

ESBWR DCD Tier 2 Chapter 9
26A6642AY Revision 5 to Revision 6 Change List

Item	Location	Description of Change
1.	Entire Chapter	Global chapter editorial changes to correct misspelling and grammar, spell out or integrate acronyms where appropriate, add dual dimensioning, and update references as needed and where required.
2.	S9.1, Fuel Storage and Handling, last para. 2 nd to last sent.	The number of fuel building storage pool cell locations has changed to account for tolerances resulting in the use of fuel storage racks in both the fuel building storage pool and the buffer pool deep pit to ensure enough storage capability for a full core off-load after 10 calendar years of plant operation.
3.	S9.1.1.1, Design Bases, 3rd para. (old).	Deleted text stating that no credit is taken for neutron leakage in response to RAI 9.1-78 S01.
4.	S9.1.1.7, Structural Design, 3 rd para.	Revised Fuel Handling Operations COL to state criticality safety of fuel handling will be handled by the COL applicant and added a fuel handling criticality criteria in Response to RAI 9.1-79 S01.
5.	S9.1.2.2, Nuclear Design, 3rd para. (old)	Deleted text stating that no credit is taken for neutron leakage in response to RAI 9.1-78 S01.
6.	S9.1.2.3, Storage Design, revised para.	The number of fuel building storage pool cell locations has changed to account for tolerances resulting in the use of fuel storage racks in both the fuel building storage pool and the buffer pool deep pit to ensure enough storage capability for a full core off-load after 10 calendar years of plant operation.
7.	S9.1.2.4, Mechanical and Structural Design	Designated section as Tier 2* in response to RAI 3.8-126.
8.	S9.1.2.4, Mechanical and Structural Design, 2 nd para., 2 nd sent.	Provided clarifying information stating that pool liners are Seismic Category I in response to RAI 9.1-119.

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9.	S9.1.2.4, Mechanical and Structural Design, 2 nd para., 5 th and 6 th sent.	Updated sentences in response to RAI 9.1-115 S01.
10.	S9.1.2.5, Thermal-Hydraulic Design, 1 st para., 1 st sent. and new last sent.	Revised to provide a maximum water temperature of 121°C (250°F) as the governing temperature for coolant exiting the fuel racks in response to RAI 9.1-120.
11.	S9.1.2.5, Thermal-Hydraulic Design 4 th para., 1 st sent.	Revised to include the boiling point for water at the pool depth of the racks to provide clarification in response to RAI 9.1-120.
12.	S9.1.2.7, Facilities Description, 3 rd para., 1 st sent.	The number of fuel building storage pool cell locations has changed to account for tolerances resulting in the use of fuel storage racks in both the fuel building storage pool and the buffer pool deep pit to ensure enough storage capability for a full core off-load after 10 calendar years of plant operation.
13.	S9.1.2.8, Safety Evaluation Criticality Control, 3 rd para. (old)	Deleted text stating that no credit is taken for neutron leakage in response to RAI 9.1-78 S01.
14.	S9.1.3.1, Safety Design Basis, new 4 th bullet	Added GDCS interconnect piping to FAPCS safety related interface in response to RAI 14.3-444.
15.	S9.1.3.2, System Description Summary. 6 th para.	Changed “SECY-03-087” to “SECY-93-087”.
16.	S9.1.3.2, Detailed System description, 6 th para.,	Added details related to the suppression pool suction strainer in response to RAI 4.4-23 S03.
17.	S9.1.3.2, Detailed System description, 6 th para.,	Provided additional detail related to adjustable speed drive equipped motor-driven pump located in the fire pump enclosure and the motor-operated shutoff valves.
18.	S9.1.3.2, Detailed System Description, 12 th para., last sent.	Added additional discussion of pipe stress analysis in response to RAI 9.1-97.
19.	S9.1.3.2, System Operation, 3 rd para., last sent.	Added detail about how the N-DCIS is used to prohibit certain valve configurations in response to RAI 9.1-98.

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20.	S9.1.3.2, System Operating Modes, Suppression Pool Cooling Mode, last sent.	New sentence added to provide detail on FAPCS capabilities for suppression pool cooling in response to RAI 9.1-20 S04.
21.	S9.1.3.3, Safety Evaluation, last para.	Added buffer pool to areas provided with safety-related level instrumentation in response to RAI 9.1-18S03.
22.	S9.1.3.5, Water levels, 1 st para., 1 st sent.	Removed description of level transmitter mounting details in response to RAI 7.1-140.
23.	S9.1.3.5, Water levels, 2 nd para. 1 st sent.	Removed description of level transmitter mounting details and described inner expansion pools in response to RAI 7.1-140.
24.	S9.1.3.5, Water levels, 2 nd para. 4 th sent.	Revised description of pool cross-connect valves in response to RAI 7.1-140.
25.	S9.1.3.5, Water levels, 3 rd para. 1st sent.	Added buffer pool to areas provided with safety-related level instrumentation in response to RAI 9.1-18S03.
26.	S9.1.3.5, Water levels, 4 th para. 1st sent.	Deleted detail for SFP and IC/PCCS pool backup nonsafety-related level indicators.
27.	S9.1.3.5, Water levels, 5 th para. 1st sent.	Deleted buffer pool from areas provided with nonsafety-related level instrumentation in response to RAI 9.1-18S03.
28.	S9.1.4.1, Design Bases, 3 rd para., 1 st sent.	Deleted Table 9.1-4 and added reference to Table 3.2-1 to eliminate duplication of information.
29.	S9.1.4.1, Design Bases, 3 rd para., 4 th sent.	Provided clarifying information about the Table 1 ANSI/ANS 57.1 interlocks applicable to the fuel handling system in response to RAI 9.1-107.
30.	S9.1.4.1, Design Bases, 3 rd para., last sent.	Revised to define Table 1 ANSI/ANS 57.1 as reference for interlocks applicable to the fuel handling system in response to RAI 9.1-107.
31.	S9.1.4.5, Refueling Machine, 3 rd para., 1 st sent.	Corrected seismic classification terminology from “class” to “category”.
32.	S9.1.4.5, Refueling Machine, 4 th para., 4th sent.	Added reference to ASME-NOG-1 for refueling machine fuel hoist in response to RAI 9.1-96.
33.	S9.1.4.5, Fuel Handling Machine, 3 rd para., 1st sent.	Corrected seismic classification terminology from “class” to “category”.

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34.	S9.1.4.5, Fuel Handling Machine, 3 rd para., last sent.	Added reference to ASME-NOG-1 for fuel handling machine fuel hoist in response to RAI 9.1-96.
35.	S9.1.4.8, Reactor Vessel Servicing Equipment, 1 st para., 1 st sent.	Deleted Table 9.1-4 and added reference to Table 3.2-1 to eliminate duplication of information.
36.	S9.1.4.12, Fuel Transfer System 2 nd para. and (new 3 rd para.)	Modified Tier 2 Subsection 9.1.4.12 to include the fuel transfer system sensors and interlocks listed in the GEH response to RAI 9.1-111.
37.	S9.1.4.12, Fuel Transfer System, new 6 th para., 1 st sent.	Added additional discussion of components within IFTS tube designed to withstand SSE in response to RAI 9.1-112.
38.	S9.1.4.17, Vessel Closure, 2 nd para., 5 th bullet	Clarified that equipment and buffer pool gates must be installed to support reactor cavity drain down.
39.	S9.1.4.17, Vessel Closure, 2 nd para., 13 th bullet	Changed “fuel gate” to “pool gate”.
40.	S9.1.5.2, General, 5 th para., 1 st sent.	Deleted Table 9.1-4 and added reference to Table 3.2-1 to eliminate duplication of information.
41.	S9.1.5.2, General, 5 th para., 2 nd sent and 4 th sent.	Added additional design requirements in response to RAI 9.1-100 and RAI 9.1-104.
42.	S9.1.5.2, General 6 th para., 2 nd sent.	Added ASME NOG-1 as reference for cranes in response to RAI 9.1- 96.
43.	S9.1.5.5, Fuel Building and Reactor Building Cranes, new 1 st para.	Added lifting device criteria for FB and RB cranes in response to RAI 9.1-105.
44.	S9.1.5.5, Fuel Building Crane, new 3 rd para.	Added description of single failure requirements for FB crane in response to RAI 14.3-447.
45.	S9.1.5.5, Reactor Building Crane, new 3 rd para.	Added description of single failure requirements for RB crane in response to RAI 14.3-447.
46.	S9.1.5.6, Upper Drywell Servicing Equipment, 2 nd para., 1 st sent And 4 th sent.	Deleted PCCS piping and valves as needing protection from load drops during drywell maintenance activities in response to RAI 14.3-447.
47.	S9.1.5.6, Upper Drywell Servicing Equipment, 2 nd para., 2 nd and 3 rd sent.	Revised description of protection for GDACS components in response to RAI 14.3-447.

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48.	S9.1.5.8, Operational Responsibilities, 1 st para., 5 th bullet.	Added reference to QA program requirements described in Subsection 9.1.5.2 in response to RAI 9.1-104.
49.	S9.1.5.8, Operational Responsibilities, 1 st para., 7 th bullet.	Added information concerning the use of non-metallic slings with single failure proof lifting devices.
50.	S9.1.5.9, Safety Evaluation, new 1 st para.	Added additional description for RB and FB crane interlocks and single failure design in response to RAI 14.3-447.
51.	S9.1.6, COL Information, COL Item 9.1-4-A, 1 st bullet	Added a bullet that stated criticality safety of fuel handling will be handled by the COL applicant in Response to RAI 9.1-79 S01.
52.	S9.1.6, COL Information, COL Item 9.1-5-A Handling of Heavy Loads, 6 th bullet	Added reference to QA program elements described in Subsection 9.1.5.2 in response to RAI 9.1-104.
53.	S 9.1.6, COL Information, COL Item 9.1-5-A Handling of Heavy Loads, new 7 th bullet	Added reference to RIS 2005-25 Supp 1 in response to RAI 9.1-103.
54.	T9.1-3, Item 6	Corrected Quality Group from “C” to “B”.
55.	T9.1-3, Item 11	Added Buffer pool water level to instrument sensing line scope in response to RAI 9.1-18S03.
56.	T 9.1-4, Classification of Equipment	Deleted Table 9.1-4 to eliminate duplication of information contained in Table 3.2-1.
57.	T 9.1-5, Reference Codes and Standards, line ANSI N14.6	Corrected standard from ANS N14.6 to ANSI N14.6 in response to RAI 14.3-447.
58.	T 9.1-5, Reference Codes and Standards, line ANSI N14.6	Corrected title. Changed from “Standard for Special Lifting Devices for Shipping Containers Weighing (5 tons) or More for Nuclear Materials” to “Special Lifting Devices for Shipping Containers Weighing 10000 Pounds (4500 kg) or More”.
59.	T 9.1-5, Reference Codes and Standards, line ASME/ANSI B30.2	Corrected title. Changed from “Performance Standards for Overhead Electric Overhead Traveling Cranes” to “Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist”.

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60.	T 9.1-5, Reference Codes and Standards, line ASME/ANSI B30.16	Corrected title. Changed from “Performance Standards for Air Wire Rope Hoists” to “Overhead Hoists (Underhung)”.
61.	T 9.1-5, Reference Codes and Standards, line ASME/ANSI B30.11	Corrected title. Changed from “Overhead and Gantry Crane” to “Monorail and Underhung Cranes”.
62.	T 9.1-5, Reference Codes and Standards, line ASME NOG-1	Added ASME NOG-1 in response to RAI 9.1-96. Made clarification in Table 9.1-5 to define the refueling and fuel handling machine hoists as mast and grapple.
63.	T 9.1-5, Reference Codes and Standards, line NUREG 0612	Made clarification in Table 9.1-5 to define the refueling and fuel handling machine hoists as mast and grapple.
64.	T 9.1-5, Reference Codes and Standards, line NUREG 0554	Made clarification in Table 9.1-5 to define the refueling and fuel handling machine hoists as mast and grapple.
65.	T9.1-8, Heat Exchangers-Heat Exchanger Type	Revised FAPCS heat exchanger description to allow a plate-type heat exchanger and changed “Design” to “Rated” Inlet Temp (tube side) in response to RAI 9.1-120.
66.	T9.1-8, Heat Exchangers-Performance Data	Revised FAPCS heat exchanger performance data to provide updated temperatures and flow rates in response to RAI 9.1-20 S04.
67.	F9.1-1	Revised the figure in response to RAI 6.2-200.
68.	F9.1-2	Revised figure in response to RAI 12.4-19 S03.
69.	S9.2.1.2, Detailed System Description, 5 th para., 1 st sent	Added additional information concerning valve material selection based on water quality in response to RAI 9.2-24.
70.	S9.2.1.2, Detailed System Description, 5 th para., 1 st sent	Corrected COL item designation for COL 9.2.1-1-A.
71.	S9.2.1.2, Detailed System Description, 6 th para., last sent	Added valve seats to material selection required based on water quality in response to RAI 9.2-24.
72.	S9.2.1.2, Detailed System Description, 6 th para., last sent	Revised to reflect that the need for valve hard seat material will be based on site water quality.

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73.	S9.2.1.5, Instrumentation Requirements, 3 rd para., 2 nd sent	Added description of PSWS pump trip if discharge valve fails to open in response to RAI 9.2-24.
74.	S9.2.1.5, Instrumentation Requirements, 7 th para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
75.	S9.2.1.6, COL Information, 9.2.1-1-A	Added valve hard seat material to material selection required based on water quality in response to RAI 9.2-24.
76.	S9.2.1.6, COL Information, 9.2.1-1-A	Revised COL 9.2.1-1-A to reflect that the need for valve hard seat material will be based on site water quality.
77.	S9.2.2.2, Detailed System Description, 3 rd para., last 2 sent.	Added additional detail for RCCWS cooling water train supply valves during LOPP conditions in support of RAI 9.2-24 resolution.
78.	S9.2.2.2, Detailed System Description, 5 th para., new 3 rd and 4 th sent.	Added description of automatic train separation signals to support response to RAI 9.2-24.
79.	S9.2.2.2, Detailed System Description, 5 th para., 4 th sent.	Revised to clearly define the signals that close RCCWS train cross connect valves.
80.	S9.2.2.2, Detailed System Description, 6 th para., 4 th bullet	Corrected DCD subsection 9.5.5 title to Standby Onsite AC Power Supply Diesel Generator Jacket Cooling Water System.
81.	S9.2.2.5, Instrumentation Requirements, 5 th para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
82.	S9.2.2.5, Instrumentation Requirements, added 6 th para.	Added discussion of surge tank level instrumentation for leak isolation in response to RAI 9.2-24.
83.	S9.2.3.5, Instrumentation Requirements, 3 rd para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
84.	S9.2.5, Ultimate Heat Sink. 1 st para., last sent.	Described “pool cross-connect valves” in response to RAI 7.1-140.
85.	S9.2.5, Ultimate Heat Sink. 4 th para., (all)	Described the water in the IC/PCCS pools, when combined with the equipment pool and reactor well, is sufficient to perform the safety-related function of transferring heat to the atmosphere for the initial 72 hours of an accident in response to RAI 7.1-140.

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86.	S9.2.5, Ultimate Heat Sink, 7 th para., last sent	Revised COL Holder 9.2.5-1-H to applicant item 9.2.5-1-A to include item in its operating procedure development program in response to discussions with DCWG.
87.	S9.2.5.1, COL Information, 9.2.5-1-A	Revised COL Holder 9.2.5-1-H to applicant item 9.2.5-1-A to include item in its operating procedure development program in response to discussions with DCWG.
88.	S9.2.6.5, Instrumentation Requirements, 3 rd para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
89.	S9.2.7.2, Summary Description, 3 rd para., 2 nd sent	Added additional description of surge tank design in response to RAI 9.2-24.
90.	S9.2.7.2, Summary Description, 3 rd para., 4 th sent	Provided metric units for CWS surge tank elevation.
91.	S9.2.7.5, Instrumentation Requirements, 8 th para. added sent 2 to sent 7	Added additional description of surge tank level instrumentation for leakage control and NPSA in response to RAI 9.2-24.
92.	S9.2.7.5, Instrumentation Requirements, 9 th para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
93.	S9.2.7.7, References	Deleted reference to ASHRAE 30 as it is applicable to chiller manufacturing not installation and it is not referred to in the section.
94.	S9.2.8.5, Instrumentation Requirements, 5 th para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
95.	T 9.2-1 PSWS Heat Loads row Normal C/D, Note 1	Added Note 1 designating design limiting heat load conditions in response to RAI 9.2-24.
96.	T 9.2-1 PSWS Heat Loads row Single Failure C/D, Note 2	Added Note 2 designating design limiting heat load conditions in response to RAI 9.2-24.
97.	T 9.2-2, PSWS Component Design Characteristics row-PSW Cooling Tower and Basins	Updated heat load for PSWS towers based on refined analysis in response to RAI 9.2-24.

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98.	T 9.2-2, PSWS Component Design Characteristics row- PSW Cooling Tower and Basins	Updated heat load for PSWS towers to correct error in incorporating change under RAI 9.2-24.
99.	T9.2-3, RCCWS Nominal Heat Loads, row FAPCS and Total Train A&B	Revised FACS and Total Train/Total Train A&B heat loads in response to RAI 9.1-20S04 (in numerous places).
100.	T 9.2-3, RCCWS Nominal Heat Loads, row- Normal C/D	Added note 2 designating design limiting heat load conditions in response to RAI 9.2-24.
101.	T 9.2-3, RCCWS Nominal Heat Loads, row- Single Failure C/D w LOPP	Added note 3 designating design limiting heat load conditions in response to RAI 9.2-24.
102.	T 9.2-5, RCCWS Configuration by Mode,	Added note 1 and note 2 designating design limiting heat load conditions in response to RAI 9.2-24.
103.	T 9.2-7, Makeup Water System Demineralized Water Storage Tank Nominal Water Quality, row- Conductivity	Corrected target value to be consistent with water chemistry specification.
104.	F9.2-1 PWS System Simplified Diagram,	Provided additional design detail in response to RAI 9.2-24
105.	F9.2-2.b, RCCW System	Provided additional design detail in response to RAI 9.2-24
106.	F9.2-3, Chilled Water System Simplified Diagram	Provided additional design detail in response to RAI 9.2-24
107.	F9.2-4 Turbine Component Cooling Water System Configuration	Updated figure to reflect Reactor Feedwater Booster Pump loads as TCCWS loads.
108.	S9.3.2.1, 2 nd para., 3 rd bullet	Deleted reference to CFR 50.34(f)(2)(xxvi). The Process Sampling System does not form part of the ESBWR compliance to the TMI item reflected in 10CFR 50.34(f)(2)(xxvi).
109.	S9.3.2.1, 3 rd para.	Relaxation of PSS requirements has made conformance to 10 CFR 50.34(f)(2)(viii) and 50 CFR 50.34(f)(2)(xxvi) not required.

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110.	S9.3.2.3, Safety Evaluation, 1 st para., 3 rd bullet	Revised reference to offsite dose limits from “10 CFR 100” to “10 CFR 52.47(a)(2)(iv)” in response to RAI 7.5-8.
111.	S9.3.2.7, new reference 9.3.2-13	Added reference “GE Nuclear Energy, “Methods of Estimating Core Damage in BWRs”, NEDO-33045P, Rev. 0, July 2001: as documentation for relaxation of PSS requirements.
112.	S9.3.3.2, Detailed System Description, New 5h para.	Added paragraph in response to RAI 9.4-54.
113.	S9.3.5.2, System Operation, 2 nd para., new 2 nd and 3 rd sent and last sent.	Revised to provide additional detail for SLC manual initiation implemented through the Anticipated Transient Without Scram/Standby Liquid Control (ATWS/SLC) logic processor.
114.	S9.3.5.2, System Operation, 4 th para., 2 nd sent.	Revised statement to reflect buffering occurring in the RPV not in the suppression pool.
115.	S9.3.5.3, Title, SRP Branch Technical Positions SPLB 3-1 and 3-4.	Revised reference Branch Technical Positions for consistency.
116.	S9.3.6.5, Instrumentation Requirements, 3 rd para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
117.	S9.3.7.5, Instrumentation Requirements, 3 rd para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
118.	S9.3.10.2, System Description, 3 rd para., last sent.	Removed reference to internal GEH document associated with oxygen injection flowrate.
119.	S9.3.10.7, References, 9.3.10-2	Removed reference to internal GEH document associated with oxygen injection flowrate.
120.	S9.3.12.2, Component Description, 2 nd para., 1 st sent.	Removed gland steam evaporator as source of steam for auxiliary boiler. This component was removed under an engineering design change.
121.	Table 9.3-8, row Pressure-SRV and ICS Isolation Valves accumulators supply (maximum)	Revised to ICS Isolation Valves accumulators supply (minimum) of 1.13 MPaG (164 psig) for clarity and consistency with DCD T2 Section 5.4.

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122.	Table 9.3-8, row Pressure-SRV and ICS Isolation Valves accumulators (minimum)	Revised to SRV accumulators (minimum) of 2.41 MPaG (350 psig) for clarity and consistency with DCD T2 Section 5.4.
123.	F9.3-1	Revised the figure in response to RAI 6.2-200.
124.	F9.3-4	Revised the figure in response to RAI 6.2-200.
125.	S9.4.1, 3 rd para., 4 th bullet, 6 th sent.	Revised to add “sected” N-DCIS components tripped upon high CRHA temperature per Engineering Change.
126.	S9.4.1, 3 rd para., 4 th bullet, 7 th sent.	Revised to remove “safety related” equipment remaining. Selected N-DCIS equipment will remain following CRHA High Temperature Trip per Engineering Change.
127.	S9.4.1, 3 rd para., 4 th bullet, 8 th sent.	Revised CRHA temperature limit from 8.3 °C (15 °F) temperature rise to a maximum temperature value of 33.9°C (93°F) per Engineering Change.
128.	S9.4.1.1, Safety Design Basis, 3 rd para., last sent	Added description of conditions that actuate second EFU.
129.	S9.4.1.1, Safety Design Bases, 8 th para.	Added EFU system detail in response to RAI 9.4-29 S03
130.	S9.4.1.1, Safety Design Bases, 11 th para., 3 rd sent.	Added “selected” N-DCIS components tripped upon high CRHA temperature per Engineering Change.
131.	S9.4.1.1, Safety Design Bases, 11 th para., 6 th sent.	Revised 6 th sent. to change CRHA temperature limit from 8.3 °C (15 °F) temperature rise to a maximum temperature value of 33.9°C (93°F) per Engineering Change.
132.	S9.4.1.1, Safety Design Bases, 11 th para., last 4 sent.	Revised description of power supply to EFU under various conditions in response to RAI 9.4-31S01.
133.	S9.4.1.1, Safety Design Bases, new 12 th and 13 th para.	Provided additional description of CRHA cooling and ventilation for various conditions in response to RAI 9.4-31S01.
134.	S9.4.1.1, Power Generation Design Bases, 1 st bullet	Changed “ASHRAE 62-2001, Table 2” to “ASHRAE 62-2007, Section 6” per RAI 9.4-29 S03.

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135.	S9.4.1.2, Detailed System Description, 5 th para. last sentence	Deleted “of 200 l/s (424 cfm)” from last sentence per Engineering Change.
136.	S9.4.1.2 Detailed System Description, 8 th para.	Moved 8 th para. to 12 th para., to group EFU descriptions.
137.	S9.4.1.2, Detailed System Description, 11 th para., last sent.	Revised to add “selected” N-DCIS components tripped upon high CRHA temperature per Engineering Change.
138.	S9.4.1.2, System Operation, 2 nd para., last sent.	Revised to add “selected” N-DCIS components tripped upon high CRHA temperature per Engineering Change.
139.	S9.4.1.5, Instrumentation Requirements, 7 th para.	Revised sentence in response to RAI 7.1-132.
140.	S9.4.1.5, Instrumentation Requirements, new 8 th para.	Added paragraph in response to RAI 7.1-132.
141.	S9.4.1.5, Instrumentation Requirements, 13 th para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
142.	S9.4.2.2 Detailed System Description, 3 rd para., 1 st sent	Added exhaust fans to “components located in FB”.
143.	S9.4.2.2 Detailed System Desc., FBGAVS; 3 rd para.	Changed description of FBGAVS fans location.
144.	S9.4.2.5, Instrumentation Requirements, 4 th para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
145.	S9.4.3.5, Instrumentation Requirements, 8 th para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
146.	S9.4.4.2; System Description; TBDRE; 2 nd para., 1 st sent.	Revised to clarify the TBDRE description
147.	S9.4.4.5, Instrumentation Requirements, 2 nd para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
148.	S9.4.6, Reactor Building HVAC System, 2 nd para., 3 rd bullet	Revised description for RB HVAC online purge exhaust filter unit in response to RAI 9.4-53.
149.	S9.4.6.1, Safety Design Bases, 1 st para., last 2 sent.	Provided description for RB HVAC accident purge exhaust filter unit in response to RAI 9.4-53.

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150.	S9.4.6.1, Power Generation Design Bases, 1 st para., new 10 th bullet	Added additional design bases for RB HVAC accident purge exhaust filter unit in response to RAI 9.4-53.
151.	S9.4.6.1, Power Generation Design Bases, 1 st para., 11 th bullet	Added “On-line purge exhaust filter unit description in response to RAI 9.4-53.
152.	S9.4.6.1, Power Generation Design Bases, 1 st para., 12 th bullet	Revised statement to allow operation of RB HVAC purge exhaust filter unit at times than other than after LOCA in response to RAI 9.4-53.
153.	S9.4.6.2, CONAVS, 2 nd para.	Provide additional description of RB HVAC accident and online purge exhaust filter assemblies in response to RAI 9.4-53.
154.	S9.4.6.2, CONAVS, 2 nd para. 1 st sent	Revise description to be consistent with engineering change.
155.	S9.4.6.2, CONAVS, 3 rd para.	Provide additional description of RB HVAC accident purge exhaust filter assembly in response to RAI 9.4-53.
156.	S9.4.6.2, CONAVS, 2 nd para., last sent.	Revised description of operation to allow supply AHU and normal exhaust fan operation during filtered purge exhaust in response to RAI 9.4-53.
157.	S9.4.6.2, CONAVS, 3 rd para., last sent.	Revised description to HVAC exhaust filter units from purge exhaust units in response to RAI 9.4-53.
158.	S9.4.6.2, CONAVS, 5 th para., 1 st Sent.	Revised description to reflect multiple AHUs as per engineering change.
159.	S9.4.6.2, REPAVS, 2 nd para., 6 th sent.	Revised description of operation to reflect online purge exhaust filter units to be used for cleanup of refueling area in response to RAI 9.4-53.
160.	S9.4.6.2 CLAVS, 2 nd para., 1 st sent	Revised description to a two train system as per engineering change.
161.	S9.4.6.2, System Operation, CONAVS, 1 st sent	Revised description to reflect multiple trains per engineering change.
162.	S9.4.6.2, System Operation, CLAVS, 1 st sent	Revised description to reflect multiple trains per engineering change.
163.	S9.4.6.3, Safety Evaluation, new 6 th and 7 th para.	Provided additional description of RB HVAC accident and online purge exhaust filter assemblies in response to RAI 9.4-53.

Item	Location	Description of Change
164.	S9.4.6.4, Testing and Inspection Requirements, 2 nd para., 1 st sent.	Revised to clarify RB HVAC accident and online purge exhaust filter test requirements described in response to RAI 9.4-53.
165.	S9.4.6.4, Testing and Inspection Requirements, 2 nd para., last 3 sent.	Provided additional description of test requirements in response to RAI 9.4-53.
166.	S9.4.6.5, Instrumentation Requirements, 3 rd para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
167.	S9.4.7.1 Power Generation Design Basis	2 nd Para, 2 nd bullet moved definition of slight pos pressure moved to S9.4.7.2 TSCVS 1 st para.
168.	S9.4.7.1 Power Generation Design Basis	2 nd para 3 rd bullet, moved to TSCVS 1 st para. for clarity.
169.	S9.4.7.5, Instrumentation Requirements, 2 nd para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
170.	S9.4.8.2, System Operation, 3 rd para.	Removed incorrect wording connecting LOCA signal to powering of DW FCUs during a LOPP.
171.	S9.4.8.5, Instrumentation Requirements, 5 th para.	Revised DCD reference to Subsection 3.1.2.4 to more accurately reflect reference location.
172.	S9.4.10.4, New 2 nd para. and bullets	Added paragraph and bulleted text in response to RAI 9.4-54.
173.	T9.4-1, Inside Design Temperatures and Humidity Heading, 1 st Row (Normal Ops)	Revised CRHA normal operating temperature range per Engineering Change.
174.	T9.4-1, Inside Design Temperatures and Humidity Heading, 2nd Row (Loss of Normal AC Power)	Changed CRHA temperature limit from 8.3 °C (15 °F) temperature rise to a maximum temperature value of 33.9°C (93°F) per Engineering Change.
175.	T9.4-1, CRHAVS Breathing air supply capacity, 1 st row.	Changed “9.5 l/s (20 cfm) per person for up to 21 persons (200 l/s or 424 cfm total)” to “10.5 l/s (22 cfm) per person for up to 21 persons (220 l/s or 466 cfm total)” and deleted “Ref. 9.4.1.1” per Engineering Change
176.	T9.4-1, CRHAVS Breathing air supply capacity, last row.	Updated entry “5” to “11” in response to RAI 6.4-21.

Item	Location	Description of Change
177.	T9.4-2 Major Equipment for CBVS	Revised capacity to reflect appropriate significant figures.
178.	T9.4-2, Major Equipment for CBVS, row-CRHA VS Outside Air fan system	Changed flow to “270 l/s (572 cfm)” per Engineering Change.
179.	T9.4-2, Major Equipment for CBVS, row-Emergency Filter Unit	Changed under “Capacity” the flow to “220 l/s (466 cfm)” per Engineering Change.
180.	T9.4-2, Major Equipment for CBVS, new row- Diff. Pressure	Added Differential Pressure row and maximum value to support removal of VFTP Bracketed CRHA VS EFU Filter dP.
181.	T9.4-2, Major Equipment for CBVS, row-EFU fans.	Corrected number of fans per EFU.
182.	T9.4-2, Major Equipment for CBVS, row-EFU fans.	Changed flow “200 l/s (424 cfm)” to “220 l/s (466 cfm)” per Engineering Change.
183.	T9.4-4, Maj Equip. for FBGA VS; last row	Changed Carbon Filter Efficiency per Engineering Change.
184.	T9.4-5 Major Equipment for FBFPVs	Revised capacity to reflect appropriate significant figures.
185.	T9.4-9, Major Equipment for CLA VS	Revised quantities and capacities and types for equipment to reflect engineering change.
186.	T9.4-11, Major Equipment for CONA VS,	Revised quantities and capacities and types for equipment to reflect engineering change.
187.	T9.4-11, Major Equipment for CONA VS, row-AFU Supply Fan.	Deleted equipment specification description in response to RAI 9.4-53.
188.	T9.4-11, Major Equipment for CONA VS, row-RB Online Purge Exhaust Filter Unit.	Added purge exhaust filter unit specifications in response to RAI 9.4-53.
189.	T9.4-11, Major Equipment for CONA VS, row-RB Online Purge Exhaust Filter Unit-Fan	Added purge exhaust filter unit fan specifications in response to RAI 9.4-53.

Item	Location	Description of Change
190.	T9.4-11, Major Equipment for CONAVS, row-RB Accident Purge Exhaust Filter Unit.	Added purge exhaust filter unit specifications in response to RAI 9.4-53.
191.	T9.4-11, Major Equipment for CONAVS, row-RB Accident Purge Exhaust Filter Unit-Fan.	Added purge exhaust filter unit fan specifications in response to RAI 9.4-53.
192.	T9.4-11, Major Equipment for CONAVS,	Revised capacity for appropriate significant figures.
193.	T9.4-15, Design Parameters for TBVS; Gen Areas	Changed Indoor Minimum Temperature to match all other buildings and System Design Spec.
194.	T9.4-16, Design Parameters for EBVS, row-TSC Air Handling Unit.	Corrected number of TSC AHUs.
195.	T9.4-16 Design Parameters for EBVS; TSC AFU Efficiency	Changed TSC charcoal efficiency per Engineering Change.
196.	Table 9.4-17 Industrial Codes and Standards Applicable to ESBWR HVAC	Remove edition for all codes see 1.9-22.
197.	F9.4-1, CRHAVS Simplified System Diagram	Provided additional detail in response to RAI 9.4-31 S01/S02.
198.	F9.4-1, CRHAVS Simplified System Diagram	Updated EFU flow, Outside AHU flow and exfiltration flow as approved under engineering design change.
199.	F9.4-2, CRHAVS Air Flow Diagram	Updated EFU flow, Outside AHU flow and exfiltration flow as approved under engineering design change.
200.	F9.4-8, TBVS Simplified System Diagram	Added the "Off Gas System Exhaust" inlet to the TBCE return upstream of the HEPAs to F9.4-8 TBVS per RAI 11.3-13.
201.	F9.4-9 CLAVS Simplified System diagram,	Updated diagram to reflect Engineering Change.
202.	F9.4-10, CONAVS Simplified System Diagram	Updated diagram to reflect accident and online purge filter units in response to RAI 9.4-53.

Item	Location	Description of Change
203.	F9.4-10, CONAVS Simplified System Diagram	Updated diagram to reflect engineering change.
204.	F9.4-12, EBVS Simplified Dia.	Updated diagram to reflect detail of AFU connection to TSC AHU.
205.	S9.5.1, Fire Protection System 1 st para., 3 rd sent to 6 th sent	Addition of discussion defining “important to safety” in response to RAI 9.5-74.
206.	S9.5.1.1, Power Generation Design Bases, 3 rd para., 11 bullet	Revised “safe shutdown” to “safety-related” in response to RAI 9.5-74.
207.	S9.5.1.1, Power Generation Design Bases, 3 rd para., 12 bullet	Provided additional details regarding FPS components supporting FAPCS makeup in response to RAI 9.1-16 S03.
208.	S9.5.1.2, System Description, 3 rd para., 1 st sent	Revised “safe shutdown” to “safety related” in response to RAI 9.5-74.
209.	S9.5.1.3, Facility Features for Fire Protection, 2 nd para., 1 st sent	Revised “safety related structures” to “structures containing safety related equipment” in response to RAI 9.5-71 S01.
210.	S9.5.1.3, Facility Features for Fire Protection, 3 rd para., 1 st sent	Revised “safe shutdown” to “safety related” in response to RAI 9.5-74.
211.	S9.5.1.4, Water Source, 3 rd para., 2 nd and 3 rd and last sent.	Provided additional details regarding FPS components supporting FAPCS makeup in response to RAI 9.1-16S03.
212.	S9.5.1.4, Fire Pumps, 1 st para., 4 th sent. from last	Provided metric units for required system line pressure.
213.	S9.5.1.4, Fire Pumps, 1 st para., 2 nd and 3 rd sent. from last	Added details on diesel driven pump.
214.	S9.5.1.4, Fire Pumps, 4 th para., 1 st , 3 rd and 4 th sent	Added detail associated with booster pumps in response to RAI 14.3-395 S0/S01.
215.	S9.5.1.5, Firewater Supply Piping, Yard Piping and Yard Hydrants, 2 nd para., last sent	Clarified that the primary loop remains functional following a SSE in response to RAI 9.5-75.

Item	Location	Description of Change
216.	S9.5.1.6, Standpipe and Hose Systems (wet), 4 th para., 1 st sent	Added “woven” to description for fire hose in response to RAI 9.5-76.
217.	S9.5.1.6, Standpipe and Hose Systems (wet), 9 th para., last sent.	Revised “safe shutdown” to “safety related” in response to RAI 9.5-74.
218.	S9.5.1.7, Fixed Automatic Water Extinguishing Systems, 2 nd para., 1 st sent.	Revised “safety related structures” to “structures containing safety related equipment” in response to RAI 9.5-74.
219.	S9.5.1.9, Smoke Detection and Fire Alarm System, 1 st para., 1 st sent.	Revised safe shutdown to safety related in response to RAI 9.5-74.
220.	S9.5.1.9, Smoke Detection and Fire Alarm System, 3 rd para., 1 st sent.	Revised “safe shutdown” to “safety related” in response to RAI 9.5-74.
221.	S9.5.1.10, Fire Barriers, New 4 th para. with 6 new bullets	Addition of design features that prevent or mitigate spurious actuations with detail in response to RAI 9.5-71 S01 and 9.5-71S02.
222.	S9.5.1.11, Building Ventilation, 3 rd para., 3 rd sent.	Revised COL Holder item for smoke control to COL applicant in response to discussions with DCWG.
223.	S9.5.1.11, CRHAVS, 4 th para., 3 rd to 6 th sent.	Revised description of CRHAVS operation during smoke purge,
224.	S9.5.1.11, CLAVS, 1 st para., last two sent.	Revised to reflect CLAVS operation during smoke / fire event including discharge through the RB/FB vent stack.
225.	S9.5.1.11, CONAVS, 1 st para., last sent.	Revised to reflect that during a radiological event, the exhaust airflow is diverted to the RB HVAC online purge exhaust filter unit to remove airborne contamination prior to discharge through the RB/FB vent stack.
226.	S9.5.1.11, REPAVS, 1 st para., last sent.	Revised to reflect that during a radiological event, the exhaust airflow is diverted to the RB HVAC online purge exhaust filter unit to remove airborne contamination prior to discharge through the RB/FB vent stack.

Item	Location	Description of Change
227.	S9.5.1.12, Safety Evaluation, 5 th para.	Replaced COL Holder item with COL applicant item for FHA (COL 9.5.1-7-A) to ensure that the applicant will provide a milestone for confirming the assumptions and requirements of the FHA against the as-built conditions and updating the FHA as necessary.
228.	S9.5.1.12.1.1, 4 th para., last sent.	Added safe shutdown “condition” as function of reactor shutdown panels in response to RAI 9.5-74.
229.	S9.5.1.12.1.2, 5 th para., last sent.	Added safe shutdown “condition” as function of reactor shutdown panels in response to RAI 9.5-74.
230.	S9.5.1.12.1.3, 4 th para., last sent.	Added safe shutdown “condition” as function of reactor shutdown panels in response to RAI 9.5-74.
231.	S9.5.1.12.1.4, 6 th para., last sent	Revised “safe shutdown” to “safety related” in response to RAI 9.5-74.
232.	S9.5.1.12.1.5, 6 th para., last sent	Revised “safe shutdown” to “safety related” in response to RAI 9.5-74.
233.	S9.5.1.12.1.7 subsection title	Revised subsection title to No Automatic Fire Suppression in Computer Rooms containing Safety Related Equipment in response to RAI 9.5-78.
234.	S9.5.1.12.1.8, subsection title	Revised subsection title to Exceed Maximum Hose Length to Reach Safety-Related Shutdown Equipment in Containment in response to RAI 9.5-78.
235.	S9.5.1.12.1.8,3 rd para., last sent.	Provided justification of exemption to 100 ft hose length requirement in containment in response to RAI 9.5-72.
236.	S9.5.1.12.1.8,4 th para.	Added “during power operation” to clarify condition when containment will be inerted in response to RAI 9.5-72.
237.	S9.5.1.12.1.8,4 th para., last 2 sent.	Provided justification of exemption to 100 ft hose length requirement in containment in Containment in response to RAI 9.5-72.
238.	S9.5.1.15.2, 3 rd para., 1 st bullet	Revised “safety related areas” to “areas containing safety related equipment” in response to RAI 9.5-82.

Item	Location	Description of Change
239.	S9.5.1.15.4, Onsite Fire Operator Training 1 st para., 1 st sent	Revised COL Holder to COL applicant for provisions associated with manual fire fighting capability for all plant areas in response to discussions with DCWG.
240.	S9.5.1.15.4.3 Fire Protection Staff Training 1 st para.	Delete reference to Table 13.1-1 and “provided in RG1.189 position 1.6.1a. Table erroneously referenced.
241.	S9.5.1.15.4.7 Fire Brigade Equipment, next to last sentence	Clarify SCBA staged at containment entrances during refueling and maintenance periods.
242.	S9.5.1.15.5, Administrative Controls, 2 nd para., 5 th bullet	Revised “safe shutdown to “safety related” in response to RAI 9.5-82.
243.	S9.5.1.15.6, Control of Combustibles, 1 st para., 1 st bullet	Revised “safe shutdown to “safety related” in response to RAI 9.5-82.
244.	S9.5.1.15.6, Control of Combustibles, 1 st para., 9 th bullet	Revised description of restrictions controlling the use of specific combustibles to agree with RG 1.189.
245.	S9.5.1.15.6, Control of Combustibles, 1 st para., last bullet	Revised “safe shutdown to “safety related” in response to RAI 9.5-82.
246.	S9.5.1.15.8, 5 th para., 4 th sent	Revised “safety related areas” to “areas containing safety related equipment” in response to RAI 9.5-82.
247.	S9.5.1.16, COL Information, COL 9.5.1-2-A, Secondary Firewater Capacity	Provided metric units for required system line pressure.
248.	S9.5.1.16, COL Information, COL 9.5.1-6-A, Smoke Control	Revised COL Holder item to COL Applicant item in response to discussions with DCWG.
249.	S9.5.1.16, COL Information, COL 9.5.1-7-A, FHA Compliance	Revised COL Holder item to COL Applicant item in response to discussions with DCWG.
250.	S9.5.1.16, COL Information, COL 9.5.1-10-A, Fire Brigade	Revised COL Holder item to COL Applicant item in response to discussions with DCWG.

Item	Location	Description of Change
251.	S9.5.2, Communications System, 1 st para., 6 th bullet	Deleted “offsite” associated with emergency communication subset in response to RAI 9.5-93 S01.
252.	S9.5.2, System Description Plant Radio System, 1 st para., last sent.	Added additional performance requirements for portable communication systems in response to RAI 9.5-93.
253.	S9.5.2.2, Plant Radio System, 3 rd para., 1 st , 2 nd and 4 th bullets	Revised listing of radios requiring multiple channels in response to RAI 9.5-93.
254.	S9.5.2.2, Emergency Communication Systems, 2 nd para., 5 th bullet	Revised description of COL Applicant actions for fire brigade radio system in response to RAI 9.5-93 S01.
255.	S9.5.2.5-5-A, Fire Brigade Radio System	Added additional description for COL item in response to RAI 9.5-93 S01.
256.	S9.5.3.3, Lighting System, System Description, 1 st para., 2 nd & 3 rd sent.	Revised to describe areas where emergency lighting is provided and references Table 9.5-3 for illumination ranges for emergency illumination.
257.	S9.5.3.3.1, Normal Lighting, 2 nd para., 1 st sent.	Revised to reference PG buses in place of unit auxiliary buses to better describe loss of power resulting in loss of normal lighting.
258.	S9.5.3.4, Safety Evaluation, 3 rd para., 1 st sent.	Revised to reference PG buses in place of unit auxiliary buses to better describe loss of power resulting in loss of normal lighting.
259.	S9.5.4.6, COL Information, COL Item 9.5.4-2-A	Revised Title of COL Item to reflect scope of system requiring protection.
260.	S9.5.5.3 Safety Evaluation	Clarified sentence to state highly reliable SDG operation.
261.	T9.5-3, Typical Luminance Ranges for Normal Lighting, row, Control Room Emergency Lighting	Added minimum design illumination values for Control Room emergency lighting.
262.	T9.5-3, Typical Luminance Ranges for Normal Lighting, row, Remote Shutdown Station Emergency Lighting	Added minimum design illumination values for Remote Shutdown Station emergency lighting.
263.	F9.5-1, Fire Protection System Simplified Diagram	Revised FPS schematic in response to RAI 9.5-73.

Item	Location	Description of Change
264.	F9.5-9, Standby Diesel Generator Fuel Oil Storage & Transfer and Air Intake and Exhaust Diagram	Revised SDG mechanical support system drawing to correct tie in to fuel oil storage tank from ancillary diesel generator fuel oil system.
265.	F9.5-9a, Ancillary Diesel Generator Fuel Oil Storage & Transfer System Diagram	Revised ADG mechanical support system drawing to correct fuel oil transfer configuration.