4.8 EMERGENCY POWER SYSTEM PERIODIC TESTS

Applicability: Applies to periodic testing and surveillance requirements for the emergency power system.

Objective: To verify that the emergency power system will respond promptly and properly.

Specification: The following tests and surveillance shall be performed as stated:

1. Diesel Generator

Each diesel generator shall be demonstrated OPERABLE:

a. On a staggered test basis (nonconcurrently) at the frequency specified by Table 4.8-1 by:

1. Verifying fuel level in the day tank and in the engine-mounted fuel tank.

2. Verifying fuel level in the fuel storage tank.

3. Verifying that a fuel transfer pump can be started and transfers fuel from the Diesel Oil Storage Tank to the Day Tank.

4. Verifying that the diesel generator starts from ambient conditions and accelerated to provide 60±1.2 Hz frequency and 4160±624 volts in ≤15 seconds.

5. Verifying that the generator is synchronized, loaded to ≥2500 kw within 10 minutes and operates for ≥60 minutes.

6. Verifying that the diesel generator cooling system functions within design limits during the 1-hour full load test required by Specification 4.8.1.a.5.

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within acceptable limits when checked for viscosity, water, and sediment.

c. At least once per 18 months by:

1. Subjecting the diesel to an inspection in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the diesel generator's capability to:

(a) Reject a load of 200 kw without exceeding 4160±624 volts and 60±1.2 Hz.

(b) Reject complete load without exceeding 4160±624 volts, and without exceeding overspeed limits.

3. Verifying that diesel generator trips which are operable during the test mode of diesel operation are inoperable when the diesel is not in the test mode of operation.

4. Alternately initiating one of the following two diesel startup tests:

   (a) Simulate a safety injection signal, and allow the diesel generator to achieve nominal rated voltage and speed. Then simulate a loss of offsite power, and allow the diesel generator to load and stabilize.

   (b) Simulate a loss of offsite power, and allow the diesel generator to load and stabilize. Then simulate a safety injection signal, and allow the diesel generator to sequence safety loads and stabilize.

5. Monitoring the tests specified in 4.8.1.c.4 to:

   (a) Verify proper deenergization and load shedding from the 4160 volt busses.

   (b) Verify that the diesel generator starts from ambient conditions and accelerates to provide 60±1.2 Hz frequency and 4160±624 volts in ≤15 seconds.

6. Verifying that the diesel generator operates for at least 8 hours by performing the following tests:

   (a) Load the diesel generator to ≥2750 kw during the first 2 hours of the 8 hour test.

   (b) Load the diesel generator to ≥2500 kw during the last 6 hours of the 8 hour test.

   (c) Verify that voltage, frequency, and cooling system functions are within design limits during the 8 hour full-load test.

7. Demonstrating the ability to sequentially:

(a) Synchronize the diesel generator with offsite power while the generator is supplying emergency loads;

(b) Transfer the emergency load to offsite power;

(c) Isolate the diesel generator; and

(d) Return the diesel generator to standby status.

8. Verifying that auto - connected loads to each diesel generator do not exceed 2750 kw.

d. At least once per 10 years, or after any modification that could affect diesel generator independence, start both diesel generators simultaneously at a time when both reactors are shutdown and verify that both diesel generators provide 60±1.2 Hz frequency and 4160±624 volts in ≤15 seconds.

TABLE 4.8-1

Diesel Generator Test Schedule

Number of Unsuccessful Valid Tests in Last 100 Valid Tests	Test Frequency
≥ 3	At least once per 30 days
≥ 6	At least once per 14 days
≥ 9	At least once per 7 days

A "VALID TEST" is defined as a start attempt initiated by (1) a bona fide automatic start signal with the diesel-generator in service (2) a manual start signal for the purpose of accomplishing the Technical Specification surveillance, or (3) a manual start signal for the purpose of demonstrating the diesel-generator unit is operable following repair, modification, or maintenance. Only valid tests conducted after the issuance of this Specification shall be included in the computation of the "last 100 valid tests." The last 100 valid tests shall be detemined on a per individual diesel-generator basis. Entry into this test schedule shall be made at the 14 day test frequency.

An "UNSUCCESSFUL VALID TEST" is defined as a valid test during which:

(1) the diesel-generator does not start properly,

(2) the diesel-generator does not come up to nominal speed and voltage within 15 seconds, or

(3) the diesel-generator is incapable of operating for at least 60 minutes due to a disabling malfunction directly related to engine or generator performance (e.g., fuel system malfunction).

For the purpose of determining the required frequency of diesel generator set periodic availability testing, only diesel generator set failures are to be included in the failure total. A diesel generator set failure is defined as:

A valid test during which:

(1) the diesel generator does not start properly, or

(2) the diesel generator set does not come up to required speed or voltage within the required time interval, or

(3) the diesel generator set is incapable of operating at the required load for the required time interval due to a disabling malfunction directly related to engine or generator performance (e.g. fuel, lubrication or excitation system malfunction).

There are many components which can prevent completely successful diesel generator set testing. These must be repaired, reported as applicable and retest performed. However, the diesel generator set should not then be routinely subjected to additional, ultimately degrading, rapid start testing unless the failure is diesel generator set related.