

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources-Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

- a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and
- b. Two of the three diesel generators (DGs) capable of supplying the onsite Class 1E power distribution subsystem(s).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	<p>A.1 Perform SR 3.8.1.1 for required OPERABLE offsite circuit.</p> <p><u>AND</u></p> <p>A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.3 Restore required offsite circuit to OPERABLE status.	72 hours <u>AND</u> 6 days from discovery of failure to meet LCO
B. One required DG inoperable.	<p>B.1 Perform SR 3.8.1.1 for the required offsite circuit(s).</p> <p><u>AND</u></p> <p>B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.</p> <p><u>AND</u></p> <p>B.3.1 Determine OPERABLE DG(s) is not inoperable due to common cause failure.</p> <p><u>OR</u></p> <p>B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s).</p> <p><u>AND</u></p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p> <p>24 hours</p> <p>24 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.4 Restore required DG to OPERABLE status.	72 hours <u>AND</u> 6 days from discovery of failure to meet LCO
C. Two required offsite circuits inoperable.	C.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. <u>AND</u> C.2 Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition C concurrent with inoperability of redundant required features 24 hours
D. One required offsite circuit inoperable. <u>AND</u> One required DG inoperable.	-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems -Operating," when Condition D is entered with no AC power source to any train. ----- D.1 Restore required offsite circuit to OPERABLE status. <u>OR</u> D.2 Restore required DG to OPERABLE status.	12 hours 12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two required DGs inoperable.	E.1 Restore one required DG to OPERABLE status.	2 hours
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3.	6 hours
	<u>AND</u> F.2 Be in MODE 5.	36 hours
G. Three or more required AC sources inoperable.	G.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.1.1 Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.1.2 -----NOTE----- 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. -----	

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>As specified in Table 3.8.1-1</p>
<p>SR 3.8.1.3 -----NOTE-----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 6300 kW and ≤ 6930 kW.</p>	<p>As specified in Table 3.8.1-1</p>
<p>SR 3.8.1.4 Verify each day tank contains ≥ 533 gal (29.55%) of fuel oil for the DG A and B, and 750 gal (32.54%) of fuel oil for the DG S.</p>	<p>31 days</p>
<p>SR 3.8.1.5 Check for and remove accumulated water from each day tank.</p>	<p>31 days</p>
<p>SR 3.8.1.6 Verify the fuel oil transfer system operates to transfer fuel oil from storage tank to the day tank.</p>	<p>31 days</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.7 -----NOTE----- All DG starts may be preceded by an engine prelube period. ----- Verify each DG starts from standby condition and achieves in ≤ 10 seconds, voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	184 days
<p>SR 3.8.1.8 -----NOTE----- This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify automatic and manual transfer of AC power sources from the normal offsite circuit to each alternate required offsite circuit.</p>	18 months

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.9 -----NOTE-----</p> <p>1. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.</p> <p>2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9.</p> <p>-----</p> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load (987kw) , and:</p> <p>a. Following load rejection, the frequency is ≤ 65 Hz;</p> <p>b. Within 3 seconds following load rejection, the voltage is ≥ 3740 V and ≤ 4580 V; and</p> <p>c. Within 4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>18 months</p>
<p>SR 3.8.1.10 -----NOTE-----</p> <p>This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.9 does not trip and voltage is maintained ≤ 4784 V during and following a load rejection of ≥ 6300 kW and ≤ 6930 kW.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11 -----NOTE-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected shutdown loads through automatic load sequencer, 3. maintains steady state voltage ≥ 3740 V and ≤ 4580 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 -----NOTE-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds after auto-start and during tests, achieves voltage ≥ 3740 V and ≤ 4580 V; b. In ≤ 10 seconds after auto-start and during tests, achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized or auto-connected through the automatic load sequencer from the offsite power system. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13 -----NOTE----- This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal except:</p> <ul style="list-style-type: none"> a. Engine overspeed; b. Generator differential current; c. Low lube oil pressure; d. High crankcase pressure; 	<p>18 months</p>
<p>SR 3.8.1.14 -----NOTE----- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ----- Verify each DG operates for ≥ 24 hours:</p> <ul style="list-style-type: none"> a. For ≥ 2 hours loaded ≥ 6930 kW ; and b. For the remaining hours of the test loaded ≥ 6300 kW. 	<p>18 months</p>

3

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.15 -----NOTE-----</p> <p>1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 6300 kW.</p> <p>Momentary transients outside of load range do not invalidate this test.</p> <p>2. All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 3740 V, and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>18 months</p>
<p>SR 3.8.1.16 -----NOTE-----</p> <p>This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG:</p> <p>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;</p> <p>b. Transfers loads to offsite power source; and</p> <p>c. Returns to ready-to-load operation.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.17 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by:</p> <ul style="list-style-type: none"> a. Returning DG to ready-to-load operation ; and b. Automatically energizing the emergency load from offsite power. 	<p>18 months</p>
<p>SR 3.8.1.18 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify interval between each sequenced load block is within $\pm 10\%$ of design interval for each emergency load sequencer.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTE-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage ≥ 3740 V and ≤ 4580 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.20 -----NOTE----- All DG starts may be preceded by an engine prelube period. ----- Verify when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, voltage ≥ 3740 V and ≤ 4580 V, and frequency \geq 58.8 Hz and ≤ 61.2 Hz.</p>	<p>10 years</p>

Table 3.8.1-1 (page 1 of 1)
Diesel Generator Test Schedule (c)

NUMBER OF FAILURES IN LAST 25 VALID TESTS(a)	FREQUENCY
≤ 3	31 days
≥ 4	7 days ^(b) (but no less than 24 hours)

- (a) Criteria for determining number of failures and valid tests shall be in accordance with Regulatory Position C.2.1 of Regulatory Guide 1.9, Revision 3, where the number of tests and failures is determined on a per DG basis.
- (b) This test frequency shall be maintained until seven consecutive failure free starts from standby conditions and load and run tests have been performed. If, subsequent to the 7 failure free tests, 1 or more additional failures occur, such that there are again 4 or more failures in the last 25 tests, the testing interval shall again be reduced as noted above and maintained until 7 consecutive failure free tests have been performed.
- (c) The unaligned DG shall follow this test schedule.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.2.1 -----NOTE----- The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.16, SR 3.8.1.18, and SR 3.8.1.19. ----- For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, "AC Sources - Operating," except SR 3.8.1.8, SR 3.8.1.17, and SR 3.8.1.20, are applicable.</p>	<p>In accordance with applicable SRs</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more DGs with fuel level</p> <p>1. For DG A or B < 81420 gal (75% / 5 M) and > 70000 gal (60% / 4.5 M); and</p> <p>2. For DG S < 85000 gal (70%) and > 74900 gal (61.7%) in storage tank.</p>	<p>A.1 Restore fuel oil level to within limits.</p>	48 hours
<p>B. One or more DGs with lube oil inventory.</p> <p>1. For DG A or B < 388 gal (88%) and > 333 gal (76%); and</p> <p>2. For DG S < 1200 gal (46.6%) and > 1030 gal (41.4%)</p>	<p>B.1 Restore lube oil inventory to within limits.</p>	48 hours

|
1

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates within limit.	7 days
D. One or more DGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days
E. One or more DGs with starting air receiver pressure < 15.85kg/cm ² (225 psig) and ≥ 8.8kg/cm ² (125psig) for DG A and B, < 38Kg/cm ² and ≥ 20 kg/cm ² for DG S.	E.1 Restore starting air receiver pressure to ≥ 15.85kg cm ² (225 psig) for DG A and B, ≥ 38Kg/cm ² for DG S.	48 hours
F. Required Action and associated Completion Time not met. <u>OR</u> One or more DGs diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains \geq 81,420 gal (75% / 5 M) of fuel for DG A and B, \geq 85,000 gal (70%) of fuel for DG S.	31 days
SR 3.8.3.2	Verify lubricating oil inventory is \geq 388 gal (88%) of lube oil for DG A and B, and \geq 1200 gal (46.6%) of lube oil for DG S.	31 days
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG air start receiver pressure is \geq 15.85 kg/cm ² (225 psig) for DG A and B, and \geq 38 kg/cm ² for DG S.	31 days
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	31 days
SR 3.8.3.6	For each fuel oil storage tank: a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank.	10 years

| 1

| 5

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 The Train A and Train B DC electrical power subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DC electrical power subsystem inoperable.	A.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.4.1 Verify battery terminal voltage is ≥ 129 V on float charge.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.2	<p>Verify no visible corrosion at battery terminals and connectors.</p> <p><u>OR</u></p> <p>Verify battery connection resistance is ≤ 0.01 ohm for inter-cell connections, ≤ 0.01 ohm for inter-rack connections, ≤ 0.01 ohm for inter-tier connections, and ≤ 0.01 ohm for terminal connections.</p>	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration.	18 months
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material.	18 months
SR 3.8.4.5	Verify battery connection resistance is ≤ 0.01 ohm for inter-cell connections, ≤ 0.01 ohm for inter-rack connections, ≤ 0.01 ohm for inter-tier connections, and ≤ 0.01 ohm for terminal connections.	18 months

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.6 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify each battery charger supplies as following(at ≥ 125 V) : Subchannel current(Amps) duration(hours) A & B ≥ 400 ≥ 4 C & D ≥ 200 (normal charger) ≥ 4 C & D ≥ 300 (standby charger) ≥ 3 S (for 5th D/G) ≥ 100 amps ≥ 2 hours</p>	<p>18 months</p>
<p>SR 3.8.4.7 -----NOTE----- 1. The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7 once per 60 months. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.8 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify battery capacity is $\geq 80\%$ of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.</p>	<p>60 months <u>AND</u> 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating 6 <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity $\geq 100\%$ of manufacturer's rating 6</p>

(TSC-MS1/2-312)

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems -Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more required DC electrical power subsystems inoperable.</p>	<p>A.1.1 Declare affected required feature(s) inoperable.</p>	<p>Immediately</p>
	<p><u>OR</u></p>	
	<p>A.2.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.2 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.3 Initiate action to suspend operations involving positive reactivity additions.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY									
<p>SR 3.8.5.1 -----NOTE----- The following SRs are not required to be performed: SR 3.8.4.6, SR 3.8.4.7, and SR 3.8.4.8. ----- For DC sources required to be OPERABLE, the following SRs are applicable:</p> <table data-bbox="438 723 1023 837"> <tr> <td>SR 3.8.4.1</td> <td>SR 3.8.4.4</td> <td>SR 3.8.4.7</td> </tr> <tr> <td>SR 3.8.4.2</td> <td>SR 3.8.4.5</td> <td>SR 3.8.4.8</td> </tr> <tr> <td>SR 3.8.4.3</td> <td>SR 3.8.4.6</td> <td></td> </tr> </table>	SR 3.8.4.1	SR 3.8.4.4	SR 3.8.4.7	SR 3.8.4.2	SR 3.8.4.5	SR 3.8.4.8	SR 3.8.4.3	SR 3.8.4.6		<p>In accordance with applicable SRs</p>
SR 3.8.4.1	SR 3.8.4.4	SR 3.8.4.7								
SR 3.8.4.2	SR 3.8.4.5	SR 3.8.4.8								
SR 3.8.4.3	SR 3.8.4.6									

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for Train A and Train B batteries shall be within the limits of Table 3.8.6-1.

APPLICABILITY: When associated DC electrical power subsystems are required to be OPERABLE.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each battery.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more batteries with one or more battery cell parameters not within Category A or B limits.	A.1 Verify pilot cell[s] electrolyte level and float voltage meet Table 3.8.6-1 Category C limits. <u>AND</u>	1 hour
	A.2 Verify battery cell parameters meet Table 3.8.6- Category C limits.	24 hours <u>AND</u>
	<u>AND</u> A.3 Restore battery cell parameters to Category A and B limits of Table 3.8.6-1.	Once per 7 days thereafter 31 days

(continued)

ACTIONS(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>One or more batteries with average electrolyte temperature of the representative cells < 60 °F.</p> <p><u>OR</u></p> <p>One or more batteries with one or more battery cell parameters not within Category C values.</p>	<p>B.1 Declare associated battery inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.6.1 Verify battery cell parameters meet Table 3.8.6-1 Category A limits for designated pilot cells.</p>	<p>7 days</p>

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE	FREQUENCY
SR 3.8.6.2 Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	92 days <u>AND</u> Once within 24 hours after a battery discharge < 110 V <u>AND</u> Once within 24 hours after a battery overcharge > 150 V
SR 3.8.6.3 Verify average electrolyte temperature of representative cells is $\geq 15^{\circ}\text{C}$ (60 °F.)	92 days

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameters Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ALLOWABLE LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ 0.635 cm (1/4 inch) above maximum level indication mark ^(a)	> Minimum level indication mark, and ≤ 0.635 cm (1/4 inch) above maximum level indication mark ^(a)	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity ^{(b)(c)}	≥ 1.200	≥ 1.195 <u>AND</u> Average of all connected cells > 1.205	Not more than 0.020 below average of all connected cells <u>AND</u> Average of all connected cells ≥ 1.195

- (a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.
- (b) Corrected for electrolyte temperature and level. Level correction is not required, however, when battery charging is < 2 amps when on float charge.
- (c) A battery charging current of < 2 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters - Operating

LCO 3.8.7 The required Class 1E 120V inverters shall be OPERABLE.

-----NOTE-----

One/two inverters may be disconnected from its/their associated DC bus for ≤ 24 hours to perform an equalizing charge on its/their associated common battery, provided:

- a. The associated AC vital bus(es) is energized from its Class 1E constant voltage source transformers; and
- b. All other AC vital buses are energized from their associated OPERABLE inverters.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required inverter inoperable.	A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems-Operating" with any vital bus de-energized. ----- Restore inverter to OPERABLE status.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, frequency, and alignment to required AC vital buses.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters -Shutdown

LCO 3.8.8 Inverters shall be OPERABLE to support the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems -Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more [required] inverters inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.8.1 Verify correct inverter voltage, frequency, and alignments to required AC vital buses.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems-Operating

LCO 3.8.9 Train A and Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable.	A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
B. One AC vital bus inoperable.	B.1 Restore AC vital bus subsystem to OPERABLE status.	2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
C. One DC electrical power distribution subsystem inoperable.	C.1 Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO

(continued)

ACTIONS(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	D.2 Be in MODE 5.	36 hours
E. Two trains with inoperable distribution subsystems that result in a loss of safety function.	E.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.9.1 Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems -Shutdown

LCO 3.8.10 The necessary portion of AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	

(continued)

ACTIONS(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status.	Immediately
	<u>AND</u> A.2.5 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.10.1 Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.11 The 5th Diesel Generator Electrical support system

LCO 3.8.11 The 5th Diesel Generator support Electrical system Shall be OPERABLE

APPLICABILITY: When 5th Diesel Generator is required to be OPERABLE.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, or DC, distribution support subsystem inoperable.	A.1 Declare the 5th Diesel Generator inoperable.	Immediately
	<u>AND</u> A.2 Enter applicable Conditions and required Action of LCO 3.8.1 and LCO 3.8.2, for AC sources-Operating and AC source-Shutdown °	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.11.1 For 5th Diesel Generator required to be OPERABLE, the SRs of Specification 3.8.4 , “DC Sources-Operating”, are applicable.	In accordance with applicable SRs

(continued)

SURVEILLANCE REQUIREMENTS(continued)

SURVEILLANCE		FREQUENCY
SR 3.8.11.2	For 5th Diesel Generator required to be OPERABLE, the SRs of Specification 3.8.6, “Battery Cell Parameters”, are applicable.	In accordance with applicable SRs
SR 3.8.11.3	For 5th Diesel Generator required to be OPERABLE, the SR of Specification 3.8.7, “Inverters-Operating”, are applicable.	In accordance with applicable SR
SR 3.8.11.4	For 5th Diesel Generator required to be OPERABLE, the SR of Specification 3.8.9, “Distribution Systems -Operating”, are applicable.	In accordance with applicable SR