

September 2, 1992

Docket No. 50-400

Mr. R. A. Watson
Senior Vice President
Nuclear Generation
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Watson:

SUBJECT: ISSUANCE OF AMENDMENT NO. 29 TO FACILITY OPERATING LICENSE NO. NPF-63 REGARDING AUXILIARY FEEDWATER SYSTEM SURVEILLANCE CHANGES - SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 (TAC NO. M82767)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 29 to Facility Operating License No. NPF-63 for the Shearon Harris Nuclear Power Plant, Unit 1. This amendment changes the Technical Specifications in response to your request dated February 27, 1992.

The amendment modifies the auxiliary feedwater system Surveillance Requirement 4.7.1.2.1 and Bases section B 3/4.7.1.2 to add full flow surveillance test capability for both the motor-driven AFW pumps, provides consistent motor-driven and turbine-driven AFW pump surveillance test acceptance criteria, acknowledges a revised AFW design flow and provides consistent application of and reference to the non-applicability of Technical Specification 4.0.4 for the turbine-driven AFW pump.

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

Enclosures:

1. Amendment No. 29 to NPF-63
2. Safety Evaluation

cc w/enclosures:
See next page

CP-1

A: PD21:DRPE	PM: PD21:DRPE	OGC <i>GH</i>	D: PD21:DRPE		
PAnderson	NLe <i>TL</i>	E Holler	EAdensam		
8/27/92	8/27/92	8/28/92	9/2/92		

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Mr. R. A. Watson
Carolina Power & Light Company

Shearon Harris Nuclear Power Plant,
Unit 1

cc:

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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. 29
License No. NPF-63

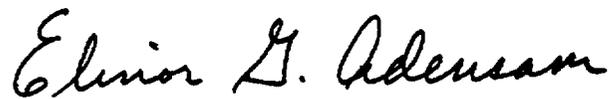
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Carolina Power & Light Company, (the licensee), dated February 27, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's 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. 29, 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



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: September 2, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 29

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 7-4
3/4 7-5
B 3/4 7-2

Insert Pages

3/4 7-4
3/4 7-5
B 3/4 7-2

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

- a. Two motor-driven auxiliary feedwater pumps, each capable of being powered from separate emergency buses, and
- b. One steam turbine-driven auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2, AND 3.

ACTION:

- a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.7.1.2.1 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by:
 1. Demonstrating that each motor-driven pump satisfies performance requirements by either:
 - a) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1514 psid at a recirculation flow of greater than or equal to 50 gpm (25 KPPH), or
 - b) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1259 psid at a flow rate of greater than or equal to 430 gpm (215 KPPH).

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

2. Demonstrating that the steam turbine - driven pump satisfies performance requirements by either:

NOTE: The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.

- a) Verifying the pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1433 psid at a recirculation flow of greater than or equal to 90 gpm (45 KPPH) when the secondary steam supply pressure is greater than 210 psig, or
 - b) Verifying the pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1400 psid at a flow rate of greater than or equal to 430 gpm (215 KPPH) when the secondary steam supply pressure is greater than 280 psig.
3. Verifying by flow or position check that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position is in its correct position; and
 4. Verifying that the isolation valves in the suction line from the CST are locked open.
- b. At least once per 18 months during shutdown by:
1. Verifying that each motor-driven auxiliary feedwater pump starts automatically, as designed, upon receipt of a test signal and that the respective pressure control valve and motor-operated recirculation isolation valve for each motor-driven pump respond as required;
 2. Verifying that the turbine-driven auxiliary feedwater pump starts automatically, as designed, upon receipt of a test signal. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3; and
 3. Verifying that the motor-operated auxiliary feedwater isolation valves and flow control valves close as required upon receipt of an appropriate test signal for steamline differential pressure high coincident with main steam isolation.

AUXILIARY FEEDWATER SYSTEM

The auxiliary feedwater pumps are capable of delivering the 430 gpm (215 KPPH) feedwater flow rate required to mitigate the most limiting design basis accidents analyzed in SHNPP FSAR Chapter 15. The most limiting accident scenarios are the Loss of Normal Feedwater (LONF) and the Feedline Break (FLB). The accident analyses assume the pressure in the steam generators reaches the setpoint of the lowest set steam generator safety relief valve for at least a portion of the accident duration. Therefore, each of the AFW pumps (motor-driven and turbine-driven) must be capable of supplying at least 430 gpm (215 KPPH) total to at least two steam generators at a steam generator inlet pressure of 1217 psig. The 1217 psig pressure is based on the lowest safety relief valve setting plus margin for accumulation and setting error. Each AFW pump must be capable of supplying the full 430 gpm (215 KPPH) flow following all credible single failure scenarios. This capacity is sufficient to ensure adequate feedwater flow is available to remove decay heat and reduce the Reactor Coolant System temperature to less than 350°F so the Residual Heat Removal System may be placed into operation.

3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for 12 hours with steam discharge to the atmosphere concurrent with total loss-of-offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics, and the value has also been adjusted in a manner similar to that for the RWST and BAT, as discussed on page B 3/4 1-3.

3/4.7.1.4 SPECIFIC ACTIVITY

The limitations on Secondary Coolant System specific activity ensure that the resultant offsite radiation dose will be limited to a small fraction of 10 CFR Part 100 dose guideline values in the event of a steam line rupture. This dose also includes the effects of a coincident 1 gpm reactor-to-secondary tube leak in the steam generator of the affected steam line. These values are consistent with the assumptions used in the safety analyses.

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blow down in the event of a steam line rupture. This restriction is required to: (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analyses.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure-induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on a steam generator RT_{NDT} of 60°F and are sufficient to prevent brittle fracture.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 29 TO FACILITY OPERATING LICENSE NO. NPF-63

CAROLINA POWER & LIGHT COMPANY

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

1.0 INTRODUCTION

By letter dated February 27, 1992, the Carolina Power & Light Company (CP&L or the licensee) submitted a request for changes to the Shearon Harris Nuclear Power Plant, Unit 1, Technical Specifications (TS). The requested changes would revise TS 4.7.1.2 and its Bases Section B 3/4.7.1.2 to add full flow surveillance test capability for both the motor- and turbine-driven AFW pumps, provide more consistent acceptance criteria, acknowledge a revised AFW design flow, and provide consistent application to the non-applicability of TS 4.0.4 for the turbine-driven AFW pump.

The present motor-driven AFW pump TS surveillance requirement provides for a minimum recirculation flow test at 50 gallons per minute (gpm) and 1558 pounds per square inch differential (psid). The present turbine-driven pump TS surveillance requirement provides for a minimum discharge pressure of 1510 pounds per square inch gauge (psig) with a minimum recirculation flow of 90 gpm at a steam supply pressure greater than 210 psig. Currently, the recirculation, or mini-flow, test is used because the AFW system design does not provide the capability of conducting a full flow test during power operation without delivering full flow to the steam generators, i.e., there is no full flow recirculation flow or redirection capability. In addition, full flow testing may add a thermal cycle to the steam generator AFW nozzles. Although the mini-flow test avoids the potential thermal cycling and proves to be a satisfactory method of verifying AFW pump operability, small flow and pressure fluctuations in combination with the high pump discharge pressure cause a certain amount of oscillation in the pressure instrument readings. These oscillations make it difficult to establish a precise average value for discharge pressure. At times, an average pressure reading has been recorded that was lower than the actual discharge pressure as determined by subsequent testing. This lower pressure may fall below the acceptance criterion and could result in a pump being declared inoperable, though the pump may actually be developing adequate discharge pressure. If the mini-flow test fails to verify pump operability, subsequent use of a full flow test may prevent an

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unnecessary declaration of pump inoperability. Therefore, the licensee has proposed acceptance criteria for a full flow surveillance test of the motor- and turbine-driven AFW pumps as a testing option to determine pump operability when needed.

In addition to the proposed full flow test alternative, the licensee also proposed to revise the discharge pressure acceptance criterion for the turbine-driven AFW pump using the temperature compensated differential pressure measurement. This change is consistent with the acceptance criteria of the motor-driven AFW pumps. In addition, the licensee increased the minimum required steam inlet pressure to the turbine-driven pump from 210 psig to 280 psig to provide greater horsepower needed for the increased flow rate during the full flow test.

In addition to the above changes, the licensee also proposes to revise the AFW TS to identify that the provisions of TS 4.0.4 are not applicable for the full flow test of the turbine-driven AFW pump. This change is consistent with the current TS for the mini-flow test of the turbine-driven AFW pump.

The Bases section of the AFW TS will also be revised to reflect the full flow test acceptance criterion of 430 gpm for all three AFW pumps. The Bases section will now be consistent with the Chapter 15 analyses in the FSAR which are based on a minimum AFW flow of 430 gpm.

2.0 EVALUATION

The proposed change to the AFW surveillance to add a full flow test which demonstrates that an AFW pump can deliver 430 gpm to the steam generators is an acceptable alternative to the present mini-flow test because the proposed surveillance would demonstrate that the AFW pumps are capable of removing the decay heat associated with the FSAR Chapter 15 accident analyses. As long as an AFW pump can be demonstrated to deliver the minimum required flow for the worst case accident conditions, the pump should be considered operable.

The proposed change to use temperature compensated differential pressure, in lieu of discharge pressure for the turbine-driven AFW pump, in both the mini-flow and full flow tests makes the surveillance consistent with the tests for the motor-driven pump. It also provides a better measure of pump performance by eliminating the dependence on varying AFW pump supply pressure. This measurement, coupled with the temperature compensation provides for a more consistent interpretation of test results. Therefore, these changes are an improvement over the present TS surveillance requirements. The minimum differential pressure for the motor-driven pump mini-flow test will also be reduced to be consistent with the minimum required flow rather than the design pump flow. Use of a minimum design pump flow curve, in lieu of the original design pump curve, is acceptable because of the Chapter 15 reanalyses which is based on a minimum AFW flow of 430 gpm.

Testing of the turbine-driven pump prior to entry into Mode 3, Hot Standby, is impossible because there is inadequate steam pressure to perform either of the surveillance tests. Therefore, an exception from the provisions of Specification 4.0.4 for entry into Mode 3 is required for both the mini-flow and full flow tests of the turbine-driven pump.

The proposed changes to the AFW Bases section of the TS, Section B 3/4.7.1.2, revises the AFW Bases to reflect the proposed revised TS changes. The original Bases were based on an earlier Westinghouse analysis of the Chapter 15 scenarios that resulted in a minimum required AFW flow of 475 gpm. Subsequent analyses have determined that the minimum required AFW flow for all Chapter 15 events is 430 gpm. The revised AFW TS and the AFW Bases section of the TS now reflect the latest Chapter 15 analyses identified in the FSAR. The proposed changes to TS B 3/4.7.1.2 are, therefore, acceptable.

3.0 SUMMARY

Based on the staff's review of the proposed changes, as described above, the staff concludes that the revised AFW TS are acceptable because they provide a surveillance test that adequately demonstrates minimum AFW flow requirements are met in order to determine a pump operable. The staff has also concluded that the revised AFW Bases section is acceptable because it reflects the present AFW design and the present Chapter 15 analyses in the FSAR. The proposed revisions to TS Sections 4.7.1.2.1 and B 3/4.7.1.2, are, therefore, acceptable.

4.0 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.

5.0 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 (57 FR 11105). 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.

6.0 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 Contributor: W. Lefave

Date: September 2, 1992

AMENDMENT NO. 29 TO FACILITY OPERATING LICENSE NO. NPF-63 - HARRIS, UNIT 1


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