

March 19, 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. 70 TO FACILITY OPERATING LICENSE  
NO. NPF-63 REGARDING DIESEL FUEL OIL SYSTEM PRESSURE TESTING  
SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 (TAC NO. M96603)

Dear Mr. Robinson:

The Nuclear Regulatory Commission has issued Amendment No. 70 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 January 10, 1997, as supplemented January 31, February 20, and March 3, 1997.

The amendment revises Technical Specification 4.8.1.1.2 to clarify pressure testing requirements for the isolable and non-isolable portions of the diesel fuel oil piping.

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. 70 to NPF-63
- 2. Safety Evaluation

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cc w/enclosures:  
See next page  
cc: Harris Service List

\*(See SE memo dated March 7, 1997  
from GBagchi to MReinhart.)

FILENAME - G:\HARRIS\HAR96603.AMD

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DATE	3/10/97	3/11/97	3/11/97	3/11/97	3/7/97
COPY	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

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Shearon Harris Nuclear Power Plant  
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AMENDMENT NO. 70 TO FACILITY OPERATING LICENSE NO. NPF-63 - HARRIS, UNIT 1

DISTRIBUTION

Docket File

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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. 70  
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 January 10, 1997, as supplemented January 31, February 20, and March 3, 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. 70, 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: March 19, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 70

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 8-9  
B 3/4 8-2  
B 3/4 8-3

Insert Pages

3/4 8-9  
B 3/4 8-2  
B 3/4 8-3

## ELECTRICAL POWER SYSTEMS

### A.C. SOURCES

#### OPERATING

#### SURVEILLANCE REQUIREMENTS (Continued)

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##### 4.8.1.1.2 (Continued)

13. Verifying that all diesel generator trips, except engine overspeed, loss of generator potential transformer circuits, generator differential, and emergency bus differential are automatically bypassed on a simulated or actual loss of offsite power signal in conjunction with a safety injection signal.
  14. Verifying that within 5 minutes of shutting down the EDG, after the EDG has operated for at least 2 hours at an indicated load of 6200-6400 kw, the EDG starts and accelerates to  $6900 \pm 690$  volts and  $60 \pm 1.2$  hz in 10 seconds or less.
- g. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting\*\* both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 450 rpm in less than or equal to 10 seconds.
- h. At least once per 10 years by:
- 1) Draining each main fuel oil storage tank, removing the accumulated sediment, and cleaning the tank using a sodium hypochlorite solution or other appropriate cleaning solution, and
  - 2) Performing a pressure test, of those isolable portions of the diesel fuel oil piping system designed to Section III, subsection ND of the ASME Code, at a test pressure equal to 110% of the system design pressure.

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\*\*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

## ELECTRICAL POWER SYSTEMS

### BASES

#### A.C. SOURCES, D.C. SOURCES, AND ONSITE POWER DISTRIBUTION (Continued)

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that: (1) the facility can be maintained in the shutdown or refueling condition for extended time periods, and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are based upon the recommendations of Regulatory Guides 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," December 1979; 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977 as modified in accordance with the guidance of IE Notice 85-32, April 22, 1985; and 1.137, "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979. Pressure testing of the diesel generator fuel oil piping at 110% of the system design pressure will only be required on the isolable portions of (1) fuel oil transfer pump discharge piping to the day tank, (2) fuel oil supply from the day tank to the diesel vendor-supplied piping, and (3) fuel oil return piping from the diesel vendor-supplied piping to the day tank regulator valve. The exemptions allowed by ASME Code Section XI will be invoked for the atmospheric day tanks and non-isolable piping.

The inclusion of the loss of generator potential transformer circuit lockout trip is a design feature based upon coincident logic and is an anticipatory trip prior to diesel generator overspeed.

The Surveillance Requirement for demonstrating the OPERABILITY of the station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage on float charge, connection resistance values, and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates, and compares the battery capacity at that time with the rated capacity.

Table 4.8-2 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage, and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and 0.015 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than 0.020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than 0.010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

## ELECTRICAL POWER SYSTEMS

### BASES

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#### A.C. SOURCES, D.C. SOURCES, AND ONSITE POWER DISTRIBUTION (Continued)

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8-2 is permitted for up to 7 days. During this 7-day period: (1) the allowable values for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than 0.020 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity, ensures that an individual cell's specific gravity will not be more than 0.040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.

#### 3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance.

The Surveillance Requirements applicable to lower voltage circuit breakers provide assurance of breaker reliability by testing at least one representative sample of each manufacturer's brand of circuit breaker. Each manufacturer's molded case and metal case circuit breakers are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of circuit breakers, it is necessary to divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes.

The bypassing of the motor-operated valves thermal overload protection during accident conditions by integral bypass devices ensures that safety-related valves will not be prevented from performing their function. The Surveillance Requirements for demonstrating the bypassing of the thermal overload protection during accident conditions are in accordance with Regulatory Guide 1.106, "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 70 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 January 10, 1997, as supplemented January 31, February 20, and March 3, 1997, the Carolina Power & Light Company (the licensee) submitted a request for changes to the Shearon Harris Nuclear Power Plant, Unit 1 (SHNPP), Technical Specifications (TS). The requested changes would revise TS 4.8.1.1.2.h.2 which requires a pressure test of those portions of diesel fuel oil systems designed to American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME) Code Section III. In lieu of the required pressure testing, the change limits the 10-year pressure test to the isolable portions of the diesel fuel oil piping system. The January 31, February 20, and March 7, 1997, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination. Furthermore, the January 10, 1997, request supersedes the September 18, 1996, proposed request to remove TS 4.8.1.1.2.h.2 (61 FR 55029).

2.0 EVALUATION

The existing TS 4.8.1.1.2.h.2 requires a pressure test of those portions of the diesel fuel oil system designed to Section III, Subsection ND, of the ASME Code. This pressure test is required to be performed at 110% of the system design pressure at least once per 10 years.

Under the proposed change, a pressure test will still be required for: 1) the portions of the diesel fuel oil piping from main fuel oil storage tank to the day tank, 2) the portions of the diesel fuel oil supply piping from the day tank to the diesel engine vendor-supplied piping, 3) the portions of the diesel fuel oil return piping from the diesel engine vendor-supplied piping, and 4) the portions of piping between the diesel engine vendor-supplied piping and the safety relief valve. The diesel fuel oil day tank and portions of certain associated piping, and portions of connected piping to main fuel oil storage tank will not be tested at 110% of the system design pressure. As

noted in the licensee's submittal letters, the day tank and certain portions of piping will be tested in accordance with the requirements and guidance of ASME Code Section XI.

The diesel fuel oil system is designed to meet American National Standards Institute (ANSI) Standard N195-1976, which is in conformance with NRC Regulatory Guide (RG) 1.137. Section 7.4 of ANSI N195-1976 requires that piping, fittings, pipe supports, valves, tanks, pumps, and strainers be designed to the ASME Section III Code, Subsection ND. The licensee has stated that the fuel oil system at SHNPP complies with this requirement. ANSI N195-1976, Section 7.3 states, "The arrangements shall provide for inservice inspection and testing in accordance with ASME Boiler and Pressure Vessel Code, Section XI, Rules for In-Service Inspection of Nuclear Power Plant Components." The TS requirement for pressure testing the SHNPP diesel fuel oil system piping is based on Regulatory Position C.1.e(1) in Rev. 1 to RG 1.137. RG 1.137, Paragraph 1.e, states that "... an acceptable method of meeting the requirements of Section 7.3 is to ensure that the system arrangement would allow: (1) Pressure testing of the fuel-oil system to a pressure 1.10 times the system design pressure at 10-year intervals. In the case of storage tanks, recommendations of the tank vendor should be taken into account when establishing the test pressure."

The licensee indicates in its submittals that ASME Section XI, 1983 Edition with Addenda through summer 1983, Article IWD-5000, is to be used for guidance. This article allows for certain portions of piping systems to be exempt from pressure testing of the piping to 110% of the system design pressure. This includes atmospheric storage tanks, open ended portions of suction and drain lines from a storage tank extending to the first shutoff valve, open ended portions of discharge lines beyond the last shutoff valve in non-closed systems, open ended vent and drain lines from components extending beyond the last shutoff valve, and open ended safety or relief valve discharge lines.

ASME Code Section XI, Article IWD-5000, provides requirements and guidance in performing the pressure tests for Class 3 systems. IWD-5223 of ASME Section XI, Item (b) states that "In the case of atmospheric storage tanks, the hydrostatic head, developed with the tank filled to its design capacity, shall be acceptable as the test pressure," and Item (c) states that "For the purpose of the test, open ended portions of suction or drain lines from a storage tank extending to the first shutoff valve shall be considered as an extension of the storage tank." The day tank is an atmospheric tank, and the level indicator and level switch lines, portions of suction and drain lines before the first shutoff valve, and portions of the diesel fuel oil supply line before the last shutoff valve are considered to be an extension of the day tank. The licensee commits to perform the required test in accordance with ASME Code Section XI, IWD-5223(b), and proposes that the day tank and related piping be visually inspected for leaks during normal operation. In its January 31, 1997 letter, the licensee also proposes an observation of "adequate" level in the tanks to ensure the piping is full of oil during visual inspection. However, during normal operation, the day tank and associated piping may experience the test pressure as required by IWD-5223(b),

but IWD-5223(b) also requires that the oil in the tank be filled to its design level. Therefore, the staff finds the licensee's proposal acceptable provided that the proposed observation of oil level verifies that the day tank is filled to its "design" level during the pressure test and visual inspection as required by IWD-5223(b) as stated in the licensee's March 3, 1997, supplemental letter.

The main fuel oil storage tank is also an atmospheric tank, but the tank is designed to ASME Code Section VIII. Therefore, a pressure test is not required by the TS. However, portions of connected piping such as suction lines, sample lines, and pump recirculation lines are designed to ASME Code Section III, and a pressure test is required by the TS. According to IWD-5223(c), those portions of connected piping before the first shutoff valve are considered to be an extension of the main fuel oil storage tank. Similar to the day tank, the licensee commits to perform the required test in accordance with ASME Code Section XI, IWD-5223(b), and proposes that the connected piping to the main fuel oil storage tank be visually inspected for leaks during normal operation, and that an observation of adequate level in the tanks be performed to ensure the piping is full of oil during visual inspection. Based on the above day tank review, the staff finds the licensee's proposal acceptable provided that the proposed observation of oil level verifies that the main fuel oil storage tank is filled to its "design" level during the pressure test and visual inspection, in accordance with IWD-5223(b).

IWD-5223(e) of ASME Section XI states that "Open ended vent and drain lines from components extending beyond the last shutoff valve and open ended safety or relief valve discharge lines shall be exempt from hydrostatic test." Per IWD-5223(e), the vent and overflow drain lines associated with the day tanks, and the discharge lines associated with the relief valve of the diesel engine are not required to be hydrostatic tested. The licensee's proposal to exclude these lines from 110% of pressure test is, therefore, acceptable.

Table IWD-2500-1, Note (1) states that "The system boundary extends up to and including the first normally closed valve or valve capable of automatic closure as required to perform the system-related system function." The piping between the two normally closed isolation valves of the day tank floor drain is considered outside the scope of system pressure boundary, and is not required to be pressure tested by ASME Code Section XI. Therefore, it is acceptable to exclude these lines from hydrostatic test.

Based on the above evaluation, the staff finds that the proposed TS change to require only certain portions of the diesel fuel oil system to be tested every 10 years at 110% of the system design pressure meets the intent of RG 1.137 and is acceptable. However, the staff finds that the proposed observation of "adequate" oil level in the tank is not in full conformance with the requirements and guidance of ASME Code Section XI, IWD-5223(b), which requires that the oil tanks be filled to their design level during the 10-year pressure test. In a subsequent letter dated March 3, 1997, the licensee stated that it will maintain the day tanks and main diesel fuel oil storage tanks to their

design levels during the 10-year pressure test, as required by ASME Code Section XI, IWD-5223(b). This meets the requirements of ASME Section XI and; therefore, the proposed change is 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 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 (62 FR 5490). 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 Contributor: John Huang

Date: March 19, 1997