

Tier 2 Chapter 8 Revision 3 to Revision 4 Change List

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
1	Abbreviations and Acronyms List	Removed terms not used in Chapter 8 from the list. (No technical change)
2	Abbreviations and Acronyms List	Added “VRLA – Valve Regulated Lead Acid” to the list. (No technical change)
3	Global	As a global editorial change, changed “DBE (Design Basis Event)” to “DBA (Design Basis Accident).” DBA is the appropriate term, as listed in the Abbreviations and Acronyms List. (No technical change)
4	Global	Made editorial changes in numerous locations to remove excessive spacing, correct punctuation, delete repeated words, correct misspelling, and correct grammar. Spelled out acronyms where appropriate. Changed GE to GEH where appropriate
5	S8.1.1, 1 ST para.	As editorial clarification, deleted the opening statement, which was just a generic lead-in. This deletion will facilitate COLA development. (No technical change)
6	S8.1.1, 2 ND para., 4 TH sentence	As editorial clarification, revised the sentence to begin, “These power sources designed to provide reliable power for the plant...” (No technical change)
7	S8.1.1, 3 RD para., 2 ND sentence	As editorial clarification, changed “two offsite power systems” to “two offsite power sources.” There is one offsite power system with two offsite power sources (normal preferred and alternate preferred). (No technical change)
8	S8.1.1, 3 RD para., 3 RD sentence	As editorial clarification, revised to read, “In the event of total loss of offsite power sources and loss of main generator island mode operation (main generator continues to provide AC power to site loads upon loss of offsite power sources), two onsite independent nonsafety-related standby diesel generators are provided to power the plant

		investment protection (PIP) nonsafety-related loads and safety-related loads through battery chargers, rectifiers, or regulating transformers.” (No technical change)
9	S8.1.2.2, 2 ND para., 1 ST sentence	As editorial clarification, changed “plant switchyard” to “switchyard.” (No technical change)
10	S8.1.2.2, 2 ND para., 1 ST sentence	As editorial clarification, changed “high voltage tie lines to the main generator circuit breaker” to “high voltage tie lines to the high-side motor operated disconnects (MODs) of the main generator circuit breaker.” (No technical change)
11	S8.1.2.2, 3 RD para., 1 ST sentence	As editorial clarification, changed “switching stations” to “switchyard.” (No technical change)
12	S8.1.2.2, 4 TH & 5 TH para.	As editorial clarification, moved the 5 TH paragraph to the beginning of the 4 TH paragraph. This new lead-in will help avoid confusion on when the source is considered normal or alternate. (No technical change)
13	S8.1.3.1	As editorial clarification, revised several instances of 13.8 and 6.9 kV power to “power levels” rather than “power load groups.” This change is to be consistent with the proper IEEE 100 definition of a “load group,” and clarify that 13.8 and 6.9 kV are medium voltage power levels. (No technical change)
14	S8.1.3.1, 1 ST para., 1 ST sentence	As editorial clarification, changed “generator breaker” to “main generator circuit breaker.” (No technical change)
15	S8.1.3.1, 4 TH para., 2 ND sentence	As editorial clarification, changed “isolation buses” to “Isolation Power Centers.” This is meant as clarification for the NRC, as requested in the telecon of 4/9/2007, to ensure consistency.
16	S8.1.3.2, 2 ND para., 2 ND sentence	As editorial clarification, revised to read, “The nonsafety-related 250V batteries are provided to supply DC power to the inverters that supply 120 VAC to the Nonsafety-Related Distributed Control and Information System (N-DCIS) and DC power to the nonsafety-related DC motors.” (No technical change)

17	S8.1.3.2, 2 ND para., 4 TH sentence	As editorial clarification, changed “power is supplied from the nonsafety-related batteries” to “power is supplied from the nonsafety-related batteries for two hours.” (No technical change)
18	S8.1.5.1, 2 ND para., 2 ND sentence	As editorial clarification, changed “site switchyard” to “site switchyard(s).” (No technical change)
19	S8.1.5.1, 3 RD para.	As editorial clarification, revised to read, “The switchyard is designed to minimize the likelihood of simultaneous failure of both the normal and alternate preferred power sources.” (No technical change)
20	S8.1.5.1, 5 TH para., 1 ST sentence	As an editorial clarification, changed “provided” to “connected.” (No technical change)
21	S8.1.5.1, 6 TH para., 1 ST sentence	As editorial clarification, deleted “with the exception of station blackout.” Station blackout is not the only scenario in which the offsite power system may not be available. (No technical change)
22	S8.1.5.2.1, 3 RD para., 3 RD sentence	As editorial clarification, replaced with “UATs supply power to their load group through the main transformer from the main generator during normal plant operation and during island mode operation. When the unit is offline, UATs supply power to their load groups from the normal preferred power supply.” (No technical change)
23	S8.1.5.2.1, 8 TH para., 2 ND sentence	As editorial clarification, changed “main circuit breaker” to “normal and alternate main circuit breakers.” (No technical change)
24	S8.1.5.2.1, 8 TH para., 4 TH sentence	As editorial clarification, changed “batteries will supply” to “batteries supply.” (No technical change)
25	S8.1.5.2.1, 8 TH para., 5 TH sentence	As editorial clarification, changed “electrical protection through isolation breakers and transformers” to “electrical protection through isolation breakers.” Deleted the word “also” as well. (No technical change)
26	S8.1.5.2.1, 13 TH para., 1 ST sentence	Revised to delete, “with the exception of the four feedwater pump safety-related isolation breakers in the Seismic Category II turbine building, as shown in Figure 8.1-1.”

		The safety-related isolation breakers on the four feedwater pumps are deleted in Revision 4. Feedwater isolation to the containment relies upon feedwater isolation valves and not trip of the feedwater pumps with a safety-related breaker. This is in accordance with SR3-1-ECA-00014.
27	S8.1.5.2.2.2, 2 ND para., 2 ND sentence	Corrected to read only, “Provision is made for automatic switching to the alternate bypass supply from a 480 VAC Power Center, in case of a failure of the inverter power supply.” The Power Center is not of the same load group.
28	S8.1.5.2.3, 1 ST para., 1 ST sentence	As editorial clarification, changed “clean power source” to “regulated power source.” (No technical change)
29	S8.1.5.2.4, “General Design Criteria,” 5 TH bullet, 3 RD sentence	As editorial clarification, added “and meet GDC 18 requirements.” (No technical change)
30	S8.1.5.2.4, “NRC Regulatory Guides,” 2 ND bullet	Corrected the title of R.G. 1.9. (No technical change)
31	S8.1.5.2.4, “NRC Regulatory Guides,” 3 RD bullet	Corrected the title of R.G. 1.32, to be consistent with the correct title of the revision as given in Table 1.9-21. (No technical change)
32	S8.1.5.2.4, “NRC Regulatory Guides,” 5 TH bullet	Corrected the title of R.G. 1.53, to be consistent with the correct title of the revision as given in Table 1.9-21. (No technical change)
33	S8.1.5.2.4, “NRC Regulatory Guides,” 7 TH bullet	Corrected the title of R.G. 1.75, to be consistent with the correct title of the revision as given in Table 1.9-21. (No technical change)
34	S8.1.5.2.4, “NRC Regulatory Guides,” 10 TH bullet	Replaced “see Subsection 8.3.4.2” with “see Subsection 13.5.2 for Operating and Maintenance Procedures and Chapter 16 for Technical Specifications.” The COL item at 8.3.4.2 has been deleted. (No technical change)
35	S8.1.5.2.4, “NRC Regulatory Guides,” 11 TH bullet	As editorial clarification, changed “batteries will limit” to “batteries limit.” (No technical change)
36	S8.1.5.2.4, “NRC Regulatory Guides,” 11 TH bullet	As editorial clarification, added IEEE 485 to the list of standards that are applicable to VRLA batteries. IEEE 485 was already given in Table 8.1-1 as applicable for RG 1.128. (No technical change)

37	S8.1.5.2.4, “NRC Regulatory Guides,” 13 TH bullet	Corrected the title of R.G. 1.153, to be consistent with the correct title of the revision as given in Table 1.9-21. (No technical change)
38	S8.1.5.2.4, “NRC Regulatory Guides,” 15 TH bullet	Replaced “Maintenance Rule development is addressed in Subsection 8.3.4.3” with “Maintenance Rule development is addressed in Table 1.9-21.” Operating and Maintenance Procedures are provided in Subsection 13.5.2. The COL item at 8.3.4.3 has been deleted. (No technical change)
39	S8.1.5.2.4, “Branch Technical Positions,” 3 RD bullet	Changed reference from “See Subsection 8.2.4.9” to “ See Subsection 8.2.2.1.” (No technical change)
40	S8.1.5.2.4, “Branch Technical Positions,” 6 TH bullet	As editorial clarification, deleted, “all safety-related loads are powered from batteries which are isolated by the battery chargers and rectifiers and diodes from the 480 VAC Isolation Power Centers.” The IPCs have degraded voltage protection.
41	S8.1.7	As editorial clarification, added Subsection 8.1.7, “COL Information” with only “None” included in the Subsection. This placeholder is meant to maintain consistency with other chapters and re-affirm that there are no COL items in Section 8.1. “References” is re-numbered to 8.1.8. (No technical change)
42	T8.1-1	Removed mark for Offsite Power System applicability for R.G. 1.32. This R.G. is applicable only to safety-related power systems. Also, the R.G. endorses IEEE 308-2001, which clearly states that it is not applicable for offsite power systems.
43	T8.1-1	Added IEEE 603 as an applicable standard to R.G. 1.53. (No technical change)
44	F8.1-1	Adjusted the location of the offsite/onsite boundary dotted line to reflect the description in Section 8.1. (No technical change)
45	F8.1-1	Removed the words “site specific” from the normal preferred and alternate preferred power supplies. (No technical change)
46	F8.1-1	Removed numbering from MODs, circuit breakers, and transformers. Numbering will be done as part of detailed

		design. This is not a conceptual change. (No technical change)
47	F8.1-1	Deleted the safety-related isolation breaker on the four feedwater pump ASDs. Feedwater isolation relies upon feedwater isolation valves and not trip of the feedwater pumps with a safety-related breaker. This is in accordance with SR3-1-ECA-00014.
48	F8.1-1, Note 1	Deleted Note 1. The safety-related breakers on the four feedwater pumps have been deleted, in accordance with SR3-1-ECA-00014.
49	F8.1-1, Note 4	Revised Note 4 to read, “Primary (high) winding voltage of UAT, RAT, and Main XFMRS are discussed in Subsection 8.2.1.2.” (No technical change)
50	F8.1-1, Note 5	Deleted Note 5 and references to the deleted Note 5 on Sheets 1, 2, and 3. (No technical change)
51	F8.1-1, Note 6	Renumbered Note 6 to now be Note 5. Also, revised the new Note 5 to read, “All components of this system are nonsafety-related except for the safety-related components marked with Note 5.” (No technical change)
52	F8.1-5, sheet 1	Revised to make the transformers fed from buses A1, A2, B1, B2, and C rated 480-208/120VAC 3-phase.
53	F8.1-5, sheet 2	Revised the standby onsite AC power to be supplied from the opposite load group for each UPS, consistent with the revised description in Subsection 8.3.1.1.5. (No technical change)
54	F8.1-5, sheet 2	Revised to make TSC N-DCIS, Lighting, and Communications buses 208/120VAC 3-phase. Also, made TSC inverters A3 and B3 208/120VAC 3-phase, and transformers 480-280/120VAC 3-phase.
55	S8.2.1.1, 1 ST para., 1 ST sentence	As editorial clarification, revised “transmission lines provide” to “transmission system provides.” The entire transmission system should be included per NERC standard compliance requirements and should be referenced as such. (No technical change)
56	S8.2.1.1, 1 ST para., 2 ND sentence	As editorial clarification, revised to read, “The system is designed and located to minimize the likelihood of simultaneous failure during DBA and adverse

		environmental conditions.” (No technical change)
57	S8.2.1.2, 2 ND para., 3 RD sentence	Changed “will auto-open” to “will be opened.” This wording will allow either automatic or manual opening of the MOD after the isolating breaker has opened.
58	S8.2.1.2, 3 RD para., 4 TH sentence	As editorial clarification, deleted the sentence. The statement was redundant information already stated in this same paragraph. (No technical change)
59	S8.2.1.2, 3 RD para., 5 TH sentence	Changed “will auto-open” to “will be opened.” This wording will allow either automatic or manual opening of the MOD after the isolating breaker has opened.
60	S8.2.1.2, 5 TH para.	As editorial clarification, added, “The normal preferred power voltage and alternate preferred power voltage are site specific. See 8.2.4-3-A and 8.2.4-4-A, respectively.” This will add the clear link to the COL items and give the COL applicant a place to insert their voltages. (No technical change)
61	S8.2.1.2.1	As editorial clarification, changed “switching station” to “switchyard” in three places. (No technical change)
62	S8.2.1.2.1, 6 TH para.	As editorial clarification, added references to 8.2.4-5-A, 8.2.4-6-A, 8.2.4-7-A, and 8.2.4-8-A. This provides clear links to the COL items and gives the applicant a pointer to where to add the required information. (No technical change)
63	S8.2.2.2, “Applicable Criteria,” 4 TH bullet	Deleted the reference to 10 CFR 50.2. 10 CFR 50.2 contains only the definition of design bases, not the requirements. (No technical change)
64	S8.2.2.2, “Applicable Criteria,” 5 TH bullet	Corrected the title of R.G. 1.32, to be consistent with the correct title of the revision as given in Table 1.9-21. (No technical change)
65	S8.2.2.2, “Applicable Criteria,” 5 TH bullet, 2 ND sentence	Revised the second sentence to read, “Therefore, Regulatory Guide 1.32 is not applicable to the ESBWR offsite power system.” This R.G. is applicable only to safety-related power systems. Also, the R.G. endorses IEEE 308-2001, which clearly states that it is not applicable for offsite power systems.
66	S8.2.2.2, “Applicable	As editorial clarification, revised to read only, “This topic is

	Criteria,” 7 TH bullet	addressed in Subsection 8.2.2.1.” (No technical change)
67	S8.2.3, 1 ST paragraph, 1 ST sentence	Deleted the reference to 10 CFR 50.2. 10 CFR 50.2 contains only the definition of design bases, not the requirements. (No technical change)
68	S8.2.3, 1 ST para., 2 ND sentence	As editorial clarification, revised to read, “These design requirements are as follows.” (No technical change)
69	S8.2.3, 3 RD bullet	As editorial clarification, replaced “switching station” with “switchyard.” (No technical change)
70	S8.2.3, 5 TH and 8 TH bullets	As editorial clarification, switched “cables” to “conductors.” (No technical change)
71	S8.2.3, 10 TH bullet	Corrected “RAT MODs” to “RAT offsite switchyard breaker.” The RAT offsite switchyard breaker will be automatically opened in the case of a failed RAT.
72	S8.2.4	As strictly editorial change, changed title of the subsection to “COL Information.” Also, re-numbered the COL items in 8.2.4 with the new ESBWR numbering system. References to the COL items in the preceding section text are revised for the new numbering. The COL items themselves are worded such that the subsection each will be addressed at is contained at the end of the COL item in parenthesis. (No technical change)
73	S8.2.5	As editorial corrections, corrected the titles of IEEE standards. (No technical change)
74	S8.3.1.1, 2 ND para., 2 ND sentence	As editorial clarification, revised sentence to “The UATs provide normal preferred offsite power or main generator island mode power to each of the plant’s two power generation and plant investment protection load groups.” (No technical change)
75	S8.3.1.1, 3 RD para., 1 ST sentence	As editorial clarification, revised “alternate preferred offsite source” to “alternate preferred offsite power source.” (No technical change)
76	S8.3.1.1, 3 RD para., 2 ND sentence	As editorial clarification, revised to state that RATs supply both the PG and PIP load groups.

		(No technical change)
77	S8.3.1.1, 6 TH para.	As editorial clarification, changed “generator circuit breaker” to “main generator circuit breaker.” (No technical change)
78	S8.3.1.1, 6 TH para., 2 ND sentence	Removed reference to IEEE C37.013 (Reference 8.3-39). This IEEE is applicable to breakers installed between the generator and the transformer terminals. Our main generator circuit breaker will be located after the main transformers, thus this IEEE is not applicable to the ESBWR.
79	S8.3.1.1, 10 TH para., 1 ST sentence	As editorial clarification, added “(Reference 8.3-26)” after “input isolation breakers.” (No technical change)
80	S8.3.1.1, 12 TH para., 1 ST sentence	As editorial clarification, changed “There will always be a normal or an alternate preferred” to “There is both a normal and an alternate preferred.” Also, added “(See Figure 8.1-1)” to the end of the sentence. (No technical change)
81	S8.3.1.1, 13 TH para., 3 RD and 4 TH sentences	Removed the long list of voltage ratings and revised sentence to read, “The onsite power distribution system has multiple nominal bus voltage ratings.” The voltages are listed out in the next sentence, and did not need to be repeated here. Also, in the 4 TH sentence, changed “480V” to “480/277V.” (No technical change)
82	S8.3.1.1, 14 TH para., 1 ST bullet, 1 ST sentence	As editorial clarification, changed “normal or alternate offsite source” to “normal preferred or alternate preferred offsite source” for consistency. (No technical change)
83	S8.3.1.1, 16 TH para., 1 ST sentence	As an editorial clarification, changed “operational at all times or when the unit is shut down” to “operational at all times, including when the unit is shut down.” (No technical change)
84	S8.3.1.1.1, 1 ST para., 3 RD sentence	As editorial clarification, revised to read, “The system ends at the input terminals of medium voltage load breakers.” (No technical change)
85	S8.3.1.1, 1 ST para., 5 TH sentence	As editorial clarification, removed this sentence. (No technical change)
86	S8.3.1.1.1, 2 ND para., 3 RD sentence	As an editorial clarification, added the clarification “under a faulted condition” when describing that source breakers are

		electrically interlocked to prevent simultaneous connection of UATs and RATs to the PG buses. (No technical change)
87	S8.3.1.1.1, 3 RD para., 1 ST & 2 ND sentences	As an editorial clarification, deleted the first two sentences, “Two 6.9 kV PIP buses (PIP-A and PIP-B) provide power for the nonsafety-related PIP loads. PIP-A and PIP-B buses are each backed by a separate standby onsite AC power supply source.” This information was a duplication from the previous subsection, and need not be repeated. (No technical change)
88	S8.3.1.1.1, 3 RD para., 5 TH sentence	As an editorial clarification, added the clarification “under a faulted condition” when describing that source breakers of the normal and alternate preferred power sources are electrically interlocked to prevent simultaneous connection of UATs and RATs to the PIP buses. (No technical change)
89	S8.3.1.1.1, 5 TH para., 2 ND sentence	Revised to reference Subsection 13.5.1. The COL item at 8.3.4.1 has been deleted. (No technical change)
90	S8.3.1.1.2, 1 ST para., 3 RD and 4 TH sentences	As editorial clarification, revised to read, “The low voltage system begins at the output terminals of the medium voltage feeder breakers to the power center transformers. The system ends at the input terminals of load breakers.” (No technical change)
91	S8.3.1.1.2, 3 RD para., 2 ND sentence	Changed 249 kW to 185 kW.
92	S8.3.1.1.2, “Isolation Power Centers,” 3 RD para., 2 ND sentence	Added the following statement: “The four safety-related Isolation Power Centers are located in the Seismic Category I Reactor Building in their respective divisional areas.”
93	S8.3.1.1.3	Moved the sub-heading “Safety-Related Uninterruptible AC Power Supply System” to the beginning of this subsection. The first four paragraphs of this subsection were already only concerning safety-related UPS, and thus needed to be under this sub-heading. (No technical change)
94	S8.3.1.1.3, “Safety-Related Uninterruptible AC power Supply System,” 6 TH para., 4 TH sentence	As and editorial clarification, revised “static bypass switch” to “static transfer switch” to be consistent with the terminology used in Figure 8.1-4. (No technical change)

95	S8.3.1.1.3, “Safety-Related Uninterruptible AC power Supply System,” 5 TH para.	<p>Revised first sentence and added second sentence in response to the agreed to change in terminology per RAI 8.3-56 S01.</p> <p>Revised to: “Four divisions of safety-related UPS provide 120 VAC power for the Q-DCIS loads/logic components (reference Section 7.1 for Q-DCIS description) and other safety-related loads requiring uninterruptible power (see Figure 8.1-4). Two divisions (1 and 2) of safety-related power supply the RPS scram pilot valve solenoids and the same two divisions supply power to the MSIV solenoids (see Figure 7.2-1 and Figure 8.1-4).”</p>
96	S8.3.1.1.3, “Safety-Related Uninterruptible AC power Supply System,” 6 TH para., 5 TH sentence	<p>As an editorial clarification, revised “manual bypass switch” to “manual maintenance transfer switch” to be consistent with the terminology used in Figure 8.1-4.</p> <p>(No technical change)</p>
97	S8.3.1.1.3, “UPS Components,” 6 TH bullet	<p>Deleted bullet “Circuits between safety-related UPS components and from safety-related UPS components to safety-related UPS loads.” Interconnecting cabling is not considered a UPS component and is discussed elsewhere. This was a redundant item.</p> <p>(No technical change)</p>
98	S8.3.1.1.3, “Nonsafety-Related Uninterruptible Power System Supply,” 1 ST para., 3 RD and 4 TH sentences	<p>Corrected to read, “UPS load groups A and B include two solid-state inverters, two solid-state rectifiers, two solid-state transfer switches, two manual transfer switches, and two regulating transformers with associated distribution panels (Figure 8.1-5).” Also, added a 4TH sentence, “UPS load group C includes one solid-state inverter, one solid-state rectifier, one solid-state transfer switch, one manual transfer switch, and one regulating transformer with associated distribution panels.”</p>
99	S8.3.1.1.3, “Nonsafety-Related Uninterruptible Power System Supply,” 2 ND para., 1 ST sentence	<p>Replaced the first sentence with the following clarification: “The normal power supply for the A and B load groups of the nonsafety-related UPS is through a nonsafety-related 480 VAC power center fed from the A and B PIP buses, respectively.”</p> <p>This is meant as clarification for the NRC, as requested in the telecon of 4/9/2007, to ensure consistency.</p>
100	S8.3.1.1.3, “Nonsafety-Related Uninterruptible Power	<p>As an editorial change, moved the third paragraph to the end of the subsection.</p> <p>(No technical change)</p>

	System Supply,” 3 RD para.	
101	S8.3.1.1.3, “Nonsafety-Related Uninterruptible Power System Supply,” 4 TH para.	To better clarify the third nonsafety-related UPS, replaced the existing paragraph with, “A third nonsafety-related UPS is provided to supply additional nonsafety-related loads that require uninterruptible power. This UPS is normally powered from 480 VAC power centers, which receive power from the diesel-backed PIP-A bus. Should a failure of the normal power supply occur, the alternate power supply to the UPS is from the 250 VDC bus. During loss of normal and alternate power supply or inverter failure, loads continue to get power from the 480 VAC DCIS double-ended (PIP-A or PIP-B) Swing Bus, which also supplies power during maintenance of the inverter and its associated components.”
102	S8.3.1.1.3, “Nonsafety-Related Uninterruptible Power System Supply,” 5 TH para., 2 ND and 3 RD sentences	As editorial clarification, replaced the 2 ND and 3 RD sentences with, “Power for each TSC nonsafety-related UPS is normally supplied from a 480 VAC power center. In case of failure of the 480 VAC power supply, transfer from the 480 VAC power center to the nonsafety-related 125 VDC bus is automatic and passive. Transfer from the normal AC power source through the inverter to the alternate AC power source occurs by automatic static transfer should an inverter failure occur.” (No technical change)
103	S8.3.1.1.4, 1 ST para.	As an editorial change, moved the fourth paragraph to the first sentence of the first paragraph. (No technical change)
104	S8.3.1.1.4, 2 ND para., 1 ST sentence	As editorial clarification, revised “those loads not requiring uninterruptible power” to “nonsafety-related I&C loads that do not require uninterruptible power.” (No technical change)
105	S8.3.1.1.4, 2 ND para., 2 ND sentence	Deleted the statement referencing Figure 8.1-6, as it is a duplication of information given in the preceding paragraph. (No technical change)
106	S8.3.1.1.4, 2 ND para., 3 RD sentence	As editorial clarification, revised to read, “The nonsafety-related Instrumentation and Control buses are each supplied independently from 480 VAC Bus C2, which is in turn fed from the DCIS Swing Bus. This is meant as clarification for the NRC, as requested in

		the telecon of 4/9/2007, to ensure consistency.
107	S8.3.1.1.4, 3 RD para.	Deleted the paragraph, as all the information was redundant and has been clarified in the preceding paragraph. This is meant as clarification for the NRC, as requested in the telecon of 4/9/2007, to ensure consistency.
108	S8.3.1.1.5, “Physical Separation and Independence,” 4 TH bullet	As editorial clarification, removed “total function” after “engineered safety feature (ESF).” The phrase was confusing and unnecessary. (No technical change)
109	S8.3.1.1.5, “Class 1E Electric Equipment Design Bases and Criteria,” 4 TH bullet, 1 ST sentence	As editorial clarification, changed “Refurbished circuit breakers shall not be used” to “Refurbished circuit breakers are not used.” (No technical change)
110	S8.3.1.1.5, “Class 1E Electric Equipment Design Bases and Criteria,” 4 TH bullet, 2 ND sentence	As editorial clarification, changed “New circuit breakers shall be specified” to “New circuit breakers are specified.” (No technical change)
111	S8.3.1.1.5, “Testing,” 1 ST and 2 ND sentences	Added Reference 8.3-37 after IEEE 338. Deleted “Refer to Subsection 8.3.4.2.” The COL item at 8.3.4.2 has been deleted. (No technical change)
112	S8.3.1.1.6, “Grounding,” 1 ST sentence	As editorial clarification, changed “grounding will comply” to “grounding complies.” (No technical change)
113	S8.3.1.1.6, “Grounding,” 1 ST sentence	Removed the mention of IEEE 665 and IEEE 1050. These IEEE standards are listed as references and discussed in Section 8A.1, not Section 8.3. (No technical change)
114	S8.3.1.1.6, “Bus Protection”	As editorial clarification, changed “circuits” to “circuit breakers” and changed “feeders” to “feeder breakers.” (No technical change)
115	S8.3.1.1.6, “Bus Protection,” 1 ST bullet	Removed bus differential protection, as the breakers themselves do not have bus differential. Added a new 4 TH bullet addressing the differential protection.
116	S8.3.1.1.6, “Bus Protection,” 8 TH bullet	Added bullet stating, “The 480V power center motor feeder breakers have instantaneous, inverse-time overload and

		ground fault protection.”
117	S8.3.1.1.7, 1 ST para., 3 RD sentence	As editorial clarification, changed “power will be supplied” to “power is supplied.” (No technical change)
118	S8.3.1.1.7, 2 ND para.	As editorial clarification, changed “protective relaying logic and control system” to “diesel generator protective relaying logic and control system.” Also, changed “electric power distribution system” to “medium voltage distribution system.” This revised statement will provide better clarification as to where these signals are being generated. (No technical change)
119	S8.3.1.1.7, “LOPP,” 1 ST para., 2 ND sentence	As editorial clarification, changed “made” to “initiated” when describing the auto transfer from normal preferred power supply to alternate preferred power supply. (No technical change)
120	S8.3.1.1.7, “LOPP,” 2 ND para., 1 ST sentence	As editorial clarification, changed “feeder breakers will trip” to “feeder breakers trip.” (No technical change)
121	S8.3.1.1.7, “LOPP,” 2 ND para., 2 ND sentence	As editorial clarification, changed “Large pump motor breakers” to “Medium voltage motor breakers.” (No technical change)
122	S8.3.1.1.7, “LOPP,” 2 ND para., 5 TH sentence	As editorial clarification, changed “large motor loads are sequence started as required” to “loads are sequentially energized as required.” (No technical change)
123	S8.3.1.1.7, “LOCA Following LOPP,” 2 ND sentence	As editorial clarification, changed “sequencing shall already have started” to “sequencing shall have started.” (No technical change)
124	S8.3.1.1.7, “Loss of Alternate Preferred Power Source During Standby Onsite Power Source Paralleling Test,” 1 ST sentence	As editorial clarification, changed “AC power source” to “affected bus.” (No technical change)
125	S8.3.1.1.8, 1 ST para., 1 ST sentence	Deleted the reference to 10 CFR 50.2. 10 CFR 50.2 contains only the definition of design bases, not the requirements. (No technical change)
126	S8.3.1.1.8, 3 RD para., 1 ST sentence	As an editorial clarification, clarified “AC power” to “backup AC power.” Also, moved “when the normal and

		alternate preferred power supplies are not available” from the end of the 2 ND sentence to the end of the 1 ST sentence. (No technical change)
127	S8.3.1.1.8, “Redundant (non-safety) Standby AC Power Supplies,” 3 RD sentence	Deleted “or for bus transfer.” (No technical change)
128	S8.3.1.1.8, “Ratings and Capability,” 2 ND bullet	As editorial clarification, changed “an unacceptable voltage drop” to “an acceptable voltage limit.” This correct grammar is consistent with the intent of the statement. (No technical change)
129	S8.3.1.1.8, “Ratings and Capability,” 3 RD bullet	As editorial clarification, changed “time that will not challenge” to “time that does not challenge.” (No technical change)
130	S8.3.1.1.8, “Ratings and Capability,” 4 TH bullet	As editorial clarification, changed “sum of the loads of its load group of PIP loads and safety-related battery chargers” to “sum of its PIP loads and battery chargers.” The new phrase is more concise and does not incorrectly use the term “load group.” (No technical change)
131	S8.3.1.1.8, “Starting Circuits and Systems,” 1 ST para., 1 ST sentence	As editorial clarification, changed “on loss of bus voltage” to “upon loss of AC power.” (No technical change)
132	S8.3.1.1.8, “Starting Circuits and Systems,” 1 ST para., 2 ND sentence	As editorial clarification, changed “relays will initiate” to “relays initiate.” (No technical change)
133	S8.3.1.1.8, “Starting Circuits and Systems,” 2 ND para., 2 ND sentence	As editorial clarification, clarified “preferred power supply” to “normal preferred power supply.” (No technical change)
134	S8.3.1.1.8, “Automatic Shedding, Loading, and Isolation,” 2 ND sentence	As editorial clarification, changed “incoming preferred” to “incoming normal preferred.” (No technical change)
135	S8.3.1.2.1, “GDC 18,” 1 ST para., 3 RD sentence	As editorial clarification, added “and meet GDC 18 requirements.” (No technical change)
136	S8.3.1.2.1, “GDC 18,” 3 RD bullet, 2 ND sentence	As editorial clarification, moved “under conditions as close to design as practicable” from the beginning of the sentence to the end. (No technical change)

137	S8.3.1.2.2, 3 RD para., 1 ST sentence	As editorial clarification, changed “equipment in service has been the citing” to “equipment in service is the citing.” (No technical change)
138	S8.3.1.3.1, 3 RD sentence	As editorial clarification, changed “design will eliminate” to “design eliminates.” (No technical change)
139	S8.3.1.4.1, “Cable derating and cable tray fill,” 3 RD sentence	As an editorial clarification, revised to state that tray fill is as established in Subsection 8.3.3.2. (No technical change)
140	S8.3.1.4.1, “Cable routing in potentially harsh environmental areas”	Removed “and armored cable,” as separation is by conduits and as described in Subsection 8.3.3.2. (No technical change)
141	S8.3.1.4.1, “Primary containment electrical penetration assemblies,” 2 ND para., 1 ST sentence	As editorial clarification, removed the word “all.” This should not change the intent of the statement, but clarifies that redundant interrupting devices are provided for circuits where the possible fault current is greater than the penetration rating. (No technical change)
142	S8.3.1.4.1, “General,” 1 ST para., 1 ST sentence	As editorial clarification, added “(Reference 8.3-33)” after IEEE 603. (No technical change)
143	S8.3.1.4.1, “General,” 1 ST para., 1 ST sentence	As editorial clarification, removed the mention of GDC 3. This GDC is not required by the Chapter 8 SRP, and thus is not listed in Table 8.1-1. Removal of the mention of GDC 3 in 8.3.1.4.1 is meant only for consistency and does not change the ESBWR requirements for separation. (No technical change)
144	S8.3.1.4.1, “General,” 2 ND para., 2 ND sentence	As editorial clarification, changed “with one division out of service” to “with one unaffected division out of service.” (No technical change)
145	S8.3.1.4.1, “Spatial Separation and/or Protective Barriers,” 2 ND sentence	As editorial clarification, changed “cable areas shall equal or exceed” to “cable areas meets or exceeds.” (No technical change)
146	S8.3.1.4.1, “Main Control Room and Relay Panels”	As editorial clarification, re-named subtitle to “Main Control Room Panels.” Also, revised the content to read, “The main control room panels are located in a safety-related structure in which there are no potential sources of missiles or pipe breaks.”

		(No technical change)
147	S8.3.1.4.1, “Other Safety-Related Systems,” (5), b. & c.	As editorial clarification, replaced multiple instances of “squib valves” and “squib valve initiators” with “valve squibs.” This better indicates one valve with multiple squibs on each valve. (No technical change)
148	S8.3.2.1, 4 TH para.	Added the statement, “Battery cycle times are shown in Table 8.3-2.” (No technical change)
149	S8.3.2.1.1, 1 ST para., 2 ND sentence	In accordance with the response to RAI 8.3-52 S02, changed “two separate battery sets for each division” to “two separate batteries in each division.”
150	S8.3.2.1.1, 1 ST para., 3 RD sentence	In accordance with the response to RAI 8.3-52 S02, changed “Each set supplies power to the safety-related inverters” to “Each battery supplies power to its safety-related inverter.”
151	S8.3.2.1.1, 1 ST para., 3 RD sentence	As editorial clarification, changed “design basis event” to “design basis accident.” (No technical change)
152	S8.3.2.1.1, “Station Blackout,” 2 ND sentence	Deleted the reference to 10 CFR 50.2. 10 CFR 50.2 contains only the definition of design bases, not the requirements. (No technical change)
153	S8.3.2.1.2, 1 ST para., 2 ND sentence	Added “except the 250 VDC load groups A and B.” Added the statement “The A and B load groups each have two normal battery chargers, one standby battery charger, two batteries, a ground detection panel, and two DC distribution panels.”
154	S8.3.2.1.2, 3 RD para.	As editorial clarification, revised to read, “The nonsafety-related DC power is required for standby lighting, control and switching functions such as the control of the main generator circuit breaker, 13.8 kV, 6.9 kV and 480V switchgear, DC motors, control relays, meters and indicators.” (No technical change)
155	S8.3.2.1.2, “Nonsafety-Related Batteries”	As editorial clarification, removed “at 25 deg C (77 deg F)” in the first and second paragraphs. This is more consistent with the discussion of the safety-related batteries in subsection 8.3.2.1.1. (No technical change)

156	S8.3.2.1.2, “Nonsafety-Related Battery Chargers,” 1 ST para., 5 TH sentence	As editorial clarification, revised the statement to read, “Each normal charger is supplied from a separate power center than its standby charger, and is backed by the standby diesel-generator.” (No technical change)
157	S8.3.2.1.2, “Nonsafety-Related Battery Chargers,” 2 ND para., 2 ND sentence	As editorial clarification, revised the statement to read, “Standby chargers are supplied from a different power center than the normal charger.” (No technical change)
158	S8.3.2.1.2, “Nonsafety-Related Battery Chargers,” 3 RD para., 5 TH sentence	Removed the sentence regarding maximum output ripple for the charger. It is not intended for this information to be addressed in the DCD. (No technical change)
159	S8.3.2.1.2, “Ventilation,” 2 ND sentence	As editorial clarification, removed reference to Subsection 8.3.2.1.1 and left only the reference to Subsection 9.4.6. 8.3.2.1.1 is the description of ventilation for the safety-related batteries, and need not be pointed to. Subsection 9.4.6 is where the system will be described. (No technical change)
160	S8.3.2.2.2, “GDC”	As an editorial clarification, revised to state that the GDCs are addressed in Subsection 8.1.5.2.4. (No technical change)
161	S8.3.2.2.2, “Regulatory Guides,” “Regulatory Guide 1.53”	Corrected the title of R.G. 1.53, to be consistent with the correct title of the revision as given in Table 1.9-21. (No technical change)
162	S8.3.2.2.2, “Regulatory Guides,” “Regulatory Guide 1.75”	Corrected the title of R.G. 1.75, to be consistent with the correct title of the revision as given in Table 1.9-21. (No technical change)
163	S8.3.2.2.2, “Regulatory Guides,” “Regulatory Guide 1.75”	As editorial clarification, changed “and will meet the design requirements” to “and meets the design requirements.” (No technical change)
164	S8.3.2.2.2, “Regulatory Guides,” “Regulatory Guide 1.118”	Replaced “See Subsection 8.3.4.2” with “See Subsection 13.5.2 for Operating and Maintenance Procedures and Chapter 16 for Technical Specifications.” The COL item at 8.3.4.2 has been deleted. (No technical change)
165	S8.3.2.2.2, “Regulatory Guides,”	As editorial clarification, changed “batteries will limit the

	“Regulatory Guide 1.128”	release” to “batteries limit the release.” (No technical change)
166	S8.3.3.2, 1 ST para., 1 ST sentence	Replaced “ICEA S-66-524/NEMA WC-7” with “ICEA S-95-658/NEMA WC-70.” The standard listed previously has been withdrawn. (No technical change)
167	S8.3.3.2, 1 ST para., 2 ND sentence	Corrected standard to “ICEA P-54-440/NEMA WC-51.” (No technical change)
168	S8.3.3.2, 2 ND para., 4 TH sentence	As editorial clarification, revised to read, “Refer to IEEE 383 (Reference 8.3-4) and ICEA S-95-658/NEMA WC-70 (Reference 8.3-5).” (No technical change)
169	S8.3.4	As an editorial change, changed the subsection title to “COL Information.” Also, inserted “None” below the title, as all COL items in Section 8.3 have been deleted. (No technical change)
170	S8.3.4.1	Deleted the COL item “Administrative Controls for Bus Grounding Circuit Breakers.” Administrative Procedures are addressed in Subsection 13.5.1. No COL item is required in Chapter 8. This is meant as clarification for the NRC, as requested in the telecon of 4/9/2007, to ensure consistency in the SER.
171	S8.3.4.2	Deleted the COL item “Periodic Testing of Power and Protection Systems.” Operating and Maintenance Procedures are addressed in Subsection 13.5.2. No COL item is required in Chapter 8. This is meant as clarification for the NRC, as requested in the telecon of 4/9/2007, to ensure consistency in the SER.
172	S8.3.4.3	Deleted the COL item “Regulatory Guide 1.160.” Operating and Maintenance Procedures are addressed in Subsection 13.5.2. Maintenance Rule development is addressed in Table 1.9-21. No COL item is required in Chapter 8. This is meant as clarification for the NRC, as requested in the telecon of 4/9/2007, to ensure consistency in the SER.
173	S8.3.5, “References”	As a general editorial change, corrected titles of IEEE, NEMA, and UL standards to be consistent with Table 1.9-22 and correct standard name. (No technical change)
174	S8.3.5, “References,”	Replaced “ICEA S-66-524/NEMA WC-7” with “ICEA S-

	8.3-5	95-658/NEMA WC-70.” The standard listed previously has been withdrawn. (No technical change)
175	S8.3.5, “References,” 8.3-7	Corrected standard to “ICEA P-54-440/NEMA WC-51.” (No technical change)
176	S8.3.5, “References,” 8.3-30	Deleted IEEE C37.20. The standard has been replaced by the IEEE (see Reference 8.3-31, IEEE C37.20.2). (No technical change)
177	S8.3.5, “References,” 8.3-30	Added IEEE 741 as the new Reference 8.3-30. (No technical change)
178	S8.3.5, “References,” 8.3-33	Deleted IEEE C57.12, which was duplication. Added IEEE 603 as Reference 8.3-33. (No technical change)
179	S8.3.5, “References,” 8.3-39	Removed reference to IEEE C37.013 (Reference 8.3-39). This IEEE is applicable to breakers installed between the generator and the transformer terminals. Our main generator circuit breaker will be located after the main transformers, thus this IEEE is not applicable to the ESBWR. Added IEEE 100 as the new Reference 8.3-39. (No technical change)
180	S8.3.5, “References,” 8.3-40	Added IEEE C37.32 as Reference 8.3-40. (No technical change)
181	S8.3.5, “References,” 8.3-41	Added IEEE 666 as Reference 8.3-41. (No technical change)
182	T8.3-2	As editorial clarification, changed table title to “Battery Cycle Times.” The table as given did not meet the definition of duty cycle as defined in IEEE 485, and as discussed previously, that information will not be provided at this time. (No technical change)
183	F8.3-1	Sheet 1 of Figure 8.3-1 (Safety-Related 480 Volt Power Centers) was changed to “Sheet 1 of 1” from “Sheet 1 of 4.” Sheets 2, 3, and 4 of Figure 8.3-1 (Nonsafety-Related 480 Volt Power Centers) were re-numbered to Figure 8.3-2, Sheets 1, 2, and 3. (No technical change)
184	S8A.1.1, 6 TH para., 2 ND	As editorial clarification, re-worded to, “The impedance of

	sentence	the neutral grounding device limits the maximum phase-to-ground current under short-circuit conditions, however, it does not limit the current for a three-phase fault or a phase-to-phase fault at its terminals.” (No technical change)
185	S8A.1.1, 10 TH para., 4 TH sentence	As editorial clarification, changed “main step-up and reserve transformers” to “main step-up transformers, UATs, and RATs.” (No technical change)
186	S8A.1.2, #6, and S8A.4, Reference 8A-9	Added IEEE C62.23, consistent with the listing for RG 1.204 in Table 8.1-1. (No technical change)
187	S8A.1.2, 2 ND para.	As editorial clarification, deleted, “This code is utilized as recommended practices only. It does not apply to electrical generating plants.” It was unclear which standard this statement referred to. It was replaced with a footnote pointing to NFPA 780. (No technical change)
188	8A.2	As editorial clarification, Section 8A.2 “Cathodic Protection” was modified to clarify that the cathodic protection system is the responsibility of the COL applicant. 8A.2.1 was modified to reference the NACE Standards. Also, 8A.2.3 “COL Information” deleted the listed requirements, which were copied from the NACE Standards and need not be listed individually, as adherence to the standards is already required. A COL item (8A.2.3-1-A) was added to require the COL applicant to describe additional minimum requirements for the cathodic protection system. This was always the applicant’s responsibility, but the new structure will make it easier to be addressed. (No technical change)
189	S8A.3.1, 1 ST para., 1 ST sentence	As editorial clarification, revised the typo “fluid warming of process fluids” to “warming of process fluids.” (No technical change)
190	S8A.3.2	As editorial clarification, added the sentence, “The ESBWR standard design has no required safety-related heat tracing.” (No technical change)