

ATTACHMENT B

Station and Switchyard Batteries
Revised Surveillance Test and Bases Pages

195
196 no changes - included for re-pagination
201

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.9.A AUXILIARY ELECTRICAL EQUIPMENT
(Cont'd)

4. 4160 volt buses A5 and A6 are energized and the associated 480 volt buses are energized.
5. The station and switchyard 125 and 250 volt batteries are operable. Each battery shall have an operable battery charger.
6. Emergency Bus Degraded Voltage Annunciation System as specified in Table 3.2.B.1 is operable.
7. Specification

Two redundant RPS Electrical Protection Assemblies (EPAs) shall be operable at all times on both inservice power supplies.

Action

- a. With one EPA on an inservice power supply inoperable, continued operation is permissible provided that the EPA is returned to operable status or power is transferred to a source with two operable EPAs within 72 hours. If this requirement cannot be met, trip the power source.
- b. With both RPS EPAs found to be inoperable on an inservice power supply, continued operation is permissible provided at least one EPA is restored to operable status or power is transferred to a source with at least one operable EPA within 30 minutes. If this requirement cannot be met, trip the power source.

NOTE: Only applicable if tripping the power source would not result in a scram.

4.9.A AUXILIARY ELECTRICAL EQUIPMENT
SURVEILLANCE (Cont'd)

- d. Once a month the quantity of diesel fuel available shall be logged.
 - e. Once a month a sample of diesel fuel shall be checked for quality in accordance with ASTM D4057-81 or D4177-82. The quality shall be within the acceptable limits specified in Table 1 of ASTM D975-81 and logged.
2. Station and Switchyard Batteries
- a. Every week the specific gravity, the voltage and temperature of the pilot cell and overall battery voltage shall be measured and logged.
 - b. Every three months the measurements shall be made of voltage of each cell to nearest 0.1 volt, specific gravity of each cell, and temperature of every fifth cell. These measurements shall be logged.
 - c. Once each operating cycle, the stated batteries shall be subjected to a Service Discharge Test (load profile). The specific gravity and voltage of each cell shall be determined after the discharge and logged.
 - d. Once every five years, the stated batteries shall be subjected to a Performance Discharge Test (capacity). This test will be performed in lieu of the Service Discharge Test requirement of 4.9.A.2.c above.

LIMITING CONDITION FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.9.B Operation with Inoperable Equipment

Whenever the reactor is in Run Mode or Startup Mode with the reactor not in a Cold Condition, the availability of electric power shall be as specified in 3.9.B.1, 3.9.B.2, 3.9.B.3, 3.9.B.4, and 3.9.B.5.

1. From and after the date that incoming power is not available from the startup or shutdown transformer, continued reactor operation is permissible under this condition for seven days. During this period, both diesel generators and associated emergency buses must be demonstrated to be operable.
2. From and after the date that incoming power is not available from both startup and shutdown transformers, continued operation is permissible, provided both diesel generators and associated emergency buses are demonstrated to be operable, all core and containment cooling systems are operable, reactor power level is reduced to 25% of design and the NRC is notified within one (1) hour as required by 10CFR50.72.
3. From and after the date that one of the diesel generators or associated emergency bus is made or found to be inoperable for any reason, continued reactor operation is permissible in accordance with Specification 3.5.F if Specification 3.9.A.1 and 3.9.A.2.a are satisfied.
4. From and after the date that one of the diesel generators or associated emergency buses and either the shutdown or startup transformer power source are made

4.9.A Auxiliary Electrical Equipment Surveillance (Cont'd)

3. Emergency 4160V Buses A5-A6 Degraded Voltage Annunciation System.
 - a. Once each operating cycle, calibrate the alarm sensor.
 - b. Once each 31 days perform a channel functional test on the alarm system.
 - c. In the event the alarm system is determined inoperable under 3.b above, commence logging safety related bus voltage every 30 minutes until such time as the alarm is restored to operable status.
4. RPS Electrical Protection Assemblies
 - a. Each pair of redundant RPS EPAs shall be determined to be operable at least once per 6 months by performance of an instrument functional test.
 - b. Once per operating cycle, each pair of redundant RPS EPAs shall be determined to be operable by performance of an instrument calibration and by verifying tripping of the circuit breakers upon the simulated conditions for automatic actuation of the protective relays within the following limits:

Overvoltage	≤ 132 volts
Undervoltage	≥ 108 volts
Underfrequency	≥ 57Hz

BASES: (Cont'd)

4.9

deliver full flow. Periodic testing of the various components, plus a functional test once per cycle, is sufficient to maintain adequate reliability.

Although station batteries will deteriorate with time, utility experience indicates there is almost no possibility of precipitous failure. The type of surveillance described in this specification has been demonstrated over the years to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure.

The Service Discharge Test provides indication of the batteries' ability to satisfy the design requirements (battery duty cycle) of the associated dc system. This test will be performed using simulated or actual loads at the rates and for the duration specified in the design load profile. A once per cycle testing interval was chosen to coincide with planned outages.

The Performance Discharge Test provides adequate indication and assurance that the batteries have the specified ampere hour capacity. The results of these tests will be logged and compared with the manufacturer's recommendations of acceptability. This test is performed once every five years in lieu of the Service Discharge test that would normally occur within that time frame.

The diesel fuel oil quality must be checked to ensure proper operation of the diesel generators. Water content should be minimized because water in the fuel could contribute to excessive damage to the diesel engine.

The electrical protection assemblies (EPAs) on the RPS inservice power supplies, either two motor generator sets or one motor generator and the alternative supply, consist of protective relays that trip their incorporated circuit breakers on overvoltage, undervoltage, or underfrequency conditions. There are two EPAs in series per power source. It is necessary to periodically test the relays to ensure the sensor is operating correctly and to ensure the trip unit is operable. Based on experience at conventional and nuclear power plants, a six-month frequency for the channel functional test is established. This frequency is consistent with the Standard Technical Specifications.

The EPAs of the power sources to the RPS shall be determined to be operable by performance of a channel calibration of the relays once per operating cycle. During calibration, a transfer to the alternative power source is required; however, prior to switching to alternative feed, de-energization of the applicable MG set power source must be accomplished. This results in a half scram on the channel being calibrated until the alternative power source is connected and the half scram is cleared. Based on operating experience, drift of the EPA protective relays is not significant. Therefore, to avoid possible spurious scrams, a calibration frequency of once per cycle is established.

ATTACHMENT C

Station and Switchyard Batteries
Marked-Up Technical Specification and Bases Pages

195
201

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.9.A AUXILIARY ELECTRICAL EQUIPMENT
(Cont'd)

- 4. 4160 volt buses A5 and A6 are energized and the associated 480 volt buses are energized.
- 5. The station and switchyard 125 and 250 volt batteries are operable. Each battery shall have an operable battery charger.
- 6. Emergency Bus Degraded Voltage Annunciation System as specified in Table 3.2.B.1 is operable.
- 7. Specification

Two redundant RPS Electrical Protection Assemblies (EPAs) shall be operable at all times on both inservice power supplies.

Action

- a. With one EPA on an inservice power supply inoperable, continued operation is permissible provided that the EPA is returned to operable status or power is transferred to a source with two operable EPAs within 72 hours. If this requirement cannot be met, trip the power source.
- b. With both RPS EPAs found to be inoperable on an inservice power supply, continued operation is permissible, provided at least one EPA is restored to operable status or power is transferred to a source with at least one operable EPA within 30 minutes. If this requirement cannot be met, trip the power source.

NOTE: Only applicable if tripping the power source would not result in a scram.

Revision 136
Amendment No. 42, 67, 96, 127

4.9.A AUXILIARY ELECTRICAL EQUIPMENT
SURVEILLANCE (Cont'd)

- d. Once a month the quantity of diesel fuel available shall be logged.
- e. Once a month a sample of diesel fuel shall be checked for quality in accordance with ASTM D4057-81 or D4177-82. The quality shall be within the acceptable limits specified in Table 1 or ASTM D975-81 and logged.
- 2. Station and Switchyard Batteries

a. Every week the specific gravity, the voltage and temperature of the pilot cell and overall battery voltage shall be measured and logged.

b. Every three months the measurements shall be made of voltage of each cell to nearest 0.1 volt, specific gravity of each cell, and temperature of every fifth cell. These measurements shall be logged.

c. Once each operating cycle, the stated batteries shall be subjected to a ~~rated load discharge test~~. The specific gravity and voltage of each cell shall be determined after the discharge and logged.

Service Discharge Test (load profile)

d.
3. Emergency 4160V Buses A5-A6 Degraded Voltage Annunciation System.

a. Once each operating cycle, calibrate the alarm sensor.

b. Once each 31 days perform a channel functional test on the alarm system.

Once every five years, the stated batteries shall be subjected to a Performance Discharge Test (capacity). This 195 test will be performed in lieu of the Service Discharge Test requirement of 4.9.A.2.c. above.

BASES: (Cont'd)

4.9

deliver full flow. Periodic testing of the various components, plus a functional test once per cycle, is sufficient to maintain adequate reliability.

Although station batteries will deteriorate with time, utility experience indicates there is almost no possibility of precipitous failure. The type of surveillance described in this specification has been demonstrated over the years to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure. In addition, the checks described also provide adequate indication that the batteries have the specified ampere hour capability.

Insert A → The diesel fuel oil quality must be checked to ensure proper operation of the diesel generators. Water content should be minimized because water in the fuel could contribute to excessive damage to the diesel engine.

The electrical protection assemblies (EPAs) on the RPS inservice power supplies, either two motor generator sets or one motor generator and the alternative supply, consist of protective relays that trip their incorporated circuit breakers on overvoltage, undervoltage, or underfrequency conditions. There are two EPAs in series per power source. It is necessary to periodically test the relays to ensure the sensor is operating correctly and to ensure the trip unit is operable. Based on experience at conventional and nuclear power plants, a six-month frequency for the channel functional test is established. This frequency is consistent with the Standard Technical Specifications.

The EPAs of the power sources to the RPS shall be determined to be operable by performance of a channel calibration of the relays once per operating cycle. During calibration, a transfer to the alternative power source is required; however, prior to switching to alternative feed, de-energization of the applicable MG set power source must be accomplished. This results in a half scram on the channel being calibrated until the alternative power source is connected and the half scram is cleared. Based on operating experience, drift of the EPA protective relays is not significant. Therefore, to avoid possible spurious scrams, a calibration frequency of once per cycle is established.

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INSERT "A" TO BASES

The Service Discharge Test provides indication of the batteries' ability to satisfy the design requirements (battery duty cycle) of the associated dc system. This test will be performed using simulated or actual loads at the rates and for the duration specified in the design load profile. A once per cycle testing interval was chosen to coincide with planned outages.

The Performance Discharge Test provides adequate indication and assurance that the batteries have the specified ampere hour capacity. The results of these tests will be logged and compared with the manufacturer's recommendations of acceptability. This test is performed once every five years in lieu of the Service Discharge test that would normally occur within that time frame.