

# Enclosure 1

## 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. At least once per 7 days, determined OPERABLE by verifying correct breaker alignments and indicated power availability, and
- b. At least once per 18 months, demonstrated OPERABLE, during shutdown, by manually transferring unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each of the above required diesel generators shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8.1.1.2-1 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 starts and transfers fuel from the storage system to the day fuel tank.
  4.
    - a) For diesel generators 1A and 1B, verifying the diesel starts\*\* from ambient condition and accelerates to at least 450 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal.
    - b) For diesel generator 1C, verifying the diesel starts\*\* from ambient condition and accelerates to at least 882 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall not exceed a maximum of 5400 volts and 66.75 Hz and shall be ~~greater than 3740 volts and 58.3 Hz within 10 seconds and~~  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 13 seconds.
  5. Verifying the diesel generator is synchronized, loaded to 3000-3100 kw\*\*\* for diesel generators 1A and 1B and 2500-2600 kw\*\*\* for diesel generator 1C in less than or equal to 60 seconds\*\*, and operates with this load for at least 60 minutes.

\*\*All diesel generator starts for the purpose of this surveillance test may be preceded by an engine prelube period. Further, all surveillance tests, with the exception of once per 184 days, may also be preceded by warmup procedures and may also include gradual loading (> 150 sec) as recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

\*\*\*Momentary transients due to changing bus loads shall not invalidate the test.

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## SURVEILLANCE REQUIREMENTS (Continued)

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- 2) Verifying the diesel generator starts\*\* on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected loads through the sequencing logic, and operates for greater than or equal to 5 minutes while its generator is loaded with the loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz during this test.
- b) For division III:
- 1) Verifying de-energization of the emergency bus.
  - 2) Verifying the diesel generator starts\*\* on the auto-start signal, energizes the emergency bus with the permanently connected loads within 10 seconds, energizes the auto-connected loads through the sequence logic, and operates for greater than or equal to 5 minutes while its generator is loaded with the loads. After energization, the steady-state voltage and frequency of the emergency bus shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz during this test. 131
- c) Operating\*\* with the diesel generator loaded to 3000-3100 kW\*\*\* for diesel generators 1A and 1B and 2500-2600 kW\*\*\* for diesel generator 1C for at least 60 minutes or until operating temperatures have stabilized. Within 5 minutes after completing this test, perform Surveillance Requirement 4.2.1.1.2.f.4.a)2) and b)2).
5. Verifying that, on an ECCS actuation test signal without loss of offsite power, the diesel generator starts on the auto-start signal and operates in standby for greater than or equal to 5 minutes. For diesel generator 1A and 1B, the generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the auto-start signal. For diesel generator 1C, the generator voltage and frequency shall not exceed a maximum of 5400 volts and 66.75 Hz and shall be greater than 2740 volts and 58.8 Hz within 10 seconds and  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 13 seconds. 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 an ECCS actuation test signal and:
- a) For divisions I and II:
- 1) Verifying deenergization of the emergency busses and load shedding from the emergency busses.

\*\*All diesel generator starts for the purpose of this surveillance test may be preceded by an engine prelube period. Further, all surveillance tests, with the exception of once per 184 days, may also be preceded by warmup procedures and may also include gradual loading (> 150 sec) as recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

\*\*\*Momentary transients due to changing bus loads shall not invalidate the test.

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After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz during this test.

b) For division III:

- 1) Verifying de-energization of the emergency bus.
  - 2) Verifying the diesel generator starts\*\* on the auto-start signal, energizes the emergency bus with its permanently connected loads within 10 seconds, energizes the auto-connected loads through the sequencing logic, and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady-state voltage and frequency of the emergency bus shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz during this test.
7. Verifying that, upon an ECCS actuation signal, all automatic diesel generator trips are automatically bypassed except engine overspeed and generator differential current.
8. Verifying the diesel generator operates for at least 24 hours. Diesel generators 1A and 1B shall be loaded to 3030-3130 kw\*\*\* for the duration of the test. Diesel generator 1C shall be loaded to 2750-2850 kw\*\*\* for the first 2 hours of the test and to 2500-2600 kw\*\*\* for the remaining 22 hours of the test. For diesel generator 1A and 1B, the generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal. For diesel generator 1C, the generator voltage and frequency shall not exceed a maximum of 5400 volts and 66.75 Hz and shall be greater than 3740 volts and 58.8 Hz within 10 seconds and  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 13 seconds. The steady-state generator voltage and frequency shall be maintained within these limits during this test.
9. Verifying that the auto-connected loads to each diesel generator do not exceed 3130 kw for diesel generator 1A and 1B and 2600 kw for diesel generator 1C.

\*\*All diesel generator starts for the purpose of this surveillance test may be preceded by an engine prelube period. Further, all surveillance tests, with the exception of once per 184 days, may also be preceded by warmup procedures and may also include gradual loading (> 150 sec) as recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

\*\*\*Momentary transients due to changing bus loads shall not invalidate the test.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

2. At least once per 12 hours with the last reported room temperature < 50°F.
  - h. At least once per 10 years, or after any modifications which could affect diesel generator interdependence, by starting all three diesel generators simultaneously, during shutdown, and verifying that all three diesel generators accelerate to at least 450 rpm for diesel generators 1A and 1B and 900 rpm for diesel generator 1C in less than or equal to 10 seconds. 882
  1. 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 or equivalent solution, 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, in accordance with ASME Code Section XI Article IWD-5000.
- 4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission, pursuant to Specification 6.9.2, 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.