

### 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;
- b. Two diesel generators (DGs) capable of supplying the onsite Class 1E power distribution subsystem(s); and
- c. Automatic load sequencers for Train A and Train B.

APPLICABILITY:    MODES 1, 2, 3, and 4

-----NOTE-----  
One DG may be synchronized with the offsite power source under administrative controls for the purpose of surveillance testing.  
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ACTIONS

-----NOTE-----  
LCO 3.0.4.b is not applicable to DGs.  
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CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required offsite circuit inoperable.</p>	<p>A.1 Perform SR 3.8.1.1 for required OPERABLE offsite circuit.</p> <p><u>AND</u></p> <p>-----NOTE----- In MODES 1, 2 and 3, the TDAFW pump is considered a required redundant feature. -----</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</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>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p>
	<p>A.3 Restore required offsite circuit to OPERABLE status.</p>	<p>72 hours</p> <p><u>AND</u></p> <p>6 days from discovery of failure to meet LCO</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each day tank contains $\geq 1440$ gal of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 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>-----NOTE----- All DG starts may be preceded by an engine prelube period. -----</p> <p>Verify each DG starts from standby condition and achieves:</p> <p>a. in <math>\leq 10</math> seconds, voltage <math>\geq 6480</math> V and frequency <math>\geq 58.8</math> Hz; and</p> <p>b. steady state, voltage <math>\geq 6480</math> V and <math>\leq 7150</math>V, and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	184 days
SR 3.8.1.8	<p>-----NOTE----- This Surveillance shall not normally 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. -----</p> <p>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-----  This Surveillance shall not normally 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.  -----  Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ul style="list-style-type: none"> <li>a. Following load rejection, the frequency is <math>\leq 66.75</math> Hz; and</li> <li>b. Within 3 seconds following load rejection, the voltage is <math>\geq 6480</math> V and <math>\leq 7150</math> V.</li> </ul>	<p>18 months</p>
<p>SR 3.8.1.10 Verify each DG does not trip and voltage is maintained <math>\leq 8280</math> V during and following a load rejection of <math>\geq 6300</math> kW and <math>\leq 7000</math> kW.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.</li> </ol> <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses;</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. energizes permanently connected loads in <math>\leq 10</math> seconds,</li> <li>2. energizes auto-connected shutdown loads through automatic load sequencer,</li> <li>3. maintains steady state voltage <math>\geq 6480</math> V and <math>\leq 7150</math> V,</li> <li>4. maintains steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz, and</li> <li>5. supplies permanently connected and auto-connected shutdown loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 -----NOTES----- All DG starts may be preceded by prelube period. -----</p> <p>Verify on an actual or simulated Safety Injection (SI) actuation signal each DG auto-starts from standby condition and:</p> <ul style="list-style-type: none"> <li>a. In <math>\leq 10</math> seconds after auto-start and during tests, achieves voltage <math>\geq 6480</math> V and frequency <math>\geq 58.8</math> Hz;</li> <li>b. Achieves steady state voltage <math>\geq 6480</math> V and <math>\leq 7150</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz;</li> <li>c. Operates for <math>\geq 5</math> minutes;</li> </ul>	<p>18 months</p>
<p>SR 3.8.1.13 -----NOTE----- For Unit 2, testing need only be performed for LOOP concurrent with SI until startup following 2RFO5. -----</p> <p>Verify each DG's automatic trips are bypassed on actual or simulated (i) loss of voltage signal on the emergency bus, and (ii) SI actuation signal, except:</p> <ul style="list-style-type: none"> <li>a. Engine overspeed; and</li> <li>b. Generator differential current.</li> </ul>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14 -----NOTES-----                      Momentary transients outside the load and power factor ranges do not invalidate this test.                      -----                      Verify each DG operates for <math>\geq 24</math> hours:</p> <ul style="list-style-type: none"> <li>a. For <math>\geq 2</math> hours loaded <math>\geq 6900</math> kW and <math>\leq 7700</math> kW; and</li> <li>b. For the remaining hours of the test loaded <math>\geq 6300</math> kW and <math>\leq 7000</math> kW.</li> </ul>	<p>18 months</p>
<p>SR 3.8.1.15 -----NOTES-----                      1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated <math>\geq 2</math> hours loaded <math>\geq 6300</math> kW and <math>\leq 7000</math> kW. Momentary transients outside of load range do not invalidate this test.                      2. All DG starts may be preceded by an engine prelube period.                      -----                      Verify each DG starts and achieves:</p> <ul style="list-style-type: none"> <li>a. in <math>\leq 10</math> seconds, voltage <math>\geq 6480</math> V and frequency <math>\geq 58.8</math> Hz; and</li> <li>b. steady state, voltage <math>\geq 6480</math> V, and <math>\leq 7150</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</li> </ul>	<p>18 months</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.16 -----NOTE-----            This Surveillance shall not normally 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.            -----</p> <p>Verify each DG:</p> <ul style="list-style-type: none"> <li>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;</li> <li>b. Transfers loads to offsite power source; and</li> <li>c. Returns to ready-to-load operation.</li> </ul>	<p>18 months</p>
<p>SR 3.8.1.17 -----NOTE-----            This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.            -----</p> <p>Verify, with a DG operating in test mode and connected to its bus, an actual or simulated SI actuation signal overrides the test mode by:</p> <ul style="list-style-type: none"> <li>a. Returning DG to ready-to-load operation; and</li> <li>b. Automatically energizing the emergency load from offsite power.</li> </ul>	<p>18 months</p>

(continued)

**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.18 -----NOTE-----  This Surveillance shall not normally 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.  -----  Verify interval between each sequenced load block is within <math>\pm 10\%</math> of design interval for each automatic load sequencer.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.</li> </ol> <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated SI actuation signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses; and</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. energizes permanently connected loads in <math>\leq 10</math> seconds,</li> <li>2. energizes auto-connected emergency loads through load sequencer,</li> <li>3. achieves steady state voltage <math>\geq 6480</math> V and <math>\leq 7150</math> V,</li> <li>4. achieves steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz, and</li> <li>5. supplies permanently connected and auto-connected emergency loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol>	<p>18 months</p>

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