

**From:** "Kozyra, Jan" <jan.kozyra@pgnmail.com>  
**To:** "Richard Emch" <RLE@nrc.gov>  
**Date:** Mon, May 23, 2005 1:41 PM  
**Subject:** FW: Cooling Tower Stuff

as discussed.

> -----Original Message-----

> From: Turkal, Mark  
> Sent: Monday, May 23, 2005 10:54 AM  
> To: Kozyra, Jan  
> Subject: Cooling Tower Stuff  
>  
> <<78DEC15\_NLU78325.pdf>> <<82FEB19\_CPL01.pdf>>  
> <<83MAR11\_NLU83184.pdf>>

**Mail Envelope Properties** (429215CB.446 : 23 : 42054)

**Subject:** FW: Cooling Tower Stuff  
**Creation Date:** Mon, May 23, 2005 1:38 PM  
**From:** "Kozyra, Jan" <jan.kozyra@pgnmail.com>

**Created By:** jan.kozyra@pgnmail.com

**Recipients**

nrc.gov  
OWGWPO02.HQGWDO01  
RLE (Richard Emch)

**Post Office**

OWGWPO02.HQGWDO01

**Route**

nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	285	Monday, May 23, 2005 1:38 PM
TEXT.htm	1299	
78DEC15_NLU78325.pdf	1635672	
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83MAR11_NLU83184.pdf	517988	
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard



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

*JKZ*  
*Rec'd 3/17*  
*Ref*

Docket Nos. 50-325  
324

March 11, 1983

*NL4-83-184*

<b>DATE RECEIVED</b>
<b>MAR 17 1983</b>
<b>BY LICENSING</b>

Mr. E. E. Utley  
Executive Vice President  
Carolina Power & Light Company  
P. O. Box 1551  
Raleigh, North Carolina 27602

Dear Mr. Utley:

The Commission has issued the enclosed Amendment Nos. 54 and 79 to Facility Operating License Nos. DPR-71 and DPR-62 for Brunswick Steam Electric Plant, Units 1 and 2. The amendments consist of changes to the Licenses and Technical Specifications in response to your applications dated April 21, 1981 and February 19, 1982, and subsequent discussions between the NRC staff and your staff. These changes have been discussed with and agreed to by members of your staff.

The amendments delete the license conditions and the Appendix B Environmental Technical Specifications (ETS) which pertain to non-radiological water quality-related requirements, as required by the Federal Water Pollution Control Act Amendments of 1972.

Your basis for the requested deletion of water quality limits and monitoring programs is that these aquatic requirements are now under the jurisdiction of the U.S. Environmental Protection Agency (EPA) as established by the Federal Water Pollution Control Act Amendments of 1972. Therefore, water quality conditions in existing reactor operating licenses should be removed as a matter of law where the licensee holds, as you do, an effective National Pollutant Discharge Elimination System (NPDES) permit.

We concur in the deletion of the aquatic requirements and will rely on the NPDES permit system which is administered by EPA for regulation and protection of the aquatic environment. However, the NRC staff still wishes to remain informed about any changes in your NPDES permit and any violations of this permit. Accordingly, as discussed with your staff, you have agreed to provide NRC with a copy of any changes to the NPDES discharge permit and any permit violations requiring notification to the permitting agency at the time this information is reported to or received from the permitting agency. This information is to be submitted to the appropriate Regional Administrator with a copy to the Director, Office of Nuclear Reactor Regulation.

Please confirm this commitment in writing within 30 days of receipt of this letter.

We have determined that the deletion of these water quality requirements is a ministerial action required as a matter of law and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR 51.5(d)(4) that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of the amendments.

Since the amendments apply only to deletion of water quality requirements, we have concluded that: (1) because the amendments do not involve a significant increase in the probability or consequences of an accident previously evaluated, do not create the possibility of an accident of a type different from any evaluated previously, and do not involve a significant reduction in a margin of safety, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) 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.

A copy of the Notice of Issuance is also enclosed.

Sincerely,



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

Enclosures:

1. Amendment No. 54 to DPR-71
2. Amendment No. 79 to DPR-62
3. Notice of Issuance

cc w/Enclosures  
See next page

Mr. E. E. Utley  
Carolina Power & Light Company

cc:

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U. S. Environmental Protection Agency  
Region IV Office  
Regional Radiation Representative  
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Resident Inspector  
U. S. Nuclear Regulatory Commission  
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Regional Administrator, Region II  
U.S. Nuclear Regulatory Commission  
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Atlanta, Georgia 30303



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. 54  
License No. DPR-71

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The applications for amendment by Carolina Power & Light Company (the licensee) dated April 21, 1981 and February 19, 1982 comply 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 deleting paragraphs 2.E.a and 2.E.b and by changes to the Technical Specifications as indicated in the attachment to this license amendment. Paragraph 2.C.(2) of Facility Operating License No. DPR-71 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 54, 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: March 11, 1983

ATTACHMENT TO LICENSE AMENDMENT NO. 54

FACILITY OPERATING LICENSE NO. DPR-71

DOCKET NO. 50-325

Replace the following pages of the Appendix B Technical Specifications with the enclosed pages as indicated. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

<u>Remove</u>	<u>Insert</u>
1	1
111	111
2-1	2-1
2-2	-
2-3	-
2-4	-
2-5	-
2-6	2-6
2-15	2-15
2-15a	-
2-16	2-16
4-1	4-1
4-2	-
4-3	-
4-4	-
4-5	-
4-5a	-
5-4	5-4
5-5	5-5
5-5a	-
5-5b	-
5-6	5-6
5-7	5-7
6-1	6-1
6-2	-
6-3	-
6-4	-
6-5	-
6-6	-
6-7	-

Figure 3.3-1

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 & 2

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NO.</u>
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2.3 Hydraulic	2-6
2.4 Meteorology	2-7
2.5 Radioactive Discharges	2-8 to 2-14a
3.0 Surveillance Requirements	2-1
3.1 Thermal - Deleted	2-1
3.2 Chemical-Deleted	2-1
3.3 Hydraulic	2-6
3.4 Meteorology	2-7
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4.0 Environmental Surveillance	
4.1 Nonradiological Monitoring	4-1
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5.0 Administrative Controls	5-1 to 5-8
6.0 Special Surveillance and Study Activities-Deleted	6-1
6.1 Marsh Productivity-Deleted	
6.2 Deleted	
6.3 Deleted	
6.4 Salt Deposition Monitoring-Deleted	
Figures	

LIST OF FIGURES

FIGURE NO.

TITLE

4.2-1A	Location of Radiological Environmental Monitoring Stations
4.2-1B	Location of Radiological Environmental Monitoring Stations
5.1-1	Management Organization Chart

## 2.0 ENVIRONMENTAL PROTECTION CONDITIONS

## 3.0 SURVEILLANCE REQUIREMENTS

General: During a national power emergency, regional emergency, reactor emergency, when the health, safety, or welfare of the public may be endangered by the inability of Carolina Power & Light Company to supply electricity, the protection limits provided in these environmental technical specifications shall be inapplicable. During such emergencies, however, the protection limits shall not be exceeded except as is necessitated by the emergency.

Certain Environmental Protection Conditions and Surveillance Requirements are specified in the effective National Pollutant Discharge Elimination System (NPDES) permit issued by the State of North Carolina, Department of Natural Resources and Community Development, Division of Environmental Management. This agency is responsible for regulation of matters involving thermal discharges, chlorine, normalizer tank pH, and piezometric head.

2.1 THERMAL

Deleted

2.1.1 Maximum Temperature Rise

Deleted

2.1.2 Rate of Change of Discharge Temperature

Deleted

2.1.3 Heat Treatment of Circulating Water System

Deleted

2.2 CHEMICAL

Deleted

2.2.1 Chlorine

Deleted

2.2.2 Other Chemicals

Deleted

2.2.3 Hydrogen Ion

Deleted

3.1 THERMAL

Deleted

3.1.1 Maximum Temperature Rise

Deleted

3.1.2 Rate of Change of Discharge Temperature

Deleted

3.1.3 Heat Treatment of Circulating Water System

Deleted

3.2 CHEMICAL

Deleted

3.2.1 Chlorine

Deleted

3.2.2 Other Chemicals

Deleted

3.2.3 Hydrogen Ion

Deleted

Amendment No. 54

NOTE: Pages 2-2 through 2-5 have been deleted.

## 2.0 ENVIRONMENTAL PROTECTION CONDITIONS

## 3.0 SURVEILLANCE REQUIREMENTS

2.3 HYDRAULIC3.3 HYDRAULIC2.3.1 Water Level in the Discharge Canal3.3.1 Water Level in the Discharge Canal

Objective: To minimize impact of the discharge canal on the local groundwater supply.

Specification: Water level in the discharge canal near the plant shall be monitored daily.

Specification: Water level in the discharge canal shall normally be maintained between +3.5 feet msl and +5.5 feet msl at the discharge weir. These limits may be exceeded as required either for plant maintenance or as a result of natural conditions such as heavy rainfall which is beyond the control of plant personnel.

..3.2 Piezometric Head

Deleted

3.3.2 Piezometric Head

Deleted

Specifications 2.3.1 and 3.3.1 maintain the discharge canal water level within a range that will minimize the potential for upwelling and downwelling effects on the aquifer.

Specification 2.4 provides the meteorological parameters which are measured at the plant will provide the information necessary to estimate potential radiation doses to the public from routine or accidental releases of radioactive materials to the atmosphere and meet the requirements of subparagraph 50.36a (a) (2) of 10CFR Part 50 and Appendices D and F to 10CFR 50.

#### RADIOACTIVE DISCHARGES

LIQUID WASTE EFFLUENTS - The release of radioactive material in liquid effluents to unrestricted areas shall not exceed the concentration limits specified in 10 CFR Part 20 and should be as low as practicable in accordance with the requirements of 10 CFR Part 50.36a. These specifications provide reasonable assurance that the resulting annual dose to the total body or any organ of an individual in an unrestricted area will not exceed 5 mrem. At the same time, these specifications permit the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the design objective levels but still within the concentration limits specified in 10 CFR Part 20. It is expected that by using this operational flexibility under unusual operating conditions, and exerting every effort to keep levels of radioactive material in liquid wastes as low as practicable, the annual releases will not exceed a small fraction of the concentration limits specified in 10 CFR Part 20.

The design objectives have been developed based on operating experience, taking into account a combination of variables including defective fuel, primary system leakage, and the performance of the various waste treatment systems, and are consistent with Appendix I to 10 CFR Part 50.

BASES:

2-15

NOTE: Page 2-15a has been deleted.  
Amendment No. 54

c. Records of changes as described in Section 5.4.2.c(1),  
and (2).

5.4.1.2

A separate annual environmental radiological report covering the previous 12 months of operation shall be submitted within 90 days after January 1 of each year. The first such report shall be submitted for the 12-month calendar period during which initial criticality is achieved. Data not available for inclusion in the report will be submitted as soon as

#### 4.0 Environmental Monitoring

#### 4.1 Nonradiological Monitoring

The nonradiological biological monitoring requirements are specified in the effective National Pollutant Discharge Elimination System (NPDES) permit issued by the State of North Carolina, Department of Natural Resources and Community Development, Division of Environmental Management. This agency is responsible for regulation of matters involving water quality and aquatic biota.

NOTE: Pages 4-2 through 4-5a have been deleted.

possible in a supplementary report. The report shall include the following:

- a. Summary records of monitoring requirements surveys and samples.
- b. Analysis of environmental data.

#### 5.4.2 Non-Routine Reports

##### a: Radiological Reports

Violations of an Environmental Technical Specification, including unplanned release of radioactive materials of significant quantities from the site shall be reported to the Director of the appropriate regional office (copy to the Director of Nuclear Reactor Regulation) within 14 days of an environmental event. The written report shall (a) describe, analyze, and evaluate the event, including extent and magnitude of the impact; (b) describe the cause of the event; and (c) indicate the corrective action (including any significant changes made in procedures) taken to preclude repetition of the event and to prevent similar events involving similar components or systems. The environmental protection conditions for radiological discharges are described in Section 2.5.

The radiological environmental monitoring is described in Section 4.2.

Analyses of environmental samples which exceed the larger of either the control station value (Table 4.2-5) or the minimum detection limit by a factor of 10 or more for that same sample type and time period will be identified and if determined to be attributable to the operation of the Brunswick Plant, a written report shall be submitted to Director of the appropriate regional office (copy to the Director of Nuclear Reactor Regulation) within 30 days after confirmation.\* The test for exceeding the guide value will be a T test at 99.5% confidence. The test will be considered positive when:

$$X_1 - (X_c / 10) > T_{99.5\%} \sqrt{\sigma_1^2 + \sigma_c^2} (100)$$

where:

$T_{99.5\%}$  = 1 tail T test (2.2414)

$X_1$  = value obtained at station 1

$X_c$  = either value obtained at control station or minimum detection limit (mdl), whichever is larger.

$\sigma_1$  = standard deviation of station 1 value

$\sigma_c$  = standard deviation of control station

\*A confirmatory reanalysis of the original, a duplicate or a new sample may be desirable, as appropriate. The results of the confirmatory analysis shall be completed at the earliest time consistent with the analysis, but in any case within 30 days. If the high value is real, the report to the NRC shall be submitted.

If milk samples collected over a calendar quarter show average I-131 concentrations of 4.8 picocuries per liter or greater and the increase is determined to be attributable to the operation of the Brunswick Plant, a written report shall be submitted to the Director of the appropriate regional office (copy to the Director of Nuclear Reactor Regulation) within 30 days, and should include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous results.

c. Miscellaneous Reports

- (1) When a change to the plant design, to the plant operation, or to the procedures described in Section 5.3 is planned which would have a significant adverse radiological effect on the environment as determined by the Plant Manager or which involves a significant radiological environmental matter or question not previously reviewed and evaluated by the NRC, a report on the change shall be submitted to the NRC for information prior to implementation. The report shall include description and evaluation of the impact of the change.
- (2) Request for changes in Environmental Technical Specifications shall be submitted to the Director of Nuclear Reactor Regulation, NRC, for prior review and authorization. The request shall include an evaluation of the impact of the change.

6.0 (Deleted)

6.1 (Deleted)

6.2 (Deleted)

6.3 (Deleted)

6.4 (Deleted)



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. 79  
License No. DPR-62

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The applications for amendment by Carolina Power & Light Company (the licensee) dated April 21, 1981 and February 19, 1982 comply 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 deleting paragraphs 2.D.a, b, and c and by changes to the Technical Specifications as indicated in the attachment to this license amendment. 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. 79, 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: March 11, 1983

ATTACHMENT TO LICENSE AMENDMENT NO. 79

FACILITY OPERATING LICENSE NO. DPR-62

DOCKET NO. 50-324

Replace the following pages of the Appendix B Technical Specifications with the enclosed pages as indicated. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

<u>Remove</u>	<u>Insert</u>
i	i
iii	iii
2-1	2-1
2-2	-
2-3	-
2-4	-
2-5	-
2-6	2-6
2-15	2-15
2-15a	-
2-16	2-16
4-1	4-1
4-2	-
4-3	-
4-4	-
4-5	-
4-5a	-
5-4	5-4
5-5	5-5
5-5a	-
5-5b	-
5-6	5-6
5-7	5-7
6-1	6-1
6-2	-
6-3	-
6-4	-
6-5	-
6-6	-
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	-

Figure 3.3-1

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 & 2

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

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2.5 Radioactive Discharges	2-8 to 2-14a
3.0 Surveillance Requirements	2-1
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3.2 Chemical-Deleted	2-1
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3.5 Radioactive Discharges	2-8 to 2-14a
Bases	2-15 to 2-23
4.0 Environmental Surveillance	4-1
4.1 Nonradiological Monitoring	4-6 to 4-10
4.2 Radiological Environmental Monitoring Program	
5.0 Administrative Controls	5-1 to 5-8
6.0 Special Surveillance and Study Activities-Deleted	6-1
6.1 Marsh Productivity-Deleted	
6.2 Deleted	
6.3 Deleted	
6.4 Salt Deposition Monitoring-Deleted	

Figures



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

DEC 15 1978

~~12/18/78~~  
12/18/78  
LAD

Bensinger  
NLU-78-325

Docket Nos. 50-324  
and 50-325

Carolina Power and Light Company  
ATTN: Mr. J. A. Jones  
Senior Vice President  
336 Fayetteville Street  
Raleigh, North Carolina 27602

Gentlemen:

ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES FOR BRUNSWICK STEAM  
ELECTRIC PLANT, UNITS NOS. 1 AND 2 (DPR-71 AND DPR-62)

The Commission has issued the enclosed Amendments No. 42 and No. 17 to  
Facility Operating Licenses DPR-71 (Unit No. 2) and DPR-62 (Unit No. 1)  
for the Brunswick Steam Electric Plant. These amendments constitute our  
action to modify the operating licenses by changing the present cooling  
tower installation date from January 1, 1979 to that date established as  
a result of a final determination by the Regional Administrator of the  
U. S. Environmental Protection Agency.

We have prepared an environmental impact appraisal supporting this action  
and a copy is enclosed for your information.

Also inclosed is a copy of the notice of issuance and negative declaration  
regarding these amendments.

Sincerely,

*Ronald L. Ballard*  
Ronald L. Ballard, Chief  
Environmental Projects Branch 1  
Division of Site Safety  
and Environmental Analysis

Enclosures:

1. Amendment No. 17 to DPR-71
2. Amendment No. 42 to DPR-62
3. Environmental Impact Appraisal
4. Notice of Issuance and Negative Declaration

cc w/encs: See next page

DEC 15 1978

Carolina Power and Light Company

2

cc:

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Office of Intergovernmental Relations  
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Counsel for Project Environment  
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Regional Administrator  
U. S. Environmental Protection Agency  
Region IV Office  
345 Courtland Street, NE  
Atlanta, Georgia 30308



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

CAROLINA POWER AND LIGHT COMPANY

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 42  
License No. DPR-62

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Carolina Power and Light Company (the Licensee) dated March 4, 1977, 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 Paragraph 2.D.c. of Facility Operating License No. DPR-62 as follows:

"c. The licensee shall comply with all the terms, provisions, and conditions of the "Stipulation by Applicant, Intervenor and NRC Regulatory Staff" dated July 8, 1974 (hereafter "the Stipulation"), required to be performed by the licensee, including, but not limited to, any conditions expressly noted in a. above. Provided, however, that the installation date for cooling towers as set forth in Paragraph 3 of the Stipulation of May 1, 1978 is hereby deleted and the installation date will be that date established as a result of the Environmental Protection Agency's adjudicatory hearing proceeding on the facility's Section 402 Federal Water Pollution Control Act permit."

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

FOR THE NUCLEAR REGULATORY COMMISSION



Voss A. Moore, Assistant Director  
for Environmental Projects  
Division of Site Safety  
and Environmental Analysis

Date of Issuance

DEC 15 1978



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

CAROLINA POWER AND LIGHT COMPANY

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 17  
License No. DPR-71

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Carolina Power and Light Company (the Licensee) dated March 4, 1977, 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 Paragraph 2.E.b of Facility Operating License No. DPR-71 as follows:

"b. The licensee shall comply with all the terms, provisions, and conditions of the "Stipulation by Applicant, Intervenor and NRC Regulatory Staff" dated July 8, 1974 (hereafter "the Stipulation"), required to be performed by the licensee, including, but not limited to, any conditions expressly noted in a. above. Provided, however, that the installation date for cooling towers as set forth in Paragraph 3 of the Stipulation of May 1, 1978 is hereby deleted and the installation date will be that date established as a result of the Environmental Protection Agency's adjudicatory hearing proceeding on the facility's Section 402 Federal Water Pollution Control Act permit."

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

FOR THE NUCLEAR REGULATORY COMMISSION



Voss A. Moore, Assistant Director  
for Environmental Projects  
Division of Site Safety  
and Environmental Analysis

Date of Issuance

DEC 15 1978

UNITED STATES NUCLEAR REGULATORY COMMISSIONBRUNSWICK STEAM ELECTRIC PLANTDOCKET NOS. 50-325 AND 50-324CAROLINA POWER AND LIGHT COMPANYNOTICE OF ISSUANCE OF AMENDMENTS TO FACILITYOPERATING LICENSESAND NEGATIVE DECLARATION

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 42 to Facility Operating License No. DPR-62 and Amendment No. 17 to DPR-71 issued to Carolina Power and Light Company, which revised the licenses for operation of the Brunswick Steam Electric Plant, Unit Nos. 1 and 2 located in Brunswick County, North Carolina. The amendments are effective as of the date of issuance.

The amendments delete the installation date of January 1, 1979 for cooling tower completion and require instead that the date be that established by the U. S. Environmental Protection Agency in its adjudicatory hearing proceeding on the facility's Section 402 Federal Water Pollution Control Act permit.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Notice of Proposed Issuance of Amendment to Facility Operating Licenses in connection with this action was published in

the FEDERAL REGISTER on November 10, 1977 (42 FR 58582). No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

The Commission has prepared an environmental impact appraisal for the amended licenses and has concluded that an environmental impact statement for this particular action is not warranted because (1) It is appropriate to defer to decisions to be made by EPA as to the choice and installation date of the cooling system and (2) the results of this appraisal have not altered the fundamental conclusions of the FES.

For further details with respect to this action, see (1) the application for amendment dated March 4, 1977, (2) Amendment No. 42 to License No. DPR-62, (3) Amendment No. 17 to License No. DPR-71, and (4) the Commission's Environmental Impact Appraisal. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Southport-Brunswick County Library, 109 W. Moore Street, Southport, North Carolina 28461. A copy of items (2), (3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Site Safety and Environmental Analysis.

Dated at Bethesda, Maryland this *15<sup>th</sup>* day of *December* 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Ronald L. Ballard, Chief  
Environmental Projects Branch 1  
Division of Site Safety  
and Environmental Analysis



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

ENVIRONMENTAL IMPACT APPRAISAL

BY THE DIVISION OF SITE SAFETY AND ENVIRONMENTAL ANALYSIS

SUPPORTING AN AMENDMENT TO THE FACILITY OPERATING LICENSES

REGARDING COOLING TOWER IMPLEMENTATION

BRUNSWICK STEAM ELECTRIC PLANT UNIT NO. 1 AND 2 (DPR-71 AND DPR-62)

CAROLINA POWER AND LIGHT COMPANY

DOCKET NOS. 50-325 AND 50-324

Description of Proposed Action

A request has been made by Carolina Power and Light Company (CP&L) to amend the licenses for the Brunswick Steam Electric Plant-Units 1 and 2. As described in CP&L's letter<sup>1</sup> of March 4, 1977, "[t]he basic thrust of the requested amendments is to eliminate the requirement to construct cooling towers and to terminate NRC's independent assertion of jurisdiction over compliance with the National Pollutant Discharge Elimination System (NPDES) permit issued by the Environmental Protection Agency (EPA)."

The NRC's previous action on CP&L's request has been the noticing<sup>2</sup> of opportunity for hearing on the proposed issuance of amendments which would modify or delete the requirement to install cooling towers. Further, the notice indicated the possible consideration by the Commission of alternatives (to CP&L's proposed amendment) consistent with the objective of reconciling the operating licenses with the NPDES permit. No requests for a hearing were received in response to the Federal Register notice.

The issuance of a modified NPDES permit is still pending the final decision in the EPA adjudicatory proceeding. The Regional Administrator (RA) issued an Initial Decision which was subsequently remanded to him by the EPA Administrator. The RA has supplemented the decision in response to the remand. While it is uncertain as to when the EPA Administrator will reach a final decision, it is certain that CP&L cannot meet the "installation date" of January 1, 1979 as presently required by the NRC-issued licenses. From any date that construction might recommence, a period of 33 to 36 months has been estimated by CP&L for completion of cooling towers.

Based on the statutory mandate of the Federal Water Pollution Control Act (FWPCA) Amendments of 1972, Section 511(c)(2), NRC cannot impose cooling system requirements for protection of water quality and aquatic biota other than any effluent limitation issued by EPA pursuant to the FWPCA. Furthermore, should EPA finally require cooling towers, the NRC could not impose a compliance deadline different from that set by EPA.

We have determined that action on CP&L's request to eliminate the license condition which requires cooling towers at Brunswick should be deferred. NRC could not delete the license condition without performing a supplemental NEPA review, including the assessment of impacts. That assessment would be based on staff review and evaluation of the same information available to the EPA. Therefore, the staff has decided to use, insofar as possible, EPA's assessment as input to any reassessment of the NEPA cost-benefit balance. Any present action to delete the cooling tower requirement would be unsupportable in view of the NRC's (AEC) analysis which supported the imposition of the closed-cycle cooling requirement and EPA's assessment which presently supports the need for reduced flow equivalent to the use of closed-cycle cooling towers.

A second action considered by the staff is whether to amend the licenses to delete or modify the cooling towers installation date. The only alternative to this action is withdrawal of the licenses (i.e., plant shutdown); the NRC is precluded from reviewing other options since the NPDES permit sets no additional limitation on interim operation with once-through cooling. We find that the factors which favored construction of the plant and operation with once-through cooling for the initial three year period also favor continued operation for certain arbitrary periods when compared with the alternative of closing down the plant. The environmental costs are those considered in the FES and the EPA hearing. While these costs entail risks for the long-term well-being of the Cape Fear Estuary, the benefits of electrical generation favor continued operation in the short-term.

The EPA Regional Administrator's Initial Decision supports a finding that adverse impacts are being incurred with the once-through cooling system and that flow reduction should be implemented at the earliest possible date. However, the presently effective Permit provision allows discharge of once-through cooling water until a date set by the RA as a result of his final determination.

Having found that withdrawal of the licenses is not cost beneficial and since the NRC cannot impose a different compliance date than that set by the EPA, we conclude that the appropriate action is to modify the January 1, 1979 "installation date." Facility Operating Licenses DPR-71 (Unit No. 1) and DPR-62 (Unit No. 2) should be amended to read as follows:

"The licensee shall comply with all the terms, provisions, and conditions of the "Stipulation by Applicant, Intervenor and AEC Regulatory Staff" dated July 8, 1974 (hereafter "the Stipulation"), required to be performed by the licensee, including, but not limited to any conditions expressly noted in a. above. Provided, however, that the installation date for cooling towers as set forth in Paragraph 3 of the Stipulation of May 1, 1978 is hereby deleted and the installation date will be that date established as a result of the Environmental Protection Agency's Adjudicatory Hearing proceeding on the facility's Section 402 Federal Water Pollution Control Act permit."

### Background

An operating license (DPR-62) for Brunswick Unit 2 (the first of the two units to be placed in operation) was issued December 27, 1974. The license incorporated, by reference, a stipulation agreement entered into by CP&L, the Intervenor (Project Environment) and the AEC Regulatory staff (now the NRC) on July 8, 1974.<sup>3</sup> Paragraph 3 of the "stipulation" states that:

"Applicant will proceed with engineering and procurement activities and with construction of cooling towers on a schedule consistent with the completion of installation of cooling towers (exclusive of their connection to the cooling systems) not later than May 1, 1978 ("installation date")."

The NPDES permit,<sup>4</sup> issued by EPA-Region IV on December 31, 1974, was consistent with the Unit 2 Operating License in requiring cooling towers at the Brunswick plant by May 1, 1978. CP&L requested and was granted a hearing by EPA on March 19, 1975. On March 12, 1976, CP&L petitioned<sup>5</sup> for a declaratory order by EPA confirming that the compliance date in the permit was within the scope of the contested issues and, therefore, stayed under 40 CFR § 125.35 (d)(2). The EPA Administrative Law Judge so found and issued an order<sup>6</sup> which granted a stay in the compliance schedule for construction of cooling towers conditioned upon CP&L obtaining written concurrence for such stay from the NRC.

The NRC staff conducted an Environmental Appraisal of the possible delay in cooling tower construction and determined that operation of the plant with once-through cooling until January 1, 1979 would be equivalent to three years operation of both units at design flow, and so would be acceptable. Bases for this finding were the FES analysis, the delayed start-up of Unit 2, and reduced volume of cooling water passed through the plant. Subsequently, the licenses for both Units 1 and 2 were amended<sup>7</sup> to incorporate the revised "installation date" of January 1, 1979 or that date set by EPA, whichever came first.

Parties to the EPA adjudicatory proceeding entered into a stipulated agreement<sup>8</sup> on June 8, 1976 which included:

1. modification of the NPDES permit as issued on December 31, 1974, and
2. identification of the ultimate issues to be determined in the proceeding.

A subsequent stipulation,<sup>9</sup> approved by the RA on June 22, 1976, added thermal effluent limitations for periods of once-through cooling operation. The "stipulated NPDES permit" is that set forth by these two agreements.

Part I.A. of the stipulated permit would authorize once-through cooling discharge (outfall serial numbers 001 and 002) with a termination date "to be developed as a result of redetermination by the Regional Administrator pursuant to 40 CFR 125.36" and would authorize discharge of cooling system blowdown (outfall serial number 003) with a beginning date "to be developed as a result of redetermination by the Regional Administrator pursuant to 40 CFR 125.36 if closed cycle cooling is ultimately required." Part I.B.1.b. reiterates the compliance schedule.

Part III.E provides for the possible modification of the permit to allow for seasonal operation in a once-through mode. This provision had also been included in the original NPDES permit issued on December 31, 1974. The stipulated issues to be resolved in the EPA adjudicatory proceeding were:

1. Whether the NPDES permit should defer determination pursuant to Section 316(b) and the imposition of Section 316(b) requirements until December 1977 (or such later date as may be appropriate).
2. Whether the closed-cycle cooling requirement in the December 31, 1974, NPDES permit is justified under Section 316(b).
3. Whether the December 31, 1974, NPDES permit should provide for a deferred determination pursuant to Section 316(a) and suspend implementation of closed cycle cooling requirements until December 1977 (or such later date as may be appropriate).
4. Whether an alternative Section 316(a) thermal effluent limitation allowing open-cycle cooling is presently required, considering existing data and the low potential thermal impact of the plant.

5. Whether the heat treatment should be permitted to go to the intake canal.
6. Legal issues referred to the Office of General Counsel for resolution pursuant to 40 CFR 125.36 (m).

As part of the adjudicatory proceeding, an EPA hearing was held during the period June 2-16, 1976 and the transcript was certified<sup>10</sup> by the Administrative Law Judge on September 24, 1976. The interim "stipulated NPDES permit" was issued on March 25, 1977. Because the record was insufficient on the fifth issue (i.e., the heat treatment discharge), on August 17, 1977, the Acting RA served all parties to the hearing with a Request for Information on that issue. By letter dated September 7, 1977, CP&L withdrew the request for approval of the heat treatment discharge and entered a request that the hearing be reopened to review data which had been collected since the June 1976 hearing.<sup>11</sup>

The RA issued his Initial Decision (ID)<sup>12</sup> on November 7, 1977, which denied CP&L's request to reopen the hearing and ordered "...the issuance of a new permit restricting capacity or flow of the intake to the absolute minimum levels consistent with the safe operation of the plant ...Further, the new permit shall include a compliance schedule which will ensure that this reduction is implemented at the earliest possible date." (ID, pp. 90-91).

The following are findings presented in the RA's Initial Decision in support of his order:

"...entrainment and impingement at Brunswick is a significant adverse environmental impact which must be minimized as quickly as possible in order to protect and preserve the Estuary ecosystem with its many valuable species of fish and shellfish." (ID. p. 44).

"The record is clear that the location of Brunswick's intake structure does not comply with the requirements of Section 316(b)." (ID. p. 54).

The evidence in the record indicates that the design of the Brunswick intake structure is not the best technology available to minimize the adverse environmental impacts occurring as a result of operation of the plant with its current once-through cooling system." (ID. p. 57).

"The capacity of the plant with operation of a once-through cooling system is not the best technology available to minimize adverse environmental impact at that site." (ID. p. 61).

"...the cost of significantly reducing the capacity of Brunswick's cooling water intake structure...is not wholly disproportionate to a 96% reduction in the severe adverse environmental impacts of the plant." (ID. p. 69).

"The evidence indicates that withdrawals of water from the Estuary in that amount [2,000,000,000 gallons of water per day]\* will cause a decrease in indigenous species, loss of critical aquatic organisms which are important elements in the food web, a reduction in fish population composition, with a resulting decrease in commercial and sport fisheries, along a significant portion of the Eastern seaboard. Therefore, CP&L is not entitled to a Section 316(a) variance." (ID. p. 71).

"...the only currently feasible alternative at Brunswick to alleviate current and future adverse environmental impacts is to severely restrict the flow of water (capacity) through the plant." (ID. p. 73).

"In considering CP&L's current request for further delays for studies, the record contains overwhelming evidence which indicates that a two-year delay is unjustified." (ID. p. 77-78).

"The record establishes that two more years of study would not alter the ultimate conclusion that the operation of Brunswick with its once-through cooling system is having an adverse environmental impact on the Estuary, therefore, the Section 316 determinations must not be deferred. CP&L is not precluded, however, from conducting studies it deems necessary to make a demonstration regarding seasonal operation of its once-through system." (ID. p. 86).

"...the permit to be developed as a result of this redetermination should not include references to specific cooling technologies, but rather should be confined to limitations on those technical parameters authorized by the statute." (ID. p. 87).

On December 1, 1977, CP&L petitioned the EPA Administrator for review<sup>13</sup> of the RA's Initial Decision and of the General Counsel's Decision, requesting (1) summary reversal of the Initial Decision and issuance of CP&L's Proposed Findings, or, alternatively, (2) reopening of the record and review of the Initial Decision based on the supplemented record, or (3) granting of appeal to review the present record. Other parties to the proceeding (i.e., the Department of Natural Resources and Community Development of the State of North Carolina, and the

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\*Information added for clarification.

Commission Staff of the Utilities Commission of the State of North Carolina) also filed petitions for review of the Initial Decision. The "Public Staff" of the Utilities Commission of the State of North Carolina requested recognition as an additional party and entered a petition for review of the Initial Decision. On January 27, 1978, additional petitions for leave to intervene were filed by Brunswick County, North Carolina and by the City of Southport, North Carolina.

On February 20, 1978, the EPA Administrator remanded the Brunswick case<sup>14</sup> to the RA with instructions to revise the Initial Decision to comply with 40 CFR 125.36(1)(2). Specifically, the Administrator found that the RA, in his initial decision, had not addressed all issues of fact or discretion submitted by the parties in their proposed findings and conclusion. Further, the RA was requested to describe, in his revised decision, (1) the existing data presented by CP&L, (2) data tendered by CP&L in support of its request to reopen the hearing, and (3) data proposed to be collected by CP&L during the remainder of its study. Finally the Administrator admitted the "Public Staff" as an additional party and authorized Brunswick County and the City of Southport to participate as amici curiae.

On March 20, 1978, the RA petitioned<sup>15</sup> the Administrator to reconsider or clarify his remand of the Initial Decision on the bases: that "all issues of fact" means all "material" issues of fact relevant to the questions of whether an NPDES permit should be issued, denied, or modified; that the material and legal issues to be determined as a result of the hearing were defined in the stipulation entered into by the parties; that the Initial Decision adequately discusses these and that if issues of fact relative to the determination have not been adequately addressed, those issues should be specified by the Administrator.

CP&L wrote to NRC, on May 16, 1978, reiterating their request for amendment of license or waiver of enforcement of the installation date.<sup>16</sup> NRC responded on August 2, 1978, requesting from CP&L information on mitigative alternatives with focus on those alternatives which could be implemented by January 1, 1979 and serve in the interim period until the EPA decision.<sup>17</sup>

By letters of June 14, August 2, August 3, and August 16, 1978 CP&L proposed alternatives to closed-cycle cooling for consideration by EPA as a settlement of the pending issues before the EPA Administrator. EPA requested technical review of the proposed alternatives by other Federal agencies.<sup>18</sup> NRC notified EPA by letter dated August 24, 1978 that the information available did not revise NRC's original position that closed-cycle operation is the preferred mode.<sup>19</sup>

By letter dated August 28, 1978, CP&L responded to NRC's request for information,<sup>19</sup> reiterating its view that the NRC had no authority to impose interim mitigative measures and further indicated that the measures which CP&L had studied would require three years for full implementation. In CP&L's opinion, any interim measures required by the NRC would constitute a more restrictive effluent limitation than required by the existing NPDES permit.<sup>20</sup>

The RA provided<sup>21</sup> the Administrator with a decision in response to the remand which was in the form of a "Supplement to the Initial Decision," dated August 31, 1978. On this same day, the RA issued a denial of CP&L's motion to reopen the hearing record.<sup>22</sup> The supplement supported the RA's conclusion that flow reduction (equivalent to closed-cycle) was required at the Brunswick Plant at the "earliest possible date." Action by the EPA Administrator is still pending.

By letter of September 1, 1978, EPA informed CP&L that their proposed alternatives to closed-cycle were inadequate to meet the "best available technology standard."<sup>23</sup>

### Discussion

In the FES, the staff evaluated the impacts of continued once-through operation at the Brunswick Plant and found that, on balance, the action required was conversion to a closed-cycle cooling system. A three-year period was selected as an acceptable period of operation while cooling towers were being constructed. By selecting the three-year period, corresponding with the minimum time estimated for completion of tower construction, the staff implied that conversion to closed-cycle should be accomplished at the earliest possible date.

The following excerpts from the FES summarize the NRC staff findings related to potential impacts on aquatic biota from impingement and entrainment at the Brunswick Steam Electric Plant (BSEP):

"The major impacts...arise primarily from the physical presence of the canal and its operation. The major impacts relate to (a) impingement and entrainment..., (b) modification of marshlands, and (c) partial loss of a freshwater resource." (p. V-1)

"...it is apparent that Snows Marsh including Walden Creek is highly productive, and serves as a nursery ground for many species of commercial importance, including shrimp, blue crab, spot and croaker. It is likely that substantial numbers of shrimp, spot and blue crabs from the Walden Creek and Snows Marsh environs will eventually pass through the plant. These organisms will be particularly vulnerable during their migrations into and out of the Walden Creek-Snow Marsh area" (p. V-26).

"Fish populations will become established in the intake canal and it is expected these populations will rapidly increase until the supporting capacity of the system is reached. ...Adult resident fish that are able to withstand the water velocities ...are less likely to become impinged on the traveling screens than the transient populations of juvenile shrimp and spot. The flow velocity...ranges from about 0.5-0.8 fps under normal conditions and up to 1.4 fps during extremely low water conditions. Juvenile shrimp and spot entering the intake canal, may be impinged on the screens. At velocities greater than 1 fps there is a sharp drop in the ability of juveniles to swim against the current. These data and the fact that Snows Marsh is an important nursery area lead the staff to conclude that significant numbers will be impinged on the traveling screens, especially during low-water conditions" (p. V-28).

"Sufficient data are not available to determine the exact impact resulting from the entrainment of plankton in the cooling water system and the impact of impingement of larger organisms on the traveling screens. Probable estimates based on the qualitative data provided can be summarized by the following statements:

1. During certain periods, all organisms passing through the traveling screen will be killed by either thermal shock, mechanical damage, or chlorination or a combination of these. At other times, the mortality due to passage through the condensers may be relatively low, but the entire process of extreme pressure and turbulence, elevated temperatures for a period of up to five hours, exposure to chlorine and chlorine residuals and final exposure to cooler oceanic temperatures can be expected to cause significant mortality rate to planktonic forms throughout the year.
2. Commercial species, particularly shrimp, utilizing the marsh environs for nursery grounds will be killed in significant numbers resulting in an estimated economic loss to Brunswick County alone estimated at \$325,000/yr.
3. White shrimp from the Cape Fear contribute to the shrimp catch in South Carolina, Georgia, and Florida. Entrainment of shrimp larva as well as impingement of developing juveniles will have an effect on the shrimp fishery in those states. As previously stated, the value of the annual shrimp catch in northern South Carolina is estimated at \$262,000. Most of these shrimp caught in this region appear to come from the Cape Fear estuary.

"The applicant states that the plankton mortality resulting from passage through the plant condensers is not considered to represent a significant loss from the estuary due to the small percentage of water from the estuary that will be diverted through the plant. The staff cannot accept this conclusion based on the data available. The staff believes that entrainment will be significantly greater because of the productivity of Snow Marsh and Walden Creek. Thus, the staff concludes, on the basis of the available data and experience from other similar once-through cooling systems, that the operation of Brunswick 1 and 2 with the proposed once-through cooling system has the potential for serious and perhaps irreversible effects on the environment of the Cape Fear Estuary. The staff considers that the impact of plant operation under the present cooling system design will be serious but not irreversible if such operation is limited to the proposed three year period while an alternative cooling system is installed" (p. V-31).

CP&L initiated testing of circulating water pumps in January 1974 and, by monitoring the trash screens and intake flow, obtained data on impingement and entrainment losses. In the ASLB hearing, the staff noted that the number of finfish impinged during pump testing was somewhat lower than had been anticipated; however, the staff did not believe these preliminary data were sufficient to evaluate fully the potential impact (ASLB Hearing Tr. at p. 758).

Staff testimony before the ASLB demonstrates subjectivity in the selection of three years as an acceptable period for once-through cooling. The period was clearly based on the practicality of construction schedules and a subjective judgement that impact during the three years would be reversible.

One effect of the Stipulation, agreed to by the applicant, intervenor, and the AEC Regulatory Staff (now the NRC), was to remove this issue from litigation in the ASLB hearing. The conditions imposed by the Stipulation were incorporated in the ASLB's Decision issued on December 26, 1974. Pertinent findings presented in the Board's Decision are:

- that irreversible impacts on aquatic biota will not result from plant operation with once-through cooling, provided that operation does not extend beyond the three-year period
- that Staff testimony establishes this three-year time frame on the basis of a subjective compromise between hardware availability and probably reversible environmental effect
- that the staff will require Applicant to conduct monitoring programs adequate to permit assessment of any serious environmental impact which might occur

- that the principal benefit of the continued construction of the plant is the addition of approximately 11.5 billion kilowatt hours of electricity per year
- that the environmental and economic benefits from the continued construction and operation of the plant, particularly the necessity for CP&L to supply electrical power to meet the demand and expected growth in electrical use within its service area, are greater than the environmental and economic costs which will necessarily be incurred by continued construction and operation of the plant.

Nearing the end of one year with pump testing at Unit 2, CP&L petitioned EPA for an adjudicatory hearing to contest the terms of the original NPDES permit, which like the license condition effectively required conversion to cooling towers. The request for hearing was granted by EPA on March 19, 1975.

In a conference between EPA and CP&L representatives on June 4, 1975, CP&L presented a data summary of their pump testing studies and proposed a two-year delay in cooling tower construction while additional data were being collected. The same proposal was made informally to NRC representatives in a meeting with CP&L on June 6, 1975. CP&L convened a technical meeting on June 27, 1975 to discuss their data and conclusions with concerned agencies and citizen groups.

Since EPA had granted a hearing on the NPDES permit, that agency took the lead in soliciting comments on CP&L's data results and proposal. Comments provided by the National Marine Fisheries Service, the Fish and Wildlife Service and EPA's own technical staff unanimously concluded that the data presented by CP&L did not justify a two-year delay (see RA's ID at p. C-11). Following review of the same information, Counsel for Project Environment informed both EPA and NRC that:

"...Project Environment does not object to the proposal outlined by Carolina Power and Light Company and does not intend to object to such modifications of the Company's licenses, permits and other documents as may be necessary in order to permit further study of the impact of the plant's once-through intake system while two units are operating."

On August 13, 1975, CP&L formally requested the NRC to amend the Unit 2 license, deferring the cooling tower installation date for 31 months until December 31, 1980. Prior to the completion of NRC staff review of the technical reports, EPA notified CP&L that it was denying the extension request but indicated that the question of any extension could be explored at the adjudicatory hearing. The NRC staff's technical review and assessment was completed subsequently.<sup>25</sup> Staff findings indicated that the CP&L information did not refute the FES assessment as to the unacceptability of

two-unit operation for an extended period with the once-through cooling system and that there was no technical basis for extending the schedule for conversion to closed-cycle cooling. By letter from H. Denton to H. Zeller dated February 4, 1976, EPA was notified of NRC's intent to cooperate in the adjudicatory hearing by providing testimony on the results of our evaluation of the Brunswick monitoring data. This action was taken pursuant to the mandate of the FWPCA directing maximum cooperation among Federal agencies in the administration of the Act [Section 101(f)] and reflected agreements between NRC and EPA in the Second Memorandum of Understanding dated December 17, 1975.

Prior to the EPA Hearing, the Administrative Law Judge issued an order staying the cooling tower compliance schedule conditioned on CP&L obtaining written concurrence for such stay from the NRC. The amendment which CP&L requested pursuant to this order was evaluated by the NRC staff on the basis of the extent of pumping which had occurred since the time Brunswick had begun operation. Amendment No. 15 to the Unit 2 license extended the "installation date" by eight months to January 1, 1979. The period of once-through cooling operation would have been equivalent to the three years originally analyzed in the FES. The staff's intent in that action was to "...permit the EPA adjudicatory hearing to proceed free of an operating license condition similar to the contested NPDES permit condition and... [was] not [to] be taken as affecting the merits of the cooling tower questions presently being litigated before EPA." The eight-month extension was expected to cover the period of time necessary for resolution by EPA of the ultimate questions concerning cooling towers at the Brunswick plant. The staff recognized that EPA could require either an earlier or a later tower installation date and that an assessment of impacts and further license amendment would be necessary if EPA's compliance schedule allowed once-through operation subsequent to January 1, 1979. The staff did not anticipate having to reconsider the question of a compliance date for cooling tower implementation until a final EPA determination had been made on the need for cooling towers, i.e., the ultimate question.

The RA has reached an Initial Decision and has further supported that decision by his supplement in response to the remand of the EPA Administrator. (The Background discussion presents excerpts which summarize the RA's findings.).

The staff believes it to be prudent and proper to apply the findings of the RA in this appraisal. The Commission's order in the Seabrook case makes clear that the NRC may, and in appropriate cases, should accept and use EPA's determination of the magnitude of aquatic impacts from cooling system operation in striking an overall cost-benefit balance for the facility.<sup>26</sup> Thus, although the NRC is not required to use EPA

determinations in every case, we are deferring to the EPA in the Brunswick case for the following reasons:

1. The EPA has held an adjudicatory hearing on those issues which were not litigated in the ASLB hearing.
2. The public interest of the Intervenor in the NRC proceeding has been further served by the EPA Hearing. The Intervenor waived the opportunity to become a party to the proceeding.
3. The NEPA concerns of the NRC staff have been given full consideration in the EPA hearing process:
  - (a) Staff findings in the FES were used and referenced.
  - (b) Testimony of an expert technical witness for the NRC was received in the EPA hearing.
  - (c) The RA's Initial Decision supports the FES findings and reflects the concerns expressed by the NRC expert witness.
4. The EPA Initial Decision presents specific factual findings on the magnitude of environmental impacts with continued once-through cooling system operation.

Once a final EPA decision is reached, the NRC staff should be able to rely heavily on these findings in conducting a cost/benefit assessment of the impacts of operation in conformity with the EPA decision. In accepting the EPA determinations, there arise two items of potential conflict between the NPDES permit and the Operating Licenses:

A. Flow Reduction vs Cooling Towers

The RA's Initial Decision, as supplemented in response to the EPA Administrator's remand, supports the need for flow reduction from that associated with once-through cooling to a level equivalent to closed-cycle operation. Since the NRC has approved cooling towers as the form of closed-cycle cooling to be used, there is a possibility of conflicting requirements between the license and the NPDES permit if flow reduction, equivalent to the use of a different technology, is approved by EPA. However, until such conflict should arise, there is no basis for removal of the cooling tower requirement.

B. Compliance Date vs Installation Date

The interim NPDES permit issued on March 25, 1977 allows once-through operation to an undefined date. The NRC-issued licenses require conversion to cooling towers on January 1, 1979. There is the possibility that the final EPA Administrative decision will not be reached before January 1, 1979 and the certainty that cooling

towers will not be available by the "installation date"; CP&L has estimated 33 to 36 months would be required to complete the cooling towers upon resumption of the construction activity. We have determined that the appropriate action is to delete the installation date and defer to that compliance date to be established by the RA upon completion of the EPA Administrative action. The consequences of this staff action are evaluated in the following section.

### Evaluation

In his Initial Decision, the RA determined that:

"...the evidence already in the record indicates that the plant's once-through cooling system is adversely impacting the Estuary and ecosystem. The exact magnitude of adverse impact remains unknown. The statute does not require that the exact magnitude be determined. Two more years of additional study proposed by CP&L will not yield information which will alter the determination of adverse impact. Each year the plant operates with its once-through cooling system, greater harm occurs to the Estuary and its resources." (ID supplement at p. 134).

The RA states that "[c]ertain testimony in the record misconstrues the statute in emphasizing that effects of Brunswick's intake structure may not be irreversible or irretrievable. The statutory test is 'adverse.' It is possible that those parties who dealt so extensively on the irreversibility question did so in order to show that no permanent damage would be done to the Estuary if that determination were deferred while further studies were conducted. However, in light of the fact that existing data are sufficient to make a Section 316(b) determination at this time, the issue of irreversibility is simply not a relevant consideration" (ID, pp. 28-30). In a footnote to this discussion, the RA further states that "[w]e are not, however, convinced that the effects of two years of two unit operation with once-through cooling would not be irreversible, particularly when considered together with the additional time that will be required to install off-stream cooling" (ID at p. 30, Footnote 61).

Based on these and other findings in the Initial Decision, the RA ordered the issuance of a new NPDES permit restricting capacity or flow to the absolute minimum levels consistent with the safe operation of the plant and including a compliance schedule which will ensure that this reduction is implemented at the earliest possible date (ID at pp. 90-91).

The NRC and the EPA Regional Administrator concur in the adversity of impacts with continued once-through operation of the Brunswick Plant. Both agree on the urgency of implementing flow reduction (equivalent to off-stream cooling) at the earliest possible date. What the NRC

must now determine under NEPA, is whether the costs outweigh the benefits if the plant is allowed continued operation with once-through cooling until flow reduction is implemented. In its 1974 Decision, the ASLB determined that the benefits favored the completion of construction and initial operation with once-through cooling even though serious short-term effects were expected. These short-term effects were not expected to result in irreversible impacts if the period of operation was limited to a stipulated three-year period. To ensure that a more serious effect was not incurred during the three-year period, the Board required that monitoring be an integral part of a continuing assessment.

The Licensee has conducted more extensive monitoring than required by the Environmental Technical Specifications to support its case in the EPA proceeding. Monitoring of the direct effects of entrainment and impingement has shown the magnitude of these observable losses to be increasing as the plant intake flow rate approaches the normal two-unit operational level. Monitoring of the estuarine populations has not identified any catastrophic effects; however, adverse effects can still be predicted with a choice of realistic assumptions in the development and application of theoretical models. The RA concluded that: "In view of the testimony, the results of all the modelers affirmatively demonstrate that adverse environmental impacts are occurring and will continue to occur so long as the plant is operated with once-through cooling" (ID supplement at p. 113).

The RA noted that the exact magnitude of impact remains unknown; therefore, it is instructive in regard to the present assessment to review the range of predicted impact. The licensee believes that its model, which predicts less than 10% decrease in the larval population of the estuary, is conservative. A reduction in the larval populations at the lower level of 2 to 3% is thought more probable by CP&L based on the plant taking in only 2 to 3% of new water flowing into the Estuary with each tide.\* With a further hypothesis that the plant flow may induce an increased larval recruitment from the ocean to the Estuary, CP&L concludes that the actual decrease will be closer to 0% than to the model predicted 10% and may even result in a slight increase in the estuarine larval populations.\*\* Witnesses for EPA estimated 46-63% larval reduction and 70% reduction due to both entrainment

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\* The RA notes that this assumption presupposes homogeneous larval distribution

and impingement (ID at p. 40). Included in the hearing record (EPA Exhibit 33) are estimates for larval reduction, provided by the National Marine Fisheries Service, ranging from 66-2/3% on the average to 99.9% for the extreme case with a three-week period of larval vulnerability to the intake. In the FES, the staff estimated losses to the shrimp fishery on the basis that about 35% of the shrimp productive area in the Cape Fear estuary would be affected adversely by the plant circulating water system (FES, p. XI-19 and Appendix C).

With the wide range of estimated losses, i.e., from 0% (or even a theorized gain) to 99.9%, the question of whether to allow continued operation remains a subjective judgement. The RA concluded:

"...it appears that a larval reduction somewhere between 25% and 75% is to be expected from full two-unit operation with once-through cooling. But it must be pointed out that even a larval reduction of 1-5% could result in a substantial reduction in population levels over a long period of time" (ID supplement, p. 113).

It is the staff's present judgement that larval losses in the predicted range of 25% - 75% are incompatible with the long-term well-being of the Cape Fear Estuary ecosystem. However, based on the available data, we do not believe it likely that irreversible damage has been incurred during the first three years of plant operation. Damage which may be incurred in the short-term will not alter the balance, previously struck by the staff and the ASLB, which favored the construction and initial operation with once-through cooling. Further, the methodology for impact assessment does not allow for pin-pointing in time when this balance may be upset. In recognition of this inadequacy of the methodology, we concur in the RA's finding that flow reduction should be implemented at the earliest possible date. We cannot construct a balance which provides better definition of a suitable or necessary installation date.

#### Conclusions for Negative Declaration

Under 10 CFR § 51.5 (c)(1), the NRC staff has concluded that this environmental appraisal (rather than an environmental impact statement) provides the necessary analysis in support of the amendment. This conclusion is based, in part, on the fact that the NRC has determined that it is appropriate to defer to decisions, to be made by EPA, as to the choice and installation date of the cooling system. It was further influenced by the fact that the results of this appraisal have not altered the fundamental conclusions of the FES. Having made this conclusion, we find that a Negative Declaration is appropriate for this licensing action.

DEC 15 1978

## References

1. Letter from E. E. Utley, CP&L Senior Vice President, Power Supply, to Benard C. Rusche, Director of Office of Nuclear Reactor Regulation, NRC, dated March 4, 1977.
2. Federal Register, Volume 42, No. 217, November 10, 1977. pp. 58582-3.
3. Stipulation by Applicant, Intervenor, and AEC Regulatory Staff, dated July 8, 1974. Appendix A to ASLB Initial Decision in the matter of Carolina Power and Light Company (Brunswick Steam Electric Plant, Units 1 and 2), December 26, 1974.
4. NPDES Permit No. NC0007064 issued by EPA Region IV, December 31, 1974.
5. CP&L Petition for Declaratory Order and Motion for Reconsideration, filed with EPA Region IV, on March 12, 1976. (Supporting Brief filed with EPA Region IV on March 17, 1976).
6. Order by EPA Administrative Law Judge dated March 17, 1976 and corrected by Order dated March 19, 1976.
7. Letter from Robert A. Purple, Chief, Operating Reactors Branch #1, to CP&L (ATTN: J. Jones), dated May 18, 1976, transmitting Amendment No. 15 to Facility Operating License No. DPR-62 (Brunswick Steam Electric Plant, Unit No. 2).
8. Stipulation for the Regional Administrator's Approval. In the Matter of NPDES Permit No. NC0007064, CP&L's Brunswick Steam Electric Plant, approved June 22, 1976.
9. Stipulation for the Regional Administrator's Approval, In the Matter of NPDES Permit No. NC0007064, CP&L's Brunswick Steam Electric Plant, approved June 22, 1976.
10. EPA Administrative Law Judge's Certification of Transcript and Recommendations in the matter of NPDES Permit No. NC0007064, Brunswick Steam Electric Plant, dated September 24, 1976.
11. CP&L letter to EPA Region IV, dated September 7, 1977.
12. EPA Region IV Administrator's Initial Decision in the Matter of NPDES Permit No. NC0007064, Brunswick Steam Electric Plant, dated November 7, 1977.
13. CP&L Petition to EPA Administrator for Review of the Initial Decision of the Region IV Administrator and of the Decision of the General Counsel No. 41, dated December 1, 1977.

References

- 2 -

14. EPA Administrator's Remand in the Matter of NPDES Appeal No. 77-19 Brunswick Steam Electric Plant, dated February 20, 1978.
15. EPA Region IV Petition for Reconsideration or Clarification of Administrator's Remand in NPDES Appeal No. 77-19, dated March 20, 1978.
16. CP&L letter from E. E. Utley to Edson G. Case, Acting Director, Office of Nuclear Reactor Regulation, Re: Cooling Tower Installation Date, dated May 16, 1978.
17. NRC letter from Daniel R. Muller, Acting Director, Division of Site Safety and Environmental Analysis, to E. E. Utley, CP&L, dated August 2, 1978.
18. Letter from Howard Zeller, EPA Region IV Deputy Director for the Enforcement Division, to Charles W. Billups, NRC Aquatic Scientist, dated July 14, 1978.
19. NRC letter from Voss Moore, Assistant Director for Environmental Projects, to Howard Zeller, EPA Region IV, dated August 24, 1978.
20. CP&L letter from E. E. Utley to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, dated August 20, 1978.
21. EPA Region IV Administrator's Denial of Carolina Power and Light Company's Motion to Reopen the Record in NPDES Appeal No. 77-19.
23. EPA letter from Howard D. Zeller to Richard E. Jones, CP&L Associate General Counsel, dated September 1, 1978.
24. Letters from Herbert P. Scott, Counsel for Project Environment, to Benard C. Rusche, Director of NRC's Office of Nuclear Reactor Regulation, and to Jack E. Ravan, EPA-Region IV Administrator, both dated August 8, 1975.
25. Technical Assistance Request (TAR) No. 1818 Response, from Malcolm L. Ernst, Assistant Director for Environmental Technology, to Voss A. Moore, Assistant Director for Environmental Projects, dated January 9, 1976.
26. Public Service Company of New Hampshire (Seabrook Station), CLI-78-1, 7 NRC 1, 23-24 (January 1978).



BC/A-4

Carolina Power & Light Company

FEB 19 1982

Office of Nuclear Reactor Regulation  
ATTN: Mr. D. B. Vassallo, Chief  
Operating Reactors Branch No. 2  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-325 AND 50-324  
LICENSE NOS. DPR-71 AND DPR-62  
REQUEST FOR LICENSE AMENDMENTS -  
NONRADIOLOGICAL ENVIRONMENTAL TECHNICAL SPECIFICATIONS

Dear Mr. Vassallo:

SUMMARY

In accordance with the Code of Federal Regulations, Title 10, Part 50.90 and Part 2.101, Carolina Power & Light Company (CP&L) hereby requests revisions to the Environmental Technical Specifications (ETS) for the Brunswick Steam Electric Plant (BSEP) Unit Nos. 1 and 2. The primary purpose of these changes is to delete duplicative nonradiological environmental monitoring requirements which are specified by our National Pollutant Discharge Elimination System (NPDES) permit.

DISCUSSION

The North Carolina Department of Natural Resources and Community Development, Division of Environmental Management, has issued NPDES Permit No. NC0007064 to CP&L for the Brunswick Steam Electric Plant. A copy of the NPDES permit is enclosed. This permit specifies the limitations and monitoring requirements applicable to nonradiological effluents released from the Brunswick Plant. The authority to issue NPDES permits has been delegated to the State of North Carolina by the Environmental Protection Agency (EPA).

The determination was made in the Yellow Creek decision that the Nuclear Regulatory Commission does not have the authority to impose requirements in jurisdictional areas of the Environmental Protection Agency. Therefore, CP&L proposes that the requirements for nonradiological environmental monitoring be deleted from the Brunswick ETS because these requirements are now specified in our NPDES permit and the associated biological monitoring program.

The following paragraphs discuss the ETS revisions we have proposed in the attached package:

As required by the NPDES permit, Part I.B, Schedule of Compliance, Item 1E, CP&L's Biological Monitoring Program has been approved by the North Carolina Department of Natural Resources and Community Development, Division of Environmental Management. This program addresses entrainment, impingement, river larval fish, nekton, high marsh, and laboratory analysis and quality control. The requirements of this biological monitoring program, along with those specified in the NPDES permit encompass and duplicate the requirements of Environmental Technical Specifications 4.1, 4.1.1, and 4.1.2 for Brunswick Units 1 and 2. Accordingly, proposed Technical Specifications changes are enclosed which will (1) delete the existing ETS Sections 4.1, 4.1.1, and 4.1.2, and (2) include a reference to the NPDES permit requirements for nonradiological monitoring.

Also, we request that the following paragraphs from Sections 2.0 and 3.0 be deleted from the Brunswick ETS: 2.1, 3.1, 2.1.1, 3.1.1, 2.1.3, 3.1.3, 2.2, 3.2, 2.2.1, 3.2.1, 2.2.3, 3.2.3, 2.3.2, and 3.3.2. These paragraphs cover thermal discharges, chlorine, normalizer tank pH, and piezometric head. Figure 3.3-1 has also been deleted from ETS since it shows the location of piezometric monitoring stations. Comparable requirements for these items are included in our NPDES permit and should thus be deleted from ETS. In addition, the corresponding portions of the ETS Bases section have been deleted. Appropriate proposed Technical Specifications revisions reflecting these changes to ETS are enclosed.

In addition, we request that the remaining three portions of ETS Section 6 be deleted. This would be Section 6.0 (Special Surveillance and Study Activities), Section 6.1 (Marsh Productivity), and Section 6.4 (Salt Deposition Monitoring). Section 6.0 is an introductory statement that is not necessary once Sections 6.1 and 6.4 are deleted. Section 6.1 should be deleted because the marsh productivity study has been completed; transmittal of this report is referenced in our May 7, 1980 letter to NRC's Mr. Charles W. Billups. Section 6.4 should also be deleted; since cooling towers will not be constructed, the postoperational phase of the salt deposition study will not be conducted. Therefore, this study is complete. Appropriate proposed Technical Specifications revisions to ETS Section 6 are enclosed.

In addition to the revisions/deletions described above, certain necessary administrative corrections and format changes have also been incorporated into the attached revised ETS pages.

#### ADMINISTRATIVE INFORMATION

You will find enclosed the revised pages with the changes indicated by vertical lines in the right-hand margins. We have evaluated this request in accordance with the criteria in 10CFR170.22 and have determined that this request is administrative in nature; therefore, one Class II

and one Class I license amendment fee are required for Units 1 and 2, respectively. Our check for \$1,600.00 is enclosed in payment of these fees.

Should you have any questions regarding this matter, please contact us.

Yours very truly,

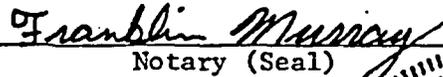


P. W. Howe  
Vice President  
Technical Services

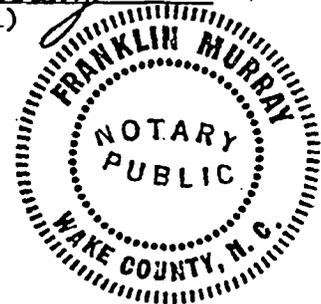
JAM/WRM/lr (9370)  
Enclosures

cc: Mr. J. P. O'Reilly (R-II)

P. W. Howe, having been first duly sworn, did depose and say that the information contained herein is true and correct to his own personal knowledge or based upon information and belief.

  
Notary (Seal)

My commission expires: Oct. 4, 1986



STATE OF NORTH CAROLINA  
DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT  
DIVISION OF ENVIRONMENTAL MANAGEMENT

PERMIT

To Discharge Wastewater Under The NATIONAL  
POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

Carolina Power and Light Company

is hereby authorized to discharge wastewater from a facility located at  
Brunswick Steam Electric Plant  
P.O. Box 458  
Southport, North Carolina 28461

to receiving waters  
Atlantic Ocean

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective January 16, 1981.

This permit and the authorization to discharge shall expire at midnight on December 31, 1985.

Signed this day of January 16, 1981.

Original Signed By  
Neil S. Grigg

---

Neil S. Grigg, Director  
Division of Environmental Management  
By Authority of the Environmental  
Management Commission

SUPPLEMENT TO PERMIT COVER SHEET

Carolina Power and Light Company

is hereby authorized to:

1. Continue operation of a 1.9 billion gallon per day cooling water system consisting of intake structure, 9.6 miles of canal, circulation pumps, siphons under the intracoastal waterway, discharge pump station on Oak Island, and discharge conduits terminating 2,000 feet off shore with all necessary appertenances for withdrawal of cooling water from the Cape Fear River near Snows Cut and the discharge of cooling water into the Atlantic Ocean.
2. Continue operation of a secondary wastewater treatment facility consisting of influent pumps, bar screen, flow measuring device, aeration tank, secondary clarifier and chlorination chamber.
3. Continue the discharge of low volume waste sources into the intake canal.
4. Continue construction and operation of a diversion fence located at the mouth of the intake canal.
5. Construct and operate Fine Mesh Screens at intake pump bays.
6. Modify intake pump system to minimize intake flow rate.
7. Discharge from said treatment works into the Atlantic Ocean which is classified Class SB.

A. (1a). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning upon the effective date and lasting until June 30, 1983 permittee is authorized to discharge from outfalls serial numbers 001 and 002 - once through cooling water and non-contact service water systems. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>					
	<u>Kg/day (lbs/day)</u> <u>Daily Avg.</u>	<u>Daily Max.</u>	<u>Other Units (Specify)</u> <u>Daily Avg. Daily Max.</u>		<u>Measurement</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>	<u>Sample</u> <u>Location</u>	<u>1/</u>
Condenser Rise ° C.(°F) - Summer/Winter	2/	---	17.2(31.0)/25.6(46)		Continuous	Recorder		
Intake Temperature					Continuous	Recorder		)
Cooling Water Flow (cubic feet per second, cfs)/unit					Continuous	Pump Logs		
Intake water temperature less than 65°F as a 5-day average								
Reactor power level 40 percent or greater							915 (effective after June 1, 1981)	
Reactor power level less than 40 percent for 48 hours or more							605 (effective after June 1, 1981)	
Intake water temperature between 65°F and 85°F as a 5-day average								
Reactor power level 40 percent or greater							915 (effective after June 1, 1981)	
Reactor power level less than 40 percent for 48 hours or more							605 (effective after June 1, 1981)	
Intake water temperature 85°F or greater								
Reactor power level 40 percent or greater							1105 (effective after June 1, 1981)	
Reactor power level less than 40 percent for 48 hours or more							835 (effective after June 1, 1981)	

Notes:

- Forty percent reactor power corresponds to approximately 315 mw net for each unit.
- During period of refueling and other outages at zero reactor power, unit flows shall be zero, except as required for radwaste discharge, operational testing, and maintenance of operating limits in the discharge canal with a minimum of two discharge pumps in service at all times.

A. (1a). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

3. At times when system demand is within 200 mw of available system reserves, flow limitations can be suspended upon notice to the Regional Supervisor. Notice should include anticipated flow rates and estimate of duration of flow rates in excess of those otherwise allowed.
4. Flow limitations can be exceeded during startup periods not to exceed 48 hours.
5. All flow limitations conditioned upon meeting applicable radwaste requirements.
6. Excursions of two 4-hour periods per week allowed to clean debris from filters.

Free Available Chlorine (mg/l)	See Below	Weekly	Multiple Grabs
Total Residual Chlorine (mg/l)	See Below	Weekly	Multiple Grabs

Free available chlorine shall not exceed an average concentration of 0.2 mg/l for a maximum period of two hours per day per unit and a maximum instantaneous concentration of 0.5 mg/l at the outlet corresponding to an individual unit. Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit may discharge free available or total residual chlorine at any one time unless the permittee can demonstrate to the Director that the unit(s) cannot operate at/or below this level of chlorination. Chlorination periods shall be reported for each unit monthly.

Total residual chlorine shall also be monitored weekly by multiple grab samples at the Caswell Beach Pump Station until July 31, 1981, in addition to the monitoring that is required for outlets at individual units.

Temperature --- Cooling water system facilities shall be effectively maintained and operated at all times so as to meet the temperature standards assigned to the Atlantic Ocean of 0.8°C (1.44°F) increase above ambient water temperature during the months of June through August and 2.2°C (3.96°F) increase above ambient water temperature during the months of September through May and in no case should the temperature exceed 32°C (89.6°F) due to the discharge of heated liquid measured three feet below the water surface except within the following defined mixing zones:

- (a) The temperature increase above ambient water temperature shall not exceed 7°F outside an area of 60 acres included within the plume extending from the point of discharge.
- (b) The temperature increase above ambient water temperature shall not exceed 0.8°C (1.44°F) increase above ambient during the months September through May, and in no case should the temperature exceed 32°C (89.6°F) outside an area of 1,000 acres.
- (c) The temperature increase above ambient water temperature at the bottom (defined as one foot above the ocean floor) shall not exceed 7°F for more than 500 feet from the point of discharge nor for an area of more than two acres.

A. (1a). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Temperature monitoring at the Ocean discharge shall be conducted twice per year, once during the June through August period and once during the September through May period. Reactor power levels should be at least 85 percent for each unit on the date of the monitoring.

Temperatures shall be monitored at the surface and bottom (defined as three feet below the water surface and one foot above the ocean floor) in sufficient locations to establish compliance with Water Quality Standards. If sufficient temperature variation exists, a plot of 1°F isotherms should be submitted for surface and bottom conditions.

There should be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

There shall be no discharge of floating solids or visible foam in other than trace amounts at the ocean outfall.

1/ Unless otherwise specified, samples taken in compliance with the monitoring requirements listed above shall be taken at an outlet corresponding to an individual unit prior to mixing with other waste streams except that intake temperature shall be monitored at the plant intake.

2/ Summer as used herein shall include the months of June through September and winter shall include all other months.

A. (1b). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning upon July 1, 1983 and lasting until June 30, 1984 permittee is authorized to discharge from outfalls serial numbers 001 and 002 - once through cooling water and non-contact service water. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>				
	<u>Kg/day (lbs/day)</u>		<u>Other Units (Specify)</u>		<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample 1/ Location</u>
	<u>Daily Avg.</u>	<u>Daily Max.</u>	<u>Daily Avg.</u>	<u>Daily Max.</u>			
Condenser Rise °C (°F)-Summer/Winter <sup>2/</sup>			16.7(30)	25.6(46)	Continuous	Recorder	
Intake Temperature					Continuous	Recorder	
Cooling Water Flow (cubic feet per second, cfs)/unit					Continuous	Pump Logs	
Intake water temperature less than 65°F as a 5-day average							
Reactor power level 40 percent or greater				605			
Reactor power level less than 40 percent for 48 hours or more				400			
Intake water temperature between 65°F and 85°F as a 5-day average							
Reactor power level 40 percent or greater				915			
Reactor power level less than 40 percent for 48 hours or more				605			
Intake water temperature 85°F or greater							
Reactor power level 40 percent or greater				1105			
Reactor power level less than 40 percent for 48 hours or more				835			

Notes:

- Forty percent reactor power corresponds to approximately 315 MW net for each unit.
- During period of refueling and other outages at zero reactor power, unit flows shall be zero, except as required for radwaste discharge, operational testing, and maintenance of operating limits in the discharge canal with a minimum of two discharge pumps in service at all times.

A. (1b). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

3. At times when system demand is within 200 mw of available system reserves, flow limitations can be suspended upon notice to the Regional Supervisor. Notice should include anticipated flow rates, and estimate of duration of flow rates in excess of those otherwise allowed.
4. Flow limitations can be exceeded during startup periods not to exceed 48 hours.
5. All flow limitations conditioned upon meeting applicable radwaste requirements.
6. Excursions of two 4-hour periods per week allowed to clean debris from filters.

Fine Mesh Screens ---Fine mesh screens shall be installed on the plant intake structure such that intake cooling water flowing into two (2) pump bays per generating unit will continuously pass through the fine mesh screens. Should use of at least two (2) screened pump bays be impossible due to screen failure or other malfunction, written notice shall be provided stating cause of malfunction, duration and corrective action taken by the Company.

Diversion Fence ---A diversion fence located at the mouth of the intake canal shall be continuously operated and maintained in such a manner as to minimize impingement.

A biological monitoring program shall be designed and implemented which will provide sufficient information to allow for a continuing assessment of the impact of the BSEP on the Cape Fear estuary with particular emphasis on the marine fisheries. This program shall at least include impingement studies (including organism return), entrainment studies, nekton studies and marsh recruitment studies. Data shall be reported on an annual basis and shall include an assessment of the effectiveness of the diversion fence, flow minimization and fine mesh screens in minimizing impingement and entrainment along with an interpretive summary report. The biological monitoring program shall be approved by the Director.

Free Available Chlorine (mg/l)	See Below	Weekly	Multiple Grabs
Total Residual Chlorine (mg/l)	See Below	Weekly	Multiple Grabs

Free available chlorine shall not exceed an average concentration of 0.2 mg/l for a maximum period of two hours per day per unit and a maximum instantaneous concentration of 0.5 mg/l at the outlet corresponding to an individual unit. Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit may discharge free available or total residual chlorine at any one time unless the permittee can demonstrate to the Director that the unit(s) cannot operate at/or below this level of chlorination. Chlorination periods shall be reported for each unit monthly.

Temperature

Cooling water system facilities shall be effectively maintained and operated at all times so as to meet the temperature standards assigned to the Atlantic Ocean of 0.8°C (1.44°F) increase above ambient water temperature during the months June through August and 2.2°C (3.96°F) increase above ambient water temperature during the months September through May and in no case should the temperature exceed 32°C (89.6°F) due to the discharge of heated liquid measured three feet below the water surface except within the following defined mixing zones:

- (a) The temperature increase above ambient water temperature shall not exceed 7°F outside an area of 60 acres included within the plume extending from the point of discharge.

Part I  
Page  
Permit No NC

A. (1b). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- (b) The temperature increase above ambient water temperature shall not exceed  $0.8^{\circ}\text{C}$  ( $1.44^{\circ}\text{F}$ ) increase above ambient water temperature during the months June through August and  $2.2^{\circ}\text{C}$  ( $3.96^{\circ}\text{F}$ ) increase above ambient water temperature during the months September through May, and in no case should the temperature exceed  $32^{\circ}\text{C}$  ( $89.6^{\circ}\text{F}$ ) outside an area of 1,000 acres.
- (c) The temperature increase above ambient water temperature at the bottom (defined as one foot above the ocean floor) shall not exceed  $7^{\circ}\text{F}$  for more than 500 feet from the point of discharge nor for an area of more than two acres.

Temperature monitoring at the Ocean discharge shall be conducted once per quarter. Reactor power levels should be at least 85 percent for each unit on the date of the monitoring.

Temperatures shall be monitored at the surface and bottom (defined as three feet below the water surface and one foot above the ocean floor) in sufficient locations to establish compliance with Water Quality Standards. If sufficient temperature variation exists, a plot of  $1^{\circ}\text{F}$  isotherms should be submitted for surface and bottom conditions.

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

There shall be no discharge of floating solids or visible foam in other than trace amounts at the ocean outfall.

1/ Unless otherwise specified, samples taken in compliance with the monitoring requirements listed above shall be taken at an outlet corresponding to an individual unit prior to mixing with other waste streams except that intake temperature shall be monitored at the plant intake.

2/ Summer as used herein shall include the months of June through September and winter shall include all other months.

A. (1c). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning upon July 1, 1984 and lasting until the expiration date permittee is authorized to discharge from outfalls serial numbers 001 and 002 - once through cooling water and non-contact service water. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>				
	<u>Kg/day (lbs/day)</u> <u>Daily Avg.</u>	<u>Daily Max.</u>	<u>Other Units (Specify)</u> <u>Daily Avg.</u>	<u>Daily Max.</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Location</u> <sup>1/</sup>
Condenser Rise °C (°F)-Summer/Winter <sup>2/</sup>			16.7(30)/25.6(46)		Continuous	Recorder	
Intake Temperature					Continuous	Recorder	
Cooling Water Flow (cubic feet per second, cfs)/unit					Continuous	Pump Logs	
Intake water temperature less than 65°F as a 5-day average							
Reactor power level 40 percent or greater				605			
Reactor power level less than 40 percent for 48 hours or more				400			
Intake water temperature between 65°F and 85°F as a 5-day average							
Reactor power level 40 percent or greater				915			
Reactor power level less than 40 percent for 48 hours or more				605			
Intake water temperature 85°F or greater							
Reactor power level 40 percent or greater				1105			
Reactor power level less than 40 percent for 48 hours or more				835			

Notes:

- Forty percent reactor power corresponds to approximately 315 mw net for each unit.
- During period of refueling and other outages at zero reactor power, unit flows shall be zero, except as required for radwaste discharge, operational testing, and maintenance of operating limits in the discharge canal with a minimum of two discharge pumps in service at all times.

A. (1c). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. At times when system demand is within 200 m<sup>3</sup> of available system reserves, flow limitations can be suspended upon notice to the Regional Supervisor. Notice should include anticipated flow rates and estimate of duration of flow rates in excess of those otherwise allowed.
4. Flow limitations can be exceeded during startup periods not to exceed 48 hours.
5. All flow limitations conditioned upon meeting applicable radwaste requirements.
6. Excursions of two 4-hour periods per week allowed to clean debris from filters.

Fine Mesh Screens --- Fine mesh screens shall be installed on the plant intake structure such that intake cooling water flowing into two (2) pump bays per generating unit will continuously pass through the fine mesh screens. Should use of at least two (2) screened pump bays be impossible due to screen failure or other malfunction, written notice shall be provided stating cause of malfunction, duration and corrective action taken by the Company.

Diversion Fence --- A diversion fence located at the mouth of the intake canal shall be continuously operated and maintained in such a manner as to minimize impingement.

A biological monitoring program shall be designed and implemented which will provide sufficient information to allow for a continuing assessment of the impact of the BSEP on the Cape Fear estuary with particular emphasis on the marine fisheries. This program shall at least include impingement studies (including organism return), entrainment studies, nekton studies and marsh recruitment studies. Data shall be reported on an annual basis and shall include an assessment of the effectiveness of the diversion fence, flow minimization and fine mesh screens in minimizing impingement and entrainment along with an interpretive summary report. The biological monitoring program shall be approved by the Director.

Chlorine --- There shall be no discharge of total residual chlorine (or total oxidants) after July 1, 1984, unless it can be demonstrated to the satisfaction of the Director that the cooling water system cannot be operated without chlorine. If the discharge of chlorine is shown to be necessary, a chlorination minimization study will be completed prior to July 1, 1984, and the minimum amount of chlorine actually required to be discharged shall be used. In no case shall the chlorination period exceed two (2) hours per day per discharge nor shall effluent total residual chlorine exceed an instantaneous maximum of 0.14 mg/l. The chlorine and total residual oxidants are to be measured at the Caswell Beach Pump Station, weekly by multiple grab samples.

Temperature --- Cooling water system facilities shall be effectively maintained and operated at all times so as to meet the the temperature standards assigned to the Atlantic Ocean of 0.8°C (1.44°F) increase above ambient water temperature during the months June through August and 2.2°C (3.96°F) increase above ambient water temperature during the months of September through May and in no case should the temperature exceed 32°C (89.6°F) due to the discharge of heated liquid measured three feet below the water surface except within the following defined mixing zones:

- (a) The temperature increase above ambient water temperature shall not exceed 7°F outside an area of 60 acres included within the plume extending from the point of discharge.

A. (1c). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- (b) The temperature increase above ambient water temperature shall not exceed  $0.8^{\circ}\text{C}$  ( $1.44^{\circ}\text{F}$ ) increase above ambient water temperature during the months June through August and  $2.2^{\circ}\text{C}$  ( $3.96^{\circ}\text{F}$ ) increase above ambient water temperature during the months September through May, and in no case should the temperature exceed  $32^{\circ}\text{C}$  ( $89.6^{\circ}\text{F}$ ) outside an area of 1,000 acres.
- (c) The temperature increase above ambient water temperature at the bottom (defined as one foot above the ocean floor) shall not exceed  $7^{\circ}\text{F}$  for more than 500 feet from the point of discharge nor for an area of more than two acres.

Temperature monitoring at the Ocean discharge shall be conducted once per quarter. Reactor power levels should be at least 85 percent for each unit on the date of the monitoring.

Temperatures shall be monitored at the surface and bottom (defined as three feet below the water surface and one foot above the ocean floor) in sufficient locations to establish compliance with Water Quality Standards. If sufficient temperature variation exists, a plot of  $1^{\circ}\text{F}$  isotherms should be submitted for surface and bottom conditions.

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

There shall be no discharge of floating solids or visible foam in other than trace amounts at the ocean outfall.

1/ Unless otherwise specified, samples taken in compliance with the monitoring requirements listed above shall be taken at an outlet corresponding to an individual unit prior to mixing with other waste streams except that intake temperature shall be monitored at the plant intake.

2/ Summer as used herein shall include the months of June through September and winter shall include all other months.

A. (2). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning the effective date of this permit and lasting until the expiration date, the permittee is authorized to discharge from outfall serial number 004 - Sewage Treatment Plant discharge. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>				<u>Monitoring Requirements</u>		
	<u>Kg/day (lbs/day)</u>		<u>Other Units (Specify)</u>		<u>Measurement</u>	<u>Sample</u>	<u>Sample 1/</u>
	<u>Daily Avg.</u>	<u>Daily Max.</u>	<u>Daily Avg.</u>	<u>Daily Max.</u>	<u>Frequency</u>	<u>Type</u>	<u>Location</u>
Flow - M <sup>3</sup> /day (MGD)			N/A		Monthly	Instantaneous	Effluent
5-day Biochemical Oxygen Demand			30 mg/l	45 mg/l	Monthly	Composite	Effluent
Total Suspended Solids			30 mg/l	45 mg/l	Monthly	Composite	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored by grab sample once per week.

There shall be no discharge of floating solids or visible foam in other than trace amounts at the ocean outfall.

1/ Samples taken in compliance with the monitoring requirements specified above shall be taken at the sewage treatment plant discharge prior to mixing with any other waste stream.

A. (3) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning the effective date of this permit and lasting until the expiration date, the permittee is authorized to discharge from outfall serial number 005 - Low Volume Waste Sources. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>				
	<u>Kg/day (lbs/day)</u> <u>Daily Avg.</u>	<u>Daily Max.</u>	<u>Other Units (Specify)</u> <u>Daily Avg.</u> <u>Daily Max.</u>		<u>Measurement</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>	<u>Sample 1/</u> <u>Location</u>
Flow			N/A                      N/A				
Total Suspended Solids			30 mg/l	100 mg/l	Weekly	Grab	
Oil and Grease			15 mg/l	20 mg/l	Weekly	Grab	

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts at the ocean outfall.

1/ Samples taken in compliance with monitoring requirements listed above shall be taken prior to mixing with other sources of wastewater.

A. (.4). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning the effective date of this permit and lasting until the expiration date, the permittee is authorized to discharge from outfall serial number 006 - Metal Cleaning Wastes. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>				
	<u>Kg/day (lbs/day)</u> <u>Daily Avg.</u>	<u>Daily Max.</u>	<u>Other Units (Specify)</u> <u>Daily Avg.</u> <u>Daily Max.</u>		<u>Measurement</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>	<u>Sample</u> <u>1/</u> <u>Location</u>
Total Suspended Solids (mg/l)			30	100			
Oil and Grease (mg/l)			15	20			(Monitoring for metal cleaning wastes shall be approved by the Division of Environmental Management prior to discharging.)
Total Copper (mg/l)			1.0	1.0			
Total Iron (mg/l)			1.0	1.0			

(The quantity of pollutants discharged in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the above concentrations.)

1/ Samples taken in compliance with monitoring requirements listed above shall be taken prior to mixing with other sources of wastewater.

B. SCHEDULE OF COMPLIANCE

Part I

1. A. Fish Diversion

Progress Report .....6/30/81  
Progress report .....3/31/82  
Full implementation .....12/31/82  
Notice of Implementation .....1/31/83

B. Walden Creek Sluiceway

Progress report .....6/30/81  
Progress report .....3/31/82  
Progress report .....12/31/82  
Full implementation .....6/30/83  
Notice of implementation .....7/31/83

C. Fine Mesh Screens and  
Screen Maintenance Program

Progress report .....6/30/81  
Progress report.....3/31/82  
Progress report .....12/31/82  
Full implementation .....6/30/83  
Notice of implementation.....7/31/83

D. Flow Minimization Modifications

Progress report .....6/30/81  
Progress report .....3/31/82  
Progress report .....12/31/82  
Full implementation .....6/30/83  
Notice of implementation .....7/31/83

E. Biological Monitoring Program

Full implementation .....1/1/81  
Report submittal .....3/31/82  
(annual reports thereafter)

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

Act used herein means the Federal Water Pollution Control Act, As amended.  
DEM used herein means the Division of Environmental Management of the  
Department of Natural Resources and Community Development.  
"EMC" used herein means the North Carolina Environmental Management  
Commission.

### C. MONITORING AND REPORTING

#### 1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

#### 2. Reporting

Monitoring results obtained during the previous one month(s) shall be summarized for each month and reported on a Monthly Monitoring Report Form (DEM No. MR 1.0, 1.1, 1.2, and 1.3) postmarked no later than the 45th day following the completed reporting period.

The DEM may require reporting of additional monitoring results by written notification. Signed copies of these, and all other reports required herein, shall be submitted to the following address:

Division of Environmental Management  
Information Services Branch  
Post Office Box 27687  
Raleigh, North Carolina 27611

#### 3. Definitions

a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days sampled during the calendar month when the measurements were made.

b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

#### 4. Test Procedures

Test procedures for the analysis of pollutants shall conform to The EMC regulations published pursuant to N. C. G. S. 143-215.63 et seq.. The Water and Air Quality Reporting Act, Section 304(g), 13 USC 1314, of the Federal Water Pollution Control Act, As Amended, and Regulation 40 CFR 136.

#### 5. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date, and time of sampling;
- b. The dates the analyses were performed;
- c. The person(s) who performed the analyses;
- d. The analytical techniques or methods used; and
- e. The results of all required analyses.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Monthly Monitoring Report Form (DEM MR 1.0, 1.1, 1.4) Such increased monitoring frequency shall also be indicated. The DEM may require more frequent monitoring or the monitoring of other pollutants not required in this permit by written notification.

7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained by the permittee for a minimum of three (3) years, or longer if requested by the State Division of Environmental Management or the Regional Administrator of the Environmental Protection Agency.

## A. MANAGEMENT REQUIREMENTS

## 1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the DEM of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

## 2. Non compliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any effluent limitation specified in this permit, the permittee shall provide the Division of Environmental Management with the following information, in writing, within five (5) days of becoming aware of such condition:

- a. A description of the discharge and cause of noncompliance; and
- b. The period of noncompliance, including exact dates and times; or, if not corrected; the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

## 3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

## 4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

## 5. Bypassing

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where

unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Water Quality Section of DEM in writing of each such diversion or bypass.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering waters of the State or navigable waters of the United States.

7. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

- a. In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or, if such alternative power source is not in existence, and no date for its implementation appears in Part I,

- b. Halt, reduce or otherwise control production and/or all discharges from wastewater control facilities upon the reduction, loss, or failure of the primary source of power to said wastewater control facilities.

8. Onshore or Offshore Construction

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

**B. RESPONSIBILITIES****1. Right of Entry**

The permittee shall allow the Director of the Division of Environmental Management, the Regional Administrator, and/or their authorized representatives, upon the presentations of credentials:

- a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and
- b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

**2. Transfer of Ownership or Control**

This permit is not transferable. In the event of any change in control or ownership of facilities from which the authorized discharge emanates or is contemplated, the permittee shall notify the prospective owner or controller by letter of the existence of this permit and of the need to obtain a permit in the name of the prospective owner. A copy of the letter shall be forwarded to the Division of Environmental Management.

**3. Availability of Reports**

Except for data determined to be confidential under N. C. G. S. 143-215.3(a)(2) or Section 308 of the Federal Act, 33 USC 1318, all reports prepared in accordance with the terms shall be available for public inspection at the offices of the Division of Environmental Management. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in N. C. G. S. 143-215.6(b)(2) or in Section 309 of the Federal Act.

**4. Permit Modification**

After notice and opportunity for a hearing pursuant to N. C. G. S. 143-215.1(b)(2) and G. S. 143-215.1(e) respectively, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. Toxic Pollutants

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance pursuant to N. C. G. S. 143-215.6 or Section 309 of the Federal Act, 33 USC 1319.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under N. C. G. S. 143-215.75 et seq. or Section 311 of the Federal Act, 33 USC 1321.

8. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

10. Expiration of Permit

Permittee is not authorized to discharge after the expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the agency authorized to issue permits no later than 180 days prior to the expiration date.

**B. Previous Permits**

All previous State water quality permits issued to this facility, whether for construction or operation or discharge, are hereby revoked by issuance of this permit. The conditions, requirements, terms, and provisions of this permit authorizing discharge under the National Pollutant Discharge Elimination System governs discharges from this facility.

**C. Construction**

No construction of wastewater treatment facilities or additions thereto shall be begun until Final Plans and Specifications have been submitted to the Division of Environmental Management and written approval and Authorization to Construct has been issued. If no objections to Final Plans and Specifications has been made by the DEM after 30 days following receipt of the plans or issuance of this permit, whichever is latter, the plans may be considered approved and construction authorized.

**D. Certified Operator**

Pursuant to Chapter 90A of North Carolina General Statutes, the permittee shall employ a certified wastewater treatment plant operator in responsible charge of the wastewater treatment facilities. Such operator must hold a certification of the grade equivalent to the classification assigned to the wastewater treatment facilities.

#### D. SPECIAL CONDITIONS

1. Submittal to the Department of Natural Resources and Community Development of an Erosion and Sedimentation Control Plan in accordance with Chapter 4 of Title 15 of the North Carolina Administrative Code is required prior to the beginning of significant land disturbing activities.
2. The Company shall continue a groundwater monitoring program acceptable to the Division to determine any adverse impact on groundwater quality. The Company shall submit a detailed outline of the current groundwater monitoring program along with a summary interpretive report on groundwater quality to date.
3. This Permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2) (C), and (D), 304 (b) (2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved: (1) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or (2) Controls any pollutant not limited in the Permit.

The Permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

4. The Company shall notify the Director in writing not later than sixty (60) days prior to instituting use of any additional biocide or chemical used in cooling systems, other than chlorine, which may be toxic to aquatic life other than those previously reported to the Division of Environmental Management. Such notification shall include:
  1. Name and general composition of biocide or chemical.
  2. Frequency of use.
  3. Quantities used.
  4. Proposed effluent limitations.
  5. EPA registration number, if applicable.
5. The discharge of intake screen wash water is permitted without limitations or monitoring requirements.
6. Copies of Environmental Monitoring Reports required by the Nuclear Regulatory Commission shall be forwarded to the Division of Environmental Management and the United States Environmental Protection Agency.
7. The Company shall install Fine Mesh Screens on the plant intake structure such that intake water flowing into two pump bays of each unit's circulating water system will pass through continuously traveling Fine Mesh Screens prior to pumpage. The Permittee will maintain a sound maintenance program to avoid operational loss of fine mesh screens during pumpage. A description of the maintenance program will be required to accompany the notice of implementation of the Fine Mesh Screen installation as provided for in the Schedule of Compliance. Also, the Company shall investigate the possibility of using fine mesh screens on more than two(2) pump bays at one time. Results of the investigation shall be reported on or before the expiration date of this permit

PROPOSED REVISIONS

TO

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

FOR THE

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 & 2

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

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4.2-1A	Location of Radiological Environmental Monitoring Stations
4.2-1B	Location of Radiological Environmental Monitoring Stations
5.1-1	Management Organization Chart

## 2.0 ENVIRONMENTAL PROTECTION CONDITIONS

## 3.0 SURVEILLANCE REQUIREMENTS

General: During a national power emergency, regional emergency, reactor emergency, when the health, safety, or welfare of the public may be endangered by the inability of Carolina Power & Light Company to supply electricity, the protection limits provided in these environmental technical specifications shall be inapplicable. During such emergencies, however, the protection limits shall not be exceeded except as is necessitated by the emergency.

Certain Environmental Protection Conditions and Surveillance Requirements are specified in the effective National Pollutant Discharge Elimination System (NPDES) permit issued by the State of North Carolina, Department of Natural Resources and Community Development, Division of Environmental Management. This agency is responsible for regulation of matters involving thermal discharges, chlorine, normalizer tank pH, and piezometric head.

2.1 THERMAL

Deleted

2.1.1 Maximum Temperature Rise

Deleted

2.1.2 Rate of Change of Discharge Temperature

Deleted

2.1.3 Heat Treatment of Circulating Water System

Deleted

2.2 CHEMICAL

Deleted

2.2.1 Chlorine

Deleted

2.2.2 Other Chemicals

Deleted

2.2.3 Hydrogen Ion

Deleted

3.1 THERMAL

Deleted

3.1.1 Maximum Temperature Rise

Deleted

3.1.2 Rate of Change of Discharge Temperature

Deleted

3.1.3 Heat Treatment of Circulating Water System

Deleted

3.2 CHEMICAL

Deleted

3.2.1 Chlorine

Deleted

3.2.2 Other Chemicals

Deleted

3.2.3 Hydrogen Ion

Deleted

NOTE: Pages 2-2 through 2-5 have been deleted.

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

3.0 SURVEILLANCE REQUIREMENTS

2.3 HYDRAULIC

3.3 HYDRAULIC

2.3.1 Water Level in the Discharge Canal

3.3.1 Water Level in the Discharge Canal

Objective: To minimize impact of the discharge canal on the local groundwater supply.

Specification: Water level in the discharge canal near the plant shall be monitored daily.

Specification: Water level in the discharge canal shall normally be maintained between +3.5 feet msl and +5.5 feet msl at the discharge weir. These limits may be exceeded as required either for plant maintenance or as a result of natural conditions such as heavy rainfall which is beyond the control of plant personnel.

2.3.2 Piezometric Head

3.3.2 Piezometric Head

Deleted

Deleted

BASES:

2-15

NOTE: Page 2-15a has been deleted.

Specifications 2.3.1 and 3.3.1 maintain the discharge canal water level within a range that will minimize the potential for upwelling and downwelling effects on the aquifer.

Specification 2.4 provides the meteorological parameters which are measured at the plant will provide the information necessary to estimate potential radiation doses to the public from routine or accidental releases of radioactive materials to the atmosphere and meet the requirements of subparagraph 50.36a (a) (2) of 10CFR Part 50 and Appendices D and F to 10CFR 50.

#### RADIOACTIVE DISCHARGES

LIQUID WASTE EFFLUENTS - The release of radioactive material in liquid effluents to unrestricted areas shall not exceed the concentration limits specified in 10 CFR Part 20 and should be as low as practicable in accordance with the requirements of 10 CFR Part 50.36a. These specifications provide reasonable assurance that the resulting annual dose to the total body or any organ of an individual in an unrestricted area will not exceed 5 mrem. At the same time, these specifications permit the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the design objective levels but still within the concentration limits specified in 10 CFR Part 20. It is expected that by using this operational flexibility under unusual operating conditions, and exerting every effort to keep levels of radioactive material in liquid wastes as low as practicable, the annual releases will not exceed a small fraction of the concentration limits specified in 10 CFR Part 20.

The design objectives have been developed based on operating experience, taking into account a combination of variables including defective fuel, primary system leakage, and the performance of the various waste treatment systems, and are consistent with Appendix I to 10 CFR Part 50.

#### 4.0 Environmental Monitoring

##### 4.1 Nonradiological Monitoring

The nonradiological biological monitoring requirements are specified in the effective National Pollutant Discharge Elimination System (NPDES) permit issued by the State of North Carolina, Department of Natural Resources and Community Development, Division of Environmental Management. This agency is responsible for regulation of matters involving water quality and aquatic biota.

NOTE: Pages 4-2 through 4-5a have been deleted.

c. . .ords of changes as described Section 5.4.2.c(1),  
and (2).

5.4.1.2

A separate annual environmental radiological report covering the previous 12 months of operation shall be submitted within 90 days after January 1 of each year. The first such report shall be submitted for the 12-month calendar period during which initial criticality is achieved. Data not available for inclusion in the report will be submitted as soon as

possible in a supplementary report. The report shall include the following:

- a. Summary records of monitoring requirements surveys and samples.
- b. Analysis of environmental data.

5.4.2 Non-Routine Reports

a. Nonradiological Reports

DELETED

b. Radiological Reports

Violations of an Environmental Technical Specification, including unplanned release of radioactive materials of significant quantities from the site shall be reported to the Director of the appropriate regional office (copy to the Director of Nuclear Reactor Regulation) within 14 days of an environmental event. The written report shall (a) describe, analyze, and evaluate the event, including extent and magnitude of the impact; (b) describe the cause of the event; and (c) indicate the corrective action (including any significant changes made in procedures) taken to preclude repetition of the event and to prevent similar events involving similar components or systems. The environmental protection conditions for radiological discharges are described in Section 2.5.

The radiological environmental monitoring is described in Section 4.2.

Analyses of environmental samples which exceed the larger of either the control station value (Table 4.2-5) or the minimum detection limit by a factor of 10 or more for that same sample type and time period will be identified and if determined to be attributable to the operation of the Brunswick Plant, a written report shall be submitted to Director of the appropriate regional office (copy to the Director of Nuclear Reactor Regulation) within 30 days after confirmation.\* The test for exceeding the guide value will be a T test at 99.5% confidence. The test will be considered positive when:

$$X_i - (X_c / 10) > T_{99.5\%} \sqrt{\sigma_i^2 + \sigma_c^2} (100)$$

where:

$T_{99.5\%}$  = 1 tail T test (2.2414)

$X_i$  = value obtained at station i

$X_c$  = either value obtained at control station or minimum detection limit (mdl), whichever is larger.

$\sigma_i$  = standard deviation of station i value

$\sigma_c$  = standard deviation of control station

\*A confirmatory reanalysis of the original, a duplicate or a new sample may be desirable, as appropriate. The results of the confirmatory analysis shall be completed at the earliest time consistent with the analysis, but in any case within 30 days. If the high value is real, the report to the NRC shall be submitted.

If milk samples collected over a calendar quarter show average I-131 concentrations of 4.8 picocuries per liter or greater and the increase is determined to be attributable to the operation of the Brunswick Plant, a written report shall be submitted to the Director of the appropriate regional office (copy to the Director of Nuclear Reactor Regulation) within 30 days, and should include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous results.

c. Miscellaneous Reports

- (1) When a change to the plant design, to the plant operation, or to the procedures described in Section 5.3 is planned which would have a significant adverse radiological effect on the environment as determined by the Plant Manager or which involves a significant radiological environmental matter or question not previously reviewed and evaluated by the NRC, a report on the change shall be submitted to the NRC for information prior to implementation. The report shall include description and evaluation of the impact of the change.
- (2) Request for changes in Environmental Technical Specifications shall be submitted to the Director of Nuclear Reactor Regulation, NRC, for prior review and authorization. The request shall include an evaluation of the impact of the change.

6.0 (Deleted)

6.1 (Deleted)

6.2 (Deleted)

6.3 (Deleted)

6.4 (Deleted)



**Reactor Operating Events  
Event Notification Report**

**\*\*\* Not For Public Distribution \*\*\*  
Event Notification Report**

U.S. Nuclear Regulatory Commission - Operations Center  
Event Reports For EN No (15683)  
\*\* EVENT NUMBERS \*\*

15683

[TOP](#)

Power Reactor	Event Number: 15683
Facility: BROWNS FERRY Region: 2 State: AL Unit: [1] [2] [3] RX Type: [1] GE-4,[2] GE-4,[3] GE-4 NRC Notified By: KIRBY HQ OPS Officer: RAY SMITH	Notification Date: 05/22/1989 Notification Time: 21:56 [ET] Event Date: 05/22/1989 Event Time: 20:25 [CDT] Last Update Date: 05/22/1989
Emergency Class: UNUSUAL EVENT 10 CFR Section: 50.72(a)(1)(i) - EMERGENCY DECLARED 50.72(b)(1)(iii) - TORNADO	Person (Organization): BARR (RDO ) LAINAS (EO ) SHULL (FEMA ) LIAW (OSP )

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
1	N	N	0	Refueling	0	Refueling
2	N	N	0	Cold Shutdown	0	Cold Shutdown
3	N	N	0	Refueling	0	Refueling

**Event Text**

AN UNUSUAL EVENT HAS BEEN DECLARED DUE TO A TORNADO WARNING IN NEIGHBORING LAUDERDALE COUNTY. UNITS 1 AND 3 ARE DEFUELED AND UNIT 2 IS COLD S/D WITH THE HEAD REMOVE. PRECAUTIONARY MEASURES ARE BEING TAKEN IN ACCORDANCE WITH THEIR TORNADO PROCEDURE WHICH INCLUDES SECURING THE OVERHEAD CRANE ON THE REFUEL FLOOR AND EVACUATING PERSONNEL TO THE TURBINE BUILDING. THE STATE AND LOCAL AUTHORITIES HAVE BEEN NOTIFIED. THE NRC RESIDENT WILL BE NOTIFIED. \*\*\* 2329 EDT UPDATE \*\*\* THE UNUSUAL EVENT WAS TERMINATED AT 2225 CDT AFTER THE TORNADO WARNING WAS CANCELLED.



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**Reactor Operating Events  
Event Notification Report**

**\*\*\* Not For Public Distribution \*\*\*  
Event Notification Report**

U.S. Nuclear Regulatory Commission - Operations Center  
Event Reports For EN No (17396)  
\*\* EVENT NUMBERS \*\*

17396

[TOP](#)

Power Reactor	Event Number: 17396
Facility: QUAD CITIES Region: 3 State: IL Unit: [1] [2] [ ] RX Type: [1] GE-3,[2] GE-3 NRC Notified By: KOOI HQ OPS Officer: BOB STRANSKY	Notification Date: 12/21/1989 Notification Time: 11:37 [ET] Event Date: 12/20/1989 Event Time: 12:30 [CST] Last Update Date: 12/21/1989
Emergency Class: NON EMERGENCY 10 CFR Section: 20.403(b)(4) - PROP DAMAGE > \$2000	Person (Organization): WIEDEMAN (RDO )

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
1	N	Y	93	Power Operation	93	Power Operation
2	N	Y	93	Power Operation	93	Power Operation

**Event Text**

LICENSEE REPORTED THAT POTENTIAL DAMAGE IN EXCESS OF \$2000 OCCURRED TO A NEW FUEL BUNDLE. ON 12/14/89 WHILE RECEIVING A NEW FUEL BUNDLE, THE REFUELING CRANE AUXILIARY HOOK WAS INADVERTENTLY LOWERED ONTO THE BUNDLE. THE HOOK WAS IMMEDIATELY REMOVED AND THE LICENSEE OBSERVED ONLY SURFACE SCRATCHES. THE LICENSEE SAW NO REASON TO REJECT DELIVERY OF THE BUNDLE. AFTER FURTHER COMMUNICATION WITH THE FUEL VENDOR, THE LICENSEE HAS DECIDED TO SHIP THE BUNDLE BACK TO THE VENDOR FOR INSPECTION AND POSSIBLE REPAIRS. RI INFORMED.



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