

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITIONS FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system, and
- b. Two separate and independent diesel generators, each with:
 1. A day fuel tank containing a minimum volume of 325 gallons of fuel, and
 2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and
 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a1. With an offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- a2. With a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours for the remaining diesel generator unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4

*Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITIONS FOR OPERATIONS (Continued)

ACTION (Continued)

within 24 hours unless the diesel generator is already operating.* Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- c. With one diesel generator inoperable, in addition to ACTION a or b above, verify that;
1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and
 2. When in MODE 1, 2 or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours unless the diesel generators are already operating.* Restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- e. With two of the above required generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a. within 1 hour and at least once per 8 hours thereafter. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS

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

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 3A0416 or 3A0603 are used to provide a source of power, the following busses are required.

for 3A0416
3A04
3B04
3D1

for 3A0603
3A06
3B06
3D2

- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power from the normal offsite power source to the alternate offsite power source.

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 day fuel tank,
 2. Verifying the fuel level in the fuel storage tank,
 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
 4. Verifying the diesel generator starts from ambient conditions and accelerates to at least 900 rpm.* The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz after reaching 900 rpm. The diesel generator shall be started for this test by using one of the following signals:

*A diesel generator start (in less than 10 seconds) from ambient conditions shall be performed at least once per 184 days. All other engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

- a) Manual
 - b) Simulated loss of offsite power by itself
 - c) Simulated loss of offsite power in conjunction with an ESF actuation test signal
5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kw in less than or equal to 77 seconds*, and operates with a load greater than or equal to 4700 kw for at least an additional 60 minutes, and
 6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.
 - c.1. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D4057-81 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-81.
 2. At least once every 92 days by obtaining a sample of fuel oil in accordance with ASTM-D4057-81 and verifying that particulate contamination is less than 10mg/liter when checked in accordance with ASTM-D2276-83, Method A.
 - d. At least once per 18 months by:
 1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
 2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kW while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 5.0 Hz.
 3. Verifying the generator capability to reject a load of 4700 kW without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

*All engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

4. Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization 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 and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.
5. Verifying that on an ESF 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 4360 ± 436 volts and 60 ± 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.
6. Deleted.
7. Simulating a loss of offsite power in conjunction with an ESF test signal, and
 - a) Verifying de-energization 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, energizes the auto connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and $60 + 1.2/-0.3$ Hz during this test.
 - c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and low-low lube oil pressure, are automatically bypassed.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start* signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 volts and $60 + 1.2/-0.3$ Hz for the first two hours of this test and 4360 ± 436 volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.8.1.1.2.d.4.b.
9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kw.
10. Verifying the diesel generator's capability to:
 - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
 - b) Transfer its loads to the offsite power source, and
 - c) Be restored to its standby status.
11. Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.
12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.
13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within $\pm 10\%$ of its design interval.
14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

*The engine start for the purpose of this surveillance test may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the engine is minimized.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.
- f. At least once per 10 years by:
 - 1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and
 - 2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures In
Last 20 Valid Tests.*

Test Frequency

≤ 1

At least once per 31 days

≥ 2

At least once per 7 days**

* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

**This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

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ATTACHMENT B
(Proposed Specification)

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITIONS FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system, and
- b. Two separate and independent diesel generators, each with:
 1. A day fuel tank containing a minimum volume of 325 gallons of fuel, and
 2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and
 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a1. With an offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- a2. With a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours for the remaining diesel generator unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4

*Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITIONS FOR OPERATIONS (Continued)

ACTION (Continued)

within 24 hours unless the diesel generator is already operating.* Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- c. With one diesel generator inoperable, in addition to ACTION a or b above, verify that;
1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and
 2. When in MODE 1, 2 or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours unless the diesel generators are already operating.* Restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- e. With two of the above required generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a. within 1 hour and at least once per 8 hours thereafter. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS

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

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 3A0416 or 3A0603 are used to provide a source of power, the following busses are required.

for 3A0416
3A04
3B04
3D1

for 3A0603
3A06
3B06
3D2

- b. Demonstrated OPERABLE at least once per refueling interval during shutdown by transferring (manually and automatically) unit power from the normal offsite power source to the alternate offsite power source.

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 day fuel tank,
 2. Verifying the fuel level in the fuel storage tank,
 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
 4. Verifying the diesel generator starts from ambient conditions and accelerates to at least 900 rpm.* The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz after reaching 900 rpm. The diesel generator shall be started for this test by using one of the following signals:

*A diesel generator start (in less than 10 seconds) from ambient conditions shall be performed at least once per 184 days. All other engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

- a) Manual
 - b) Simulated loss of offsite power by itself
 - c) Simulated loss of offsite power in conjunction with an ESF actuation test signal
5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kw in less than or equal to 77 seconds*, and operates with a load greater than or equal to 4700 kw for at least an additional 60 minutes, and
 6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.
 - c.1. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D4057-81 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-81.
 2. At least once every 92 days by obtaining a sample of fuel oil in accordance with ASTM-D4057-81 and verifying that particulate contamination is less than 10mg/liter when checked in accordance with ASTM-D2276-83, Method A.
- d. At least once per refueling interval by:
 1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
 2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kW while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 5.0 Hz.
 3. Verifying the generator capability to reject a load of 4700 kW without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

*All engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

4. Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization 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 and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.
5. Verifying that on an ESF 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 4360 ± 436 volts and 60 ± 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.
6. Deleted.
7. Simulating a loss of offsite power in conjunction with an ESF test signal, and
 - a) Verifying de-energization 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, energizes the auto connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and $60 + 1.2/-0.3$ Hz during this test.
 - c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and low-low lube oil pressure, are automatically bypassed.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start* signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 volts and $60 + 1.2/-0.3$ Hz for the first two hours of this test and 4360 ± 436 volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.8.1.1.2.d.4.b.
9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kw.
10. Verifying the diesel generator's capability to:
 - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
 - b) Transfer its loads to the offsite power source, and
 - c) Be restored to its standby status.
11. Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.
12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.
13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within $\pm 10\%$ of its design interval.
14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

*The engine start for the purpose of this surveillance test may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the engine is minimized.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.
- f. At least once per 10 years by:
 - 1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and
 - 2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures In
Last 20 Valid Tests.*

Test Frequency

≤ 1

At least once per 31 days

≥ 2

At least once per 7 days**

* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

**This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

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ATTACHMENT C
(Existing Specifications)

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITIONS FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system, and
- b. Two separate and independent diesel generators, each with:
 1. A day fuel tank containing a minimum volume of 325 gallons of fuel, and
 2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and
 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a1. With an offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- a2. With a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours for the remaining diesel generator unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- c. With one diesel generator inoperable, in addition to ACTION a or b above, verify that;
1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and
 2. When in MODE 1, 2 or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours unless the diesel generators are already operating.* Restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and each Class 1E 4 kV Bus shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 2A0416 or 2A0603 are used to provide a source of power, the following busses are required.

for 2A0416
2A04
2B04
2D1

for 2A0603
2A06
2B06
2D2

- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power from the normal offsite power source to the alternate offsite power source.

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 day fuel tank,
2. Verifying the fuel level in the fuel storage tank,
3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
4. Verifying the diesel generator starts from ambient conditions and accelerates to at least 900 rpm.* The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz after reaching 900 rpm. The diesel generator shall be started for this test by using the manual start 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

*A diesel generator start (in less than 10 seconds) from ambient conditions shall be performed at least once per 184 days. All other engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kW in less than or equal to 77 seconds*, and operates with a load greater than or equal to 4700 kW for at least an additional 60 minutes, and
 6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.
- c.1. At least once per 92 days and from new fuel prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D4057-81 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-81.
2. At least once every 92 days by obtaining a sample of fuel oil in accordance with ASTM-D4057-81 and verifying that particulate contamination is less than 10mg/liter when checked in accordance with ASTM D2276-83, Method A.
- d. At least once per 18 months by:
1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
 2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kW while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 5.0 Hz.
 3. Verifying the generator capability to reject a load of 4700 kW without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

*All engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4. Simulating a loss of offsite power by itself, and
 - a) Verifying de-energization 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 and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.
5. Verifying that on an ESF 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 4360 ± 436 volts and 60 ± 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.
6. Deleted
7. Simulating a loss of offsite power in conjunction with an ESF test signal, and
 - a) Verifying de-energization 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, energizes the auto-connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and $60 + 1.2/-0.3$ Hz during this test.
 - c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low-low lube oil pressure, are automatically bypassed.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz after the start* signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 volts and $60 \pm 1.2 / -0.3$ Hz for the first 2 hours of this test and 4360 ± 436 volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.4.b.
9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kW.
10. Verifying the diesel generator's capability to:
 - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
 - b) Transfer its loads to the offsite power source, and
 - c) Be restored to its standby status.
11. Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.
12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.
13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within $\pm 10\%$ of its design interval.
14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

*The engine start for the purpose of this surveillance test may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the engine is minimized.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.
- f. At least once per 10 years by:
 - 1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and
 - 2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures In
Last 20 Valid Tests.*

≤ 1

≥ 2

Test Frequency

At least once per 31 days

At least once per 7 days**

*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

**This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

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ATTACHMENT D
(Proposed Specifications)

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITIONS FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system, and
- b. Two separate and independent diesel generators, each with:
 1. A day fuel tank containing a minimum volume of 325 gallons of fuel, and
 2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and
 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a1. With an offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- a2. With a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours for the remaining diesel generator unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- c. With one diesel generator inoperable, in addition to ACTION a or b above, verify that;
1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and
 2. When in MODE 1, 2 or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours unless the diesel generators are already operating.* Restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and each Class 1E 4 kV Bus shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 2A0416 or 2A0603 are used to provide a source of power, the following busses are required.

for 2A0416
2A04
2B04
2D1

for 2A0603
2A06
2B06
2D2

- b. Demonstrated OPERABLE at least once per refueling interval during shutdown by transferring (manually and automatically) unit power from the normal offsite power source to the alternate offsite power source.

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 day fuel tank,
 2. Verifying the fuel level in the fuel storage tank,
 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
 4. Verifying the diesel generator starts from ambient conditions and accelerates to at least 900 rpm.* The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz after reaching 900 rpm. The diesel generator shall be started for this test by using the manual start 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

*A diesel generator start (in less than 10 seconds) from ambient conditions shall be performed at least once per 184 days. All other engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kW in less than or equal to 77 seconds*, and operates with a load greater than or equal to 4700 kW for at least an additional 60 minutes, and
 6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.
- c.1. At least once per 92 days and from new fuel prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D4057-81 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-81.
2. At least once every 92 days by obtaining a sample of fuel oil in accordance with ASTM-D4057-81 and verifying that particulate contamination is less than 10mg/liter when checked in accordance with ASTM D2276-83, Method A.
- d. At least once per refueling interval by:
1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
 2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kW while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 5.0 Hz.
 3. Verifying the generator capability to reject a load of 4700 kW without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

*All engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4. Simulating a loss of offsite power by itself, and
 - a) Verifying de-energization 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 and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.
5. Verifying that on an ESF 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 4360 ± 436 volts and 60 ± 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.
6. Deleted
7. Simulating a loss of offsite power in conjunction with an ESF test signal, and
 - a) Verifying de-energization 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, energizes the auto-connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and $60 + 1.2/-0.3$ Hz during this test.
 - c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low-low lube oil pressure, are automatically bypassed.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz after the start* signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 volts and $60 \pm 1.2/-0.3$ Hz for the first 2 hours of this test and 4360 ± 436 volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.4.b.
9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kW.
10. Verifying the diesel generator's capability to:
 - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
 - b) Transfer its loads to the offsite power source, and
 - c) Be restored to its standby status.
11. Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.
12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.
13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within $\pm 10\%$ of its design interval.
14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

*The engine start for the purpose of this surveillance test may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the engine is minimized.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.
- f. At least once per 10 years by:
 - 1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and
 - 2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures In
Last 20 Valid Tests.*

≤ 1

≥ 2

Test Frequency

At least once per 31 days

At least once per 7 days**

*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

**This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.