August 6, 1985

Docket Nos. 50-325/324

Mr. E. E. Utley
Senior Executive Vice President
Power Supply and Engineering & Construction
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Utley:

The Commission has issued the enclosed Amendment Nos. 89 and 114 to Facility Operating License Nos. DPR-71 and DPR-62 for the Brunswick Steam Electric Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your submittal of April 9, 1985.

The amendments change the Technical Specifications (TS) to permit loading of up to four fuel bundles around each source range monitor, if needed, in order to obtain the required minimum count rate.

A copy of the related Safety Evaluation is also enclosed.

Sincerely,

Original signed by/

Marshall Grotenhuis, Project Manager
Operating Reactors Branch #2
Division of Licensing

Enclosures:
1. Amendment No. 89 to License No. DPR-71
2. Amendment No. 114 to License No. DPR-62
3. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION	HRichings			
Docket File	SNorris	BGrimes		OPA, CMiles
NRC PDR	MGrotenhuis	TBarnhart (8)		RDiggs
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07/24/85	07/ /85	07/30/85	08/ /85	08/ /85

Mr. E. E. Utley
Carolina Power & Light Company
Brunswick Steam Electric Plant, Units 1 and 2

cc:

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

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 89
License No. DPR-71

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Carolina Power & Light Company (the licensee) dated April 9, 1985, 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. 89, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 6, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 89

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 vertical lines.

Pages
1-7
3/4 9-3
3/4 9-4
B 3/4 1-1
B 3/4 9-1

DEFINITIONS

SHUTDOWN MARGIN

SHUTDOWN MARGIN shall be the amount of reactivity by which the reactor would be subcritical assuming that all control rods capable of insertion are fully inserted except for the analytically determined highest worth rod which is assumed to be fully withdrawn, and the reactor is in the shutdown condition, cold, 68°F, and Xenon free.

SITE BOUNDARY

The SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee, as defined by Figure 5.1.3-1.

SOLIDIFICATION

SOLIDIFICATION shall be the conversion of wet wastes into a form that meets shipping and burial ground requirements.

SOURCE CHECK

A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to radiation.

SPIRAL RELOAD

A SPIRAL RELOAD is the reverse of a SPIRAL UNLOAD. Except for fuel bundles around each of the four SRMs, the fuel in the interior of the core, symmetric to the SRMs, is loaded first. Up to four fuel bundles may be loaded around each of the four SRMs.

SPIRAL UNLOAD

A SPIRAL UNLOAD is a core unload performed by first removing the fuel from the outermost control cells (four bundles surrounding a control blade). Unloading continues in a spiral fashion by removing fuel from the outermost periphery to the interior of the core, symmetric about the SRMs, except for fuel bundles around each of the four SRMs. Up to four fuel bundles may be left around each SRM to maintain adequate count rate.

STAGGERED TEST BASIS

A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals.

b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.9.2 During CORE ALTERATIONS, the requirements for the source range monitors (SRMs) shall be:

a. Two SRMs* shall be OPERABLE, one in the core quadrant where fuel is being moved and one in an adjacent quadrant. For an SRM to be considered OPERABLE, it shall be inserted to the normal operating level and shall have a minimum of 3 cps except as specified in d and e below.

b. The SRMs shall give a continuous visual indication in the Control Room.

c. The "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn** and shutdown margin demonstrations.

d. During a core SPIRAL UNLOAD the count rate may drop below 3 cps.

e. Prior to a core SPIRAL RELOAD, up to four fuel assemblies shall be loaded into different control cells containing control blades around each SRM to obtain 3 cps. Until these assemblies have been loaded, the 3 cps count rate is not required.

APPLICABILITY: OPERATIONAL CONDITION 5

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and fully insert all insertable control rods. The provisions of Specification 3.0.3 are not applicable.

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*The use of special movable detectors during CORE ALTERATIONS in place of the normal SRM nuclear detectors is permissible as long as these special detectors are connected to the normal SRM circuits.

**Not required for control rods removed per Specifications 3.9.10.1 or 3.9.10.2.

SURVEILLANCE REQUIREMENTS

4.9.2 Each of the above required SRM channels shall be demonstrated OPERABLE by:

a. At least once per 12 hours;

1. Performance of a CHANNEL CHECK,

2. Verifying the detectors are inserted to the normal operating level,

3. During CORE ALTERATIONS, verifying that the detector of an OPERABLE SRM channel is located in the core quadrant where CORE ALTERATIONS are being performed and one is located in the adjacent quadrant,

4. During CORE ALTERATIONS, verifying that the channel count rate is at least 3 cps (except as noted in Specification 3.9.2.d and 3.9.2.e),

5. During a core SPIRAL UNLOAD or SPIRAL RELOAD, verifying that the fuel movement sheet is being followed.

b. Verifying prior to the start of a SPIRAL RELOAD that the SRMs have been raised to a count rate of at least 3 cps by the insertion of up to four fuel assemblies around each of the four SRMs.

c. Performance of a CHANNEL FUNCTIONAL TEST:

1. Within 24 hours prior to the start of CORE ALTERATIONS, and

2. At least once per seven days.

3/4.1 REACTIVITY CONTROL SYSTEMS

BASES

3/4.1.1 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that 1) the reactor can be made subcritical from all operating conditions, 2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and 3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

Since core reactivity values will vary through core life as function of fuel depletion and poison burnup, the demonstration of SHUTDOWN MARGIN will be performed in the cold xenon-free condition and shall show the core to be subcritical by a least R + 0.38% delta k/k. The value of R in units of % delta k/k is the difference between the calculated value of maximum core reactivity during the operating cycle and the calculated beginning-of-life core reactivity. The value of R must be positive or zero and must be determined for each fuel loading cycle. Satisfaction of this limitation can be best demonstrated at the time of fuel loading, but the margin must be determined anytime a control rod is incapable of insertion.

During the SPIRAL RELOAD deviations from the scheduled core loading are permitted in order to achieve the required 3 cps needed to gain SRM operability provided the cold reactivities (zero voids) of the fuel bundles temporarily loaded around the SRMs are individually less than that of the respective bundles scheduled for those locations. The cold shutdown margin calculation performed for the scheduled core loading bounds the partially loaded core during the SPIRAL RELOAD process.

This reactivity characteristic has been a basic assumption in the analysis of plant performance and can best be demonstrated at the time of fuel loading, but the margin must also be determined anytime a control rod is incapable of insertion.

3/4.1.2 REACTIVITY ANOMALIES

Since the SHUTDOWN MARGIN requirement for the reactor is small, a careful check on actual conditions to the predicted conditions is necessary, and the changes in reactivity can be inferred from these comparisons of rod patterns. Since the comparisons are easily done, frequent checks are not an imposition on normal operations. A 1% change is larger than is expected for normal operation so a change of this magnitude should be thoroughly evaluated. A change as large as 1% would not exceed the design conditions of the reactor and is on the safe side of the postulated transients.

"During the first startup following CORE ALTERATIONS" implies that the specified surveillance should be performed upon the initial attainment of a high equilibrium power level, preferably of at least 90% of RATED THERMAL POWER, during the unit startup.

3/4.1.3 CONTROL RODS

The specifications of this section ensure that 1) the minimum SHUTDOWN MARGIN is maintained, 2) the control rod insertion times are consistent with those used in the accident analysis, and 3) the

3/4.9 REFUELING OPERATIONS

BASES

3/4.9.1 REACTOR MODE SWITCH

Locking the reactor mode switch in the refuel position ensures that the restrictions on rod withdrawal and refueling platform movement during the refueling operations are properly activated. These conditions reinforce the refueling procedures and reduce the probability of inadvertent criticality, damage to reactor internals, fuel assemblies and exposure of personnel to excessive radioactivity.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the source range monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

During a SPIRAL UNLOAD, the count rate of the SRM will decrease below 3 cps before all of the fuel is unloaded. The count rate of 3 cps is not necessary since there will be no reactivity additions during the spiral unload. The SRMs will be required to be OPERABLE prior to the SPIRAL UNLOAD, and each SRM will be verified operational by raising the count rate to 3 cps prior to the SPIRAL RELOAD by inserting up to four fuel assemblies around each SRM. This will ensure that the SRMs can be relied upon to monitor core reactivity during the reload.

3/4.9.3 CONTROL ROD POSITION

The requirement that all control rods be inserted during CORE ALTERATIONS ensures that fuel will not be loaded into a cell without a control rod and prevents two positive reactivity changes from occurring simultaneously.

3/4.9.4 DECAY TIME

The minimum requirement for reactor subcriticality prior to fuel movement ensures that sufficient time has elapsed to allow the radioactive decay of the short lived fission products. This decay time is consistent with the assumptions used in the accident analyses.

3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity condition during movement of fuel within the reactor pressure vessel.

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

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 114
License No. DPR-62

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Carolina Power & Light Company (the licensee) dated April 9, 1985, 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. 114, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 6, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 114

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 vertical lines.

Pages
1-8
3/4 9-3
3/4 9-4
B 3/4 1-1
B 3/4 9-1

SPIRAL RELOAD

A SPIRAL RELOAD is the reverse of a SPIRAL UNLOAD. Except for fuel bundles around each of the four SRMs, the fuel in the interior of the core, symmetric to the SRMs, is loaded first. Up to four fuel bundles may be loaded around each of the four SRMs.

SPIRAL UNLOAD

A SPIRAL UNLOAD is a core unload performed by first removing the fuel from the outermost control cells (four bundles surrounding a control blade). Unloading continues in a spiral fashion by removing fuel from the outermost periphery to the interior of the core, symmetric about the SRMs, except for fuel bundles around each of the four SRMs. Up to four fuel bundles may be left around each SRM to maintain adequate count rate.

STAGGERED TEST BASIS

A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems trains or other designated components obtained by dividing the specified test interval into n equal subintervals.

b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.

THEMAL POWER

THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

TOTAL PEAKING FACTOR

The TOTAL PEAKING FACTOR (TPF) shall be the ratio of local LHGR for any specific location on a fuel rod divided by the average LHGR associated with the fuel bundles of the same type operating at the core average bundle power.

UNIDENTIFIED LEAKAGE

UNIDENTIFIED LEAKAGE shall be all leakage which is not IDENTIFIED LEAKAGE.

UNRESTRICTED AREA

An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purpose of protection of individuals from exposure to radiation and radioactive materials or any area within the SITE BOUNDARY used for residential quarters or industrial, commercial, institutional and/or recreational purposes.

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.9.2 During CORE ALTERATIONS, the requirements for the source range monitors (SRMs) shall be:

a. Two SRMs* shall be OPERABLE, one in the core quadrant where fuel is being moved and one in an adjacent quadrant. For an SRM to be considered OPERABLE, it shall be inserted to the normal operating level and shall have a minimum of 3 cps except as specified in d and e below.

b. The SRMs shall give a continuous visual indication in the Control Room.

c. The "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn** and shutdown margin demonstrations.

d. During a core SPIRAL UNLOAD the count rate may drop below 3 cps.

e. Prior to a core SPIRAL RELOAD, up to four fuel assemblies shall be loaded into different control cells containing control blades around each SRM to obtain 3 cps. Until these assemblies have been loaded, the 3 cps count rate is not required.

APPLICABILITY: OPERATIONAL CONDITION 5

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and fully insert all insertable control rods. The provisions of Specification 3.0.3 are not applicable.

---

* The use of special movable detectors during CORE ALTERATIONS in place of the normal SRM nuclear detectors is permissible as long as these special detectors are connected to the normal SRM circuits.

** Not required for control rods removed per Specifications 3.9.10.1 or 3.9.10.2.

SURVEILLANCE REQUIREMENTS

4.9.2 Each of the above required SRM channels shall be demonstrated OPERABLE by:

a. At least once per 12 hours;

1. Performance of a CHANNEL CHECK,

2. Verifying the detectors are inserted to the normal operating level,

3. During CORE ALTERATIONS, verifying that the detector of an OPERABLE SRM channel is located in the core quadrant where CORE ALTERATIONS are being performed and one is located in the adjacent quadrant,

4. During CORE ALTERATIONS, verifying that the channel count rate is at least 3 cps (except as noted in Specification 3.9.2.d and 3.9.2.e),

5. During a core SPIRAL UNLOAD or SPIRAL RELOAD, verifying that the fuel movement sheet is being followed.

b. Verifying prior to the start of a SPIRAL RELOAD that the SRMs have been raised to a count rate of at least 3 cps by the insertion of up to four fuel assemblies around each of the four SRMs.

c. Performance of a CHANNEL FUNCTIONAL TEST:

1. Within 24 hours prior to the start of CORE ALTERATIONS, and

2. At least once per seven days.

3/4.1 REACTIVITY CONTROL SYSTEMS

BASES

3/4.1.1 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that 1) the reactor can be made subcritical from all operating conditions, 2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and 3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

Since core reactivity values will vary through core life as a function of fuel depletion and poison burnup, the demonstration of SHUTDOWN MARGIN will be performed in the cold xenon-free condition and shall show the core to be subcritical by at least R + 0.38% delta k/k. The value of R in units of % delta k/k is the difference between the calculated value of maximum core reactivity during the operating cycle and the calculated beginning-of-life core reactivity. The value of R must be positive or zero and must be determined for each fuel loading cycle. Satisfaction of this limitation can be best demonstrated at the time of fuel loading, but the margin must be determined anytime a control rod is incapable of insertion.

During the SPIRAL RELOAD deviations from the scheduled core loading are permitted in order to achieve the required 3 cps needed to gain SRM operability provided the cold reactivities (zero voids) of the fuel bundles temporarily loaded around the SRMs are individually less than that of the respective bundles scheduled for those locations. The cold shutdown margin calculation performed for the scheduled core loading bounds the partially loaded core during the SPIRAL RELOAD process.

This reactivity characteristic has been a basic assumption in the analysis of plant performance and can best be demonstrated at the time of fuel loading, but the margin must also be determined anytime a control rod is incapable of insertion.

3/4.1.2 REACTIVITY ANOMALIES

Since the SHUTDOWN MARGIN requirement for the reactor is small, a careful check on actual conditions to the predicted conditions is necessary, and the changes in reactivity can be inferred from these comparisons of rod patterns. Since the comparisons are easily done, frequent checks are not an imposition on normal operations. A 1% change is larger than is expected for normal operation so a change of this magnitude should be thoroughly evaluated. A change as large as 1% would not exceed the design conditions of the reactor and is on the safe side of the postulated transients.

"During the first startup following CORE ALTERATIONS" implies that the specified surveillance should be performed upon the initial attainment of a high equilibrium power level, preferably of at least 90% of RATED THERMAL POWER, during the unit startup.

3/4.1.3 CONTROL RODS

The specifications of this section ensure that 1) the minimum SHUTDOWN MARGIN is maintained, 2) the control rod insertion times are consistent with those used in the accident analysis, and 3) the

3/4.9 REFUELING OPERATIONS

BASES

3/4.9.1 REACTOR MODE SWITCH

Locking the reactor mode switch in the refuel position ensures that the restrictions on rod withdrawal and refueling platform movement during the refueling operations are properly activated. These conditions reinforce the refueling procedures and reduce the probability of inadvertent criticality, damage to reactor internals, fuel assemblies and exposure of personnel to excessive radioactivity.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the source range monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

During a SPIRAL UNLOAD, the count rate of the SRM will decrease below 3 cps before all of the fuel is unloaded. The count rate of 3 cps is not necessary since there will be no reactivity additions during the spiral unload. The SRMs will be required to be OPERABLE prior to the SPIRAL UNLOAD, and each SRM will be verified operational by raising the count rate to 3 cps prior to the SPIRAL RELOAD by inserting up to four fuel assemblies around each SRM. This will ensure that the SRMs can be relied upon to monitor core reactivity during the reload.

3/4.9.3 CONTROL ROD POSITION

The requirement that all control rods be inserted during CORE ALTERATIONS ensures that fuel will not be loaded into a cell without a control rod and prevents two positive reactivity changes from occurring simultaneously.

3/4.9.4 DECAY TIME

The minimum requirement for reactor subcriticality prior to fuel movement ensures that sufficient time has elapsed to allow the radioactive decay of the short lived fission products. This decay time is consistent with the assumptions used in the accident analyses.

3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity condition during movement of fuel within the reactor pressure vessel.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 89 TO FACILITY LICENSE NO. DPR-71 AND

AMENDMENT NO. 114 TO FACILITY 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 April 9, 1985, the Carolina Power & Light Company (the licensee) submitted proposed changes to the Technical Specifications (TS) appended to Facility Operating License Nos. DPR-71 and DPR-62 for the Brunswick Steam Electric Plant, Units 1 and 2. The proposed changes would change the TS to permit loading of up to four fuel bundles around the source range monitor (SRM), if needed, in order to obtain the required minimum count. The changes are directed at the Limiting Conditions for Operation (LCO) for core monitoring during core alterations, and addresses source range monitor operability, via count rate, and fuel assembly loading limits. It specifically involves Specification 3.4.9.2 and related Bases and Definitions for both Units 1 and 2.

2.0 BACKGROUND

The Brunswick units, in common with many other boiling water reactors (BWRs), use spiral unloading and reloading for full core reloading. The spirals for reloading begin at the core center and grow outward. The initial fuel loaded is thus some distance from the SRMs which are located nearly halfway out along the core radius. For such operations it is generally required that at least a minimum count rate be maintained on the SRMs whenever fuel is in the core. This minimum count rate for Brunswick is 3 counts per second (cps). There are exceptions to this requirement, however. The exception relevant to the present request is that during spiral reloading including (at least some) irradiated fuel, a given maximum number of fuel assemblies may be loaded around each SRM before requiring the 3 cps operability state. The concept is that the neutrons produced by irradiated fuel (e.g., by gamma-neutron reactions on the D_2O in the water) can provide the needed SRM count rate to demonstrate the required operability while still maintaining a highly subcritical fuel array.

The present Brunswick TS permit a maximum of two assemblies to be loaded adjacent to each SRM before requiring 3 cps. The requested change is to allow up to four. If some of the fuel to be loaded at these locations were fresh, irradiated assemblies would be substituted until core load was complete, at which time it would be exchanged for the fuel intended for

that location. The irradiated fuel thus used would be selected for high irradiation and to have a lower reactivity worth than the fuel it is temporarily replacing.

3.0 EVALUATION

During the past several years several utilities have requested Technical Specification changes to permit loading up to four assemblies adjacent to each SRM before attaining required count rates to demonstrate operability. The primary basis for acceptability is that the resulting configurations are far subcritical. This applies to the presently allowed Brunswick configuration, two assemblies adjacent to each SRM, or the configurations, up to four, accepted for other reactors. Generally at least eight tightly clustered assemblies, without control rods, are required for criticality. In the requested configurations there will be at most only four tightly clustered assemblies at each SRM, which will be neutronically well isolated (no reactivity interaction) from those around other SRMs, and control rods will be inserted. Thus the system will be far subcritical when the initial (SRM) loading is completed and the SRM meet the required count rate. Therefore, this is acceptable for Brunswick.

The proposed changes to the Technical Specifications for both Brunswick Units 1 and 2 are:

(1) to the Definitions for Spiral Reload and Spiral Unload to include up to four (rather than two) assemblies around each SRM.

(2) to Specification 3.9.2 and 4.9.2, Refueling Operations, Instrumentation, to permit four (rather than two) assemblies to be loaded around each SRM in order to achieve 3 cps, before requiring that count rate. (There is also an administrative word change of "Condition" to Operational Condition.")

(3) to the Bases for 3/4.9.2 to indicate four (rather than two) assemblies.

(4) to the Bases for 3/4.1.1, Shutdown Margin, indicating that deviations from the normally scheduled loading patterns are permitted to allow irradiated fuel not scheduled to be located around the SRMs to be temporarily loaded to achieve required SRM count rate if the (cold) reactivities of the loaded assemblies are, individually, less than the assemblies scheduled for the location. Thus the shutdown margin analysis for the scheduled pattern bounds the altered pattern.

Since the only proposed changes are to increase the number of assemblies around each SRM from two to four and to permit the use of irradiated fuel at the four locations, these Technical Specifications changes suitably cover the proposal and are acceptable.

Carolina Power & Light Company has requested TS changes for Brunswick, Units 1 and 2 to increase from two to four the number of irradiated fuel assemblies which may be located around SRMs before requiring 3 cps. The primary reason for the request is to provide greater assurance that the required count rate can be achieved. The primary basis for the safety of the requested change is that the core will be subcritical during the loading around the SRMs, and subsequent loading will be well monitored by the SRM. Based on our review we have concluded that the core will be subcritical during the loading around SRMs and subsequent loading will be well monitored by the SRMs. Therefore, this process is acceptable, the requested Technical Specification changes appropriately implement the process and the changes are also acceptable.

4.0 ENVIRONMENTAL CONSIDERATIONS

The amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The 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. 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

We have 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: H. Richings

Dated: August 6, 1985