

September 27, 2007

Mr. James Scarola, Vice President
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Carolina Power & Light Company
Post Office Box 10429
Southport, North Carolina 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 - ISSUANCE OF
AMENDMENT RELATED TO MAIN FUEL OIL STORAGE TANK
(TAC NOS. MD3305 AND MD3306)

Dear Mr. Scarola:

The Commission has issued the enclosed Amendment No. 242 to Renewed Facility Operating License No. DPR-71 and Amendment No. 270 to Facility Operating License No. DPR-62 for Brunswick Steam Electric Plant, Units 1 and 2. The amendments are in response to your application dated September 28, 2006, as supplemented by letter dated September 20, 2007.

The amendments change Technical Specification 3.8.3, "Diesel Fuel Oil," to allow the main fuel oil storage tank to be taken out of service for 14 days for inspection, maintenance, and associated repair on a one-time basis.

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

Sincerely,

/RA/

Stewart N. Bailey, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-325 and 50-324

Enclosures:

1. Amendment No. 242 to
License No. DPR-71
2. Amendment No. 270 to
License No. DPR-62
3. Safety Evaluation

cc w/enclosures: See next page

Carolina Power & Light Company

Brunswick Steam Electric Plant
Units 1 and 2

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Accession Number: ML072600327 Package No.: ML072600464 TS: ML072710141 NRR-058

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* concur by memo

** with comments

OFFICIAL RECORD COPY

Letter to James Scarola from Stewart N. Bailey dated September 27, 2007

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 - ISSUANCE
OF AMENDMENT RELATED TO MAIN FUEL OIL STORAGE TANK
(TAC NOS. MD3305 AND MD3306)

AMENDMENT NO. 242 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-71,
BRUNSWICK, UNIT 1

AMENDMENT NO. 270 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-62,
BRUNSWICK, UNIT 2

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CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 242
Renewed License No. DPR-71

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by Carolina Power & Light Company (the licensee), dated September 28, 2006, as supplemented by letter dated September 20, 2007, 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 Renewed Facility Operating License No. DPR-71 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 242, are hereby incorporated in the license. Carolina Power & Light Company shall operate the facility in accordance with the Technical Specifications.

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/

Thomas H. Boyce, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Operating License
and Technical Specifications

Date of Issuance: September 27, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 242
RENEWED FACILITY OPERATING LICENSE NO. DPR-71
DOCKET NO. 50-325

Replace Page 4 of Renewed Operating License DPR-71 with the attached Page 4.

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

3.8-20

Insert Pages

3.8-20

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 270
Renewed License No. DPR-62

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by Carolina Power & Light Company (the licensee), dated September 28, 2006, as supplemented by letter dated September 20, 2007, 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 Renewed Facility Operating License No. DPR-62 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 270, are hereby incorporated in the license. Carolina Power & Light Company shall operate the facility in accordance with the Technical Specifications.

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/

Thomas H. Boyce, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
and Technical Specifications

Date of Issuance: September 27, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 270

FACILITY OPERATING LICENSE NO. DPR-62

DOCKET NO. 50-324

Replace Page 3 of Renewed Operating License DPR-62 with the attached Page 3.

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

3.8-20

Insert Pages

3.8-20

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 242 AND 270

TO RENEWED FACILITY OPERATING LICENSES NOS. DPR-71 AND DPR-62

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NOS. 50-325 AND 50-324

1.0 INTRODUCTION

By application dated September 28, 2006, as supplemented by letter dated September 20, 2007, the Carolina Power & Light Company, the licensee, requested changes to the Technical Specifications (TSs) for the Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (Brunswick).

These amendments would revise TS 3.8.3, "Diesel Fuel Oil," to allow the main fuel storage tank to be made inoperable for up to 14 days for the purpose of performing inspection, cleaning, and associated repair activities.

The supplement dated September 20, 2007, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on January 3, 2007 (72 FR 148).

2.0 BACKGROUND

As described by the licensee's September 28, 2006, application, the emergency diesel generators (EDGs) comprise a major part of emergency power supply when off-site power is lost or an event occurs. There are four EDGs that supply power to the Brunswick safety-related electrical buses. EDG 1 and EDG 2 supply emergency buses E1 and E2, respectively, and are assigned to Unit 1. EDG 3 and EDG 4 supply emergency buses E3 and E4, respectively, and are assigned to Unit 2. However, certain Unit 1 loads are supplied by emergency buses E3 and E4 and certain Unit 2 loads are supplied by emergency buses E1 and E2. As such, operability of a single EDG affects both Units 1 and 2. The emergency power system is described in the Brunswick Updated Final Safety Analysis Report (UFSAR) Section 8.3, "Onsite Power Systems."

The diesel fuel oil system is designed to supply each EDG with enough fuel oil to operate for approximately 7 days at rated load. The diesel fuel oil system is described in more detail in Brunswick UFSAR Section 8.3.1.1.6.2.8, "Fuel Oil System." The system consists, in part, of:

One main fuel oil storage tank, which contains sufficient capacity (225,000 gallons) to provide for approximately 3 days of operation for each of four EDGs at rated load.

Four Seismic Class I day fuel oil storage tanks (23,300 gallons per tank). There is one day fuel oil storage tank for each EDG, each located in its own vault. The day fuel oil storage tanks, in combination with the engine mounted fuel tanks, provide approximately 4 days of diesel generator operation at rated load. The day fuel oil storage tanks are known as the "4-day tanks."

Four Seismic Class I engine mounted fuel tanks (550 gallons per tank), one attached to each EDG.

Gravity fill is used to maintain fuel oil level in the 4-day tanks. Two redundant transfer pumps between each 4-day tank and its associated engine mounted fuel tank maintain fuel oil level in the engine mounted fuel tanks. Automatic makeup to the engine mounted fuel tanks occurs upon low level.

The UFSAR states that the main fuel oil storage tank is seismically designed but not seismically qualified. To ensure supply to the 4-day tanks following damage to the main fuel oil storage tank, fuel oil can be readily obtained by truck or rail directly to Brunswick, or by barge to local docks and off loaded into trucks for delivery to the site.

The licensee stated that, as a result of robotic tank inspections performed in July 2005, periodic draining of the main fuel oil storage tank would be the preferred method for performing inspection, cleaning, or repair activities of the tank and associated piping. However, TS 3.8.3 currently requires the diesel fuel oil level in the tank to be greater than or equal to 20,850 gallons per required EDG. When diesel fuel oil level is less than 20,850 gallons and greater than 13,900 gallons per required EDG, the licensee is allowed 48 hours to restore level. If this is not accomplished or if the diesel fuel oil level is less than 13,900 gallons, the associated EDGs must be immediately declared inoperable. These requirements do not provide sufficient time to inspect, clean, and/or repair the main fuel oil storage tank if draining of the tank is required.

Additionally, since operability of the main fuel oil storage tank affects all four EDGs, a dual unit shutdown would be required to accomplish the required inspections. Therefore, the licensee proposed new Condition A to allow the main fuel oil storage tank to be inoperable for up to 14 days for the purpose of performing inspection, cleaning, or repair activities.

The licensee's original application requested a new Condition A to TS 3.8.3, and associated editorial changes, to allow the surveillance, maintenance, or repairs on a periodic basis, as needed. By letter dated September 20, 2007, the licensee requested that the change be made on a one-time basis. As a result, instead of requesting a new Condition A to TS 3.8.3 and associated editorial changes, the licensee requested a note to TS 3.8.3 to allow the activities.

3.0 REGULATORY EVALUATION

The Nuclear Regulatory Commission's (NRC's or the Commission's) regulatory requirements related to the content of the TSs are set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, "Technical specifications." This regulation requires that the TSs

include items in five specific categories. These categories include: (1) safety limits, limiting safety system settings and limiting control settings, (2) limiting conditions for operation (LCOs), (3) surveillance requirements (SRs), (4) design features, and (5) administrative controls. Additionally, Criterion 2 of 10 CFR 50.36(c)(2)(ii) requires an LCO to be established for a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

The onsite electrical power system includes standby power sources, distribution systems, and vital auxiliary supporting systems to supply power to safety-related equipment. Most commercial nuclear power plants use diesel generators as the emergency power source for the safety-related electrical buses. The importance of the diesel generators (or other standby power sources) is reflected in their incorporation into NRC regulations, TSs, and other regulatory programs, including Appendix B (“Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants”) of 10 CFR Part 50. NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants,” addresses diesel fuel oil and other supporting systems in Section 9.5.4, “Emergency Diesel Engine Fuel Oil Storage and Transfer System Review Responsibilities.”

General Design Criterion (GDC) 17, “Electric power systems,” of Appendix A, “General Design Criteria for Nuclear Power Plants,” of 10 CFR Part 50 requires, in part, that nuclear power plants have onsite and offsite electric power systems to permit the functioning of structures, systems, and components that are important to safety. The onsite system is required to have sufficient independence, redundancy, and testability to perform its safety function, assuming a single failure. The offsite power system is required to be supplied by two physically independent circuits that are designed and located so as to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accidents, and environmental conditions. In addition, this criterion requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as a result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

GDC-18, “Inspection and testing of electric power systems,” requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing.

The proposed license amendment was not risk-informed, but did provide risk insights from the Brunswick plant-specific probabilistic risk assessment (PRA). The staff review of the licensee’s risk insights was performed in accordance with the guidance in NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants,” Chapter 19, “Use of Probabilistic Risk Assessment in Plant-Specific, Risk-Informed Decisionmaking,” Appendix D, “Use of Risk Information in Review of Non-Risk-Informed License Amendment Requests.” Appendix D provides guidance to the staff in determining if “special circumstances” exist for license amendment requests that are not risk-informed. Special circumstances would exist if, even though the application is in compliance with existing regulatory requirements, concerns associated with the application are identified regarding adequate protection. Per the guidance of Appendix D, the staff used elements of the risk-informed decision making process described in Regulatory Guide (RG) 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” to focus the review. The staff did not perform an in-depth review of the licensee’s PRA. Although

the guidance presented in RG 1.174 does not constitute a definition of adequate protection, it does provide an appropriate set of guidelines that can be used in the initial process in determining the potential for “special circumstances,” and in providing a basis for finding that there is reasonable assurance of adequate protection by compliance with the existing regulatory requirements.

4.0 TECHNICAL EVALUATION

The proposed change revises TS 3.8.3 to allow the main fuel oil storage tank to be inoperable for up to 14 days for the purpose of performing inspection, cleaning, and associated repair activities on a one-time basis. The proposed Note specifies that the licensee must confirm that the oil level in the day fuel oil storage tanks (i.e., the 4-day tanks) is greater than or equal to 22,650 gallons per required EDG before removing the main fuel oil storage tank from service, and once every 12 hours thereafter.

The licensee stated that periodic draining of the main fuel oil storage tank would be the preferable method for performing inspection, cleaning, or repair activities, and that internal tank inspection and cleaning is planned to be performed on a 10-year frequency. The licensee estimates that the required draining, inspecting/cleaning, and re-filling the main fuel oil storage tank will take 7 to 10 days. The requested 14-day completion time (CT) provides margin should the evolution take longer than expected, and eliminates the requirement for a dual unit outage to accomplish the inspections. The licensee also stated that repair activities may be associated with the main fuel oil storage tank or components associated with the supply of fuel oil from the main fuel oil storage tank to the 4-day tanks (e.g., buried piping).

In addition to supplying the four EDGs, the main fuel oil storage tank also supplies fuel to the diesel driven fire pump. The diesel driven fire pump is described in Brunswick UFSAR Section 9.5.1.4, “Fire Suppression and Propagation Control Features.” The licensee stated that the primary difference between the current plant configuration and the configuration during inspection and repair activities will be the location of the make-up diesel fuel oil supply and the operator actions required to refill the diesel driven fire pump fuel supply storage tank. Both configurations require manual operator actions to maintain an adequate fuel supply. The existing operator actions require unlocking and opening two manual isolation valves. With the main fuel oil storage tank out of service, re-supply fuel will require use of temporary hoses from the temporary on-site storage location.

The license identified compensatory measures such that the availability of the EDGs and the diesel driven fire pump are maintained when the main fuel oil storage tank is out of service. The licensee committed to the following prior to removing the main fuel oil storage tank from service:

In support of the main fuel oil storage tank inspection and cleaning activities, CP&L will establish an implementing procedure to assure that the EDGs will be able to perform their intended safety function when the main fuel oil storage tank is removed from service. This procedure will include the proposed following provisions.

- Fuel oil removed from the main fuel oil storage tank will be readily available to replenish the 4-day tanks or supply the diesel driven fire pump should the need arise.
- Elective maintenance and testing (i.e., including performance of routine surveillances), that affects EDG operability, will not be permitted when the main fuel oil storage tank is out-of-service for inspection, cleaning or repairs.
- Switchyard activities and other on-site electrical maintenance that could cause any unstable offsite or on-site power conditions will not be scheduled while the main fuel oil storage tank is removed from service.
- Removal of the main fuel oil storage tank from service will not be permitted when severe weather is forecast for the area or if there is a foreseen need for EDG operation.
- Restoration of the main fuel oil storage tank will be pursued in an expeditious manner in the event that long-term EDG operation is required.

With the main fuel oil storage tank out-of-service, re-supply fuel for the fire pump will require use of temporary hoses from the temporary on-site storage location. Appropriate procedural controls and training will be developed to ensure adequate fuel oil inventory to the diesel driven fire pump from alternate supplies.

With respect to the EDGs, the licensee will maintain on site sufficient fuel oil to operate the required EDGs for 7 days at rated load. The quality of the oil is governed by the licensee's program developed under TS 5.5.9, "Diesel Fuel Oil Testing Program." Additionally, the licensee will develop and train on procedures for filling the EDG 4-day tanks from the temporary storage location, the maintenance will not be performed when there are severe weather considerations, and the licensee will protect the off-site sources of power by limiting switchyard activities. Also, as stated in the licensee's March 31, 2006, response to Generic Letter 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power," the licensee and the transmission system operator communicate daily to discuss the status of the plant and transmission system, upcoming work activities, and operating conditions scheduled or anticipated for the next 7 days. With respect to the diesel-driven fire pump, the licensee is replacing existing manual actions with new manual actions. The licensee will develop procedures and train on the actions before the main fuel oil storage tank is taken out of service. The licensee determined that draining the main fuel oil storage tank is the preferred method for effective inspection and repair activities of the tank and associated components. The staff also notes that, if needed, additional fuel oil can be obtained from offsite sources, as discussed in the Brunswick UFSAR. Therefore, the staff concludes that there is reasonable assurance that the EDGs and diesel fire pump will be able to perform their design functions during inspection, maintenance, and associated repair activities of the main fuel oil storage tank.

The NRC staff also addressed additional risks associated with the request. As described in Section 4.0 of the submittal, the licensee evaluated extending the CT for the main fuel oil

storage tank by identifying the equipment or structures impacted by the proposed change, and then assessing whether the impacts to this equipment would cause a significant increase in either core damage frequency (CDF) or large early release frequency (LERF). The licensee identified that the only equipment modeled in the PRA impacted by the proposed change would be the EDG and the diesel-driven fire pump.

With regards to the EDG impact, the main fuel oil storage tank provides makeup to each of the four EDG 4-day tanks, via a gravity feed. The flowpath is normally isolated, and operator action is procedurally required to refill the 4-day tanks. Each EDG has sufficient fuel to operate at rated load for four days without requiring any makeup from the main fuel oil storage tank. Loss of offsite power (LOOP) events with durations exceeding four days are not common, and the licensee identified only one such event occurring in the industry since 1990, which involved a hurricane. The licensee identified that makeup to the 4-day tanks would be available using a temporary, on-site storage facility during the time the main fuel oil storage tank was unavailable. In the event of a prolonged LOOP lasting more than four days, additional fuel oil would be available on site from this temporary storage facility. Therefore, the risk impact of the proposed CT extension due to the impacts to the EDGs is considered to be insignificant, since the fuel oil could still be supplied to each of the EDGs, which is the only function of the main fuel oil storage tank for the EDGs in the PRA model.

With regards to the diesel-driven fire pump, the PRA model includes a manual operator action to refuel the diesel-driven fire pump fuel tank. The primary differences between the normal plant configuration with the main fuel oil storage tank available and the configuration during the extended CT are the location of the makeup fuel oil supply and the actions required to refill the tank. The existing operator actions require unlocking and opening two manual isolation valves. With the main fuel oil storage tank out of service, re-supply fuel for the fire pump will require use of temporary hoses from the temporary on-site storage location. The licensee identified that appropriate procedures and training will be developed to address these actions. Therefore, the risk impact of the proposed CT extension due to the impacts to the diesel-driven fire pump is considered to be insignificant.

The staff finds that the licensee's approach and analyses to address the risks associated with the proposed license amendment are reasonable and demonstrate that the risk increases due to implementation of the proposed license amendment are expected to be very small and within the acceptance guidelines of RG 1.174. Therefore, the staff concludes that the proposed license amendment does not introduce a level of risk that would rebut the presumption of adequate protection provided by the licensee meeting the deterministic requirements and regulations.

The NRC staff finds that reasonable controls for implementing the above regulatory commitments, and for subsequent evaluation of changes to the above regulatory commitments, are best provided by the licensee's administrative processes, including its commitment management program. The above regulatory commitments do not warrant the creation of regulatory requirements (items requiring prior NRC approval of subsequent changes).

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 amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change 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 change the Surveillance Requirements. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (72 FR 148). Accordingly, the amendments meet 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 amendments.

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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: S. Bailey
A. Howe

Date: September 27, 2007