

October 7, 1991

Docket No. 50-325

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See attached page

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. 155 TO FACILITY OPERATING LICENSE  
NO. DPR-71 REGARDING EXTENSION OF ALLOWED OUT OF SERVICE TIME  
OF DIESEL GENERATORS - BRUNSWICK STEAM ELECTRIC PLANT,  
UNIT 1 (TAC NO. 81328)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 155 to Facility Operating License No. DPR-71 for the Brunswick Steam Electric Plant, Unit 1. The amendment consists of changes to the Technical Specifications in response to your submittal dated August 22, 1991, as supplemented September 10, 1991.

The amendment changes the Technical Specifications to allow a one-time-only extension of the 7-day allowed out-of-service time (AOT) for one inoperable diesel generator for each of Diesel Generator Numbers 3 and 4, to a 14-day AOT for one inoperable diesel generator for each of Diesel Generator Numbers 3 and 4 during the Unit 2 refueling outage No. 9.

A copy of the Safety Evaluation is also enclosed. 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. 155 to License No. DPR-71
2. Safety Evaluation

cc w/enclosures:

See next page

\*See previous for concurrences

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NAME	:Anderson	:NLe:dt	:EAdensam	:RJones*	:CGrimes*
DATE	:9/27/91	:9/17/91	:9/13/91	:10/4/91	:

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Document Name: BRUNSWICK AMENDMENT 81328

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Mr. L. W. Eury  
Carolina Power & Light Company

Brunswick Steam Electric Plant  
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. 155  
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 August 22, 1991, as supplemented September 10, 1991, 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. 155, 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



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 7, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 155

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.

Remove Pages

3/4 8-2

3/4 8-3

Insert Pages

3/4 8-2

3/4 8-3

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

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#### ACTION (Continued)

1. Demonstrate the OPERABILITY of the A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 2 hours and at least once per 12 hours thereafter;
  2. Demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within 24 hours and at least once per 72 hours thereafter;
  3. Restore the inoperable diesel generator 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. \*
- c. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable:
1. Demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a, 4.8.1.1.2.a.4, and 4.8.1.1.2.a.5 within 2 hours and at least once per 12 hours thereafter;
  2. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours;
  3. With the inoperable offsite A.C. power source restored, demonstrate the OPERABILITY of the remaining A.C. power sources as required by ACTION b; restore four diesel generators to OPERABLE status within 7 days from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours;\*
  4. With the inoperable diesel generator restored, demonstrate the OPERABILITY of the remaining A.C. power sources as required by ACTION a; restore two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- d. With two of the above required offsite A.C. circuits inoperable:
1. Demonstrate the OPERABILITY of four diesel generators by performing Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within two hours and at least once per 12 hours thereafter, unless the diesel generators are already operating;

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\* During the Brunswick Unit 2 Refueling Outage No. 9, on a one time basis, Diesel Generator Number 3 or Diesel Generator Number 4 may each be inoperable for up to 14 days to support planned maintenance activities, provided the remaining three diesel generators are OPERABLE. Restore the inoperable Diesel Generator Number 3 or Diesel Generator Number 4 to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### ACTION (Continued)

2. Restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours;
  3. With one offsite source restored, demonstrate the OPERABILITY of the remaining A.C. power sources as required by ACTION a; restore two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- e. With two of the above required diesel generators inoperable:
1. Demonstrate the OPERABILITY of the remaining A.C. power sources by performing Surveillance Requirements 4.8.1.1.1.a, 4.8.1.1.2.a.4, and 4.8.1.1.2.a.5 within 2 hours and at least once per 12 hours thereafter;
  2. Restore at least three diesel generators to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours;
  3. With one diesel generator restored, demonstrate the OPERABILITY of the remaining A.C. power sources as required by ACTION b; restore at least 4 diesel generators to OPERABLE status within 7 days from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. \*

#### SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring unit power supply from the normal circuit to the alternate circuit.

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\* During the Brunswick Unit 2 Refueling Outage No. 9, on a one time basis, Diesel Generator Number 3 and Diesel Generator Number 4 may each be inoperable for up to 14 days to support planned maintenance activities, provided the remaining three diesel generators are OPERABLE. Restore the inoperable Diesel Generator number 3 or Diesel Generator Number 4 to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.



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

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 155 TO FACILITY OPERATING LICENSE NO. DPR-71

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

DOCKET NO. 50-325

1.0 INTRODUCTION

By letter dated August 22, 1991, as supplemented September 10, 1991, Carolina Power & Light Company (CP&L) submitted a request for changes to the Brunswick Steam Electric Plant (BSEP), Unit 1, Technical Specifications (TS) 3.8.1.1, Actions b.3, c.3, and e.3. The proposed license amendment allows a one-time-only extension of the 7-day allowed out-of-service time (AOT) for one inoperable emergency diesel generator (EDG) for each of the EDG Nos. 3 and 4 to a 14-day AOT during the BSEP, Unit 2, refueling outage No. 9. This AOT is needed to perform the EDG manufacturer's 18-month inspection and to support planned maintenance work while each of the EDGs (Nos. 3 and 4) is torn down. The outage began on September 12, 1991. The four EDGs at BSEP, Unit 1 (EDG Nos. 1 and 2), and Unit 2 (EDG Nos. 3 and 4) are designed and operated with a shared configuration where power supply to some engineered safety features (ESF) loads (i.e., two residual heat removal and one service water) of each unit are provided by the opposite unit's EDGs. TS 3.8.1.1 requires that all four EDGs be operable whenever either unit is in operation or Action statements b.3, c.3, and e.3 of the TS require an inoperable EDG to be restored to an operable status within seven days. The September 10, 1991, letter provided additional information that was requested by the staff during a conference call with CP&L conducted on August 30, 1991. This letter did not change the action noticed in the Federal Register on September 4, 1991, and did not affect the initial proposed no significant hazards consideration determination.

1.1 BACKGROUND

Unlike a dedicated EDG configuration between two units, BSEP's shared EDG configuration does not provide sufficient time for regular maintenance of its EDGs during a unit refueling outage with one unit in operable status. Surveillance Requirement (SR) 4.8.1.1.2.d.1 of the TS requires that each EDG be subjected to the manufacturer's required inspection at least once every 18-months during shutdown. This requires a partial tear down of the EDG according to procedure OMST-DG500, "Emergency Diesel Generators Inspection."

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In the past, CP&L has been performing the required regular EDG maintenance when both units were shutdown or during multiple 7-day AOTs with an inoperable EDG and one unit operating. For this outage, the licensee proposes to perform the above 18-month SR on EDG Nos. 3 and 4 during the requested 14-day AOT period along with other extensive maintenance work, rather than during multiple 7-day AOTs as permitted by the above actions of TS 3.8.1.1. The licensee finds that a 14-day period (12 day work window) will provide two-extended-days work window, as opposed to two 7-day AOTs (10-days work window), which can be used to perform additional maintenance on each of EDGs by eliminating the following repetitive work evolutions:

- 1) Draining and filling system piping & heatup
- 2) Staging and cleaning up tools and materials
- 3) Starting and loading of EDGs as required under the TS
- 4) Placing and removing clearance
- 5) Performing acceptance and surveillance testing

## 2.0 EVALUATION

The licensee has provided a list of the maintenance activities that are currently scheduled based on the 7-day AOT. However, other maintenance items that are not scheduled could be accommodated due to the added efficiency and elimination of the above-mentioned repetitive work evolutions if the 14-day AOT were granted. CP&L also provided the emergency core cooling system (ECCS) equipment and other safety-related equipment that would be available to safely shut down Unit 1 during a worst case design basis accident (DBA) coincident with the loss of any one of the remaining three EDGs. The licensee has stated that based on the General Electric (GE) Document EAS-40-0688, "Relaxation of Safety System Parameter in the Brunswick Steam Electric Plant," they conclude that the remaining equipment can be used to safely shutdown BSEP, Unit 1, under each of the postulated conditions. The licensee further stated that the core damage probability for a 14-day AOT is no greater than that which exists for two 7-day AOTs. The licensee based this on their probabilistic risk assessment (PRA) study which showed that an increase in overall core damage probability is less than  $5E-7$  over the second 7-day AOT period.

The licensee contends that this small increase in overall core damage probability is deemed acceptable because the additional maintenance could effectively reduce EDG Nos. 3 and 4 outage frequencies, thereby increasing EDGs availability. On this basis, CP&L has determined that a one-time extension of the 7-day AOT for one inoperable EDG for each of the EDG Nos. 3 and 4 to a 14-day AOT would not have unacceptable effects on the overall safety of the plant.

To assure the operability and availability of the redundant safety equipment, CP&L will provide the following compensatory measures:

1. CP&L will conduct simulator training for all five BSEP shift operating crews prior to entering into the first 14-day AOT to assure that operating personnel are cognizant of the appropriate measures.
2. CP&L will avoid performing other testing or maintenance (e.g., transformer and switchyard work) that would increase the likelihood of a plant transient during this period.
3. Redundant equipment powered from the other emergency bus on Unit 2 will not be removed from service for discretionary maintenance in order to assure that at least one train of necessary safety-related equipment is available.

To ensure that BSEP, Unit 1, redundant equipment powered from the other emergency bus on Unit 2 would remain operable, the staff reviewed in detail the list of surveillance tests to be conducted during the extended AOT for EDG Nos. 3 and 4. In a followup conference call with the licensee on September 23, 1991, the staff requested that certain surveillance tests listed on Attachments 2 and 3 to the September 10, 1991 letter be performed at another time than during the extended AOT window. The licensee has agreed to the staff's request and will reschedule the following tests: (1) for EDG No. 3: OPT 08.2.4, 1PT 24.1.1-1, OPT 07.1.8, and OPT 12.3.2.A, and (2) for EDG No. 4: OPT 08.2.4, APT 24.1-1, 1MST - CS21M, and OPT 07. 1.8.

Based on the staff's review of the proposed amendment request and pertinent supporting documents, the staff finds that:

1. The proposed maintenance activities indeed could take longer than 7-days, and the requested 14-day AOT could provide an extra two day working window, thus eliminating the need for two separate 7-day AOTs.
2. The extended AOT could provide an opportunity to perform a more comprehensive maintenance and inspection to look for any potential problems, thereby increasing long-term EDG reliability and safety margin.
3. The licensee's compensatory actions and analysis of available safety equipment presented in GE's document EAS-40-0688 provide assurance that the plant can be safely shutdown with the three remaining EDGs.
4. By letter dated September 10, 1991, the licensee clarified that the remainder of the 18-month surveillance tests (TS 4.8.1.1.2.d.2 through 4.8.1.1.2.d.7) will be performed to reset the surveillance cycle during this outage and thus will not need to be performed again until the next refueling outage.

5. Within 24-hours prior to removal of an EDG from operable status and once per 72-hours thereafter, the operability of the three remaining EDGs will be verified under SR 4.8.1.1.2.a.4 and SR 4.8.1.1.2.a.5 (starting and running). SR 4.8.1.1.1.a (offsite power) will be performed within 2-hours of removal of any one EDG from operable status and once per 12-hours thereafter.
6. With a loss of one EDG among the remaining three operable EDGs, the TS require restoration of at least three EDGs to operable status within 2-hours or be in at least hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.

Based on the review of compensatory measures committed to by CP&L in the September 10, 1991, letter, rescheduling of certain surveillances mentioned previously, and current SRs, the staff concurs with CP&L's determination that a one-time extension of the 7-day AOT for an inoperable EDG to a 14-day AOT period would not have an unacceptable effect on the overall safety of the plant. Also, it is the staff's judgement that an event requiring plant shutdown concurrent with a loss of offsite power and the loss of one additional EDG is a very unlikely event over the 14-day AOT period and, does not, therefore represent a significant risk to the health and safety of the public.

On this basis, the staff concludes that a one-time extension of the AOT from 7 days to 14 days for an inoperable EDG for each of EDG Nos. 3 and 4, during the upcoming BSEP, Unit 2, refueling outage from the requirement of TS 3.8.1.1, Actions b.3, c.3, and e.3, is acceptable.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of North Carolina official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (56 FR 43803 - September 4, 1991). Accordingly, the amendment meets 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 amendment.

5.0 CONCLUSION

The Commission 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: P. Kang  
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Date: October 7, 1991

AMENDMENT NO. 155 TO FACILITY OPERATING LICENSE NO. DPR-71 - BRUNSWICK, UNIT 1

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