

FROM: **Carolina Power & Light Company**
Raleigh, North Carolina 27602
J. A. Jones

TO: **Dr. Morris**

CLASSIF: **U** POST OFFICE
REG. NO:

DESCRIPTION: (Must Be Unclassified)

Ltr re SHOW CAUSE.....trans the following:

ENCLOSURES:

Statement - why its operating Lic. should ~~not~~ be suspended pending completion of NEPA Enviro Review, notarized 10-18-71.

(3 Orig notarized & 47 conf'd cys rec'd)

REMARKS:

Holding (3) cys for ACRS

DATE OF DOCUMENT: 10-18-71		DATE RECEIVED 10-19-71		NO: 4-55	
LTR: X		MEMO:		PORT:	
OTHER:		ORIG.: 1 signed & 49 conf'd		CC: OTHER:	
ACTION NECESSARY <input type="checkbox"/>		CONCURRENCE <input type="checkbox"/>		DATE ANSWERED:	
NO ACTION NECESSARY <input type="checkbox"/>		COMMENT <input type="checkbox"/>		BY:	
FILE CODE: 50-261 (ENVIRO FILE)					
REFERRED TO		DATE		RECEIVED BY	
Geller		10-19-71		DO NOT REMOVE	
W/4 cys for ACTION				ACKNOWLEDGED	
DISTRIBUTION:					
Reg Files				DeYoung	
AEC PDR				H. Denton	
Compliance (2)				Clare Miles, C-459 GT	
Beck/Mann				J. Totter, E-201 GT	
Felton				J. DiNunno, A-170 GT	
Henderson				W. Williams, F-309 GT	
Boyd/Grimes				G. Blanc	
OCC, Rm P 506A				DTIE (Laughlin)	
Morris/Schroeder		TRWilson		NSIC (Buchanan)	
L. Rogers				ASLB (Yore "H" St)	
E. G. Case					
L. Johnson, SLR					
Thornton					

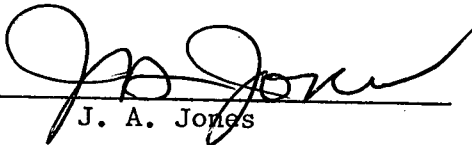
U.S. ATOMIC ENERGY COMMISSION

MAIL CONTROL FORM FORM AEC-3265
(8-60)

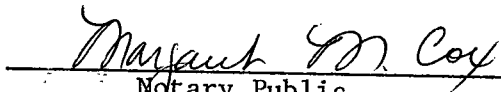
In the Matter of)
)
CAROLINA POWER & LIGHT COMPANY) Docket No.
) 50-261
)
(H. B. Robinson Unit No. 2)) License DPR-23

AFFIDAVIT OF J. A. JONES

I, J. A. Jones, being duly sworn, depose and state that I reside in Raleigh, North Carolina; that I am Senior Vice President, Engineering and Operating, Carolina Power & Light Company; that I am fully cognizant of the contents of the foregoing statement entitled "Statement by the Licensee Why Its Operating License Should Not be Suspended Pending Completion of NEPA Environmental Review by the Atomic Energy Commission" and consisting of twenty-one pages and seven tables, and that the contents of the same are true and correct to the best of my knowledge.


J. A. Jones

Subscribed and sworn to before me
this 18th day of October, 1971, at
Raleigh, North Carolina.


Margaret M. Cox
Notary Public

My commission expires July 4, 1975.

(SEAL)

FROM: Carolina Power & Light Company
Raleigh, North Carolina 27601
Charles D. Barham, Jr.

TO: Dr. Peter A. Morris

CLASSIF: U POST OFFICE
REG. NO:

DESCRIPTION: (Must Be Unclassified)

Ltr requesting 7 to 10 day extension
in which to file Environmental Reports
for Brunswick Units 1 & 2 and H. B.
Robinson Unit 2...

ENCLOSURES:

REMARKS:

(Local PDR - Southport, N. C.)

DATE OF DOCUMENT:

11-4-71

LTR.

X

MEMO:

DATE RECEIVED:

11-9-71

REPORT:

NO.:

OTHER:

ORIG.:

1

CC:

OTHER:

ACTION NECESSARY ☐

NO ACTION NECESSARY ☐

CONCURRENCE ☐

COMMENT ☐

DATE ANSWERED:

BY:

FILE CODE:

50-261 50-324 50-325 (ENVIRO FILE)

REFERRED TO

DATE

RECEIVED BY

DATE

G. Blanc
w/2 cys for ACTION

11-9-71

Do Not Remove

Goller
w/2 cys for ACTION

11-9-71

(50-261)

Knuth
w/2 cys for ACTION

11-9-71

(50-324/325)

DISTRIBUTION:

Reg File (3)
AEC PDR (3)

A. Giambusso
Thronbugh

Compliance (2)
OGC Rm P-506-A

M. FitzPatrick
ASLB Mr. Yore

H St

E. Case
DeYoung

ACKNOWLEDGED

Boyd
H. Denton
N. Dube

rht

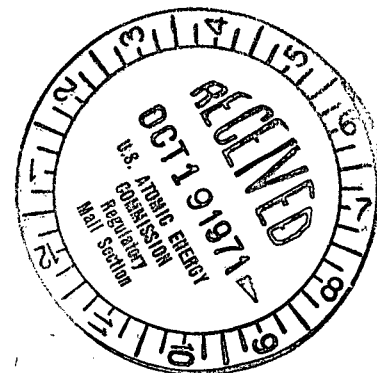
U.S. ATOMIC ENERGY COMMISSION

MAIL CONTROL FORM FORM AEC-3265
(8-60)

Carolina Power & Light Company

Raleigh, North Carolina 27602

October 18, 1971



Dr. Peter A. Morris, Director
Division of Reactor Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Re: H. B. Robinson Unit No. 2; AEC Docket No. 50-261;
Operating License No. DPR-23

Brunswick Steam Electric Plant Units 1 and 2;
AEC Docket Nos. 50-324 and 50-325; Construction
Permit Nos. CPPR-67 and CPPR-68

Dear Dr. Morris:

Carolina Power & Light Company herewith files with respect to the above referenced facilities three signed original copies and forty-seven additional conformed copies of the Statements required by Section E of Revised Appendix D to Part 50 of Title 10 of the Code of Federal Regulations.

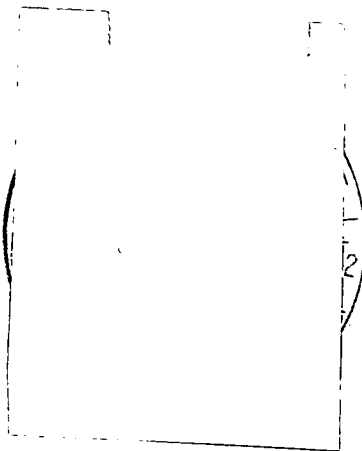
These Statements support the continued operation of H. B. Robinson Unit No. 2 and the continued construction of Brunswick Units Nos. 1 and 2 pending the AEC review of the environmental reports to be filed by Carolina Power & Light Company on November 8, 1971, with respect to each of these plants.

Yours very truly,

A handwritten signature in dark ink, appearing to read 'J. A. Jones'.

J. A. Jones
Senior Vice President
Engineering & Operating

CDB:ej
Enclosures



4555
DV

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

Received w/Ltr Dated 10-18-71

In the Matter of)	
)	Docket No.
CAROLINA POWER & LIGHT COMPANY)	50-261
)	
(H. B. Robinson Unit No. 2))	License DPR-23

STATEMENT BY THE LICENSEE
WHY ITS OPERATING LICENSE SHOULD NOT
BE SUSPENDED PENDING COMPLETION OF
NEPA ENVIRONMENTAL REVIEW BY THE
ATOMIC ENERGY COMMISSION

J. A. Jones
Senior Vice President
Carolina Power & Light Company
Box 1551
Raleigh, North Carolina 27602

October 19, 1971

Carolina Power & Light Company ("CP&L") herewith submits the following statement pursuant to the provisions of Section E, Revised Appendix D, 10 CFR 50, setting forth the reasons why operating license DPR-23 for the H. B. Robinson Unit No. 2 should not be suspended pending completion of the Atomic Energy Commission's NEPA review of the facility:

INTRODUCTION

CP&L is an electric utility which serves an approximately 30,000 square mile area in North Carolina and South Carolina. This area includes a substantial portion of the Coastal Plain and lower Piedmont regions of North Carolina and South Carolina and an area of western North Carolina in and around the City of Asheville. Electric service is rendered to over 200 communities with populations of over 500 persons. In addition, CP&L provides wholesale service to 24 municipal electric systems, 18 rural electric cooperatives and 2 privately owned utilities. The estimated total population in the territory served by CP&L is in excess of 2,800,000 persons.

Approximately 74 percent of CP&L's installed generating capability is in units of 100 megawatt capacity or more. The largest single generating unit is H. B. Robinson Unit No. 2 (Robinson Unit No. 2), a 700 megawatt nuclear fueled unit at the H. B. Robinson Steam Electric Plant near Hartsville, South Carolina.

Facility operating license DPR-23 authorizing operation of Robinson Unit No. 2 at power levels not to exceed 5 MWt was issued by the Atomic Energy Commission (AEC) on July 31, 1970. On September 23, 1970, the low power restriction was removed, and Robinson Unit No. 2 was authorized to operate at power levels not to exceed 2200 MWt. Robinson Unit No. 2 was declared available for commercial operation on March 7, 1971. Except

for certain outages which limited its availability, the unit has been providing power to the Carolina Power & Light Company system, as required by load conditions, since that date.

On September 9, 1971, the AEC caused to be published in the Federal Register a Revised Appendix D to Part 50 of Title 10 of the Code of Federal Regulations ("Revised Appendix D") implementing the National Environmental Policy Act of 1969 (NEPA). Revised Appendix D is divided into five sections. Sections A, B and E apply to Robinson Unit No. 2. This statement is submitted in response to the requirements of Section E and sets forth the reasons why the continued operation of Robinson Unit No. 2 should be allowed pending completion of the AEC's NEPA environmental review.

CP&L has estimated that the AEC will require at least nine to twelve months to complete its NEPA review of the facilities affected by Sections B and C of Revised Appendix D. For purposes of this Statement, CP&L has assumed a review period of ten months for Robinson Unit No. 2.

The following analysis will demonstrate: (1) that there has been no significant environmental impact from the operation of Robinson Unit No. 2 which has operated now for almost eleven months; (2) that continued operation during the review period will produce no additional environmental impact; (3) that it is anticipated that the NEPA environmental review will not result in any changes to the facility design or technical specifications; (4) that in the event some future alteration of the facility might be necessary, the continued operation of the facility during the review period will not preclude or foreclose any possible alternatives; (5) that the continued operation of the facility

is essential to the ability of CP&L to meet its load requirements to the public and meet its commitments to neighboring utilities who have a similar public service obligation; and (6) that temporary suspension of the operation of the facility would result in a severely large economic penalty to the Company and to the public it serves through the imposition of greatly increased operating costs.

SITE BACKGROUND

The Robinson Plant is located in northeastern South Carolina near Hartsville, approximately 55 miles east-northeast of Columbia. Initial construction at the site began in 1957 for the installation of H. B. Robinson Unit No. 1, a 185 MWe fossil unit, which was placed in commercial operation in 1960. Development of the site included construction of a 2250-acre cooling lake which impounded the waters of Black Creek.

In the initial development of the Robinson site, future expansion was considered and the lake was built to accommodate a total plant capacity of 1200 MWe. The construction and operation of the lake as a cooling facility were authorized and approved by the South Carolina Board of Health and the South Carolina Pollution Control Authority. The respective documents were unnumbered permits issued by the South Carolina Board of Health on May 12, 1958, and January 26, 1960; and permits 179, 217, and 307 issued by the South Carolina Pollution Control Authority on May 12, 1958, May 13, 1961, and June 24, 1964.

Land in the area of the Robinson site, prior to initial construction, was wooded and sparsely settled. Less than 10% of the land was used for farming. Lowland hardwood trees grew along the creek bed while second growth pines were present in the uplands.

CONSTRUCTION EFFECTS

The decision by CP&L in 1965 to complete an existing generating plant rather than develop a new plant site constituted the minimum environmental impact for the location of a new electric generating unit. The utilization of the Robinson site permitted CP&L to employ an approved cooling water system and land already dedicated to the generation of electric energy. The plant area had been cleared for future expansion during the construction of Robinson Unit No. 1 in the late 1950's. Other than the physical erection and resulting visual effect of additional structures in the plant area, the only alteration of the landscape with the construction of Robinson Unit No. 2 was an extension of the cooling water discharge canal from a point approximately 1.2 miles above the plant to a point 4.2 miles above the plant and the addition of four segments of 230 KV transmission line to tie the plant into CP&L's 230 transmission system. The transmission lines are supported by low profile H-frame wood structures. The poles blend with surrounding wooded areas and because of the low height are not visible above the treetops at a distance. Extension of the canal was along the lake shore on land previously dedicated for use as part of the generating plant site.

The scenic appearance of the areas which were used for borrowing and wasting materials during the canal construction has been improved through the replanting of various types of grasses and pine seedlings. In all, approximately 187,000 pine seedlings have been planted around the plant, along the discharge canal and in the other areas used during construction of the plant and the discharge canal.

There has been no opposition to the construction or operation of Robinson Unit No. 2. No requests to intervene nor limited appearances were made concerning the construction of the facility at the public hearing held in Darlington, South Carolina, prior to the issuance of the provisional construction permit by the AEC. Likewise, there were no requests for public hearing in connection with the issuance of the operating license for the facility in July, 1970.

RADIOLOGICAL EFFECTS

The potential radiological impact of the plant on the environment was extensively reviewed and approved during the construction permit and operating permit licensing proceedings by the AEC, its consultants, and other interested parties. The conclusions drawn from this extensive review were summarized in the "Statement on Environmental Considerations Related to the Proposed Operation by Carolina Power & Light Company of H. B. Robinson Unit No. 2" prepared by the AEC staff and dated June 5, 1970.

Releases to the environment during the first year of operation have been only a small fraction of the limits contained in the facility Technical Specifications and applicable federal and state regulations. There have been some difficulties in the performance of equipment resulting in a lesser degree of efficiency than originally expected; however, these difficulties have not resulted in releases to the environment in excess of those that could be expected with all equipment performing at design specifications. In particular, the waste concentrator has not met performance specifications. To maintain the design objectives for the radioactive waste treatment system while engineered changes are being made to improve the efficiency of the waste

concentrator, CP&L has shipped (under licensed conditions) 201,942 gallons of liquid containing less than 10% of low specific activity materials to licensed burial grounds. The principal radionuclide in these shipments was Co^{58} . The total activity shipped was 5.9 curies with the liquid ranging from $3.6 \times 10^{-2} \mu\text{ci/ml}$ to $4 \times 10^{-5} \mu\text{ci/ml}$. The MPC_w for Co^{58} is $9 \times 10^{-5} \mu\text{ci/cc}$. In addition to design improvements to the waste concentrator, polishing demineralizers are to be installed downstream of the waste concentrator. These modifications should enable the liquid waste processing system to meet all performance objectives and to further reduce the quantities of radioactivity released from the plant.

During the first eleven months of operation, a total of 0.022 curies of gaseous activity (Kr,Xe) was released to the atmosphere; and 0.583 curies of fission and corrosion products exclusive of tritium and 38.275 curies of tritium were released to Lake Robinson. These releases have resulted in radioactivity concentrations in Lake Robinson as shown in Table I. The resulting dose from these releases of both liquid and gaseous radioactivity to a maximum exposed individual living at the nearest site boundary and eating 50 grams of fish daily from Lake Robinson is calculated to be .000025 mrem for the entire period. This dose is clearly insignificant when compared to the 100 to 125 mrem the same person receives from natural background during the same period.

Radioactive releases to the environment during the period required for NEPA review are not expected to be significantly different from those experienced during the first year of operation with no adverse effect on the environment. Carolina Power & Light Company has monitored radioactivity

during the first year and has filed two reports with the AEC titled, "Environmental Monitoring Report - H. B. Robinson Unit No. 2 for October 1, 1970, to March 30, 1971" and "Routine Operating Report - H. B. Robinson Unit No. 2 for September 20, 1970, to March 20, 1971." The Company will continue to monitor radioactivity in the environment during the period of NEPA review as a further assurance that there will be no adverse effect on the environment. In addition to the radiological environmental program being carried out by CP&L, the Environmental Protection Agency in cooperation with the AEC Division of Compliance and the State of South Carolina are independently carrying out environmental monitoring programs in the site environs.

Based upon analytical results and release records from the plant, CP&L concludes that there will be no adverse radiological effect on the environment from the continued operation of the plant and that resulting doses to the public from the minimal routine radioactive effluent releases to the environment will be insignificant and well within the limits of proposed Appendix I of 10 CFR Part 50.

There are three general classes of shipments of radioactive material to and from Robinson Unit No. 2. These are: (1) shipment of irradiated fuel to a fuel reprocessing plant; (2) shipment of new (non-irradiated) fuel from the fuel fabricator to the H. B. Robinson plant; and (3) shipment of radioactive waste to licensed burial grounds. During the assumed NEPA review period there will be no shipments of irradiated fuel from Robinson Unit No. 2. There may, however, be an incoming shipment of approximately 23 metric tons of new fuel depending upon the power history of the unit during the next several months. Should there be such a shipment, the

new fuel will be clad in zircaloy cladding and packaged in accordance with the Department of Transportation, Hazardous Materials Regulations Board, Special Permit No. 5450. The shipping container is designed in accordance with ASME-67-WA/NE-5. The shipment will also comply with the requirements of 10 CFR Part 71 and appendices thereof. Should there be an accident during the shipment of this new fuel, the radiological impact would be extremely small, if not nonexistent. The design and shipping techniques preclude an inadvertent criticality situation. The environmental impact under normal conditions should be no different from that which might be associated with the shipment of any other large object.

There will be some shipments of solid radioactive waste from Robinson Unit No. 2 to a licensed burial ground. This material will be packaged in accordance with 10 CFR Part 71 and the Department of Transportation regulations. Generally, these packages of solid waste will contain low to intermediate levels of radioactivity, such as solidified evaporator bottoms, dewatered resins, paper, rags, and other slightly contaminated solid materials. During the first eleven months of operation, 130 drums of solid waste were shipped from Robinson Unit No. 2 to a licensed burial facility in Barnwell, South Carolina. It is not anticipated that during the NEPA review period any large shipments of solid waste will be required. Environmental impact associated with normal shipments of solid waste will be no more significant than the impact from any shipment of a 55-gallon drum loaded with solids. Under accident conditions, the drums should remain intact and produce no radiological environmental impact. If, however, one postulates the rupture of some of the drums, the release would remain (due to its solidified form) in the

immediate area and could be recovered, thus producing at a maximum only a slight and temporary effect. Extremely low level liquid waste containing less than 10% of low specific activity materials were also shipped from Robinson Unit No. 2 during the first eleven months of operation. These shipments will cease when the engineered modifications to the waste concentrator and installation of the polishing demineralizers have been completed. If, however, one postulates the continued transport of this liquid during the NEPA review period, no environmental impact is anticipated during normal shipment. If one postulates an accident which results in the release of the liquid, no significant environmental impact would occur, as the licensee (shipper) is prohibited from transporting liquid having a radioactive content greater than 10% of low specific activity materials. CP&L, therefore, concludes that no significant adverse environmental impact would occur even if the shipment of liquid waste were to continue during the NEPA review period.

Robinson Unit No. 2 was the subject of an extensive safety review prior to receiving its AEC operating license. This review was conducted both before the issuance of the construction permit and again before the issuance of the operating license. During the course of these reviews, the radiological consequences of various postulated accidents were calculated using highly conservative assumptions and models. The results of these analyses were consistently within the AEC guidelines. The AEC regulatory staff, the Advisory Committee on Reactor Safeguards (ACRS), and the Atomic Safety and Licensing Board (ASLB), each concluded that the Robinson Unit No. 2 could be constructed and operated at the proposed

site without undue risk to the health and safety of the public. The conclusions reached by the AEC staff, ACRS, and ASLB were based upon evaluations which employed highly conservative assumptions, such as the degradation of safety systems, meteorology which, for the low population zone, would represent an occurrence frequency of less than 0.01% of the time, quantities of fission products released in excess of what would be reasonably expected, and other similarly conservative assumptions. When these same postulated accidents are evaluated using more realistic assumptions, the resulting radiological consequences are significantly reduced, a matter which will be treated in further detail in the Environmental Report which CP&L will file with the AEC in November, 1971.

In view of the extensive safety review by the AEC staff, ACRS and ASLB, the design, number, high quality and effectiveness of the engineered safety features built into the plant, the remote probability of postulated accidents, and the highly conservative models used in evaluating consequences of postulated accidents, CP&L has concluded that the continued operation of the H. B. Robinson Unit No. 2 during the NEPA review period will not give rise to a significant effect on the environment in the event of an accidental radioactive release.

THERMAL AND BIOLOGICAL EFFECTS

Experience at the Robinson Unit No. 2, and elsewhere, has shown the cooling lake to be an effective and efficient means of dissipating the heat rejected in the plant condensers. In the case of Lake Robinson, it is felt that construction of the lake has made a positive environmental contribution to the area surrounding the Robinson Plant. In addition to

its functions as a cooling facility for the plant, the lake has provided such recreational activities as boating, sailing, and fishing which were largely nonexistent in the plant area prior to construction of the lake and which would not have been possible with alternate methods of heat disposal, such as cooling towers.

The surface area at Lake Robinson is approximately 2,250 acres, 80% of which is used for the dissipation of heat absorbed by the water that passes through the plant. The lake is approximately 40 feet deep at the dam and about 7-1/2 miles in length. Tainter gates and Howell Bunger valves are provided at the dam for multilevel releases and reaeration of the releases before they enter the stream below the lake.

Operation of Robinson Unit No. 2 requires approximately 1,070 cfs of cooling water from the lake. Under full load conditions, this water is increased in temperature by approximately 18⁰ F as it passes through the condenser.

Experience has shown that releases from the lake into the stream comply in all aspects with existing South Carolina water quality standards. Experience also has shown that from the stream above the lake to the stream below the lake there is a general improvement in water quality as measured by dissolved oxygen, suspended solids, and turbidity. The effects of the plant discharge on the lake is a general warming of most of the lake surface. The heated discharge, however, is confined essentially to the upper 10 or 15 feet of water. Below these depths, the water temperature remains near the natural temperature which might be expected in any impounded reservoir. There have been no observed changes in local meteorology as a result of the lake or the operation of Unit No. 2.

The principal impact of the heated discharge on aquatic life in the lake is confined to the microorganisms that pass through the condenser. While there have been no observed effects from the operation of Robinson Unit No. 2, CP&L does anticipate some long-term biological change in the lake as a result of the added input from Robinson Unit No. 2. Lake Robinson, however, was constructed as an industrial cooling facility, and, as such, cannot be expected to support the same distribution of fish and other aquatic life that might be found in a natural lake. With the added heat input to the lake, minor changes in the population and distribution of certain aquatic life are anticipated over the long term. None, however, are anticipated during the near-term NEPA review period of ten months. These changes are not necessarily adverse, are not of an irreversible nature, and are not expected to have significant impact on secondary uses of the lake by the public. Certainly, the lake will continue to permit broad public utilization of this resource, and the public will continue to have available to it a facility that provides a variety of water-based activities that were severely limited, if not nonexistent in the area, prior to development of the cooling water facility by CP&L.

Since the startup of Robinson Unit No. 2, the plant has experienced some impingement of fish on the traveling screens at the plant intake. Investigation indicates that the number of fish collected on the screens is not sufficient to create a significant deprivation of the fish population or alteration of specie distribution in the lake. Study and evaluation of this matter are continuing.

CHEMICAL AND SANITARY WASTES

Effective procedures for the treatment of sanitary and chemical waste have been provided for the Robinson plant. Sanitary wastes from the plant

are piped into a septic tank and lateral field, from which the liquid is collected, chlorinated, and discharged to the condenser cooling system. The normal biooxidation process occurring in this waste disposal system prevents organic contamination of the lake and public water resources.

Chemical wastes subject to possible radioactive contamination are processed through the radioactive waste treatment system where they are neutralized, monitored, and otherwise treated prior to release into the circulating water system. Those wastes not subject to radioactive contamination are collected and properly treated before being discharged. Permits numbered 216 and 1732 were granted on October 26, 1959, and November 25, 1970, by the South Carolina Water Pollution Control Authority. These permits apply respectively to the disposal of sanitary and chemical wastes.

REFUSE ACT PERMIT

In compliance with the U. S. Army Corps of Engineers' Refuse Act Permit Program, an application for a discharge permit for the H. B. Robinson Steam Electric Plant was filed with the Charleston District of the Corps of Engineers on June 29, 1971. Two copies of this application were filed with the South Carolina Pollution Control Authority on the same date along with a request for certification as required under The Water Quality Improvement Act of 1970. Both transmittals have been acknowledged, and instructions on filing Part B of the discharge permit application have been received by the Company. Response on Part B was made by CP&L in a letter dated September 28, 1971. CP&L knows of no other actions that have been taken on these applications at this time.

EFFECT OF CONTINUED OPERATION ON ANY FUTURE DESIGN CHANGES

CP&L does not believe that the NEPA environmental review will result in the recommendation of any significant changes in the design or operation of Robinson Unit No. 2. The facility was located at an existing electric generating plant site which had a condenser cooling water system already sized and approved for additional generating capacity sufficient to accommodate the additional unit. Subsequent operation of Robinson Unit No. 2 has been well within design criteria and regulatory requirements and with no significant impact upon the environment. Furthermore, any impact which the construction and operation of Robinson Unit No. 2 can reasonably be expected to have upon the environment has already occurred and continued operation of the facility will not materially alter that impact.

If, however, in the unlikely event that the NEPA review should suggest changes in either the design or operation of the facility, continued operation during the review period would not preclude or foreclose such changes. Robinson Unit No. 2 is an operating facility. Any alternative which is presently available will be available at the conclusion of the review period. Continued operation of Robinson Unit No. 2 will not alter, either physically or economically, the range of options available to CP&L or the AEC with respect to any future change that might possibly be required for the facility.

EFFECT ON SYSTEM CAPACITY

The continued operation of Robinson Unit No. 2 is essential to the ability of CP&L to meet its load requirements during the review period.

Table II shows CP&L's resources, loads and reserves by month for the period November, 1971, through August, 1972, assuming the availability of Robinson Unit No. 2 for the entire period, the availability of Virginia Electric & Power Company's (VEPCO) Surry nuclear unit No. 1 and Duke Power Company's (Duke) Oconee nuclear unit No. 1 at their rated capacities for the period February, 1972, through August, 1972, and the availability of VEPCO's Surry nuclear unit No. 2 in August, 1972. Even with such assumptions, the CP&L reserves will be only 8.7% in January, 1972. The reserve margin during the critical summer months of July and August is 15.8%. CP&L considers that it needs an approximately 18% reserve to provide reliable service to its customers. This reserve margin is necessary to accommodate the unscheduled outage of its largest generating unit, reduced capability of its other units due to equipment failure, variations in actual load from that forecast and extreme weather conditions which experience has indicated could result in load increases of as much as 4% above that forecast for normal conditions. The importance to CP&L of the availability of the Surry and Oconee nuclear units is that it will reduce CP&L's obligation to provide limited term capacity and energy assistance to the Duke and VEPCO systems and allows CP&L to maintain adequate or near adequate reserves except for January, 1972, when its reserve margin will be only 8.7%.

Table III shows CP&L's resources, loads and reserves for the same ten-month period as shown in Table II, assuming that Robinson Unit No. 2 is available for the entire period and the Surry and Oconee units are not placed in service during the period. It will be observed that from

January, 1972, through August, 1972, CP&L's reserves will be only 8.7% in January and 3.4% in August.

Table IV shows CP&L's reserves for the same 10-month period as in Tables II and III, assuming Robinson Unit No. 2 is not available and the Surry and Oconee nuclear units are not placed in service during the period. It will be noted that CP&L will not be able to carry its load in any month of the ten-month period if necessary maintenance of existing units (some of which is for the installation of additional pollution abatement equipment) is undertaken. If necessary maintenance is omitted, CP&L will not be able to carry the load in six of the ten months and will be critically short of reserve margin in the remaining four months.

Tables II, III and IV also assume the availability in June, 1972, of a 420 MWe fossil unit addition to CP&L's Sutton Plant which is presently 62% complete.

Tables V, VI and VII show the resources, loads and reserves for CP&L, VEPCO, Duke and South Carolina Electric and Gas systems for Winter 1971-72 and Summer 1972 under the same set of assumptions as are shown in Tables II, III and IV for the CP&L system. With Robinson Unit No. 2 available for the entire period, Surry nuclear unit No. 1 and Oconee nuclear unit 1 available in February, 1972, and Surry nuclear unit No. 2 available in August, 1972, the territorial reserves will be 17.4% for Winter 1971-72 and 17.2% for Summer 1972. With the Robinson Unit No. 2 available for the full period and the Surry and Oconee Units unavailable, the territorial reserves are 17.4% for Winter 1971-72 and only 4.3% for Summer 1972. With

none of the four nuclear units available, the territorial reserves are 13.2% for Winter 1971-72 and less than 1% for Summer 1972.

With the critically low reserves in the Virginia-Carolinas territory it is apparent that purchase power is not available to CP&L from neighboring utilities on a firm basis should the operation of Robinson Unit No. 2 be suspended. In fact, the other companies in the territory are dependent upon capacity and energy sales from CP&L to support their system reliability through Winter 1971-72 and, if the Oconee and Surry nuclear units are not placed in service as scheduled, for such period of time as it takes to place those units in service. The continued operation of Robinson Unit No. 2 is essential, therefore, not only to the CP&L system but also to the limited energy resources of the Virginia-Carolinas territory.

EFFECT ON COSTS

The suspension of Robinson Unit No. 2 pending the NEPA review of the Environmental Report would result in additional costs to CP&L in excess of \$40,000,000.

The carrying charges on CP&L's \$75,000,000 investment in plant and \$21,000,000 investment in nuclear fuel at Robinson Unit No. 2 would be \$15,162,000. The forced holding of reload fuel supplies which have been purchased or legally obligated and the escalation of materials and services associated with the reload fuel which have not yet been purchased would impose a further nuclear fuel penalty on CP&L of \$1,101,880. The differential fuel costs for the suspension period would increase CP&L's costs by an additional \$24,056,524.

These cost estimates assume the availability at current prices of the necessary quantities of fossil fuel, particularly No. 2 fuel oil, to meet CP&L's additional requirements. Robinson Unit No. 2 is expected to generate approximately 3,542,000 MWH of electric energy during the period November 1, 1971, through August 31, 1972. This is based on a 70% capacity factor and 700 MWe capability. If this generation were lost, the replacement energy would have to be supplied by IC (internal combustion) turbines and the older, less efficient coal fired generating units. Approximately 40% of the replacement energy would come from IC turbines using No. 2 fuel oil. This would increase CP&L's No. 2 fuel oil consumption by an additional 3,970,965 barrels. CP&L burned only 800,000 barrels of No. 2 fuel oil in 1970. In addition, CP&L would be required to purchase an additional 831,800 tons of coal. Both No. 2 fuel oil and steam coal of the quality required to meet North Carolina and South Carolina air quality standards are presently in short supply. The impact of the CP&L's requirements alone would affect the present market balance and likely cause an advancement of current price levels for both fuels. If CP&L's additional fossil fuel requirements were combined with those of other utilities similarly situated and those planning to bring new nuclear plants into service during the review period, the near-term fuel supply would probably not be sufficient to meet demand even at premium prices.

In addition to the above costs, CP&L would incur such additional related costs as carrying charges on transmission lines constructed for Robinson Unit No. 2, the continuing personnel costs at Robinson Unit No. 2, and costs associated with the development of additional fuel oil storage capacities at the various plant sites at which IC turbine units are located.

CONCLUSION

The completion of the development of the H. B. Robinson Steam Electric Plant through the construction of Robinson Unit No. 2 at the site constituted the minimum environmental impact for the location of a new electric generating unit. Subsequent operation of Robinson Unit No. 2 has been well within design criteria and regulatory requirements with no significant impact on the environment. Furthermore, any impact which the construction and operation of the facility can reasonably be expected to have on the environment has already occurred and continued operation of the facility during the prospective AEC NEPA review period will not materially alter that impact. While CP&L does not believe that the NEPA environmental review will result in the recommendation of any significant changes in the design or operation of the facility, continued operation during the review period will not alter, either physically or economically, the range of options available to CP&L or AEC with respect to possible future changes. Any alternative which is presently available will be available at the conclusion of the review period.

Moreover, the continued operation of Robinson Unit No. 2 is essential to the ability of CP&L to meet the energy requirements of its public service area and to fulfill its capacity and energy commitments to neighboring utilities who have a similar public service responsibility. Without the Robinson, Oconee and Surry nuclear units, CP&L will be unable to carry its forecast load and meet its commitments to neighboring utilities in any month of the assumed review period if necessary maintenance of existing units is undertaken. If necessary maintenance is omitted, CP&L will not be able to carry its forecast load in six of the ten months and will be

critically short of reserve margin in the remaining four months. Loss of Robinson Unit No. 2 for the assumed review period will also impose a severely large economic penalty on CP&L and the public it serves. The carrying charges and fuel economics penalties alone would result in additional costs in excess of \$40,000,000.00

For the reasons set forth herein, the public interest requires the continued operation of Robinson Unit No. 2 during the prospective AEC NEPA review period.

TABLE I

RADIOACTIVE RELEASES IN LIQUIDS
FROM H. B. ROBINSON UNIT 2
(SEPT. 1970 - AUG. 1971)

Isotope*	Total Release mCi	Concentration*** in Lake ($\mu\text{Ci/ml}$)	MPC _f **
Cr-51	13.2	2.3×10^{-11}	1.15×10^{-8}
Mn-54	63.5	2.5×10^{-10}	2.5×10^{-6}
Fe-59	2.6	7.2×10^{-12}	1.44×10^{-7}
Co-58	450.0	1.25×10^{-9}	1.4×10^{-5}
Co-60	29.0	1.27×10^{-10}	4.2×10^{-6}
I-131	23.0	1.6×10^{-11}	5.3×10^{-5}
Cs-137	<u>1.9</u>	8.4×10^{-12}	<u>4.2×10^{-7}</u>
Total	583.2		7.43×10^{-5}
H-3	38,274	1.7×10^{-7}	5.7×10^{-5}

*The isotopic distribution of releases shown here is based on representative isotopic identification of individual releases and on composite identification of other releases and is representative of the actual distribution of the total annual release.

**Based on MPC's from Table II, Appendix B, 10 CFR Part 20. The MPC_f is the fraction of the MPC in the lake and is obtained by dividing the concentration in the lake by the MPC for that isotope.

***Concentration in the lake is calculated as follows:

$$X = \frac{C}{V(\lambda + \frac{R}{V})} \left[1 - \exp - \left(\lambda + \frac{R}{V} \right) t \right]$$

Where

X = concentration in the lake ($\mu\text{Ci/ml}$)
 C = addition rate to the lake ($\mu\text{Ci/year}$)
 V = volume of lake (ml)
 R = flow rate from the lake (ml/year)
 λ = decay constant (year^{-1})
 t = time (years)

TABLE II

CP&L POWER RESOURCES, LOAD, AND RESERVES BY MONTHS
WITH ROBINSON #2 IN SERVICE

Limited Term Sales Based on Surry 1 and Oconee 1 in Service by Feb. 1, 1972
and Surry 2 by Aug. 1, 1972

	1971		1972							
	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>
Installed Capacity (MWe)										
Hydro	211.5	211.5	211.5	211.5	211.5	211.5	213.5	213.5	213.5	213.5
Fossil	2922.0	2922.0	2922.0	2922.0	2922.0	2922.0	2894.0	3314.0	3314.0	3314.0
Nuclear	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0
IC's	560.0	560.0	560.0	560.0	560.0	560.0	487.0	487.0	487.0	487.0
Total Owned Capacity	4393.5	4393.5	4393.5	4393.5	4393.5	4393.5	4294.5	4714.5	4714.5	4714.5
Long Term Purchases (MWe)	213.2	213.2	213.2	213.2	213.2	213.2	212.7	212.7	212.7	212.7
Other Purchases & Sales (MWe)										
Wateree #2	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0
SCPSA Reserve Exchange	32.0	32.0	32.0	32.0	32.0	32.0	20.0	20.0	20.0	20.0
Asheville #2	(155.0)	(155.0)	(155.0)	(155.0)	(155.0)	(155.0)	(115.0)	(115.0)	(115.0)	(115.0)
Sutton #3	-	-	-	-	-	-	-	(140.0)	(140.0)	(140.0)
AEP	60.0	-	-	-	-	-	-	-	-	-
Limited Term Purch. or (Sale) (MWe)	(360.0)	(352.0)	(342.0)	6	6	6	104	29*	29*	203*
Total Power Resources (MWe)	4244.7	4192.7	4202.7	4550.7	4550.7	4550.7	4577.2	4782.2	4782.2	4956.2
Forecast Peak Load (MWe)	3289	3535	3818	3600	3480	3200	3400	4000	4130	4279
Reserve	955.7	657.7	384.7	950.7	1070.7	1350.7	1177.2	782.2	652.2	677.2
Percent Reserve	29.1	18.6	10.7	26.4	30.8	42.2	34.6	19.6	15.8	15.8
Sched. Maint. Reserve	(293)	(190)	(51)	(51)	(308)	(685)	(401)	0	0	0
Percent Reserve	662.7	467.7	333.7	899.7	762.7	665.7	776.2	782.2	652.2	677.2
	20.1	13.2	8.7	25.0	21.9	20.8	22.8	19.6	15.8	15.8

TABLE III

CP&L POWER RESOURCES, LOAD, AND RESERVES BY MONTHS
WITH ROBINSON #2 IN SERVICE

Limited Term Sales Based on Surry and Oconee Units Not in Service

	1971		1972							
	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Installed Capacity (MWe)										
Hydro	211.5	211.5	211.5	211.5	211.5	211.5	213.5	213.5	213.5	213.5
Fossil	2922.0	2922.0	2922.0	2922.0	2922.0	2922.0	2894.0	3314.0	3314.0	3314.0
Nuclear	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0
IC's	560.0	560.0	560.0	560.0	560.0	560.0	487.0	487.0	487.0	487.0
Total Owned Capacity	4393.5	4393.5	4393.5	4393.5	4393.5	4393.5	4294.5	4714.5	4714.5	4714.5
Long Term Purchases (MWe)	213.2	213.2	213.2	213.2	213.2	213.2	212.7	212.7	212.7	212.7
Other Purchases & Sales (MWe)										
Wateree #2	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0
SCPSA Reserve Exchange	32.0	32.0	32.0	32.0	32.0	32.0	20.0	20.0	20.0	20.0
Asheville #2	(155.0)	(155.0)	(155.0)	(155.0)	(155.0)	(155.0)	(115.0)	(115.0)	(115.0)	(115.0)
Sutton #3	-	-	-	-	-	-	-	(140.0)	(140.0)	(140.0)
AEP	60.0	-	-	-	-	-	-	-	-	-
Limited Term Purch. or (Sale) (MWe)	(360.0)	(352.0)	(342.0)	(342.0)	(342.0)	(342.0)	(253.0)	(328.0)*	(328.0)*	(328.0)*
Total Power Resources (MWe)	4244.7	4192.7	4202.7	4202.7	4202.7	4202.7	4220.2	4425.2	4425.2	4425.2
Forecast Peak Load (MWe)	3289	3535	3818	3600	3480	3200	3400	4000	4130	4279
Reserve	955.7	657.7	384.7	602.7	722.7	1002.7	820.2	425.2	295.2	146.2
Percent Reserve	29.1	18.6	10.7	16.7	20.8	31.3	24.1	10.6	7.2	3.4
Sched. Maint. Reserve	(293)	(190)	(51)	(51)	(308)	(685)	(401)	0	0	0
Percent Reserve	662.7	467.7	333.7	551.7	414.7	317.7	419.2	425.2	295.2	146.2
	20.1	13.2	8.7	15.3	11.9	9.9	12.3	10.6	7.2	3.4

TABLE IV

CP&L POWER RESOURCES, LOAD, AND RESERVES BY MONTHS
WITH ROBINSON #2 HALTED 11/71 - CAPACITY INCLUDED IN ALLOCATIONS

Limited Term Sales Based on Surry and Oconee Units Not in Service

	1971		1972							
	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Installed Capacity (MWe)										
Hydro	211.5	211.5	211.5	211.5	211.5	211.5	213.5	213.5	213.5	213.5
Fossil	2922.0	2922.0	2922.0	2922.0	2922.0	2922.0	2894.0	3314.0	3314.0	3314.0
Nuclear	-	-	-	-	-	-	-	-	-	-
IC's	560.0	560.0	560.0	560.0	560.0	560.0	487.0	487.0	487.0	487.0
Total Owned Capacity	3693.5	3693.5	3693.5	3693.5	3693.5	3693.5	3594.5	4014.5	4014.5	4014.5
Long Term Purchases (MWe)	213.2	213.2	213.2	213.2	213.2	213.2	212.7	212.7	212.7	212.7
Other Purchases & Sales (MWe)										
Wateree #2	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0
SCPSA Reserve Exchange	32.0	32.0	32.0	32.0	32.0	32.0	20.0	20.0	20.0	20.0
Asheville #2	(155.0)	(155.0)	(155.0)	(155.0)	(155.0)	(155.0)	(115.0)	(115.0)	(115.0)	(115.0)
Sutton #3	-	-	-	-	-	-	-	(140.0)	(140.0)	(140.0)
AEP	60.0	-	-	-	-	-	-	-	-	-
Limited Term Purch. or (Sale) (MWe)	(360.0)	(352.0)	(342.0)	(342.0)	(342.0)	(342.0)	(253.0)	(328.0)	*(328.0)*	*(328.0)*
Total Power Resources (MWe)	3544.7	3492.7	3502.7	3502.7	3502.7	3502.7	3520.2	3725.2	3725.2	3725.2
Forecast Peak Load (MWe)	3289	3535	3818	3600	3480	3200	3400	4000	4130	4279
Reserve	255.7	(42.3)	(315.3)	(97.3)	22.7	302.7	120.2	(274.8)	(404.8)	(553.8)
Percent Reserve	7.8	(1.2)	(8.3)	(2.7)	0.7	9.5	3.5	(6.9)	(9.8)	(12.9)
Sched. Maint. Reserve	(293)	(190)	(51)	(51)	(308)	(685)	(401)	0	0	0
Percent Reserve	(37.3)	(232.3)	(366.3)	(148.3)	(285.3)	(382.3)	(280.8)	(274.8)	(404.8)	(553.8)
	(1.1)	(6.6)	(9.6)	(4.1)	(8.2)	(11.9)	(8.3)	(6.9)	(9.8)	(12.9)

TABLE V

CP&L, DUKE, SCE&G, & VEPCO
POWER RESOURCES, TERRITORIAL LOADS, AND RESERVES

With Robinson #2 In Service
 With Oconee #1 and Surry #1 & 2 In For Summer 1972

1971-72 Winter

Load - MWe	16,873
Capacity - MWe	19,802
Reserve - MWe	2,929
Reserve - %	17.4

1972 Summer

Load - MWe	19,951
Capacity - MWe	23,380
Reserve - MWe	3,429
Reserve - %	17.2

TABLE VI

CP&L, DUKE, SCE&G, & VEPCO
POWER RESOURCES, TERRITORIAL LOADS, AND RESERVES

With Robinson #2 In Service
With Oconee #1 and Surry #1 & 2 Not In Service For Summer 1972

1971-72 Winter

Load - MWe	16,873
Capacity - MWe	19,802
Reserve - MWe	2,929
Reserve - %	17.4

1972 Summer

Load - MWe	19,951
Capacity - MWe	20,800
Reserve - MWe	849
Reserve - %	4.3

TABLE VII

CP&L, DUKE, SCE&G, & VEPCO
POWER RESOURCES, TERRITORIAL LOADS, AND RESERVES

With Robinson #2 Halted 11/71 - Capacity Included in Allocations
 With Oconee #1 and Surry #1 & 2 Not In Service For Summer 1972

1971-72 Winter

Load - MWe	16,873
Capacity - MWe	19,102
Reserve - MWe	2,229
Reserve - %	13.2

1972 Summer

Load - MWe	19,951
Capacity - MWe	20,100
Reserve - MWe	149
Reserve - %	0.7