

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two independent circuits between the offsite transmission network and the onsite Class 1E distribution system, each consisting of:
 - 1. One OPERABLE 345 KV transmission line,
 - 2. One OPERABLE 345-13.8 KV startup transformer, and
 - 3. One OPERABLE 13.8 KV bus, and
- b. Two separate and independent diesel generators each with:
 - 1. A separate day fuel tank containing a minimum volume of 4000 gallons of fuel,
 - 2. A separate fuel storage system containing a minimum volume of 32,000 gallons of fuel, and
 - 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With either an offsite circuit or diesel generator 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 one hour and at least once per 8 hours thereafter and by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one offsite circuit and one diesel generator 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 one hour and at least once per 8 hours thereafter and by performing Surveillance Requirement 4.8.1.1.2.a.4 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

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ACTION (Continued)

offsite circuits and two 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.

- c. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours and at least once per 8 hours thereafter, unless the 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.
- d. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable 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 two diesel generators 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.

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 and indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply to each of the 345 KV transmission lines.***

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS, if Surveillance Requirement 4.8.1.1.2.c has not been performed within the previous 31 days, by:

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SURVEILLANCE REQUIREMENTS (Continued)

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 can be started and transfers fuel from the storage system to the day tank.
 4. Verifying the diesel starts and accelerates up to 900 rpm, preceded by an engine prelube and/or appropriate other warmup procedures.
 5. Verifying the generator is synchronized, loaded to ≥ 1000 kw, and operates for ≥ 60 minutes.
 6. Verifying the diesel generator is aligned to provide standby power to the associated essential busses.
 7. Verifying that the automatic load sequence timer is OPERABLE with each load sequence time within $\pm 10\%$ of its required value.
- b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-68 when checked for viscosity, water and sediment.
- c. At least once per 184 days 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 can be started and transfers fuel from the storage system to the day tank.
 4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in ≤ 10 seconds.
 5. Verifying the generator is synchronized, loaded to ≥ 1000 kw, and operates for ≥ 60 minutes.
 6. Verifying the diesel generator is aligned to provide standby power to the associated essential busses.
 7. Verifying that the automatic load sequence timer is OPERABLE with each load sequence time within $\pm 10\%$ of its required value.

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SURVEILLANCE REQUIREMENTS (Continued)

- 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 the generator capability to reject a load equal to the largest single emergency load supplied by the generator without tripping.
 3. Simulating a loss of offsite power in conjunction with a safety features actuation system (SFAS) test signal, and:
 - (a) Verifying de-energization of the essential busses and load shedding from the essential busses,
 - (b) Verifying the diesel starts from ambient condition on the auto-start signal, energizes the essential busses with permanently connected loads, energizes the auto-connected essential loads through the load sequencer and operates for ≥ 5 minutes while its generator is loaded with the essential loads.
 - (c) Verifying that all diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the essential bus and/or an SFAS test signal.*
 4. Verifying the diesel generator operates for ≥ 60 minutes while loaded to ≥ 2000 kw.
 5. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 2838 kw.

* The 18 month surveillance which is due on January 3, 1988 for EDG 1-1 and December 10, 1987 for EDG 1-2, may be delayed for EDG 1-1 until March 31, 1988 and EDG 1-2 until March 20, 1988.

** *The 18 month surveillance which is due on March 1, 1988 may be delayed until April 1, 1988*

ELECTRICAL POWER SYSTEMS

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system consisting of:
 1. One OPERABLE 345 KV transmission line,
 2. One OPERABLE 345 KV - 13.8 KV startup transformer, and
 3. One OPERABLE 13.8 KV bus, and
- b. One diesel generator with:
 1. Day fuel tank containing a minimum volume of 4000 gallons of fuel,
 2. A fuel storage system containing a minimum volume of 32,000 gallons of fuel, and
 3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 except for requirement 4.8.1.1.2.a.5 and 4.8.1.1.2.a.7.

BASES

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criterion 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the safety analyses and are based upon maintaining at least one of each of the onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the facility status.

The Surveillance Requirements for demonstrating the OPERABILITY of the station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants", February 1978, and IEEE Std. 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations".

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage on float charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

Table 4.8-1 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and .015 below the manufacturer's full charge specific gravity is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than .020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than .010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.