50-324/325

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

April 24, 1995

Mr. R. A. Anderson
Carolina Power & Light Company
Brunswick Steam Electric Plant
Post Office Box 10429
Southport, North Carolina 28461

SUBJECT: CORRECTIONS TO AMENDMENT NO. 176 TO FACILITY OPERATING LICENSE NO. DPR-71 AND AMENDMENT NO. 207 TO FACILITY OPERATING LICENSE NO. DPR-62 REGARDING ELIMINATION OF THE MAIN STEAM LINE RADIATION MONITOR SCRAM AND ISOLATION FUNCTIONS - BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 (TAC NOS. M90573 AND M90574)

Dear Mr. Anderson:

On March 31, 1995, the Nuclear Regulatory Commission issued Amendment No. 176 to Facility Operating License No. DPR-71 and Amendment No. 207 to Facility Operating License No. DPR-62. The amendments changed the Technical Specifications in response to your submittal dated September 30, 1994, as supplemented on March 24, 1995. The amendments eliminated the reactor scram and isolation functions of the main steam line radiation monitors.

Due to an administrative error, these amendments were issued with incorrect dates specified for amendment effectiveness and implementation. These dates have been revised, and the affected pages are enclosed.

Additionally, a potentially confusing statement concerning the condenser off-gas monitor alarm setpoint has been removed from the Safety Evaluation (SE) related to these amendments. As a result, the SE now clearly shows that the NRC's approval of these amendments is based, in part, upon your commitment to

DF01

reduce the setpoint for this monitor to 1.5 times the nominal nitrogen-16 background but not less than 1.5 R/hr. A revised copy of the SE is also enclosed.

Sincerely,

(Original Signed By)

David C. Trimble, Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-325
and 50-324

Enclosures:
1. Amendment No. 176 to License No. DPR-71
2. Amendment No. 207 to License No. DPR-62
3. Safety Evaluation

cc w/enclosures: See next page

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

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 176
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 30, 1994, as supplemented on March 24, 1995, 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. 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. 176, 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 to be effective and implemented upon completion of the B11OR1 outage (refuel outage 9).

FOR THE NUCLEAR REGULATORY COMMISSION

David B. Matthews, 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 31, 1995

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

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 207
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 30, 1994, as supplemented on March 24, 1995, 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. 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. 207, 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 to be effective and implemented upon completion of the B212R1 outage (refuel outage 11).

FOR THE NUCLEAR REGULATORY COMMISSION

David B. Matthews, 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 31, 1995

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 176 TO FACILITY OPERATING LICENSE NO. DPR-71

AND AMENDMENT NO. 207 TO FACILTY OPERATING LICENSE NO. 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 letter dated September 30, 1994, as supplemented on March 24, 1995, Carolina Power & Light Company (CP&L) submitted a request to amend the Brunswick Steam Electric Plant, Units 1 and 2, (Brunswick) Technical Specifications (TS). The March 24, 1995, supplement provided clarifying information only and did not affect the NRC's determination of no significant hazards consideration. The proposed amendment will eliminate the main steam line radiation monitor (MSLRM) scram and isolation functions. As a result of the proposed amendment, the reactor scram, main steam isolation valves (MSIVs) closure, main steam line (MSL) drain valve closure, reactor water sample line isolation, and mechanical vacuum line isolation on a "High-High" radiation signal from the MSLRM will be removed from the TS. The MSLRM signal for the reactor water sample line isolation will be replaced with a low condenser vacuum signal. An isolation signal from the main stack radiation monitor will be provided for the mechanical vacuum pump line. This request was submitted as the plant specific portion which, in conjunction with the General Electric Company Licensing Topical Report NEDO-31400 and the NRC staff's May 15, 1991, Safety Evaluation (SE) on this topical report, formed the basis for the package to be evaluated.

The licensee states that elimination of this trip function would result in a reduced potential for unnecessary reactor shutdowns and engineered safety features actuations caused by spurious MSLRM "High-High" signals and would increase plant operational flexibility without compromising plant safety. The licensee's proposed changes are based on the May 1987 BWR Owners' Group Licensing Topical Report NEDO-31400[1] and on NRC's NUREG-0800[2].

In NEDO-31400, a reevaluation of the role of the MSLRM in the control rod drive accident (CRDA) analysis was performed, confirming that removal of the

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[1] NEDO-31400, "Safety Evaluation for Eliminating the Boiling Water Reactor Main Steam Line Isolation Valve Closure Function and Scram Function of the Main Steam Radiation Monitor".

[2] NUREG-0800, Standard Review Plan (SRP) 15.4.9, Rev.2, July 1981.

MSLRM scram/isolation features would not compromise CRDA consequences. The topical report also evaluated the potential effect on occupational exposure in the event of a sudden release of radioactive material from the fuel and concluded that the elimination of the scram/isolation features would have no adverse effect.

Specifically, the licensee proposed the following changes for the TS for Units 1 and 2:

1. All references to the MSLRM automatic shutdown features have been deleted from Tables 2.2.1-1, 3.3.1-1 and 4.3.1-1.

2. All references to the MSLRM isolation function of the main steam lines have been deleted from Table 3.3.2-1, and 4.3.2-1.

3. The Bases for 2.2, Limiting Safety System Settings, have been amended to reflect the deletion of the main steam line radiation automatic reactor shutdown function and closure of the MSIVs.

4. The Actions and Notes items for Tables 2.2.1-1, Reactor Protection System Instrumentation Setpoints; 3.3.1-1, Reactor Protection System Instrumentation Actions; 4.3.1-1, Reactor Protection System Instrumentation Surveillance Requirements Notes; and 4.3.2-1, Isolation Actuation Instrumentation Surveillance Requirements Notes; have been amended to reflect the deletion of the main steam line radiation monitor automatic reactor shutdown and isolations.

2.0 EVALUATION

The MSLRM consists of four redundant radiation detectors located on the outside of the MSLs and external to the primary containment. The MSLRM was designed to provide an early indication of gross fuel cladding failures. The original intent of this monitor was to mitigate the releases of the detected fuel failure by providing a scram signal to terminate the initiating event and a MSIV closure signal to assure containment of the release. However, no credit is taken for the automatic reactor scram due to high radiation in the MSLs in any design basis event.

The only design basis accident in which either the MSLRM scram or MSIV isolation functions are mentioned is the control rod drop accident. To be consistent with Section 15.4.9 of the Standard Review Plan (SRP), all of the postulated radioactive material is assumed to be released to the condenser and turbine before the isolation occurs. Hence, no credit is assumed for the automatic isolation resulting from the MSLRM signal, and the resultant dose consequences from the control rod drop accident will remain unchanged. However, since the alarm function will be retained, an operator can initiate a manual closure of the MSIV after confirming a high radiation level in the MSLs. Additionally, upon a main stack high radiation signal, the mechanical vacuum pumps (MVPs) for the main condenser will automatically trip, and the MVP line will isolate. The MVPs are only in service at plant power levels of less than 5 percent. Above 5 percent power the offgas line from the

condenser will isolate automatically on a high radiation signal from a radiation monitor located on the offgas line.

In a May 15, 1991, Safety Evaluation on NEDO-31400, the staff concluded that removal of the MSLRM trips that automatically shutdown the reactor and close the main steam isolation valves was acceptable and that Licensing Topical Report NEDO-31400 may be referenced in support of an amendment request as long as the following three conditions were met:

1. The applicant demonstrates that the assumptions with regard to input values (including power per assembly, X/Q, and decay times) that are made in generic analysis bound those for the plant.

The licensee, in response to Condition 1, has provided two tables showing: a comparison of key input parameters and a comparison of the dose assessment between Brunswick design basis and NEDO-31400 analysis assumptions. The specific power level is used to determine the source term. This factor is offset by the lower calculated power for the failed fuel rods. The licensee also considered the two hour exclusion area boundary doses for the CRDA. The Brunswick site-specific atmospheric dispersion factor was lower than the value used in NEDO-31400. The other parameters are the same or more conservative than the NEDO-31400 values. Based on the above, the staff agrees that the generic analysis of the Licensing Topical Report is bounding for Brunswick. The staff finds that the licensee's analysis has met the applicable requirements of Condition 1, and is, therefore, acceptable.

2. The applicant includes evidence (implemented or proposed operating procedures, or equivalent commitments) to provide reasonable assurance that increased significant levels of radioactive material in the main steam lines will be controlled expeditiously to limit both occupational doses and effluent releases.

In the response to Condition 2, the licensee has in place the Offsite Dose Calculation Manual (ODCM), a Radiation Protection Program, including an ALARA program, and a Radiological Environmental Monitoring Program. Existing annunciator procedures for the MSLRM "High Radiation" annunciator and the condenser off-gas "High Radiation" annunciator initiate actions through emergency operating procedures which ensure that significant levels of radiation in the MSLs are controlled expeditiously to limit both occupational doses and environmental releases. Brunswick's emergency operating procedures will be revised as necessary to incorporate specific considerations to change isolation of the MSLs from an automatic to a manual function. Thus any significant increase in the levels of radioactivity in the MSLs will continue to be promptly controlled to limit effluent releases and on-site occupational exposure.

The MSLRM alarm setpoint of 1.5 times the normal full power background will be used to initiate sampling and surveillance actions. Confirmation of elevated activity will cause administrative controls to be implemented that ensure offsite and onsite doses are maintained ALARA. Manual action to close the MSLs and shutdown the reactor will occur when all the evidence has indicated the need for isolation and shutdown. Also, procedures will require immediate

notification of radiation protection and chemistry upon annunciation in the control room of the high radiation alarm of the MSLRM or offgas radiation monitor. The NRC staff concludes that the licensee's commitment is acceptable and responsive to Condition 2 that was addressed in the Topical Report NEDO-31400.

3. The applicant standardizes the MSLRM and offgas radiation monitor alarm setpoint at 1.5 times the nominal nitrogen-16 background dose rate at the monitor locations, and commits to promptly sample the reactor coolant to determine possible contamination levels in the plant reactor coolant and the need for additional corrective actions, if either the MSLRM or offgas radiation monitors or both exceed their alarm setpoint.

In response to Condition 3, CP&L will maintain the MSLRM alarm setpoint at 1.5 times the normal full power nitrogen-16 (N-16) background dose rate. CP&L will reduce the condenser off-gas monitor alarm setpoint to 1.5 times the nominal N-16 background but not less than 1.5 R/hr. This alarm will trigger entry into a procedure which will require a reactor coolant sample to be obtained and analyzed (TS 3.4.5.b.2). The alarm setpoint accounts for the normal full power N-16 carryover, due to hydrogen water chemistry, at the monitor location. The offgas radiation monitor is a more sensitive monitor than the MSLRM because the N-16, dominating the radiation signal to the MSLRM, has decayed by the time the offgas radiation monitor can be affected by any increased levels of activity. Therefore, setting the offgas radiation monitor at 1.5 times the N-16 background dose rate can lead to spurious activations of the alarm. The offgas radiation monitor alarm is set to satisfy Brunswick TS 3.4.5.b.2, which is based on the ODCM. The offgas monitor setpoint provides assurance that the total body exposure to an individual at the exclusion area boundary will not exceed the dose reference values of 10 CFR Part 100. Based on a review of the licensee's commitment, the NRC staff has determined that Condition 3 has been satisfied.

Based on a review of the CP&L submittals and safety analysis, the NRC staff concludes that there are no adverse safety implications associated with removal of the MSLRM scram and MSIV closure function because the licensee has provided reasonable assurance that the offsite radiation exposure levels are within the reference values of 10 CFR Part 100 and SRP 15.4.9. The NRC staff concludes that the proposed changes to eliminate the reactor scram and MSIV requirements associated with the MSLRMs 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 amendments. The State official had no comments.

4.0 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 changes 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 (59 FR 55867). 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.

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

Principal Contributor: J. Minns

Date: March 31, 1995