

**AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL**  
(TEMPORARY FORM)

CONTROL NO: 2896

<b>FROM:</b> Carolina Power & Light Company Raleigh, N. C. 27602 E. E. Utley		<b>DATE OF DOC:</b> 5-1-73	<b>DATE REC'D</b> 5-3-73	<b>LTR</b> X	<b>MEMO</b>	<b>RPT</b>	<b>OTHER</b>
<b>TO:</b> Mr. Schemel		<b>ORIG</b> 3 signed	<b>CC</b>	<b>OTHER</b>	<b>SENT AEC PDR</b> X <b>SENT LOCAL PDR</b> X		
<b>CLASS:</b> <u>U</u> PROP INFO		<b>INPUT</b> X	<b>NO CYS REC'D</b> 400	<b>DOCKET NO:</b> 50-261			

**DESCRIPTION:**

Ltr re our 4-12-73 ltr.....furnishing revisions to Tech Specs - Boron Injection Capability & Inclusion of All Shutdown Conditions.....W/Attachment Proposed changes to Tech Spec & Bases.

**ENCLOSURES:**

**Do Not Remove  
ACKNOWLEDGED**

**PLANT NAMES:** H. B. Robinson Unit No. 2

**FOR ACTION/INFORMATION**

5-3-73

AB

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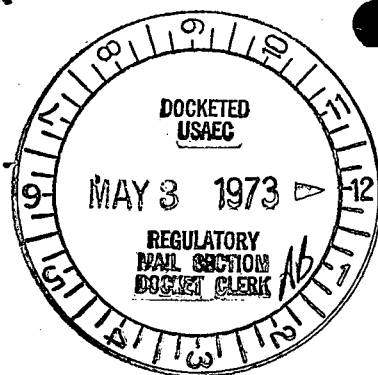
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	VOLLMER				

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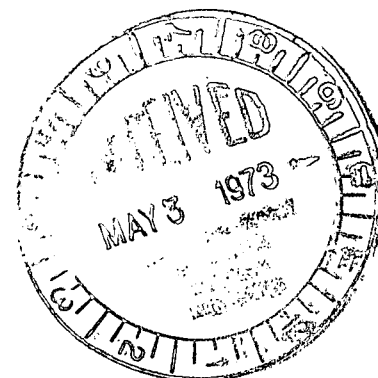
**EXTERNAL DISTRIBUTION**

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WOODWARD/H ST.	NEWMARK/BLUME/AGABIAN	RM C-427, GT)
✓ 16-CYS ACRS HOLDING SENT TO LIC ASST.	1- GERLAD ULRIKSON....ORNL	1- RD...MULLER...F-309GT
S. TEETS ON 5-3-73		

**CP&L**

Carolina Power &amp; Light Company

May 1, 1973



Robert J. Schemel, Chief  
Operating Reactors Branch #1  
Directorate of Licensing  
United States Atomic Energy Commission  
Washington, D. C. 20545

Dear Mr. Schemel:

H. B. ROBINSON UNIT NO. 2  
LICENSE DPR-23

REVISION TO TECHNICAL SPECIFICATIONS  
BORON INJECTION CAPABILITY AND INCLUSION OF ALL SHUTDOWN CONDITIONS

In your letter of April 12, 1973, regarding Carolina Power & Light Company's request for revision of Technical Specifications with regard to performance of surveillance tests, you identified certain conditions of the plant operation which, in your opinion, were not well defined and requested revisions to the Technical Specifications to provide clarity as to the requirements for operation under these conditions.

We have reviewed these areas and concur that modifications to the Technical Specifications are required. With regard to definitions of shutdown conditions as contained in Specification 1.2, Reactor Operation, page 1-1, we propose a definition for an Intermediate Shutdown Condition, which covers the range from 200°F to 540°F and allows for a complete identification of all shutdown conditions.

With regard to the need to maintain boron injection capability whenever fuel is in the reactor vessel, we refer you to Specification 3.2.1, which requires at least one flow path to the core for boric acid injection through the Chemical and Volume Control System. However, this only covers periods of normal operation or anticipated transients; during a steam break accident, for example, capability to add large quantities of boric acid in a more rapid manner than with the CVCS is required, via the Safety Injection System. The requirement for this capability exists only when the coolant temperature is above 212°F and the plant is in a potential steam-producing status. Since the Technical Specifications do not clearly require the need for Safety Injection System Capability in the Hot Shutdown and Intermediate Shutdown Conditions, we propose a change to Specification 3.3.1 to provide for boron injection capability during these plant conditions.

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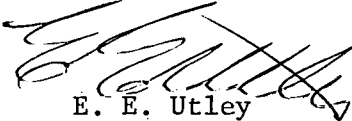
Mr. Robert J. Schemel

2

May 1, 1973

The proposed changes to the Technical Specifications and Bases are attached as page changes to the present Specifications. Additional revisions with regard to surveillance tests and supporting analyses will be forthcoming within the 60-day period specified for response.

Yours very truly,



E. E. Utley  
Vice-President  
Bulk Power Supply

DBW:mp  
Attachment

cc: Mr. C. D. Barham  
Mr. N. B. Bessac  
Mr. B. J. Furr  
Mr. D. V. Menscer

1.0 DEFINITIONS

The following frequently used terms are defined for the uniform interpretation of the specifications.

1.1 Rated Power

A steady state nuclear steam supply output <sup>reactor core</sup> (thermal power) of 2200 Mwt.

1.2 Reactor Operation1.2.1 Refueling Shutdown Condition

When the reactor is subcritical by at least 10%  $\Delta k/k$  and  $T_{avg}$  is  $\leq 140^{\circ}\text{F}$ .

1.2.2 Cold Shutdown Condition

When the reactor is subcritical by at least 1%  $\Delta k/k$  and  $T_{avg}$  is  $\leq 200^{\circ}\text{F}$ .

1.2.3 Intermediate Shutdown Condition

When the reactor is subcritical by an amount equal to or greater than the lesser of a.) or b.) below:

a.) The margin as specified in Technical Specification 3.10 (Figure 3.10.2), or

b.) 1% plus the reactivity difference between the existing coolant temperature and  $200^{\circ}\text{F}$  and  $T_{avg}$  is between  $200^{\circ}\text{F}$  and  $540^{\circ}\text{F}$ .

1.2.4 Hot Shutdown Condition

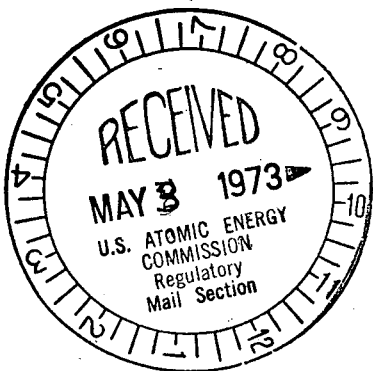
When the reactor is subcritical, by an amount greater than or equal to the margin as specified in Technical Specification 3.10 (Figure 3.10.2) and  $T_{avg}$  is  $\geq 540^{\circ}\text{F}$ .

1.2.5 Reactor Critical

When the neutron chain reaction is self-sustaining and  $k_{eff} = 1.0$ .

1.2.6 Power Operating Condition

When the reactor is critical and the neutron instrumentation indicates greater than 2% of rated power.



1.2.7 Refueling Operation

Any operation involving movement of core components after the pressure vessel head is unbolted or removed.

1.3 Operable

A system or component is operable when it is capable of performing its intended function within the required range.

1.4 Protective Instrumentation Channel

An arrangement of components and modules as required to generate a single protective action signal when required by a plant condition. A channel loses its identity where single action signals are combined.

1.5 Degree of Redundancy

The difference between the number of operable channels and the number of channels which when tripped will cause an automatic system trip.

1.6 Instrumentation Surveillance

1.6.1 Channel Check

A qualitative determination of acceptable operability by observation of channel behavior during operation. This determination shall include comparison of the channel with other independent channels measuring the same variable.

- c. If any one flow path including valves of the safety injection or residual heat removal system is found to be inoperable during normal reactor operation, the reactor may remain in operation for a period not to exceed 24 hours, provided the other flow path(s) are demonstrated to be operable prior to initiating repairs. The hot leg injection paths of the Safety Injection System, including valves, are not subject to the requirements of this specification.

3.3.1.3 When the reactor is in the Hot Shutdown or Intermediate Shutdown Condition, at least one flow-path to the core shall be available for boron injection via the Safety Injection System. The minimum capability for boric acid injection shall be equivalent to that supplied by the Refueling Water Storage Tank.

### 3.3.2 Containment Cooling and Iodine Removal Systems

3.3.2.1 The reactor shall not be made critical, except for low temperature physics tests, unless the following conditions are met:

- a. The spray additive tank contains not less than 2505 gal. of solution with a sodium hydroxide concentration of not less than 30% by weight.
- b. Two containment spray pumps are operable.
- c. Four fan cooler units are operable.
- d. All essential features including valves, controls, dampers, and piping associated with the above components are operable.

3.3.2.2 During power operation, the requirements of 3.3.2.1 may be modified to allow any one of the following components to be inoperable. If the system is not restored to meet the requirements of 3.3.2.1 within the time period specified, the reactor shall be placed in the hot shutdown condition utilizing normal operating procedures. If the requirements of 3.3.2.1 are not satisfied within an additional 48 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.

- a. If one fan cooler unit or the flow path for a fan cooler unit becomes inoperable during normal reactor operation, the reactor may remain in operation for a period not to exceed 24 hours, provided both containment spray pumps are demonstrated to be operable.

shutdown condition to provide for reduction of the decay heat from the fuel, and consequent reduction of cooling requirements should a loss-of-coolant accident occur. This will also permit improved access for repairs in some cases. After a limited time in hot shutdown, if the malfunction(s) are not corrected, the reactor will be placed in the cold shutdown condition, utilizing normal shutdown and cooldown procedures. In the cold shutdown condition there is no possibility of an accident that would release fission products or damage the fuel elements. By specifying at least one flow path for boron injection capability when the plant is in the Hot Shutdown or Intermediate Shutdown Condition, the ability for rapid injection of highly concentrated boric acid in case of a steam break accident is assured.

The plant operating procedures will require immediate action to effect repairs of an inoperable component, and therefore in most cases repairs will be completed in less than the specified allowable repair times. Infrequently, however, major maintenance might be required. Replacement of principal system components could necessitate outages of more than the time allowed for a system or component to be out of service. This extended maintenance specification is intended to allow a ruling by the AEC on equipment outages on a case-by-case basis. Furthermore, the specified repair times do not apply to regularly scheduled maintenance of the engineered safety features, which is normally to be performed during refueling shutdowns. The limiting times to repair are based on:

- 1) Assuring with high reliability that the safety features will function properly if required to do so.
- 2) Allowances of sufficient times to effect repairs using safe and proper procedures.

Assuming the reactor has been operating at full rated power for at least 100 days, the magnitude of the decay heat decreases as follows after initiating hot shutdown.

<u>Time After Shutdown</u>	<u>Decay Heat % of Rated Power</u>
1 min.	4.5
30 min.	2.0
1 hour	1.62
8 hours	0.96
48 hours	0.62

FROM: **DR. J. MORRIS, Director, Research & Development (General Research)**  
**Washington, D. C.**

DATE OF DOCUMENT:

10-10-66

DATE RECEIVED:

10-10-66

NO.:

2896

LTR.:

X

MEMO:

REPORT:

OTHER:

TO:

Morris

ORIG.:

CC:

OTHER:

X

&amp; 21 conformed cys.

ACTION NECESSARY ☒CONCURRENCE ☐

DATE ANSWERED:

NO ACTION NECESSARY ☐COMMENT ☐

BY:

CLASSIFICATION:

U

POST OFFICE

REG. NO.:

FILE CODE:

DOCKET 50-261

DESCRIPTION: (MUST BE UNCLASSIFIED)

Ltr. trans:

AMENDMENT NO. 1 TO APPL, notarized 10-6-66, submitting the following as a result of staff discussions on 9-2-66:  
 (22 cys)

ENCLOSURES:

New Chapters 5 and 12 --reflecting changes in containment design (12 cys)

Certificate of Service, for service on County Commission. (22 cys)

REMARKS: Distribution:

- 1 - formal file
- 1 - suppl file
- 1 - ABC PDR
- 2 - Compliance
- 1 - Stoder
- 1 - OGC
- 1 - Skovholt

- 8 - Hearing File
- 15 - ACRS (holding)

REFERRED TO

DATE

RECEIVED BY

DATE

Boyd:

10-11

w/12 sets --FOR ACTION

Dr. Morris (w/info ckr)

H. Price (w/info cy)

2896



SHAW, PITTMAN, POTTS, TROWBRIDGE & MADDEN

BARR BUILDING

910 17TH STREET, N.W.

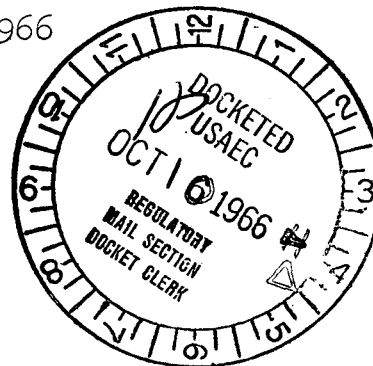
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AREA CODE 202  
PHONE 296-3888  
CABLE: "SHAWLAW"  
TELEX: 440143

October 10, 1966



Peter A. Morris, Director  
Division of Reactor Licensing  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Re: Carolina Power & Light Company  
Docket No. 50-261

File Copy (Suppl)

Dear Doctor Morris:

On behalf of Carolina Power & Light Company, I am filing amendment No. 1 to the company's application for a construction permit and operating license for the H.B. Robinson Unit No. 2. The amendment would substitute a new chapter 5 and a new chapter 13 for the chapters 5 and 13 contained in the application dated July 12, 1966.

*inserted*  
11-3-66 157B

The new chapter 5 reflects the changes in containment design which were discussed with the AEC staff on September 2, 1966. Also enclosed are 15 copies of a certificate of service of amendment No. 1 to the license application on the chief executive of the county in which the H.B. Robinson Unit 2 is to be located.

Very truly yours,

SHAW, PITTMAN, POTTS  
TROWBRIDGE & MADDEN

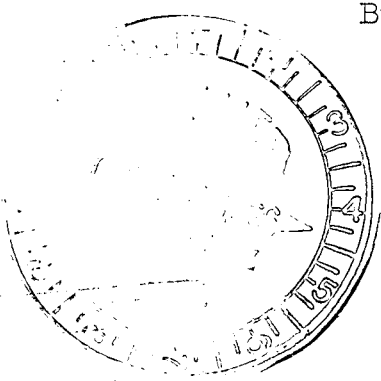
By

Gerald Charnoff

*Gerald Charnoff*

GC:mw

Enclosure



2896

CAROLINA POWER & LIGHT COMPANY  
APPLICATION FOR  
REACTOR CONSTRUCTION PERMIT AND OPERATING LICENSE

Docket No. 50-261

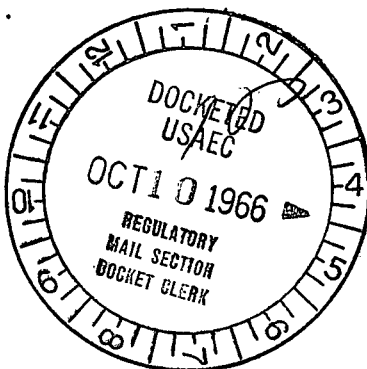
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Amendment No. 1

The above entitled application, dated July 12, 1966,  
is hereby amended as follows:

1. In volume 2 of the Preliminary Safety Analysis  
Report, substitute the enclosed chapter 5, Containment System,  
for the chapter 5 contained in the July 12th application.

2. In volume 3 of the Preliminary Safety Analysis  
Report, substitute the enclosed chapter 13, Organization and  
Training, for the chapter 13 contained in the July 12th appli-  
cation.



CAROLINA POWER & LIGHT COMPANY

By

P. S. Colby  
P. S. Colby - Vice President  
Operating and Engineering Department

Attest:

R. S. Mallison  
R. S. Mallison  
Secretary

Sworn to and subscribed before me this 6th day of October, 1966.

Margaret M. Col  
Notary Public

My Commission expires: July 4, 1968

UNITED STATES OF AMERICA  
ATOMIC ENERGY COMMISSION

IN THE MATTER OF  
CAROLINA POWER & LIGHT COMPANY }

Docket No. 50-261

CERTIFICATE OF SERVICE

*(Suppl)*  
~~File~~ Copy

This is to certify that a copy of amendment No. 1 to the application by Carolina Power & Light Company for a construction permit and operating license has this 10th of October, 1966, been served on the chief executive of Darlington County, South Carolina, by deposit in the United States mail, addressed as follows:

Mr. G. Graham Segars  
Chairman, Darlington County Commission  
County Court House  
Darlington, South Carolina

SHAW, PITTMAN, POTTS  
TROWBRIDGE & MADDEN

By

*Gerald Charnoff*  
Gerald Charnoff

Dated: October 10, 1966

