



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

COMMONWEALTH EDISON COMPANY

DOCKET NO. STN 50-456

BRAIDWOOD STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5
License No. NPF-72

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Commonwealth Edison Company (the licensee) dated December 3, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the licensee is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-72 is hereby amended to read as follows:

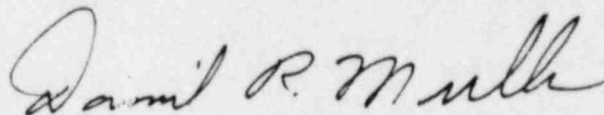
(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 5 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

8802090468 880127
PDR ADOCK 05000456
P PDR

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, reading "Daniel R. Muller".

Daniel R. Muller, Director
Project Directorate III-2
Division of Reactor Projects - III
IV, V and Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 27, 1988



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

COMMONWEALTH EDISON COMPANY

DOCKET NO. STN 50-457

BRAIDWOOD STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5
License No. NPF-75

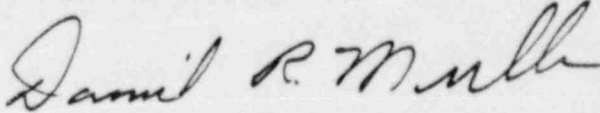
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Commonwealth Edison Company (the licensee) dated December 3, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the licensee is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-75 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 5 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, reading "Daniel R. Muller".

Daniel R. Muller, Director
Project Directorate III-2
Division of Reactor Projects - III
IV, V and Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 27, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 5

FACILITY OPERATING LICENSE NO. NPF-72

DOCKET NO. STN-50-456

Revise Appendix A as follows:

Remove Pages

3/4 8-10
3/4 8-11
3/4 8-12*
3/4 8-13
3/4 8-14*

Insert Pages

3/4 8-10
3/4 8-11
3/4 8-12*
3/4 8-13
3/4 8-14*

* Overleaf pages added for convenience

ELECTRICAL POWER SYSTEMS

3/4.8.2 D.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 As a minimum the following D.C. electrical sources shall be OPERABLE:

- a. 125-Volt D.C. Bus 111 fed from Battery 111 for Unit 1 (Bus 211 fed from Battery 211 for Unit 2), and its associated full capacity charger, and
- b. 125-Volt D.C. Bus 112 fed from Battery 112 for Unit 1 (Bus 212 fed from Battery 212 for Unit 2), and its associated full capacity charger.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one of the required battery banks and/or chargers inoperable, restore the inoperable battery bank and/or battery bus 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.
- b. With the normal full capacity charger inoperable: 1) restore the affected battery and/or battery bus to operable status with the opposite units full capacity charger within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and 2) restore the normal full capacity charger to operable status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- c. Use of the D.C. crosstie breakers between opposite unit D.C. buses (bus 111 and 211, or bus 112 and 212) shall be limited to the following:
 - (1) With a normal full capacity charger inoperable, comply with action statement (b) above.
 - (2) With a D.C. bus inoperable or not energized on a shutdown unit (Mode 5 or 6), the affected D.C. bus may be energized from the operating unit (Mode 1, 2, 3 or 4) opposite D.C. bus via the crosstie breakers after limiting the D.C. loads on the affected D.C. bus; operation may then continue for up to 7 days or open the crosstie breakers.

SURVEILLANCE REQUIREMENTS

4.8.2.1.1 Each D.C. bus shall be determined OPERABLE and energized from its battery at least once per 7 days by verifying correct breaker alignment.

4.8.2.1.2 Each 125-volt battery bank and its associated charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 - 1) The parameters in Table 4.8-2 meet the Category A limits, and
 - 2) The total battery terminal voltage is greater than or equal to 126 volts on float charge.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 145 volts, by verifying that:
- 1) The parameters in Tabl 4.8-2 meet the Category B limits,
 - 2) There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150×10^{-6} ohm*, and
 - 3) The average electrolyte temperature of all connected cells is above 60°F.
- 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 anticorrosion material,
 - 3) The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohm*, and
 - 4) The battery charger will supply a load equal to the manufacturer's rating for at least 8 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 all of the actual or simulated emergency loads for 240 minutes when the battery is subject to a battery service 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 may be performed in lieu of the battery service test required by Specification 4.8.2.1.2d.;
- f. At least once per 18 months during shutdown, by giving performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

4.8.2.1.3 At least once per 12 hours, when in specification 3.8.2.1.c.(2), verify the total crossie loading will not exceed 63 amps.

*Obtained by subtracting the normal resistance of: 1) the cross room rack connector (400×10^{-6} ohm, typical) and 2) the bi-level rack connector (50×10^{-6} ohm, typical); from the measured cell-to-cell connection resistance.

TABLE 4.8-2

BATTERY SURVEILLANCE REQUIREMENTS

PARAMETER	CATEGORY A ⁽¹⁾		CATEGORY B ⁽²⁾
	LIMITS FOR EACH DESIGNATED PILOT CELL	LIMITS FOR EACH CONNECTED CELL	ALLOWABLE ⁽³⁾ VALUE FOR EACH CONNECTED CELL
Electrolyte Level	>Minimum level indication mark, and < 1/4" above maximum level indication mark	>Minimum level indication mark, and < 1/4" above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 volts	≥ 2.13 volts ⁽⁶⁾	> 2.07 volts
Specific Gravity ⁽⁴⁾	≥ 1.200 ⁽⁵⁾	≥ 1.195 Average of all connected cells > 1.205	Not more than 0.020 below the average of all connected cells Average of all connected cells ≥ 1.195 ⁽⁵⁾

TABLE NOTATIONS

- (1) For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.
- (2) For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.
- (3) Any Category B parameter not within its allowable value indicates an inoperable battery.
- (4) Corrected for electrolyte temperature and level.
- (5) Or battery charging current is less than 2 amps when on charge.
- (6) Corrected for average electrolyte temperature.

ELECTRICAL POWER SYSTEMS

D.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, one 125-volt D.C. bus fed from its battery and its associated full-capacity charger shall be OPERABLE.*

APPLICABILITY: MODES 5 and 6.

ACTION:

With the required battery bank and/or full-capacity charger inoperable, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes or movement of irradiated fuel; initiate corrective action to restore the required battery bank and full-capacity charger to OPERABLE status as soon as possible, and within 8 hours, depressurize and vent the Reactor Coolant System through at least a 2 square inch vent.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The above required 125-volt D.C. bus fed from its battery and its associated charger shall be demonstrated OPERABLE per Specifications 4.8.2.1.1 and 4.8.2.1.2.

*Use of the D.C. cross-tie breakers is covered in Technical Specification 3.8.2.1, Action Statement c.

ELECTRICAL POWER SYSTEMS

3/4.8.3 ONSITE POWER DISTRIBUTION

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.3.1 The following electrical busses shall be energized in the specified manner for the applicable unit:

- a. A.C. ESF Busses consisting of:

<u>UNIT 1</u>	<u>UNIT 2</u>
Division 11	Division 21
1) 4160-Volt Bus 141,	1) 4160-Volt Bus 241
2) 480-Volt Bus 131X.	2) 480-Volt Bus 231X.

- b. A.C. ESF Busses consisting of:

<u>UNIT 1</u>	<u>UNIT 2</u>
Division 12	Division 22
1) 4160-Volt Bus 142	1) 4160-Volt Bus 242
2) 480-Volt Bus 132X.	2) 480-Volt Bus 232X.

- c. 120-Volt A.C. Instrument Bus 111 for Unit 1 (Bus 211 for Unit 2) energized from its associated inverter connected to D.C. Bus 111 for Unit 1 (Bus 211 for Unit 2),
- d. 120-Volt A.C. Instrument Bus 113 for Unit 1 (Bus 213 for Unit 2) energized from its associated inverter connected to D.C. Bus 111 for Unit 1 (Bus 211 for Unit 2),
- e. 120-Volt A.C. Instrument Bus 112 for Unit 1 (Bus 212 for Unit 2) energized from its associated inverter connected to D.C. Bus 112 for Unit 1 (Bus 212 for Unit 2), and
- f. 120-Volt A.C. Instrument Bus 114 for Unit 1 (Bus 214 for Unit 2) energized from its associated inverter connected to D.C. Bus 112 for Unit 1 (Bus 212 for Unit 2).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one of the required divisions of A.C. ESF busses not fully energized, reenergize the division within 8 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 A.C. instrument bus either not energized from its associated inverter, or with the inverter not connected to its associated D.C. bus: 1) reenergize the A.C. instrument bus within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and 2) reenergize the A.C. instrument bus from its associated inverter connected to its associated D.C. bus within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ATTACHMENT TO LICENSE AMENDMENT NO. 5

FACILITY OPERATING LICENSE NO. NPF-75

DOCKET NO. STN-50-457

Revise Appendix A as follows:

Remove Pages

3/4 8-10
3/4 8-11
3/4 8-12*
3/4 8-13
3/4 8-14*

Insert Pages

3/4 8-10
3/4 8-11
3/4 8-12*
3/4 8-13
3/4 8-14*

* Overleaf pages added for convenience

ELECTRICAL POWER SYSTEMS

3/4.8.2 D.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 As a minimum the following D.C. electrical sources shall be OPERABLE:

- a. 125-Volt D.C. Bus 111 fed from Battery 111 for Unit 1 (Bus 211 fed from Battery 211 for Unit 2), and its associated full capacity charger, and
- b. 125-Volt D.C. Bus 112 fed from Battery 112 for Unit 1 (Bus 212 fed from Battery 212 for Unit 2), and its associated full capacity charger.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one of the required battery banks and/or chargers inoperable, restore the inoperable battery bank and/or battery bus 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.
- b. With the normal full capacity charger inoperable: 1) restore the affected battery and/or battery bus to operable status with the opposite units full capacity charger within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and 2) restore the normal full capacity charger to operable status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- c. Use of the D.C. crosstie breakers between opposite unit D.C. buses (bus 111 and 211, or bus 112 and 212) shall be limited to the following:
 - (1) With a normal full capacity charger inoperable, comply with action statement (b) above.
 - (2) With a D.C. bus inoperable or not energized on a shutdown unit (Mode 5 or 6), the affected D.C. bus may be energized from the operating unit (Mode 1, 2, 3 or 4) opposite D.C. bus via the crosstie breakers after limiting the D.C. loads on the affected D.C. bus; operation may then continue for up to 7 days or open the crosstie breakers.

SURVEILLANCE REQUIREMENTS

4.8.2.1.1 Each D.C. bus shall be determined OPERABLE and energized from its battery at least once per 7 days by verifying correct breaker alignment.

4.8.2.1.2 Each 125-volt battery bank and its associated charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 - 1) The parameters in Table 4.8-2 meet the Category A limits, and
 - 2) The total battery terminal voltage is greater than or equal to 126 volts on float charge.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 145 volts, by verifying that:
- 1) The parameters in Table 4.8-2 meet the Category B limits,
 - 2) There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150×10^{-6} ohm*, and
 - 3) The average electrolyte temperature of all connected cells is above 60°F.
- 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 anticorrosion material,
 - 3) The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohm*, and
 - 4) The battery charger will supply a load equal to the manufacturer's rating for at least 8 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 all of the actual or simulated emergency loads for 240 minutes when the battery is subject to a battery service 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 may be performed in lieu of the battery service test required by Specification 4.8.2.1.2d.;
- f. At least once per 18 months during shutdown, by giving performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

4.8.2.1.3 At least once per 12 hours, when in specification 3.8.2.1.c.(2), verify the total crosstie loading will not exceed 63 amps.

*Obtained by subtracting the normal resistance of: 1) the cross room rack connector (400×10^{-6} ohm, typical) and 2) the bi-level rack connector (50×10^{-6} ohm, typical); from the measured cell-to-cell connection resistance.

TABLE 4.8-2

BATTERY SURVEILLANCE REQUIREMENTS

PARAMETER	CATEGORY A ⁽¹⁾		CATEGORY B ⁽²⁾
	LIMITS FOR EACH DESIGNATED PILOT CELL	LIMITS FOR EACH CONNECTED CELL	ALLOWABLE ⁽³⁾ VALUE FOR EACH CONNECTED CELL
Electrolyte Level	>Minimum level indication mark, and $\leq \frac{1}{4}$ " above maximum level indication mark	>Minimum level indication mark, and $\leq \frac{1}{4}$ " above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 volts	≥ 2.13 volts ⁽⁶⁾	> 2.07 volts
Specific Gravity ⁽⁴⁾	≥ 1.200 ⁽⁵⁾	≥ 1.195 Average of all connected cells > 1.205	Not more than 0.020 below the average of all connected cells Average of all connected cells ≥ 1.195 ⁽⁵⁾

TABLE NOTATIONS

- (1) For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.
- (2) For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.
- (3) Any Category B parameter not within its allowable value indicates an inoperable battery.
- (4) Corrected for electrolyte temperature and level.
- (5) Or battery charging current is less than 2 amps when on charge.
- (6) Corrected for average electrolyte temperature.

ELECTRICAL POWER SYSTEMS

D.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, one 125-volt D.C. bus fed from its battery and its associated full-capacity charger shall be OPERABLE.*

APPLICABILITY: MODES 5 and 6.

ACTION:

With the required battery bank and/or full-capacity charger inoperable, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes or movement of irradiated fuel; initiate corrective action to restore the required battery bank and full-capacity charger to OPERABLE status as soon as possible, and within 8 hours, depressurize and vent the Reactor Coolant System through at least a 2 square inch vent.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The above required 125-volt D.C. bus fed from its battery and its associated charger shall be demonstrated OPERABLE per Specifications 4.8.2.1.1 and 4.8.2.1.2.

*Use of the D.C. crosstie breakers is covered in Technical Specification 3.8.2.1, Action Statement c.

ELECTRICAL POWER SYSTEMS

3/4.8.3 ONSITE POWER DISTRIBUTION

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.3.1 The following electrical busses shall be energized in the specified manner for the applicable unit:

- a. A.C. ESF Busses consisting of:

<u>UNIT 1</u>	<u>UNIT 2</u>
Division 11	Division 21
1) 4160-Volt Bus 141,	1) 4160-Volt Bus 241
2) 480-Volt Bus 131X.	2) 480-Volt Bus 231X.

- b. A.C. ESF Busses consisting of:

<u>UNIT 1</u>	<u>UNIT 2</u>
Division 12	Division 22
1) 4160-Volt Bus 142	1) 4160-Volt Bus 242
2) 480-Volt Bus 132X.	2) 480-Volt Bus 232X.

- c. 120-Volt A.C. Instrument Bus 111 for Unit 1 (Bus 211 for Unit 2) energized from its associated inverter connected to D.C. Bus 111 for Unit 1 (Bus 211 for Unit 2),
- d. 120-Volt A.C. Instrument Bus 113 for Unit 1 (Bus 213 for Unit 2) energized from its associated inverter connected to D.C. Bus 111 for Unit 1 (Bus 211 for Unit 2),
- e. 120-Volt A.C. Instrument Bus 112 for Unit 1 (Bus 212 for Unit 2) energized from its associated inverter connected to D.C. Bus 112 for Unit 1 (Bus 212 for Unit 2), and
- f. 120-Volt A.C. Instrument Bus 114 for Unit 1 (Bus 214 for Unit 2) energized from its associated inverter connected to D.C. Bus 112 for Unit 1 (Bus 212 for Unit 2).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one of the required divisions of A.C. ESF busses not fully energized, reenergize the division within 8 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 A.C. instrument bus either not energized from its associated inverter, or with the inverter not connected to its associated D.C. bus: 1) reenergize the A.C. instrument bus within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and 2) reenergize the A.C. instrument bus from its associated inverter connected to its associated D.C. bus within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.