

Changes From Revision 1 to Revision 2

DCD Tier 2 Chapter 8

Item	Location (e.g., subsection with paragraph/sentence/item, table with column/row, or figure)	Description of Change
1	S8.1.1	Deleted: “(or other reliable sources such as Combustion Turbine Generators) and “(” later in sentence. ESBWR design now uses diesel generators as standard design. Editorial clarification.
2	S8.1.2.1	Remove reference to COL and refer to Subsection 8.1.7. Editorial Clarification.
3	S8.1.2.2 Off-Site Power System Description, second, third, forth, fifth, sixth and seventh paragraph.	Second paragraph: Clarified text editorial to reflect off-site power as shown on Figure 8.1-1. Third paragraph editorial corrections same reason as second paragraph. Fourth paragraph deleted and replaced: ‘two electrically independent and physically separate’ with “the switchyard connected to the transmission grid”. This change reflects the ESBWR exceptions for GDC 17 and RG 1.32 that commit to DC power to support passive core cooling and containment integrity safety functions with no AC power required for 72 hours and supports grid reliability and stability. Fifth, sixth and seventh paragraphs have editorial clarifications to reflect the Figure 8.1-1.
4	S8.1.3.1	Revise description of the on-site AC power to reflect a medium voltage Main Generator Circuit Breaker instead of a high voltage breaker, two UAT high side medium voltage isolation breakers, and two motor operated disconnects on the high side of the RATs. Revised to reflect unit availability and grid reliability/stability detail design. These editorial changes reflect the detail design requirements of the protective relay scheme as it reflects the Generation System Design, Option 1 for generator breaker configuration that provides for total power source protection (Grid, Main Generator and Standby Diesel Generators), ensures reliability and plant availability and reduces unwanted plant trips. Editorial revised description of power load groups to not reference to “tiers” of power, only “power load groups”. Changes are COLA inputs.
5	S8.1.3.2	Editorial grammar corrections and to reflect 72 hours of DC of DC availability after plant shutdown.

6	S8.1.4	Revised first and second sentence and last sentence to reflect N-2 divisions of power. Add the following clarification to the last sentence, “and Subsection 7.1.1.2.1, which indicate the four separate divisions of safety-related power to each system required for safety, as shown in Figure 8.1-4.”
7	S8.1.5.1, First Sentence	Add, “Unit-specific” to the beginning of the sentence. Delete, “the responsibility of the COL applicant as defined” and replace with, “described within” before ‘Subsection 8.2.1’. Editorial Clarification.
8	S8.1.5.1, second paragraph	Revise to delete: ‘two physically separated’, ‘simultaneous’, ‘One of t’, ‘lines’, ‘as’, and ‘the other transmission line serves as’ and rewrite the paragraph to read; “Electric power from the utility grid to the off-site power system is provided by transmission lines designed and located to minimize the likelihood of failure while ensuring grid reliability. The transmission system serves as the main off-site power circuit (Normal Preferred Power), and the reserve off-site power circuit (Alternate Preferred Power) through the site switchyard.” Same change basis as 3 above and 9 below.
9	S8.1.5.1, third paragraph	Revise to delete; ‘such that the equipment associated with the two transmission lines is physically separated to’ and rewrite the paragraph to read, “The switchyard is designed to minimize the likelihood of simultaneous failure to both the Normal and Alternate Preferred Power sources from the switchyard to the Unit and Reserve Auxiliary Transformers.” Same change basis as 3 and 8 above.
10	S8.1.5.1, fourth paragraph	Change ‘12’ hours to “24” hours for the time required to switch to a spare Main Transformer. Change made due to industry-established standards for this design concept based on COLA comment input.
11	S8.1.5.1	Revised fifth, sixth and seventh paragraphs to reflect detail design and editorial corrections as shown in Figure 8.1-1.
12	S8.1.5.2.1, first and third paragraphs	Added further editorial clarification to reflect description of detail on site power in S8.1.3.
13	S8.1.5.2.1, fourth, fifth and sixth paragraphs.	Editorial revisions to text to describe/clarify details of the N-2 design.
14	S8.1.5.2.2.1, total section.	Editorial clarifications to text to describe in further detail the N-2 design, in that NO AC source is required to support the Class 1E AC loads, which are totally powered by DC batteries through inverters to uninterruptible AC

		distribution should the normal preferred power (AC sources) be lost.
15	S8.1.5.2.2.2, last sentence.	Editorial, '6.9KV' to "6.9 kV".
16	S8.1.5.2.3, second paragraph.	Deleted second paragraph. The N-2 design has deleted all power loads other than I&C loads from the four divisions of safety-related power. The alternative AC backup source is replaced by the existing AC source that used to go to 480AC to 480 VAC isolation transformers before stepping down to 120VAC. The N-2 design has three sources of power to the Safety-related AC power distribution, as described in S8.1.5.2.2.1, second and third paragraphs.
17	S8.1.5.2.4, GDC 4	Revise GDC 4 title to delete 'Missile' and replace with, "Dynamic Effects". Editorial correction.
18	S8.1.5.2.4, GDC 5	Delete, 'is a single unit plant design' and replace with, "does not share any safety-related structure, system or component with any other unit". Editorial clarification.
19	S8.1.5.2.4, GDC 17	Add clarification of exception, "Safety-related DC power sources are provided to support passive core cooling and containment integrity safety functions. No offsite or diesel-generator-derived AC power is required for 72 hours after an abnormal event."
20	S8.1.5.2.4, GDC 18	Add clarification of exception, "Safety-related DC power sources are provided to support passive core cooling and containment integrity safety functions. No offsite or diesel-generator-derived AC power is required for 72 hours after an abnormal event."
21	S8.1.5.2.4, RG 1.6	Deleted last sentence. Not applicable to the ESBWR design.
22	S8.1.5.2.4, RG 1.9	Added clarification at end of non-applicable statement: "therefore this regulatory guide is not applicable to the ESBWR design."
23	S8.1.5.2.4, RG 1.63	Delete, "Light Water Cooled". Editorial correction.
24	S8.1.5.2.4, RG 1.75	Change, 'will meet' to "meets". Editorial clarification.
25	S8.1.5.2.4, RG 1.106	This RG not applicable to the ESBWR passive design. Added non-applicable statement.
26	S8.1.5.2.4, RG 1.108	Delete per NRC notification. Editorial.
27	S8.1.5.2.4, RG 1.118	Delete: "for COL information". Editorial clarification.
28	S8.1.5.2.4, RG 1.129	Delete: "for COL information". Editorial clarification.

29	S8.1.5.2.4, RG 1.160	Delete: “by the COL applicant (see” and “for COL information)”. Editorial clarification.
30	S8.1.5.2.4, BTP ICSB 11 (PSB)	Delete: “for COL information”. Editorial clarification. Add non-applicable statement for ESBWR.
31	S8.1.5.2.4, BTP ICSB 18 (PSB)	Deleted. No S-R, manually controlled electrically operated valves are in the ESBWR design.
32	S8.1.5.2.4, BTP ICSB 21	Delete, “Guidance for Application of Regulatory Guide 1.47” and replace with new title “Supplemental Guidance for Bypass and Inoperable Status Indication for Engineered Safety Features Systems”. NRC title change, editorial.
33	S8.1.5.2.4, BTP PSB 1	Delete: “for COL information”. Add non-applicability statement for ESBWR design.
34	S8.1.5.2.4, BTP PSB 2	Added non-applicability statement since diesels are non-safety.
35	S8.1.5.2.4, NUREG/CR 0660	Editorial, replace ‘for’ with “to”.
36	S8.1.5.2.4, NUREG-0718, Revision 1	Delete: ‘TMI Item regarding application of RG 1.47’ and replace with new title, “Licensing Requirements for Pending Applications for Construction Permits and Manufacturing License,” relating to TMI Item I.D.3, “Safety System Status Monitoring,” regarding the application of Regulatory Guide 1.47.” Editorial.
37	S8.1.6.3 Compliance to Regulatory Requirements and Guidelines	Revise to “8.1.6” and make minor editorial clarifications to the text.
38	S8.1.6 COL Information	Revise number and title to: “8.1.7 COL Unit-Specific Information”. Editorial change.
39	S8.1.6.1 Utility Power Grid Description	Change ‘8.1.6.1’ to’8.1.7.1”. Delete the first sentence and revise description to: “The Main Generator output is delivered to the off-site switchyard through the on-site main step-up transformers and site specific Normal Preferred Power Supply lines, as described within Section 8.2. Items served by the switchyard, unit to switchyard connections, through the site-specific Alternate Preferred Power lines at the RATs, are provided in Table 8.1-2. Transmission system and intra-system ties are further described within Section 8.2.”
40	S8.1.6.2 Offsite Power System Description	Deleted and replaced function with Table 8.1-2 as described in new S8.1.7.1. Editorial.

41	S8.1.7 References	Change numbering from '8.1.7' to "8.1.8". Editorial.
42	Table 8.1-1 On-Site Power System SRP Criteria Applicability Matrix	Revise table applicability reflect changes that are described in Subsection 8.1.5.2.4. Editorial clarifications to reflect ESBWR design basis.
43	(New) Table 8.1.2 Grid Design Parameters	New table added in accordance with 8.1.7.1 for use by the utility to show lines and items served by site specific design in the future COLA/FSAR. Editorial to standardize the DCD for FSAR approval.
44	Figure 8.1-1, Sheet 1	Delete the primary voltage indicated at the UAT and RAT tables and replace with a "*" and another "*" at the 'SEE NOTE 4' by each table. Show detail design for UAT breakers, RAT MODs and main generator circuit breaker location. Delete 13.8 kV supply to the Aux Boilers since detail design for P62 is now oil fired and not electric fired. Editorial clarification.
45	Figure 8.1-1, Sheet 1	Revise the dotted line to go through the drawing above the main transformers, UAT and RAT's and show "OFF SITE POWER" above the line and "ON SITE POWER" below the line. Clarification to show ESBWR standard design as "ON SITE" and OFF SITE to be site specific in design.
46	Figure 8.1-1, Sheets 2 and 3.	Editorial for PIP Bus label and show interlocks at Diesel generator feeder breaker to Normal and Alternate feeder breakers.
47	Figure 8.1-2, Sheets 1 and 2.	Redrawn for clarity.
48	Figure 8.1-3	Added second batteries, chargers and 250VDC power centers to divisions 3 and 4 to provide 72 hours of 120 VAC power with deletion of all 480 VAC safety-related loads.
49	Figure 8.1-4	Added second UPS (rectifiers, diodes, inverters, transformers, static and maintenance transfer switches and 120VAC load buses to divisions 3 and 4 to equalize load capacity and ensure 72 hour ampacity for all four divisions of safety-related power.
50	Figure 8.1-5, sheet 2.	Editorial correction to show correct power center supplying UPS rectifiers A3 and B3.
51	Figure 8.1-6, sheet 1 of 2.	Deleted this figure and the 32 breakers, four transformers, and associated buses that supplied diesel derived 120VAC power to the Class 1E safety-related I & C E-DCIS loads to be used as a second source of power for self-check. Power

		replaced with second battery of each division to ensure 72 hours of DC power without AC source required.
52	Figure 8.1-6, sheet 2 of 2.	Revised sheet number to sheet 1 of 1.

1	S8.2.1.1S#.#.#.#, 2 nd para.	Revised to reflect COLA comments.Replaced “_____” with “_____”
2	S8.2.1.2, complete subsection.S##.#.##, 4 th para., 5 th sent.	Revised the text of this complete subsection to reflect the Figure 8.1-1 sheets 1, 2 and 3 to show detail of separation between off site and on site power. Also describes with clarity the details required to protect the grid as a source from faults within the on site power systems. Also enhances the description of protection for the main on site generatorRewritten for clarity. and stand-by diesel generators. Changes are editorial enhancements, based on actual Main generator revised size. Changes standardize the COLA.
3	S8.2.1.2.1, Switchyard.	Revised the subsection to reflect COLA comments to standardize the DCD for COLA application.
4	S8.2.2, Analysis, GDC 17, GDC 18 and BTP ICSB 11.	GDC 17 exception described to not require AC power sources to support containment isolation or core cooling safety-related functions for 72 hours. GDC 18 has be clarified to reflect that the ESBWR DC systems comply with this GDC and AC power sources are not applicable, as they are not required for 72 hours after an abnormal event. BTP ICSB 11 has deleted ‘for COL information’ as a COLA change to the DCD for standardization..
5	S8.2.3, Design Bases Interface Requirements (Title).S##.#.#.#, new 3 rd para.	Revised subsection title to, “Design Bases Requirements” per COLA comment to remove word ‘interface’.Additional details provide.
6	S8.2.3, bullets one and two.	Editorially revised to reflect both plant description in S8.1, Figure 8.1-1 and ESBWR position to GDC 17 and 18.
7	S8.2.3, bullet 5.	Revised to show both reference to circuit breaker standard and disconnect switch standard per COLA comment.
8	S8.2.3, bullet 6.	Revised fire barrier description to reflect S9A.4.7.
9	S8.2.3, bullet 7.	Editorial correction per COLA standardization.
10	S8.2.3, bullets 8 and 9.	Rewrote bullets 8 and 9 to reflect comment 8, above, and COLA standardization editorial changes. Deleted ‘with separate manholes.’ From end of bullet 8 since the cables are separated by the raceways, not the duct bank, therefore

		there will be by a common manhole to the duct bank.
11	S8.2.3, bullet 10.	Rewrote to reflect COLA standard requirement for Reliability and Stability studies and PRA analysis in Chapter 19.
12	S8.2.3, bullet 11.	Rewritten to reflect Figure 8.1-1 and detail design on interface between RAT failure and the off site switchyard.
13	S8.2.3, bullet 12.	Editorial clarification to reflect standard ESBWR ground grid design and reference S8A.1.1.
14	S8.2.4 Title.	Changed section title to “COL Unit Specific Information” as a COLA comment incorporation.
15	S8.2.4.1	Revised to add Table 8.1-2 as a COL application requirement.
16	S8.2.4.2	Revised to show COL application to address in S8.2.1.2.1.
17	S8.2.4.3, S8.2.4.4 and S8.2.4.5.	Revised to, “This item is addressed in Subsection 8.2.1.2” as a COLA comment incorporation.
18	S8.2.4.6, S8.2.4.7, and S8.2.4.8.	Revised to, “This item is addressed in Subsection 8.2.1.2.1” as a COLA comment incorporation.
19	S8.2.4.9.	Revised to, “This item is addressed in Subsection 8.2.1.2” as a COLA comment incorporation.
20	S8.2.4.10 Title and subsection text.	Revise Title to, “Stability and Reliability of the Off-Site Transmission power Systems” per COLA comment incorporation. Revise subsection text to read, “The Reliability and Stability Study will be provided in the COL application as a supporting document to the COLA.” Cola standardization comment incorporation.
21	S8.2.4.11, Transmission System Reliability.	Deleted this subsection and incorporated into S8.2.4.10
22	S8.2.4.11, New title and text from old S8.2.4.12.	New title’ “Generator Circuit Breaker”, and new text, “The generator circuit breaker meets Appendix A to Standard Review Plan (SRP) Section 8.2 and is site-specific equipment.”
23	S8.2.4.13	Renumbered to S8.2.4.12 and revised text to, “The degraded voltage protection criteria is described in Subsection 8.3.4.4.” COLA standardization ion DCD.
24	S8.2.4.14	Renumbered to 8.2.4.13 and revised text to, “Interface requirements are addressed in Subsection 8.2.3 (Design Basis Requirements). This is a COLA comment incorporation.

25	Reference 8.2-3 (new)	Revised to add new comment as referenced in change 7, above for “IEEE Standard C37.32” with complete title in new text.
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1	S8.3.1.1, first bullet and second bullet.	Delete the second from last sentence in first bullet and place the following sentence in the second bullet to correctly clarify where a reverse power relay prevents Backfeed, “Backfeed to the Standby On-site AC power source is prevented by reverse power relaying.”
2	S8.3.1.1, third and fourth paragraph.	Detail design editorial clarification describes fast transfer between UATs and RATs and deletes the reference to S8.3.4 as a COLA comment incorporation.
2a	S8.3.1.1, fourth paragraph.	Completed the UAT to RAT description of fast transfer and manual fast transfer back to RAT for the PIP Buses, as done for the PG buses in above comment 2 for S8.3.1.1.
3	S8.3.1.1.1, first, second, third, fifth and sixth paragraphs.	Editorial clarifications to the first, second and third paragraphs to reflect Figure 8.1-1 and descriptions within S8.1 and 8.2. Delete last sentence of second and third paragraphs since this will be within the detail design and loading of individual non-safety buses. Fifth and sixth paragraph have had the last sentence of the fifth paragraph and the complete sixth paragraph deleted since the control of breakers will be a plant administrative function as related to the design and control of the “ground truck circuit breaker”. The detail design of the switchgear will be in detail level of design that will not be discussed at the level of detail within the DCD.
4	S8.3.1.1.2, first and third paragraphs.	Minor editorial corrections to reflect descriptions of system boundaries and grammar corrections.
5	S8.3.1.1.2, Isolation Power Centers, Second paragraph, last sentence	Delete the sentence. No clarity is obtained from this statement since there are no “interruptible” Class 1E 480VAC power centers and the ESBWR has no 480VAC Class 1E pumps or valves.
6	S8.3.1.1.2, Isolation Power Centers, fourth paragraph.	Clarified that voltage and frequency relays are installed at both the PIP and Isolation Power Centers and deleted, “for COL applicant/holder items” per COLA standardization of DCD.
7	S8.3.1.1.2, Motor Control Centers, second paragraph.	Delete paragraph since no Class-1E 480VAC motors or MOVs are used in the ESBWR passive design.
8	S8.3.1.1.3,	Revise the first paragraph to reflect four divisions of

	Uninterruptible AC Power Supply, first, second, third, fourth and fifth paragraph.	120VAC Class-1E power supplied by two inverters per division. Delete the last sentence of the first paragraph and delete the complete second paragraph. Revise the third paragraph to reflect 120VAC distribution panels that feed the Reactor Building and the Control Building. These changes delete all 480VAC loads from the four divisions of Class-1E power that now only supply 120VAC for safety-related I&C loads. Revise last sentence of fifth paragraph to clarify the Turbine Building as being Seismic Category II.
9	S8.3.1.1.3, Uninterruptible AC Power Supply, last sentence.	Revised to reflect COLA standardization and corrected reference to 8.3.1.1.5.
10	S8.3.1.1.3, Class 1E Uninterruptible AC Power Supply, second and third paragraphs.	Loads and load function described in the deleted paragraphs will be described within Chapter 7 and not as a part of the power supply system. The detail functions of systems other than electrical power distribution will not be covered in Chapter 8.
11	S8.3.1.1.3, UPS Components.	Revised to include editorial clarifications of each division of power. Equipment added to support two batteries per division instead of only one battery in divisions 3 and 4. Also shows 120VAC as output of each division instead of 480VAC.
12	S8.3.1.1.3, Operating Configuration, under Non-class 1E Uninterruptible Power Supply System.	Moved last three paragraphs to first three paragraphs for clarity and sequence of thought. Deleted the first sentence of the new third paragraph as it is now covered by the last sentence of the new first paragraph. Deleted, “load group” from the first sentence of the fifth paragraph and added, “(Figure 8.1-5 Sh 2 of 2)” to the first sentence of the new sixth paragraph. These changes are all non-technical editorial clarifications.
13	S8.3.1.1.4, third paragraph and first sentence of fourth paragraph.	Delete the complete paragraph. This description refers to the deleted Figure 8.1-6 Sheet 1 of 2, which was deleted since AC power is not needed as a supply to the E-DCIC platforms with two batteries now incorporated in divisions 3 and 4. Revise first sentence of fourth paragraph to delete, “other” and capitalize “Instrument”. This Paragraph reflects the only drawing left in Figure 8.1-6.
14	S8.3.1.1.5, Class 1E Electric Equipment Design Bases and Criteria:	Delete the first, third, and fifth bullets and revise the second and sixth bullet (new first and third bullets) to reflect change which eliminates all safety-related 480VAC motor loads and revises the new third bullet to reflect COLA standardization for circuit breaker interruption capacity and

		circuit breaker procurement
15	S8.3.1.1.5, Testing:	Replaced the word, 'driven' with "actuated" since the ESBWR passive design has deleted motors on MOVs and never had motor actuated devices (pumps). Now all the safety-related devices are actuated as by squibs or solenoids and not driven, as with a motor.
16	S8.3.1.1.6, Circuit Protection, Philosophy of Protection, second and third paragraphs.	Deleted second paragraph since non-safety circuit protection cannot interface with relays or protection of safety-related circuits. Revised third paragraph to delete the words, "on primary and backup circuit breakers" since relaying is on more than just breakers. Editorial clarification.
17	S8.3.1.1.6, Circuit Protection, Bus Protection, first sentence, fifth and sixth bullets and last sentence.	Revise the first sentence to read, "Bus protection for non-Class 1E and Class 1E are as follows:" since the subsection discusses both Class and non-class. Revise the fourth bullet, second sentence to read, "In addition, loss of voltage, degraded voltage and under-frequency relay..." For clarification of design. Add the following clarification statement to the sixth bullet after the word 'loads', "(non-safety only, there are no safety-related 480VAC MCC loads)". Delete the last sentence as a COLA comment since no 480VAC ESBWR safety-related loads.
18	S8.3.1.1.7, Load Shedding and Sequencing on PIP Buses.	Add new second paragraph, "PIP bus ready-to-load signals are generated by the protective relaying logic and control system for the electric power distribution system." Revise old second paragraph, new third paragraph, second sentence, per COLA comment to, "Details of loads and starting sequences are addressed in Subsection 8.3.4.3." Delete the old third paragraph since the protective relaying PLC circuits will control the non-safety PIP load shedding and sequencing and will be shown in a COLA Table.
19	S8.3.1.1.7, LOPP, second paragraph, first and last sentences and old third sentence.	Revise first sentence to delete reference to specific voltage and note that the PIP incoming breakers trip on loss of power and start a new second sentence at, "Large pump motors...". Delete, 'done manually' and add, "a synchronized closure of the feeder breaker by manual action to the selected source." At the end of the last sentence to clarify actions when normal or alternate power has returned. Delete the third through sixth words, 'trips the supply breaker,' since this statement does not correctly describe the LOPP logic.
20	S8.3.1.1.7, Loss of Coolant Accident	Revised to reflect that diesels start with a LOCA and run unloaded in standby and the load shed and sequence is not

	(LOCA).	started. This is a conservative change to the logic.
21	S8.3.1.1.7, LOPP Following LOCA.	Add the following phrase to the end of the sentence, “, except the standby diesels will have started and be in standby, as described in LOCA, above.” This change compliments the conservative action change to LOCA and provides for smoother action during abnormal events.
22	S8.3.1.1.7, LOPP During Standby On-site Power Source Parallel Test.	Revised logic to reflect ESBWR PIP load requirements and required action of breakers to trip and restart diesels and reload to prevent diesel overload.
23	S8.3.1.1.7, Restoration of Off-Site Power.	Added clarity by adding the following to the end of the sentence, “, as described above in LOPP.”
24	S8.3.1.1.7, Protection Against Degraded Voltage.	Delete references to, ‘90%’ and “5minute” as referring to the voltage degradation and a time delay that the degraded voltage can be withstood. The set point for the voltage will be based on later detail design load calculations and the individual large electrical loads and are below the level of detail for non-safety loads in the DCD. The time delay will be based on ensuring that the degraded voltage will not cause damage during the time it is withstood prior to tripping or recovery of voltage to an acceptable level. Since the PIP loads are not safety related except for the Isolation Phase Centers, and those loads have safety related protection, this subsection pertains to degraded voltage that is not applicable to ESBWR per BTP PSB1 as described in S8.3.4.4 and may be applied to all the plant loads powered by both 13.8 and 6.9 kV.
24a	S8.3.1.1.7, Last Paragraph.	Deleted “Protection Against Degraded Voltage” paragraph. This paragraph is only applicable to non-passive nuclear power plants that an AC source for safety-related loads. The ESBWR DCD discusses protective relaying in S8.3.1.1.6, Bus Protection.
25	S8.3.1.1.8, Standby On-site AC Power Supply System, Ratings and Capability, forth, sixth, seventh, eighth and ninth bullet and final COLA sentence.	Forth bullet, delete, ‘next 600 seconds’, and replace with, “time as shown in Table 8.3-4.” Rewrite sixth bullet to describe diesel-loading table in COLA requirements. Delete the seventh, eighth and ninth bullets that relate to safety-related diesel, which is not the passive design of ESBWR.
26	S8.3.1.1.8, “Starting Circuits and Systems”	Provide editorial enhancement for first paragraph. In the first sentence of the second paragraph, delete reference to S8.3.1.1.7. Delete the third paragraph since this would

		pertain to a safety-related diesel and ESBWR does not require safety-related diesels or AC power to provide for safe shutdown for the first 72 hours of shutdown.
27	S8.3.1.1.8, “Automatic Shedding, Loading and Isolation.” First paragraph.	Add clarification, “, except during parallel load testing using the Normal or Alternate preferred power sources (see.” to the end of the first sentence and add “see” in front of the reference.
28	S8.3.1.1.8, “Protection Systems” second paragraph.	Add, “(see Table 8.3-1).” After the words ‘main control room’ in the first sentence and delete the rest of the paragraph. Deleted since RG 1.47 and BTP PSB-2 are not applicable to the non-safety PIP diesels.
29	S8.3.1.1.8, “Local and Remote Control”.	Clarified that transfer of control for the standby onsite AC diesel power source is a key switch in the Main Control Room.
30	S8.3.1.1.8, “Interlocks and Testability”.	Deleted the Last sentence. This statement has nothing to do with interlocks and testing and only repeats an obvious fact.
31	S8.3.1.2, “GDC 17, Electric Power Systems”.	The ESBWR takes exception to the applicability of AC power sources for the first 72 hours following loss of all AC power. The functions of the offsite and onsite power sources are discussed in previous subsections and not applicable to the clarification of GDC 17.
32	S8.3.1.1.8, “GDC 18, Inspection and Testing of Electric Power Systems.”	Added clarification to applicability of GDC 18 for the DC safety-related Class 1E systems for Inspection and testing. There is no Class 1E AC source to be tested. The 120VAC Class 1E power is derived through isolated rectifiers, diodes and inverters and does not depend upon AC to perform the safety-related functions.
33	S8.3.1.2.2, “Quality Assurance Requirements”	Editorial revision to indicate that the QA program is a GE program and not a vendor-derived program as provided for in Chapter 17.
34	S8.3.1.2.3, “Environmental Considerations”	Replaced the word, ‘hostile’ with “harsh” to describe the environment during and after an accident, editorial clarification.
35	S8.3.1.3.1, “Power, Instrumentation and Control Systems”	Deleted “for COL information”. This is a COLA change to delete unnecessary COL references within the DCD.
35a	S8.3.1.3.1, Cable Identification.	Editorial, changed from: “in a manner of” to “with”.
36	S8.3.1.3.1, “Cable Identification”, “Raceway	Details for cable marking and conductor marking will be described within the detail designs. Clarified raceway and conduit marking and removed exact length requirements for

	Identification” and “Sensory Equipment Grouping and Designation Letters”	identification on conduits and raceways as it conflicted with marking individual sections and components. Cable voltage class and special cables are described in the Project Design Manual for detail design and deleted from DCD. Deleted “Sensory Equipment Grouping and Designation Letters” since it is redundant and not needed.
37	S8.3.1.4.1, “Power Systems”, second and forth paragraphs.	Editorial corrections to refer to applicably “Appendix” for “(Fire Separation for Divisional Electrical Systems)” and revise reference to the correct IEEE Standard 384 and RG 1.75.
38	S8.3.1.4.1, “Class 1E Electric Equipment Arrangement”	Replaced, ‘insofar as’ with “to the extent” as an editorial correction. Deleted showing an example of raceway arrangement in paragraph 4 since this is detail design within the Project Design Manual for drafting.
39	S8.3.1.4.1, (1)“Cable routing in potential harsh environmental areas”, (2)“Cable fire protection and detection” (3)“Spacing of wiring and components in control boards, panels and relay racks” and (4)“Electric penetration assembly”.	(1) Reworded for editorial clarification and deleted incorrect reference to Section 9A.5. (2) Correctly added reference to “Section 9A.5” (3) Minor editorial grammar corrections. (4) Minor editorial reference corrections and deleted reference to “COL applicant/holder items” in the text by referencing the correct subsection for, “fault current devices and curves”.
40	S8.3.1.4.1, “General”	Replaced ‘Section’ with “Appendix”, minor editorial.
41	S8.3.1.4.1, “Safety Class Structure”	Same editorial correction as change #38, above.
42	S8.3.1.4.1, “Spatial Separation and/or Protective Barriers”	Add word “redundant” in front of ‘safety-related’ and delete the last sentence, as it is not in context with the subsection intent.
43	S8.3.1.4.1, (1)“Reactor Protection (Trip) System (RPS)” and (2)“Other Safety-Related Systems”	(1) & (2) Same as change #36, above and (2) delete “The two systems” from the beginning of the sentence preceded by “(5)”. Minor editorial corrections. Length of the flexible metal conduit will be a detail design item and called out in the Project Design Manual to reflect NEC Standards.
44	S8.3.2.1, (DC Power Systems) “Description”	Revised second paragraph to reflect 72 hours of DC power from two batteries of each safety-related division of power. Revised last paragraph per COLA request to delete reference, ‘COL applicant/ license items’ and replace with’

		“battery DC cell voltage analysis and ampere hour rating/time”
45	S8.3.2.1.1, “Class 1E Station Batteries and Battery Chargers”, first and second paragraphs.	Revised to reflect 72 hour batteries, deleted ‘motor control’ added new ending to the last sentence of the second paragraph that clarifies that with a division out of service for maintenance a second division may be lost by a single failure and not prevent the plant from performing safe shutdown with only two divisions of Class 1E power.
46	S8.3.2.1.1, “Class 1E Batteries”	Revised first paragraph to correctly describe the four divisions of 72 hour safety-related batteries
46a	S8.3.2.1.1, Station Blackout.	Added the words “for 72 hours” after the word “shutdown” at the end of the second sentence. Deleted the reference to Appendix 8B.
47	S8.3.2.1.1, “Class 1E Battery Chargers”, first and third paragraphs.	Editorial correction to describe the full design capabilities of the standby battery chargers as either battery equalization or replacement of a normal battery charger in the first paragraph. Revise the third paragraph to reflect that each charger can fully charge a safety-related battery to 95% capacity in “24” hours instead of ‘12’ hours “while supplying the full load associated with the individual battery”.
48	S8.3.2.1.1, “Ventilation”	Added reference, “(see Subsection 9.4.6).
49	S8.3.2.1.1, “Inspection, Maintenance, and Testing” and “Station Blackout”	Delete, ‘called for as’ in first sentence. Editorial correction. Corrected typo in last sentence of Station Blackout to reference Subsection 15.5.5 instead of 15.5.
50	S8.3.2.1.2, “Non-Class 1E Station Batteries and Battery Chargers”, 125V and 250V Non-Class 1E DC Systems Configurations”	Added, “a standby battery charger,” to reflect all components common to each DC system shown in Figure 8.1-2 as editorial correction.
51	S8.3.2.1.2, “Non-Class 1E Batteries”.	Deleted last phrase of last sentence in forth paragraph, ‘without loss of availability or capability’ to reflect the fact that during the time the battery is taken out of service for cell replacement it will not be available for use. This is an editorial correction of text.
52	S8.3.2.1.2, “Non-Class 1E Battery Chargers”	Revised first paragraph to reflect that an acceptable alternate design rectifier may be used and that the chargers operate from “480”, not ‘460’ volts AC. Deleted third paragraph that required that the non-safety batteries be fully

		recharged within 12 hours, as this is not necessary or regulatory prompted.
53	S8.3.2.2.1, (Analysis) “Class 1E DC Power Systems”	Deleted the last paragraph and its’ two bullets since the Class 1E DC divisions no longer supply power to be converted to 480VAC for safety-related components. The ESBWR passive design no longer requires AC powered MOV’s for safe shutdown.
54	S8.3.2.2.2, “Regulatory Requirements”	Revised title to, “Regulatory Requirements and Guides” as an editorial clarification of the subsection contents.
55	S8.3.2.2.2, “Regulatory Requirements and Guides”	Revise first paragraph with clarification added to the second sentence to reflect a single failure with a division out of service and still be able to function for 72 hours with the remaining two divisions before requiring recharge. Revise GDCs’ to reflect “(DC only)” as shown in Table 8.1-1. Revise the regulatory guides to reflect the description and applicability of SRP Table 8.1-1 and minor reference correction at RG 1.155.
56	S8.3.3.1, “Resistance of Cables to Combustion”	Delete the second sentence since UL-44 is not applicable to the flame test for cables. Revise last sentence to reflect IEEE “1202” instead of ‘383’ as applicable standard for the flame test and show as new reference “8-3-11” instead of ‘8.3-4’.
57	S8.3.3.2, “Cables and raceways”	Revise reference ‘IPCEA’ to “ICEA”. Add, “(higher temperature qualified conductor such as 125 C may be used instead of 90 C if local conditions require). Replace ‘Col applicant/holder items’ with “certified proof tests” as reference to S8.3.4.5. This is a COLA request.
58	S8.3.3.3 “Localization of Fires”	Delete, ‘however’ in the last sentence of the first paragraph and replace with “described in Appendix 9A” and delete the entire last paragraph as this is a repeat of the text referenced in Appendix 9A.
59	S8.3.3.4 “Fire Detection and Protection Systems”	Deleted this subsection since it is a repeat of Appendix 9A, as referenced above.
60	S8.3.4, “COL Information”, Title	Revise title to, “COL Unit-Specific Information”.
61	S8.3.4.1, “Interrupting Capacity of Electrical Distribution Equipment”	Revised to require no further COL action due to detail design ensuring load calcs and interrupting devices are specified as part of the detail design.
62	S8.3.4.2 “Defective Refurbished Circuit	Revised to clarify the use and procurement of circuit

	Breakers”	breakers as detail design and delete Col Action.
63	S8.3.4.3, Title and new Table	Minor typo to title and added new Table 8.3-4 as COLA correction.
64	S8.3.4.4, “Minimum Starting Voltages for Class 1E Motors”	Deleted this subsection applicability as a COL item as no Class 1E motors are required for the ESBWR design.
65	S8.3.4.5, “Certified Proof Tests on Cable Samples”	Revised the first paragraph to become a positive statement and refer to correct subsection 8.3.3.2 and references 8.3-4 and 8.3-5.
66	S8.3.4.6, “Associated Circuits”	Revised to add Table 8.3-5 to record and justify each such circuit that is applicable and editorially correct to delete COL reference and Position 4 of RG 1.75. COLA requested change.
67	S8.3.4.7, “Electrical Penetration Assemblies”	Added new Figure 8.3-2 and Figure 8.3-3 for plotting the fault current clearing times and to provide a simplified one-line that shows location of the protective devices in the penetration circuits. These changes are per COLA request.
68	S8.3.4.8, “DC Voltage Analysis”	Added new tables 8.3-6 and 8.3-7 for the Class 1E loading profile and the second table for the manufacturers ampere-hour rating for both the safety and non-safety batteries.
69	S8.3.4.9, “Administrative Controls for Bus Grounding Circuit Breakers”	Revised the subsection to state that bus grounding circuit breakers are provided and that administrative controls will be provided by the COL holder. Also referenced Subsection 8.3.1.1.1. Deleted any suggestion as to what the administrative controls should say or how to control the breakers.
70	S8.3.4.10, “Testing of Thermal Overload Bypass Contacts for Motor Operated Valves”	The ESBWR design no longer uses Class 1E MOVs, therefore this subsection is no longer applicable.
71	S8.3.4.11, “Emergency Operating Procedures for Station Blackout”	Revised to reflect that the COL holder will provide site-specific instructions in their EOPs for operator action during a postulated SBO event.
72	S8.3.4.12, “Periodic testing of Power and Protection Devices”	Revised to a positive statement that the testing is in accordance with the RG 1.118 and IEEE 338 and deleted the reference to the COL applicant
73	S8.3.4.13, “Common Industrial Standards Referenced in Purchase Specifications”	Removed the incorrectly used words, ‘shall’ and ‘would’, grammar corrections.

74	S8.3.4.14, “Periodic testing of batteries	Revised per COLA request to reference the Surveillance Requirements of Section 3.8 of unit-specific Technical Specifications and delete reference to, ‘by the COLA applicant’.
75	S8.3.4.15, “Regulatory Guide 1.160”	Revised to, “The Maintenance Rule Program is addressed within the programs section of the COL application.” Per request of the COL applicant.
76	S8.3.5, “References” (NEW Title) replaced old 8.3.5 (title) Additional Industry Standards.	Corrected typo in Reference 8.3-5. Added new References 8.3-10 and 8.3-11 (IEEE 384 and IEEE 1202) as referenced in text in previous described changes. Added references to be used in current 8.3.5, deleted old section title and replaced with “References”.
76A	S8.3.5, Additional Industry Standards.	Deleted the subsection Title. The Table 8.3-5 is a stand-alone table and does require a subsection to act as a reference
77	T8.3-3, “Battery Duty Cycles”	Revised table to reflect eight safety-related 72 hour batteries in the four divisions of safety-related DC power.
78	T8.3-4, “Diesel Generator Loads and Sequencing of Loads”	Added new table as described earlier for COL application, per COLA request.
79	T8.3-5, “Associated Circuits Table”	Added new table to list circuits per COL request.
80	T8.3-6, “Class 1E Battery Loading Profile”	New Table added as COL applicant responsibility.
81	T8.3-7, “Amp. Hour Load Table For 72 Hour Battery Rate”	New table added as COL applicant responsibility.
82	Figure 8.3-1, Sheets 1 through 4.	Redrawn for clarity.
83	Figure 8.3-2, Sheet 1 of X.	Added new figure for penetration fault clearing curves to be provided during the COLA phase.
84	Figure 8.3-3, “Protective Devices for Electric Penetrations One-Line (Simplified)	Added new figure for future new one-lines during the COLA phase.

1	S8A.1.1, “Description”, second paragraph, forth	Revise ‘only one’ to “discrete”. Corrected ‘MCM’ to “kcmil”. Rewrite the description of the generator neutral grounding device per COLA request. Correct reference
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	paragraph sixth paragraph and seventh paragraph.	from ‘units’ to “UATs and RATs”.
2	S8A.1.2, “Analysis”.	Add new second sentence to the first paragraph, “Lightning protection is provided in accordance with Regulatory Guide (RG) 1.204, “Guidelines for Lighting Protection of Nuclear Power Plants.”
3	S8A.1.3, Title and contents of subsection.	Revised to “COL Unit Specific Information” Replaced “244” with “260” and made sentence a positive statement that ground measurements “are performed”, deleted reference to COL applicant and made minor grammatical changes.
4	S8A.2.3, Title and first paragraph.	Revised to “COL Unit Specific Information” Replaced figure to reflect updated piping design. Deleted reference to COL applicant and rewrote to be a positive statement. Added corrected reference to “National Association of Corrosion Engineers (NACE) Standards” as reference 8A-5.
5	S8A-5, new reference.	Added: “National Association of Corrosion Engineers (NACE) Standards.”
Others		
1	Global Editorial and Typo.	Added or removed hyphens, plurals, and corrected verb phrases to simple present verbs.
2	Appendix 8B.	Replaced Appendix 8B with a reference to Subsection 15.5.5. This appendix was mostly a duplicate of S15.5.5, which is referenced in S8.3.2.1.1. DG1145 guidance followed for Passive SBO for Chapter 8.