

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources—Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

- a. Two qualified circuits (345KV Switchyard and 69KV line through the startup/standby transformers) between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and
- b. Two of three Emergency diesel generators (EDGs)*

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

(continued)

* An inoperable diesel generator (A or B) may be removed from service when aligning the fifth diesel generator to the (A or B) class 1E distribution system. The statements which follow establish requirements to restore inoperable diesel generators to operable status in a specified time period. The restore requirement may be satisfied by aligning an available diesel generator to replace the inoperable diesel generator.

ACTIONS (continued)		
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	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 EDG inoperable.	B.1 Perform SR 3.8.1.1 for OPERABLE required offsite circuit(s). <u>AND</u> B.2 Declare required feature(s), supported by the inoperable EDG, inoperable when the redundant required feature(s) are inoperable. <u>AND</u> B.3.1 Determine OPERABLE EDG is not inoperable due to common cause failure. <u>OR</u> B.3.2 Perform SR 3.8.1.2 for OPERABLE EDG. <u>AND</u>	1 hour <u>AND</u> Once per 8 hours thereafter 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s) 24 hours 24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.4 Restore required EDG 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 the redundant required feature(s) are 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 feature(s) 24 hours
D. One required offsite circuit inoperable. <u>AND</u> One required EDG inoperable.	-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.7, “Distribution Systems --- Operating”, when Condition D is entered with no AC power source to any division. ----- D.1 Restore required offsite circuit to OPERABLE status. <u>OR</u> D.2 Restore required EDG to OPERABLE status.	12 hours 12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two required EDGs inoperable.	E.1 Restore one required EDG 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.	12 hours
	<u>AND</u> F.2 Be in MODE 4.	36 hours
G. Three or more required AC sources inoperable for reasons other than Condition E.	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

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.2 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified EDG 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. <p>-----</p> <p>Verify each EDG* starts from standby conditions and achieves steady state: for EDG A or B, voltage ≥ 3740 V and ≤ 4580 V, frequency ≥ 58.8 Hz and ≤ 61.2 Hz; for the 5th EDG, voltage ≥ 3870 V and ≤ 4730 V, frequency ≥ 61.2 Hz and ≤ 63.6 Hz.</p>	<p>As specified in Table 3.8.1-1</p>
<p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> 1. EDG 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 EDG 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 EDG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 3400 kW and ≤ 3700 kW.</p>	<p>As specified in Table 3.8.1-1</p>

(continued)

* For the 5th EDG, the selection of the ESF buses shall rotate through the four ESF buses.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each day tank contains ≥ 1136 l (300 gal) of fuel oil for EDG A or B and ≥ 1070 l (285 gal) of fuel oil for the 5th EDG.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	184 days
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tank to the day tank.	92 days
SR 3.8.1.7	<p>-----NOTES-----</p> <p>All EDG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each EDG starts from standby condition and achieves, in ≤ 10 seconds, for EDG A or B, voltage ≥ 3740 V and ≤ 4580 V, frequency ≥ 58.8 Hz and ≤ 61.2 Hz; for the 5th EDG, voltage ≥ 3870 V and ≤ 4730 V, frequency ≥ 61.2 Hz and ≤ 63.6 Hz.</p>	184 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.8 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 2. If performed with the EDG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 <p>-----</p> <p>Verify each EDG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ol style="list-style-type: none"> a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 3740 V and ≤ 4580 V for EDG A or B, and ≥ 3870 V and ≤ 4730 V for the 5th EDG. c. Within 4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz for EDG A or B, and ≥ 61.2 Hz and ≤ 63.6 Hz for the 5th EDG. 	<p>18 months</p>
<p>SR 3.8.1.9 -----NOTES-----</p> <p>This Surveillance shall not be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each EDG operating at a power factor ≤ 0.9 does not trip and voltage is maintained ≤ 4800 V during and following a load rejection of ≥ 3400 kW and ≤ 3700 kW.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.10 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All EDG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, portion of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. 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; and c. EDG 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 sequencer, 3. maintains steady state voltage ≥ 3740 V and ≤ 4580 V for EDG A or B, and ≥ 3870 V and ≤ 4730 V for the 5th EDG. 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz for EDG A or B, and ≥ 61.2 Hz and ≤ 63.6 Hz for the 5th EDG, 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 3.8.1.11 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All EDG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. However, portion of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each EDG 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 for EDG A or B, and ≥ 3870 V and ≤ 4730 V for the 5th EDG. b. In ≤ 10 seconds after auto-start and during tests, achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz for EDG A or B, and ≥ 61.2 and ≤ 63.6 Hz for the 5th EDG. c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized from the offsite power system. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 -----NOTES----- This Surveillance shall not be performed in MODE 1, 2 or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR ----- Verify each EDG’s automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ECCS initiation signal except:</p> <ul style="list-style-type: none"> a. Engine overspeed; b. Generator differential current; c. Low lube oil pressure (for the 5th EDG only); and d. Start failure (for EDG A/B only) 	<p>18 months</p>
<p>SR 3.8.1.13 -----NOTES----- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. This Surveillance shall not be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ----- Verify each EDG operating at a power factor ≤ 0.9 operates for ≥ 24 hours:</p> <ul style="list-style-type: none"> a. For ≥ 2 hours loaded ≥ 3780 kW and ≤ 4100 kW; and b. For the remaining hours of the test loaded ≥ 3400 kW and ≤ 3700 kW. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated ≥ 2 hours loaded ≥ 3400 kW and ≤ 3700 kW. Momentary transients outside of load range do not invalidate this test. 2. All EDG starts may be preceded by an engine prelube period. <p>-----</p> <p>Verify each EDG starts and achieves, in ≤ 10 seconds, for EDG A or B, voltage ≥ 3740 V and ≤ 4580 V, frequency ≥ 58.8 Hz and ≤ 61.2 Hz; for the 5th EDG, voltage ≥ 3870 V and ≤ 4730 V, frequency ≥ 61.2 Hz and ≤ 63.6 Hz.</p>	<p>18 months</p>
<p>SR 3.8.1.15 -----NOTES-----</p> <p>This Surveillance shall not be performed in MODE1, 2, or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each EDG:</p> <ol style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.16 -----NOTES-----</p> <p>1. This Surveillance shall not normally be performed in MODE1, 2, or 3. However, portion of this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify with an EDG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by :</p> <p>a. Returning EDG to ready-to-load operation.</p> <p>b. Automatically energizing the emergency load from offsite power.</p>	<p>18 months</p>
<p>SR 3.8.1.17 -----NOTES-----</p> <p>For low pressure ECCS pumps, the time delay setting shall be in accordance with Table 3.3.5.1-1 of LCO 3.3.5.1.</p> <p>-----</p> <p>Verify each load sequence time delay relay setting is within $\pm 10\%$ of design value for each emergency load.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.18 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All EDG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, portion of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. 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 ECCS initiation signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. EDG 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 sequence. 3. achieves steady state voltage ≥ 3740 V and ≤ 4580 V, for EDG A or B, and ≥ 3870 V and ≤ 4730 V for the 5th EDG. 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, for EDG A or B, and ≥ 61.2 Hz and ≤ 63.6 Hz for the 5th EDG. 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTES----- All EDG starts may be preceded by an engine prelube period. ----- Verify, when started simultaneously from standby condition, each aligned EDG achieves, in ≤ 10 seconds, for EDG A or B, voltage ≥ 3740 V and ≤ 4580 V, frequency ≥ 58.8 Hz and ≤ 61.2 Hz; for the 5th EDG, voltage ≥ 3870 V and ≤ 4730 V, frequency ≥ 61.2 Hz and ≤ 63.6 Hz.</p>	<p>10 years</p>

Table 3.8.1-1
Diesel Generator Test Schedule^(c)

NUMBER OF FAILURES IN LAST 25 VALID TESTS ^(a)	FREQUENCY
≤ 3	31 days
≥ 4	7 days ^(b) (but ≥ 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 4, where the number of tests and failures is determined on a per EDG 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 EDG shall follow this test schedule.

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources—Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

-----NOTE-----
Specification 16.6.15 shall be met

- a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8, “Distribution Systems—Shutdown”, and
- b. One diesel generator (EDG) capable of supplying one division of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8.

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required offsite circuit inoperable.</p>	<p>-----NOTE----- Enter applicable Condition and Required Actions of LCO 3.8.8, with one required division de-energized as a result of Condition A. -----</p> <p>A.1 Declare affected required feature(s), with no offsite power available, from a required circuit inoperable.</p> <p><u>OR</u></p> <p>A.2.1 Suspend CORE ALTERATIONS.</p> <p><u>AND</u></p>	<p>Immediately</p> <p>Immediately</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Suspend movement of irradiated fuel assemblies in the secondary containment. <u>AND</u>	Immediately
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs). <u>AND</u>	Immediately
	A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately
	B. One required EDG inoperable.	B.1 Suspend CORE ALTERATIONS. <u>AND</u>
B.2 Suspend movement of irradiated fuel assemblies in secondary containment. <u>AND</u>		Immediately
B.3 Initiate action to suspend OPDRVs. <u>AND</u>		Immediately
B.4 Initiate action to restore required EDG to OPERABLE status.		Immediately

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.2.1 -----NOTES----- The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.8 through SR 3.8.1.10, SR 3.8.1.12 through SR 3.8.1.15, SR 3.8.1.17, and SR 3.8.1.18. ----- For AC sources required to be OPERABLE the SRs of Specification 3.8.1, except SR 3.8.1.16 and SR 3.8.1.19, is 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 emergency diesel generator (EDG).

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required EDGs with fuel oil level < 227,000 l (60,000 gal) and > 194,679 l (51,429 gal) for EDG A or B, and < 166,500 l (44,000 gal) and > 142,763 l (37,714 gal) for the 5th EDG	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more required EDGs with lube oil inventory < 1060 l (280 gal) and > 908 l (240 gal) for EDG A or B, and < 1348 l (356 gal) and > 1155 l (305 gal) for the 5th EDG	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more required EDGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates to within limit.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more required EDGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days
E. One or more required EDGs with starting air receiver pressure < 14 kg/cm ² (200 psig) and ≥ 6.6 kg/cm ² (94 psig) or for required 5th EDG with starting air receiver pressure < 30 kg/cm ² (426 psig) and ≥ 20 kg/cm ² (284 psig)	E.1 Restore starting air receiver pressure to within limits	48 hours
F. Required Action and associated Completion Time not met. <u>OR</u> One or more required EDGs with 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 EDG inoperable	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify the associated fuel oil storage tank contains $\geq 227,000$ l (60,000 gal) of fuel for each required EDG A or B, and $\geq 166,500$ l (44,000 gal) of fuel for the required 5th EDG.	31 days
SR 3.8.3.2	Verify lube oil inventory is ≥ 1060 l (280 gal) for each required EDG A or B, and ≥ 1348 l (356 gal) for the required 5th EDG.	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 required EDG air start receiver pressure is ≥ 14.1 kg/cm ² (200 psig) for required EDG A or B, and ≥ 30 kg/cm ² (426 psig) for the required 5th EDG.	31 days
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	92 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

LCO 3.8.4 The Division 1 and Division 2 station service DC electrical power subsystems shall be OPERABLE.

and

The 5th EDG DC electrical power subsystems shall be OPERABLE, when the 5th EDG required to be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

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 of Condition A not met for station service DC subsystem SWBD #6.	B.1 Declare the HPCI system inoperable	Immediately
C. Required Action and Associated Completion Time of Condition A not met for station service DC subsystem other than SWBD #6.	C.1 Be in MODE 3.	12 hours
	<u>AND</u> C.2 Be in MODE 4.	36 hours
D. Required Action and associated Completion Time of Condition A not met for the 5 th EDG DC subsystem.	D.1 Declare the 5 th EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 130 V on float charge.	7 days
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. <u>OR</u> Verify battery connection resistance is $\leq 2.5E-4$ ohm ($250 \mu\Omega$) for inter-cell connections, $\leq 2.5E-4$ ohm ($250 \mu\Omega$) for inter-rack connections, $\leq 2.5E-4$ ohm ($250 \mu\Omega$) for inter-tier connections, and $\leq 2.5E-4$ ohm ($250 \mu\Omega$) for terminal connections.	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration.	18 months
SR 3.8.4.4	Remove visible corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	18 months
SR 3.8.4.5	Verify battery connection resistance is $\leq 2.5E-4$ ohm ($250 \mu\Omega$) for inter-cell connections, $\leq 2.5E-4$ ohm ($250 \mu\Omega$) for inter-rack connections, $\leq 2.5E-4$ ohm ($250 \mu\Omega$) for inter-tier connections, and $\leq 2.5E-4$ ohm ($250 \mu\Omega$) for terminal connections.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.6 -----NOTES----- This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify each required battery charger supplies \geq 140 amps for station service subsystems, and \geq 100 amps for 5th EDG DC subsystems at \geq 129 V for \geq 2 hours.</p>	<p>18 months</p>
<p>SR 3.8.4.7 -----NOTES----- 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, or 3. 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 -----NOTES----- This Surveillance shall not be performed in MODE 1, 2, or 3. 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 <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity $\geq 100\%$ of manufacturer's rating</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources—Shutdown

LCO 3.8.5 DC electrical power subsystems shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.8, “Distribution Systems—Shutdown.”

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more required DC electrical power subsystems inoperable.</p>	<p>A.1 Declare affected required feature(s) inoperable.</p> <p><u>OR</u></p>	<p>Immediately</p>
	<p>A.2.1 Suspend CORE ALTERATIONS.</p> <p><u>AND</u></p>	<p>Immediately</p>
	<p>A.2.2 Suspend movement of irradiated fuel assemblies in the secondary containment.</p> <p><u>AND</u></p>	<p>Immediately</p>
	<p>A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.</p> <p><u>AND</u></p>	<p>Immediately</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 -----NOTES----- 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: 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>	<p>In accordance with applicable SRs</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for the station service and the 5th EDG 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 Table 3.8.6-1 Category A or B limits.	A.1 Verify pilot cells 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 3.8.6-1 Category C limits. <u>AND</u>	24 hours Once per 7 days thereafter
	<u>AND</u> A.3 Restore battery cell parameters to Category A and B limits of Table 3.8.6-1.	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 not within limits.</p> <p><u>OR</u></p> <p>One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 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.</p>	<p>7 days</p>

(continued)

SURVEILLANCE REQUIREMENTS

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 battery discharge < 110 V <u>AND</u> Once within 24 hours after battery overcharge > 150 V
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is $\geq 13^{\circ}\text{C}$ (55°F) for each station service battery and the 5 th EDG battery.	92 days

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameter 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 \geq 1.195

- (a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during equalizing charges provided it is not overflowing.
- (b) Corrected for electrolyte temperature and level. Level correction is not required, however, when on float charge battery charging current is < 1 amp for station service batteries and < 0.5 amp for the 5th EDG batteries.
- (c) A battery charging current of < 1 amp for station service batteries and < 0.5 amp for the 5th EDG batteries 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 Distribution Systems—Operating

LCO 3.8.7 Division 1 and Division 2 AC and DC electrical power distribution subsystems shall be OPERABLE.

and

The 5th EDG DC electrical power distribution subsystems shall be OPERABLE, when the 5th EDG required to be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more AC electrical power distribution subsystems inoperable.	A.1 Restore AC electrical power distribution subsystems to OPERABLE status.	8 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
B. One or more station service DC electrical power distribution subsystems, other than SWBD#6 and/or MCC2A, inoperable.	B.1 Restore DC electrical power distribution subsystems to OPERABLE status.	2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
C. Required Action and associated Completion Time of Condition A, or B not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. The 5 th EDG DC electrical power distribution subsystems inoperable.	D.1 Declare the 5 th EDG inoperable.	Immediately
E. The DC electrical power distribution subsystems of SWBD#6 and/or MCC2A inoperable.	E.1 Declare the HPCI system inoperable.	Immediately
F. Two or more electrical power distribution subsystems inoperable that result in a loss of function.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.7.1 Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Distribution Systems—Shutdown

LCO 3.8.8 The necessary portions of the AC and DC electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC or DC electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable. <u>OR</u>	Immediately
	A.2.1 Suspend CORE ALTERATIONS. <u>AND</u>	Immediately
	A.2.2 Suspend handling of irradiated fuel assemblies in the secondary containment. <u>AND</u>	Immediately
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel. <u>AND</u>	Immediately
	A.2.4 Initiate actions to restore required AC and DC electrical power distribution subsystems to OPERABLE status. <u>AND</u>	Immediately

(continued)

ACTIONS (continued)		
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.8.1 Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	7 days