

Docket No. 50-324

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

Gentlemen:

The Commission has issued the enclosed Amendment No. 16 to Facility Operating License No. DPR-62 for the Brunswick Steam Electric Plant Unit 2. This amendment consists of changes to the Technical Specifications and is in response to your request dated April 20, 1976, as supplemented May 7, 1976.

This amendment makes changes in the Appendix B Environmental Technical Specifications to allow the conduct of a condenser chlorination study required by the NPDES permit. In addition, this amendment, which includes a change previously approved by us on March 21, 1975, permits the drywell to be purged without the standby gas treatment system provided that certain release and sampling procedures are followed, and adds reporting requirements for environmental surveillance programs and special studies.

Copies of the Environmental Impact Appraisal, Negative Declaration and Federal Register Notice are also enclosed.

Sincerely,

Original signed by:
 Robert A. Purple

Robert A. Purple, Chief
 Operating Reactors Branch #1
 Division of Operating Reactors

Enclosures:

1. Amendment No. 16 to DPR-62
2. Environmental Impact Appraisal
3. Federal Register Notice

cc: See next page

OFFICE →	ORB#1	OELD	ORB#1		
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SURNAME →	CTrammell:tsb				
DATE →	5/28/76	6/1/76	6/3/76		

June 3, 1976

cc w/enclosures:

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Mr. W. A. Kopp, Jr.
Chairman, Board of County
Commissioners of Brunswick County
Bolivia, North Carolina 28422

cc w/enclosures & incoming:
Office of Intergovernmental
Relations
116 West Jones Street
Raleigh, North Carolina 27603



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

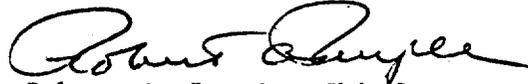
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 16
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 April 20, 1976, as supplemented May 7, 1976, 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;
 - E. After weighing the environmental aspects involved, 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 a change to the Technical Specifications as indicated in the attachment to this license amendment.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 3, 1976

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO.16 TO FACILITY LICENSE NO. DPR-62

DOCKET NO. 50-324

Revise Appendix B as follows:

1) Remove the following pages and replace with identically numbered revised pages:

2-3 and 2-4
2-13 and 2-14
5-5

2) Remove page 6-7 (reverse side is blank) and replace with revised page 6-7 and new pages 6-8 and 6-9

3) Add new page 5-5a

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

3.0 SURVEILLANCE REQUIREMENTS

2.1 THERMAL2.1.3 Heat Treatment of Circulating Water System

Objective: The objective of this specification is to limit unnecessary thermal stress on aquatic organisms by limiting the frequency, duration, and time of heat treating to that amount necessary for reliable operation of the plant.

Specification: During heat treatment, the condenser water shall not exceed a temperature rise of 54°F. The duration of maximum temperature during heat treatment shall be limited to one hour per week for each condenser box. This limit is based on projected requirements for growth control when the plant becomes operational. If it is determined that the above cycle time is not sufficient to adequately protect plant circulating water system equipment or operation, an evaluation shall be made of additional operation of the heat treatment, including an estimate of incremental environmental impact, and submitted to AEC for their review and approval.

3.1 THERMAL3.1.3 Heat Treatment of Circulating Water System

Specification: During the periods of heat treatment, temperature of the inlet and outlet pipes of the condenser box being back-washed will be monitored continuously and recorded every 15 minutes.

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

3.0 SURVEILLANCE REQUIREMENTS

2.2 CHEMICAL

Objective: The purpose of these specifications is to limit the stress to the aquatic ecosystem that might be caused by the discharge of excess concentrations of chemicals.

2.2.1 Chlorine

Specification: If the need for chlorination arises, each condenser will be chlorinated alternately for not more than three one-hour periods per day. Residual chlorine shall not exceed a maximum of 0.5 ppm nor an average of 0.2 ppm when averaged over a twenty-four (24) hour period. Higher levels of chlorine and longer chlorination periods are permitted during the short-term study to determine the amount of chlorine needed to control fouling described in Section 6.5. The concentration of total residual chlorine permitted at the ocean outfall is limited to 0.1 ppm during the special study described in Section 6.5.

2.2.2 Other Chemicals

Specification: Planned use of chemicals at the plant include the following:

Sodium nitrite & sodium hydroxide - Reactor building closed cooling water system (RBCCW) and Turbine building closed cooling water system (TBCCW).

Trisodium phosphate, disodium phosphate cyclohexylamine & Sulfite - Auxiliary boiler water.

Nitrite-borate & substituted thiozole - Diesel generator cooling water.

Sulfuric acid & sodium hydroxide - Regeneration of ion exchange resins.

Chlorine (elemental or as sodium hypochlorite) - Sanitary waste system, possible in the reactor building & turbine building evaporative cooling systems.

3.2 CHEMICAL

Objective: The purpose of these specifications is to ensure that chemical effluent releases are maintained within the specified levels.

3.2.1 Chlorine

Specification: Both free and combined residual chlorine will be monitored in the discharge canal near the plant during each period of chlorination. Residual chlorine will be measured using a method approved by ASTM or Standard Methods. Monitoring of chlorine during the special study will be as described in Section 6.5.

3.2.2 Corrosion Inhibitors

Specification: Monitoring for the presence of chemical discharges will be performed as follows:

- a) Monitoring of the auxiliary boiler water system for phosphate, cyclohexylamine and sulfite will be done weekly during those weeks that the auxiliary boilers are operating. The amount of chemicals released shall be calculated from the blowdown rate, duration and chemical concentrations.
- b) Each planned discharge from the RBCCW and TBCCW shall be monitored for sodium nitrite and sodium hydroxide.
- c) Each planned release from the diesel generator cooling water shall be monitored for nitrite-borate and substituted thiozole.

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

3.0 SURVEILLANCE REQUIREMENTS

2.5.2 Gaseous Waste Effluents (cont'd)

- d. Whenever the augmented off gas system is out of service, the air ejector off gas monitor listed in Table 3.5-4 shall be operating and set to alarm and to initiate the automatic closure of the waste gas discharge valve prior to exceeding the limits specified in 2.5.2.a above. The operability of each automatic isolation valve in the gaseous radwaste discharge line shall be demonstrated quarterly.
- e. If no off gas monitor is operating, a shutdown shall be initiated so that the reactor will be in the hot shutdown condition within 24 hours.

The augmented off gas (AOG) process monitor shall be operable whenever a release is being made from the AOG system storage tanks.

If the augmented off gas system is out of service and the air ejector off gas monitors are inoperative, a reactor shutdown shall be initiated so that the reactor will be in the hot shutdown condition within 24 hours.

- f. If the release rate from the site of noble gases from the main condenser vacuum system is:

$$\sum_{i=1}^n \bar{E}_i \beta_i \left[1.4 Q_{s_i} + 580 Q_{v_i} \right] > 1$$

or

$$\sum_{i=1}^n \bar{E}_i \gamma_i \left[45 Q_{s_i} + 400 Q_{v_i} \right] > 1$$

for a period of greater than 48 hours, notify the Commission in writing within 10 days, identifying the causes of activity. The report should include the flow rate of the off gas from the main condenser vacuum system and the activity measured at the off gas steam jet air ejector (SJAE) monitor.

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

3.0 SURVEILLANCE REQUIREMENTS

2.5.2 Gaseous Waste Effluents (cont'd)

- g. The drywell shall be purged through the standby gas treatment system, or released to the environment at a rate in conformance with Specifications 2.5.2.c(2) and (3) based on a containment sample analysis as defined in Table 3.5-2.
- h. Either the hydrogen monitor and one of the two temperature switches or both temperature switches in the off gas line downstream of the recombiners shall be operable during power operation. If the hydrogen concentration reaches set point of four percent by volume or the temperature reaches the setpoint of 900°F, the off gas flow shall be stopped by automatically closing the valves downstream of the recombiners. Whenever any two of these three devices are inoperable during power operation, grab samples shall be taken and analyzed for hydrogen concentration each shift. Calibration of the monitoring system shall be performed quarterly and checked weekly by comparison to grab-sample analysis.

2.5.3 Specifications for Solid Waste Handling and Disposal

- a. Measurements shall be made to determine or estimate the total curie quantity and principal radionuclide composition of all radioactive solid waste shipped offsite.
- b. Solid wastes preparatory to shipment shall be monitored and packaged to assure compliance with 10 CFR Part 20, 10 CFR Part 71, and 49 CFR Parts 171-178.
- c. Reports of the radioactive solid waste shipments, volumes, principal radionuclides, and total curie quantity, shall be submitted in accordance with Section 5.4.

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.

5.4.1.3 A report on environmental surveillance programs contained in Section 4.1 for the previous year of operation shall be submitted within 90 days after January 1 of each year. The report shall be a summary and interpretation of the results of the environmental activities for the period, including a comparison with preoperational studies where appropriate, and an assessment of the observed impacts of the plant operation on the environment. A status report shall be submitted for incomplete programs.

5.4.1.4 Copies of reports of nonradiological studies and the special studies in Section 6 (except for chlorination study) sent to the U.S. EPA shall also be submitted within 15 days to the Director of Operating Reactors.

5.4.2 Non-Routine Reports

a. Nonradiological Reports

A written report shall be made 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.

b. Radiological Reports

Violations of an Environmental Technical Specification, including unplanned release of radioactive materials of significant quantities from the site shall be reported in the same manner as described in Section 5.4.2.a. (Non-radiological Reports). The environmental protection conditions for radiological discharges are described in Section 2.5. The radiological environmental monitoring is described in Section 4.2.

for analyses of selected ions including sodium and chloride, with appropriate control station(s) included.

Range gauges will be located at selected stations throughout the area to monitor rainfall. Salt deposition data will also be correlated with data from the meteorological tower at BSEP.

SECTION 6.5 CHLORINE STUDY

Objectives:

The objectives of the chlorination study are: (1) to determine the minimum frequency of chlorination necessary to control marine growth, and (2) to determine the minimum dosage to be used when chlorination is required.

Procedures:

The licensee will initiate the study with the following chlorination schedule. The study will continue to reduce the frequency of chlorination per this schedule until the lowest application rate and time is determined commensurate with the degree of condenser cleanliness needed for efficient plant operation. However, should there be excessive growth following any period, it may be necessary to initiate continuous chlorination for a period of approximately 30-45 days to clean the system and achieve a baseline condition.

<u>Duration</u>	<u>Residual</u>	<u>Frequency</u>	<u>Total Cl₂ Time/Day</u>
Approximately			
30-45 days	0.2 ppm free	2 hrs. on - 2 hrs. off	12 hrs.
30-45 days	0.2 ppm free	1 hr. on - 3 hrs. off	6 hrs.
30-45 days	0.2 ppm free	1/2 hr. on - 3 1/2 hrs. off	3 hrs.
30-45 days	0.2 ppm free	1/4 hr. on - 3 3/4 hrs. off	2 hrs.

If at the end of this period there is effective control, the conditions specified in the last entry of the above schedule will be continued indefinitely. However, if at any time in this schedule the program proves ineffective in controlling growth, the chlorination frequency shall be sequentially increased according to the above schedule until an effective residual/frequency combination is reached. This frequency shall be continued for approximately 30-45 days. Further reductions in frequency shall be attempted at the indicated intervals. This sequence shall be repeated until such time that a definitive annual cyclic chlorination program can be established.

Any changes made to these procedures will be such that the free chlorine residual measured at the individual unit discharge will not exceed a daily average of 0.2 ppm free or a maximum of 0.5 ppm free chlorine. This study shall be terminated not later than June 30, 1977.

Sampling:

Samples for free and total residual chlorine will be taken at the top of the weir, and, should there be a detectable residual at the top, samples will also be taken at the bottom of the outfall weir corresponding to the unit being chlorinated. If a detectable chlorine residual exists at the bottom of the weir, then additional measurements for total residual chlorine shall be performed in the discharge canal immediately upstream of the discharge pump structure (Caswell Beach). All residual chlorine measurements will be made on-site using the amperometric titration method, and made at a minimum frequency of once per day when chlorination has been conducted. Measurements shall be made at times most likely to detect the maximum value of residual chlorine at the sampling location.

Reporting Requirement:

Within 90 days of the completion of the test program, Carolina Power and Light Company shall submit a report to the NRC which shall present the general scope, objectives, and results of the program, appropriate test data including input and output biocide concentrations at the discharge weir and Caswell Beach, flow rates, and observations and conclusions. This report should also include an evaluation of the environmental impact of the various concentrations/frequencies of chlorine usage.



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

ENVIRONMENTAL IMPACT APPRAISAL BY THE DIVISION OF OPERATING REACTORS

SUPPORTING AMENDMENT NO.16 TO DPR-62

CAROLINA POWER AND LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2

DOCKET NO. 50-324

Introduction

By letter dated April 20, 1976, Carolina Power and Light Company (the licensee) requested a change to the Environmental Technical Specifications. The proposed change would modify the chlorine effluent limitations and allowable chlorination periods to permit a chlorination study to be conducted to investigate, under operating conditions, the minimum chlorination frequency and duration needed to control biological fouling.

Discussion

Specification 2.2.1 of the Environmental Technical Specifications (ETS) for Brunswick Steam Electric Plant Unit No. 2 (BSEP-2) limits the chlorination of plant condensers to three one-hour periods per day. The National Pollutant Discharge Elimination System (NPDES) permit, issued by the United States Environmental Protection Agency (EPA) on December 31, 1974, also contains limitations on the use of chlorine for treating the condensers, but permits the Company to demonstrate to the EPA Regional Administrator whether or not the plant can operate within the two-hour per day per unit chlorination discharge limit set to take effect on December 31, 1976.

Accordingly, the licensee initiated a study in 1975 with the objective of determining the minimum chlorination frequency, period, and dose necessary to protect the plant condensers and circulating water system. The licensee was of the understanding that such a demonstration would not be considered a violation of the Environmental Technical Specifications since it was permissible under the terms of the NPDES permit. During a site inspection in January 1976 by the Office of Inspection and Enforcement Region II, however, the licensee was cited for chlorinating more than three hours per day.

In order to resume the chlorination study and to resolve any problems created by differences between the Environmental Technical Specifications and the NPDES permit, the licensee submitted proposed changes to ETS 2.2.1 and 3.2.1 and indicated that the chlorine study program could be made a part of Special Studies Section 6.0.

We discussed the proposed program with the licensee on April 27, 1976, and the licensee has agreed to certain changes. These changes include adding the chlorination study program to Section 6 of the ETS as a special study, and requiring a report to us of the program results on completion.

Evaluation

The purpose of the study is to enable the licensee to minimize the use of chlorine during the life of the plant and thereby reduce the discharge of residual chlorine to the minimum level concomitant with protection of the plant circulating water system. The study will be temporary (through June 30, 1977) and will be terminated earlier if a chlorination frequency of two hours or less per day is found to be adequate for plant operation before that date.

Section 5 of the Final Environmental Statement (FES) for BSEP published in January 1974 reviewed the effects of the use of chlorine in the condenser cooling water. The FES recommended that the concentration of total residual chlorine at the ocean outfall should not exceed 0.1 ppm. The licensee has submitted chlorination data for the period May 1975 to February 1976. The results show that the concentration at the ocean outfall did not exceed 0.1 ppm; and due to the five hour travel time in the discharge canal, the outfall concentration normally was 0.0 ppm. The licensee is required to monitor the chlorine concentrations at the plant discharge to the discharge canal and, if any is detected, to monitor also the concentrations at the ocean outfall. The concentration of total residual chlorine at the ocean outfall is limited to 0.1 ppm.

Based on the above, we conclude that the licensee may conduct the proposed study to determine the minimum amount of chlorine needed to maintain condenser efficiency. The environmental impacts associated with the study will not be significantly different from those previously analyzed in the Brunswick FES and found to be acceptable.

In addition, this amendment makes two other changes to the ETS unrelated to the above. We have added a requirement for a routine annual report of the environmental surveillance programs currently required by the ETS, and a report on each special study when completed. The requirement for these reports was inadvertently omitted from the original ETS. The second change confirms a change previously approved by us on March 21, 1975, under our procedures for emergency Technical Specification changes. This change relates to requirements for purging the drywell. It allows the standby gas treatment system to be bypassed for drywell purging provided that specified release rate and sampling procedures are followed which limit the release from such operations to not more than one-half the objective annual quantity during any calendar quarter. The purpose of the change is to prevent filter degradation in the standby gas treatment system when the system is not needed, and was requested by the licensee

on an emergency basis on March 21, 1975, when it appeared that fumes and particles in the drywell resulting from painting would shorten filter life unnecessarily. The formal inclusion of this change into the ETS is administrative, since the change itself was approved by us on March 21, 1975.

Conclusion and Basis for Negative Declaration

In summary, the proposed changes do not authorize a change in effluent types or a significant increase in total amounts or concentrations and will not authorize an increase in power level. The changes are compatible with the EPA and permitting state's determination under FWPCA. Based on the above, there will be no environmental impact other than as described in the Commission's Final Environmental Statement. Having made this evaluation, the Commission concludes that no environmental impact statement need be prepared and that a negative declaration is appropriate.

Since this amendment applies only to reporting requirements, to drywell purging procedures previously authorized, and to the conduct of a chlorination study, it does not involve significant new safety information of a type not considered by a previous safety review of the facility. We have concluded, based on the considerations discussed above, that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change does 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: June 3, 1976

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-324

CAROLINA POWER AND LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

AND NEGATIVE DECLARATION

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 16 to Facility Operating License No. DPR-62 issued to Carolina Power and Light Company which revised Technical Specifications for operation of the Brunswick Steam Electric Plant, Unit No. 2, located in Brunswick County, North Carolina. The amendment is effective as of its date of issuance.

This amendment makes changes in the Appendix B Environmental Technical Specifications to allow the conduct of a condenser chlorination study required by the NPDES permit. In addition, this amendment permits the drywell to be purged without the standby gas treatment system provided that certain release and sampling procedures are followed, and adds reporting requirements for environmental surveillance programs and special studies.

The application for the amendment 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. Prior

public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

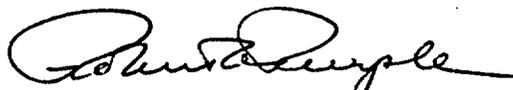
The Commission has prepared an environmental impact appraisal for the revised Technical Specifications and has concluded that an environmental impact statement for this particular action is not warranted because the Commission has determined that this is not a major action significantly affecting the quality of the human environment, and that a negative declaration to this effect is appropriate.

For further details with respect to this action, see (1) the application for amendment dated April 20, 1976 and supplement dated May 7, 1976, (2) Amendment No. 16 to License No. DPR-62, (3) 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. 20555, and at the Southport Brunswick County Library, 109 W. Moore Street, Southport, North Carolina 28461.

A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 3rd day of June, 1976.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Operating Reactors