

May 6, 1997

Mr. W. R. Robinson, Vice President  
Shearon Harris Nuclear Power Plant  
Carolina Power & Light Company  
Post Office Box 165, Mail Code: Zone 1  
New Hill, North Carolina 27562-0165

SUBJECT: ISSUANCE OF AMENDMENT NO. 71 TO FACILITY OPERATING LICENSE NO. NPF-63 REGARDING REFUELING WATER STORAGE TANK TECHNICAL SPECIFICATION CHANGE TO PERMIT REACTOR COOLANT SYSTEM ISOLATION VALVE TESTING - SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 (TAC NO. M98143)

Dear Mr. Robinson:

The Nuclear Regulatory Commission has issued Amendment No. 71 to Facility Operating License No. NPF-63 for the Shearon Harris Nuclear Power Plant, Unit No. 1. This amendment changes the Technical Specifications (TS) in response to your request dated March 14, 1997.

The amendment extends the allowed outage time for its Refueling Water Storage Tank (RWST) while performing surveillance testing of the Reactor Coolant System (RCS) pressure isolation valves.

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

Sincerely,

Original signed by:

Ngoc B. Le, Project Manager

Project Directorate II-1

Division of Reactor Projects - I/II

Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosures:

1. Amendment No. 71 to NPF-63

2. Safety Evaluation

cc w/enclosures:

See next page

(See SE memos dated \*4/18/97 from FOrr to NLe & \*\*4/23/97 from CThomas to MReinhart)

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DATE	4/23/97	4/23/97	5/6/97	5/2/97	4/24/97
COPY	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
OFFICE	BC:HHFB**	BC:TSB			
NAME	CThomas	CGrimes <sup>for</sup>			
DATE	4/24/97	4/24/97	/ /97	/ /97	/ /97
COPY	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

OFFICIAL RECORD

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AMENDMENT NO. 71 TO FACILITY OPERATING LICENSE NO. NPF-63 - HARRIS, UNIT 1

Docket File  
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cc: Harris Service List



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-400

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 71  
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 14, 1997, 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:

(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. 71, 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 and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Mark Reinhart, Acting 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: May 6, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 71

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.

Remove Pages

3/4 5-9  
B 3/4 5-2

Insert Pages

3/4 5-9  
B 3/4 5-2

## EMERGENCY CORE COOLING SYSTEMS

### 3/4.5.4 REFUELING WATER STORAGE TANK

#### LIMITING CONDITION FOR OPERATION

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3.5.4 The refueling water storage tank (RWST) shall be OPERABLE with:

- a. A minimum contained borated water volume of 436,000 gallons, which is equivalent to 92% indicated level.
- b. A boron concentration of between 2400 and 2600 ppm of boron.
- c. A minimum solution temperature of 40°F, and
- d. A maximum solution temperature of 125°F.

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTION:

With the RWST inoperable, restore the tank to OPERABLE status within 1 hour\* or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.5.4 The RWST shall be demonstrated OPERABLE:

- a. At least once per 7 days by:
  1. Verifying the contained borated water volume in the tank, and
  2. Verifying the boron concentration of the water.
- b. At least once per 24 hours by verifying the RWST temperature when the outside air temperature is less than 40°F or greater than 125°F.

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\* Except that while performing surveillance 4.4.6.2.2, the tank must be returned to OPERABLE status within 12 hours.

BASES

ECCS SUBSYSTEMS (Continued)

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the safety analyses are met and that subsystem OPERABILITY is maintained. Surveillance Requirements for throttle valve position and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

3/4.5.4 REFUELING WATER STORAGE TANK

The OPERABILITY of the refueling water storage tank (RWST) as part of the ECCS ensures that a sufficient supply of borated water is available for injection into the core by the ECCS. This borated water is used as cooling water for the core in the event of a LOCA and provides sufficient negative reactivity to adequately counteract any positive increase in reactivity caused by RCS cooldown. RCS cooldown can be caused by inadvertent depressurization, a LOCA, or a steam line rupture.

The limits on RWST minimum volume and boron concentration assure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core and (2) the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes with all shutdown and control rods inserted except for the most reactive control assembly. These limits are consistent with the assumption of the LOCA and steam line break analyses.

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 8.5 and 11.0 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

An RWST allowed outage time of 12 hours is permitted during performance of Technical Specification surveillance 4.4.6.2.2 with a dedicated attendant stationed at valve 1CT-22 in communication with the Control Room. The dedicated attendant is to remain within the RWST compartment whenever valve 1CT-22 is open during the surveillance. The dedicated attendant can manually close valve 1CT-22 within 30 minutes in case of a line break caused by a seismic event. Due to the piping configuration, a break in the non-seismic portion of piping during this surveillance could result in draining the RWST below the minimum analyzed volume.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

CAROLINA POWER & LIGHT COMPANY

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

1.0 INTRODUCTION

By letter dated March 14, 1997, the Carolina Power & Light Company (CP&L or the licensee) submitted a request for changes to the Shearon Harris Nuclear Power Plant, Unit 1 (SHNPP), Technical Specifications (TS). The requested changes would extend the allowed outage time for its refueling water storage tank (RWST) while performing surveillance testing of its reactor coolant system (RCS) pressure isolation valves (Surveillance 4.4.6.2.2). Specifically, the licensee proposed to add a footnote to the Action Statement of TS 3.5.4 which would extend the time allowed for returning the RWST to OPERABLE status from 1 hour to 12 hours while performing Surveillance 4.4.6.2.2. The increased outage time is needed because the time required to perform the surveillance tests is longer than the currently allowed outage time.

2.0 EVALUATION

The licensee's submittal states that tests implementing Surveillance 4.4.6.2.2 involve connection of the hydrotest pump to the RWST through their respective associated piping. The RWST and its associated pipe, which interfaces the hydrotest pump suction line, are safety grade and seismically qualified, whereas the hydrotest pump suction line is not. At the interface of the two lines is a seismically qualified, manually operated isolation valve. The licensee has determined that when the isolation valve is open to permit performing the surveillance tests, the seismic qualification of the RWST line is compromised because a seismic event could be postulated to break the hydrotest pump suction line, diverting its break flow from the RWST line safety path. Since the RWST qualification could be compromised while in this test alignment, the licensee has declared that the RWST would be inoperable during the tests. SHNPP Technical Specification 3.5.4 requires that the RWST be operable during plant operation Modes 1, 2, 3, and 4, with an action statement allowance of 1 hour to restore the RWST to OPERABLE status or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

The surveillance is required to be performed at least every 18 months and at other times when the isolation valves might have passed flow. It is conducted while ascending in power prior to entry into MODE 2 and is normally performed

in MODE 3. The tests are normally completed in less than 8 hours. However, this time is greater than the allowed outage time, and greater than the time at which shutdown would be required.

The licensee proposed to add a footnote to the TS 3.5.4 action statement which would extend the time allowed for returning the RWST to OPERABLE status from 1 hour to 12 hours while performing Surveillance 4.4.6.2.2. The licensee also proposed adding discussion to the Bases section for TS 3/4.5.4 to clarify that a dedicated attendant, in communication with the control room, would be stationed by the isolation valve at the interface of the two systems throughout the testing period. The licensee indicated that the operator could manually close the valve within 30 minutes of a line break caused by a seismic event. The licensee estimated that, in the event of such a break, the diverted flow rate would be 240 gallons-per-minute. The licensee also estimates that the safety function of the RWST under these circumstances would continue to be assured for 103 minutes with this leak rate. The licensee concluded that the operator could isolate the broken non-seismic piping in time to assure the RWST safety function for the scenarios of concern.

In evaluating the adequacy of operator-assisted action in isolating the broken non-seismic piping, the staff used the following guidance relevant to manual operator actions and times to complete its evaluation of the licensee's submittal: Generic Letter 91-18 and ANSI-58.8.

Generic Letter 91-18 states: "The consideration of manual action in...areas also must include the ability and timing in getting to the area, training of personnel to accomplish the task, and occupational hazards to be incurred such as radiation, temperature, chemical, sound, or visibility hazards." ANSI-58.8 supplies estimates of reasonable response times for operator actions, and allows licensees to use time intervals derived from independent sources, provided they are based on task analyses with consideration given to human performance. The staff evaluated the licensee's task-analysis-related responses sent in its letter of March 14, 1997, as follows.

(1) Specific operator actions and times required

The licensee noted that to mitigate the consequences of a failure in the non-seismic piping, manual actions will be needed to isolate the break flow (i.e., close valve ICT-22), prior to reducing the water volume in the RWST below the minimum analyzed volume. ANSI/ANS 58.8, "Time Response Design Criteria for Nuclear Safety Related Operator Actions," recommends 30 minutes for operator actions outside the control room. The licensee stated that 30 minutes are assumed for the valve attendant to execute the manual actions.

(2) Potentially harsh or inhospitable environmental conditions expected, including seismic considerations.

The licensee stated that a postulated seismic event would pose additional challenges to the valve attendant by diverting attention away from closing valve ICT-22 and limiting access to the valve. Further, the licensee noted the potential for flooding as an accessibility concern that could hinder the valve attendant from closing valve ICT-22. The licensee explained that the largest non-safety line in the area where the valve attendant performs the manual action is a 6-in recirculation line to RWST from the containment spray pumps (about 1800 gpm flow). The licensee stated that, to prevent this line from causing a potential flooding concern, operating procedures will prohibit the use of the containment spray pump recirculation line during performance of the surveillance test.

- (3) General discussion of the ingress/egress paths taken by the operators to perform functions

The licensee stated that the dedicated attendant will be stationed at the valve, prior to performing the required surveillance test, and will be in communication with the control room, and therefore, accessibility limitations are not a concern.

- (4) Procedural guidance for required actions

The licensee stated that procedural controls will be in place which will assign a dedicated attendant for the specific purpose of closing valve ICT-22. The licensee pointed out that required manual actions will be reviewed with personnel involved in the testing during the control room pre-job briefing prior to the performance of the surveillance test. In addition, plant "Operations Surveillance Test (OST)-1506," Revision 4, dated March 26, 1996, provides procedural requirements for unlocking and opening valve ICT-22, as well as for checking and verifying that the post-test alignment of the valve is closed and locked.

- (5) Specific operator training necessary to carry out actions including any operator qualifications required to carry out actions

The licensee stated that the required manual actions will be reviewed with personnel involved in the testing during the control room pre-job briefing prior to the performance of the testing surveillance.

- (6) Any additional support personnel and equipment required by the operator to carry out actions

The licensee stated that the control room operator will be monitoring the level in the RWST and will notify the dedicated attendant to immediately close the ICT-22 valve when the RWST low level alarm is received. The licensee also

stated that the dedicated attendant will be equipped with a flashlight in case of failure of local area lighting.

- (7) Description of information required by the control room staff to determine such operator action is required, including qualified instrumentation<sup>1</sup> used to diagnose the situation and to verify that the required action has been successfully taken.

The licensee stated that manual actions will be initiated upon receipt of the low level alarm. It was the staff's interpretation that once the required action is completed, the low level alarm would clear.

- (8) Ability to recover from plausible errors in performance of manual actions, and the expected time required to make such a recovery

It does appear that the licensee's evaluation considered the possibility of performance errors or the likelihood of recovering from such errors given the timeframe (i.e., 30 minutes) allotted to accomplish the manual action. Given the time assumed for operator action and communication with the control room, it is likely that recovery from an error in performance could be achieved.

The staff finds the previously discussed information acceptable because it is consistent with ANSI/ANS 58.8 and Generic Letter 91-18.

With regard to the licensee request for extending the RWST allowed outage time from 1 hour to 12 hours, the staff finds the request to be reasonable because the surveillance test normally would take approximately 8 hours to complete; however, the license has requested a 12-hour allowed outage time for the RWST to provide for an orderly conduction of the surveillance to be conducted within one normal operational-shift of 12 hours and to allow for any potential testing delay. Furthermore, the licensee has stated that the RWST would remain functionally available throughout this duration.

Based on the above review, the staff finds (1) the licensee request to extend the allowed outage time from 1 hour to 12 hours for the RWST while performing TS surveillance 4.4.6.2.2 and (2) the licensee's commitment to station a dedicated attendant, in full-time communication with the control room, during the implementation of TS surveillance 4.4.6.2.2 acceptable. The staff

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<sup>1</sup> In accordance with RG 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants Assess Plant and Environs Conditions During and Following an Accident," Revision 3, 1983, qualification of the instrumentation relied upon by the operators may be an important review issue. RG 1.97, defines Type A variables as: "those variables to be monitored that provide the primary information required to permit the control room operator to take specific manually controlled actions for which no automatic control is provided and that are required for safety systems to accomplish their functions for design-basis accident events."

finds the proposed operator-assisted action of manually closing the seismically qualified valve within 30 minutes of a line break caused by a seismic event could isolate the broken non-seismic piping in time to assure the RWST safety function for the scenarios of concern. Additionally, the staff finds that the licensee's assessment for the request to extend the allowed outage time from 1 hour to 12 hours for the RWST, and the licensee's proposed action to station a dedicated attendant to isolate the postulated line break of the non-seismic piping during the TS surveillance testing is consistent with ANSI/ANS 58.8 and Generic Letter 91-18. Therefore, the staff concludes that the proposed TS change and its associate BASES provisions are acceptable.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of North Carolina official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC 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 the amendment involves no significant hazards consideration, and there has been no public comment on such finding (62 FR 14459). Accordingly, the 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 the amendment.

### 5.0 CONCLUSION

The Commission 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: F. Orr  
G. West

Date: May 6, 1997