

ATTACHMENT A

NPF-38-125

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

<u>FUNCTIONAL UNIT</u>	<u>TRIP VALUE</u>	<u>ALLOWABLE VALUES</u>
5. SAFETY INJECTION SYSTEM SUMP RECIRCULATION (RAS)		
a. Manual RAS (Trip Buttons)	Not Applicable	Not Applicable
b. Refueling Water Storage Pool - Low	10.0% (57,967 gallons)	9.3% (53,910 gallons)
c. Automatic Actuation Logic	Not Applicable	Not Applicable
6. LOSS OF POWER		
a. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	$\geq$ 3245 volts	$\geq$ 3245 volts
b. 480 V Emergency Bus Undervoltage	$\geq$ 372 volts	$\geq$ 354 volts
c. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	$\geq$ 3640 volts	$\geq$ 3604 volts
7. EMERGENCY FEEDWATER (EFAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Steam Generator (1&2) Level - Low	$\geq$ 27.4% <sup>(3) (4)</sup>	$\geq$ 26.7% <sup>(3) (4)</sup>
c. Steam Generator $\Delta$ P - High (SG-1 > SG-2)	$\leq$ 127.6 psid	$\leq$ 136.6 psid
d. Steam Generator $\Delta$ P - High (SG-2 > SG-1)	$\leq$ 127.6 psid	$\leq$ 136.6 psid
e. Steam Generator (1&2) Pressure - Low	$\geq$ 764 psia <sup>(2)</sup>	$\geq$ 748 psia <sup>(2)</sup>
f. Automatic Actuation Logic	Not Applicable	Not Applicable
g. Control Valve Logic (Wide Range SG Level - Low)	$\geq$ 36.3% <sup>(3) (5)</sup>	$\geq$ 35.3% <sup>(3) (5)</sup>

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
2. <u>Pressurizer Pressure-Low</u>	
a. Safety Injection (ECCS) (1) High Pressure Safety Injection (2) Low Pressure Safety Injection	≤ 30.0*/18.5** ≤ 45.5*/34.0**
b. Containment Isolation	≤ 23.5*/12.0**
c. Containment Cooling	≤ 31.0*/19.5**
3. <u>Containment Pressure-High</u>	
a. Safety Injection (ECCS) (1) High Pressure Safety Injection (2) Low Pressure Safety Injection	≤ 30.0*/18.5** ≤ 45.5*/34.0**
b. Containment Isolation	≤ 23.5*/12.0**
c. Main Steam Isolation	≤ 4.0*/4.0**
d. Main Feedwater Isolation	≤ 6.0*/6.0**
e. Containment Cooling	≤ 31.0*/19.5**
4. <u>Containment Pressure--High-High</u>	
a. Containment Spray Pump	≤ 15.2*/2.7**
b. Containment Spray Valves	≤ 11.0*/11.0**
c. CCW to RCP Valves	≤ 23.5*/12.0**
5. <u>Containment Area Radiation-High#</u>	
Containment Purge Valves Isolation	≤ 6.2*/6.2**
6. <u>Steam Generator Pressure-Low</u>	
a. Main Steam Isolation	≤ 4.0*/4.0**
b. Main Feedwater Isolation	≤ 6.0*/6.0**
7. <u>Refueling Water Storage Pool-Low</u>	
Containment Sump Recirculation	≤ 120.0*/108.5**
8. <u>4.16 kV Emergency Bus Undervoltage (Loss of Voltage)</u>	
Loss of Power (0 volts)	≤ 2***
9. <u>480V Emergency Bus Undervoltage (Loss of Voltage)</u>	
Loss of Power (0 volts)	N.A.
10. <u>4.16 kV Emergency Bus Undervoltage (Degraded Voltage)</u>	
Loss of Power	≤ 11***

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

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4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months by transferring manually and automatically unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE\*:

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:
  1. Verifying the fuel level in the diesel oil feed tank,
  2. Verifying the fuel level in the diesel generator fuel oil storage tank,
  3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the diesel oil feed tank,
  4. Verifying the diesel starts and accelerates to at least 600 rpm ( $60 \pm 1.2$  Hz) in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  within 10 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:
    - a) Manual.
    - b) Simulated loss-of-offsite power by itself.
    - c) Simulated loss-of-offsite power in conjunction with an ESF actuation test signal.
    - d) An ESF actuation test signal by itself.

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\*All planned starts for the purpose of surveillance in this section may be preceded by a prelube period as recommended by the manufacturer.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verify the other properties specified in Table 1 of ASTM-D975-1977 and Regulatory Guide 1.137, Revision 1, October 1979, Position 2.a., when tested in accordance with ASTM-D975-1977; analysis shall be completed within 14 days after obtaining the sample but may be performed after the addition of new fuel oil. Failure to meet this requirement shall not affect diesel generator OPERABILITY; however, corrective action shall be initiated within 72 hours to return the fuel oil supply to within acceptable limits.
- d. At least once per 18 months during shutdown by:
  1. Verifying the generator capability to reject a load of greater than or equal to 498 kW (SI pump) while maintaining voltage at  $4160 \pm 420$  volts and frequency at  $60 +4.5, -1.2$  Hz.
  2. Verifying the generator capability to reject a load of 4400 kW without tripping. The generator voltage shall not exceed 4784 volts during and following the load rejection.
  3. Simulating a loss-of-offsite power by itself, and:
    - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.
    - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds after the auto-start signal, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 420$  volts and  $60 + 1.2, -0.3$  Hz during this test.
  4. Verifying that on an SIAS actuation test signal (without loss-of-offsite power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady-state generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- b. Simulating a loss-of-offsite power in conjunction with an SIAS actuation test signal, and
  - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.
  - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds after the auto-start signal, energizes the auto-connected emergency loads through the load sequencer and operates for greater than or equal to 5 minutes. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 1.2, -0.3$  Hz during this test.
  - c) Verifying that all automatic diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a safety injection actuation signal.
6. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to an indicated 4700 to 4900 Kw\* and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 4200 to 4400 Kw.\* The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal; the steady-state generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2, -0.3$  Hz during this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.3b.\*\*
7. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 4400 kW.

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\*This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variation due to changing bus loads shall not invalidate the test.

\*\*If Surveillance Requirement 4.8.1.1.2d.3b is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at an indicated 4200-4400 kw\* for 1 hour or until internal operating temperatures have stabilized.

ATTACHMENT B

NPF-38-125

TABLE 3.3-4 (Continued)

## ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

FUNCTIONAL UNIT	TRIP VALUE	ALLOWABLE VALUES
5. SAFETY INJECTION SYSTEM SIMP RECIRCULATION (RAS)		
a. Manual RAS (Trip Buttons)	Not Applicable	Not Applicable
b. Refueling Water Storage Pool - Low	10.0% (57,907 gallons)	9.3% (53,910 gallons)
c. Automatic Actuation Logic	Not Applicable	Not Applicable
6. LOSS OF POWER		
a. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	$\geq 3245$ volts	$\geq 3245$ volts
b. 480 V Emergency Bus Undervoltage	$\geq 372$ volts	$\geq 354$ volts
c. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	$\geq 3640$ volts	$\geq 3604$ volts
7. EMERGENCY FEEDWATER (EFAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Steam Generator (1&2) Level - Low	$\geq 27.4\%$ <sup>(3) (4)</sup>	$\geq 26.7\%$ <sup>(3) (4)</sup>
c. Steam Generator $\Delta P$ - High (SG-1 > SG-2)	$\leq 127.6$ psid	$\leq 135.6$ psid
d. Steam Generator $\Delta P$ - High (SG-2 > SG-1)	$\leq 127.6$ psid	$\leq 136.6$ psid
e. Steam Generator (1&2) Pressure - Low	$\geq 764$ psia <sup>(2)</sup>	$\geq 748$ psia <sup>(2)</sup>
f. Automatic Actuation Logic	Not Applicable	Not Applicable
g. Control Valve Logic (Wide Range SG Level - Low)	$\geq 36.3\%$ <sup>(3) (5)</sup>	$\geq 35.3\%$ <sup>(3) (5)</sup>

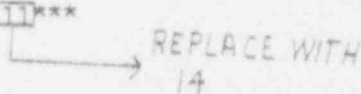
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TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
2. <u>Pressurizer Pressure-Low</u>	
a. Safety Injection (ECCS) (1) High Pressure Safety Injection (2) Low Pressure Safety Injection	$\leq 30.0^*/18.5^{**}$ $\leq 45.5^*/34.0^{**}$
f. Containment Isolation	$\leq 23.5^*/12.0^{**}$
c. Containment Cooling	$\leq 31.0^*/19.5^{**}$
3. <u>Containment Pressure-High</u>	
a. Safety Injection (ECCS) (1) High Pressure Safety Injection (2) Low Pressure Safety Injection	$\leq 30.0^*/18.5^{**}$ $\leq 45.5^*/34.0^{**}$
b. Containment Isolation	$\leq 23.5^*/12.0^{**}$
c. Main Steam Isolation	$\leq 4.0^*/4.0^{**}$
d. Main Feedwater Isolation	$\leq 6.0^*/6.0^{**}$
e. Containment Cooling	$\leq 31.0^*/19.5^{**}$
4. <u>Containment Pressure--High-High</u>	
a. Containment Spray Pump	$\leq 15.2^*/2.7^{**}$
b. Containment Spray Valves	$\leq 11.0^*/11.0^{**}$
c. CCW to RCP Valves	$\leq 23.5^*/12.0^{**}$
5. <u>Containment Area Radiation--High#</u>	
Containment Purge Valves Isolation	$\leq 6.2^*/6.2^{**}$
6. <u>Steam Generator Pressure-Low</u>	
a. Main Steam Isolation	$\leq 4.0^*/4.0^{**}$
b. Main Feedwater Isolation	$\leq 6.0^*/6.0^{**}$
7. <u>Refueling Water Storage Pool-Low</u>	
Containment Sump Recirculation	$\leq 120.0^*/108.5^{**}$
8. <u>4.16 kV Emergency Bus Undervoltage (Loss of Voltage)</u>	
Loss of Power (0 volts)	$\leq 2^{***}$
9. <u>480V Emergency Bus Undervoltage (Loss of Voltage)</u>	
Loss of Power (0 volts)	N.A.
10. <u>4.16 kV Emergency Bus Undervoltage (Degraded Voltage)</u>	
Loss of Power	$\leq 11^{***}$ 

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months by transferring manually and automatically unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE\*:

- a. In accordance with the frequency specified in Table 4.8-1 or a STAGGERED TEST BASIS by:
  1. Verifying the fuel level in the diesel oil feed tank,
  2. Verifying the fuel level in the diesel generator fuel oil storage tank,
  3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the diesel oil feed tank,
  4. Verifying the diesel starts and accelerates to at least 600 rpm ( $60 \pm 1.2$  Hz) in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:
    - a) Manual. REMOVE ——— INSERT, -240
    - b) Simulated loss-of-offsite power by itself.
    - c) Simulated loss-of-offsite power in conjunction with an ESF actuation test signal.
    - d) An ESF actuation test signal by itself.

\*All planned starts for the purpose of surveillance in this section may be preceded by a prelube period as recommended by the manufacturer.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verify the other properties specified in Table 1 of ASTM-D975-1977 and Regulatory Guide 1.137, Revision 1, October 1979, Position 2.a., when tested in accordance with ASTM-D975-1977; analysis shall be completed within 14 days after obtaining the sample but may be performed after the addition of new fuel oil. Failure to meet this requirement shall not affect diesel generator OPERABILITY; however, corrective action shall be initiated within 72 hours to return the fuel oil supply to within acceptable limits.

d. At least once per 18 months during shutdown by:

1. Verifying the generator capability to reject a load of greater than or equal to 498 kW (HPSI pump) while maintaining voltage at  $4160 \pm 420$  volts and frequency at  $60 \pm 4.5, -1.2$  Hz.

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2. Verifying the generator capability to reject a load of 4400 kW without tripping. The generator voltage shall not exceed 4784 volts during and following the load rejection.

3. Simulating a loss-of-offsite power by itself, and:

- a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.

- b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds after the auto-start signal, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 1.2, -0.3$  Hz during this test.

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4. Verifying that on an SIAS actuation test signal (without loss-of-offsite power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady-state generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

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ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

5. Simulating a loss-of-offsite power in conjunction with an SIAS actuation test signal, and
- a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.
  - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds after the auto-start signal, energizes the auto-connected emergency loads through the load sequencer and operates for greater than or equal to 5 minutes. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 1.2, -0.3$  Hz during this test.
  - c) Verifying that all automatic diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a safety injection actuation signal.

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6. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to an indicated 4700 to 4900 Kw\* and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 4200 to 4400 Kw.\* The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal; the steady-state generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2, -0.3$  Hz during this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.3b.\*\*
7. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 4400 kW.

REMOVE

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\*This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variation due to changing bus loads shall not invalidate the test.

\*\*If Surveillance Requirement 4.8.1.1.2d.3b is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at an indicated 4200-4400 kw\* for 1 hour or until internal operating temperatures have stabilized.