

LIMITING CONDITIONS FOR OPERATIONSURVEILLANCE REQUIREMENTS

3.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

a. Operability

The diesel generator itself and its auxiliaries are operable.

4.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

a. Operability

1. Each diesel generator shall be manually started and loaded to demonstrate operational readiness in accordance with the frequency specified in Table 4.9-1 on a Staggered Test Basis.* Verify that each diesel starts from ambient condition, gradually load the generator to 1710-2000 kW** and operate for ≥ 60 minutes. A steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz will be maintained. Verify the pressure in both diesel air start receivers to be ≥ 225 psig.
2. At least once per 184 days, each diesel generator shall be started and verified to reach synchronous speed in ≤ 12 seconds, loaded to an indicated 2250-2400 kW** for 1A and 1C and 2360-2425 kW** for 1B in ≤ 120 seconds, and operated for ≥ 60 minutes. The test will verify the diesel generator will achieve and maintain a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.*

*For the 1B (swing) diesel, a single test will satisfy the requirements for Unit 1 Specification 4.9.A.2.a.1 and Unit 2 Specification 4.8.1.1.2.a.4, with the diesel connected to one unit's emergency bus for one periodic test and connected to the emergency bus in the other unit during the next periodic test.

A single 6-month (184-day) test for the 1B diesel will satisfy the requirements for Unit 1 Specification 4.9.A.2.a.2 and Unit 2 Specification 4.8.1.1.2.b. The 6-month test will be performed using the starting circuitry and emergency bus from one unit. The next 6-month test will be performed using the starting circuitry and emergency bus from the other unit.

**Momentary variations outside this band shall not invalidate the test.

4.9.A.2. Standby AC Power Supply (Diesel
Generators 1A, 1B, and 1C)
(Continued)

a. Operability (Continued)

diesel generator shall be loaded to ≥ 3000 kW* and during the remaining 22 hours of this test, the diesel generator shall be loaded to 2775-2825 kW**.

7. At least once per 18 months, verify the auto-connected loads to each diesel generator do not exceed 3100 kW.
8. At least once per 18 months, verify the diesel generator's capability to synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power, to transfer its loads to the offsite power source, and to proceed through its shutdown sequence.
9. At least once per 18 months, verify that with the diesel generator operating in the test mode (connected to its bus), a simulated LOCA actuation signal overrides the test mode by returning the diesel generator to standby operation and automatically energizes the emergency loads with offsite power.
10. At least once per 10 years, or after any modifications which could affect diesel generator interdependence, verify that all three diesel generators start simultaneously during shutdown, and accelerate to synchronous speed in ≤ 12 seconds.

*Momentary variations outside this band shall not invalidate the test.

**For the 1B diesel generator a single 24-hour load test every 18 months will satisfy the requirements of Unit 1 Specification 4.9.A.2.a.6 and Unit 2 Specification 4.8.1.1.2.d.9.

LIMITING CONDITIONS FOR OPERATIONSURVEILLANCE REQUIREMENTS3.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

- b. Diesel Battery (125 Volt)
Each 125-volt diesel battery is operable and capable of supplying the required load.
- c. Battery Charger
An operable battery charger is available. Each battery charger shall have adequate capacity to restore its battery to full charge within 24 hours from a discharged condition while carrying the DC load.
- d. Diesel Fuel
There shall be a minimum of 99,000 gallons of acceptable diesel fuel in the diesel fuel storage tanks and a minimum of 900 gallons in each diesel fuel day tank.
- e. Fuel Oil Transfer Pumps
A fuel oil transfer pump shall be operable and capable of transferring fuel oil from the storage system to the day tank.

4.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

- b. Diesel Battery (125 Volt)
Each 125-volt diesel battery shall be subjected to the same periodic surveillance as the plant batteries in Specification 4.9.A.3.
- c. Battery Charger
Indicators shall be provided to monitor the status of the battery charger supply. This instrumentation shall include indication of output current and output voltage.
- d. Diesel Fuel
1. The quantity of diesel fuel available in each fuel storage tank and fuel day tank shall be measured and recorded concurrently with the operability test specified for that diesel in Specification 4.9.A.2.a.1.
 2. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.
- e. Fuel Oil Transfer Pumps
1. The operation of the diesel fuel oil transfer pumps to transfer fuel from the storage system to the day tank shall be demonstrated concurrent with the operability test specified for that diesel in Specification 4.9.A.2.a.1.
 2. The operation of the diesel fuel oil transfer pumps to transfer fuel from each associated fuel storage tank to the day tank of each diesel, via the installed cross connection lines, shall be demonstrated at least once per 18 months.

4.9.A.6. Emergency 250 Volt DC to 600 Volt AC Inverters (Continued)

- b. Once every scheduled refueling outage, the emergency 250-volt DC/600-volt AC inverters shall be subjected to a load test to demonstrate operational readiness.

3.9.A.7. Logic Systems

The following logic systems shall be operable:

- a. The common accident signal logic system is operable.

- b. The undervoltage relays and supporting system are operable.

4.9.A.7. Logic Systems

The logic systems shall be tested in the manner and frequency as follows:

- a. Each division of the common accident signal logic system shall be tested every scheduled refueling outage to demonstrate that it will function on actuation of the ECCS to provide an automatic start signal to all 3 diesel generators. Each diesel generator shall operate on standby for ≥ 5 minutes.
 - b.1. Once every 18 months, the conditions under which the undervoltage logic system is required shall be simulated with an undervoltage on each start bus to demonstrate that the emergency busses are deenergized, the diesel generators will start, energize the emergency busses with permanently connected loads in ≤ 12 seconds, energize the auto-connected shutdown loads through the load sequencer, operate for ≥ 5 minutes while the diesel generators are loaded with the shutdown loads, and achieve and maintain a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz. The testing of the undervoltage logic shall also demonstrate the operability of the 4160-volt load shedding, auto bus transfer circuits, and that the subsequent loading is in accordance with design requirements ($\pm 10\%$ of its design interval). The simulations shall test both the degraded voltage and the loss of offsite power relays.

3.9.A.7. Logic Systems (Continued)

- c. The common accident signal logic system, and undervoltage relays and supporting system are operable.

4.9.A.7. Logic Systems (Continued)

- b.2. Within 5 minutes after completing the 24-hour load test specified in Surveillance Requirement 4.9.A.2.a.6, perform Surveillance Requirement 4.9.A.7.b.1 with a simulated loss of offsite power start signal and run the diesel for at least 5 minutes while loaded with shutdown loads.* This test is to be performed every 18 months.
3. Once per month, the relays which initiate energization of the emergency buses by the Diesel Generators when voltage is lost on the emergency buses and startup transformer 1C, will be functionally tested.
- c.1. Once every 18 months, each diesel generator shall be demonstrated operable by simulating a loss of offsite power in conjunction with an accident test signal and verifying: de-energization of the emergency buses and load shedding from the emergency buses; the diesel starts from on the auto-start signal with permanently connected loads in ≤ 12 seconds, energizes the auto-connected shutdown (emergency) loads through the load sequencer, operates for ≥ 5 minutes while its generator is loaded with the emergency loads, and achieves and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.
2. The undervoltage relays for the start buses shall be calibrated annually for trip and reset voltages and the measurements recorded.
3. Verify, once per 18 months, that all diesel generator trips, except engine overspeed, low lube oil pressure, and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with an ECCS actuation signal.

*If the diesel generator fails this test, a retest may be performed after the diesel generator has been operated for ≥ 2 hours at ≥ 2565 kW.

3.9. AUXILIARY ELECTRICAL SYSTEMS

The objective of these Specifications is to assure an adequate supply of electrical power to operate facilities to cool the reactor during shutdown and operate engineered safety features following an accident. There are two sources of auxiliary AC electrical energy available; namely the 230-kV transmission system through the two startup auxiliary transformers and the three diesel generators. The DC power systems supply emergency DC power required for control.

A. Requirements for Reactor Startup

In accordance with General Design Criterion 17 of Appendix A to 10 CFR 50, the onsite electric power supplies, including the batteries, and the onsite electrical distribution system shall have sufficient independence and redundancy to perform their safety functions assuming a single failure.

1. Offsite Power Sources

The network interconnection between HNP-1 and the Southern Company transmission system will consist of at least four 230-kV transmission lines which are fed from different sections of the Southern Company grid. The system shall be able to withstand the simultaneous loss of any system generator and the most critical transmission line associated with its loss. Separation is provided in routing for these transmission lines as they approach the switchyard.

The 230-kV transmission lines connect to the two startup auxiliary transformers (1C and 1D). Startup auxiliary transformer 1D normally provides startup and shutdown power. Startup auxiliary transformer 1C provides backup power to safety features in the event of the loss of transformer 1D. The startup auxiliary transformers remain energized to permit auxiliary load transfer if required. Each startup auxiliary transformer, in addition to its startup function, is sized to provide 100% of the emergency AC load to engineered safety features within a few seconds following a design basis accident.

2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)

The design of the diesel generator systems shall conform to the applicable section of proposed IEEE Standard No. 308. The diesel generators are selected on the basis of their proven reliability and independence as standby power supplies. There are three diesel generator units available for HNP-1 (diesel generator 1B will be shared with HNP-2) and each has a 2850-kW continuous rating. The diesel generator units shall not be operated in parallel with each other at any time nor do they have any secondary function but shall be utilized solely as a standby power supply.

a. Operability

In order to be considered operable the diesel generators shall be capable of providing electric energy for the operation of emergency systems and engineered safety features during and following the shutdown of the reactor when the preferred power supply (230-kV transmission network) is not available. This shall include the capability to: (1) start and accelerate a number of large motor loads in rapid succession, and be able to sustain

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

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 physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Three separate and independent diesel generators*, each with:
 1. A separate day tank containing a minimum of 900 gallons of fuel,
 2. A separate fuel storage tank containing a minimum of 33,000 gallons of fuel, and
 3. A separate fuel transfer pump.

APPLICABILITY: CONDITIONS 1, 2, and 3.

ACTION:

- a. With one offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore at least two offsite circuits 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 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 1 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 three diesel generators to

*A diesel generator may be inoperable for up to 1 hour during surveillance testing without entering the Actions, while control is taken locally to allow gradual startup and to allow the diesel engine to be barred (rolled) over.

ELECTRIC 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 and indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator 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 tanks.
 2. Verifying the fuel level in the plant 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 that each diesel starts from ambient condition by gradually loading the generator to 1710-2000 kW*, and operating for ≥ 60 minutes, and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.**
 5. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

*Momentary variations outside this band shall not invalidate the test.

**For the 1B (swing) diesel, a single test will satisfy the requirements for Unit 1 Specification 4.9.A.2.a.1 and Unit 2 Specification 4.8.1.1.2.a.4, with the diesel connected to one unit's emergency bus for one periodic test and connected to the emergency bus in the other unit during the next periodic test.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

6. Verifying the pressure in both diesel air start receivers to be ≥ 225 psig.
- b. At least once per 184 days by verifying the diesel starts from ambient condition and accelerates to synchronous speed in < 12 seconds is loaded to 2764-2825 kW* for diesel generator 2A, 2360-2425 kW* for diesel generator 1B, and 2752-2825 kW* for diesel generator 2C in ≤ 120 seconds, achieves and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 HZ, and operates for ≥ 60 minutes thereafter.**
- c. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.
- 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.***

*Momentary variations outside this band shall not invalidate the test.

**A single 6-month (184-day) test for the 1B diesel will satisfy the requirements for Unit 1 Specification 4.9.A.2.a.2 and Unit 2 Specification 4.8.1.1.2.b. The 6-month test will be performed using the starting circuitry and emergency bus for one unit. The next 6-month test will be performed using the starting circuitry and emergency bus from the other unit.

***For the 1B diesel generator, a single diesel inspection every 18 months will satisfy the requirements of Unit 1 Specification 4.9.A.2.a.3 and Unit 2 Specification 4.8.1.1.2.d.1.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4. Verifying the diesel generator capability to reject a load of at least 2775 kW without tripping. The generator voltage shall not exceed 4800 volts during and following the load rejection.*
5. Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads in < 12 seconds, energizes the auto-connected shutdown loads through the load sequencer, operates for ≥ 5 minutes while its generator is loaded with the shutdown (emergency) loads, and achieves and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.
6. Verifying that on an ECCS actuation test signal, without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for ≥ 5 minutes.
7. (deleted)
8. Simulating a loss of offsite power in conjunction with an ECCS actuation test signal, and
 - a) Verifying de-energization of the emergency busses and load shedding for the emergency busses.
 - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads in < 12 seconds, energizes the auto-connected shutdown (emergency) loads through the load sequencer, operates for ≥ 5 minutes while its generator is loaded with the emergency loads, and achieves and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.
 - c) Verifying that all diesel generator trips, except engine overspeed, low lube oil pressure, and generator differential are automatically bypassed upon loss of voltage on the emergency bus concurrent with an ECCS actuation signal.

* For the 1B diesel generator a single full load rejection test every 18 months will satisfy the requirements of Unit 1 Specification 4.9.A.2.a.5 and Unit 2 Specification 4.8.1.1.2.d.4.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

9. Verifying that the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to ≥ 3000 kW* and during the remaining 22 hours of this test, the diesel generator shall be loaded to 2775-2825 kW**. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.5.***
 10. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 3100 kW.
 11. 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.
 12. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated LOCA actuation signal overrides the test mode by: (1) returning the diesel generator to standby operation and (2) automatically energizing the emergency loads with offsite power.
 13. Verifying that the fuel transfer pump transfers fuel from each associated fuel storage tank to the day tank of each diesel via the installed cross connection lines.
- e. 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 synchronous speed in ≤ 12 seconds.

*Momentary variations outside this band shall not invalidate the test.

** For the 1B diesel generator, a single 24-hour load test every 18 months will satisfy the requirements of Unit 1 Specification 4.9.A.2.a.6 and Unit 2 Specification 4.8.1.1.2.d.9.

***If the diesel generator fails this test, a retest may be performed after the diesel generator has been operated for ≥ 2 hours at ≥ 2565 kW.

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

4.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

a. Operability

The diesel generator itself and its auxiliaries are operable.

a. Operability

1. Each diesel generator shall be manually started and loaded to demonstrate operational readiness in accordance with the frequency specified in Table 4.9-1 on a Staggered Test Basis.* Verify that each diesel starts from ambient condition, gradually load the generator to 1710-2000 kW** and operate for ≥ 60 minutes. A steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz will be maintained. Verify the pressure in both diesel air start receivers to be ≥ 225 psig.
2. At least once per 184 days, each diesel generator shall be started and verified to reach synchronous speed in < 12 seconds, loaded to an indicated 2250-2400 kW** for 1A and 1C and 2360-2425 kW** for 1B in ≤ 120 seconds, and operated for ≥ 60 minutes. The test will verify the diesel generator will achieve and maintain a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.*

*For the 1B (swing) diesel, a single test will satisfy the requirements for Unit 1 Specification 4.9.A.2.a.1 and Unit 2 Specification 4.B.1.1.2.a.4, with the diesel connected to each unit's emergency bus for ~~90~~ minutes, one periodic test and connected to the emergency bus in the other unit during the next periodic test. A single 6-month (184-day) test for the 1B diesel will satisfy the requirements for Unit 1 Specification 4.9.A.2.a.2 and Unit 2 Specification 4.B.1.1.2.b. with the diesel connected to each unit's emergency bus for ~~90~~ minutes. The 6-month test for the 1B diesel will be performed ~~will be initiated using the starting circuitry on one unit, for one 6-month test, and the starting circuitry on the other unit at the next 6-month test.~~ and emergency bus from

**Momentary variations outside this band shall not invalidate the test.

The next 6-month test will be performed using the starting circuitry and emergency bus from the other unit.

4.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

a. Operability (Continued)

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- diesel generator shall be loaded to ≥ 2000 kW* and during the remaining 22 hours of this test, the diesel generator shall be loaded to 2775-2825 kW.**
7. At least once per 18 months, verify the auto-connected loads to each diesel generator do not exceed 3100 kW.
 8. At least once per 18 months, verify the diesel generator's capability to synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power, to transfer its loads to the offsite power source, and to proceed through its shutdown sequence.
 9. At least once per 18 months, verify that with the diesel generator operating in the test mode (connected to its bus), a simulated LOCA actuation signal overrides the test mode by returning the diesel generator to standby operation and automatically energizes the emergency loads with offsite power.
 10. At least once per 10 years, or after any modifications which could affect diesel generator interdependence, verify that all three diesel generators start simultaneously during shutdown, and accelerate to synchronous speed in ≤ 12 seconds.

*Momentary variations outside this band shall not invalidate the test.

**For the 1B diesel generator a single 24-hour load test every 18 months will satisfy the requirements of Unit 1 Specification 4.9.A.2.a.6 and Unit 2 Specification 4.8.1.1.2.d.9.

LIMITING CONDITIONS FOR OPERATIONSURVEILLANCE REQUIREMENTS3.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

- b. Diesel Battery (125 Volt)
Each 125-volt diesel battery is operable and capable of supplying the required load.
- c. Battery Charger
An operable battery charger is available. Each battery charger shall have adequate capacity to restore its battery to full charge within 24 hours from a discharged condition while carrying the DC load.
- d. Diesel Fuel
There shall be a minimum of 99,000 gallons of acceptable diesel fuel in the diesel fuel storage tanks and a minimum of 900 gallons in each diesel fuel day tank.

- e. Fuel Oil Transfer Pumps
A fuel oil transfer pump shall be operable and capable of transferring fuel oil from the storage system to the day tank.

4.9.A.2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)
(Continued)

- b. Diesel Battery (125 Volt)
Each 125-volt diesel battery shall be subjected to the same periodic surveillance as the plant batteries in Specification 4.9.A.3.
- c. Battery Charger
Indicators shall be provided to monitor the status of the battery charger supply. This instrumentation shall include indication of output current and output voltage.
- d. Diesel Fuel
1. The quantity of diesel fuel available in each fuel storage tank and fuel day tank shall be measured and recorded concurrently with the operability test specified for that diesel in Specification 4.9.A.2.a.1.
 2. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.
- e. Fuel Oil Transfer Pumps
1. The operation of the diesel fuel oil transfer pumps to transfer fuel from the storage system to the day tank shall be demonstrated concurrent with the operability test specified for that diesel in Specification 4.9.A.2.a.1.
 2. The operation of the diesel fuel oil transfer pumps to transfer fuel from each *associated* fuel storage tank to the day tank of each diesel, via the installed cross connection lines, shall be demonstrated at least once per 18 months.

~~During verification of fuel pump operability with the day tank containing < 900 gallons, the associated diesel generator may be inoperable for up to 4 hours without entering the Actions.~~

4.9.A.6. Emergency 250 Volt DC to 600 Volt AC Inverters (Continued)

- b. Once every scheduled refueling outage, the emergency 250-volt DC/600-volt AC inverters shall be subjected to a load test to demonstrate operational readiness.

3.9.A.7. Logic Systems

The following logic systems shall be operable:

- a. The common accident signal logic system is operable.
- b. The undervoltage relays and supporting system are operable.

4.9.A.7. Logic Systems

The logic systems shall be tested in the manner and frequency as follows:

- a. Each division of the common accident signal logic system shall be tested every scheduled refueling outage to demonstrate that it will function on actuation of the ECCS to provide an automatic start signal to all 3 diesel generators. Each diesel generator shall operate on standby for ≥ 5 minutes.
- b.1. Once every 18 months, the conditions under which the undervoltage logic system is required shall be simulated with an undervoltage on each start bus to demonstrate that the emergency busses are deenergized, the diesel generators will start, energize the emergency busses with permanently connected loads in ≤ 12 seconds, energize the auto-connected shutdown ~~(emergency)~~ loads through the load sequencer, operated for ≥ 5 minutes while the diesel generators are loaded with the shutdown loads, and achieve and maintain a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz. The testing of the undervoltage logic shall also demonstrate the operability of the 4160-volt load shedding, auto bus transfer circuits, and that the subsequent loading is in accordance with design requirements ($\pm 10\%$ of its design interval). The simulations shall test both the degraded voltage and the loss of offsite power relays.

3.9.A.7. Logic Systems (Continued)

4.9.A.7. Logic Systems (Continued)

after completing the 24-hour load test specified in Surveillance Requirement 4.9.A.2.a.6,

- c. The common accident signal logic system, and undervoltage relays and supporting system are operable.

- b.2. Within 5 minutes of shutting down the diesel after the diesel has operated ~~≥ 1 hour at ≥ 1710 kW, or the diesel to at normal operating temperature,~~ perform Surveillance Requirement 4.9.A.7.b.1 with a simulated loss of offsite power start signal and run the diesel for at least 5 minutes while loaded with shutdown loads.* This test is to be performed every 18 months.

3. Once per month, the relays which initiate energization of the emergency buses by the Diesel Generators when voltage is lost on the emergency buses and startup transformer 1C, will be functionally tested.

- c.1. Once every 18 months, each diesel generator shall be demonstrated operable by simulating ~~both~~ a loss of offsite power in conjunction with an accident test signal ~~and a degraded voltage condition,~~ and verifying: de-energization of the emergency buses and load shedding from the emergency buses; the diesel starts from ~~sub-normal condition~~ on the auto-start signal with permanently connected loads in ≤ 12 seconds, energizes the auto-connected shutdown (emergency) loads through the load sequencer, operates for ≥ 5 minutes while its generator is loaded with ~~the~~ shutdown loads, and achieves and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.

Emergency

2. The undervoltage relays for the start buses shall be calibrated annually for trip and reset voltages and the measurements recorded.
3. Verify, once per 18 months, that all diesel generator trips, except engine overspeed, low lube oil pressure, and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with an ECCS actuation signal.

* If the diesel ^{generator} fails this test, a retest may be performed after the diesel generator has been operated for ≥ 2 hours at ≥ 2565 kW.

3.9. AUXILIARY ELECTRICAL SYSTEMS

The objective of these Specifications is to assure an adequate supply of electrical power to operate facilities to cool the reactor during shutdown and operate engineered safety features following an accident. There are two sources of auxiliary AC electrical energy available; namely the 230-kV transmission system through the two startup auxiliary transformers and the three diesel generators. The DC power systems supply emergency DC power required for control.

A. Requirements for Reactor Startup

In accordance with General Design Criterion 17 of Appendix A to 10 CFR 50, the onsite electric power supplies, including the batteries, and the onsite electrical distribution systems shall have sufficient independence and redundancy to perform their safety functions assuming a single failure.

1. Offsite Power Sources

The network interconnection between HNP-1 and the Southern Company transmission system will consist of at least four 230-kV transmission lines which are fed from different sections of the Southern Company grid. The system shall be able to withstand the simultaneous loss of any system generator and the most critical transmission line associated with its loss. Separation is provided in routing for these transmission lines as they approach the switchyard.

The 230-kV transmission lines connect to the two startup auxiliary transformers (1C and 1D). Startup auxiliary transformer 1D normally provides startup and shutdown power. Startup auxiliary transformer 1C provides backup power to safety features in the event of the loss of transformer 1D. The startup auxiliary transformers remain energized to permit auxiliary load transfer if required. Each startup auxiliary transformer, in addition to its startup function, is sized to provide 100% of the emergency AC load to engineered safety features within a few seconds following a design basis accident.

2. Standby AC Power Supply (Diesel Generators 1A, 1B, and 1C)

The design of the diesel generator systems shall conform to the applicable section of proposed IEEE Standard No. 308. The diesel generators are selected on the basis of their proven reliability and independence as standby power supplies. There are three diesel generator units available for HNP-1 (diesel generator 1B will be shared with HNP-2) and each has a 2650-kW continuous rating. The diesel generator units shall not be operated in parallel with each other at any time ~~(except per Surveillance Requirement 4.9.4.2.10)~~ nor do they have any secondary function but shall be utilized solely as a standby power supply.

a. Operability

In order to be considered operable the diesel generators shall be capable of providing electric energy for the operation of emergency systems and engineered safety features during and following the shutdown of the reactor when the preferred power supply (230-kV transmission network) is not available. This shall include the capability to: (1) start and accelerate a number of large motor loads in rapid succession, and be able to sustain

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

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 physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Three separate and independent diesel generators*, each with:
 1. A separate day tank containing a minimum of 900 gallons^{***} of fuel,
 2. A separate fuel storage tank containing a minimum of 33,000 gallons of fuel, and
 3. A separate fuel transfer pump.

APPLICABILITY: CONDITIONS 1, 2, and 3.

ACTION:

- a. With one offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore at least two offsite circuits 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 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 1 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 three diesel generators to

*A diesel generator may be inoperable for up to 1 hour during surveillance testing without entering the Actions, while control is taken locally to allow gradual startup and to allow the diesel engine to be barred (rolled) over.

~~**During verification of fuel transfer pump operability with the day tank containing < 900 gallons, the associated diesel generator may be inoperable for up to 4 hours without entering the Actions.~~

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 and indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator 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 tanks.
 2. Verifying the fuel level in the plant 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 that each diesel starts from ambient condition by gradually loading the generator to 1710-2000 kW*, and operating for ≥ 60 minutes, and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.**
 5. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

*Momentary variations outside this band shall not invalidate the test.

**For the 1B (swing) diesel, a single test will satisfy the requirements for Unit 1 Specification 4.9.A.2.a.1 and Unit 2 Specification 4.8.1.1.2.a.4, with the diesel connected to ~~each~~ ^{one} unit's emergency bus for ~~a 30-minute~~ ^{one periodic test} and connected to the emergency bus in the other unit during the next periodic test.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

6. Verifying the pressure in both diesel air start receivers to be ≥ 225 psig.
- b. At least once per 184 days by verifying the diesel starts from ambient condition and accelerates to synchronous speed in ≤ 12 seconds is loaded to 2764-2825 kW* for diesel generator 2A, 2360-2425 kW* for diesel generator 1B, and 2742-2825 kW* for diesel generator 2C in ≤ 120 seconds, achieves and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 HZ, and operates for ≥ 60 minutes thereafter.**
- c. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.
- 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.***

The 6-month test will be performed using the starting circuitry and emergency bus from one unit. The next 6-month test will be performed using the starting and emergency bus from the other unit.

*Momentary variations outside this band shall not invalidate the test.

**A single 6-month (184-day) test for the 1B diesel will satisfy the requirements for Unit 1 Specification 4.9.A.2.a.2, and Unit 2 Specification 4.8.1.1.2.b with the diesel connected to each unit's emergency bus for ≥ 30 minutes. ~~The 6-month test for the 1B diesel will be initiated using the starting circuitry on one unit for one 6-month test, and the starting circuitry on the other unit at the next 6-month test.~~

***For the 1B diesel generator, a single diesel inspection every 18 months will satisfy the requirements of Unit 1 Specification 4.9.A.2.a.3 and Unit 2 Specification 4.8.1.1.2.d.1.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4. Verifying the diesel generator capability to reject a load of at least 2775 kW without tripping. The generator voltage shall not exceed 4800 volts during and following the load rejection."
5. Simulating a loss of offsite power by itself ~~within 5 minutes of shutting down the diesel after the diesel has operated 2 hour at 1710 kW or the diesel is at normal operating temperature, and:~~
 - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel starts ~~from ambient conditions~~ on the auto-start signal, energizes the emergency busses with permanently connected loads in ≤ 12 seconds, energizes the auto-connected shutdown loads through the load sequencer, operates for ≥ 5 minutes while its generator is loaded with the shutdown (emergency) loads, and achieves and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.
6. Verifying that on an ECCS actuation test signal, without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for ≥ 5 minutes.
(deleted)
7. ~~Verifying that on a simulated loss of the diesel generator, with offsite power not available, the loads are shed from the emergency busses and that subsequent loading of the diesel generator is in accordance with design requirements.~~
8. ~~Simulating with separate tests: 1) a degraded voltage condition and 2) a loss of offsite power in conjunction with an ECCS actuation test signal, and~~
 - a) Verifying de-energization of the emergency busses and load shedding for the emergency busses.
 - b) Verifying the diesel starts ~~from ambient condition~~ on the auto-start signal, energizes the emergency busses with permanently connected loads in ≤ 12 seconds, energizes the auto-connected shutdown (emergency) loads through the load sequencer, operates for ≥ 5 minutes while its generator is loaded with the emergency loads, and achieves and maintains a steady-state voltage of 4160 ± 420 volts and a steady-state frequency of 60 ± 1.2 Hz.
 - c) Verifying that all diesel generator trips, except engine overspeed, low lube oil pressure, and generator differential are automatically bypassed upon loss of voltage on the emergency bus concurrent with an ECCS actuation signal.

*For the 1B diesel generator a single full load rejection test every 18 months will satisfy the requirements of Unit 1 Specification 4.9.A.2.a.5 and Unit 2 Specification 4.B.1.1.2.d.4.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

9. Verifying that the diesel generator³⁰⁰⁰ operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to ~~2 3000~~ kW* and during the remaining 22 hours of this test, the diesel generator shall be loaded to 2775-2825 kW**. *** Within 5 minutes after completing this 24-hour test, perform surveillance requirement 4.8.1.1.2.d.5.*
10. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 3100 kW.
11. 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.
12. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated LOCA actuation signal overrides the test mode by: (1) returning the diesel generator to standby operation and (2) automatically energizing the emergency loads with offsite power.
13. Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.
- e. 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 synchronous speed in ≤ 12 seconds.

*Momentary variations outside this band shall not invalidate the test.

**For the 1B diesel generator, a single 24-hour load test every 18 months will satisfy the requirements of Unit 1 Specification 4.9.A.2.a.6 and Unit 2 Specification 4.8.1.1.2.d.9.

*** *If the diesel generator fails this test, a retest may be performed after the diesel generator has been operated for ≥ 2 hours at ≥ 2565 kW.*

HATCH - UNIT 2

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Proposed TS/0310q/292-83

NOTE:
No changes to this page. Existing page is correct.

ELECTRICAL POWER SYSTEMS

A.C. SOURCES - 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, and
- b. One diesel generator with:
 - 1. A day tank containing a minimum of 900 gallons⁹⁹ of fuel,
 - 2. A fuel storage tank containing a minimum of 33,000 gallons of fuel, and
 - 3. A fuel transfer pump.

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APPLICABILITY: CONDITIONS 4 and 5.

ACTION:

With less than the above required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS, irradiated fuel handling, positive reactivity changes or operations that have the potential of draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.8.1.2 At least the above required A.C. electrical power sources shall be demonstrated OPERABLE per Surveillance Requirements 4.8.1.1.1, 4.8.1.1.2, except for the requirement of 4.8.1.1.2.a.5, 4.8.1.1.3 and 4.8.1.1.4.

~~*During verification of fuel transfer pump operability with the day tank containing < 900 gallons, the associated diesel generator may be inoperable for up to 4 hours without entering the Actions.~~

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