

DISTRIBUTION:

Docket No. 50-324

MAY 18 1976

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

DOCKET FILE (ENVIRON) ACRS (16) CAT. B
"TIC-OR" BScott
NRC-PDR Harty, PNL
Local-PDR NDube
NRR Reading SVarga
DSE Reading ASteen
EP-1 Reading SSheppard
RGeckler/GKnighton MSlater
ORB-1
OELD
VAMoore
HDenton
RSBoyd
I&E (5)
BJones (w/4 encls)
BScharf (15)

bcc: J. R. Buchanan, ORNL
T. B. Abernathy, DTIE

Dear Mr. Jones:

The Commission has issued the enclosed Amendment No. 15 to Facility Operating License (FOL) No. DPR-62 (Brunswick Steam Electric Plant, Unit No. 2). The operating license for Unit No. 1 is presently planned for issuance in August 1976 and when issued will incorporate the terms of the enclosed amendment for Unit No. 2. Amendment No. 15 is issued in response to your letters of August 13, 1975 and March 30, 1976 requesting modification of FOL No. DPR-62.

Amendment No. 15 extends by up to eight months the May 1, 1978 date for installation of cooling towers incorporated in FOL No. DPR-62 (Paragraph 2.D.c) by reference to the "Stipulation by Applicant, Intervenor and AEC Regulatory Staff" dated July 8, 1974. FOL No. DPR-62 was issued December 27, 1974 and on December 31, 1974, the Environmental Protection Agency (EPA) issued an NPDES permit for the Brunswick Steam Electric Plant which also required installation of cooling towers by May 1978. EPA granted an adjudicatory hearing on the NPDES permit which is set to commence June 1, 1976. The EPA Administrative Law Judge entered an Order in that case which, in effect, confirms that the compliance schedule, including the May 1978 end date in the NPDES permit, is within the scope of the contested issues to be considered in the adjudicatory hearing. Under applicable EPA regulations (40 CFR §125.35(d)(2), contested NPDES provisions are stayed pending final agency action. The eight month period of extension provided by Amendment No. 15 is intended to cover the period of time necessary for resolution by EPA of the ultimate questions concerning cooling towers at the Brunswick Steam Electric Plant. In the event EPA should determine that cooling towers are required earlier than January 1, 1979, that earlier date would govern. If EPA were to permit installation of cooling towers subsequent to January 1, 1979, further amendment to FOL No. DPR-62 would be required based on an assessment of impacts during the additional period.

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Our action will permit the EPA adjudicatory hearing to proceed free of an operating license condition similar to the contested NPDES condition and should not be taken as affecting the merits of the cooling tower questions presently being litigated before EPA. Counsel for Project Environment, a party to the Stipulation embodying the May 1, 1978 date for installation of cooling towers, advised the Commission by a letter to Mr. Benard C. Rusche of August 8, 1975 that Project Environment does not object to your request.

Pursuant to 10 CFR § 51.5(b)(2) and (c)(1) and 51.7, ~~that~~ the NRC has prepared an environmental impact appraisal assessing the impacts from once-through cooling for the maximum eight month period. Copies are available as noted in the enclosed Federal Register notice.

Amendment No. 15 which extends the date for installation of cooling towers does not involve a significant increase in the probability or consequences of an accident, does not involve a significant decrease in a safety margin and, therefore, does not involve a significant hazards consideration. We have also concluded there is reasonable assurance that the health and safety of the public will not be endangered by this action.

Sincerely,

S/
Robert A. Purple, Chief
Operating Reactors Branch No. 1
Division of Operating Reactors

Enclosures:

1. Amendment No. 15
to FOL No. DPR-62
2. Federal Register notice

cc w/encls: See next page

<i>OMP</i> OFFICE →	DSE:EP-1	DSE:EP-1	OELD	ORB	ADEP
SURNAME →	RPeckler:m	GKnighton	<i>buttel</i>	RAPurple	VAMoore
DATE →	5/12/76	5/12/76	5/17/76	5/ /76	5/12/76

Carolina Power & Light Co.

cc w/encls:

George F. Trowbridge, Esquire
Shaw, Pittman, Potts & Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

John J. Burney, Jr., Esquire
Burney, Burney, Sperry & Barefoot
110 North Fifth Avenue
Wilmington, North Carolina 28401

Ms. Janet Godwin, President
Project Environment
202 Bedford Road East
Wilmington, North Carolina 28401

Cape Fear Council of Governments
1 North Third
Suite 206
Wilmington, North Carolina 28401

cc w/encls & incoming:
Mr. W. A. Kopp, Jr., Chairman
Board of County Commissioners
Brunswick County
Bolivia, North Carolina 28422

Office of Intergovernmental Relations
116 West Jones Street
Raleigh, North Carolina 27603

Mr. Dave Hopkins
Federal Activities Branch
U. S. Environmental Protection Agency
1421 Peachtree Street, N. E.
Atlanta, Georgia 30309

Mr. Neill Thomasson
ATTN: Ms. Loretto Long
Office of Radiation Programs
U. S. Environmental Protection Agency
Waterside Mall, Room 647A East Tower
401 M Street, S. W.
Washington, D.C. 20460

CAROLINA POWER AND LIGHT COMPANY

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 15
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 August 13, 1975 and March 30, 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; and
 - E. An environmental appraisal of the effects of possible delay has not revealed any environmental impacts not previously evaluated nor in excess of those previously determined; therefore, an environmental statement is not needed.
2. Accordingly, the license is amended by changing Paragraph 2.D.c of Facility License No. DPR-62 to read as follows:

"c. 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,

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"including, but not limited to any conditions expressly noted in a and b 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 extended to January 1, 1979 or the installation date as finally determined by the Environmental Protection Agency in its Adjudicatory Hearing proceeding on the facility's Section 402 Federal Water Pollution Control Act permit, whichever is earlier."

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

FOR THE NUCLEAR REGULATORY COMMISSION

S/
Robert A. Purple, Chief
Operating Reactors Branch No. 1
Division of Operating Reactors

Date of Issuance:

MAY 18 1976

OFFICE ➤	DSE/EP-1	DSE/EP-1	OELD	ADEP	ORB-1
SURNAME ➤	RGeckler	GKnighton	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
DATE ➤	5/12/76	5/12/76	5/17/76	5/12/76	5/18/76

UNITED STATES NUCLEAR REGULATORY COMMISSION
DOCKET NO. 50-324
CAROLINA POWER AND LIGHT COMPANY
NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

Notice is hereby given that the U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 15 to Facility Operating License No. DPR-62 for operation of Unit 2 of the Brunswick Steam Electric Plant, located in Brunswick County, North Carolina. The amendment is effective as of its date of issuance.

The amendment allows an eight month delay in the installation of cooling towers from May 1, 1978 to a date corresponding to three years of plant operation estimated to be January 1, 1979.

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 on 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment is not required since the amendment does no involve a significant hazards consideration.

The Commission has prepared an environmental impact appraisal to amend Facility Operating License DPR-62 and has concluded that an environmental impact statement for this particular action is not warranted because there will be no environmental impact attributable to the proposed action other than that which has already been predicted and described in the Commission's

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Final Environmental Statement for the Brunswick Steam Electric Plant published in January 1974, and that a negative declaration to this effect is appropriate.

For further details with respect to this action see (1) the application for the amendment dated August 13, 1975 and March 30, 1976; and (2) Amendment No. 15 to License No. DPR-62; and (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. and at the Southport-Brunswick County Library, 109 W. Moore Street, Southport, North Carolina.

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 Site Safety and Environmental Analysis.

Dated at Rockville, Maryland this *18th* day of *May* 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
George W. Knighton

George W. Knighton, Chief
Environmental Projects Branch 1
Division of Site Safety and
Environmental Analysis

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OFFICE					
SURNAME	<i>Wlater/1k</i>	<i>RGeckler</i>	<i>butalotta</i>	<i>GKnighton</i>	
DATE	5/10/76	5/12/76	5/7/76	5/11/76	

ENVIRONMENTAL APPRAISAL OF A POSSIBLE DELAY IN CONSTRUCTION OF COOLING
TOWERS AT BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 & 2

INTRODUCTION

A. Final Environmental Assessment

In the Final Environmental Statement relating to the continued construction and proposed issuance of an operating license, dated January 1974, the staff concluded that "the plant, as presently designed, and because of the unique features of the site and cooling system, has the potential for causing serious and perhaps irreversible adverse effects on the environment of the Cape Fear Estuary, and cannot be operated for an extended period without incurring unacceptable environmental impact." (p. iv)

"The staff also concludes, based on the data available at this time, that it is unlikely that irreversible damage will occur during the first three years of plant operation..."

B. Stipulation

Prior to hearing, an agreement entitled "Stipulation by Applicant, Intervenor and AEC Regulatory Staff" was entered into on July 8, 1974. Paragraph 3 of the Stipulation reads "Applicant will proceed with engineering and procurement activities and with the construction of cooling towers on a schedule consistent with the completion of installation of cooling towers (exclusive of their connection to the cooling system) not later than May 1, 1978 ("installation date")."

The Stipulation was considered by the Atomic Safety and Licensing Board which issued its Initial Decision affirming continuation of construction permits December 26, 1974 (8 AEC 1144). The Intervenor withdrew from the proceedings as provided for in the Stipulation and the Stipulation was incorporated in License DPR-62 by reference (Paragraph 2.D.c.).

C. Applicant Request for Delay of Cooling Towers Installation Date

Operating License DPR-62 (for Unit 2) was issued December 27, 1974, and on December 31, 1974, the Environmental Protection Agency (EPA) issued a NPDES permit pursuant to Section 402 of the Federal Water Pollution Control Act which also required installation of cooling towers at the Brunswick Steam Electric Plant by May 1, 1978. EPA, pursuant to C P & L (the Applicant) request, granted an adjudicatory hearing on the NPDES permit. The hearing, which was originally scheduled to commence April 5, 1976, has been rescheduled at EPA's request for June 1, 1976. C P & L had submitted a request to the

Commission by letter of August 13, 1975 asking that the installation date for cooling towers be deferred for 31 months, until December 31, 1980. The Intervenor, by letter of August 8, 1975, advised the Commission that he does not oppose the C P & L's request. A modification of the August 13, 1975 request was submitted by letter of March 30, 1976 in which C P & L petitioned for a stay of the May 1, 1978 installation date. This request was based on an Order entered by the EPA Administrative Law Judge which, in effect, confirmed that the compliance schedule and May 1978 installation date included in the NPDES permit was a contested issue within the scope of the adjudicatory hearing and, therefore, stayed under applicable EPA regulations (40 CFR § 125.35(d)(2)).

The basis for C P & L's request is that construction of the cooling towers has proceeded to the point where it is now time for the major portion of funds to be committed. C P & L asserts that these substantial expenditures should be deferred, pending final EPA action on the time and necessity for installation of cooling towers.

C P & L also asserts that even if EPA still requires closed cycle cooling, a delay in the installation of cooling towers will not cause irreparable environmental damage.

This report is concerned with assessing the consequences of the delay in installation of cooling towers from an environmental point of view.

DISCUSSION

Three-year limit on once-through cooling and the May 1, 1978 Stipulation date

Since the staff has concluded that it is unlikely that irreversible damage will occur during the first three years of operation, changing the date for completion of cooling towers from the May 1, 1978 Stipulation date to a date corresponding to approximately three years of plant operation would be acceptable on environmental grounds.

The FES evaluated the operation of Unit No. 2 for three years and Unit No. 1 for two years at a design flow of 2,900 cfs (for both units). An acceptable tower completion date can be computed on the basis of the actual operation and flows through both units.

Unit 2 began operation on December 27, 1974. To date, it has operated at an average of two-thirds design cooling water flow. So the equivalent full-flow operation of Unit 2 has been $\frac{2}{3} \times 16 = 10.7$ months.

Unit 1 is to begin operation in August 1976. By August 1, 1976, Unit 2 will have operated the equivalent of approximately 13 months. However, future flows for both units are estimated to be approximately $\frac{3}{4}$ of the original design flow. Operation of both units at the projected flow rate to January 1, 1979, would produce the equivalent of 58 months design flow, neglecting refueling.

Thus, the operation of both units with once-through cooling until January 1, 1979 (29 months from August 1, 1976) based on actual and planned operation and flows of both units, would cover a period equivalent to that evaluated in the FES, and so would be acceptable to the staff.

OPERATIONAL DATA

Impingement

The adequacy of the licensee's data for evaluating long-term impacts is expected to be a major issue in the EPA hearing. As a first approximation, the impingement and entrainment losses during full 2-unit operation have been calculated using linear extrapolation (based on flow rates) of the available data for partial one-unit operation. The staff emphasizes that these loss estimates may be low for reasons identified in the following discussion.

In one year (January 19, 1974 - January 18, 1975) of impingement study an estimated 2,465,000 organisms weighing 42,300 pounds were collected from the screens. During the year, the volume of intake water was approximately two-thirds the design volume for one-unit operation. During February-October 1975, an estimated 2,418,000 organisms weighing 49,400 lbs. was collected. The applicant claims that 63% of these (1975) organisms could have been returned alive to the estuary; there have been no data presented to verify survival of nekton returned to the estuary. Over the 21 months in which data were collected, 4460 pounds were impinged each month (231,000 organisms) on the average. The applicant's data for (1974-75) showed a range from 30,406 (399 pounds) in November 1974 to 486,492 organisms (7123 pounds) in August 1974. The 1975 (9 months) data showed a range of from 144,494 (June) to 420,354 (August) weighing 3477 and 7159 pounds, respectively.*

The average of 4460 pounds impinged per month has a relatively large variance; the applicant calculated the 95% confidence limit for the 1974-5 monthly data to be 2297-4775 pounds and for the 1975 data, 3605-7381. Ranges of annual impingement were 27,348-57,300 pounds for 1974-5 and 43,260-88,572 pounds for 1975. For estimating impingement losses the use of the monthly average appears adequate in view of the ranges just listed. On this basis, for every month the installation date for the cooling tower is delayed, there will be an impingement loss of ~ 4,500 pounds of fish, on the average. This estimate is based on a water volume flow of approximately two-thirds of design. If flow and impingement are

*Although fewer organisms were impinged in September and October 1975 than in August, they weighed more as shown below:

<u>Month</u>	<u>Organisms</u>	<u>Weight (lbs)</u>
September 1974	331,433	8564
October	369,292	9202

linearly related, full flow would result in $3/2 \times 4,500 = 6,650$ pounds impinged per month for Unit 2. Similarly, if a linear relationship existed, Units 1 and 2 combined would double the impingement to an average of 13,300 pounds per month. This amounts to approximately 700,000 organisms per month or 8.4×10^6 organisms per year (160,000 pounds). However, it is expected that impingement rates (both in terms of numbers and weight) will increase by a factor greater than a linear rate and, hence, this estimated annual number is low by an undetermined amount.

Increased pump operation will increase the flow velocity of water in the intake canal. This area has been identified by C P & L's consultant as preferentially attractive to certain migratory fishes. The increased velocity can possibly exceed the threshold velocity below which these fishes maintain their position in the canal. This will result in increased impingement mortality of an undetermined magnitude.

Entrainment

Full two-unit operation with eight pumps will significantly increase the volume and velocity at the intake structure and could likely increase the percentage of water flow from Walden Creek-Snow's Marsh area. Assuming a linear relationship of volume flow to entrainment in the estuary, full operation with both units operating could result in losses of up to 30×10^6 larvae per day through the plant during periods of peak larvae production (in addition to losses in excess of 10^8 copepods of genus Acartia per day). Actually, increased flow may preferentially remove a greater volume of the highly productive marsh waters adjoining the intake canal, with resulting non-linear increases in entrainment losses. The Applicant has recently provided predicted entrainment for important species for one- and two-unit once-through cooling (Table 1).

CONCLUSIONS

The foregoing data do not alter the staff conclusions quoted in the first two paragraphs of the introduction of this appraisal. Based on the foregoing discussion, the staff finds that an eight-month delay in installation of cooling towers (to January 1, 1979) is acceptable in view of the equivalence of that date with three years of operation. However, the applicant has not at this time demonstrated that the requested 31-month delay is appropriate.

TABLE 1

COPELAND ATTACHMENT 189: Predicted entrainment (No./day) for projected one and two unit once-through cooling at BSEP.

Species	1 Unit		2 Units	
	Mean	Maximum	Mean	Maximum
Spot	23×10^4	69×10^5	46×10^4	137×10^5
Croaker	57×10^4	115×10^5	114×10^4	231×10^5
Trout	7×10^4	49×10^5	14×10^4	99×10^5
Flounder	0.5×10^4	1.4×10^5	1×10^4	2.8×10^5
Menhaden	2×10^4	12×10^5	4×10^4	25×10^5
Mullet	1.2×10^4	19×10^5	2.4×10^4	37×10^5
All Fish Larvae	230×10^4	334×10^5	460×10^4	668×10^5
Penaeid Shrimp	16×10^4	21×10^5	32×10^4	43×10^5
Crab Megalops	400×10^4	655×10^5	801×10^4	1311×10^5

Source: Testimony of Dr. B. J. Copeland for the C P & L Brunswick Steam Electric Plant, Vol. 2, Attachments 1976.