

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1  
DOCKET NO. 50-325/LICENSE NO. DPR-71  
REQUEST FOR LICENSE AMENDMENT - REVISION OF MINIMUM CRITICAL POWER  
RATIO SAFETY LIMIT VALUES

Basis For Change Request

Introduction

In accordance with the Code of Federal Regulations, Title 10, Parts 50.90 and 2.101, Carolina Power & Light (CP&L) Company requests a revision to the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Unit No. 1.

The proposed license amendment revises the Minimum Critical Power Ratio (MCPR) Safety Limit values contained in Specification 2.1.1.2 from 1.09 to 1.10 for two recirculation loop operation and from 1.10 to 1.11 for single recirculation loop operation. The proposed license amendment also removes an expiring cycle-specific reference in the list of analytical methods approved for determining core operating limits in Specification 5.6.5.b.

Current Requirement

Specification 2.1.1.2 states:

-----NOTE-----  
MCPR SL values are only applicable for Cycle 12 operation.  
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With the reactor steam dome pressure  $\geq 785$  psig and core flow  $\geq 10\%$  rated core flow:

MCPR shall be  $\geq 1.09$  for two recirculation loop operation or  $\geq 1.10$  for single recirculation loop operation.

Specification 5.6.5.b states:

The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (latest approved version).
2. NEDO-32339-A, "Reactor Stability Long Term Solution: Enhanced Option I-A," July 1995.

3. NEDC-32339-P Supplement 1, "Reactor Stability Long Term Solution: Enhanced Option I-A ODYSY Computer Code," March 1994 (approved in NRC Safety Evaluation dated January 4, 1996).
4. NEDO-32339 Supplement 3, "Reactor Stability Long Term Solution: Enhanced option I-A Flow Mapping Methodology," August 1995 (Approved in NRC Safety Evaluation dated May 28, 1996).
5. NRC Safety Evaluation for Brunswick Unit 1 Amendment No. 194.

### Proposed Change

Revise Specification 2.1.1.2 to state:

With the reactor steam dome pressure  $\geq 785$  psig and core flow  $\geq 10\%$  rated core flow:

MCPR shall be  $\geq 1.10$  for two recirculation loop operation or  $\geq 1.11$  for single recirculation loop operation.

Remove Specification 5.6.5.b, Item 5.

### Background

The fuel cladding is one of the physical barriers that separates radioactive materials from the environs. Specification 2.1.1.2 establishes a MCPR Safety Limit which, if not exceeded, ensures that at least 99.9% of the fuel rods in the reactor core would not experience transition boiling in the event of a postulated accident. The GE methodology for MCPR Safety Limit determination for each fuel design is contained in NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel (GESTAR II)," which otherwise is referred to as GESTAR II.

A cycle-specific restriction to the MCPR Safety Limit was originally implemented for BSEP, Unit 1, Cycle 11 operation through License Amendment No. 182. A cycle-specific MCPR Safety Limit analysis for Cycle 11 determined that a MCPR Safety Limit value of 1.10 should be established for the Cycle 11 core rather than using the generic MCPR Safety Limit value of 1.09 for GE13 fuel. At the time of the Cycle 11 reload, GESTAR II did not include NRC-approved methodology and uncertainties for implementation of cycle-specific MCPR Safety Limit values. As a result, CP&L proposed a MCPR Safety Limit value that was based on cycle-specific inputs, and the NRC approval of the MCPR Safety Limit value was limited to Unit 1, Cycle 11 only.

The cycle-specific restriction was subsequently revised for BSEP, Unit 1, Cycle 12 operation through License Amendment No. 194. This amendment request proposed a revision to the MCPR Safety Limit value from 1.10 to 1.09 and the removal of the footnote restricting use of the MCPR Safety Limit value to one cycle of operation. The basis for this amendment request was the plant-specific evaluations performed by GE using the methods described in NEDO-10958-A, "General Electric BWR Thermal Analysis Basis (GETAB): Data, Correlation and Design Application." This evaluation yielded a calculated MCPR Safety Limit value of 1.09, which is

equivalent to the generic MCPR Safety Limit value of 1.09 for GE13 fuel. However, the NRC concluded that because a cycle-specific evaluation was used to determine the Cycle 12 MCPR Safety Limit, their approval of the MCPR Safety Limit value should be limited to Cycle 12 pending NRC approval of GE Report NEDE-24011, Amendment 25. To accommodate the NRC approval, two changes were implemented to the Technical Specifications: (1) a footnote was added to the MCPR Safety Limit value in Specification 2.1.1.2 and its' associated ACTION statement, and (2) a reference to the NRC Safety Evaluation for Unit 1 Amendment 194, was added to Specification 5.6.5.b.

#### Basis For Proposed Change

The GE methodology for MCPR Safety Limit determination for each fuel design is contained in NEDE-24011-P-A. To address NRC concerns relating to the methodologies and procedures for determining cycle-specific MCPR Safety Limits, GE submitted several topical reports for NRC review and approval. These topical reports included: (1) description of the procedures used to account for the reload-specific core design and operation in determining the cycle-specific MCPR Safety Limit in NEDC-32601-P; (2) the power distribution uncertainty for the new GE 3D-MONICORE core surveillance system in NEDC-32694P; and (3) the methodology and uncertainties required for the implementation of cycle-specific MCPR Safety Limits in Amendment 25 to NEDE-24011-P-A. By letter dated March 11, 1999, from Frank Akstulewicz, NRC, to Glen Wattford, GE, the NRC accepted these topical reports for referencing in license applications.

The MCPR Safety Limit analysis for BSEP, Unit 1, Cycle 13 has been performed by GE using NRC-approved methodologies described in topical report NEDE-24011-P-A (i.e., GESTAR-II). Use of the NRC-approved methodologies ensures that the resulting MCPR Safety Limit values satisfy the fuel design safety criteria that less than 0.1 percent of the fuel rods experience boiling transition if the safety limits are not violated. As a result, the proposed MCPR Safety Limit value changes do not significantly impact any safety analysis assumptions or results.

A summary of the relevant input parameters and results of a comparison of the Unit 1 Cycle 12 and Unit 1 Cycle 13 MCPR Safety Limit values is provided in Enclosure 2. Some of the information contained in the document is considered GE proprietary information and should be withheld from public disclosure in accordance with 10 CFR 9.17(a)(4) and 10 CFR 2.790(a)(4). An affidavit attesting to this fact is provided in Enclosure 3. A non-proprietary version of the GE document is provided in Enclosure 4.

In addition to the revision of the MCPR Safety Limit values, an administrative change is being made to Specification 5.6.5.b to remove the expiring reference to the NRC Safety Evaluation for Unit 1 Amendment No. 194. As noted above, the reference to the NRC Safety Evaluation for Unit 1 Amendment No. 194 was added based on the NRC's BSEP-specific review and acceptance of a MCPR Safety Limit for Unit 1 Cycle 12 operation only. Specification 5.6.5.b requires that the analytical methods used to determine core operating limits be those previously reviewed and approved by the NRC and listed in Specification 5.6.5.b. Specification 5.6.5.b already includes a reference for the latest approved version of GE topical report

NEDE-24011-P-A. By letter dated March 11, 1999, from Frank Akstulewicz, NRC, to Glen Watford, GE, the NRC approved the use of Amendment 25 to NEDE-24011-P-A. Amendment 25 to NEDE-24011-P-A provides methods and uncertainties required for implementing cycle-specific MCPR Safety Limits that replace the former, generic, bounding MCPR Safety Limits.

#### Cycle-Specific Note

By letter dated September 28, 1999 (Serial: BSEP 99-0126), CP&L has requested a license amendment to remove the cycle-specific restriction for the MCPR Safety Limit values. Removal of this note will avoid the review and approval of future license amendments when the MCPR Safety Limit values do not require modification.

Based on the use of NRC approved methods for determination of the MCPR Safety Limit values and incorporation of the appropriate NRC approved methods used for determining the cycle-specific MCPR Safety Limit values for Unit 1 Cycle 13, removal of the cycle-specific restriction note is justified. As a result, the Technical Specification pages provided herein have been updated to reflect removal of the note.

#### Needed Approval Schedule

Approval of the revised MCPR Safety Limit values is needed to support restart of BSEP, Unit 1 following its upcoming refueling outage, which is currently scheduled to begin on February 26, 2000. Based on the current Unit 1 Refueling Outage 12 work schedule, NRC approval of this license amendment request is needed no later than March 17, 2000, to support unit restart.

#### References

1. Letter from Mr. Frank Akstulewicz, Acting Chief, Generic Issues and Environmental Project Branch, Division of Reactor Program Management, Office of Nuclear Reactor Regulation to Mr. Glen A. Watford, Manager, General Electric, dated March 11, 1999, "Acceptance For Referencing of Licensing Topical Reports NEDC-32601P, Methodology and Uncertainties for Safety Limit MCPR Evaluations; NEDC-32694P, Power Distribution Uncertainties for Safety Limit MCPR Evaluation; and Amendment 25 to NEDE-24011-P-A on Cycle-Specific Safety Limit MCPR (TAC Nos. M97490, M99069 and M97491)."
2. Letter from Mr. David C. Trimble (USNRC) to Mr. W. R. Campbell (CP&L), dated October 7, 1996, "Issuance of Amendment No. 182 To Facility Operating License No. DPR-71 Regarding The Fuel Cycle 11 Reload – Brunswick Steam Electric Plant, Unit 1 (TAC Nos. M95263)."
3. Letter from Mr. David C. Trimble (USNRC) to Mr. C. S. Hinnant (CP&L), dated May 11, 1998, "Issuance of Amendment No. 194 to Facility Operating License No. DPR-71 Revising the Technical Specification (TS) for Fuel Cycle 12 Reload to Change the Safety Limit Minimum Critical Power Ratio (SLMCPR) - Brunswick Steam Electric Plant, Unit 1 (TAC No. MA1044)."

4. Letter from Mr. John S. Keenan (CP&L) to the Document Control Desk (USNRC), dated September 28, 1999, "Request for License Amendment - Removal of Cycle-Specific Minimum Critical Power Ratio Safety Limit Restriction."

ENCLOSURE 3

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1  
DOCKET NO. 50-325/LICENSE NO. DPR-71  
REQUEST FOR LICENSE AMENDMENT - REVISION OF MINIMUM CRITICAL POWER  
RATIO SAFETY LIMIT VALUES

General Electric Nuclear Energy Affidavit  
Regarding Withholding from Public Disclosure

ENCLOSURE 4

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1  
DOCKET NO. 50-325/LICENSE NO. DPR-71  
REQUEST FOR LICENSE AMENDMENT - REVISION OF MINIMUM CRITICAL POWER  
RATIO SAFETY LIMIT VALUES

General Electric Nuclear Energy Document Entitled  
"Additional Information Regarding the  
Cycle Specific SLMCPR for Brunswick 1 Cycle 13"  
(**Non-Proprietary Version**)



**Affidavit**

**I, Glen A. Watford**, being duly sworn, depose and state as follows:

- (1) I am Manager, Nuclear Fuel Engineering, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in the attachment to the letter, *W. H. Hetzel (GE) to A. T. Kremer (CP&L), "Brunswick 1 Cycle 13 SLMCPR," October 21, 1999.*
- (3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4) and 2.790(a)(4) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential commercial information," and some portions also qualify under the narrower definition of "trade secret," within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).
- (4) Some examples of categories of information which fit into the definition of proprietary information are:
  - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;
  - b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;
  - c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of General Electric, its customers, or its suppliers;
  - d. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, of potential commercial value to General Electric;
  - e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in both paragraphs (4)a. and (4)b., above.



- (5) The information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in (6) and (7) following. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
- (8) The information identified in paragraph (2) is classified as proprietary because it contains details of GE's fuel design and licensing methodology.

The development of the methods used in these analyses, along with the testing, development and approval of the supporting methodology was achieved at a significant cost, on the order of several million dollars, to GE.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The fuel design and licensing methodology is part of GE's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by GE.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

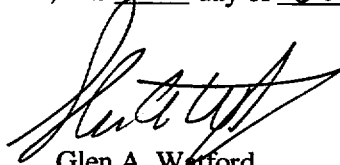
Affidavit

State of North Carolina    )  
County of New Hanover    )    SS:

Glen A. Watford, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at Wilmington, North Carolina, this 21<sup>st</sup> day of October, 19 99



Glen A. Watford  
General Electric Company

Subscribed and sworn before me this 21<sup>st</sup> day of October, 19 99



Notary Public, State of North Carolina

My Commission Expires 10/08/2001

**References**

- [1] Letter, Frank Akstulewicz (NRC) to Glen A. Watford (GE), "Acceptance for Referencing of Licensing Topical Reports NEDC-32601P, *Methodology and Uncertainties for Safety Limit MCPR Evaluations*; NEDC-32694P, *Power Distribution Uncertainties for Safety Limit MCPR Evaluation*; and Amendment 25 to NEDE-24011-P-A on Cycle Specific Safety Limit MCPR," (TAC Nos. M97490, M99069 and M97491), March 11, 1999.
- [2] Letter, Thomas H. Essig (NRC) to Glen A. Watford (GE), "Acceptance for Referencing of Licensing Topical Report NEDC-32505P, Revision 1, *R-Factor Calculation Method for GE11, GE12 and GE13 Fuel*," (TAC No. M99070 and M95081), January 11, 1999.
- [3] *General Electric BWR Thermal Analysis Basis (GETAB): Data, Correlation and Design Application*, NEDO-10958-A, January 1977.

**Comparison of Brunswick Unit 1 Cycle 13 and Cycle 12 SLMCPR Values**

Table 1 summarizes the relevant input parameters and results of the SLMCPR determination for the Brunswick Unit 1 Cycle 13 and Cycle 12 cores. The SLMCPR evaluations were performed using NRC approved methods and uncertainties[1]. These evaluations yield different calculated SLMCPR values because different inputs were used. The quantities that have been shown to have some impact on the determination of the safety limit MCPR (SLMCPR) are provided.

In comparing the Brunswick Unit 1 Cycle 13 and Cycle 12 SLMCPR values it is important to note the impact of the differences in the core and bundle designs. These differences are summarized in Table 1.

[[ ]].

[[ ]].

The uncontrolled bundle pin-by-pin power distributions were compared between the Brunswick Unit 1 Cycle 13 bundles and the Cycle 12 bundles. Pin-by-pin power distributions are characterized in terms of R-factors using the NRC approved methodology[2]. [[ ]]

**Summary**

[[ ]] have been used to compare quantities that impact the calculated SLMCPR value. Based on these comparisons, the conclusion is reached that the Brunswick Unit 1 Cycle 13 core/cycle has a flatter core MCPR distribution [[ ]] and more peaked in-bundle power distributions [[ ]] than what was used to perform the Cycle 12 SLMCPR evaluation.

The calculated 1.10 Monte Carlo SLMCPR for Brunswick Unit 1 Cycle 13 is consistent with what one would expect [[ ]] the 1.10 SLMCPR value is appropriate.

Based on all of the facts, observations and arguments presented above, it is concluded that the calculated SLMCPR value of 1.10 for the Brunswick Unit 1 Cycle 13 core is appropriate. It is reasonable that this value is 0.01 higher than the 1.09 value calculated for the previous cycle.

For single loop operations (SLO) the calculated safety limit MCPR for the limiting case is 1.11 [[ ]]

Prepared by:

Verified by:

R. M. Butrovich  
Technical Project Manager  
Brunswick Project

J. E. Fawks  
Nuclear Fuel Engineering



## ENCLOSURE 5

### BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1 DOCKET NO. 50-325/LICENSE NO. DPR-71 REQUEST FOR LICENSE AMENDMENT - REVISION OF MINIMUM CRITICAL POWER RATIO SAFETY LIMIT VALUES

#### 10 CFR 50.92 EVALUATION

Carolina Power & Light (CP&L) Company is requesting a change to the Brunswick Steam Electric Plant (BSEP), Unit No. 1 Technical Specifications (TS) to revise the Minimum Critical Power Ratio (MCPR) Safety Limit values contained in Specification 2.1.1.2 from 1.09 to 1.10 for two recirculation loop operation and from 1.10 to 1.11 for single recirculation loop operation. The proposed change also removes an expiring cycle-specific reference in the list of analytical methods approved for determining core operating limits in Specification 5.6.5.b. CP&L has determined that these proposed changes do not involve a Significant Hazards Consideration. In support of this determination, an evaluation of each of the three (3) standards set forth in 10 CFR 50.92 is provided below.

1. The proposed license amendments do not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed license amendment will establish MCPR Safety Limit values of 1.10 for two recirculation loop operation and 1.11 for single recirculation loop operation. Additionally, the proposed license amendment replaces an expiring cycle-specific reference in the list of analytical methods approved for determining core operating limits in Specification 5.6.5.b with a reference to a GE topical report which has been accepted by the NRC.

The methods for calculating the MCPR Safety Limit values have been previously approved by the NRC and are described in GE's reload licensing methodology topical report NEDE-24011-P-A. Use of these methods ensures that the integrity of the fuel will be maintained during normal operation and that the resulting MCPR Safety Limit values satisfy the fuel design safety criteria that less than 0.1 percent of the fuel rods experience boiling transition if the safety limits are not violated. The change does not require any physical plant modifications, physically affect any plant components, or allow the plant to be operated any closer to fuel design limits. Therefore, the proposed change to the MCPR Safety Limit values and to the list in Specification 5.6.5.b of analytical methods approved for determining core operating limits results no increase in the probability of a previously evaluated accident.

The consequences of a previously evaluated accident are dependent on the initial conditions assumed for the analysis, the behavior of the fuel during the accident, the

availability and successful functioning of the equipment assumed to operate in response to the accident, and the setpoints at which these actions are initiated.

The methods used for calculating the MCPR Safety Limits have been approved by the NRC and are described in GE's reload licensing methodology topical report NEDE-24011, "General Electric Standard Application for Reactor Fuel (GESTAR II)." The proposed MCPR Safety Limit values of 1.10 for two recirculation loop operation and 1.11 for single recirculation loop operation will ensure that less than 0.1 percent of the fuel rods will experience boiling transition during any plant operation if the limits are not violated. The proposed change to the MCPR Safety Limit values does not affect the performance of any equipment used to mitigate the consequences of a previously evaluated accident. Also, the proposed change does not affect setpoints that initiate protective or mitigative actions. No analysis assumptions are violated and there are no adverse effects on the factors contributing to offsite and onsite dose.

Based on the determination of the proposed MCPR Safety Limit values using conservative NRC-approved methods and the operability of plant systems designed to mitigate the consequences of accidents not being changed, the proposed change to the MCPR Safety Limit values and to the list in Specification 5.6.5.b of analytical methods approved for determining core operating limits does not significantly increase the consequences of a previously evaluated accident.

2. The proposed license amendments will not create the possibility of a new or different kind of accident from any accident previously evaluated.

Creation of the possibility of a new or different kind of accident would require the creation of one or more new precursors of that accident. New accident precursors may be created by modifications of the plant configuration, including changes in allowable modes of operation. This proposed license amendment does not involve any physical alteration of plant systems and plant equipment will not be operated in a different manner. As a result, no new failure modes are being introduced. Therefore, the proposed change to the MCPR Safety Limit values and to the list in Specification 5.6.5.b of analytical methods approved for determining core operating limits will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed license amendments do not involve a significant reduction in a margin of safety.

The margin of safety is established through the design of the plant structures, systems, and components; through the parameters within which the plant is operated; through the establishment of setpoints for actuation of equipment relied upon to respond to an event; and through margins contained within the safety analyses.

The proposed change to the MCPR Safety Limit values and the list in Specification 5.6.5.b of analytical methods approved for determining core operating limits does not adversely impact the performance of plant structures, systems,

components, and setpoints relied upon to respond to mitigate an accident. As previously stated, the methods for calculating the MCPR Safety Limit values have been previously approved by the NRC and are described in GE's reload licensing methodology topical report NEDE-24011-P-A. Use of these methods ensures that the resulting MCPR Safety Limit values satisfy the fuel design safety criteria that less than 0.1 percent of the fuel rods experience boiling transition if the safety limits are not violated. As a result, the proposed changes do not significantly impact any safety analysis assumptions or results. Based on the assurance that the fuel design safety criteria will be met, the proposed changes do not involve a significant reduction in a margin of safety.



## ENCLOSURE 6

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1  
DOCKET NO. 50-325/LICENSE NO. DPR-71  
REQUEST FOR LICENSE AMENDMENT - REVISION OF MINIMUM CRITICAL POWER  
RATIO SAFETY LIMIT VALUES

### ENVIRONMENTAL CONSIDERATIONS

Carolina Power & Light (CP&L) Company has concluded that the proposed license amendment revising the Minimum Critical Power Ratio (MCPR) Safety Limit values contained in Specification 2.1.1.2 from 1.09 to 1.10 for two recirculation loop operation and from 1.10 to 1.11 for single recirculation loop operation and removal of the expiring cycle-specific reference in the list of analytical methods approved for determining core operating limits in Specification 5.6.5.b are eligible for categorical exclusion from performing an environmental assessment. In support of this determination, an evaluation of each of the three (3) criteria set forth in 10 CFR 51.22(c)(9) is provided below.

1. The proposed changes do not involve a significant hazards consideration, as shown in Enclosure 5.
2. The proposed changes do not result in a significant change in the types or a significant increase in the amounts of any effluent that may be released offsite. The proposed changes do not do not introduce any new equipment nor require any existing equipment or systems to perform a different type of function than they are presently designed to perform. The proposed changes do not alter the function of existing equipment and will ensure that the consequences of any previously evaluated accident do not increase. Therefore, CP&L has concluded that there will not be a significant increase in the types or amounts of any effluent that may be released offsite and, as such, the changes do not involve irreversible environmental consequences beyond those already associated with normal operation.
3. The proposed MCPR Safety Limits and determination of core operating limits using NRC-approved methodologies will ensure the integrity of the fuel is maintained during normal operations. Therefore, the proposed changes does not result in an increase in individual or cumulative occupational radiation exposure.

ENCLOSURE 7

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1  
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RATIO SAFETY LIMIT VALUES

PAGE CHANGE INSTRUCTIONS

<u>UNIT 1</u>	
Removed page	Inserted page
2.0-1	2.0-1
5.0-19	5.0-19

ENCLOSURE 8

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1  
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RATIO SAFETY LIMIT VALUES

TYPED TECHNICAL SPECIFICATION PAGES - UNIT NO. 1

## 2.0 SAFETY LIMITS (SLs)

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### 2.1 SLs

#### 2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be  $\leq$  25% RTP.

2.1.1.2 With the reactor steam dome pressure  $\geq$  785 psig and core flow  $\geq$  10% rated core flow:

MCPR shall be  $\geq$  1.10 for two recirculation loop operation or  $\geq$  1.11 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

#### 2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be  $\leq$  1325 psig.

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### 2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

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5.6 Reporting Requirements (continued)

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5.6.5 CORE OPERATING LIMITS REPORT (COLR)

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:
  1. The AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR) for Specification 3.2.1;
  2. The MINIMUM CRITICAL POWER RATIO (MCPR) for Specification 3.2.2;
  3. The Allowable Value for Function 2.b, APRM Flow Biased Simulated Thermal Power—High, for Specification 3.3.1.1; and
  4. The Allowable Values and power range setpoints for Rod Block Monitor Upscale Functions for Specification 3.3.2.1.
  
- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:
  1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (latest approved version).
  2. NEDO-32339-A, "Reactor Stability Long Term Solution: Enhanced Option I-A," July 1995.
  3. NEDC-32339-P Supplement 1, "Reactor Stability Long Term Solution: Enhanced Option I-A ODYSY Computer Code," March 1994 (Approved in NRC Safety Evaluation dated January 4, 1996).
  4. NEDO-32339 Supplement 3, "Reactor Stability Long Term Solution: Enhanced Option I-A Flow Mapping Methodology," August 1995 (Approved in NRC Safety Evaluation dated May 28, 1996).
  5. Deleted.

(continued)

ENCLOSURE 9

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1  
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REQUEST FOR LICENSE AMENDMENT - REVISION OF MINIMUM CRITICAL POWER  
RATIO SAFETY LIMIT VALUES

MARKED-UP TECHNICAL SPECIFICATION PAGES - UNIT NO. 1

2.0 SAFETY LIMITS (SLs)

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2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be  $\leq$  25% RTP.

SEE CP&L LETTER  
DATED 9/28/99

2.1.1.2 ~~NOTE  
MCPR SL values are only applicable for Cycle 12 operation.~~

With the reactor steam dome pressure  $\geq$  785 psig and core flow  $\geq$  10% rated core flow:

MCPR shall be  $\geq$  ~~1.09~~<sup>1.10</sup> for two recirculation loop operation or  $\geq$  ~~1.10~~<sup>1.11</sup> for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be  $\leq$  1325 psig.

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2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

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5.6 Reporting Requirements (continued)

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5.6.5 CORE OPERATING LIMITS REPORT (COLR)

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:
1. The AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR) for Specification 3.2.1;
  2. The MINIMUM CRITICAL POWER RATIO (MCPR) for Specification 3.2.2;
  3. The Allowable Value for Function 2.b, APRM Flow Biased Simulated Thermal Power—High, for Specification 3.3.1.1; and
  4. The Allowable Values and power range setpoints for Rod Block Monitor Upscale Functions for Specification 3.3.2.1.
- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:
1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (latest approved version).
  2. NEDO-32339-A, "Reactor Stability Long Term Solution: Enhanced Option I-A," July 1995.
  3. NEDC-32339-P Supplement 1, "Reactor Stability Long Term Solution: Enhanced Option I-A ODYSY Computer Code," March 1994 (Approved in NRC Safety Evaluation dated January 4, 1996).
  4. NEDO-32339 Supplement 3, "Reactor Stability Long Term Solution: Enhanced Option I-A Flow Mapping Methodology," August 1995 (Approved in NRC Safety Evaluation dated May 28, 1996).
  5. ~~NRC Safety Evaluation for Brunswick Unit 1 Amendment No. 194.~~

Deleted.

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