

Exelon Nuclear
200 Exelon Way
Kennett Square, PA 19348

www.exeloncorp.com

10 CFR 50.90

June 10, 2002

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Peach Bottom Atomic Power Station, Unit 2
Facility Operating License No. DPR-44
NRC Docket No. 50-277

Subject: License Amendment Request 02-00304
Safety Limit Minimum Critical Power Ratio (SLM CPR) Change

Dear Sir/Madam:

Pursuant to 10 CFR 50.90, Exelon Generation Company, LLC (Exelon), hereby requests the following amendment to the Technical Specifications (TS), Appendix A of Operating License No. DPR-44 for Peach Bottom Atomic Power Station (PBAPS), Unit 2. This proposed change will revise Technical Specification (TS) Section 2.1. This Section will be revised to incorporate revised Safety Limit Minimum Critical Power Ratios (SLM CPRs) due to the cycle specific analysis performed by Global Nuclear Fuel for PBAPS, Unit 2, Cycle 15. This information is being submitted under unsworn declaration.

Information supporting this License Amendment Request is contained in Attachment 1 to this letter, and the proposed marked up TS pages and final TS pages are contained in Attachments 2 and 3, respectively. Attachment 4 (letter from C. P. Collins (Global Nuclear Fuel) to K. Donovan (Exelon Generation Company, LLC), dated May 3, 2002) specifies the new SLM CPRs for PBAPS, Unit 2. Attachment 4 contains information proprietary to Global Nuclear Fuel. Global Nuclear Fuel requests that the document be withheld from public disclosure in accordance with 10 CFR 2.790(a)(4). An affidavit supporting this request is also contained in Attachment 4. Attachment 5 contains a non-proprietary version of the Global Nuclear Fuel document.

In order to support the upcoming refueling outage at PBAPS, Unit 2, Exelon requests approval of the proposed amendment by September 10, 2002.

Once approved, this amendment shall be implemented within 30 days of issuance.

Additionally, there are no commitments contained within this letter.

APOI

PBAPS Unit 2 License Amendment Request ECR 02-00304

June 10, 2002

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A copy of this License Amendment Request, including the reasoned analysis about a no significant hazards consideration, is being provided to the appropriate Pennsylvania State official in accordance with the requirements of 10 CFR 50.91(b)(1).

If you have any questions or require additional information, please contact Dave Helker at (610) 765-5525.

I declare under penalty of perjury that the forgoing is true and correct.

Respectfully,

Executed on

06-11-02



Michael P. Gallagher
Director, Licensing & Regulatory Affairs
Mid-Atlantic Regional Operating Group

Attachments: 1-Licensee's Evaluation
2-Markup of Technical Specification Pages
3-Camera Ready Technical Specification Pages
4-Proprietary Global Nuclear Fuels Letter
5-Non-proprietary Version of Global Nuclear Fuels Letter

cc: H. J. Miller, Administrator, Region I, USNRC
A. C. McMurtray, USNRC Senior Resident Inspector, PBAPS
J. Boska, Senior Project Manager, USNRC
R. R. Janati, Commonwealth of Pennsylvania



Global Nuclear Fuel

A Joint Venture of GE, Toshiba, & Hitachi

Affidavit

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

- (1) I am Manager, Fuel Engineering Services, Global Nuclear Fuel– Americas, L.L.C. (“GNF-A”) 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, “Additional Information Regarding the Cycle Specific SLMCPR for Peach Bottom Unit 2 Cycle 15,” May 3, 2002.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, GNF-A 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 GNF-A’s competitors without license from GNF-A 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 GNF-A, its customers, or its suppliers;
 - d. Information which reveals aspects of past, present, or future GNF-A customer-funded development plans and programs, of potential commercial value to GNF-A;
 - 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 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 GNF-A, 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 GNF-A, 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, or subject to the terms under which it was licensed to GNF-A. Access to such documents within GNF-A 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 GNF-A 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 GNF-A'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 GNF-A or its licensor.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GNF-A's competitive position and foreclose or reduce the availability of profit-making opportunities. The fuel design and licensing methodology is part of GNF-A'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 GNF-A or its licensor.

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.

GNF-A's competitive advantage will be lost if its competitors are able to use the results of the GNF-A 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 GNF-A 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 GNF-A of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

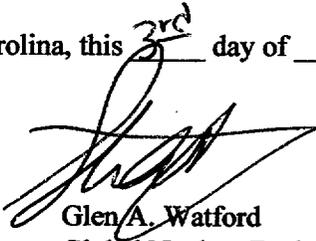
Affidavit

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

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

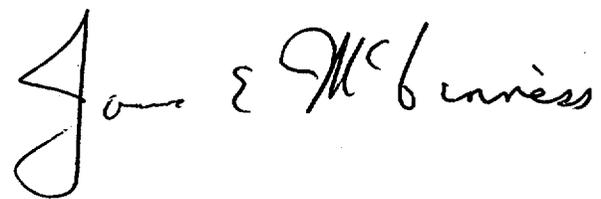
That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at Wilmington, North Carolina, this 3rd day of May, 2002



Glen A. Watford
Global Nuclear Fuel – Americas, LLC

Subscribed and sworn before me this 3 day of May, 2002



Notary Public, State of North Carolina

JAMES E. MCGINNESS
Notary Public, State of North Carolina
New Hanover County

My Commission Expires _____

My Commission Expires 1/23/2008

ATTACHMENT 1

PEACH BOTTOM ATOMIC POWER STATION
UNIT 2

DOCKET NO. 50-277

LICENSE NO. DPR-44

LICENSE AMENDMENT REQUEST 02-00304

"Revision of SLMCPRs"

ATTACHMENT 1 CONTENTS

- 1.0 INTRODUCTION
- 2.0 DESCRIPTION OF PROPOSED AMENDMENT
- 3.0 BACKGROUND
- 4.0 REGULATORY REQUIREMENTS & GUIDANCE
- 5.0 TECHNICAL ANALYSIS
- 6.0 REGULATORY ANALYSIS
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- 10.0 REFERENCES

1.0 INTRODUCTION

Exelon Generation Company, LLC, Licensee under Facility Operating License No. DPR-44 for Peach Bottom Atomic Power Station (PBAPS), Unit 2, requests that the Technical Specifications (TS) contained in Appendix A to the Operating License be amended to revise TS 2.1 to reflect a change in the Safety Limit Minimum Critical Power Ratios (SLMCPRs) due to the cycle specific analysis performed by Global Nuclear Fuel for PBAPS, Unit 2, Cycle 15. The marked up Technical Specification pages and final Technical Specification pages are contained in Attachments 2 and 3, respectively. Attachment 4 (letter from C. P. Collins (Global Nuclear Fuel) to K. Donovan (Exelon Generation Company, LLC), dated May 3, 2002) specifies the new SLMCPRs for PBAPS, Unit 2, Cycle 15.

2.0 DESCRIPTION OF THE PROPOSED AMENDMENT

The proposed amendment involves revising the Safety Limit Minimum Critical Power Ratio (SLMCPR) values contained in TS 2.1 for two recirculation loop operation and single recirculation loop operation. The SLMCPR values are being revised for PBAPS, Unit 2 based on the reload core design for Cycle 15, which will use the GE-14 fuel product line. GE-14 fuel has previously been loaded at the Peach Bottom Atomic Power Station in both Units 2 and 3 for their respective Cycles 14.

3.0 BACKGROUND

The SLMCPRs have been determined in accordance with NRC approved methodology described in "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U. S. Supplement, NEDE-24011-P-A-14-US, June, 2000, which incorporates Amendment 25. Amendment 25 provides the methodology for determining the cycle specific MCPR safety limits that replace the former generic fuel type dependent values. Amendment 25 is used for determining the upcoming Cycle 15 SLMCPRs. Future SLMCPRs determined in accordance with Amendment 25 will not need prior NRC approval for each cycle unless the value changes. The NRC safety evaluation approving Amendment 25 is contained in a letter from the NRC to General Electric Company, dated March 11, 1999 (F. Akstulewicz (NRC) to G. 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)).

Global Nuclear Fuel has designed GE-14 fuel to be in compliance with Amendment 22 incorporated in "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U. S. Supplement, NEDE-24011-P-A-14-US, June, 2000. Amendment 22 was the basis for compliance for GE-13, which is currently installed at PBAPS, Units 2 and 3.

4.0 REGULATORY REQUIREMENTS & GUIDANCE

10 CFR 50.36 – "Technical Specifications"

5.0 TECHNICAL ANALYSIS

The proposed TS change will revise TS 2.1 to reflect the changes in the cycle specific analysis performed by Global Nuclear Fuel for PBAPS, Unit 2, Cycle 15, which includes the use of the GE-14 fuel product line.

The new SLMCPRs are calculated using NRC approved methodology described in "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U.S. Supplement, NEDE-24011-P-A-14-US, June, 2000, which incorporates Amendment 25. Amendment 25 is used for determining the upcoming Cycle 15 SLMCPRs. Future SLMCPRs determined in accordance with Amendment 25 will not need prior NRC approval for each cycle unless a value changes. The NRC safety evaluation approving Amendment 25 is contained in a letter from the NRC to General Electric Company, dated March 11, 1999.

Global Nuclear Fuel has designed GE-14 fuel to be in compliance with Amendment 22 to "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U. S. Supplement, NEDE-24011-P-A-14-US, June, 2000. Amendment 22 was the basis for compliance for GE-13.

The SLMCPR analysis establishes SLMCPR values that will ensure that greater than 99.9% of all fuel rods in the core avoid transition boiling if the limit is not violated. The SLMCPRs are calculated to include cycle specific parameters which include: 1) the actual core loading, 2) conservative variations of projected control blade patterns, 3) the actual bundle parameters (e.g., local peaking), and 4) the full cycle exposure range. The new SLMCPRs at PBAPS, Unit 2, Cycle 15 are 1.07 (two-loop operation) and 1.09 (single-loop operation) as shown in Attachment 4. Additional information regarding the 1.07 and 1.09 cycle specific SLMCPRs for PBAPS, Unit 2 Cycle 15 are contained in the Attachment 4 letter.

6.0 REGULATORY ANALYSIS

10 CFR 50.36(c)(1) requires that safety limits be included in the plant Technical Specifications. Therefore, the SLMCPR is included in the PBAPS, Unit 2 Technical Specifications. The SLMCPRs have been determined in accordance with NRC approved methodology described in "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U. S. Supplement, NEDE-24011-P-A-14-US, June, 2000

7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

We have concluded that the proposed change to the PBAPS, Unit 2 Technical Specifications (TS), which will revise TS 2.1, does 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(c) is provided below.

1. The proposed TS change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The derivation of the cycle specific Safety Limit Minimum Critical Power Ratios (SLMCPRs) for incorporation into the Technical Specifications (TS), and their use to determine cycle specific thermal limits, has been performed using the methodology discussed in "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U.S. Supplement, NEDE-24011-P-A-14-US, June, 2000, which incorporates Amendment 25. Amendment 25 was approved by the NRC in a March 11, 1999 safety evaluation report.

The basis of the SLMCPR calculation is to ensure that greater than 99.9% of all fuel rods in the core avoid transition boiling if the limit is not violated. The new SLMCPRs preserve the existing margin to transition boiling. The GE-14 fuel is in compliance with Amendment 22 to

"General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U. S. Supplement, NEDE-24011-P-A-14-US, June, 2000, which provides the fuel licensing acceptance criteria. The probability of fuel damage will not be increased as a result of this change. Therefore, the proposed TS change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed TS change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The SLMCPR is a TS numerical value, calculated to ensure that transition boiling does not occur in 99.9% of all fuel rods in the core if the limit is not violated. The new SLMCPRs are calculated using NRC approved methodology discussed in "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U.S. Supplement, NEDE-24011-P-A-14-US, June, 2000, which incorporates Amendment 25. Additionally, the GE-14 fuel is in compliance with Amendment 22 to "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U. S. Supplement, NEDE-24011-P-A-14-US, June, 2000, which provides the fuel licensing acceptance criteria. The SLMCPR is not an accident initiator, and its revision will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed TS change does not involve a significant reduction in a margin of safety.

There is no significant reduction in the margin of safety previously approved by the NRC as a result of the proposed change to the SLMCPRs, which includes the use of GE-14 fuel. The new SLMCPRs are calculated using methodology discussed in "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U.S. Supplement, NEDE-24011-P-A-14-US, June, 2000, which incorporates Amendment 25. The SLMCPRs ensure that greater than 99.9% of all fuel rods in the core will avoid transition boiling if the limit is not violated when all uncertainties are considered, thereby preserving the fuel cladding integrity. Therefore, the proposed TS change will not involve a significant reduction in the margin of safety previously approved by the NRC.

Based on the above, Exelon Generation Company, LLC, concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

8.0 ENVIRONMENTAL CONSIDERATION

An environmental assessment is not required for the proposed change to the SLMCPR limits since the proposed change conforms to the criteria for "actions eligible for categorical exclusion" as specified in 10 CFR 51.22(c)(9). The proposed change will have no impact on the environment. The proposed change does not involve a significant hazards consideration as discussed in the preceding section. The proposed change does not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite. In addition, the proposed change does not involve a significant increase in individual or cumulative occupational radiation exposure.

9.0 PRECEDENT

In a letter dated June 14, 2000 (letter from J. A. Hutton (PECO Energy Company (now Exelon Generation Company, LLC)) to U. S. Nuclear Regulatory Commission), Exelon Generation Company, LLC, submitted License Change Application ECR 00-00759 for Peach Bottom Atomic

Power Station, Unit 2. This submittal incorporated the revised dual- and single-loop SLMCPR values into the Technical Specifications for PBAPS, Unit 2 Cycle 14 in a similar manner that this submittal is requesting to incorporate the revised values for SLMCPR in the Technical Specifications for PBAPS, Unit 2 Cycle 15. This Technical Specifications Change Request was approved in a Safety Evaluation Report dated September 22, 2000 (letter from J. P. Boska (U. S. Nuclear Regulatory Commission) to J. A. Hutton (PECO Energy Company (now Exelon Generation Company, LLC))). PBAPS, Unit 2 Cycle 14 was the first use of GE-14 fuel in the Unit 2 core. PBAPS, Unit 2 Cycle 15 will be the second use of GE-14 fuel in the Unit 2 core. The revised SLMCPR values for PBAPS, Unit 2 Cycle 15 were calculated using the Amendment 25 methodology.

REFERENCES

1. "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-14 (GESTAR-II), and U.S. Supplement, NEDE-24011-P-A-US, June, 2000

ATTACHMENT 2

PEACH BOTTOM ATOMIC POWER STATION
UNIT 2

DOCKET NO. 50-277

LICENSE NO. DPR-44

LICENSE AMENDMENT REQUEST 02-00304

"Revision of SLMCPRs"

MARKED UP TECHNICAL SPECIFICATION PAGES

UNIT 2

Page 2.0-1

2.0 SAFETY LIMITS (SLs)

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 ≤ 25% RTP.

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

1.07
1.09 MCPR shall be ≥ 1.09 for two recirculation loop operation or ≥ 1.10 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 ≤ 1325 psig.

2.2 SL Violations

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

2.2.1 Within 1 hour, notify the NRC Operations Center, in accordance with 10 CFR 50.72.

2.2.2 Within 2 hours:

2.2.2.1 Restore compliance with all SLs; and

2.2.2.2 Insert all insertable control rods.

2.2.3 Within 24 hours, notify the Plant Manager and the Vice President - Peach Bottom Atomic Power Station.

(continued)

ATTACHMENT 3

PEACH BOTTOM ATOMIC POWER STATION
UNIT 2

DOCKET NO. 50-277

LICENSE NO. DPR-44

LICENSE AMENDMENT REQUEST 02-00304

"Revision of SLMCPRs"

CAMERA-READY TECHNICAL SPECIFICATION PAGES

UNIT 2

Page 2.0-1

2.0 SAFETY LIMITS (SLs)

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 1.07 for two recirculation loop operation or \geq 1.09 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.

2.2 SL Violations

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

2.2.1 Within 1 hour, notify the NRC Operations Center, in accordance with 10 CFR 50.72.

2.2.2 Within 2 hours:

2.2.2.1 Restore compliance with all SLs; and

2.2.2.2 Insert all insertable control rods.

2.2.3 Within 24 hours, notify the Plant Manager and the Vice President—Peach Bottom Atomic Power Station.

(continued)

ATTACHMENT 5

PEACH BOTTOM ATOMIC POWER STATION
UNIT 2

Docket No. 50-277

License No. DPR-44

LICENSE AMENDMENT REQUEST 02-00304

NON-PROPRIETARY VERSION

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.
- [4] Letter, Glen A. Watford (GNF-A) to U. S. Nuclear Regulatory Commission Document Control Desk with attention to R. Pulsifer (NRC), "Confirmation of 10x10 Fuel Design Applicability to Improved SLMCPR, Power Distribution and R-Factor Methodologies", FLN-2001-016, September 14, 2001.
- [5] Letter, Glen A. Watford (GNF-A) to U. S. Nuclear Regulatory Commission Document Control Desk with attention to J.E. Donoghue (NRC), "Confirmation of Applicability of the GEXL14 Correlation and Associated R-Factor Methodology for Calculating SLMCPR Values in Cores Containing GE14 Fuel", FLN-2001-017, October 1, 2001.
- [6] Letter, G.A. Watford (GNF) to J.E. Donoghue (NRC), Final Presentation Material for GEXL Presentation - February 11, 2002; FLN-2002-004; February 12, 2002.
- [7] GNF-A design record file (DRF) 0000-0002-7280 titled "Peach Bottom 2 Cycle 15 – Safety Limit MCPR (SLMCPR)".

Comparison of Peach Bottom Unit 2 SLMCPR Values for Cycles 15 and 14

Table 1 summarizes the relevant input parameters and results of the SLMCPR determination for the Peach Bottom Unit 2 Cycle 15 and 14 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 Peach Bottom Unit 2 Cycle 15 and Cycle 14 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.

In general, the calculated safety limit is dominated by two key parameters: (1) flatness of the core bundle-by-bundle MCPR distributions and (2) flatness of the bundle pin-by-pin

power/R-factor distributions. Greater flatness in either parameter yields more rods susceptible to boiling transition and thus a higher calculated SLMCPR.

[[]]

The uncontrolled bundle pin-by-pin power distributions were compared between the Peach Bottom Unit 2 Cycle 15 bundles and the Cycle 14 bundles. Pin-by-pin power distributions are characterized in terms of R-factors using the NRC approved methodology^[2]. For the Peach Bottom Unit 2 Cycle 15 limiting case analyzed at EOR-1K, [[]] the Peach Bottom Unit 2 Cycle 14 bundles are flatter than the bundles used for the Cycle 15 SLMCPR analysis.

Summary

[[]] have been used to compare quantities that impact the calculated SLMCPR value. Based on these comparisons, the conclusion is reached that the Peach Bottom Unit 2 Cycle 15 core has a flatter core MCPR distribution [[]] than what was used to perform the Cycle 14 SLMCPR evaluation; and the Peach Bottom Unit 2 Cycle 14 core has a flatter in-bundle power distributions [[]] than what was used to perform the Cycle 15 SLMCPR evaluation.

The calculated 1.07 Monte Carlo SLMCPR for Peach Bottom Unit 2 Cycle 15 is consistent with what one would expect [[]] the 1.07 SLMCPR value is appropriate.

Based on all of the facts, observations and arguments presented above, it is concluded that the calculated SLMCPR value of 1.07 for the Peach Bottom Unit 2 Cycle 15 core is appropriate. It is reasonable that this value is 0.02 less 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 1.09 as determined by specific calculations for Peach Bottom Unit 2 Cycle 15.

Supporting Information

The following information is provided in response to NRC questions on similar submittals regarding changes in Technical Specification values of SLMCPR. NRC questions pertaining to how GE14 applications satisfy the conditions of the NRC SER^[1] have been addressed in Reference [4]. Other generically applicable questions related to application of the GEXL14 correlation and the applicable range for the R-factor methodology are addressed in Reference [5]. Only those items that require a plant/cycle specific response are presented below since all the others are contained in the references that have already been provided to the NRC.

The core loading information for Peach Bottom Unit 2 Cycles 14 and 15 is provided in Figures 1 and 2, respectively. The impact of the fuel loading pattern differences on the calculated SLMCPR is correlated to the values of [[]]

Table 1
Comparison of the Peach Bottom Unit 2 Cycle 15 and Cycle 14 SLMCPR

QUANTITY, DESCRIPTION	Peach Bottom Unit 2 Cycle 14	Peach Bottom Unit 2 Cycle 15
Number of Bundles in Core	764	764
Limiting Cycle Exposure Point	PHE	EOR-1.0K
Cycle Exposure at Limiting Point [MWd/STU]	12800	14300
Reload Fuel Type	GE14	GE14
Latest Reload Batch Fraction [%]	38.2%	37.2%
Latest Reload Average Batch Weight % Enrichment	3.96%	4.16%
Batch Fraction for GE14	38.2%	75.4%
Batch Fraction for GE13	61.8%	24.6%
Core Average Weight % Enrichment	4.00%	4.07%
Core MCPR (for limiting rod pattern)	1.34	1.38
[[]]
[[]]
Power distribution uncertainty	GETAB	GETAB
Non-power distribution uncertainty	Revised	Revised
Calculated Safety Limit MCPR	1.09	1.07

Assessment of Potential Penalty for Top-Peaked Power Shape

In a meeting with the NRC staff on February 11, 2002 (Reference [6]) [[]] To evaluate the impact on SLMCPR, the process described in Reference [6] was applied to Peach Bottom Unit 2, Cycle 15. The results are shown in Table 2.

Table 2

Net Adjustment to SLMCPR [[to account for Top-peaked Power Shapes]]		Dual Loop Operation	Single Loop Operation
	Proposed SLMCPR	1.07	1.09
Step	Calculated M/C SLMCPR	[[]]	[[]]
1	Margin to Proposed SLMCPR	[[]]	[[]]
2,3	[[]]	[[]]	[[]]
4	Credit for Reduced Uncertainties	[[]]	[[]]
	[[]]	[[]]	[[]]
	Net unrounded change	[[]]	[[]]
	Adjusted SLMCPR with rounding	1.07	1.09
	Requested SLMCPR for Tech Specs	1.07	1.09

As indicated in Table 2, no SLMCPR penalty was assessed [[]] for Peach Bottom Unit 2, Cycle 15 because the process documented in the next paragraph revealed that such a penalty is not applicable.

[[]] The details for the cycle-specific assessment that was performed for Peach Bottom Unit 2, Cycle 15 are documented in Reference [7].

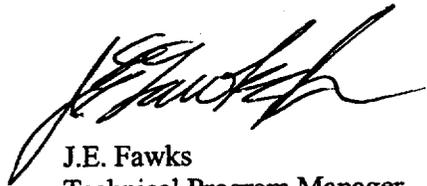
Therefore, as indicated in Table 2, no change is needed in the requested values for the Dual Loop Operation (DLO) and Single Loop Operation (SLO) Technical Specification SLMCPR for Peach Bottom Unit 2, Cycle 15.

Prepared by:



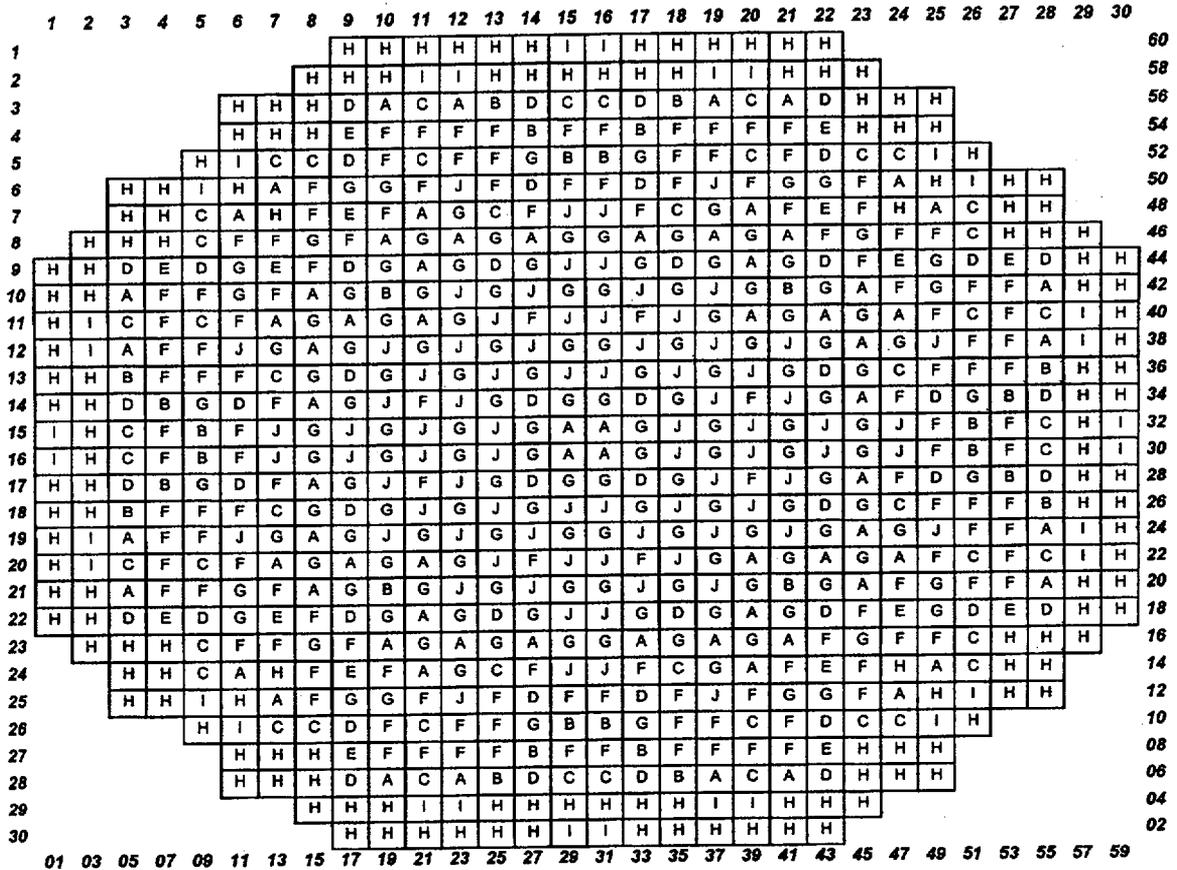
H. Zhang
Technical Program Manager

Verified by:



J.E. Fawks
Technical Program Manager

Figure 2 Reference Core Loading Pattern – Cycle 15



Bundle Name	Number in Core	Cycle Loaded
A GE14-P10DNAB396-14GZ-100T-150-T-2408	72	14
B GE14-P10DNAB397-15GZ-100T-150-T-2407	28	14
C GE14-P10DNAB396-14GZ-100T-150-T-2408	48	14
D GE14-P10DNAB397-15GZ-100T-150-T-2407	48	14
E GE14-P10DNAB396-14GZ-100T-150-T-2408	16	14
F GE14-P10DNAB416-15GZ-100T-150-T-2544	136	15
G GE14-P10DNAB416-16GZ-100T-150-T-2545	148	15
H GE13-P9DTB409-13GZ-100T-146-T	156	13
I GE13-P9DTB406-12GZ-100T-146-T	32	13
J GE14-P10DNAB397-15GZ-100T-150-T-2407	80	14
Total	764	