

# ELECTRICAL POWER SYSTEMS

## A.C. SOURCES

### OPERATING

#### SURVEILLANCE REQUIREMENTS (Continued)

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##### 4.8.1.1.2 (Continued)

The generator shall be manually synchronized to its appropriate emergency bus, loaded to an indicated 6200-6400<sup>\*\*\*</sup> kW, and operate for at least 60 minutes. The diesel generator shall be started for this test by using one of the following signals on a rotating basis:

1. Simulated loss of offsite power by itself, and
2. A Safety Injection test signal by itself.

This test, if it is performed so that it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

f. At least once per 18 months by:

1. DELETED
2. During shutdown, verifying that, on rejection of a load of greater than or equal to 1078 kW, the voltage and frequency are maintained with  $6900 \pm 690$  volts and  $60 \pm 6.75$  Hz, with frequency stabilizing to  $60 \pm 1.2$  Hz within 10 seconds without any safety-related load tripping out or operating in a degraded condition. |
3. During shutdown, verifying that the load sequencing timer is OPERABLE with the interval between each load block within 10% of its design interval. |
4. During shutdown, simulating a loss of offsite power by itself, and: |

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<sup>\*\*\*</sup>This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing or momentary variations due to changing bus loads shall not invalidate the test.

# ELECTRICAL POWER SYSTEMS

## A.C. SOURCES

### OPERATING

#### SURVEILLANCE REQUIREMENTS (Continued)

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##### 4.8.1.1.2 (Continued)

- a) Verifying de-energization of the emergency buses and load shedding from the emergency buses.
  - b) Verifying the diesel starts\*\* on the auto-start signal, energizing the emergency buses with permanently connected loads in less than or equal to 10 seconds, energizing the auto-connected shutdown loads through the load sequencer, and operating for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization of these loads, the steady-state voltage and frequency shall be maintained at  $6900 \pm 690$  volts and  $60 \pm 1.2$  Hz.
5. During shutdown, verifying that on a safety injection test.. | signal (without loss of power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes.
6. During shutdown, simulating a loss of offsite power in | conjunction with a safety injection test signal, and
- a) Verifying de-energization of the emergency buses and load shedding from the emergency buses.
  - b) Verifying the diesel starts\*\* on the auto-start signal, energizing the emergency buses with permanently connected loads in less than or equal to 10 seconds, energizing the auto-connected emergency (accident) loads through the sequencing timers, and operating for greater than or equal to 5 minutes and maintaining the steady-state voltage and frequency at  $6900 \pm 690$  volts and  $60 \pm 1.2$  Hz.
  - c) DELETED

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\*\*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

# ELECTRICAL POWER SYSTEMS

## A.C. SOURCES

### OPERATING

#### SURVEILLANCE REQUIREMENTS (Continued)

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##### 4.8.1.1.2 (Continued)

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 6800-7000 kW\*\*\* and, during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 6200-6400 kW\*\*\*.
8. DELETED
9. During shutdown, 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) Proceed through its shutdown sequence.
10. DELETED
11. During shutdown, verifying the generator capability to reject a load of between 6200 and 6400 kW without tripping. The generator voltage shall not exceed 110% of the generator voltage at the start of the test during and following the load rejection;
12. During shutdown, verifying that, with the diesel generator operating in a test mode and 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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\*\*\*This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing or momentary variations due to changing bus loads shall not invalidate the test.

A.C. SOURCES

OPERATING

SURVEILLANCE REQUIREMENTS (Continued)

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4.8.1.1.2 (Continued)

13. During shutdown, verifying that all diesel generator trips, except engine overspeed, loss of generator potential transformer circuits, generator differential, and emergency bus differential are automatically bypassed on a simulated or actual loss of offsite power signal in conjunction with a safety injection signal.
14. During shutdown, verifying that within 5 minutes of shutting down the EDG, after the EDG has operated for at least 2 hours at an indicated load of 6200-6400 kw, the EDG starts and accelerates to  $6900 \pm 690$  volts and  $60 \pm 1.2$  hz in 10 seconds or less.
- g. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 450 rpm in less than or equal to 10 seconds.
- h. At least once per 10 years by:
  - 1) Draining each main fuel oil storage tank, removing the accumulated sediment, and cleaning the tank using a sodium hypochlorite solution or other appropriate cleaning solution, and
  - 2) Performing a pressure test, of those isolable portions of the diesel fuel oil piping system designed to Section III, subsection ND of the ASME Code, at a test pressure equal to 110% of the system design pressure.

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\*\*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.