating and cooling coils and a supply fan." To:

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	sent.	"The AHU includes filters, heating and cooling coils and redundant supply fans."
421	S9.4.6.2, Detailed System Description – CONAVS, 2nd para., 5th sent.	Revised sentence for design clarification from: "The chilled water system provides cooling water for the CONAVS AHUs." To: "The chilled water system provides cooling for the CONAVS AHUs."
422	S9.4.6.2, Detailed System Description – CONAVS, 2nd para., 8th sent.	Revised "plant vent stack" to "RB/FB vent stack" to reflect design change providing for multiple vent stacks.
423	S9.4.6.2, Detailed System Description – CONAVS, 2nd para., 12th and 13th sent.	Revised sentences for design clarification from: "…detected in the supply air duct, the affected subsystem is shut down. The exhaust fans are then…" To: "…detected in the air duct, the system is shut down. After the fire is completely extinguished, the exhaust fans are then …"
424	S9.4.6.2, Detailed System Description – CONAVS, 2nd para., 18th sent.	Revised sentence for design clarification and to reflect design change from: "The RB purge exhaust filter units are equipped with pre-filters, HEPA filters and carbon filters for mitigating and controlling gaseous effluents from the Reactor or Fuel buildings." To: "The RB purge exhaust filter units are equipped with pre-filters, HEPA filters, high efficiency filters and carbon filters for mitigating and controlling gaseous effluents from the Reactor Building."
425	S9.4.6.2, Detailed System Description – CONAVS, 2nd para., new 19th sent.	Added sentence to reflect design change: "After a LOCA, one Reactor Building HVAC Purge Exhaust Filter Unit (the redundant one is in standby) can be energized to partially re-circulate and partially exhaust the space air in the CONVAS area."
426	S9.4.6.2, Detailed System Description – CONAVS, 2nd para., 2nd from last sent.	Revised sentence to clarify design detail from: "…RWCU pump motors, rooms, and/or electrical/instrument panels designed to limit..." To: "…RWCU pump motor coolers from RCCW, and electrical/instrument panels are provided with either Chilled Water or Direct Expansion Units designed to limit..."
427	S9.4.6.2, Detailed System Description –	Deleted sentence as it was out of place in the paragraph: "The steam tunnel recirculating AHUs are located in the Turbine

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	CONAVS, 3rd para., former last sent.	Building."
428	S9.4.6.2, Detailed System Description – REPAVS, 2nd para., 1st and 2nd sent.	Revised sentences for design clarification from: "The REPAVS is a once-through ventilation system and consists of redundant AHUs, exhaust fans and building isolation dampers. Each AHU includes filters, heating and cooling coils and a supply fan." To: "The REPAVS is a once-through ventilation system and consists of the AHU, redundant exhaust fans and building isolation dampers. The AHU includes filters, heating and cooling coils and redundant supply fans."
429	S9.4.6.2, Detailed System Description – REPAVS, 2nd para., 5th sent.	Revised "plant vent stack" to RB/FB vent stack" to reflect design change providing for multiple vent stacks.
430	S9.4.6.2, Detailed System Description – REPAVS, 2nd para., 10th and 11th sent.	Revised sentences for design clarification from: "In the event smoke is detected in the supply air duct, the affected subsystem is shut down. The exhaust fans are then used for smoke removal with the exhaust air being monitored for radiological contamination." To: "In the event smoke is detected in the air duct, the system is shut down. After the fire is completely extinguished, the exhaust fans are then used for smoke removal with the exhaust air being monitored for radiological contamination."
431	S9.4.6.2, Detailed System Description – REPAVS, 3rd para., 4th and 5th sent.	Deleted sentences because this requirement is part of RBVS not REPAVS: "RB HVAC, including two backup heaters per room, maintains SLC accumulator room environmental conditions within technical specification limits. PIP A and PIP B busses provide power for these heaters."
432	S9.4.6.2, Detailed System Description – CLAVS, 2nd para., 1st and 2nd sent.	Revised sentences for design clarification from: "The CLAVS is a recirculating ventilation system with redundant AHUs, return/exhaust fans and smoke exhaust fans. Each AHU includes filters, heating and cooling coils and a supply fan." To: "The CLAVS is a recirculating ventilation system with the AHU, and redundant return/exhaust fans . The AHU includes filters, heating and cooling coils and redundant supply fans."
433	S9.4.6.2, Detailed System Description –	Revised sentences for design clarification from: "In the event smoke is detected in the supply air duct, the affected

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	CLAVS, 2nd para., 10th and 11th sent.	subsystem is shut down. The CLAVS smoke exhaust fans are then used for smoke removal." To: "In the event smoke is detected in the air duct, the system is shut down. After the fire is completely extinguished, the CLAVS exhaust fans are then used for smoke removal."
434	S9.4.6.2, Detailed System Description – CLAVS, 2nd para., 12th sent.	Revised sentence for design clarification from: "The chilled water system provides cooling water for the CLAVS AHUs." To: "The chilled water system provides cooling for the CLAVS AHU."
435	S9.4.6.2, Detailed System Description – CLAVS, 2nd para., 17th sent.	Revised "plant vent stack" to RB/FB vent stack" to reflect design change providing for multiple vent stacks.
436	S9.4.6.2, Detailed System Description – CLAVS, 2nd para., new last sent.	Added sentence in response to RAI 9.4-43: "Battery room hydrogen indication and loss of ventilation alarm functions are provided."
437	S9.4.6.2, Detailed System Description – CLAVS, last para., 2nd sent.	Deleted 2nd sentence "The CLAVS smoke exhaust fans are located in the Reactor Building." Clarify detailed design that the CLAVS exhaust fans perform this smoke removal function.
438	S9.4.6.2, System Operation – CONAVS, 1st para., 4th and 5th sent.	Revised sentences for design clarification from: "Failure of an operating exhaust fan automatically energizes the standby exhaust fan. Simultaneously, the CONAVS AHU supply fan is de-energized due to a loss in room negative pressure." To: "Failure of an operating supply or exhaust fan automatically energizes the standby fan and de-energizes the failed fan. The CONAVS AHU supply fan is de-energized due to a loss in room negative pressure."
439	S9.4.6.2, System Operation – REPAVS, 1st para., 4th and 5th sent.	Revised sentences for design clarification from: "Failure of an operating exhaust fan automatically energizes the standby exhaust fan. Simultaneously, the REPAVS AHU supply fan is de-energized due to a loss in room negative pressure." To: "Failure of an operating supply or exhaust fan automatically energizes the standby fan and de-energizes the failed fan. The REPAVS AHU supply fan is de-energized due to a loss in room negative pressure."
440	S9.4.6.2, System Operation – CLAVS,	Revised sentences for design clarification from: "Failure of an operating AHU supply fan automatically energizes the standby AHU supply fan and de-energizes the failed fan.

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	1st para., 3rd and 4th sent.	Simultaneously, the return/exhaust fan is de-energized due to a loss in room pressurization." To: "Failure of an operating supply or return/exhaust fan automatically energizes the standby fan and de-energizes the failed fan. The return/exhaust fan is de-energized due to a loss in room pressurization."
441	S9.4.6.2, System Operation – CLAVS, 2nd para.	Revised paragraph for design clarification from: "Following a fire recovery, exhaust fans or smoke exhaust fans are used to remove smoke from the area by exhausting to the outdoors." To: "Following a fire recovery, return/exhaust fans are used to remove smoke from the area by exhausting to the outdoors."
442	S9.4.6.3, 3rd para., 1st and new 2nd sents.	Changed writeup for clarification from: "The RBVS does not perform any safety-related functions, except for boundary isolation dampers closing in the event of radiological events." To: "The RBVS does not perform any safety-related functions, except for the CONAVS and REPAVS subsystem boundary isolation dampers closing in the event of radiological events. The CLAVS subsystem is also provided with safety-related building isolation dampers, which close upon Loss of Power or Loss of Instrument Air."
443	S9.4.6.3, 3rd para., 3rd sent.	Revised "refueling area" to "Reactor Building" to be consistent with design.
444	S9.4.6.3, 5th para.	Revised "technical specification" to "temperature" to avoid referencing technical specifications.
445	S9.4.6.5, 1st bullet	Changed the 1st bullet for clarification, and to ensure terminology matches other DCD sections, from: "Reactor Building boundary isolation dampers close on receipt a high radiation signal or on a loss of AC power." To: "Reactor Building boundary isolation dampers for the CONAVS and REPAVS subsystems close on receipt a high radiation signal or on a loss of AC power. There is no automatic high radiation isolation signal for the CLAVS subsystem. The As stated in Chapter 11.5, radiation monitors of the PMRS which initiate automatic building isolation are: • Reactor Building HVAC Exhaust (CONAVS) • Refuel Handling Area HVAC Exhaust (REPAVS)"
446	S9.4.6.5, 3rd bullet	Deleted "(one upstream and one downstream)" to remove

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		unneeded detail.
447	S9.4.6.5, 5th bullet, 2nd sent.	Revised sentence for clarification of design from: "The controller adjusts the CLAVS AHU supply fan's variable inlet vanes or fan speed…" To: "The controller adjusts the CLAVS return/exhaust fan speed…"
448	S9.4.6.5,8th bullet, 2nd sent.	Deleted "fan's variable inlet vanes or" to be consistent with design.
449	S9.4.6.5, 2nd to last bullet	Revised bullet for clarification and in response to RAI 9.4-43 from: "… including flow rates, damper position, filter pressure drop, building pressure with respect to atmospheric and temperatures" To: "…including flow rates, control damper position, filter pressure drop, building pressure with respect to atmospheric, temperatures, battery room hydrogen concentration"
450	S9.4.6.5, last bullet	Added "and high battery room hydrogen concentration." in response to RAI 9.4-43.
451	T9.4-8, CONAVS REPAVS, and CLAVS	From parameters "Outdoor Design Summer ", deleted "27.8°C (82°F) wb (non-coincident)" as it is not needed for HVAC design and clarified CLAVS area.
452	T9.4-9	Revised "Supply Handling Units" from "2 - 100% capacity (one running and one standby)" to "1" to meet the current design and deleted "per unit" because only one unit is specified.
453	T9.4-9, AHU Supply Fans, Return/Exhaust Fans and Battery Room Exhaust Fan	Revised Type from "variable speed" to "variable frequency" for design clarification.
454	T9.4-9, Smoke exhaust fans	Deleted "Smoke exhaust fans" from table since "Return/exhaust fans" perform this function as written in S9.4.6.2.
455	T9.4-9, New Line Item	Added "Safety-related Building Isolation Dampers" in response to RAI 9.4-46, 9.4-42, 14.3-53 S01 and clarify

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		detailed design.
456	T9.4-10	Revised "Supply Handling Units" from "2 - 100% capacity (one running and one standby)" to "1" to clarify detailed design.
457	T9.4-10, AHU Supply Fans and Exhaust Fans	Revised Type from "variable speed" to "variable frequency" for design clarification.
458	T9.4-11	Revised "Supply Handling Units" from "2 - 100% capacity (one running and one standby)" to "1" to clarify detail design.
459	T9.4-11, AHU Supply Fans, Exhaust Fans, Containment Purge Fans and RB Purge Exhaust Fan	Revised "Variable Speed" to "Variable Frequency" for design clarification.
460	T9.4-11, Purge Exhaust Filter Unit and Purge Exhaust Filter Unit Exhaust Fans	Revised "Purge exhaust" to "RB Purge exhaust" and deleted "(used when purging and when temporarily filtering exhaust from other areas)" per design change.
461	T9.4-11	Deleted: "Main Steam Tunnel Recirculating AHU" and relocated them to T9.4-15, as these units are located under the TBVS system design.
462	F9.4-9	Figure 9.4-9 CLAVS revised to clarify the detailed design and to include the building isolation dampers per RAIs 9.4-46; RAI 14.3-52 S01.
463	F9.4-10	Figure 9.4-10 CONAVS revised to clarify the detailed design to removed Main Steam Tunnel Recirc AHU from figure and relocated it to Figure 9.4-8 to coincide with the current design.
464	F9.4-11	Figure 9.4-11 REPAVS revised to clarify the detailed design.
465		
466	9.4.7, 2nd para. 2nd bullet, last sent.	Deleted "safety-related" because it is not applicable.
467	S9.4.7, 7th bullet, former 1st sent.	Deleted "Meets GDC 19." in response to RAI 9.4-25 S01.

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468	S9.4.7, 7th bullet, former last sent.	Deleted text in response to RAI 13.3-5 S02: "however, the TSC is not specifically committed to providing a safety-related environment in full compliance with GDC 19 that defines the Control Room habitability acceptance criteria"
469	S9.4.7.1, new 2nd para.	Added paragraph to describe RTNSS requirements in response to RAI 9.4-39 S01 (Note that a response to this RAI has not been previously submitted.): "The EBVS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the defense-in-depth principles of redundancy and physical separation to ensure adequate reliability and availability as described in Subsection 19A.8.3."
470	S9.4.7.1, 4th bullet	Revised bullet to specify current design requirements from: "Prevents the buildup of hydrogen in the nonsafety-related battery rooms to less than 2 percent hydrogen by volume" To: "Maintains the hydrogen concentration levels in the nonsafety-related battery rooms below 2% by volume in accordance with RG 1.128."
471	S9.4.7.1, EERVS, new 6th bullet	Added statement to clarify detailed design: "The onsite diesel generators provide electrical power to the EERVS in case of a Loss of Preferred Power (LOPP)."
472	S9.4.7.1, EERVS, new 7th bullet	Added new item in response to RAI 9.4-39 S01 (Note that a response to this RAI has not been previously submitted.): "EBVS provides post 72-hour cooling for Safety-related Electrical Distribution, and support for electrical power to FAPCS."
473	S9.4.7.1, DGVS, new 5th bullet	Added statement to clarify detailed design: "The onsite diesel generators provide electrical power to the DGVS in case of a Loss of Preferred Power (LOPP)."
474		
475	S9.4.7.2, Summary Description EERVS, 1st sent.	Revised "Electric Equipment Building" to "Electrical Building" as there is no Electric Equipment Building.
476	S9.4.7.2, Summary Description TSCVS, 1st	Revised for clarity from: "The TSCVS is a recirculating ventilation system to provide filtered

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	para., 1st four sent.	conditioned air to the TSC. Two supply fans and filtration units with high efficiency particulate air (HEPA) filters and charcoal filters remove radioactive materials when required. The supply fans provide fresh air to the TSC to augment the return air to maintain the TSC under slight positive pressure. The recirculating system includes redundant air conditioning units (with air mixing plenum, filters, heating and cooling coils, and humidifier) and recirculating fans to provide conditioned air through ducts, dampers, and registers to the TSC." To: "The TSCVS is a recirculating ventilation system to provide filtered conditioned air to the TSC. Two redundant Air Filtration Units (AFU) with supply fans, high efficiency particulate air (HEPA) filters and charcoal filters remove radioactive materials when required. The AFUs provide fresh air to the TSC to augment the return air to maintain the TSC under slight positive pressure. The recirculating AHU system includes redundant air handling units (with fans, air mixing plenum, filters, heating and cooling coils, and humidifier) to provide conditioned air through ducts, dampers, and registers to the TSC."
477	S9.4.7.2, Summary Description DGVS, 2nd para., 1st sent.	Deleted "motor operated" as the design details will determine damper motive force.
478	S9.4.7.2, System Operation, Normal Operating Mode, EERVS, last para., 1st sent.	Revised sentence to be consistent with current design from: "Temperature controllers located at the heating and cooling coils air outlet modulate the EERVS air handling heating and cooling coil operation." To: "Temperature is monitored at the heating and cooling coils to ensure air outlet conditions are properly maintained."
479	S9.4.7.2, System Operation, Normal Operating Mode, TSCVS, 1st para., 1st two sent.	Revised sentences for clarity and per current design from: "During normal operation, outside air, filtered and conditioned in the air-handling unit is propelled by fans and supplied to the TSC. General rooms and areas exhaust air is recirculated to the AHU." To: "During normal operation, outside air is drawn into the AHU where it is filtered and conditioned then discharged by supply fans to TSC areas. General rooms and area return air is recirculated to the AHU."
480	S9.4.7.2, System Operation, Normal Operating Mode, TSCVS, 2nd para., 1st	Revised sentence for clarity by changing "AFU filtration unit" to "AFU."

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
	sent.	
481	S9.4.7.2, System Operation, Normal Operating Mode, DGVS, 1st para., 2nd sent.	Revised sentences for clarity and per current design from: "Outside air, filtered and heated (when required) in the all-fresh-air handling unit, is propelled by a fan and supplied to general areas…" To: "Outside and / or recirculated room air is filtered and heated (when required) in the AHU, then supplied to general areas…"
482	S9.4.7.2, System Operation, Normal Operating Mode, DGVS, 1st para., last sent.	Deleted "through automatically operated control dampers" to remove unnecessary design details.
483	S9.4.7.2, System Operation, Normal Operating Mode, DGVS, 3rd para., last sent.	Revised sentences for clarity and per current design from: "The roof fans stop automatically on low temperature." To: "The roof fans operate automatically to maintain room temperature."
484	S9.4.7.2, System Operation, Smoke Removal Operating Mode, 1st para., 1st sent.	Revised sentence for clarity and per current design from: "Supply AHUs and Exhaust fans stop automatically if smoke is detected." To: "If smoke is detected in the return air ductwork for the EERVS or TSCVS, or in the DG AHU main supply ductwork, the respective supply AHU and Exhaust fan/PWRVs stop automatically. If smoke is detected in the associated outside air intakes for the EERVS or TSCVS the respective intake isolates and the TSC AFU shuts down if running. If smoke is detected just downstream of the operating EER or TSC AHU/AFU, the respective unit shuts down and the standby unit starts automatically."
485	S9.4.7.2, System Operation, Radiological Event Operation, 1st para.	Revised sentence for clarity and per current design from: "Upon detection of outside air high radiation signal a filtration unit fan starts automatically and opens its normally closed isolation damper. The signal also closes the filtration unit bypass damper and the exhaust air dampers." To: "Upon detection of outside air high radiation signal an AFU starts and aligns automatically to the AHU return ductwork. The signal also closes

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		the AFU bypass damper and the exhaust air dampers."
486	S9.4.7.5, new last bullet	Added bullet to be consistent with design writeup: "Battery room hydrogen sensors and high hydrogen concentration alarm."
487	T9.4-16, EBVS	From parameters "Outdoor Design Temperature", deleted "(82°F) wb (non-coincident)" as it is not needed for HVAC design.
488	T9.4-16, EER Supply, EER Return, EER Battery Room Exhaust, TSC AFU, TSC AHU, DG AHU and DG Power Roof Ventilators	Revised Fan Type from "Variable Speed" to "Variable Frequency" for design clarification.
489	T9.4-16; DG Power roof ventilators	Added "x 20%" after "6 per DG", to match F9.4-12.
490	F9.4-12	Changed figure for design clarification and to properly identify the building louvers in response to RAI 9.4-48.
491		
492	S9.4.8.2, Detailed System Description, 1st para., 2nd sent.	Added "with variable frequency drives," per current design.
493	S9.4.8.2, Detailed System Description, 1st para., last sent.	Revised sentence clarify detailed design from: "The two trains of chill water, the FCU's and the fans are redundant." To: "The FCU's and the fans are redundant"
494	S9.4.8.2, Detailed System Description, 2nd para., 1st sent.	Deleted "Nuclear Island subsystem of the" for clarity.
495	S9.4.8.2, Detailed System Description, 3rd para., 2nd sent.	Revised "provided per" to "accommodated by each" for clarification.
496	S9.4.8.2, Detailed System Description, 3rd para., former 3rd sent.	Deleted sentence to clarify detailed design: "Nuclear Island subsystem of CWS train A supplies one FCU, and

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		Nuclear Island subsystem of CWS train B supplies the other."
497	S9.4.8.2, Detailed System Description, 4th para.	Revised to clarify the detailed design, added adjective "upper" to the two sentences in front of FCU.
498	S9.4.8.2, Detailed System Description, 3rd para., former 5th sent.	Revised sentence to clarify detailed design from: "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." To: "Upon loss of one FCU, both fans in the affected unit are secured and the fans in the remaining FCU are started or continue to operate."
499	S9.4.8.2, Detailed System Description, 5th para., 2nd sent.	Revised "provided per" to "accommodated by each" for clarification.
500	S9.4.8.2, Detailed System Description, 5th para., former 4th sent.	Deleted sentence to clarify detailed design: "Nuclear Island subsystem of CWS train A supplies one FCU, while Nuclear Island of subsystem CWS train B supplies the other."
501	S9.4.8.2, Detailed System Description, 5th para., 5th sent.	Revised sentence to clarify detailed design from: "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." To: "Upon loss of one FCU, both fans in the affected FCU are secured and the fans in the remaining FCU are started or continue to operate."
502	S9.4.8.2, Detailed System Description, 8th para., 1st sent.	Revised sentence for clarity from: "The piping for train A and train B of the Nuclear Island subsystem of CWS independently penetrate the containment. " To: "The CWS piping penetrates the containment at two independent locations, redundantly."
503	S9.4.8.2, Detailed System Description, 8th para., former 2nd sent.	Deleted sentence to clarify detailed design: "The cooling coils of one FCU in the upper drywell and one FCU in the lower drywell are piped in parallel to Nuclear Island subsystem of CWS train A and the remaining two are piped in parallel to Nuclear Island subsystem of CWS train B."

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
504	S9.4.8.2, Detailed System Description, 8th para., 2nd to last sent.	Revised sentence to clarify detailed design from: "Upon failure of one FCU due to loss of a single electrical group, the two fans of the remaining FCU are in service." To: "Upon failure of one FCU, the two fans of the remaining FCU are in service."
505	S9.4.8.2, Detailed System Description, last para.	Revised sentence to clarify detailed design from: "The FCU fans and fan motors…" To: "The FCU variable frequency drive motors…"
506	S9.4.8.4, 1st para., 1st sent.	Revised to delete "Nuclear Island subsystem of" because it provides unnecessary detail.
507	S9.4.8.4, 2nd para., 1st sent.	Deleted "supply" because requirement applies to all duct.
508	T9.4-12; Max Temp of ambient atmosphere in each drywell zone	Revised temperature from 66°C (150.8 °F) to 65.5 °C (150 °F) to correspond with Table 6.2-2 and updated analysis
509	S9.4.8.5, 1st para., new 3rd sent.	Added sentence to specify requirement consistent with the current design: "The condensate discharge flow from the upper and lower drywell air coolers is provided to LD&IS for monitoring and alarming."
510		
511	S9.5	Provided "SDG" to clarify between different diesel generator sets for "standby diesel generator" and "ADG" for "ancillary diesel generator".
512	S9.5.1	Throughout Subsection 9.5.1, "Nuclear Island" was removed or revised to provide clarity or more detail of the appropriate structure.
513	S9.5.1.1, 2nd para.	Revised entire paragraph to reference Chapter 19 for RTNSS requirements from: "The FPS has Regulatory Treatment of Non-Safety Systems (RTNSS) functions to provide post 72-hour makeup to the IC/PCC pools and Spent Fuel Pool using this portion of FAPCS. The FPS primary water storage tank also has a RTNSS function of providing makeup water for reactor coolant inventory. Performance of RTNSS functions is assured

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		by applying the augmented design standards described in DCD Section 19A.8.3." To: "The FPS has RTNSS functions as described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the defense-in-depth principles of redundancy and physical separation to ensure adequate reliability and availability. Performance of RTNSS functions is also assured by applying augmented design standards as described in Subsection 19A.8.3."
514	S9.5.1.1, former 3rd para.	Deleted the entire paragraph as RTNSS requirements are specified in previous paragraph.
515	S9.5.1.1 Power Generation Design Basis, 3rd set of bullets, 6th bullet, 2nd sent	Revised element of design basis for clarification consistent with existing design stating both fire pumps are designed and analyzed to remain functional following an SSE From: "…including a water source; one fire pump and its associated suction..." To: "…including a water source; two fire pumps and their associated suction..."
516	S9.5.1.2, 1st para., 1st sent.	Revised sentence for clarification From: "Figure 9.5-1 shows the FPS simplified system diagram." To: "Figure 9.5-1 shows the FPS simplified system diagram for the ESBWR standard plant facilities."
517	S9.5.1.2, 3rd para., 1st sent.	Revised "safety related" to "safe shutdown" to better describe the equipment to which fire suppression type is based.
518	S9.5.1.3, 3rd para.	Revised sentence for consistency with response to RAI 14.3-393 S01 by changing "safety-related areas" to "areas containing safe shutdown equipment."
519	S9.5.1.3, 5th para., 1st sent.	Revised sentence for clarification from: "Safety-related raceway and circuit routing comply with Branch Technical Position (BTP) SPLB 9.5-1 except that separation by fire barriers rather than distance is used outside the MCR or containment." To: "Seismically supported raceway containing safety-related circuits and circuit routing comply with Branch Technical Position (BTP) SPLB

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		9.5-1 except that separation by fire barriers rather than distance is used outside the MCR or containment."
520	S9.5.1.4, new 1st para.	Added new sentence describing the purpose of Figure 9.5-1: "Figure 9.5-1 provides a simplified diagram of the primary firewater supply piping and supply piping for ESBWR Standard Plant facilities supported by the secondary firewater supply piping yard loop."
521	S9.5.1.4, Water Source, 1st para., 2nd sent.	Revised sentence to remove reference to Figure 9.5-1 as it is introduced in a new paragraph leading the subsection.
522	S9.5.1.4, Water Source, 1st para., 4th sent.	Revised "1136 m^3 (300,000 gallons)" to "2082 m^3 (550,000 gallons)," to meet RG 1.189 Position 3.2.1.c requirements to mitigate water quality and RTNSS concerns.
523	S9.5.1.4, Water Source, 3rd para., 1st sent.	Added "and Seismic Category I diesel pump and fire protection piping" to clarify seismic category of post-accident makeup water to the IC/PCCS pools and Spent Fuel Pool is provided.
524	S9.5.1.4, Water Source, 3rd para., 2nd sent.	Deleted "diesel" due to design change.
525	S9.5.1.4, Water Source, 3rd para., last sent.	Revised sentence to clarify that changing Quality Group D and invoking RTNSS requirements assure reliability: From: "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." To: "This deviation is acceptable because this function is not required until after 72 hours. RTNSS requirements on the components performing the nonsafety-related makeup water function assure reliability which also justifies the change from Quality Group C to D."
526	S9.5.1.4, Fire Pumps, 1st para., 1st sent.	Added "Ancillary Diesel Building" to list of buildings per design change.
527	S9.5.1.4, Fire Pumps, 1st para., 2nd to last sent.	Added "Seismic Category II" to clarify seismic boundaries.
528	S9.5.1.4, Fire Pumps, 3rd para., 1st sent.	Added the following words to provide additional details on the jockey pump: ", one (1) dedicated for the primary fire protection circuit and one (1) dedicated for the secondary fire protection circuit,"

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
529	S9.5.1.5, 1st para.	Revised paragraph to provide details of the content of Figure 9.5-1 from: "Figure 9.5-1 provides a simplified diagram of the firewater supply piping." To: "Figure 9.5-1 provides a simplified diagram of the primary firewater supply piping and supply piping for ESBWR Standard Plant facilities supported by the secondary firewater supply piping yard loop."
530	S9.5.1.5, 2nd para., 1st, 2nd, and 3rd sent.	Revised sentences to be consistent with clarifying seismic boundaries. From: "…suspended ASME B31.1, Seismic Category I piping (nuclear island piping loop). The Seismic Category I loop is designed to remain functional following a SSE. The primary fire pumps supply firewater to the Seismic Category I loop supplying firewater within the structures of the nuclear island (Reactor Building, Control Building, and Fuel Building)." To: "…suspended ASME B31.1, either Seismic Category I or II piping (primary piping). The Seismic Category I and II loops are designed to remain functional following a SSE. The primary fire pumps supply firewater to the Seismic Category II loop supplying firewater within the Reactor Building, Control Building, Ancillary Diesel Building and Fuel Building."
531	S9.5.1.5, 2nd para., last sent.	Revised "Seismic Category I" to "Seismic Category II" to clarify seismic boundaries.
532	S9.5.1.6, Standpipe and Hose Systems (Wet)	Revised entire subsection for consistency and compliance with Regulatory Guide 1.189 (Revision 1) in regard to SI units. Each "100 mm" revised to "102 mm". Each "150 mm" revised to "152 mm". Each "65 mm" revised to "64 mm". Each "40 mm" revised to "38 mm". Each "6.35-cm" revised to "64 mm". Each "3.8-cm" revised to "38 mm".
533	S9.5.1.6, 3rd from last para.	Revised to provide detail how hose requirements are met in response to RAI 14.3-209 S01: "…hazard to safety-related equipment can be reached by at least one effective hose stream with a maximum…" To: "…hazard to safe shutdown equipment can be reached by at least one effective hose stream 9.1 meters (30 feet) with a maximum…"
534	S9.5.1.6, new 2nd to last para.	Added new paragraph to provide details in response to RAI 14.3-209 S01:

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"Standpipes and hose stations external to containment and portable extinguishers provide protection during refueling and maintenance operations. Hose stations are located such that any location within containment can be reached by two effective hose streams with a maximum of 61 meters (200 feet) of hose."
535	S9.5.1.7, 2nd para., 1st sent	Revised "Seismic Category I" to "Seismic Category II" to clarify seismic boundaries.
536	S9.5.1.9, 1st para., 1st sent.	Revised sentence for consistency with response to RAI 14.3-209 S01 by changing "safety-related" to "safe shut down".
537	S9.5.1.9, 3rd para.	Revised sentence for consistency with response to RAI 14.3-209 S01 by changing "safety-related" to "safe shutdown".
538	S9.5.1.9, 7th para.	Added "Ancillary Diesel Building" to list of buildings per design change.
539	S9.5.1.11, 2nd para., 1st sent.	Deleted sentence in response to RAI 9.5-68 S01: "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."
540	S9.5.1.11, 2nd para., new 2nd and 3rd sent.	Added sentences in response to RAI 9.5-68 S01: "The Turbine, Electrical, Reactor, Fuel, Radwaste and Control Buildings are provided with pressurized stairwells, in accordance with International Building Code (IBC) 2003 edition, section 1019.1.8 which requires pressurized stairwells where stairwells serve floors 22.9m (75 ft.) or more above the lowest level of fire department vehicle access (grade level) or more than 9.1 m (30 ft.) below the level of exit discharge. Per these IBC requirements, pressurized stairwells are not required for the Service Building."
541	S9.5.1.11, Control Room Habitability HVAC Area Subsystem, 2nd para., 2nd sent.	To be consistent with current design change: "Additionally, hose stations with UL-approved fixed fog nozzles are installed outside both entrances to the MCR." To: "Additionally, hose stations with UL-approved fixed fog nozzles are installed in both stairwells outside the MCR."
542	S9.5.1.11, Control Room Habitability HVAC Area Subsystem, 4th para., 2nd sent.	Revised sentence due to an design change from: "Upon receipt of the outside air intake smoke alarm, the CRHAVS automatically isolates and is placed in full recirculation mode to isolate the MCR from the outside air." To:

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"Upon receipt of the outside air intake smoke alarm, the MCR operator manual action is required to isolate the MCR from the outside air and place the CRHAVS in full recirculation mode."
543	S9.5.1.11; Reactor Building Contaminated Area HVAC Subsystem (CONAVS); 2nd to last sent.	Changed "plant vent stack" to "RB/FB vent stack" due to design change.
544	S9.5.1.11; Reactor Building Contaminated Area HVAC Subsystem (CONAVS); last sent.	Changed "plant vent stack" to "RB/FB vent stack" due to design change.
545	S9.5.1.11; Refueling and Pool Area HVAC Subsystem; 3rd sent.	Changed "plant vent stack" to "RB/FB vent stack" due to design change.
546	S9.5.1.11; Refueling and Pool Area HVAC Subsystem; last sent.	Changed "plant vent stack" to "RB/FB vent stack" due to design change.
547	S9.5.1.11; Electrical Building (EB) Smoke Removal, 1st para., last sent.	Revised sentence to clarify that EB HVAC removes smoke from the standby diesel generator rooms.
548	S9.5.1.11, new last para.	Added new section due to an design design change which added ancillary diesels: **"Ancillary Diesel Building (ADB) Smoke Removal** The ADB HVAC System provides smoke removal for the Ancillary Diesel Building. The smoke removal mode of the ADB HVAC System provides smoke removal from the Ancillary Diesel Generator (ADG) rooms, switchgear rooms, and ADG fuel oil storage tank rooms."
549	S9.5.1.12, 5th para. and bullets	Revised 5th para. and bullets to address the COL requirement in response to RAI 9.5-44 S01, RAI 9.5-45 S02 and RAI 19.1-150 S01 from: "The COL Holder referencing the ESBWR Standard Plant will conduct a compliance review of the as-built design against the assumptions and requirements stated in the FHA. Based on this review, the FHA will be updated as necessary (9.5.1-7-H)." To:

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"The COL Holder referencing the ESBWR Standard Plant will conduct a compliance review of the final as-built design against the assumptions and requirements stated in the FHA. Based on this review, the FHA will be updated as necessary (9.5.1-7-H). This review will include the following: • Identify potential in situ and transient fire hazards including types, configuration, locations of flammable and combustible materials and situations where in situ combustibles present an exposure to systems and components required for safe shutdown. • Review of final layout and configuration of SSCs required for safe-shutdown within a fire area determined on the basis of the worst-case fire that is likely to occur and the resulting damage. • Potential fire impacts, including smoke control, on operations will be identified, including the accessibility of plant areas or smoke removal facilities that impede operations or fire extinguishment in plant areas important to safe shutdown. • Review of the final fire-safe shutdown analysis including a safe shutdown analysis with the description and location of safe shutdown equipment including cabling. • Review of the Safe Shutdown Analysis will verify no spurious actuations induced by a fire in a single fire area can adversely affect the capability to achieve and maintain safe shutdown."
550	S9.5.1.12.1.3, 4th para., 2nd sent.	Deleted "or very slow to spread" as it is not applicable.
551	S9.5.1.12.1.4, Entire Subsection	Revised subsection to clarify that this section refers to the "Standby" diesels, due to addition of new ancillary diesels per design change.
552	S9.5.1.12.1.4, 4th para., 1st and 2nd sent.	Revised sentences for clarification and to reference Chapter 8 for electrical load details from: "The ESBWR design includes two independent and physically separated nonsafety-related SDG, either of which is capable of providing the full electrical load for the redundant nonsafety-related electrical buses. Neither is necessary to achieve and maintain safe shutdown conditions for the 72-hour period following an accident or fire event." To: "The ESBWR design includes two independent and physically separated nonsafety-related SDGs, capable of providing the electrical load as described in Subsection 8.3.1.1.8 and shown on Figure 8.1-1. Neither SDG is necessary to achieve and maintain safe shutdown conditions for the 72-hour period following an accident or fire event."
553	S9.5.1.12.1.4, 4th para., 3rd sent.	Deleted "of masonry or concrete construction" to eliminate unnecssary details.

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
554	S9.5.1.12.1.4, 5th para., last sent.	Deleted former sentence as statement does not apply: "In the unlikely event the fire cannot be extinguished, the day tank room can be isolated by closing doors and dampers to allow the fire to burn out on its own without spreading to other fire areas."
555	S9.5.1.12.1.5, New Subsection	Added new subsection to specify the fire protection requirements for fuel oil storage for ancillary diesels due to design change. Subsequent sections renumbered accordingly.
556	S9.5.1.12.1.6, Entire Subsection	Revised subsection as needed to specify "standby and ancillary" diesels, due to design change.
557	S9.5.1.12.1.6, last para., 1st sent.	Added "standby" for clarification due to design change.
558	S9.5.1.12.1.6, last para., new 2nd sent.	Added new sentence to specify requirements due to design change: "The ESBWR design also includes two independent and physically separated nonsafety-related ancillary diesel generators, either of which is capable of providing redundant post-accident power (Reference Subsection 8.3.1.1.9)."
559	S9.5.1.12.1.8, New Subsection	Added new subsection to specify hose requirements in response to RAI 14.3-209 S01.
560	S9.5.1.15.2, 1st para., 1st sent.	Revised sentence in response to RAI 9.5-70 from: "The organizational staffing structure of the Fire Protection Program is discussed in Chapter 13.1." To: "The COL applicant shall provide a description of the Fire Protection program (COL 13.4-1-A)."
561	S9.5.1.15.2, 3rd para., 6th bullet, 2nd line	Revised sentence for clarification from: "Scheduling and conducting fire brigade drills;" To: "Scheduling and ensuring that fire brigade drills are conducted;"
562	S9.5.1.15.2, 3rd para., 7th bullet	Revised sentence for clarification from: "Developing and conducting the Fire Extinguisher Training Program;" To: "Developing and conducting the Fire Extinguisher Training Program, or ensuring that it is conducted;"
563	S9.5.1.15.2, 3rd para., former 2nd to last bullet	Deleted sentence because COL item is addressed by RG 1.189:

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"The COL applicant shall provide the proposed fire protection license condition for making changes to the fire protection system without prior review and approval of the NRC (9.5.1-9-A)."
564	S9.5.1.15.3, 1st para.	Revised sentence in response to RAI 9.5-70 from: "Fire Protection Staffing requirements are described in Section 13.1." To: "The COL applicant shall provide a description of the fire protection program staffing requirements and the organization of the Fire Brigade (COL 13.1-1-A)."
565	S9.5.1.15.4.1	Revised sentence in response to RAI 9.5-65 from: "The Fire Brigade organization is discussed in Subsection 13.1.2.1.5." To: "Fire protection training consists of training in three specific areas: • Employees designated to be members of the station fire brigade; • Employees assigned to the fire protection staff; and • Offsite fire departments. Specific training requirements for each of the above categories of personnel are described in the following sections."
566	S9.5.1.15.4.2, 1st and 2nd para.	Revised criteria for fire brigade training in response to RAI 9.5-65 from: "Fire protection training consists of training in three specific areas: • Employees designated to be members of the station fire brigade; • Employees assigned to the fire protection staff; and • Offsite fire departments. Specific training requirements for each of the above categories of personnel are described in the following sections." To: "The qualifications of the fire brigade personnel are described in Regulatory Guide 1.189, Regulatory Position 1.6.4.1. The brigade leader and at least two members should have sufficient training in or knowledge of plant systems to understand the effects of fire and fire suppressants on safe-shutdown capability. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant systems. Nuclear power plants staffed with a dedicated professional fire department may utilize a fire team advisor to assess the potential safety consequences of a fire and advise the control room and incident commander. The fire team advisor should possess an operator's license or equivalent knowledge of plant systems and be dedicated to supporting the fire incident commander during fire emergency events. The fire team advisor does not need to meet the qualifications of a brigade member, but if the team advisor does not meet the qualifications of a fire brigade member, there should be five available qualified fire brigade

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		members in addition to the fire team advisor."
567	S9.5.1.15.4.2, last para.	Revised last paragraph for consistency with RAI 9.5-65 from: "To qualify as a member of the Fire Brigade, an individual must meet the following criteria: • Is available to answer fire alarms; • Has attended the required training sessions for the position he occupies on the Fire Brigade; and • Has passed an annual physical exam." To: "To qualify as a member of the Fire Brigade, an individual must meet the following criteria: • Is available to answer fire alarms; and • Has passed an annual physical exam which includes an annual physical examination to determine their ability to perform strenuous firefighting activities."
568	S9.5.1.15.4.7, 1st para., 1st sent.	Added "protective hoods" to list of personal protective equipment.
569	S9.5.1.15.5, 2nd para., 5th bullet	Revised sentence for consistency with response to RAI 14.3-209 S01 by changing "safety-related" to "safe shutdown".
570	S9.5.1.15.6, 1st para., 1st and last bullets	Revised sentence for consistency with response to RAI 14.3-209 S01 by changing "safety-related" to "safe shutdown".
571	S9.5.1.16, COL Item 9.5.1-7-H	Revised "as-built" to "final as-built" to clarify the COL item.
572	S9.5.1.16, COL Item 9.5.1-9-A	Deleted COL Item because it is addressed by RG 1.189.
573	S9.5.2.2, Emergency Communication Systems, All Bullets	Added COL Item number to each bullet in response to RAI 14.3-124 S01.
574	S9.5.2.5, COL Item 9.5.2.5-1-A	Updated COL Item per RAI 14.3-124 S01 by changing COL Title from: "Offsite Interfaces" To: "Emergency Notification System"

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		and to the COL statement added: "provisions required by 10 CFR 50.47(b)(6) and will address recommendations described in BL-80-15."
575	S9.5.2.5, new COL Items	Added new COL Items per RAI 14.3-124 S01: "***9.5.2.5-3-A Offsite Interfaces (1)*** The COL applicant will describe the means of communication between the control room, TSC, EOF, State and local emergency operation centers and radiological field personnel in accordance with NUREG – 0696 and NUREG – 0654. ***9.5.2.5-4-A Offsite Interfaces (2)*** The COL applicant will describe the communication methods from the control room, TSC, and EOF to NRC head quarters including establishment of Emergency Response Data Systems (ERDS) in accordance with NUREG – 0696. ***9.5.2.5-5-A Fire Brigade Radio System*** The COL applicant will describe the Fire Brigade Radio System"
576	S9.5.2.6, Reference 9.5.2-1	Deleted reference due to cancellation of IEEE Standard 281.
577	S9.5.3.1, 1st bullet	Added "and Remote Shutdown Area" to be consistent with RAI 9.5-60 S01 and S02.
578	S9.5.3.3.3, 1st para., 1st sent.	Added "remote shutdown area" per RAI 9.5-60 S01.
579	S9.5.3.3.3, 1st bullet	Revised sentence per RAI 9.5-60 S01 from: "Control room emergency lighting; and" To: "Main control room and remote shutdown area emergency lighting; and"
580	S9.5.3.3.3.1, Title	Revised title of subsection per RAI 9.5-60 S01 From: "Control Room Emergency Lighting" To: "Main control Room and Remote Shutdown Area Emergency Lighting"
581	S9.5.3.3.3.1, 1st para., 1st sent.	Revised sentence per RAI's 9.5-60 S01 & S02 from: "The control room emergency lighting power is supplied from the four divisions of 72-hour safety related Uninterruptible AC power supply system (UPS)." To: "The main control room and remote shutdown area emergency lighting

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		power is supplied from the safety-related Uninterruptible AC power supply system (UPS) as shown in DCD Chapter 8, Figure 8.1-4, Sheet 1 of 1."
582	S9.5.3.3.3.1, 1st para., 2nd sent.	Revised sentence per RAI's 9.5-60 S01 & S02 from: "The safety-related UPS and the MCR emergency lighting circuitry is isolated by a series of circuit breakers that are coordinated for isolation." To: "Electrical isolation of nonsafety-related emergency lighting circuits from safety-related Uninterruptible AC power supply is accomplished by the use of series isolation devices that are designed to coordinate with upstream 120 VAC distribution panel circuit breakers."
583	S9.5.3.3.3.1, 1st para., next to last sent.	Revised sentence per RAI 9.5-60 S01 from: "Cables used in the main control room are safety-related." To: "Cables used for emergency lighting in the main control room and the remote shutdown area are nonsafety-related."
584	S9.5.3.3.3.2, 1st para., 1st sent.	Revised sentence for design development and consistency with Tier 1 from: "In areas outside the MCR and the remote shutdown area, emergency light is provided by 8-hour, self-contained, battery pack, sealed beam lighting units." To: "In areas outside the MCR emergency light is provided by 8-hour, self-contained, battery pack, sealed beam lighting units."
585	S9.5.3.3.3.2, 1st para., 3rd bullet	Revised bullet for design development and consistency with Tier 1 from: "Stairwells serving as escape or access routes for fire fighting." To: "Stairwells serving as escape or access routes for fire fighting and the remote shutdown area."
586	S9.5.3.4, 4th para., 1st sent.	Changed "one minute" to "two minutes" for design development.
587	S9.5.3.4, 4th para., 2nd sent.	Changed "1-minute" to "2-minute" for design development.
588	S9.5.3.4, 4th para., 4th sent.	Revised sentence for design development from: "After an additional time delay, the DC self-contained battery-operated lighting units connected to the standby lighting power supply automatically turn off." To:

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		"The DC self-contained battery-operated lighting units connected to the standby lighting power supply automatically turn off."
589	S9.5.4	Revised text to clarify between different diesel generator sets the "SDG" for "standby diesel generator" and "ADG" for "ancillary diesel generator" was provided.
590	S9.5.4.1, Safety Design Bases, 1st para.	Added new header before first paragraph "Standby Diesel Generators" to reflect design change adding ancillary diesel generators to the standard ESBWR.
591	S9.5.4.1, Safety Design Bases, 2nd para.	Revised entire paragraph to point to Chapter 19 for RTNSS functions from: "The diesel generator fuel oil storage and transfer system has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as a supporting system to provide power. Performance of RTNSS functions is assured by applying the augmented design standards described in DCD Section 19A.8.3." To: "The SDG fuel oil storage and transfer system has RTNSS functions, as a supporting system to provide power. These functions are described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by incorporating the defense-in-depth principles of redundancy and physical separation at the system (SDG) level to ensure adequate reliability and availability."
592	S9.5.4.1, Safety Design Bases, former 3rd para.	Deleted entire paragraph because previous paragraph references Appendix 19A for RTNSS requirements: "The diesel generator fuel oil storage and transfer system piping and components supporting the RTNSS functions meet the requirements for Category B2 RTNSS as described in Section 19A.8.3"
593	S9.5.4.1, Safety Design Bases, new 3rd para.	Added the following paragraph to clarify that redundancy is not required for DG subsystems: "Each of the two SDGs is equipped with its own dedicated fuel oil storage and supply system. The subsystems, including fuel oil storage and supply, associated with each SDG engine are independent and separated from the subsystems associated with the other SDG engine. Thus, the subsystems are not required to be designed with redundancy or defense-in-depth principles applied."
594	S9.5.4.1, Safety Design Bases, new para. "Ancillary Diesel Generators"	Added the following due to design change: "<u>Ancillary Diesel Generators</u> The ancillary diesel generator (ADG) fuel oil storage and transfer system is not safety-related and has no safety-related design basis. The ADG fuel oil storage and transfer system has RTNSS functions, as a supporting system to provide power, as described in Appendix 19A,

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by applying the augmented design standards described in subsection 19A.8.3. Each of the two ADGs is provided as a complete skid-mounted package. A separate, dedicated, fuel oil storage and transfer system is provided for each ADG. Thus, the ADG fuel oil storage and transfer system is not required to be designed with redundancy or defense-on-depth principles applied."
595	S9.5.4.1, Power Generation Design Bases, 1st para.	Added new header before first paragraph "Standby Diesel Generators" to reflect design change adding ancillary diesel generators to the standard ESBWR.
596	S9.5.4.1, Power Generation Design Bases, 1st para., 3rd bullet	Revised sentence for clarification from: "Ensure adequate separation between the two Diesel Generators Systems including their auxiliary and fuel oil supplies so that failure in one DG does not incapacitate the other diesel-generator;" To: "Ensure adequate separation between the two SDG systems including their auxiliary and fuel oil supplies so that failure in one SDG does not result in loss of function of the other SDG;"
597	S9.5.4.1, Power Generation Design Bases, 1st para., 7th bullet	Revised sentence for design development from: "The diesel fuel tanks provide fuel to the Auxiliary Boiler system and the diesel-engine driven Fire Protection System pump." To: "The standby diesel fuel tanks provide fuel to the Auxiliary Boiler System, the diesel-engine driven Fire Protection System pump day tank, and the ADG fuel oil storage tanks."
598	S9.5.4.1, Power Generation Design Basis, new para. "Ancillary Diesel Generators"	Added the following due to design change: "<u>Ancillary Diesel Generators</u> Each ADG is supplied by a separate dedicated fuel oil system. The ADGs provide post accident power as described in Subsection 8.3.1.1.9. The fuel oil storage and transfer systems for the ADGs design bases are as follows: • Provide a day tank of sufficient capacity to support ADG operation; • Provide a long-term fuel oil storage capacity (fuel oil storage tank) dedicated to supplying the ADG with sufficient fuel to support ancillary diesel operation for a minimum of 7 days without refueling; • Ensure adequate separation between the two ADG systems including their auxiliary and fuel oil supplies so that failure in one ADG does not result in loss of function of the other ADG; • Provide protection against contamination of the ground or ground water through failure of tanks or buried piping;

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		• The ancillary diesel engine is designed to be compatible with the use of low sulfur and ultra-low sulfur diesel fuel; • ADG fuel tanks are designed in accordance with State and Federal regulations for leak containment requirements; and • The ancillary diesel fuel oil storage tanks can be filled by either a tanker truck via a fill station, or by manually initiated transfer from the yard (standby diesel) fuel oil storage tanks."
599	S9.5.4.2, Summary Description, 1st para.	Added new header before first paragraph "Standby Diesel Generators" to reflect design change adding ancillary diesel generators to the standard ESBWR.
600	S9.5.4.2, Summary Description, 2nd para., 1st sent.	Added "portable fuel oil" before "purification system" for design clarification.
601	S9.5.4.2, Summary Description, 3rd para.	Revised paragraph for design development from: "The DG fuel oil system has piping connections to supply fuel to the Auxiliary Boiler system and diesel-engine driven Fire Protection System pumps." To: "The SDG fuel oil system has piping connections to supply fuel to the Auxiliary Boiler system, diesel-engine driven Fire Protection System pump day tank, and ADG fuel oil storage tanks."
602	S9.5.4.2, Summary Description, new para. "Ancillary Diesel Generators"	Added the following due to design change: "<u>Ancillary Diesel Generators</u> A simplified diagram of a typical ADG fuel oil system is provided as Figure 9.5-9a. The ADG fuel oil system for each of the two ADG engines consists of separate fuel oil storage tanks, fuel oil day tanks, fuel oil transfer pumps, strainers/filters, oil purifier or tank connections for tying in a portable duel oil purification system, instrumentation and controls, and the necessary interconnecting piping and valves."
603	S9.5.4.2, Detailed System Description, 1st para.	Added new header before first paragraph "Standby Diesel Generators" to reflect design change adding ancillary diesel generators to the standard ESBWR.
604	S9.5.4.2, Detailed System Description, 1st para., former 1st sent., new 1st and 2nd sent.	Revised sentence for design clarification from: "There are two standby diesel generators, DG-A and DG-B, each housed in a separate enclosure in the Electrical Building adjacent to the Turbine Building." To: "The two standby diesel generators, SDG-A and SDG-B, are used to address the NRC's probabilistic safety goals and are each housed in a separate enclosure in the Electrical Building adjacent to the Turbine Building. The seismic design of the Electrical Building is described in

Item	Location (e.g. subsection with paragraph/sentence/item, table with column,/row, or figure)	Description of Change
		subsection 19A.8.3."
605	S9.5.4.2, Detailed System Description, 3rd para., 1st and 2nd sent.	Revised sentences for clarification from: "Corrosion protection for underground piping for the fuel oil system is determined based on the piping material. If piping subject to corrosion, such as carbon steel piping, is utilized, corrosion protection for underground portions is provided." To: "Corrosion protection for underground portions of the fuel oil system is determined based on the material of the underground portion. If piping or components subject to corrosion, such as carbon steel piping, is utilized, corrosion protection for underground portions is provided."
606	S9.5.4.2, Detailed System Description, 3rd para., last sent.	Revised "underground piping portion" to "underground portion" as this applies to all underground portions.
607	S9.5.4.2, Detailed System Description, 4th para., 5th sent.	Deleted reference to Subsection 9.5.4.6 as unnecessary and for readability.
608	S9.5.4.2, Detailed System Description, 5th para.	Revised paragraph for design development from: "The DG fuel oil system has piping connections to supply fuel to the Auxiliary Boiler system. The piping connections for the auxiliary boiler tie into the diesel oil storage tank at an elevated nozzle connection. This location ensures that fuel stored below this level is not be affected by Auxiliary Boiler or Fire Protection system usage. This ensures the 7 days Diesel Fuel Oil storage requirements cannot be used for any other purposes." To: "The SDG fuel oil system has piping connections to supply fuel to the Auxiliary Boiler System, diesel-engine driven Fire Protection System pump day tank, and ADG fuel oil storage tanks. These piping connections tie into the diesel fuel oil storage tank at an elevated nozzle connection. This location ensures that fuel stored below this level is not affected by Auxiliary Boiler usage, Fire Protection system usage, or transfers to the ADG fuel oil storage tanks. This ensures the 7-day Diesel Fuel Oil storage requirements cannot be used for any other purposes (COL 9.5.4-1-A)."
609	S9.5.4.2, Detailed System Description, new 6th, 7th, 8th, 9th and 10th para.	Added new paragraphs under "Ancillary Diesel Generators" due to design change.
610	S9.5.4.2, System Operation, 1st para.	Added new header before first paragraph "Standby Diesel Generators" to reflect design change adding ancillary diesel

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		generators to the standard ESBWR.
611	S9.5.4.2, System Operation, 1st para., last sent.	Added reference to COL Item (9.5.4-1-A) for clarification.
612	S9.5.4.2, System Operation, new para. "Ancillary Diesel Generators"	Added the following due to design change: "Ancillary Diesel Generators Transfers from the yard (SDG) fuel oil storage tanks to the ancillary fuel oil storage tanks are controlled manually. Transfer pumps supplying fuel oil to the day tanks from the ancillary fuel oil storage tanks can be operated manually; however, level sensors on the day tanks normally operate them automatically. A "low" level signal starts the first transfer pump, a "low-low" level signal starts the standby transfer pump and a "high" level signal stops both pumps. The engine-driven fuel oil pump supplies fuel to the ancillary diesel engine fuel manifold from the day tank. Administrative controls ensure a minimum of fuel oil capacity is maintained onsite at all times (see COL 9.5.4-1-A)."
613	S9.5.4.3, 1st para.	Added new header before first paragraph "Standby Diesel Generators" to reflect design change adding ancillary diesel generators to the standard ESBWR. Also added "fuel oil" before "storage tanks" for clarification.
614	S9.5.4.3, 1st para., 2nd sent.	Revised sentence for clarification from: "The storage tanks are located at a sufficient distance away from other plant buildings or buildings are protected with 3-hr rating barriers." To: "The fuel oil storage tanks are located a sufficient distance away from other plant buildings, or nearby buildings are protected with 3-hr fire-rated barriers."
615	S9.5.4.3, 1st para., 4th, 5th and 6th sent.	Revised sentences for design clarification from: "Corrosion protection is provided for underground fuel oil piping. To prevent any fuel oil contamination during storage, biocides and other fuel additives are added, as required, to the stored fuel oil to prevent deterioration, accumulation of sludge in the tank, and the growth of algae and fungi. The design incorporates either a fuel oil purification system or tank connections for periodic hookup to a fuel oil purification system." To: "Corrosion protection is provided for the underground portion of the fuel oil system. Biocides and other fuel additives are added, as required, to the stored fuel oil to prevent deterioration, accumulation of sludge in the tank, and the growth of algae and fungi. The design incorporates tank connections for periodic hookup to a portable fuel oil purification system."

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616	S9.5.4.3, new para. "Ancillary Diesel Generators"	Added the following due to design change: "Ancillary Diesel Generators The ADGs, and their fuel oil storage and transfer systems, are not safety-related, and are not credited in any safety analysis. The fuel storage tanks are in separate concrete vaults, or rooms, located adjacent to the ADGs. The vaults or rooms are constructed of 3-hr fire rated concrete walls. Corrosion protection is provided for underground fuel oil transfer piping from the yard fuel oil storage tanks to the ancillary fuel oil storage tanks. Biocides and other fuel additives are added, as required, to the stored fuel oil to prevent deterioration, accumulation of sludge in the tank, and the growth of algae and fungi. The design incorporates tank connections for periodic hookup to a portable fuel oil purification system. This prevents tank contamination and thus ensures the ancillary diesel oil storage tank maintains the fuel at the desired quality."
617	S9.5.4.4, 1st para.	Added new header before first paragraph "Standby Diesel Generators" to reflect design change adding ancillary diesel generators to the standard ESBWR.
618	S9.5.4.4, 3rd para., 2nd and 3rd sent.	Deleted both sentences to eliminate information duplicated in subsection 9.5.4.3: "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."
619	S9.5.4.4, new para. "Ancillary Diesel Generators"	Added the following due to design change: "Ancillary Diesel Generators The ADG fuel oil storage and transfer system permits periodic testing and inspection. Ancillary DG fuel oil storage and transfer system functionality is demonstrated during the regularly scheduled operational tests of the ancillary ADGs. Periodic testing of instruments, controls, sensors and alarms assures reliable operation. The ASTM standard fuel sample tests are conducted at regular intervals to ensure compliance with fuel composition limits recommended by the diesel engine manufacturer. Each ancillary fuel oil storage tank is emptied and accumulated sediments are removed every 10 years to conform to Federal and State examination requirements. New fuel oil is tested for specific gravity, cloud point and viscosity and visually inspected for appearance prior to addition to ensure that the limits of ASTM D975 are not exceeded. Analysis of other properties of the fuel oil is completed within thirty days of the receipt of the new fuel."
620	S9.5.4.5, 1st para.	Added new header before first paragraph "Standby Diesel

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		Generators" to reflect design change adding ancillary diesel generators to the standard ESBWR.
621	S9.5.4.5, 1st para.	Revised paragraph to remove design detail and increase design flexibility from: "Fuel supply levels in the storage and day tanks are indicated locally and in the Main Control Room (MCR). Also, alarms on the local DG panels annunciate low level and high level in the day tanks. The setting of the low level alarm provides fuel for at least 60 minutes of DG operation at 100% load with 10% margin between the alarm and when the suction line inlet level sensors in the day tank signal automatic start of the first fuel oil transfer pump." To: "Indications and alarms for the fuel supply levels in the standby diesel storage and day tanks are provided."
622	S9.5.4.5, new subsection "Ancillary Diesel Generators"	Added the following due to design change: "Ancillary Diesel Generators Indications and alarms for the fuel supply levels in the ancillary diesel storage and day tanks are provided."
623	S9.5.4.6, COL Item 9.5.4-1-A	Revised COL Item to reflect design change adding ancillary diesels to the standard ESBWR from: "COL applicant will establish procedural controls to ensure a minimum fuel oil capacity is maintained onsite." To: "COL applicant will establish procedural controls to ensure a minimum fuel oil capacity is maintained onsite for both SDGs and ADGs. (Subsection 9.5.4.2)"
624	S9.5.4.6, COL Item 9.5.4-2-A	Revised COL Item to reflect design change adding ancillary diesels to the standard ESBWR from: "The COL applicant shall describe the material and corrosion protection for the underground piping portion of the fuel oil transfer system." To: "The COL applicant shall describe the material and corrosion protection for the underground portion of the fuel oil transfer systems associated with the SDGs. (Subsection 9.5.4.2)"
625	S9.5.5.1, Safety Design Bases, 2nd para.	Revised entire paragraph to point to Chapter 19 for RTNSS requirements from: "The diesel generator jacket cooling water system has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as a supporting system to provide power. Performance of RTNSS functions is assured by applying the augmented design standards described in DCD Section

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		19A.8.3." To: "The SDG jacket cooling water system has RTNSS functions, as a supporting system to provide power. These functions are described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by incorporating the defense-in-depth principles of redundancy and physical separation at the system (SDG) level to ensure adequate reliability and availability. "
626	S9.5.5.1, Safety Design Bases, new 3rd para.	Added the following paragraph to clarify that redundancy is not required for DG subsystems: "Each of the two SDGs is equipped with its own dedicated jacket cooling water system. The subsystems, including jacket cooling water, associated with each SDG engine are independent and separated from the subsystems associated with the other SDG engine. Thus, the subsystems are not required to be designed with redundancy or defense in depth principles applied."
627	S9.5.5.1, Safety Design Bases, new 4th para.	Added the following paragraph to clarify that a separate jacket cooling water subsystem is not required for the ancillary diesel generators: "Each of the two ADGs is provided as a complete skid-mounted package. A separate jacket cooling water system beyond the cooling system provided integrally with the ADGs, is not required."
628	S9.5.5.2, System Operation, 1st para., new 3rd sent.	Added sentence to reflect design changing adding ancillary diesels to the standard ESBWR: "The SDG keep-warm heaters and circulating pumps are supplied with alternate power from the ancillary diesel generators, as described in Subsection 8.3.1, to support delayed SDG engine starting following loss of offsite power."
629	S9.5.6.1, Safety Design Bases, 2nd para.	Revised entire paragraph to point to Chapter 19 for RTNSS functions from: "The diesel generator starting air system has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as a supporting system to provide power. Performance of RTNSS functions is assured by applying the augmented design standards described in DCD Section 19A.8.3." To: "The SDG starting air system has RTNSS functions, as a supporting system to provide power. These functions are described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by incorporating the defense-in-depth principles of redundancy and physical separation at the system (SDG) level to ensure adequate reliability and availability."

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630	S9.5.6.1, Safety Design Bases, new 3rd para.	Added the following paragraph to clarify that redundancy is not required for DG subsystems: "Each of the two SDGs is equipped with its own dedicated started air system. The subsystems, including starting air, associated with each SDG engine are independent and separated from the subsystems associated with the other SDG engine. Thus, the subsystems are not required to be designed with redundancy or defense-in-depth principles applied."
631	S9.5.6.1, Safety Design Bases, new 4th para.	Added the following paragraph to clarify that a starting air subsystem is not required for the ancillary diesel generators: "Each of the two ADGs is provided as a complete skid-mounted package. The ADGs are started via an electrical system provided integrally with the ADGs. Thus, a starting air system is not required for the ADGs."
632	S9.5.6.2, System Operation, 1st para., new 4th sent.	Added sentence to reflect design chang adding ancillary diesels to the standard ESBWR: "The SDG starting air compressors are supplied with alternate power from the ancillary diesel generators, as described in Subsection 8.3.1, to support delayed SDG engine starting following loss of offsite power."
633	S9.5.7.1, Safety Design Bases, 2nd para.	Revised entire paragraph to point to Chapter 19 for RTNSS functions from: "The diesel generator lubrication system has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as a supporting system to provide power. Performance of RTNSS functions is assured by applying the augmented design standards described in DCD Section 19A.8.3." To: "The SDG lubrication system has RTNSS functions, as a supporting system to provide power. These functions are described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by incorporating the defense-in-depth principles of redundancy and physical separation at the system (SDG) level to ensure adequate reliability and availability."
634	S9.5.7.1, Safety Design Bases, new 3rd para.	Added the following paragraph to clarify that redundancy is not required for DG subsystems: "Each of the two SDGs is equipped with its own dedicated lubrication system. The subsystems, including lubrication, associated with each SDG engine are independent and separated from the subsystems associated with the other SDG engine. Thus, the subsystems are not required to be designed with redundancy or defense-in-depth principles applied."
635	S9.5.7.1, Safety Design	Added the following paragraph to clarify that a separate

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	Bases, new 4th para.	lubrication subsystem is not required for the ancillary diesel generators: "Each of the two ADGs is provided as a complete skid-mounted package. A separate lubrication system beyond that provided integrally with the ADGs, is not required."
636	S9.5.7.2, Summary Description, 1st para., 4th sent.	Revised sentence to reflect design clarification from: "An electric heater and a keep-warm circulating pump continuously circulate warm oil to maintain the engine in standby readiness." To: "The SDG keep-warm system continuously warms the lube oil to maintain the engine in standby readiness."
637	S9.5.7.2, Summary Description, 1st para., former last sent.	Deleted sentence to reflect design clarification: "This keep-warm system is not required for the engine to perform its function."
638	S9.5.7.2, Detailed System Description, 3rd para., 1st four sent.	Revised former sentences to reflect design clarification from: "The DG sets have lube oil heating systems to keep the oil warm during standby. An electric lube oil heater heats the oil, which is then circulated through the engine oil circuit by a motor-driven keep-warm circulating pump. The keep-warm system circulates oil through a filter to ensure cleanliness. The lube oil portion of the system to keep the engine warm and prelubed is not required for the engine to start and perform its function." To: "The SDG keep-warm systems use electric heaters to warm the engine and lube oil, as required, during standby. Motor driven pre-lube pumps are provided to circulate oil to pre-lubricate the engine bearings prior to starting."
639	S9.5.7.2, System Operation, 1st para.	Revised paragraph to reflect design clarification and design change adding ancillary diesels to the standard ESBWR from: "The lube oil keep-warm systems are in operation when the DGs are in their normal standby mode. When an engine starts, the lube oil keep-warm subsystem shuts down. When each DG is started, the engine-driven lube oil pump begins circulating oil through the filters and manifold to the engine bearing surfaces and back to the sump. The oil pumps are engine driven and therefore are not affected by flooding or power losses so lube oil circulation continues until the engine is shutdown." To: "The SDG keep-warm systems are normally in operation when the SDGs are in their normal standby mode. The pre-lube pumps circulate

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		oil to pre-lubricate the engine bearings, as required, prior to starting. The keep-warm heaters and circulating pumps for the standby SDGs are supplied with alternate power from the ancillary diesel generators, as described in Subsection 8.3.1, to support delayed engine starting following loss of offsite power. When an engine starts, the lube oil keep-warm subsystem shuts down and the engine-driven lube oil pump begins circulating oil through the filters and manifold to the engine bearing surfaces and back to the sump. The oil pumps are engine driven and therefore are not affected by flooding or power losses so lube oil circulation continues until the engine is shutdown."
640	S9.5.8.1, Safety Design Bases, 2nd para.	Revised entire paragraph to point to Chapter 19 for RTNSS functions from: "The diesel generator combustion air intake and exhaust system has Regulatory Treatment of Non-Safety Systems (RTNSS) functions as a supporting system to provide power. Performance of RTNSS functions is assured by applying the augmented design standards described in DCD Section 19A.8.3." To: "The SDG combustion air intake and exhaust system has RTNSS functions, as a supporting system to provide power. These functions are described in Appendix 19A, which provides the level of oversight and additional requirements to meet the RTNSS functions. Performance of RTNSS functions is assured by incorporating the defense-in-depth principles of redundancy and physical separation at the system (SDG) level to ensure adequate reliability and availability."
641	S9.5.8.1, Safety Design Bases, new 3rd para.	Added the following paragraph to clarify that redundancy is not required for DG subsystems: "Each of the two SDGs is equipped with its own dedicated combustion air intake and exhaust system. The subsystems, including combustion air intake and exhaust, associated with each SDG engine are independent and separated from the subsystems associated with the other SDG engine. Thus, the subsystems are not required to be designed with redundancy or defense-in-depth principles applied."
642	S9.5.8.1, Safety Design Bases, new 4th para.	Added the following paragraph to clarify that a separate combustion air intake and exhaust subsystem is not required for the ancillary diesel generators: "Each of the two ADGs is provided as a complete skid-mounted package. A separate combustion air intake and exhaust system beyond that provided integrally with the ADGs, is not required."
643	S9.5.8.2, Detailed System Description, 3rd para., former 3rd sent., new 1st sent.	Relocated sentence to beginning of paragraph for readability: "Each engine has its own exhaust system."

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644	S9.5.8.2, Detailed System Description, 5th para.	Revised paragraph for design flexibility from: "In order to ensure exhaust emissions meet Federal, State and Local Air Quality Emissions Standards, the Diesel Engine design employs either an engine control system or a direct water injection system." To: "In order to ensure exhaust emissions meet Federal, State and Local Air Quality Emissions Standards, the SDG engine design employs either an engine control system, an exhaust gas treatment system, or both."
645	T9.5-1, NFPA	Revised various NFPA Titles to be consistent with the actual title of the NFPA. Added NFPA 51B as applicable to the design.
646	T9.5-2, Firewater Pumps	Revised the capacity for the following Firewater Pumps: Primary motor-driven fire pump Primary diesel-driven fire pump Secondary motor-driven fire pump Secondary diesel-driven fire pump From "454.2 m^3/hr (2,000 gpm)" to "484 m^3/hr (2,130 gpm)" to replace nominal design with current design.
647	T9.5-2, Firewater Storage	Revised "Secondary storage minimum firewater storage" from "1135.6 m^3 (300,000 gallons)" to "2082 m^3 (550,000 gallons)" to meet the current design conditions
648	F9.5-1	Revised entire figure to be consistent with current design and DCD Tier 2 Table 3.2-1 in response to RAI 9.5-66. Also added Ancillary Diesel Building in accordance with design change.
649	F9.5-9	Revised title to add "Standby" in front of "Diesel Generator". Also added takeoff to ancillary fuel oil storage tank to reflect design change.
650	F9.5-9a (new)	Added new figure to reflect design change, "Ancillary Diesel Generator Fuel Oil Storage and Transfer System Diagram".
651	F9.5-10	Revised title to add "Standby" in front of "Diesel Generator" for clarification.
652	F9.5-11	Revised title to add "Standby" in front of "Diesel Generator" for clarification.
653	F9.5-12	Revised title to add "Standby" in front of "Diesel Generator" for clarification.