February 6, 1990

Docket Nos. 50-325
and 50-324

DISTRIBUTION
See attached list

Mr. Lynn W. Eury
Executive Vice President
Power Supply
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Eury:

SUBJECT: ISSUANCE OF AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NO. DPR-71 AND AMENDMENT NO. 171 TO FACILITY OPERATING LICENSE NO. DPR-62 - BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2, REGARDING MAIN STEAM LINE RADIATION MONITOR SETPOINT CHANGE WHILE WATER CHEMISTRY SYSTEM IS IN SERVICE (TAC NOS. 75136/75137)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 139 to Facility Operating License No. DPR-71 and Amendment No. 171 to Facility Operating License No. DPR-62, for Brunswick Steam Electric Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your submittal dated October 19, 1989, as supplemented January 5, 1990.

The amendments change the Technical Specifications to add a footnote to Tables 2.2.1-1 and 3.3.2-2 for the adjustment of the main steam line radiation monitors trip setpoints to compensate for the increased background radiation levels while the hydrogen water chemistry system (HWC) is in service. The staff has reviewed your submittals and concludes that the proposed changes associated with the permanent HWC system is acceptable.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's 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. 139 to License No. DPR-71
2. Amendment No. 171 to License No. DPR-62
3. Safety Evaluation

cc w/enclosures:
See next page

9002130328 900206
PDR ADOCK 05000324
P PDC

DF01

OFC	:LA:PD21:DRPR	:PM:PD21:DRPR	:(A)D:PD21:DRPR	:	:	:
NAME	: PAnderson	:NLe:sw	: Eleutigny	:	:	:
DATE	:2/10/90	:2/6/90	:2/6/90	:	:	:

OFFICIAL RECORD COPY

AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NO. DPR-71 - BRUNSWICK, UNIT 1
AMENDMENT NO. 171 TO FACILITY OPERATING LICENSE NO. DPR-62 - BRUNSWICK, UNIT 2

Docket File
NRC PDR
Local PDR
Brunswick File
S. Varga (14E4)
G. Lainas
E. Adensam
P. Anderson
E. Tourigny
N. Le
L.Spessard (MNBB 3701)
OGC
D. Hagan (MNBB 3302)
E. Jordan (MNBB 3302)
G. Hill (4) (P1-137)
W. Jones (P-130A)
J. Calvo (11D3)
F. Witt
ACRS (10)
GPA/PA
ARM/LFMB

cc: Licensee/Applicant Service List

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

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 139
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 October 19, 1989, as supplemented January 5, 1990, 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:

9002130332 900206
PDR ADOCK 05000324
P PDC

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 139 , 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

Original Signed By:

E. G. Tourigny, 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: February 6, 1990

OFC	:LA:PD21:DRPR	:PM:PD21:DRPR	:OGC	:(A)D:PD21:DRPR	:	: :
NAME	: PAnderson	:NLe:sw	:RBachmann	:ETourigny:		
DATE	:1/24/90	:1/24/90	:1/30/90	:1/24/90	:	:

OFFICIAL RECORD COPY

ATTACHMENT TO LICENSE AMENDMENT NO. 139

FACILITY OPERATING LICENSE NO. DPR-71

DOCKET NO. 50-325

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

Remove Pages	Insert Pages
2-4	2-4
2-5	2-5
B 2-6	B 2-6
3/4 3-18	3/4 3-18
3/4 3-22	3/4 3-22

TABLE 2.2.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1. Intermediate Range Monitor, Neutron Flux - High[a]	≤ 120 divisions of full scale	≤ 120 divisions of full scale
2. Average Power Range Monitor		
a. Neutron Flux - High, 15%[b]	≤ 15% of RATED THERMAL POWER	≤ 15% of RATED THERMAL POWER
b. Flow-Biased Neutron Flux - High[c][d]	≤ (0.66 W + 54%)	≤ (0.66 W + 54%)
c. Fixed Neutron Flux - High[d]	≤ 120% of RATED THERMAL POWER	≤ 120% of RATED THERMAL POWER
3. Reactor Vessel Steam Dome Pressure - High	≤ 1045 psig	≤ 1045 psig
4. Reactor Vessel Water Level - Low, Level 1	≥ +162.5 inches[g]	≥ +162.5 inches[g]
5. Main Steam Line Isolation Valve - Closure[e]	≤ 10% closed	≤ 10% closed
6. Main Steam Line Radiation - High[h]	≤ 3 x full power background	≤ 3.5 x full power background
7. Drywell Pressure - High	≤ 2 psig	≤ 2 psig
8. Scram Discharge Volume Water Level - High	≤ 109 gallons	≤ 109 gallons
9. Turbine Stop Valve - Closure[f]	≤ 10% closed	≤ 10% closed
10. Turbine Control Valve Fast Closure, Control Oil Pressure - Low[f]	≥ 500 psig	≥ 500 psig

TABLE 2.2.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

NOTES

(a) The Intermediate Range Monitor scram functions are automatically bypassed when the reactor mode switch is placed in the Run position and the Average Power Range Monitors are on scale.

(b) This Average Power Range Monitor scram function is a fixed point and is increased when the reactor mode switch is placed in the Run position.

(c) The Average Power Range Monitor scram function is varied, Figure 2.2.1-1, as a function of recirculation loop flow (W). The trip setting of this function must be maintained in accordance with Specification 3.2.2.

(d) The APRM flow-biased high neutron flux signal is fed through a time constant circuit of approximately 6 seconds. The APRM fixed high neutron flux signal does not incorporate the time constant, but responds directly to instantaneous neutron flux.

(e) The Main Steam Line Isolation Valve-Closure scram function is automatically bypassed when the reactor mode switch is in other than the Run position.

(f) These scram functions are bypassed when THERMAL POWER is less than 30% of RATED THERMAL POWER.

(g) Vessel water levels refer to REFERENCE LEVEL ZERO.

(h) The Hydrogen Water Chemistry (HWC) system shall not be placed in service until reactor power reaches 20% of RATED THERMAL POWER. After reaching 20% of RATED THERMAL POWER, the normal full power background radiation level and associated trip setpoints may be increased to compensate for increased radiation levels as a result of full power operation with hydrogen injection. Prior to decreasing power below 20% of RATED THERMAL POWER and after the HWC system has been shut off, the background level and associated setpoint shall be returned to the normal full power values. Control rod motion shall be suspended, when the reactor power is below 20% of RATED THERMAL POWER, until the necessary adjustment is made (except for scram or other emergency action).

3. Reactor Vessel Steam Dome Pressure-High (Continued)

pressure measurement compared to the highest pressure that occurs in the system during a transient. This setpoint is effective at low power/flow conditions when the turbine stop valve closure is bypassed. For a turbine trip under these conditions, the transient analysis indicates a considerable margin to the thermal hydraulic limit.

4. Reactor Vessel Water Level-Low, Level #1

The reactor water level trip point was chosen far enough below the normal operating level to avoid spurious scrams but high enough above the fuel to assure that there is adequate water to account for evaporation losses and displacement of cooling following the most severe transients. This setting was also used to develop the thermal-hydraulic limits of power versus flow.

5. Main Steam Line Isolation Valve-Closure

The low-pressure isolation of the main steam line trip was provided to give protection against rapid depressurization and resulting cooldown of the reactor vessel. Advantage was taken of the shutdown feature in the run mode which occurs when the main steam line isolation valves are closed, to provide for reactor shutdown so that high power operation at low pressures does not occur. Thus, the combination of the low-pressure isolation and isolation valve closure reactor trip with the mode switch in the Run position assures the availability of neutron flux protection over the entire range of the Safety Limits. In addition, the isolation valve closure trip with the mode switch in the Run position anticipates the pressure and flux transients which occur during normal or inadvertent isolation valve closure.

6. Main Steam Line Radiation - High

The Main Steam Line Radiation detectors are provided to detect a gross failure of the fuel cladding. When the high radiation is detected, a scram is initiated to reduce the continued failure of fuel cladding. At the same time, the Main Steam Line Isolation Valves are closed to limit the release of fission products. The trip setting is high enough above background radiation levels to prevent spurious scrams, yet low enough to promptly detect gross failures in the fuel cladding.

The Main Steam Line Radiation detectors setpoints may be adjusted prior to placing the hydrogen water chemistry (HWC) system in service. If the setpoints are adjusted, the HWC system shall be placed in service or the setpoints shall be returned to the normal full power values within 24 hours. If the HWC system is not placed in service and the setpoints are not readjusted within 24 hours, control rod motion shall be suspended (except for scram or other emergency action) until the necessary adjustments are made. Hydrogen injection may cause the radiation levels in the main steam lines to increase. After shutting off the HWC system or decreasing power, the setpoints shall be returned to the normal full power values.

The Technical Specification wording was derived using the EPRI "Guidelines for Permanent BWR Hydrogen Water Chemistry Installations, 1987 Revision".

TABLE 3.3.2-2

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. PRIMARY CONTAINMENT ISOLATION		
a. Reactor Vessel Water Level -		
1. Low Level 1	$\geq$ + 162.5 inches[a]	$\geq$ + 162.5 inches[a]
2. Low Level 2	$\geq$ + 112 inches[a]	$\geq$ + 112 inches[a]
3. Low Level 3	$\geq$ + 2.5 inches[a]	$\geq$ + 2.5 inches[a]
b. Drywell Pressure - High	$\leq$ 2 psig	$\leq$ 2 psig
c. Main Steam Line		
1. Radiation - High	$\leq$ 3 x full power background[c]	$\leq$ 3.5 x full power background[c]
2. Pressure - Low	$\geq$ 825 psig	$\geq$ 825 psig
3. Flow - High	$\leq$ 140% of rated flow	$\leq$ 140% of rated flow
d. Main Steam Line Tunnel Temperature - High	$\leq$ 200°F	$\leq$ 200°F
e. Condenser Vacuum - Low	$\geq$ 7 inches Hg vacuum	$\geq$ 7 inches Hg vacuum
f. Turbine Building Area Temp - High	$\leq$ 200°F	$\leq$ 200°F
g. Main Stack Radiation - High	(b)	(b)

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
5. SHUTDOWN COOLING SYSTEM ISOLATION		
a. Reactor Vessel Water Level - Low Level 1	$\geq$ 162.5 inches[(a)]	$\geq$ 162.5 inches[(a)]
b. Reactor Steam Dome Pressure - High	$\leq$ 140 psig	$\leq$ 140 psig

(a) Vessel water levels refer to REFERENCE LEVEL ZERO.

(b) Establish alarm/trip setpoints per the methodology contained in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

(c) The Hydrogen Water Chemistry (HWC) system shall not be placed in service until reactor power reaches 20% of RATED THERMAL POWER. After reaching 20% of RATED THERMAL POWER, the normal full power background radiation level and associated trip setpoints may be increased to compensate for increased radiation levels as a result of full power operation with hydrogen injection. Prior to decreasing power below 20% of RATED THERMAL POWER and after the HWC system has been shut off, the background level and associated setpoint shall be returned to the normal full power values. Control rod motion shall be suspended, when the reactor power is below 20% of RATED THERMAL POWER, until the necessary adjustment is made (except for scram or other emergency action).

Amendment No. 69,122,132,139

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

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 171
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 October 19, 1989, as supplemented January 5, 1990, 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. 171 , 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

Original Signed By:

E. G. Touringy, 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: February 6, 1990

OFC	:LA:PD21:DRPR	:PM:PD21:DRPR	:OGC	:(A)D:PD21:DRPR	:	: :
NAME	: PAnderson	:NLe:sw:	: RBachmann	:ETouringy	:	:
DATE	:1/24/90	:1/24/90	:1/30/90	:1/31/90	:	:

OFFICIAL RECORD COPY w/Changes to SE p. 2

ATTACHMENT TO LICENSE AMENDMENT NO. 171

FACILITY OPERATING LICENSE NO. DPR-62

DOCKET NO. 50-324

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

Remove Pages	Insert Pages
2-4	2-4
2-5	2-5
B 2-6	B 2-6
3/4 3-18	3/4 3-18
3/4 3-22	3/4 3-22

TABLE 2.2.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1. Intermediate Range Monitor, Neutron Flux - High[a]	≤ 120 divisions of full scale	≤ 120 divisions of full scale
2. Average Power Range Monitor		
a. Neutron Flux - High, 15%[b]	≤ 15% of RATED THERMAL POWER	≤ 15% of RATED THERMAL POWER
b. Flow Biased Neutron Flux - High[c][d]	≤ (0.66 W + 54%)	≤ (0.66 W + 54%)
c. Fixed Neutron Flux - High[d]	≤ 120% of RATED THERMAL POWER	≤ 120% of RATED THERMAL POWER
3. Reactor Vessel Steam Dome Pressure - High	≤ 1045 psig	≤ 1045 psig
4. Reactor Vessel Water Level - Low, Level 1	≥ +162.5 inches[g]	≥ +162.5 inches[g]
5. Main Steam Line Isolation Valve - Closure[e]	≤ 10% closed	≤ 10% closed
6. Main Steam Line Radiation - High[h]	≤ 3 x full power background	≤ 3.5 x full power background
7. Drywell Pressure - High	≤ 2 psig	≤ 2 psig
8. Scram Discharge Volume Water Level - High	≤ 109 gallons	≤ 109 gallons
9. Turbine Stop Valve - Closure[f]	≤ 10% closed	≤ 10% closed
10. Turbine Control Valve Fast Closure, Control Oil Pressure - Low[f]	≥ 500 psig	≥ 500 psig

Amendment No. 92, 78, 97, 131, 160, 168, 171

TABLE 2.2.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

NOTES

(a) The Intermediate Range Monitor scram functions are automatically bypassed when the reactor mode switch is placed in the Run position and the Average Power Range Monitors are on scale.

(b) This Average Power Range Monitor scram function is a fixed point and is increased when the reactor mode switch is placed in the Run position.

(c) The Average Power Range Monitor scram function is varied, Figure 2.2.1-1, as a function of recirculation loop flow (W). The trip setting of this function must be maintained in accordance with Specification 3.2.2.

(d) The APRM flow-biased high neutron flux signal is fed through a time constant circuit of approximately 6 seconds. The APRM fixed high neutron flux signal does not incorporate the time constant, but responds directly to instantaneous neutron flux.

(e) The Main Steam Line Isolation Valve-Closure scram function is automatically bypassed when the reactor mode switch is in other than the Run position.

(f) These scram functions are bypassed when THERMAL POWER is less than 30% of RATED THERMAL POWER.

(g) Vessel water levels refer to REFERENCE LEVEL ZERO.

(h) The Hydrogen Water Chemistry (HWC) system shall not be placed in service until reactor power reaches 20% of RATED THERMAL POWER. After reaching 20% of RATED THERMAL POWER, the normal full power background radiation level and associated trip setpoints may be increased to compensate for increased radiation levels as a result of full power operation with hydrogen injection. Prior to decreasing power below 20% of RATED THERMAL POWER and after the HWC system has been shut off, the background level and associated setpoint shall be returned to the normal full power values. Control rod motion shall be suspended, when the reactor power is below 20% of RATED THERMAL POWER, until the necessary adjustment is made (except for scram or other emergency action).

3. Reactor Vessel Steam Dome Pressure-High (Continued)

pressure measurement compared to the highest pressure that occurs in the system during a transient. This setpoint is effective at low power/flow conditions when the turbine stop valve closure is bypassed. For a turbine trip under these conditions, the transient analysis indicates a considerable margin to the thermal hydraulic limit.

4. Reactor Vessel Water Level-Low, Level #1

The reactor water level trip point was chosen far enough below the normal operating level to avoid spurious scrams but high enough above the fuel to assure that there is adequate water to account for evaporation losses and displacement of cooling following the most severe transients. This setting was also used to develop the thermal-hydraulic limits of power versus flow.

5. Main Steam Line Isolation Valve-Closure

The low-pressure isolation of the main steam line trip was provided to give protection against rapid depressurization and resulting cooldown of the reactor vessel. Advantage was taken of the shutdown feature in the run mode which occurs when the main steam line isolation valves are closed, to provide for reactor shutdown so that high power operation at low pressures does not occur. Thus, the combination of the low-pressure isolation and isolation valve closure reactor trip with the mode switch in the Run position assures the availability of neutron flux protection over the entire range of the Safety Limits. In addition, the isolation valve closure trip with the mode switch in the Run position anticipates the pressure and flux transients which occur during normal or inadvertent isolation valve closure.

6. Main Steam Line Radiation - High

The Main Steam Line Radiation detectors are provided to detect a gross failure of the fuel cladding. When the high radiation is detected, a scram is initiated to reduce the continued failure of fuel cladding. At the same time, the Main Steam Line Isolation Valves are closed to limit the release of fission products. The trip setting is high enough above background radiation levels to prevent spurious scrams, yet low enough to promptly detect gross failures in the fuel cladding.

The Main Steam Line Radiation detectors setpoints may be adjusted prior to placing the hydrogen water chemistry (HWC) system in service. If the setpoints are adjusted, the HWC system shall be placed in service or the setpoints shall be returned to the normal full power values within 24 hours. If the HWC system is not placed in service and the setpoints are not readjusted within 24 hours, control rod motion shall be suspended (except for scram or other emergency action) until the necessary adjustments are made. Hydrogen injection may cause the radiation levels in the main steam lines to increase. After shutting off the HWC system or decreasing power, the setpoints shall be returned to the normal full power values.

The Technical Specification wording was derived using the EPRI "Guidelines for Permanent BWR Hydrogen Water Chemistry Installations, 1987 Revision".

TABLE 3.3.2-2

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. PRIMARY CONTAINMENT ISOLATION		
a. Reactor Vessel Water Level -		
1. Low, Level 1	$\geq$ + 162.5 inches[a]	$\geq$ + 162.5 inches[a]
2. Low, Level 2	$\geq$ + 112 inches[a]	$\geq$ + 112 inches[a]
3. Low, Level 3	$\geq$ + 2.5 inches[a]	$\geq$ + 2.5 inches[a]
b. Drywell Pressure - High	$\leq$ 2 psig	$\leq$ 2 psig
c. Main Steam Line		
1. Radiation - High	$\leq$ 3 x full power background[c]	$\leq$ 3.5 x full power background[c]
2. Pressure - Low	$\geq$ 825 psig	$\geq$ 825 psig
3. Flow - High	$\leq$ 140% of rated flow	$\leq$ 140% of rated flow
4. Flow - High	$\leq$ 40% of rated flow	$\leq$ 40% of rated flow
d. Main Steam Line Tunnel Temperature - High	$\leq$ 200°F	$\leq$ 200°F
e. Condenser Vacuum - Low	$\geq$ 7 inches Hg vacuum	$\geq$ 7 inches Hg vacuum
f. Turbine Building Area Temp - High	$\leq$ 200°F	$\leq$ 200°F
g. Main Stack Radiation - High	(b)	(b)

Amendment No. 182, 171

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
5. SHUTDOWN COOLING SYSTEM ISOLATION		
a. Reactor Vessel Water Level - Low Level 1	$\geq$ 162.5 inches[(a)]	$\geq$ 162.5 inches[(a)]
b. Reactor Steam Dome Pressure - High	$\leq$ 140 psig	$\leq$ 140 psig

(a) Vessel water levels refer to REFERENCE LEVEL ZERO.

(b) Establish alarm/trip setpoints per the methodology contained in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

(c) The Hydrogen Water Chemistry (HWC) system shall not be placed in service until reactor power reaches 20% of RATED THERMAL POWER. After reaching 20% of RATED THERMAL POWER, the normal full power background radiation level and associated trip setpoints may be increased to compensate for increased radiation levels as a result of full power operation with hydrogen injection. Prior to decreasing power below 20% of RATED THERMAL POWER and after the HWC system has been shut off, the background level and associated setpoint shall be returned to the normal full power values. Control rod motion shall be suspended, when the reactor power is below 20% of RATED THERMAL POWER, until the necessary adjustment is made (except for scram or other emergency action).

Amendment No. 97,148,162,171

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NO. DPR-71

AND AMENDMENT NO. 171 TO FACILITY OPERATING LICENSE NO. DPR-62

CAROLINA POWER & LIGHT COMPANY, et al.

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NOS. 50-325 AND 50-324

1.0 INTRODUCTION

By letter dated October 19, 1989, as supplemented by letter dated January 5, 1990, the licensee requested to amend Brunswick Steam Electric Plant, Units 1 and 2, (Brunswick Plant) Operating Licenses DPR-71 and DPR-62, to allow the operation of a permanent hydrogen water chemistry (HWC) system. The amendment proposes revising Technical Specifications (TS) Tables 2.2.1-1 and 3.3.2-2.

The TS changes would allow permanent HWC system operation by increasing the main steam line radiation monitors (MSLRM) trip setpoints and by restricting HWC operation to power levels greater than 20% of rated thermal power.

In the October 19, 1989 initial request, the licensee proposed that within 24 hours after reactor power has decreased below 20% of rated thermal power or the HWC has been shut off, the background level and associated MSLRM setpoints shall be returned to the normal full power values. The staff performed a preliminary review and made an initial determination that the proposed change does not involve a significant hazards consideration. This finding was published in a notice of the proposed action in the Federal Register (54 FR 53202) on December 27, 1989.

In order to be consistent with other Technical Specifications at the other Boiling Water Reactor plants for the resetting of the MSLRM trip setpoints, the staff held a conference call with the licensee on January 2, 1990, and suggested that the initial request be revised. By letter dated January 5, 1990, the licensee amended the original request to provide clarification that, prior to decreasing of power below 20% of rated thermal power and after the HWC system has been shut off, the MSLRM set points shall be returned to its normal full power values. The staff has reviewed the updated information, and finds that the procedure to reset the MSLRM setpoints in the revised submittal does not significantly change the resetting of the MSLRM setpoints from the previously proposed in that the proposed time for resetting the setpoints (prior to decreasing below 20% of rated thermal power) is encompassed by that described in the notice. Therefore, the

9002130333 900206
PDR ADOCK 05000324
P PDC

staff has concluded that the additional information provided by the licensee on January 5, 1990 did not change the action noticed or alter the staff's proposed no significant hazards consideration determination published in the Federal Register.

2.0 EVALUATION

2.1 MSLRM Set Point TS Changes

The MSLRM provides reactor scram, as well as reactor vessel and primary containment isolation signals, upon detection of high activity levels in the main steam lines. Additionally, these monitors serve to limit radioactivity released in the event of fuel failures. The proposed TS adds a footnote to Tables 2.2.1-1 and 3.3.2-2 for the adjustment of the MSLRM after reaching 20% of rated thermal power to compensate for the increased background radiation levels while the HWC system is in service. The footnote also requires that prior to decreasing power level below 20% of rated thermal power and after the HWC system has been shutoff, the background level and associated set point shall be returned to the normal full power values. In addition, control rod motion shall be suspended, when the reactor power is below 20% of rated thermal power, until the necessary adjustments are made (except for scram or other emergency action). The adjustments should be based on either calculating, or preferably on actual radiation levels made during the HWC mini-test performed during January 1987.

The licensee states that the only design basis accident (DBA) which takes credit for the MSLRM trip is the DBA control rod drop accident (CRDA). Generic analysis of the CRDA has shown that fuel failures are not expected to occur from a CRDA occurring at greater than 10% power. This is primarily a result of analyses which indicate that as power increases, the severity of the CRDA decreases due to the effects of a lower rod worth and increased Doppler reactivity feedback. Since hydrogen injection will be shut-off at 20% of rated thermal power, and the increased MSLRM trip setpoint will be reduced to normal full power level when decreasing power below 20% of rated thermal power. The staff concludes that the currently approved CRDA analysis for Brunswick Steam Electric Plant, Units 1 and 2 is appropriately bounded and remains valid. The proposed TS amendments are also in accordance with the BWR Owners Group "Guidelines for Permanent Hydrogen Water Chemistry Installations - 1987 Revision," EPRI NP-5283-SR A, September 1987.

2.2 HWC Installation

The staff visited the Brunswick Plant on August 23 and 24, 1988 to review the design and installation of the permanent HWC facility. We reviewed system diagrams, piping layouts, HWC mini-test results, and walked down the system piping and components from the storage

facility to the hydrogen and oxygen injection points. The 10 CFR 50.59 package for the HWC installation was also reviewed. The hydrogen and oxygen supply facilities, hydrogen and oxygen injection systems, instrumentation and controls, and other safety considerations meet the recommendations of EPRI NP 5283-SR A, September 1987.

3.0 SUMMARY

On the basis of the above evaluation, we find that the proposed TS amendment does not affect the safety analysis of the control rod drop accident, the only accident scenario requiring the MSLRM trip, and also is in accordance with the BWR Owners Group "Guidelines for Permanent Hydrogen Water Chemistry Installations - 1987 Revision," EPRI NP-5283-SR A, September 1987. It is therefore, acceptable.

4.0 ENVIRONMENTAL CONSIDERATIONS

These amendments change a requirement with respect to installation or use of a facility component located within the restricted areas as defined in 10 CFR Part 20 and changes to the surveillance requirements. The staff has determined that these amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released off site; and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration, and there has been no public comment on such finding. Accordingly, these 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 these amendments.

5.0 CONCLUSION

The Commission made a proposed determination that this amendment involves no significant hazards consideration which was published in the Federal Register (54 FR 53202) on December 27, 1989, and consulted with the State of North Carolina. No public comments or requests for hearing were received, and the State of North Carolina did not have any comments.

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and 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: F. Witt

Dated: February 6, 1990

cc:

Mr. Russell B. Starkey, Jr.
Vice President
Brunswick Nuclear Project
P. O. Box 10429
Southport, North Carolina 28461

Mr. R. E. Jones, General Counsel
Carolina Power & Light Company
P. O. Box 1551
Raleigh, North Carolina 27602

Ms. Frankie Rabon
Board of Commissioners
P. O. Box 249
Bolivia, North Carolina 28422

Resident Inspector
U. S. Nuclear Regulatory Commission
Star Route 1
P. O. Box 208
Southport, North Carolina 28461

Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, Suite 2900
Atlanta, Georgia 30323

Mr. Dayne H. Brown, Director
Division of Radiation Protection
N. C. Department of Environmental,
Commerce and Natural Resources
P. O. Box 27687
Raleigh, North Carolina 27611-7687

Mr. J. L. Harness
Plant General Manager
Brunswick Steam Electric Plant
P. O. Box 10429
Southport, North Carolina 28461

Mr. H. A. Cole
Special Deputy Attorney General
State of North Carolina
P. O. Box 629
Raleigh, North Carolina 27602

Mr. Robert P. Gruber
Executive Director
Public Staff - NCUC
P. O. Box 29520
Raleigh, North Carolina 27626-0520