

March 8, 2006

Mr. Cornelius J. Gannon, 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: SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 - ISSUANCE OF
AMENDMENT REGARDING TEMPERATURE LIMIT FOR DISSOLVED OXYGEN
IN REACTOR COOLANT SYSTEM (TAC NO. MC7399)

Dear Mr. Gannon:

The Nuclear Regulatory Commission has issued Amendment No.120 to Facility Operating License No. NPF-63 for the Shearon Harris Nuclear Power Plant, Unit 1. This amendment changes the Technical Specifications (TS) in response to your application dated June 20, 2005, as supplemented by letter dated November 2, 2005.

The amendment revises the footnotes in Tables 3.4-2 and 4.4-3 of TS 3/4.4.7 by increasing the temperature limit above which (1) reactor coolant sampling and analysis for dissolved oxygen is required, and (2) when limit for dissolved oxygen, specified in TS 4.4.7, applies. This temperature limit is increased from 180 EF to 250 EF.

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

Sincerely,

/RA/

Chandu P. Patel, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosures:

1. Amendment No. 120 to NPF-63
2. Safety Evaluation

cc w/encl: See next page

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CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-400

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.120
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 June 20, 2005, as supplemented by letter dated November 2, 2005, 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.120, 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Michael L. Marshall, Jr., Branch Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 8, 2006

ATTACHMENT TO LICENSE AMENDMENT NO.120

FACILITY OPERATING LICENSE NO. NPF-63

DOCKET NO. 50-400

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

3/4 4-27

3/4 4-28

Insert Pages

3/4 4-27

3/4 4-28

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 120 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 June 20, 2005, as supplemented by letter dated November 2, 2005, the Carolina Power & Light Company (the licensee) submitted a request for changes to the Shearon Harris Nuclear Power Plant, Unit 1(HNP), Technical Specifications (TS). The amendment would revise the footnotes in Tables 3.4-2 and 4.4-3 of TS 3/4.4.7 by increasing the temperature limit above which (1) reactor coolant sampling and analysis for dissolved oxygen is required, and (2) when limit for dissolved oxygen, specified in TS 4.4.7, applies. This temperature limit will be increased from 180 EF to 250 EF.

The November 2, 2005, letter provided clarifying information that was within the scope of the initial notice and did not change the initial proposed no significant hazards consideration determination.

2.0 REGULATORY EVALUATION

In evaluating the licensee's request, the Nuclear Regulatory Commission (NRC) staff used previous precedent amendment requests and the guidance provided in the Standard Technical Specifications for Westinghouse Pressurized Water Reactors (NUREG-0452, Revision 4). The NRC staff also considered the industry guidelines for primary water chemistry in Pressurized Water Reactors.

3.0 TECHNICAL EVALUATION

TS 3/4.4.7 requires maintaining the reactor coolant chemistry as specified in Table 3.4-2 and its surveillance requirement as specified in Table 4.4-3. Currently, Surveillance Requirement 4.4.7 requires sampling and analysis of reactor coolant for dissolved oxygen whenever average temperature (T_{avg}) is greater than 180 EF. The licensee has proposed to revise these surveillance requirements by raising this temperature limit to 250 EF. The licensee indicated that this change is consistent with current industry guidelines and practices for control of reactor

coolant dissolved oxygen and that the change will enhance operational flexibility when returning the plant to service from cold shutdown conditions.

The purpose of the temperature limit for Reactor Coolant System (RCS) oxygen control is to minimize the corrosion effect at high temperatures on the RCS components. At elevated temperatures, dissolved oxygen can lead to stress corrosion cracking and general corrosion of RCS components. The licensee notes that industry guidance and practice indicate that these mechanisms do not prevail at temperatures below 250 EF thus, these effects are reduced to a point of little concern at temperatures less than 250 EF and operating controls need not be implemented until the coolant exceeds this temperature. In addition, the licensee indicated that the proposed changes are consistent with Standard Westinghouse Technical Specifications and are consistent with other plants of similar size and vintage.

In order to comply with TS 3/4.4.7 the current practice at HNP requires during plant heatup, after initial removal of oxygen by venting, the introduction of hydrazine into the RCS below 180 EF to scavenge oxygen from coolant. However, because of the slow reaction rate of hydrazine with oxygen below 180 EF and because hydrazine simultaneously is decomposing rapidly, the effective removal rate of oxygen is low. Thus, it is necessary to suspend heatup above 180 EF until the concentration of dissolved oxygen is lowered to within the limit specified in Table 3.4-2.

The reaction rate of hydrazine with dissolved oxygen increases rapidly with increasing temperature. Thus, as temperature increases, the rate of oxygen scavenging relative to the hydrazine decomposition rate becomes greater and the removal of dissolved oxygen by hydrazine becomes more effective. The concentration of dissolved oxygen in the coolant could be brought into compliance with the specified limit faster if heatup could proceed above 180 EF. The licensee's proposal to increase the temperature limit to 250 EF would decrease the time needed to achieve compliance with the dissolved oxygen limit and decrease the overall time to start the unit from cold shutdown without affecting safety of the plant.

After evaluating the licensee's justifications for modification of TS 3/4.4.7, the NRC staff agrees that it will improve the operational procedure for the plant without degrading plant safety. The NRC staff also agrees that other similar Westinghouse plants have adopted similar changes. Therefore, the NRC staff finds the proposed modification of TS 3/4.4.7 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 Title 10, Code of Federal Regulations (10 CFR) Part 20 and changes the Surveillance Requirements. 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 (70 FR 59084). 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: K. Parczewski

Date: March 8, 2006

Mr. C. J. Gannon, Jr.
Carolina Power & Light Company

cc:

David T. Conley
Associate General Counsel II -
Legal Department
Progress Energy Service Company, LLC
Post Office Box 1551
Raleigh, North Carolina 27602-1551

Resident Inspector/ Harris NPS
c/o U. S. Nuclear Regulatory Commission
5421 Shearon Harris Road
New Hill, North Carolina 27562-9998

Ms. Margaret A. Force
Assistant Attorney General
State of North Carolina
Post Office Box 629
Raleigh, North Carolina 27602

Public Service Commission
State of South Carolina
Post Office Drawer 11649
Columbia, South Carolina 29211

Ms. Beverly Hall, Section Chief
Division of Radiation Protection
N.C. Department of Environment
and Natural Resources
3825 Barrett Drive
Raleigh, North Carolina 27609-7721

Mr. Chris L. Burton
Manager
Performance Evaluation and
Regulatory Affairs PEB 7
Progress Energy
Post Office Box 1551
Raleigh, North Carolina 27602-1551

Mr. Eric McCartney
Plant General Manager
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
P. O. Box 165, Mail Zone 3
New Hill, North Carolina 27562-0165

**Shearon Harris Nuclear Power Plant
Unit 1**

Mr. Robert J. Duncan II
Director of Site Operations
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
Post Office Box 165, Mail Zone 1
New Hill, North Carolina 27562-0165

Mr. Robert P. Gruber
Executive Director
Public Staff NCUC
4326 Mail Service Center
Raleigh, North Carolina 27699-4326

Chairman of the North Carolina
Utilities Commission
Post Office Box 29510
Raleigh, North Carolina 27626-0510

Mr. Herb Council, Chair
Board of County Commissioners
of Wake County
P. O. Box 550
Raleigh, North Carolina 27602

Mr. Tommy Emerson, Chair
Board of County Commissioners
of Chatham County
P. O. Box 87
Pittsboro, North Carolina 27312

Mr. Christos Kamilaris, Manager
Support Services
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
P. O. Box 165, Mail Zone 1
New Hill, North Carolina 27562-0165

Mr. David H. Corlett, Supervisor
Licensing/Regulatory Programs
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
P. O. Box 165, Mail Zone 1
New Hill, NC 27562-0165

Mr. John H. O'Neill, Jr.
Shaw, Pittman, Potts & Trowbridge
2300 N Street, NW.
Washington, DC 20037-1128