

September 20, 1985

Docket Nos. 50-325/324

Mr. E. E. Utley
Senior Executive Vice President
Power Supply and Engineering & Construction
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Utley:

The Commission has issued the enclosed Amendment Nos. 92 and 117 to Facility Operating License Nos. DPR-71 and DPR-62 for the Brunswick Steam Electric Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your submittal of December 10, 1984 as supplemented June 28, 1985.

The amendments change the Technical Specifications (TS) to upgrade TS Sections 3/4 8.2.3 and 3/4 8.2.4 to reflect the Brunswick DC system design and load profiles. Administrative changes have also been made to Section 3/4 8.2.5.

A copy of the related Safety Evaluation is also enclosed.

Sincerely,

Original signed by/

Marshall Grotenhuis, Project Manager
Operating Reactors Branch #2
Division of Licensing

Enclosures:

1. Amendment No. 92 to License No. DPR-71
2. Amendment No. 117 to License No. DPR-62
3. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION

Docket File
NRC PDR
Local PDR
ORB#2 Reading
HThompson

LRubenstein
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MGrotenhuis
OELD
LJHarmon
ELJordan

SRhow
BGrimes
TBarnhart (8)
WJones
MVirgilio
ACRS (10)

OPA, CMiles
RDiggs
Gray file
Extra 5
JPartlow

DL:ORB#2
SNorris:rc
09/18/85

DL:ORB#2
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09/18/85

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LRubenstein
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DVassallo
09/19/85

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09/19/85

DL:AD-OR
GLainas
09/19/85

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PDR ADOCK 05000324
P PDR

9/19

Mr. E. E. Utley
Carolina Power & Light Company
Brunswick Steam Electric Plant; Units 1 and 2

cc:

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

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 92
License No. DPR-71

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Carolina Power & Light Company (the licensee) dated December 10, 1984, as supplemented June 28, 1985 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 license 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. DPR-71 is hereby amended to read as follows:

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(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 92, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 20, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 92

FACILITY OPERATING LICENSE NO. DPR-71

DOCKET NO. 50-325

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

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ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.3 As a minimum, the following D.C. divisions shall be OPERABLE with tie breakers between divisions open:

- a. Division I, consisting of:
 - 1. A 250/125 volt bus
 - 2. Two 125 volt D.C. batteries, 1A-1 and 1A-2, each with a full capacity charger.

- b. Division II, consisting of:
 - 1. A 250/125 volt bus.
 - 2. Two 125 volt D.C. batteries, 1B-1 and 1B-2, each with a full capacity charger.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With one or more batteries and/or its associated charger inoperable in one division, restore the division to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

- b. With one or more batteries and/or its associated charger inoperable in both divisions, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each of the above required D.C. divisions shall be determined OPERABLE with tie breakers open at least once per 7 days by verifying:

- a. Correct breaker alignment and indicated power availability, and

- b. That no more than two 37.5 KVA power conversion modules are aligned to the B division bus.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.8.2.3.2 Each of the above required 125-volt batteries and chargers shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 1. The parameters in Table 4.8.2.3.2-1 meet the Category A limits, and
 2. Total battery terminal voltage is greater than or equal to 129 volts on float charge.

- b. At least once per 92 days by verifying that:
 1. The parameters in Table 4.8.2.3.2-1 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} ohms, and
 3. The average electrolyte temperature of the 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, free of corrosion, and coated with anti-corrosion material, and
 3. The battery charger will supply at least 250 amperes at a minimum of 135 volts for at least 4 hours.

ELECTRICAL POWER SYSTEMSSURVEILLANCE REQUIREMENTS (Continued)

- d. At least once per 18 months, during shutdown, by verifying that:
1. The battery capacity is adequate to supply a dummy load of the following profile while maintaining the battery terminal voltage greater than or equal to 105 volts.
 - a) During the initial 60 seconds of the test:
 - 1) Battery 1A-1 greater than or equal to 916 amperes.
 - 2) Battery 1A-2 greater than or equal to 916 amperes.
 - 3) Battery 1B-1 greater than or equal to 916 amperes.
 - 4) Battery 1B-2 greater than or equal to 916 amperes.
 - b) During the remainder of the first 30 minutes of the test:
 - 1) Battery 1A-1 greater than or equal to 250 amperes.
 - 2) Battery 1A-2 greater than or equal to 250 amperes.
 - 3) Battery 1B-1 greater than or equal to 250 amperes.
 - 4) Battery 1B-2 greater than or equal to 250 amperes.
 - c) During the remainder of the 4 hour test:
 - 1) Battery 1A-1 greater than or equal to 200 amperes.
 - 2) Battery 1A-2 greater than or equal to 200 amperes.
 - 3) Battery 1B-1 greater than or equal to 200 amperes.
 - 4) Battery 1B-2 greater than or equal to 200 amperes.
 2. At the completion of the above tests, the battery charger shall be demonstrated capable of recharging its battery at a rate of at least 200 amperes while supplying normal D.C. loads. The battery shall be charged to at least 95% capacity in less than or equal to 24 hours.
- 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.

TABLE 4.8.2.3.2-1

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 $\leq 1/4$ " above maximum level indication mark	>Minimum level indication mark, and $\leq 1/4$ " above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 volts	≥ 2.13 volts ^(c)	≥ 2.07 volts
Specific Gravity ^(a)	≥ 1.200 ^(b)	any one cell ≥ 1.195 Average of all connected cells ≥ 1.205	Not more than .020 below the average of all connected cells Average of all connected cells ≥ 1.195 ^(b)

(a) Corrected for electrolyte temperature and level.

(b) Or battery charging current is less than 2 amps.

(c) Corrected for average electrolyte temperature.

(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 7 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.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATION OF ONE OR BOTH UNITS

LIMITING CONDITION FOR OPERATION

3.8.2.4.1 The 125 VDC control power circuits shall be OPERABLE from their normal source for the following equipment:

- a. Diesel Generator #1, 4160 V emergency bus E1, and 480 V emergency bus E5.
- b. Diesel Generator #2, 4160 V emergency bus E2, and 480 V emergency bus E6.
- c. Diesel Generator #3, 4160 V emergency bus E3, and 480 V emergency bus E7.
- d. Diesel Generator #4, 4160 V emergency bus E4, and 480 V emergency bus E8.
- e. ESS panel H58*
- f. ESS panel H59*
- g. ESS panel H60*
- h. ESS panel H61*

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With 125 VDC control power circuit for the diesel generator, 4160 V emergency bus, or 480 V emergency bus not OPERABLE from its normal source, declare the affected diesel generator, 4160 V emergency bus, or 480 V emergency bus inoperable and either:
 - 1. Take the applicable ACTION statement for the inoperable equipment, or
 - 2. Declare the affected equipment OPERABLE by manually transferring the 125 VDC control power circuit for the affected diesel generator, 4160 V emergency bus, or 480 V emergency bus to the OPERABLE alternate source.
- b. With the 125 VDC control power circuit for ESS panels H58, H59, H60, or H61 not OPERABLE from its normal source, either:
 - 1. Verify the alternate source is OPERABLE and that power availability is indicated, or

* The ESS panel automatically transfers to its alternate source should the normal source de-energize. Refer to ACTION b.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

2. When the alternate source is inoperable, declare the affected equipment inoperable and take the applicable ACTION statement for the inoperable equipment, or
 3. Verify the 125 VDC control power circuit for the affected ESS panel has automatically transferred to its OPERABLE alternate source and that power availability is indicated.
- c. Restore the affected 125 VDC control power circuit to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.4.1.1 The above specified normal 125 volt D.C. control power circuits shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.4.1.2 The batteries and chargers associated with the above normal 125 volt D.C. control power circuits shall be determined OPERABLE per Surveillance Requirement 4.8.2.3.2.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.4.2 As a minimum, Division I or Division II of the D.C. power distribution system shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 4, 5, and *.

ACTION:

- a. With less than Division I or Division II of the above required D.C. distribution system OPERABLE, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment, and all operations that could decrease SHUTDOWN MARGIN or have the potential for draining the reactor vessel. Restore at least one division to OPERABLE status within 7 days.
- b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.8.2.4.2.1 The above required D.C. Division shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.4.2.2 The batteries and chargers associated with the above required division shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2.

*When handling irradiated fuel in the secondary containment.

ELECTRICAL POWER SYSTEMS

REACTOR PROTECTION SYSTEM ELECTRIC POWER MONITORING

LIMITING CONDITION FOR OPERATION

3.8.2.5 Two RPS electric power monitoring channels for each inservice RPS MG set or alternate source shall be OPERABLE.

APPLICABILITY: Whenever the respective power supply is supplying power to a RPS bus.

ACTION:

- a. With one RPS electric power monitoring channel for an inservice RPS MG set or alternate power supply inoperable, restore the inoperable channel to OPERABLE status within 72 hours or remove the associated RPS MG set or alternate power supply from service.
- b. With both RPS electric power monitoring channels for an inservice RPS MG set or alternate power supply inoperable, restore at least one to OPERABLE status within 30 minutes or remove the associated RPS MG set or alternate power supply from service.

SURVEILLANCE REQUIREMENTS

4.8.2.5 The above specified RPS power monitoring system instrumentation shall be determined OPERABLE:

- a. At least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST, and
- b. At least once per 18 months by demonstrating the OPERABILITY of over-voltage, under-voltage, and under-frequency protective instrumentation by performance of a CHANNEL CALIBRATION including simulated automatic actuation of the protective relays, tripping logic, and output circuit breakers and verifying the following setpoints:

	<u>RPS MG SET</u>	<u>ALTERNATE SOURCE</u>
1. Over-voltage	< 129 VAC	< 132 VAC
2. Under-voltage	> 105 VAC	> 108 VAC
3. Under-frequency	> 57 Hz	> 57 Hz



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

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 117
License No. DPR-62

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Carolina Power & Light Company (the licensee) dated December 10, 1984, as supplemented June 28, 1985 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 license 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. DPR-62 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 117, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 20, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 117

FACILITY OPERATING LICENSE NO. DPR-62

DOCKET NO. 50-324

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

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ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.3 As a minimum, the following D.C. divisions shall be OPERABLE with tie breakers between divisions open:

- a. Division I, consisting of:
 - 1. A 250/125 volt bus.
 - 2. Two 125 volt D.C. batteries, 2A-1 and 2A-2, each with a full capacity charger.

- b. Division II, consisting of:
 - 1. A 250/125 volt bus.
 - 2. Two 125 volt D.C. batteries, 2B-1 and 2B-2, each with a full capacity charger.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With one or more batteries and/or its associated charger inoperable in one division, restore the division to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

- b. With one or more batteries and/or its associated charger inoperable in both divisions, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each of the above required D.C. divisions shall be determined OPERABLE with tie breakers open at least once per 7 days by verifying:

- a. Correct breaker alignment and indicated power availability, and

- b. No more than two 37.5 KVA power conversion modules aligned to the B division bus.

ELECTRICAL POWER SYSTEMSSURVEILLANCE REQUIREMENTS (Continued)

4.8.2.3.2 Each of the above required 125-volt batteries and chargers shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 1. The parameters in Table 4.8.2.3.2-1 meet the Category A limits, and
 2. Total battery terminal voltage is greater than or equal to 129 volts on float charge.

- b. At least once per 92 days by verifying that:
 1. The parameter in Table 4.8.2.3.2-1 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} ohms, and
 3. The average electrolyte temperature of the 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, free of corrosion, and coated with anti-corrosion material, and
 3. The battery charger will supply at least 250 amperes at a minimum of 135 volts for at least 4 hours.

ELECTRICAL POWER SYSTEMSSURVEILLANCE REQUIREMENTS (Continued)

- d. At least once per 18 months, during shutdown, by verifying that:
1. The battery capacity is adequate to supply a dummy load of the following profile while maintaining the battery terminal voltage greater than or equal to 105 volts.
 - a) During the initial 60 seconds of the test:
 - 1) Battery 2A-1 greater than or equal to 916 amperes.
 - 2) Battery 2A-2 greater than or equal to 916 amperes.
 - 3) Battery 2B-1 greater than or equal to 916 amperes.
 - 4) Battery 2B-2 greater than or equal to 916 amperes.
 - b) During the remainder of the first 30 minutes of the test:
 - 1) Battery 2A-1 greater than or equal to 250 amperes.
 - 2) Battery 2A-2 greater than or equal to 250 amperes.
 - 3) Battery 2B-1 greater than or equal to 250 amperes.
 - 4) Battery 2B-2 greater than or equal to 250 amperes.
 - c) During the remainder of the 4 hour test:
 - 1) Battery 2A-1 greater than or equal to 200 amperes.
 - 2) Battery 2A-2 greater than or equal to 200 amperes.
 - 3) Battery 2B-1 greater than or equal to 200 amperes.
 - 4) Battery 2B-2 greater than or equal to 200 amperes.
 2. At the completion of the above tests, the battery charger shall be demonstrated capable of recharging its battery at a rate of at least 200 amperes while supplying normal D.C. loads. The battery shall be charged to at least 95% capacity in less than or equal to 24 hours.
- 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.

TABLE 4.8.2.3.2-1

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 $\leq 1/4$ " above maximum level indication mark	>Minimum level indication mark, and $\leq 1/4$ " above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 volts	≥ 2.13 volts ^(c)	≥ 2.07 volts
Specific Gravity ^(a)	≥ 1.200 ^(b)	any one cell ≥ 1.195 Average of all connected cells ≥ 1.205	Not more than .020 below the average of all connected cells Average of all connected cells ≥ 1.195 ^(b)

(a) Corrected for electrolyte temperature and level.

(b) Or battery charging current is less than 2 amps.

(c) Corrected for average electrolyte temperature.

(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 7 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.

ELECTRICAL POWER SYSTEMSD.C. DISTRIBUTION - OPERATION OF ONE OR BOTH UNITSLIMITING CONDITION FOR OPERATION

3.8.2.4.1 The 125 VDC control power circuits shall be OPERABLE from their normal source for the following equipment:

- a. Diesel Generator #1, 4160 V emergency bus E1, and 480 V emergency bus E5.
- b. Diesel Generator #2, 4160 V emergency bus E2, and 480 V emergency bus E6.
- c. Diesel Generator #3, 4160 V emergency bus E3, and 480 V emergency bus E7.
- d. Diesel Generator #4, 4160 V emergency bus E4, and 480 V emergency bus E8.
- e. ESS panel H58*
- f. ESS panel H59*
- g. ESS panel H60*
- h. ESS panel H61*

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With 125 VDC control power circuit for the diesel generator, 4160 V emergency bus, or 480 V emergency bus not OPERABLE from its normal source, declare the affected diesel generator, 4160 V emergency bus, or 480 V emergency bus inoperable and either:
 1. Take the applicable ACTION statement for the inoperable equipment, or
 2. Declare the affected equipment OPERABLE by manually transferring the 125 VDC control power circuit for the affected diesel generator, 4160 V emergency bus, or 480 V emergency bus to the OPERABLE alternate source.
- b. With the 125 VDC control power circuit for ESS panels H58, H59, H60, or H61 not OPERABLE from its normal source, either:
 1. Verify the alternate source is OPERABLE and that power availability is indicated, or

* The ESS panel automatically transfers to its alternate source should the normal source de-energize. Refer to ACTION b.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

2. When the alternate source is inoperable, declare the affected equipment inoperable and take the applicable ACTION statement for the inoperable equipment, or
 3. Verify the 125 VDC control power circuit for the affected ESS panel has automatically transferred to its OPERABLE alternate source and that power availability is indicated.
- c. Restore the affected 125 VDC control power circuit to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.4.1.1 The above specified normal 125 volt D.C. control power circuits shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.4.1.2 The batteries and chargers associated with the above normal 125 volt D.C. control power circuits shall be determined OPERABLE per Surveillance Requirement 4.8.2.3.2.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.4.2 As a minimum, Division I or Division II of the D.C. power distribution system shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 4, 5, and *.

ACTION:

- a. With less than Division I or Division II of the above required D.C. distribution system OPERABLE, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment, and all operations that could decrease SHUTDOWN MARGIN or have the potential for draining the reactor vessel. Restore at least one division to OPERABLE status within 7 days.
- b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.8.2.4.2.1 The above required D.C. Division shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.4.2.2 The batteries and chargers associated with the above required division shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2.

*When handling irradiated fuel in the secondary containment.

ELECTRICAL POWER SYSTEMS

REACTOR PROTECTION SYSTEM ELECTRIC POWER MONITORING

LIMITING CONDITION FOR OPERATION

3.8.2.5 Two RPS electric power monitoring channels for each inservice RPS MG set or alternate source shall be OPERABLE.

APPLICABILITY: Whenever the respective power supply is supplying power to a RPS bus.

ACTION:

- a. With one RPS electric power monitoring channel for an inservice RPS MG set or alternate power supply inoperable, restore the inoperable channel to OPERABLE status within 72 hours or remove the associated RPS MG set or alternate power supply from service.
- b. With both RPS electric power monitoring channels for an inservice RPS MG set or alternate power supply inoperable, restore at least one to OPERABLE status within 30 minutes or remove the associated RPS MG set or alternate power supply from service.

SURVEILLANCE REQUIREMENTS

4.8.2.5 The above specified RPS power monitoring system instrumentation shall be determined OPERABLE:

- a. At least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST, and
- b. At least once per 18 months by demonstrating the OPERABILITY of over-voltage, under-voltage, and under-frequency protective instrumentation by performance of a CHANNEL CALIBRATION including simulated automatic actuation of the protective relays, tripping logic, and output circuit breakers and verifying the following setpoints:

	<u>RPS MG SET</u>	<u>ALTERNATE SOURCE</u>
1. Over-voltage	< 129 VAC	< 132 VAC
2. Under-voltage	> 105 VAC	> 108 VAC
3. Under-frequency	> 57 Hz	> 57 Hz



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 92 TO FACILITY LICENSE NO. DPR-71 AND
AMENDMENT NO. 117 TO FACILITY LICENSE NO. DPR-62
CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2
DOCKET NOS. 50-325 AND 50-324

1.0 INTRODUCTION

By letter dated December 10, 1984 as supplemented June 28, 1985, the Carolina Power & Light Company (the licensee) submitted proposed changes to the Technical Specifications (TS) appended to Facility Operating License Nos. DPR-71 and DPR-62 for the Brunswick Steam Electric Plant, Units 1 and 2.

The proposed changes modify the TS to upgrade TS Sections 3/4 8.2.3 and 3/4 8.2.4 to reflect the Brunswick direct current (DC) system design and load profiles. Administrative changes have also been made to Section 3/4 8.2.5. These changes are an outgrowth of the events described below.

In November 1983, Battery 2A-2 failed a routine 18-month load profile surveillance test. Though the battery was successfully retested on December 31, 1983, a detailed load study along with an extensive review of the DC system and the existing Technical Specifications (TS) for the system was made to verify the adequacy of the design and the appropriateness of the surveillance program. As a result of this study, the licensee determined that some existing TS could be revised to more readily identify degraded conditions and provide appropriate guidance to operate.

2.0 EVALUATION

The changes to the TS for the DC Distribution portion of the Electric Power System, proposed by the licensee in the December 10, 1984 application have been reviewed. Our evaluation below of each Limiting Condition of Operation (LCO) and Surveillance Requirement (SR) proposed by the licensee is identified by the TS section number.

The Brunswick design has unique DC systems which consist of four 125-volt dc systems per unit. Two of the 125-volt dc systems form the Division I 250-volt dc power supply while other two form the Division II 250-volt dc power supply. The current TS and the Standard Technical Specification (STS) were designed for a unitized, fully separate 125/250-volt dc system. However, the Brunswick plant has unique system design for 125-volt dc power supply with flexibility to enhance the availability of power to the equipment and the systems. Certain circuits, including equipment of the

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125-volt dc system, are shared between the two Brunswick units. For instance, 1A2, one of four 125-volt dc systems supplies normal DC power to DG-1, and distribution buses E1, E5 and H58. When the normal supply is not available, 2A1, one of four 125-volt dc systems of the other unit is the alternate DC power supply to the above circuits through an automatic transferring scheme and is an independent power path. If the normal and the alternate power supplies, 1A2 and 2A1, are not available, 2A2, the other 125-volt dc system of the same 250-volt division of the other unit is the third power supply through a manual transferring operation. Thus, the Brunswick design has three independent 125-volt dc power supplies available to the ECCS equipment and circuits. Therefore, the normal STS LCOs for the 125-volt dc power supplies are not applicable to the Brunswick design while the LCO for only 250-volt dc power supplies are applicable. The LCO for the 125-volt dc power supplies is governed by the more restrictive LCO for its associated equipment and circuits. The LCO for the 125-volt dc circuits will be discussed in the TS change for Section 3.8.2.4.1 below.

(1) LCO 3.8.2.3

This section is reformatted to more closely conform with the standard Technical Specification for BWR, NUREG-0123 (STS). This is an administrative change and is acceptable.

(2) 3.8.2.3 Action Statements

(a) Action Statement "a" is revised to reflect the DC system design. The DC system design at Brunswick consists of four 125 volt (V)dc batteries and chargers per unit. Each of the 125 Vdc batteries and its associated charger provide 125 Vdc control and instrumentation power for the safety-reloaded loads. Two of the 125 Vdc batteries and their associated chargers are connected to form the Division I 250 Vdc power supply. The other two form the Division II 250 Vdc power supply. Therefore, an inoperable battery and/or an inoperable charger renders the 250 Vdc division inoperable. The results of the licensee's analysis for the loss of one DC division reflect that sufficient Emergency Core Cooling System (ECCS) equipment is maintained to mitigate the postulated design basis events (DBE). Because the system has been analyzed for a complete loss of one division, the 7-day (LCO) is applicable regardless of the number of inoperable batteries and/or chargers in the one division. Therefore, Action Statement "a" is revised as a result of the above analysis. The statement: "With one battery, or one charger, or one battery and its associated charger" is changed to read "with one or more batteries and/or its associated charger." Any one of 125 Vdc inoperable batteries and/or inoperable chargers renders the 250 Vdc inoperable, and therefore the proposed change is acceptable.

(b) Action Statement "b" is revised to provide for the fact that loss of more than one division of DC power per unit could result in less than the minimum ECCS requirements. Therefore, an orderly shutdown of the Unit is warranted with both DC divisions declared

inoperable. When one or more batteries and/or its associated charger in both divisions is declared inoperable, the action statement requires hot shutdown without delay. The proposed change to the action statement from a 3-day LCO to immediate shutdown with both divisions inoperable satisfies the NRC guidance provided in Regulatory Guide 1.93, and is therefore, acceptable.

- (c) Action Statement "c" has been deleted. With modification of the definition of an inoperable division as described in proposed 3.8.2.3 Action Statement "a" above, the current Action Statement "c" is no longer required. The loss of one DC division is not applicable to the Brunswick system design because the current TS defines that a loss of one division includes loss of a single 125 Vdc supply and beyond.

Based on our evaluation of the 250/125-volt dc systems design of Brunswick, as discussed above, the staff finds the proposed changes to Technical Specification 3.8.2.3 action statements acceptable.

(3) SR 4.8.2.3.1

This section is revised to add verification that not more than two 37.5 Kilovolt amperes (KVA) power conversion modules are aligned to the "B" division bus. The "B" division dc power system provides the normal feed to the lighting and communication inverter for its respective unit. It also provides the alternate feed to the plant uninterruptable power supply (UPS) (normally fed from "A" division) and the opposite unit lighting and communications inverter. The licensee's load study reflects that the resultant value of all three of the 37.5 KVA power conversion modules aligned to the "B" division dc system batteries during the design basis accident (DBA) could exceed the 916 ampere limit in the TS change proposed for Section 4.8.2.3.2. The proposed TS change places a restriction to allow a maximum of two inverters to be fed from the "B" division batteries at the same time and is, therefore, acceptable.

(4) SR 4.8.2.3.2

The licensee has performed a detailed DC system load study. The study reflects that 60-second loading values are less than the 916 ampere maximum value. The first 1-minute duty cycle profiles were formulated in accordance with IEEE-458-1983, IEEE-308-1971 and other committed design codes and standards. Therefore, the recommended test value of 916 amperes for the first 60 seconds of the profile test, demonstrates the battery's capability to adequately supply the worst case ampacities.

The recommended test values for the remainder of the first 30 minutes and the remainder of the 4-hour test are much greater than duty cycle profile ampere values. The test values for the remainder of the 4-hour test in the proposed change are more than double the test values for

the 8-hour test of the current TS. Also, the total test time of 4 hours was selected as an adequate time to notice any signs of the battery capacity degradation.

(a) SR 4.8.2.3.2 a and SR 4.8.2.3.2 b

The present 7-day and 92-day surveillance requirements determine the battery and charger's operability with those specified in the STS. The proposed changes to TS 4.8.2.3.2 a and 4.8.2.3.2 b are consistent with the criteria statements reviewed above and are therefore, acceptable.

(b) SR 4.8.2.3.2 c

The footnote for the one-time-only exception, currently included in this section, is proposed to be deleted. This is an administrative change to remove an obsolete statement and is therefore acceptable.

(c) SR 4.8.2.3.2 d

The licensee provided information related to the 125-volt dc batteries, lead-calcium type, Gould Model NEX-1200. The battery's uncorrected plant rating (before correcting for aging, temperature, and design margin per IEEE 485-1983) correlated to a maximum ampacity value for the first-minute duty cycle profile equals 916 amperes.

Based on our evaluation of the load study and justification for the proposed changes to the loading profile, the staff concludes that the recommended test value of 916 amperes for the first 60-seconds of the profile test adequately demonstrates the battery's capacity to supply the worst case ampacities and the revisions made to the 30-minute and 4-hour test capacities are in all cases more conservative and restrictive than the previous capacities. Therefore, the proposed changes to TS 4.8.2.3.2 d are acceptable.

(d) 4.8.2.3.2 e.

The licensee proposed a change that the 60-month performance discharge test supersedes the battery service test. This change is consistent with the other proposed changes and is, therefore, acceptable.

(5) Table 4.8.2.3.2

The proposed table provides the parameters to which the surveillance requirements of Section 4.8.2.3.2 must be performed. These parameters in Table 4.8.2.3.2 are consistent with the action statements and are, therefore, acceptable.

(6) LCO 3.8.2.4.1

The current TS treat the 125-volt and 250-volt dc system as a unitized system and therefore provide the LCOs and surveillance requirements for

one unitized 125/250-volt dc system. As described in the above evaluation, the 250-volt dc divisions are not shared, while certain circuits of the 125-volt dc systems are.

The 125-volt dc systems (divisions) are shared between units, because they provide 125-volt dc control power for the onsite Class IE alternating current (AC) power distribution system. The onsite Class IE AC power distribution system, e.g., diesel generator, is shared between units in that three of the four AC divisions between the two units are required to maintain the minimum ECCS requirements. When the dc control power for diesel generators, 4160V emergency buses, 480V emergency buses, or ESS logic cabinets is transferred to its alternate source, a single failure to the DC system could make two of the four AC divisions inoperable. The LCO for the safety function of the circuits is more restrictive than the LCO for the 125 Vdc power supplies. Also, the LCO in the present TS for the 125-volt dc power supply (division) is not applicable to the Brunswick design because a given circuit has two normal and one alternate 125-volt dc power supplies. Therefore, the proposed surveillance requirements of these circuits in the plant TS will provide control of the transfer and provide added assurance of dc power availability.

Based on our evaluation of the 125-volt dc power design, the staff concludes that the proposed changes accurately reflect the Brunswick design and are acceptable.

3.0 SUMMARY

We have reviewed the above licensee proposed changes. We find that the proposed changes to the TS will more accurately reflect the plant design and also ensure that the DC systems are fully tested within the design limits of the system and are therefore acceptable.

4.0 ENVIRONMENTAL CONSIDERATIONS

The amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change in surveillance requirements. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

We have concluded, based on the considerations discussed above, that:
(1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Rhow

Dated: September 20, 1985