

ATTACHMENT

DONALD C. COOK NUCLEAR PLANT UNITS 1 AND 2
APPENDIX A TECHNICAL SPECIFICATIONS

7908140 559 P

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

- a. Two feedwater pumps, each capable of being powered from separate emergency busses, and
- b. One feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

With one auxiliary feedwater pump inoperable, restore at least three auxiliary feedwater pumps (two capable of being powered from separate emergency busses and one capable of being powered by an OPERABLE steam supply system) to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
 1. Starting each pump from the control room.
 2. Verifying that:
 - a. Each motor driven pump develops a discharge pressure of ≥ 1375 psig on recirculation flow, and
 - b. The steam turbine driven pump develops a discharge pressure of ≥ 1285 psig at a flow of ≥ 700 gpm when the secondary steam pressure is greater than 310 psig.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying that each pump operates for at least 15 minutes.
 4. Cycling each testable power operated or automatic valve in the flow path through at least one complete cycle of full travel.
 5. Verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
- b. At least once per 18 months during shutdown by:
1. Cycling each power operated valve in the flow path that is not testable during plant operation, through at least once complete cycle of full travel.
 2. Verifying that each motor driven pump starts automatically upon receipt of each of the following signals:
 - a) Loss of main feedwater pumps.
 - b) Safety Injection.
 - c) Steam Generator Water Level--Low-Low from one steam generator, 2 out of 3 channels.
 3. Verifying that the steam turbine driven pump starts automatically upon receipt of each of the following signals:
 - a) Steam Generator Water Level--Low-Low from two steam generators, 2 out of 3 channels.
 - b) Reactor Coolant Pump Bus Undervoltage.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING - TRAIN N BATTERY SYSTEM

LIMITING CONDITION FOR OPERATION

3.8.2.5 The following D.C. bus train shall be energized and OPERABLE with tie breakers between it and the Train AB and Train CD battery circuit open.

TRAIN N consisting of 250 volt D.C. bus No. N, 250 volt D.C. battery bank No. N and a full capacity charger.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

- a. With the 250 volt D.C. bus inoperable, restore the inoperable bus to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours.
- b. With the 250 volt D.C. battery No. N and/or its charger inoperable, restore the inoperable battery and/or charger to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.5.1 The D.C. bus train No. N shall be determined OPERABLE and energized with tie breakers open at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.5.2 The 250 volt battery bank and charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 1. The electrolyte level of each pilot cell is between the minimum and maximum level indication marks,

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. The pilot cell specific gravity, corrected to 77°F and full electrolyte level, is ≥ 1.200 ,
 3. The pilot cell voltage is ≥ 2.10 volts, and
 4. The overall battery voltage is ≥ 250 volts.
- b. At least once per 92 days by verifying that:
1. The voltage of each connected cell is ≥ 2.10 volts under float charge and has not decreased more than 0.05 volts from the value observed during the original acceptance test,
 2. The specific gravity, corrected to 70°F and full electrolyte level, of each connected cell is ≥ 1.200 and has not decreased more than 0.03 from the value observed during the previous test, and
 3. The electrolyte level of each connected cell is between the minimum and maximum level indication marks.
- c. At least once per 18 months by verifying that:
1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.
 2. The cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material.
 3. The battery charger will supply at least 10 amperes at ≥ 250 volts for at least 4 hours.
- d. At least once per 18 months, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status the emergency loads for the specified times of Table 4.8-2 with the battery charger disconnected. The battery terminal voltage shall be maintained ≥ 210 volts throughout the entire test.
- e. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test shall be performed subsequent to the satisfactory completion of the required battery service test.

TABLE 4.8-2
BATTERY EMERGENCY LOADS

<u>"N" Battery Loads</u>	<u>Minimum Time</u>
Auxiliary feedwater turbine control bus	4 hours
FMO-211 valve	*
FMO-221 "	*
FMO-231 "	*
FMO-241 "	*
TDTV "	*

* Valves will be operated through the following sequence:

1. Beginning of test: open valves.
2. Five minutes after the beginning of the test: close the valves.
3. Ten minutes after the beginning of the test: reopen the valves.
4. Four hours after the beginning of the test: close the valves.

End of the test.

3/4.8 ELECTRICAL POWER SYSTEMS

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 specifies independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 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 accident 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 train N station battery system provides an independent 250 volt DC power supply for power and control of the turbine driven auxiliary feedwater pump train. The limiting conditions of operation for the train N battery are consistent with the requirements of the auxiliary feedwater system. The surveillance requirements for the train N battery system are consistent with requirements of the AB and CD station batteries. Standby circuits provide the capability to connect the train N battery system to the AB or CD station battery trains. The train N battery loads are derived from equipment in the turbine driven auxiliary feedwater pump train and battery sizing is consistent with the functional requirements of these components.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING - TRAIN N BATTERY SYSTEM

LIMITING CONDITION FOR OPERATION

3.8.2.5 The following D.C. bus train shall be energized and OPERABLE with tie breakers between it and the Train AB and Train CD battery circuit open.

TRAIN N consisting of 250 volt D.C. bus No. N, 250 volt D.C. battery bank No. N and a full capacity charger.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

- a. With the 250 volt D.C. bus inoperable, restore the inoperable bus to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours.
- b. With the 250 volt D.C. battery No. N and/or its charger inoperable, restore the inoperable battery and/or charger to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.5.1 The D.C. bus train No. N shall be determined OPERABLE and energized with tie breakers open at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.5.2 The 250 volt battery bank and charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 1. The electrolyte level of each pilot cell is between the minimum and maximum level indication marks,

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. The pilot cell specific gravity, corrected to 77°F and full electrolyte level, is ≥ 1.200 ,
 3. The pilot cell voltage is ≥ 2.10 volts, and
 4. The overall battery voltage is ≥ 250 volts.
- b. At least once per 92 days by verifying that:
1. The voltage of each connected cell is ≥ 2.10 volts under float charge and has not decreased more than 0.05 volts from the value observed during the original acceptance test,
 2. The specific gravity, corrected to 70°F and full electrolyte level, of each connected cell is ≥ 1.200 and has not decreased more than 0.03 from the value observed during the previous test, and
 3. The electrolyte level of each connected cell is between the minimum and maximum level indication marks.
- c. At least once per 18 months by verifying that:
1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.
 2. The cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material.
 3. The battery charger will supply at least 10 amperes at ≥ 250 volts for at least 4 hours.
- d. At least once per 18 months, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status the emergency loads for the specified times of Table 4.8-2 with the battery charger disconnected. The battery terminal voltage shall be maintained ≥ 210 volts throughout the entire test.
- e. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test shall be performed subsequent to the satisfactory completion of the required battery service test.

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End of the test.

3/4.8 ELECTRICAL POWER SYSTEMS

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 Criteria 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 accident analyses and are based upon maintaining at least one redundant set of 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 diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies", March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants", Revision 1, August 1977.

The train N station battery system provides an independent 250 volt DC power supply for power and control of the turbine driven auxiliary feedwater pump train. The limiting conditions of operation for the train N battery are consistent with the requirements of the auxiliary feedwater system. The surveillance requirements for the train N battery system are consistent with the requirements of the AB and CD station batteries. Standby circuits provide the capability to connect the train N battery system to the AB or CD station battery trains. The train N battery loads are derived from equipment in the turbine driven auxiliary feedwater pump train and battery sizing is consistent with the functional requirements of these components.