

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATION CHANGES

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3/4.8 ELECTRICAL POWER SYSTEMS3/4.8.1 A.C. SOURCESOPERATINGLIMITING CONDITION 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 1E Distribution System\*\*, and
- b. Three separate and independent standby diesel generators, each with a separate fuel tank containing a minimum volume of 60,500 gallons of fuel.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one offsite circuit of the above-required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. ~~Demonstrate the OPERABILITY of each standby diesel generator that has not been successfully tested within the past 24 hours by performing Surveillance Requirement 4.8.1.1.2.a.2) for each such standby diesel generator, separately, within 24 hours.~~ Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With a standby diesel generator inoperable, demonstrate the OPERABILITY of the above-required 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. If the standby diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE standby diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2) ~~and~~ for each such standby diesel generator, separately, within 24 hours. ~~Restore the inoperable standby diesel generator to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.~~
- c. With one offsite circuit and one standby diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; and if the standby diesel generator became inoperable due to

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A.

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~~\*This test is required to be completed regardless of when the inoperable standby diesel generator is restored to OPERABILITY.~~

\*\*Loss of one 13.8 kV Standby bus to 4.16 kV ESF bus line constitutes loss of one offsite source. Loss of two 13.8 kV Standby busses to 4.16 kV ESF bus lines constitutes loss of two offsite sources.

ATTACHMENT A.

... an inoperable support system, an independently testable component, or ...

ATTACHMENT B.

... , unless it can be demonstrated there is no potential common mode failure for the remaining diesel generator(s). ...

LIMITING CONDITION FOR OPERATIONACTION (Continued)SEE  
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any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE standby diesel generators by performing Surveillance Requirement 4.8.1.1.2a.2) within 8 hours; 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 three standby diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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- d. With one standby diesel generator inoperable in addition to ACTION b. or c. 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 feedwater 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.

- e. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of three standby diesel generators by performing the requirements of Specification 4.8.1.1.2a.2) within 8 hours unless the standby 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 time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- f. With two or three of the above required standby diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing the requirements of Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; restore at least two standby 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 three standby diesel generators to OPERABLE status within 72 hours from time of initial loss or be in least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

~~\*This test is required to be completed regardless of when the inoperable standby diesel generator is restored to OPERABILITY.~~



## 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 during shutdown by transferring the unit power supply from the normal circuit to each of the alternate circuits.

4.8.1.1.2 Each standby 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 its associated fuel tank,
  - 2) Verifying the diesel starts from ambient condition and accelerates to 600 rpm (nominal) in less than or equal to 10 seconds.\*  
The generator voltage and frequency shall be  $4160 \pm 416$  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, or
    - b) Simulated loss-of-offsite power by itself, or
    - c) Simulated loss-of-offsite power in conjunction with a Safety Injection test signal, or
    - d) A Safety Injection test signal by itself.
  - 3) Verifying the generator is synchronized, loaded to greater than or equal to 5500 kW in less than or equal to 10 minutes\*, and operates with a load greater than or equal to 5500 kW for at least 60 minutes, and ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION
  - 4) Verifying the standby diesel generator is aligned to provide standby power to the associated emergency busses.

~~\*These diesel generator starts from ambient conditions shall be performed only once per 184 days in these surveillance tests and all other engine starts for the purpose of this surveillance testing shall be preceded by an engine prelube period and/or other warmup procedures such as gradual loading (>150 sec) recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.~~

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

- 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 its associated fuel tank;
- c. By sampling new fuel oil in accordance with ASTM-D4057 prior to addition to storage tanks and:
  - 1) By verifying in accordance with the tests specified in ASTM-D975-81 prior to addition to the storage tanks that the sample has:
    - a) An API Gravity of within 0.3 degrees at 60°F, or a specific gravity of within 0.0016 at 60/60°F, when compared to the supplier's certificate, or an absolute specific gravity at 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89, or an API gravity of greater than or equal to 27 degrees but less than or equal to 39 degrees;
    - b) A kinematic viscosity at 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes if gravity was not determined by comparison with the supplier's certification;
    - c) A flash point equal to or greater than 125°F; and
    - d) A clear and bright appearance with a light color when tested in accordance with ASTM-D4176-82.
  - 2) By verifying within 30 days of obtaining the sample that the other properties specified in Table 1 of ASTM-D975-81 are met when tested in accordance with ASTM-D975-81 except that the analysis for sulfur may be performed in accordance with ASTM-D1552-79, ASTM-D2622-82, or ASTM-D4294-83.
- d. At least once every 31 days by obtaining a sample of fuel oil in accordance with ASTM-D2276-78, and verifying that total particulate contamination is less than 10 mg/liter when checked in accordance with ASTM-D2276-78, Method A;
- e. 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 the generator capability to reject a load of greater than or equal to 785.3 kW while maintaining voltage at  $4160 \pm 416$  volts and frequency at  $60 \pm 4.5$  Hz;

## ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- 3) Verifying the generator capability to reject a load of 5500 kW without tripping. The generator voltage shall not exceed 5262 volts during and following the load rejection;
- 4) Simulating a loss-of-offsite power by itself, and:
  - a) Verifying deenergization of the ESF busses and load shedding from the ESF busses, and
  - b) Verifying the diesel starts on the auto-start signal within 10 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. After energization, the steady-state voltage and frequency of the ESF busses shall be maintained at  $4160 \pm 416$  volts and  $60 \pm 1.2$  Hz during this test.
- 5) Verifying that on a Safety Injection 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  $4160 \pm 416$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the auto-start signal; the steady-state generator voltage and frequency shall be maintained within these limits during this test;
- 6) Simulating a loss-of-offsite power in conjunction with a Safety Injection test signal, and:
  - a) Verifying deenergization of the ESF busses and load shedding from the ESF busses;
  - b) Verifying the diesel starts on the auto-start signal within 10 seconds, energizes the auto-connected ESF (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the ESF loads. After energization, the steady-state voltage and frequency of the ESF busses shall be maintained at  $4160 \pm 416$  volts and  $60 \pm 1.2$  Hz during this test; and
  - c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low lube oil pressure are automatically bypassed upon loss of voltage on the ESF bus concurrent with a Safety Injection Actuation signal.
- 7) Verifying the standby diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel

SURVEILLANCE REQUIREMENTS (Continued)

- 8) Verifying that the auto-connected loads to each standby diesel generator do not exceed the 2000-hour rating of 5935 kW;
- 9) Verifying the standby diesel generator's capability to:
  - a) Synchronize with the offsite power source while the generator is loaded with its ESF 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.
- 10) Verifying that with the standby 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 ESF loads with offsite power;
- 11) Verifying that the automatic load sequence timer is OPERABLE with the first sequenced load verified to be loaded between 1.0 second and 1.6 seconds, and all other load blocks within  $\pm 10\%$  of its design interval;
- 12) Verifying that the standby diesel generator emergency stop lock-out feature prevents diesel generator starting; and

4.0.1.1.2e.6) If Specification 4.0.1.1.2e.6) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the standby diesel generator may be operated at 5500 kW for 1 hour or until operating temperature has stabilized.

2 hours



## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

- 13) Demonstrating the OPERABILITY of the automatic load shed bypass and the manual load shed reinstatement features of the load sequencer.
- f. At least once per 10 years or after any modifications which could affect standby diesel generator interdependence by starting all standby diesel generators simultaneously, during shutdown, and verifying that all standby diesel generators accelerate to at least 600 rpm in less than or equal to 10 seconds; and
- g. At least once per 10 years by:
  - 1) Draining each fuel tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution, or 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% of the system design pressure.

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

<u>NUMBER OF FAILURES IN LAST 20 VALID TESTS*</u>	<u>NUMBER OF FAILURES IN LAST 100 VALID TESTS*</u>	<u>TEST FREQUENCY</u>
$\leq 1$	$\leq 4$	Once per 31 days
$\geq 2^{**}$	$\geq 5$	Once per 7 days

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\* 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, but determined on a per diesel generator basis.

For the purpose of determining the required test frequency, the previous test failure count may be reduced to zero if a complete diesel overhaul to like-new condition is completed, provided that the overhaul, including appropriate post-maintenance operation and testing, is specifically approved by the manufacturer and if acceptable reliability has been demonstrated. The reliability criterion shall be the successful completion of 14 consecutive tests in a single series. Ten of these tests shall be in accordance with the routine Surveillance Requirements 4.8.1.1.2.a.2 and 4.8.1.1.2.a.3 and four tests in accordance with the 184-day testing requirement of Surveillance Requirements 4.8.1.1.2.a.2 and 4.8.1.1.2.a.3. If this criterion is not satisfied during the first series of tests, any alternate criterion to be used to transvalue the failure count to zero requires NRC approval.

\*\*The associated 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.