



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 168 TO FACILITY OPERATING LICENSE NO. DRP-71
AND AMENDMENT NO. 199 TO FACILITY 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 December 31, 1992, as supplemented on June 10, 1993, and August 23, 1993, Carolina Power & Light Company (the licensee) submitted a request for changes to the Brunswick Steam Electric Plant (BSEP), Units 1 and 2, Technical Specifications (TS). The proposed changes would (1) revise the definition of core alteration in section 1.0, Definitions, and (2) clarify the TS 3/4.9.3, Control Rod Position, action statement, surveillance requirements and the associated bases.

By letter dated December 8, 1993, the licensee requested a TS change to correct the surveillance frequency for the channel calibration of the High Pressure Coolant Injection Steam Line Tunnel Temperature - High that was inadvertently left as quarterly in the September 14, 1993, license amendment request. The changes were addressed in the September 14, 1992, amendment request and addressed in the Safety Evaluation issued October 14, 1992. By your letter dated December 8, 1993, you requested the NRC to reissue the pages, as corrected. Therefore, these pages are being issued with this amendment.

The June 10, 1993, and August 23, 1993, letters provided supplemental information and updated TS pages and did not change the initial proposed no significant hazards consideration determinations.

2.0 EVALUATION

The licensee proposed the changes to TS 3/4-9.3 in response to an NRC finding raised in Inspection Reports 50-325/89-05 and 50-324/89-05, dated April 6, 1989. The licensee's interpretation of core alteration was not supported by the current language in the TS in that the licensee did not consider the insertion or withdrawal of control rods by normal means to be a core alteration. However, the licensee assumed that its interpretation met the intent of the definition from the current BSEP, Units 1 and 2, TS that state:

CORE ALTERATION shall be the addition, removal, relocation, or movement of fuel, sources, incore instruments, or reactivity controls in the reactor core with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of the movement of a component to a safe, conservative location.

The licensee based its present interpretation on the definition listed in the BSEP TS, as originally issued in 1977, which stated:

ALTERATION OF THE REACTOR CORE: the act of moving any component in the region above the core support plate, below the upper grid and within the shroud. Normal control rod movement with the control rod drive hydraulic system is not defined as a core alteration. Normal movement of incore instrumentation is not defined as a core alteration.

Because of the NRC inspection finding, the licensee has proposed to change the definition of core alterations as follows:

CORE ALTERATION shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. Movement of source range monitors, local power range monitors, intermediate range monitors, traversing in-core probe monitors, or special moveable detectors (including under-vessel replacement) is not considered a CORE ALTERATION.

In addition, control rod movement with other than the normal control rod drive is not considered a CORE ALTERATION provided there are no fuel assemblies in the associated core cell. Suspension of CORE ALTERATIONS shall not preclude completion of the movement of a component to a safe position.

This proposed definition more explicitly defines those operations that have the greatest potential for adding positive reactivity to the core while the vessel head is removed and fuel is in the vessel. Movement of in-core instruments such as source range monitors, local power range monitors, intermediate range monitors, traversing in-core probe monitors, and special movable detectors, including their under-vessel replacement, do not significantly change the reactivity of the core. Thus, the licensee proposed that the movement of in-core instruments is not a core alteration. The licensee also proposed that the movement of a control rod by methods other than the normal control rod drive is not a core alteration when there are no fuel assemblies in the associated core cell. When the fuel assemblies surrounding the control rod are removed, the potential for adding positive reactivity is greatly reduced. Therefore, movement of control rods in such a manner should not reduce the shutdown margin (SDM). The staff has reviewed the licensee's proposals and supporting justification and finds the proposed definition of core alteration is acceptable.

In the current TS 3/4.9.3, all control rods are required to be fully inserted during core alterations when the unit is in Condition 5, Refueling. The licensee proposed deleting the references to core alterations and replacing them with the phrase "loading of fuel assemblies into the core." This proposed change would allow the movement of sources, reactivity control components, or other components affecting reactivity when the vessel head is removed, fuel is in the vessel, and all control rods are not fully inserted. Protection against inadvertent criticality in this case is still provided, as follows. While in Condition 5, BSEP TS 3.9.1, Reactor Mode Switch, requires the licensee to lock the reactor mode switch in the refuel position. This initiates the refuel position One-Rod-Out interlock which prevents the selection of more than one control rod for movement when any other control rod is not fully inserted. The TS also require the licensee to maintain the SDM greater than or equal to 0.38% delta k/k. The refuel position One-Rod-Out interlock and this SDM ensure that the reactor will not become critical when all control rods are not fully inserted.

The licensee is required by TS 3.9.1 to have the following refuel position equipment interlocks operable when equipment associated with the interlock is being operated for core alterations (1) All-Rods-In, 2) Refuel Platform Position, 3) Refuel Platform Hoists Fuel-Loaded, 4) Fuel Grapple Position, and 5) Service Platform Hoist Fuel-Loaded. These refuel position equipment interlocks prevent the loading of fuel into the core with any control rod withdrawn and prevent the withdrawal of a rod from the core during fuel loading. Therefore, criticality is prevented during the insertion of fuel, provided all control rods are fully inserted and the refuel position equipment interlocks are operable. This is acceptable to the staff.

The licensee also proposed replacing the phrase "deenergize the control rod scram solenoid valves" in the TS 3.9.1 action statement with the words "suspend loading of fuel assemblies into the core." The staff finds this proposed change acceptable because it improves the action statement by restricting fuel addition and its associated reactivity addition into the core when all control rods are not fully inserted. The current TS would have allowed continued fuel loading even if the scram solenoid valves were deenergized but did not result in rod insertion. The staff finds this change acceptable.

In summary, the staff has reviewed the proposed TS changes and found that the proposed definition of core alterations adequately clarifies the operations that are considered to be core alterations. The staff also determined that the refuel position equipment interlocks and the requirements for all control rods to be fully inserted ensures that the reactor will not become critical during the fuel loading. Therefore, the staff finds the changes acceptable. The staff also notes that the proposed changes are consistent with the standard of the NUREG-1433 for the definition of core alteration and the control rod position TS.

On October 14, 1993, the staff issued Amendment Nos. 166 and 197 for BSEP, Units 1 and 2, respectively, regarding the installation of NUMAC Steam Leak Detection equipment. Although the Safety Evaluation supporting these amendments addressed the acceptability of changing the surveillance frequency

for the channel calibration of the High Pressure Coolant Injection Steam Line Tunnel Temperature - High from quarterly (Q) to refuel (R), TS Table 4.3.2-1 did not reflect this change. Since this surveillance interval change was previously approved by the staff, the staff finds this TS change request acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of North Carolina official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes the Surveillance Requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (xxxxFR cite). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: K. Kavanaugh

Date: February 8, 1994

AMENDMENT NO. 168 TO FACILITY OPERATING LICENSE NO. DPR-71 - BRUNSWICK, UNIT 1
AMENDMENT NO. 199 TO FACILITY OPERATING LICENSE NO. DPR-62 - BRUNSWICK, UNIT 2

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cc: Brunswick Service List

100025

February 8, 1994

Mr. R. A. Anderson

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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:
Patrick D. Milano, Senior Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment Nos. 168 and 199
2. Safety Evaluation

cc w/enclosures:
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