



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

December 7, 1989

Docket No. 50-400

Mr. Lynn W. Eury  
Executive Vice President  
Power Supply  
Carolina Power & Light Company  
Post Office Box 1551  
Raleigh, North Carolina 27602

Dear Mr. Eury:

SUBJECT: ISSUANCE OF AMENDMENT NO. 16 TO FACILITY OPERATING LICENSE  
NO. NPF-63 - SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1,  
REGARDING MISCELLANEOUS REFUELING OPERATIONS  
(TAC NO. 72883)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 16 to Facility Operating License No. NPF-63 for the Shearon Harris Nuclear Power Plant, Unit 1. This amendment consists of changes to the Technical Specifications (TS) in response to your request dated March 30, 1989, as supplemented April 25, 1989, and May 16, 1989.

The amendment changes two TS associated with refueling operations. The first is TS 3/4.9.1, Boron Concentration. Currently, Table 4.9-1 provides a valve arrangement intended to prevent a boron dilution event while in Mode 6. The specified valve arrangement does not allow the Refueling Water Storage Tank (RWST) to be refilled while in Mode 6. The change allows an alternate valve arrangement permitting makeup to the RWST. Also, the following administrative changes to TS 3/4.9.1 and 3/4.9.2 make them easier to use and avoid possible operator confusion.

- (1) In the first change, the table related to administrative controls on valves to prevent dilution during refueling, Table 4.9-1 is moved from the surveillance TS, referenced in the Limiting Condition for Operation (LCO) section and renumbered as Table 3.9-1 to prevent confusion in the LCO section. Table 3.9-1 is reformatted. The reformatting includes a new title and a descriptively expanded "Valve Position During Refueling" column.
- (2) The second change in TS 3/4.9.2 clarifies that both action requirements must be fulfilled with two inoperable source range neutron flux monitors.

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PDC

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's regular Bi-weekly Federal Register notice.

Sincerely,

Original Signed By:

Richard A. Becker, Project Manager  
Project Directorate II-1  
Division of Reactor Projects I/II  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 16 to NPF-63
2. Safety Evaluation

cc w/enclosures:

See next page

Doc. Name: [SHarris amend 72883]

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NAME	:PAnderson: RBecker: EAdams	:	:	:	:
DATE	: 11/3/89 : 11/3/89 : 12/2/89	:	:	:	:

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Mr. L. W. Eury  
Carolina Power & Light Company

Shearon Harris

cc:

Mr. R. E. Jones, General Counsel  
Carolina Power & Light Company  
P. O. Box 1551  
Raleigh, North Carolina 27602

Regional Administrator, Region II  
U.S. Nuclear Regulatory Commission  
101 Marietta Street  
Suite 2900  
Atlanta, Georgia 30323

Resident Inspector/Harris NPS  
c/o U. S. Nuclear Regulatory Commission  
Route 1, Box 315B  
New Hill, North Carolina 27562

Mr. C. S. Hinnant  
Plant General Manager  
Harris Nuclear Plant  
P. O. Box 165  
New Hill, North Carolina 27562

Mr. R. B. Richey, Manager  
Harris Nuclear Project  
Harris Nuclear Plant  
P. O. Box 165  
New Hill, North Carolina 27562

Mr. Dayne H. Brown, Chief  
Radiation Protection Section  
Division of Facility Services  
N. C. Department of Human Resources  
701 Barbour Drive  
Raleigh, North Carolina 27603-2008

Mr. H. A. Coie  
Special Deputy Attorney General  
State of North Carolina  
P. O. Box 629  
Raleigh, North Carolina 27602

AMENDMENT NO. 16 TO FACILITY OPERATING LICENSE NO. NPF-63 - HARRIS, UNIT 1

**Docket File**

NRC PDR

Local PDR

PDII-1 Reading

S. Varga (14E4)

G. Lainas

E. Adensam

P. Anderson

R. Becker

OGC

D. Hagan (MNBB 3302)

E. Jordan (MNBB 3302)

B. Grimes (9A2)

T. Meeks (4) (P1-137)

W. Jones (P-130A)

J. Calvo (11D3)

GPA/PA

ARM/LFMB

R. Jones 8-E-23

ACRS (10)

cc: Licensee/Applicant Service List



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

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-400

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 16  
License No. NPF-63

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Carolina Power & Light Company, (the licensee), dated March 30, 1989, as supplemented April 25, 1989, and May 16, 1989, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment; and paragraph 2.C.(2) of Facility Operating License No. NPF-63 is hereby amended to read as follows:

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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, as revised through Amendment No. 16, are hereby incorporated into this license. Carolina Power & Light Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

E.G. Tourigny/for

Elinor G. Adensam, Director  
Project Directorate II-1  
Division of Reactor Projects I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 7, 1989

[Sharris Amend 72883]

OFC	:LA:PD21:DRPR:PM:PD21:DRPR:	SRXB	OGC	:D:PD21:DRPR:	:	:
NAME	:PAnderson:	RJones	OGC	:EAdensam:	:	:
DATE	:11/3/89:	11/3/89	11/3/89	11/13/89	12/7/89	:

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ATTACHMENT TO LICENSE AMENDMENT NO. 16

FACILITY OPERATING LICENSE NO. NPF-63

DOCKET NO. 50-400

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

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Insert Pages

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### 3/4.9 REFUELING OPERATIONS

#### 3/4.9.1 BORON CONCENTRATION

##### LIMITING CONDITION FOR OPERATION

3.9.1.a The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met; either:

- (1) A  $K_{eff}$  of 0.95 or less, or
- (2) A boron concentration of greater than or equal to 2000 ppm.

3.9.1.b The valves listed in Table 3.9-1 shall be in their positions required by Table 3.9-1.

APPLICABILITY: MODE 6.

##### ACTION:

- a. With the requirements of Specification 3.9.1.a not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes, and initiate and continue boration at greater than or equal to 30 gpm of a solution containing greater than or equal to 7000 ppm boron or its equivalent until  $K_{eff}$  is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 2000 ppm, whichever is the more restrictive.
- b. With the requirements of Specification 3.9.1.b not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes, and initiate action to return the valve(s) to the position required by Table 3.9-1.

##### SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the two reactivity conditions of Specification 3.9.1.a shall be determined prior to:

- a. Removing or unbolting the reactor vessel head, and
- b. Withdrawal of any control rod in excess of 3 feet from its fully inserted position within the reactor vessel.

4.9.1.2 The boron concentration of the Reactor Coolant System and the refueling canal shall be determined by chemical analysis to be within the limits of Specification 3.9.1.a at least once per 72 hours.

4.9.1.3 At least once per 31 days, verify that the valves listed in Table 3.9-1 are in their positions required by Table 3.9-1.

TABLE 3.9-1

ADMINISTRATIVE CONTROLS  
TO PREVENT DILUTION DURING REFUELING

<u>CP&amp;L VALVE NO.</u> <u>(Ebasco Valve No.)</u>	<u>DESCRIPTION</u>	<u>REQUIRED POSITION</u>
1CS-149 (CS-D121SN)	Reactor Makeup Water to CVCS Makeup Control System	Lock closed; may be opened to permit makeup to Refueling Water Storage Tank provided valves 1CS-156 and 1CS-155 are maintained closed with their main control board control switches in "shut" position, and manual valves 1CS-274, 1CS-265 and 1CS-287 are locked closed.
1CS-510 (CS-D631SN)	Boric Acid Batch Tank Outlet	Locked closed; may be opened provided the boron concentration of the boric acid batch tank $\geq$ 2000 ppm and valve 1CS-503 is closed.
1CS-503 (CS-D251)	Reactor Makeup Water to Boric Acid Batch Tank	Lock closed, may be opened provided valve 1CS-510 is closed.
1CS-93 (CS-D51SN)	Resin Sluice to CVCS Demineralizers	Lock closed.
1CS-320 (CS-D641SN)	Boron Recycle Evaporator Feed Pump to Charging/SI Pumps	Lock closed.
1CS-570 (CS-D575SN)	CVCS Letdown to Boron Thermal Regeneration System	Closed with main control board control switch in "shut" position, and BTRS function selector switch maintained in "off" position; no lock required.
1CS-670 (CS-D599SN)	Reactor Makeup Water to Boron Thermal Regeneration System	Lock closed.
1CS-649 (CS-D198SN)	Resin Sluice to BTRS Demineralizers	Lock closed.
1CS-98 (CS-D740SN)	Boron Thermal Regeneration System Bypass	Opened with main control board control switch maintained in "open" position; no lock required.

## REFUELING OPERATIONS

### 3/4.9.2 INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

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3.9.2 As a minimum, two Source Range Neutron Flux Monitors shall be OPERABLE, each with continuous visual indication in the control room and one with audible indication in the containment and control room.

APPLICABILITY: MODE 6.

#### ACTION:

- a. With one or more of the above required monitors inoperable or not operating, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes.
- b. With both of the above required monitors inoperable or not operating, in addition to Action a. above, determine the boron concentration of the Reactor Coolant System at least once per 12 hours.

#### SURVEILLANCE REQUIREMENTS

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4.9.2 Each Source Range Neutron Flux Monitor shall be demonstrated OPERABLE by performance of:

- a. A CHANNEL CHECK at least once per 12 hours,
- b. An ANALOG CHANNEL OPERATIONAL TEST within 8 hours prior to the initial start of CORE ALTERATIONS, and
- c. An ANALOG CHANNEL OPERATIONAL TEST at least once per 7 days.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 16 TO FACILITY OPERATING LICENSE NO. NPF-63  
CAROLINA POWER & LIGHT COMPANY, et al.  
SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1  
DOCKET NO. 50-400

1.0 INTRODUCTION

By letter dated March 30, 1989, as supplemented April 25, 1989 and May 16, 1989, the Carolina Power & Light Company submitted a request for changes to the Shearon Harris Nuclear Power Plant, Unit 1 (Harris), Technical Specifications (TS) 3/4.9.1, Boron Concentration and TS 3/4.9.2, Instrumentation. The change to 3/4.9.1, Boron Concentration, allows valve 1CS-149 to be opened provided that valves 1CS-155 and 1CS-156 are maintained closed with their control board control switches in the closed position and manual valves 1CS-265, 1CS-274 and 1CS-287 are locked closed. In addition to the valve arrangement changes, the proposed amendment reformats Table 4.9-1 and redesignates it as Table 3.9-1. The valve arrangement changes would allow the flexibility to refill the Refueling Water Storage Tank (RWST) while still isolating the unborated water sources from the reactor vessel to preclude the potential for a boron dilution accident. The administrative changes bring consistency of labeling with other TS tables, place further emphasis on the required valve positions established by the specification and state clearly that core alterations and positive reactivity changes must be suspended if the valve positions are not as required by the specifications. The changes to TS 3/4.9.2 are administrative in nature to clarify that both action requirements must be fulfilled with two inoperable Source Range Neutron Flux Monitors.

The April 25, 1989 and May 16, 1989, letters provided clarifying information that did not change the initial determination of no significant hazards consideration as published in the Federal Register (54 FR 21299) dated May 17, 1989.

2.0 EVALUATION

Currently, unborated sources of water are isolated from the reactor vessel and refueling cavity during Mode 6 by administratively controlling the valve positions of certain valves to preclude the possibility of an uncontrolled boron dilution of the filled portion of the reactor coolant system. However, the valve arrangement does not allow the RWST to be refilled. The proposed amendment allows an alternate valve arrangement which would allow makeup to the RWST. After the RWST is partially drained to fill the refueling cavity, the potential exists for exhausting this supply leaving the Boric Acid Tank (BAT) as the only remaining source of borated water.

TS 3.1.2.5 requires, as a minimum, that either the BAT or the RWST be operable while in Mode 5 or 6. With no borated water source operable, all operations involving core alterations or positive reactivity changes must be suspended. In order to maintain the operational flexibility allowed by TS 3.1.2.5, it is necessary to be able to refill the RWST. The proposed amendment would allow makeup to the RWST by allowing valve 1CS-149 to be unlocked and opened if valves 1CS-156 and 1CS-155 are maintained closed with their main control board control switches in the "shut" position, and manual valves 1CS-274, 1CS-265 and 1CS-287 are locked closed.

Valves 1CS-155, 1CS-156, 1CS-265, 1CS-274 and 1CS-287 will isolate the RWST and unborated water sources from the RCS. The RWST can then be refilled through the path containing 1CS-FCV-151 if the valve 1CS-149 is opened. Therefore, the proposed valve alignment will allow the refilling of the RWST while precluding the potential for an uncontrolled boron dilution event; and the staff finds these changes acceptable.

Reformatting Table 4.9-1 and changing the designation to Table 3.9-1 are administrative changes to put further emphasis on the required valve positions established by the specification, to clearly state that core alterations and positive reactivity changes must be suspended if the valve positions are not as required by the TS and to be consistent with the labeling used throughout the TS. The staff finds the administrative changes proposed to Table 4.9-1 are acceptable.

The changes proposed to TS 3/4.9.2 are clarifications to avoid the possibility of operator confusion with regard to the requirement to suspend core alterations or positive reactivity changes when either one or two of the Source Range Neutron Flux Monitors are inoperable and are, therefore, acceptable.

### 3.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted areas as defined in 10 CFR Part 20 and changes to the surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration, and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

#### 4.0 CONCLUSION

The Commission made a proposed determination that this amendment involves no significant hazards consideration which was published in the Federal Register (54 FR 21299) on May 17, 1989, and consulted with the State of North Carolina. No public comments or requests for hearing were received, and the State of North Carolina did not have any comments.

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) 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.

Principal Contributor: R. Becker

Dated: December 7, 1989