



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

October 11, 1990

Docket Nos. 50-325
and 50-324

Mr. Lynn W. Eury
Executive Vice President
Power Supply
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Eury:

SUBJECT: ISSUANCE OF AMENDMENT NO. 146 TO FACILITY OPERATING LICENSE
NO. DPR-71 AND AMENDMENT NO.177 TO FACILITY OPERATING LICENSE NO.
DPR-62 REGARDING THE SERVICE WATER SYSTEM - BRUNSWICK STEAM ELECTRIC
PLANT, UNITS 1 AND 2 (TAC NOS. 76083 and 76084)

The Nuclear Regulatory Commission has issued the enclosed Amendment No.146 to Facility Operating License No. DPR-71 and Amendment No. 177 to Facility Operating License No. DPR-62 for Brunswick Steam Electric Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your submittals dated February 28, 1990, as supplemented May 8, 1990, September 21, 1990, and September 27, 1990.

The amendments revise the Technical Specifications (TS) Section 3.7.1.2 to clarify and expand the service water pump operability requirements during various plant operational conditions, thereby reflecting the plant design in a clearer manner. A change to the Bases Section 3/4.7.1 would also be made reflecting the proposed change. The February 28, 1990, submittal was noticed on May 2, 1990 (55 FR 18410). A revised change to correct discrepancies between the letter, the proposed bases and the proposed TS of the earlier submittal was submitted on May 8, 1990, and was noticed on August 8, 1990 (55 FR 32323). The correction revised the number of required nuclear service water pumps per site from two to three when the units are in Operational Condition 4 or 5.

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Mr. Eury

-2-

DISTRIBUTION
See attached list

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's bi-weekly Federal Register Notice.

Sincerely,

Original Signed By:

Ngoc B. Le, Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 146 to License No. DPR-71
- 2. Amendment No. 177 to License No. DPR-62
- 3. Safety Evaluation

cc w/enclosures:
See next page

OFFICE	:LA:PD21:DRPR	:PM:PD21:DRPR	:D:PD21:DRPR	:	:	:
NAME	:PAnderson	:NLe:dt	:EAdensam	:	:	:
DATE	9/27/90	9/28/90	10/11/90	:	:	:

AMENDMENT NO. 146 TO FACILITY OPERATING LICENSE NO. DPR-71 - BRUNSWICK, UNIT 1
AMENDMENT NO. 177 TO FACILITY OPERATING LICENSE NO. DPR-62 - BRUNSWICK, UNIT 2

~~Docket File~~

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Brunswick File

cc: Brunswick Service List

030071

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Carolina Power & Light Company

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Units 1 and 2

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

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 146
License No. DPR-71

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by Carolina Power & Light Company (the licensee), dated February 28, 1990, as supplemented May 8, 1990, September 21, 1990, and September 27, 1990, 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. 146, are hereby incorporated in the license. Carolina Power & Light Company shall operate the facility in accordance with the Technical Specifications.

- 3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By:

Elinor G. Adensam, Director
 Project Directorate II-1
 Division of Reactor Projects I/II
 Office of Nuclear Reactor Regulation

Attachment:
 Changes to the Technical
 Specifications

Date of Issuance: October 11, 1990

R. Anand *J.C. J. Hendrick*
 OFC :LA:PD21:DRPR:PM:PD21:DRPR:SM:BB : OGC :D:PD21:DRPR : :
 NAME : *Anderson* :NLe *McCracken* : *E. Holler* : EAdensam : : :
 DATE :10/1/90 :10/1/90 :10/2/90 :10/9/90 :10-11-90 : :

ATTACHMENT TO LICENSE AMENDMENT NO. 146

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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PLANT SYSTEMS

SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 The service water system shall be OPERABLE with at least:

In OPERATIONAL CONDITIONS 1, 2, and 3:

Two OPERABLE nuclear service water pumps, and two OPERABLE conventional service water pumps capable of supplying the nuclear and conventional headers.

In OPERATIONAL CONDITIONS 4 and 5:

Three OPERABLE site nuclear service water pumps, and two operable Unit 1 service water pumps, nuclear and/or conventional, powered from separate emergency buses and capable of supplying the nuclear header.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, and 5

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3:

1. With two OPERABLE conventional service water pumps and only one nuclear service water pump OPERABLE, restore the remaining nuclear service water pump to OPERABLE status within 7 days or be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.
2. With no OPERABLE nuclear service water pumps, regardless of conventional service water pump status, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours.
3. With two OPERABLE nuclear service water pumps and only one conventional service water pump OPERABLE, restore at least one additional conventional service water pump to OPERABLE status within 7 days or be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.
4. With two OPERABLE nuclear service water pumps and no conventional service water pump OPERABLE, restore at least one conventional service water pump to OPERABLE status within 72 hours and restore the remaining conventional service water pump to OPERABLE status within 7 days from the time of the loss of the first pump. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

PLANT SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

5. With only one nuclear service water pump and one conventional service water pump OPERABLE, restore at least one additional service water pump, nuclear or conventional, to OPERABLE status within 72 hours and restore the remaining service water pump to OPERABLE status within 7 days from the time of the loss of the first pump. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 6. With one OPERABLE nuclear service water pump and no OPERABLE conventional service water pumps, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 4 or 5:
1. With one less than the required number of nuclear service water pumps OPERABLE per site, restore at least one additional nuclear service water pump to OPERABLE status within 14 days or declare the diesel generators inoperable and take the ACTION required by Specification 3.8.1.2.
 2. With the service water system nuclear header inoperable, or no Unit 1 nuclear service water pumps OPERABLE, operation may continue provided that the service water system conventional header is OPERABLE with at least two conventional service water pumps OPERABLE. Restore the service water system nuclear header to OPERABLE status within 14 days or declare the Core Spray System and the LPCI System inoperable and take the ACTION required by Specifications 3.5.3.1 and 3.5.3.2. Also, declare the diesel generators inoperable and take the ACTION required by Specification 3.8.1.2.
 3. With less than two OPERABLE site nuclear service water pumps, declare the diesel generators inoperable and take the ACTION required by Specification 3.8.1.2.
 4. With only one Unit 1 service water pump OPERABLE, restore at least one additional Unit 1 pump, either nuclear or conventional, powered from a separate emergency bus, to OPERABLE status within 7 days or declare the Core Spray System and the LPCI System inoperable and take the ACTION required by Specifications 3.5.3.1 and 3.5.3.2.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

- 4.7.1.2 The service water system shall be demonstrated OPERABLE:
- a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) servicing safety related equipment 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 verifying that each automatic valve servicing safety-related equipment actuates to its correct position on the appropriate ECCS actuation test signals.
 - c. In OPERATIONAL CONDITION 4 or 5 with service water system nuclear header inoperable, verify that the service water system conventional header is lined up to supply cooling water to vital ECCS loads and that the Unit 2 nuclear header is lined up to supply cooling water for the diesel generators by verifying that each valve servicing the diesel generators that is not locked open is administratively controlled in the proper position.

3/4.7 PLANT SYSTEMS

BASES

3/4.7.1 SERVICE WATER SYSTEMS

During the initial stage of a DBA (0-10 minutes), the service water system provides lube water and service water cooling to the diesel generators. The service water system design allows either unit's nuclear header to supply diesel generator cooling water. Two pumps are necessary to supply sufficient flow to cool all four diesel generators under worst-case scenarios while also supplying flow to other safety and non-safety related components. Therefore, any combination of three OPERABLE nuclear service water pumps per site will meet the single failure criteria and assure diesel generator cooling. The requirement for two OPERABLE nuclear service water pumps associated with a unit in OPERATIONAL CONDITIONS 1, 2, or 3 and at least three OPERABLE nuclear service water pumps per site when one or both units are in OPERATIONAL CONDITIONS 4 or 5 ensures that emergency diesel generator cooling requirements are met.

After the initial ten minutes of a DBA, additional loads require cooling water. These loads include RHR and CS pump room coolers, RHR service water heat exchangers, and RHR pump seal heat exchangers. Evaluations have determined that the RHR pump seals, as well as the equipment in rooms serviced by the RHR and CS room coolers, remain within the manufacturers' temperature limits for the first ten minutes of a DBA. To meet the additional loads during the post-ten minute stage of a DBA, two service water pumps on the affected unit must be in service. In order to assure single failure criteria is met, the Technical Specification requires two OPERABLE conventional service water pumps per unit while in OPERATIONAL CONDITION 1, 2, or 3.

As discussed above, when in OPERATIONAL CONDITIONS 4 and 5, the reduced core decay heat load and the accessibility to the reactor building for manual operator action reduce the requirement for OPERABLE service water pumps after an accident/transient to one. Therefore, when in OPERATIONAL CONDITIONS 4 or 5, two OPERABLE service water pumps (any combination of nuclear and/or conventional) capable of supplying the nuclear header are required provided that there are at least three OPERABLE nuclear service water pumps per site. Maintaining two OPERABLE service water pumps (nuclear and/or conventional) on the unit while in OPERATIONAL CONDITIONS 4 or 5 assures long-term cooling can be supplied, even after application of the single failure criteria. Stipulating at least three OPERABLE nuclear service water pumps per site assures diesel generator cooling will be available following any DBA, regardless of which unit suffers the accident/transient.

The allowed out-of-service times and compensatory measures established in the ACTION Statements are conservative. In particular, ACTION Statement a.2 for OPERATIONAL CONDITIONS 1, 2, and 3 requires the unit to be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours with no OPERABLE nuclear service water pumps. Analyses have been performed which

PLANT SYSTEMS

BASES

3/4.7.1 SERVICE WATER SYSTEMS (Continued)

demonstrate operation in OPERATIONAL CONDITIONS 1 through 3 with no OPERABLE nuclear service water pumps is acceptable provided that at least two nuclear service water pumps are OPERABLE on the opposite unit and two conventional pumps are OPERABLE on the affected unit. Specific ACTION statements and LCO time limits for this situation have not been developed since a more conservative ACTION Statement has been established in order to minimize the risk of personnel error in administrating this situation.

3/4.7.2 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

The OPERABILITY of the control room ventilation system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less, whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criteria 10 of Appendix "A", 10 CFR Part 50.

3/4.7.3 FLOOD PROTECTION

The limitation on flood protection ensures that facility protective actions will be taken and operation will be terminated in the event of flood conditions. The limit of elevation 17'6" Mean Sea Level is based on the maximum elevation at which facility flood control measures provide protection to safety-related equipment.

3/4.7.4 REACTOR CORE ISOLATION COOLING SYSTEM

The reactor core isolation cooling system (RCICS) is provided to assure adequate core cooling in the event of reactor isolation from its primary heat sink and the loss of feedwater flow to the reactor vessel without requiring actuation of any of the Emergency Core Cooling equipment. RCICS is conservatively required to be OPERABLE whenever reactor pressure exceeds 113 psig even though the Residual Heat Removal (RHR) system provides adequate core cooling up to 150 psig. The condensate storage tank provides sufficient water to reduce the reactor coolant temperature and pressure to permit the RHR system to be operated.



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

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 177
License No. DPR-62

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by Carolina Power & Light Company (the licensee), dated February 28, 1990, as supplemented May 8, 1990, September 21, 1990, September 27, 1990, 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. 177, are hereby incorporated in the license. Carolina Power & Light Company shall operate the facility in accordance with the Technical Specifications.

- 3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By:

Elinor G. Adensam, Director
 Project Directorate II-1
 Division of Reactor Projects - I/II
 Office of Nuclear Reactor Regulation

Attachment:
 Changes to the Technical
 Specifications

Date of Issuance: October 11, 1990

R. Arund J.C. Knutrick

OFC	: LA	: PD21	: DRPR	: PM	: PD21	: DRPR	: SPLB	:	OGC	:	D	: PD21	: DRPR	:	:
NAME	: Patterson	:	NLe	: <i>the</i>	:	Cracken	:	<i>E. Haller</i>	:	EAdensam	:	:	:	:	:
DATE	: 10/1/90	:	10/1/90	:	10/4/90	:	10/9/90	:	10/11/90	:	:	:	:	:	:

ATTACHMENT TO LICENSE AMENDMENT NO. 177

FACILITY OPERATING LICENSE NO. DPR-62

DOCKET NO. 50-324

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PLANT SYSTEMS

SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 The service water system shall be OPERABLE with at least:

In OPERATIONAL CONDITIONS 1, 2, and 3:

Two OPERABLE nuclear service water pumps, and two OPERABLE conventional service water pumps capable of supplying the nuclear and conventional headers.

In OPERATIONAL CONDITIONS 4 and 5:

Three OPERABLE site nuclear service water pumps; and two OPERABLE Unit 2 service water pumps, nuclear and/or conventional, powered from separate emergency buses and capable of supplying the nuclear header.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, and 5

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3:

1. With two OPERABLE conventional service water pumps and only one nuclear service water pump OPERABLE, restore the remaining nuclear service water pump to OPERABLE status within 7 days or be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.
2. With no OPERABLE nuclear service water pumps, regardless of conventional service water pump status, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours.
3. With two OPERABLE nuclear service water pumps and only one conventional service water pump OPERABLE, restore at least one additional conventional service water pump to OPERABLE status within 7 days or be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.
4. With two OPERABLE nuclear service water pumps and no conventional service water pump OPERABLE, restore at least one conventional service water pump to OPERABLE status within 72 hours and restore the remaining conventional service water pump to OPERABLE status within 7 days from the time of the loss of the first pump. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

PLANT SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

5. With only one nuclear service water pump and one conventional service water pump OPERABLE, restore at least one additional service water pump, nuclear or conventional, to OPERABLE status within 72 hours and restore the remaining service water pump to OPERABLE status within 7 days from the time of the loss of the first pump. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 6. With one OPERABLE nuclear service water pump and no OPERABLE conventional service water pumps, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 4 or 5:
1. With one less than the required number of nuclear service water pumps OPERABLE per site, restore at least one additional nuclear service water pump to OPERABLE status within 14 days or declare the diesel generators inoperable and take the ACTION required by Specification 3.8.1.2.
 2. With the service water system nuclear header inoperable, or no Unit 2 nuclear service water pumps OPERABLE, operation may continue provided that the service water system conventional header is OPERABLE with at least two conventional service water pumps OPERABLE. Restore the service water system nuclear header to OPERABLE status within 14 days or declare the Core Spray System and the LPCI System inoperable and take the ACTION required by Specifications 3.5.3.1 and 3.5.3.2. Also, declare the diesel generators inoperable and take the ACTION required by Specification 3.8.1.2.
 3. With less than two OPERABLE site nuclear service water pumps, declare the diesel generators inoperable and take the ACTION required by Specification 3.8.1.2.
 4. With only one Unit 2 service water pump OPERABLE, restore at least one additional Unit 2 pump, either nuclear or conventional, powered from a separate emergency bus, to OPERABLE status within 7 days or declare the Core Spray System and the LPCI System inoperable and take the ACTION required by Specifications 3.5.3.1 and 3.5.3.2.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

- 4.7.1.2 The service water system shall be demonstrated OPERABLE:
- a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) servicing safety related equipment 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 verifying that each automatic valve servicing safety-related equipment actuates to its correct position on the appropriate ECCS actuation test signals.
 - c. In OPERATIONAL CONDITION 4 or 5 with service water system nuclear header inoperable, verify that the service water system conventional header is lined up to supply cooling water to vital ECCS loads and that the Unit 1 nuclear header is lined up to supply cooling water for the diesel generators by verifying that each valve servicing the diesel generators that is not locked open is administratively controlled in the proper position.

3/4.7 PLANT SYSTEMS

BASES

3/4.7.1 SERVICE WATER SYSTEMS

During the initial stage of a DBA (0-10 minutes), the service water system provides lube water and service water cooling to the diesel generators. The service water system design allows either unit's nuclear header to supply diesel generator cooling water. Two pumps are necessary to supply sufficient flow to cool all four diesel generators under worst-case scenarios while also supplying flow to other safety and non-safety related components. Therefore, any combination of three OPERABLE nuclear service water pumps per site will meet the single failure criteria and assure diesel generator cooling. The requirement for two OPERABLE nuclear service water pumps associated with a unit in OPERATIONAL CONDITIONS 1, 2, or 3 and at least three OPERABLE nuclear service water pumps per site when one or both units are in OPERATIONAL CONDITIONS 4 or 5 ensures that emergency diesel generator cooling requirements are met.

After the initial ten minutes of a DBA, additional loads require cooling water. These loads include RHR and CS pump room coolers, RHR service water heat exchangers, and RHR pump seal heat exchangers. Evaluations have determined that the RHR pump seals, as well as the equipment in rooms serviced by the RHR and CS room coolers, remain within the manufacturers' temperature limits for the first ten minutes of a DBA. To meet the additional loads during the post-ten minute stage of a DBA, two service water pumps on the affected unit must be in service. In order to assure single failure criteria is met, the Technical Specification requires two OPERABLE conventional service water pumps per unit while in OPERATIONAL CONDITION 1, 2, or 3.

As discussed above, when in OPERATIONAL CONDITIONS 4 and 5, the reduced core decay heat load and the accessibility to the reactor building for manual operator action reduce the requirement for OPERABLE service water pumps after an accident/transient to one. Therefore, when in OPERATIONAL CONDITIONS 4 or 5, two OPERABLE service water pumps (any combination of nuclear and/or conventional) capable of supplying the nuclear header are required provided that there are at least three OPERABLE nuclear service water pumps per site. Maintaining two OPERABLE service water pumps (nuclear and/or conventional) on the unit while in OPERATIONAL CONDITIONS 4 or 5 assures long-term cooling can be supplied, even after application of the single failure criteria. Stipulating at least three OPERABLE nuclear service water pumps per site assures diesel generator cooling will be available following any DBA, regardless of which unit suffers the accident/transient.

The allowed out-of-service times and compensatory measures established in the ACTION Statements are conservative. In particular, ACTION Statement a.2 for OPERATIONAL CONDITIONS 1, 2, and 3 requires the unit to be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours with no OPERABLE nuclear service water pumps. Analyses have been performed which

PLANT SYSTEMS

BASES

3/4.7.1 SERVICE WATER SYSTEMS (Continued)

demonstrate operation in OPERATIONAL CONDITIONS 1 through 3 with no OPERABLE nuclear service water pumps is acceptable provided that at least two nuclear service water pumps are OPERABLE on the opposite unit and two conventional pumps are OPERABLE on the affected unit. Specific ACTION statements and LCO time limits for this situation have not been developed since a more conservative ACTION Statement has been established in order to minimize the risk of personnel error in administrating this situation.

3/4.7.2 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

The OPERABILITY of the control room ventilation system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less, whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criteria 10 of Appendix "A", 10 CFR Part 50.

3/4.7.3 FLOOD PROTECTION

The limitation on flood protection ensures that facility protective actions will be taken and operation will be terminated in the event of flood conditions. The limit of elevation 17'6" Mean Sea Level is based on the maximum elevation at which facility flood control measures provide protection to safety-related equipment.

3/4.7.4 REACTOR CORE ISOLATION COOLING SYSTEM

The reactor core isolation cooling system (RCICS) is provided to assure adequate core cooling in the event of reactor isolation from its primary heat sink and the loss of feedwater flow to the reactor vessel without requiring actuation of any of the Emergency Core Cooling equipment. RCICS is conservatively required to be OPERABLE whenever reactor pressure exceeds 113 psig even though the Residual Heat Removal (RHR) system provides adequate core cooling up to 150 psig. The condensate storage tank provides sufficient water to reduce the reactor coolant temperature and pressure to permit the RHR system to be operated.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 146 TO FACILITY OPERATING LICENSE NO. DPR-71
AND AMENDMENT NO. 177 TO FACILITY OPERATING LICENSE NO. DPR-62

CAROLINA POWER & LIGHT COMPANY, et al.

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NOS. 50-325 AND 50-324

1.0 INTRODUCTION

By letter dated February 28, 1990, as supplemented May 8, 1990, September 21, 1990, and September 27, 1990, Carolina Power & Light Company (the licensee), requested amendments to Facility Operating License Nos. DPR-71 and DPR-62 for the Brunswick Steam Electric Plant, Units 1 and 2 (Brunswick). The September 21, 1990, and September 27, 1990, submittals forwarded updated Technical Specifications (TS) pages and did not change the initial determination of no significant hazards consideration as published in the Federal Register. The proposed amendments would revise the TS to require both the nuclear and the conventional service water headers to be operable with two nuclear and two conventional service water pumps capable of supplying the headers in OPERATIONAL CONDITION 1, 2, or 3. When the unit is in OPERATIONAL CONDITION 4 or 5, the number of the applicable unit pumps required drops to any combination of two nuclear and/or conventional service water pumps powered from separate emergency buses provided that there are at least three operable nuclear service water pumps per site.

2.0 EVALUATION

The service water system provides water for lubrication and cooling of selected equipment in the turbine building, reactor building, diesel generator building, chlorination system, circulating water system, and screen wash system. The service water system is subdivided into two major headers which are normally operated independently. The nuclear header supplies service water to the nuclear or vital equipment in the reactor building and diesel generator building and the conventional header normally supplies service water to conventional equipment in the turbine building and other areas. Two nuclear service water pumps supply the nuclear header for each unit. Cross-connect valves allow the conventional service water pumps to supply the nuclear header as conditions dictate. Three conventional service water pumps supply the conventional header for each unit. The two types of pumps are identical except that the nuclear service water pumps are capable of starting automatically during a design basis accident (DBA) while the conventional service water pumps must be started manually under these conditions. The diesel generators, which are the only common service water load between the two units, can receive

cooling water from the nuclear header of either unit. Either of the conventional or nuclear headers, or a combination of the two, can provide water to other loads including the residual heat removal (RHR) system room coolers, the RHR pump seal heat exchangers, the core spray (CS) pump room coolers, and the RHR service water cooling system. The service water system can also be cross-connected to the RHR system during emergencies to provide core flooding capabilities.

Presently, TS Section 3.7.1.2 requires each unit to have three service water pumps operable to supply the service water nuclear header. It does not specify whether these pumps need to be nuclear or conventional. Therefore, the licensee proposed in the amendment that when in OPERATIONAL CONDITIONS 1, 2, and 3, the applicable unit must have at least two operable nuclear service water pumps and two operable conventional service water pumps capable of supplying the nuclear and conventional service water headers. When the unit is in OPERATIONAL CONDITION 4 or 5, two service water pumps of the applicable unit powered from separate emergency buses and capable of supplying the nuclear service water header are required. The two operable pumps can consist of any combination of nuclear and/or conventional service water pumps. Additionally, at least three operable site nuclear service water pumps are required. The reduced requirements of OPERATIONAL CONDITIONS 4 and 5 account for the reduced heat and conventional service water loads and the ability to supply the diesel generators from either unit's nuclear headers.

The licensee has stated that the proposed changes in the TS Section 3.7.1.2 will allow the use of the present plant design and the capabilities to ensure that an adequate supply of water will be available for cooling of the diesel generators and other vital equipment during normal and emergency conditions. The proposed changes provide for both the nuclear and the conventional headers to be operable with two nuclear and two conventional service water pumps of the unit capable of supplying the headers when the unit is in OPERATIONAL CONDITION 1, 2, or 3. These requirements meet single failure criteria and ensure the availability of service water for diesel generator cooling during the initial ten minute period of a design basis accident (DBA) and provide sufficient service water capability for the post-ten minute period of a DBA. When the unit is in OPERATIONAL CONDITION 4 or 5, the number of the applicable unit pumps required drops to any combination of two nuclear and/or conventional service water pumps, provided that there are at least three operable site nuclear service water pumps. Maintaining two operable service water pumps while in OPERATIONAL CONDITIONS 4 and 5 assures single failure criteria are met; and stipulating at least three operable site nuclear service water pumps assures that diesel generator cooling will be available following any DBA, regardless of which unit is affected by an accident or a transient.

The staff has reviewed the allowed out of service times and compensatory measures established in the revised Action Statement and finds them to be consistent with those of existing TS 3.7.1.2.

On the basis of the above evaluation, the staff concludes that the proposed changes in the TS Section 3.7.1.2 and its associated bases for the Brunswick Units 1 and 2 assures that the service water system will be available to provide an adequate supply of cooling water for both normal and emergency conditions and, therefore, is acceptable.

3.0 ENVIRONMENTAL CONSIDERATIONS

These amendments change a requirement with respect to installation or use of a facility component located within the restricted areas as defined in 10 CFR Part 20 and change the surveillance requirements. The staff has determined that these amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released off site and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration, and there has been no public comment on such finding. Accordingly, these 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 these amendments.

4.0 CONCLUSION

The Commission made a proposed determination that these amendments involve no significant hazards consideration which was published in the Federal Register (55 FR 18410) on May 2, 1990, and (55 FR 32323) on August 3, 1990, and consulted with the State of North Carolina. No public comments or requests for hearing were received, and the State of North Carolina did not have any comments.

The staff has 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: October 11, 1990

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