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ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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d. At least once per 18 months during shutdown 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 that, on rejection of a load greater than or equal to 820 kw, the voltage and frequency are restored to \geq 3950 and \leq 4580 volts and 60 ± 1.2 Hz within 4 seconds.
3. Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization of the vital bus and load shedding from the vital bus.
 - b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 seconds, 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. The steady state voltage and frequency of the vital bus shall be maintained at \geq 3950 and \leq 4580 volts and 60 ± 1.2 Hz during this test.
4. Verifying that on an ESF 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 generator voltage and frequency shall be \geq 3950 and \leq 4580 volts and 60 ± 1.2 Hz within 13 seconds after the auto-start signal and shall be maintained within these limits during this test.
5. Not Used.
6. Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and:
 - a) Verifying de-energization of the vital bus and load shedding from the vital bus.
 - b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. The steady state voltage and frequency of the vital bus shall be maintained at \geq 3950 and \leq 4580 volts and 60 ± 1.2 Hz during this test.

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SURVEILLANCE REQUIREMENTS (Continued)

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- c) Verifying that all nonessential automatic diesel generator trips (i.e., other than engine overspeed, lube oil pressure low, 4 KV bus differential and generator differential), are automatically bypassed upon loss of voltage on the vital bus concurrent with a safety injection actuation signal.
 - 7. 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 2760-2860 kw.** During the remaining 22 hours of this test, the diesel generator shall be loaded to 2500-2600 kw**. The steady state voltage and frequency shall be maintained at \geq 3950 and \leq 4580 volts and 60 ± 1.2 Hz during this test. Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.8.1.1.2.d.6.b.***
 - 8. Verifying that the auto-connected loads to each diesel generator do not exceed the two hour rating of 2860 kw.
 - 9. 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 energizing the emergency loads with offsite power.
 - e. At least once per ten years or after any modifications which could affect diesel generator interdependence by starting all diesel generators simultaneously*, during shutdown, and verifying that all diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.
- INSERT** → 4.8.1.1.3 The diesel fuel oil storage and transfer system shall be demonstrated OPERABLE:
- a. At least once per 31 days by:
 1. Verifying the level in each of the above required 20,000 gallon fuel storage tanks.
 2. Verifying that both fuel transfer pumps can be started and transfer fuel from the 20,000 gallon storage tanks to the day tanks.
 - b. At least once per 92 days by verifying that a sample of diesel fuel from each of the above required 20,000 gallon fuel storage tanks is within the acceptable limits specified in Table 1 of ASTM D975-77 when checked for viscosity, water and sediment.

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- f. At least once per 18 months, the following test shall be performed within 5 minutes of diesel shutdown after the diesel has operated for at least one hour at 2500-2600 kw**:

Verifying the diesel starts and accelerates to 900 rpm in less than or equal to 10 seconds*. The generator voltage and frequency shall be \geq 3950 volts and \leq 4580 volts and 60 ± 1.2 Hz within 13 seconds after the start signal.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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4.8.1.1.4 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission in a Special Report pursuant to Specification 6.9.2 within 30 days. 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.

- * Surveillance testing shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube, warm-up and loading (unless loading times are specified in the individual Surveillance Requirements).
- ** This band is meant as guidance to preclude routine exceedances of the diesel generator manufacturer's design ratings. Loads in excess of this band for special testing or momentary variations due to changing bus loads shall not invalidate the test.
- *** ~~Failure of a test per Surveillance Requirement 4.8.1.1.2.d.6.b, following performance of Surveillance Requirement 4.8.1.1.2.d.7, does not require that the 24 hour test of 4.8.1.1.2.d.7 be repeated. As an alternative, the EDG shall be loaded to 2500-2600 kw for one hour, or until operating temperatures have stabilized, prior to repeating Surveillance Requirement 4.8.1.1.2.d.6.b.~~

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ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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d. At least once per 18 months during shutdown 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 that, on rejection of a load of greater than or equal to 820 kw, the voltage and frequency are restored to ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 4 seconds.
3. Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization of the vital bus and load shedding from the vital bus.
 - b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 seconds, 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. The steady state voltage and frequency of the vital bus shall be maintained at ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz during this test.
4. Verifying that on an ESF 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 generator voltage and frequency shall be ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 13 seconds after the auto-start signal and shall be maintained within these limits during this test.
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SURVEILLANCE REQUIREMENTS (Continued)

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- c) Verifying that all nonessential automatic diesel generator trips (i.e., other than engine overspeed, lube oil pressure low, 4 KV Bus differential and generator differential) are automatically bypassed upon loss of voltage on the vital bus concurrent with a safety injection actuation signal.
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8. Verifying that the auto-connected loads to each diesel generator do not exceed the two hour rating of 2860 kw.
9. 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 energizing the emergency loads with offsite power.
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- f. At least once per 18 months, the following test shall be performed within 5 minutes of diesel shutdown after the diesel has operated for at least one hour at 2500-2600 kw**:

Verifying the diesel starts and accelerates to 900 rpm in less than or equal to 10 seconds*. The generator voltage and frequency shall be \geq 3950 volts and \leq 4580 volts and 60 ± 1.2 Hz within 13 seconds after the start signal.

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SURVEILLANCE REQUIREMENTS (Continued)

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