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10 CFR 50.90

June 23, 2003

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

Peach Bottom Atomic Power Station, Unit 3
Facility Operating License No. DPR-56
NRC Docket No. 50-278

SUBJECT: License Amendment Request: AR A1418692
Safety Limit Minimum Critical Power Ratio (SLMCPR) 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-56 for Peach Bottom Atomic Power Station (PBAPS), Unit 3. 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 (SLMCPRs) due to the cycle specific analysis performed by Global Nuclear Fuel for PBAPS, Unit 3, Cycle 15, which will include the use of the GE-13 and GE-14 fuel product lines. 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 T. G. Orr (Global Nuclear Fuel) to R. Tropasso (Exelon Generation Company, LLC), dated May 27, 2003) specifies the new SLMCPRs for PBAPS, Unit 3, Cycle 15. 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.

Exelon requests approval of the proposed amendment by September 19, 2003.

This amendment shall be implemented prior to startup from the upcoming PBAPS, Unit 3 outage.

Additionally, there are no commitments contained within this letter.

A001

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 foregoing is true and correct.

Respectfully,

06-23-03
Executed on

Michael P. Gallagher
Director, Licensing and 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

ATTACHMENT 1

PEACH BOTTOM ATOMIC POWER STATION
UNIT 3

DOCKET NO. 50-278

LICENSE NO. DPR-56

LICENSE AMENDMENT REQUEST: AR A1418692

"Revision of SLMCPRs"

ATTACHMENT 1 CONTENTS

SUBJECT: SAFETY LIMIT MINIMUM CRITICAL POWER RATIO (SLMCPR) CHANGE

1.0 DESCRIPTION

Exelon Generation Company, LLC, Licensee under Facility Operating License No. DPR-56 for Peach Bottom Atomic Power Station (PBAPS), Unit 3, 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 3, Cycle 15, which includes the use of the GE-13 and GE-14 fuel product lines. The marked up Technical Specification pages and final Technical Specification pages are contained in Attachments 2 and 3, respectively. Attachment 4 (letter from T. G. Orr (Global Nuclear Fuel) to R. Tropasso (Exelon Generation Company, LLC), dated May 27, 2003) specifies the new SLMCPRs for PBAPS, Unit 3, Cycle 15.

2.0 PROPOSED CHANGE

The proposed change 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 value for two loop operation is being changed from ≥ 1.09 to ≥ 1.07. The SLMCPR value for single loop operation is being changed from ≥ 1.11 to ≥ 1.09.

Marked up Technical Specification page 2.0-1 showing the requested changes is provided in Attachment 2.

3.0 BACKGROUND

The proposed change 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 3 based on the reload core design for Cycle 15, which will use the second reload of the GE-14 fuel product line. GE-14 fuel has previously been loaded at the Peach Bottom Atomic Power Station in Unit 3 for Cycle 14. 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)). The SLMCPRs have been calculated using the revised methodology of NEDC-32601P-A and the reduced power distribution uncertainties from NEDC-32694P-A as shown in Tables 1 and 2 of Attachment 4.

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, Unit 3.

4.0 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 3, Cycle 15, which includes the use of the GE-13 and GE-14 fuel product lines.

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 fuel.

The SLMCPR analysis establishes SLMCPR values that will ensure that during normal operation and during abnormal operational transients, at least 99.9% of all fuel rods in the core do not experience 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 3, 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 3, Cycle 15 are contained in the Attachment 4 letter.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

We have concluded that the proposed change to the PBAPS, Unit 3 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. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   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 during normal operation and during abnormal operational transients, at least 99.9% of all fuel rods in the core do not experience 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. Amendment 22 was the basis for compliance for GE-13 fuel. 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. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The SLMCPR is a TS numerical value, calculated to ensure that during normal operation and during abnormal operational transients, at least 99.9% of all fuel rods in the core do not experience transition boiling 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. Amendment 22 was the basis for compliance for GE-13 fuel. 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. Does the proposed amendment involve a significant reduction in a margin of safety?

   Response: No.

   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-13

and GE-14 fuel product lines. 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 during normal operation and during abnormal operational transients, at least 99.9% of all fuel rods in the core do not experience 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.

5.2 Applicable Regulatory Requirements/Criteria

Safety limits are required to be included in the Technical Specifications by 10 CFR 50.36. The SLMCPR ensures sufficient conservatism in the operating MCPR limit that during normal operation and during abnormal operational transients, at least 99.9% of all fuel rods in the core do not experience transition boiling considering the power distribution within the core and all uncertainties.

In conclusion, based on the considerations discussed above, (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.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

a) NEDE-24011-P-A-14 (GESTAR-II), "General Electric Standard Application for Reactor Fuel,", and U. S. Supplement, NEDE-24011-P-A-14-US, June, 2000, which incorporates Amendment 25

b) NRC Safety Evaluation Report 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)).

c) NEDC-32601P-A, Methodology and Uncertainties for Safety Limit MCPR Evaluations.

d) NEDC-32694P-A, Power Distribution Uncertainties for Safety Limit MCPR Evaluation.

e) Letter from T. G. Orr (Global Nuclear Fuel) to R. Tropasso (Exelon Generation Company, LLC) dated May 27, 2003 (Proprietary).

Precedence

In a letter dated July 12, 1999 (letter from Garrett D. Edwards (PECO Nuclear) to U. S. Nuclear Regulatory Commission), PECO Nuclear, submitted Technical Specifications Change Request Application ECR 99-01255 for Peach Bottom Atomic Power Station (PBAPS), Unit 3. This submittal incorporated the revised dual- and single-loop SLMCPR values into the Technical Specifications for PBAPS, Unit 3 Cycle 13 in a similar manner that this submittal is requesting to incorporate the revised values for SLMCPR in the Technical Specifications for PBAPS, Unit 3 Cycle 15. This Technical Specifications Change Request was approved in a Safety Evaluation Report dated October 5, 1999 (letter from B. C. Buckley (U. S. Nuclear Regulatory Commission) to J. S. Hutton (PECO Nuclear). The revised SLMCPR values for PBAPS, Unit 3 Cycle 13 were calculated using the methodology discussed in "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A (GESTAR-II), and U.S. Supplement, NEDE-24011-P-A-US, similar to the SLMCPR values for PBAPS, Unit 3 Cycle 15. A Technical Specification change request was not submitted for PBAPS, Unit 3 Cycle 14 SLMCPRs, as the values did not change significantly from the PBAPS, Unit 3 Cycle 13 values. The main difference in the determination between the PBAPS, Unit 3 Cycle 13 and 14 SLMCPRs and the PBAPS, Unit 3 Cycle 15 SLMCPR in the use of the reduced power distribution uncertainty as described in NEDC-32694P-A rather than the GETAB power distribution uncertainty used in previous submittals.

ATTACHMENT 2

PEACH BOTTOM ATOMIC POWER STATION
UNIT 3

DOCKET NO. 50-278

LICENSE NO. DPR-56

LICENSE AMENDMENT REQUEST: AR A1418692

"Revision of SLMCPRs"

MARKED UP TECHNICAL SPECIFICATION

UNIT 3

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:

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 3

DOCKET NO. 50-278

LICENSE NO. DRF-56

LICENSE AMENDMENT REQUEST: AR A1418692

"Revision of SLMCPRs"

CAMERA-READY TECHNICAL SPECIFICATION PAGES

UNIT 3

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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:

MCPR shall be ≥ 1.07 for two recirculation loop operation or ≥ 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 ≤ 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 3

Docket No. 50-278

License No. DPR-56

LICENSE AMENDMENT REQUEST: AR A1418692

Letter from T. G. Orr (Global Nuclear Fuel) to R. Tropasso (Exelon Generation Company, LLC),
Dated May 27, 2003

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 24, 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) 0000-0012-0085 for Peach Bottom 3 Cycle 15 – Safety Limit MCPR (SLMCPR), titled "SLMCPR. Rev 0"

[8] GNF-A design record file (DRF) 0000-0017-1842 for Peach Bottom 3 Cycle 15 – Safety Limit MCPR (SLMCPR), titled "Peach Bottom 3 SLMCPR. Rev 1"

Comparison of Peach Bottom 3 SLMCPR Values for Cycles 15 and 14

Table 1 summarizes the relevant input parameters and results of the SLMCPR determination for the Peach Bottom 3 Cycle 15 and 14 cores. Table 2 provides a more detailed presentation of the bases and results for the Cycle 15 and Cycle 14 analyses. 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 3 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. The Cycle 14 column and the GETAB power distribution uncertainty

column for Cycle 15 are both provided for comparison to the Cycle 15 reduced power distribution uncertainty column.

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 3 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 3 Cycle 15 limiting case analyzed at EOC, [[ ]] the Peach Bottom 3 Cycle 15 bundles are flatter than the bundles used for the Cycle 14 SLMCPR analysis.

With a much flatter core MCPR distribution in Cycle 15 than in Cycle 14, and with a slightly flatter bundle R-factor distribution in Cycle 15 relative to the Cycle 14 bundles, it would be expected that the Cycle 15 SLMCPR result would be higher than the Cycle 14 result. Table 1 shows that when using the same uncertainties the Cycle 15 SLMCPR value is higher than the Cycle 14 SLMCPR.

As indicated in Table 1, the NRC approved[1] reduced power distribution uncertainties have been assumed for the Peach Bottom 3 Cycle 15 analyses. For the Cycle 14 case, the standard GETAB power distribution uncertainties were used. Use of the reduced power distribution uncertainties results in a reduction of the SLMCPR by approximately [[ ]] from Cycle 14.

The potential impact of a bias on the calculated SLMCPR due to [[ ]].

Comparison of the GETAB and Reduced Uncertainties

The power distribution and other uncertainties that are the bases for the proposed Tech Spec safety limit for Peach Bottom 3 Cycle 15 are identified in Table 2. Column 2 of Table 2 shows the power distribution and other uncertainties that are the bases for the current Tech Spec safety limit for Cycle 14. Note that while a safety limit for Cycle 14 was calculated at [[ ]], Exelon chose to retain the 1.09 value from Cycle 13 for application to Cycle 14. The revised bases to support the proposed Tech Spec change in safety limit for Cycle 15 are identified in column 3b of Table 2. The GETAB bases and values for Cycle 15 are provided for comparison purposes in column 3a. By comparing the values from columns 2 for Cycle 14 and column 3a for Cycle 15, one may see that the calculated SLMCPR for Cycle 15 is

higher [[ ]] than the value for Cycle 14 when using the same GETAB model and uncertainties for both calculations.

The revised model and reduced power distribution uncertainties affect the calculated SLMCPR for Peach Bottom 3 Cycle 15 as indicated in Table 2. Bases that have not changed are not reported in either table except where it is important to indicate that the bases have not changed. For these exceptions, the impact on the SLMPCR is indicated as "None" in the rightmost column of Table 2. For the other items where a change in basis is indicated, the calculated impact that each item has on the calculated SLMCPR is indicated.

The impacts from the changes in bases have been grouped into three categories. In each category the shaded cells contain values that sum to produce the total impact for that category indicated in the cell immediately below the shaded cells.

In Section 1 of Table 2 the impact of using the "revised uncertainties not related to power distribution" is indicated as "None" since the same revised uncertainties were used for both the GETAB calculation (Column 3a) and the revised calculation (Column 3b).

Likewise, in Section 3 of Table 2 the "secondary impact on SLMCPR because the reduced SLMCPR causes a lower OLMCPR" is indicated as "None" since both the GETAB calculation and the revised calculation use the same set of limiting rod patterns, [[ ]]

The entire change in the calculated SLMCPR is the reduction that is due to use of the NRC-approved revised power distribution model and its associated reduced uncertainties as described in NEDC-32694P-A. For Peach Bottom 3 Cycle 15 the calculated SLMCPR was reduced by [[ ]] as indicated in Section 2 of Table 2. This amount of improvement is consistent with the expected improvements as presented to the NRC in Table 4.3 of NEDC-32694P-A. Of this improvement, about [[ ]] is attributed to the reduced uncertainties themselves and the remaining [[ ]] is attributed to the methodology improvements described in NEDC-32694P-A.

Reduction in the Tech Spec SLMCPRs by these calculated amounts is warranted since the old GETAB value is overly conservative. The excessive conservatism in the GETAB model and inputs is primarily due to the higher [[ ]] uncertainty [[ ]]. These limitations are not applicable to the 3D-MONICORE (3DM) monitoring system. The revised power distribution model and reduced uncertainties associated with 3DM have been justified, reviewed and approved by the NRC (reference NEDC-32601P-A and NEDC-32694P-A). The conservatism that remains even when applying the revised model and reduced uncertainties to calculate a lower SLMCPR was documented as part of the NRC review and approval. It was noted on page A-24 of NEDC-32601P-A [[ ]]

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 3 Cycle 15 core has a

flatter core MCPR distribution [[ ]] than what was used to perform the Cycle 14 SLMCPR evaluation; and the Peach Bottom 3 Cycle 15 core has a flatter in-bundle power distributions [[as indicated by RIP]] than what was used to perform the Cycle 14 SLMCPR evaluation.

The calculated 1.05 Monte Carlo SLMCPR for Peach Bottom 3 Cycle 15 is consistent with what one would expect [[ ]] the 1.05 SLMCPR value is appropriate. A value of 1.07 is recommended for use in the technical specifications.

Based on all of the facts, observations and arguments presented above, it is concluded that the calculated SLMCPR value of 1.05 for the Peach Bottom 3 Cycle 15 core is appropriate. It is reasonable that this value is 0.03 lower than the 1.08 value calculated for the previous cycle.

For single loop operations (SLO) the calculated safety limit MCPR for the limiting case is 1.07 as determined by specific calculations for Peach Bottom 3 Cycle 15. For the technical specifications, a SLO value of 1.09 is recommended.

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 3 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 [[ ]]

Prepared by:

J. Rea
Technical Program Manager

Verified by:

J.E. Fawks
Technical Program Manager

Table 1
Comparison of the Peach Bottom 3 Cycle 15 and Cycle 14 SLMCPR

QUANTITY, DESCRIPTION	Peach Bottom 3 Cycle 14	Peach Bottom 3 Cycle 15	Peach Bottom 3 Cycle 15
Number of Bundles in Core	764	764	764
Limiting Cycle Exposure Point	EOC	EOC	EOC
Cycle Exposure at Limiting Point [MWd/STU]	14,000	13,600	13,600
Reload Fuel Type	GE14	GE14	GE14
Latest Reload Batch Fraction [%]	37.2%	37.2%	37.2%
Latest Reload Average Batch Weight % Enrichment	4.10%	4.15%	4.15%
Batch Fraction for GE14	37.2%	74.3%	74.3%
Batch Fraction for GE13	62.8%	25.7%	25.7%
Core Average Weight % Enrichment	4.05%	4.11%	4.11%
Core MCPR (for limiting rod pattern)	1.39	1.38	1.38
[[			]]
[[			]]
Power distribution uncertainty	GETAB	GETAB	REDUCED
Non-power distribution uncertainty	Revised	Revised	Revised
Monte Carlo Calculated Safety Limit MCPR	**1.08**	**1.09**	**1.05**
Recommended Tech Spec Safety Limit MCPR	**1.09**[1]		**1.07**

[1] The technical specification value of 1.09 from Cycle 13 was retained for Cycle 14 operation.

Table 2

Peach Bottom 3 Cycles 14 and 15 SLMCPR Results Assessment

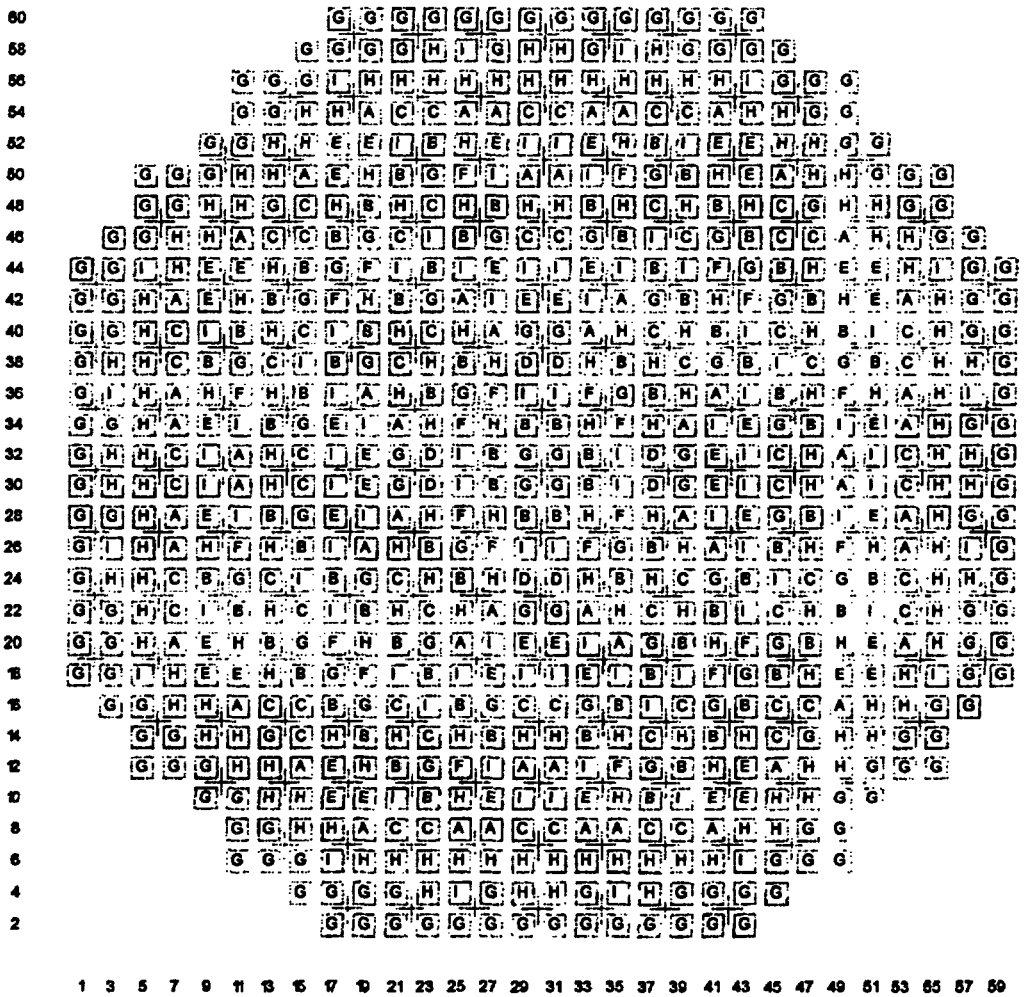
1	2	3a	3b	4
Quantity	Cycle 14 GETAB Value	Cycle 15 GETAB Value	Cycle 15 Revised Bases	Impact on SLMCPR for Cycle 15 (col. 3b-3a)
Tech Spec	Current	Used only for comparison	Proposed	-0.02
1. Impact of Revised Uncertainties Not Related to Power Distribution				
Reference Document	NEDC-32601P-A August 1999	NEDC-32601P-A August 1999	NEDC-32601P-A August 1999	Approved by NRC
Core flow rate (derived from pressure drop)	[[[[		]]	None
Individual channel flow area	[[		]]	None
Individual channel friction factor	[[		]]	None
Friction factor multiplier	[[		]]	None
Reactor pressure	[[		]]	None
Core inlet temperature	[[		]]	None
Feedwater temperature	[[		]]	None
Feedwater flow rate	[[		]]	None
				[[ ]]
2. Impact of Reduced Power Distribution Uncertainties and Revised Modeling				
Reference Document	NEDO-10958-A January 1977	NEDO-10958-A January 1977	NEDC-32694P-A August 1999	Both approved by NRC
R-factor uncertainty	[[		]]	None
Critical power uncertainty (The GE14 value revised since last cycle analysis)	[[		]]	None
TIP random uncertainty component	[[		]]	None
Adaptive mode used for analysis	Absolute		Shape	None
Effective total bundle power uncertainty	[[		]]	Part of overall TIPSYS
Effective non-random TIPSYS	[[		]]	Part of overall TIPSYS
Effective overall TIPSYS uncertainty as modeled	[[		]]	[[ ]]

Table 2 (cont.)

Peach Bottom 3 Cycles 14 and 15 SLMCPR Results Assessment

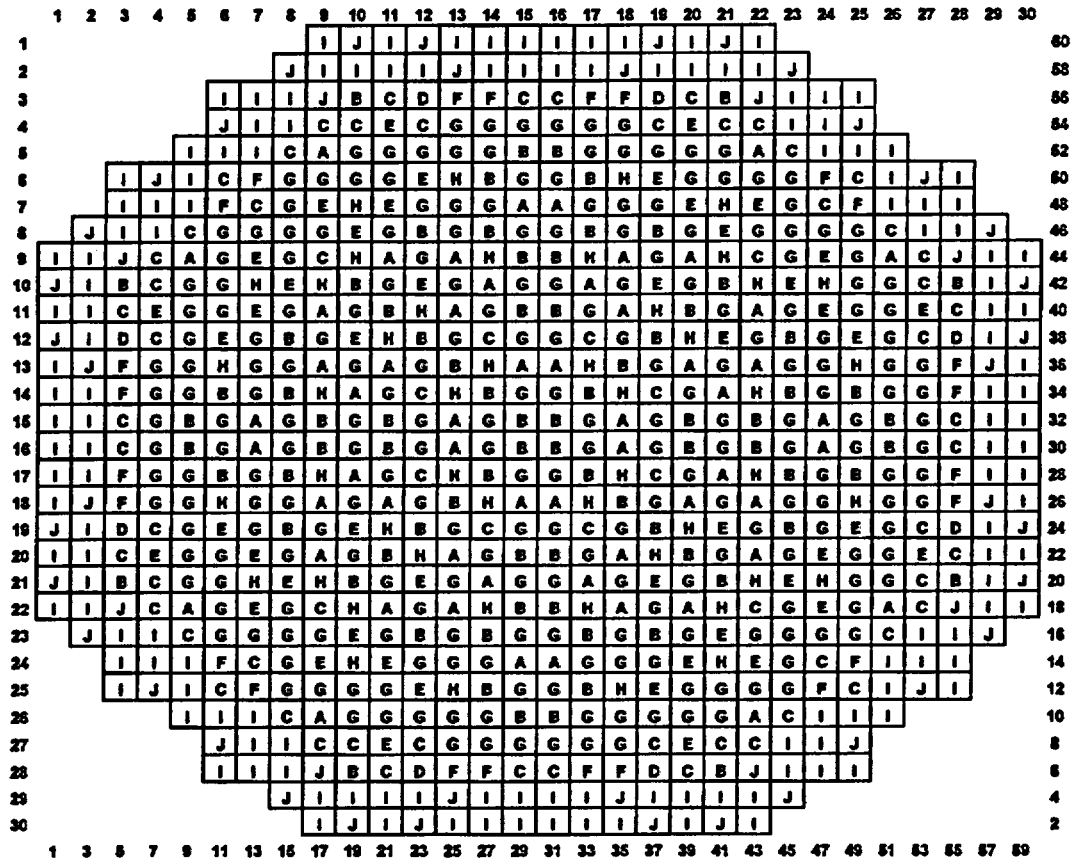
3. Secondary Impact on SLMCPR because Reduced SLMCPR causes a Lower OLMCPR				
Target OLMCPR			1.38	None
[[			]]	None
[[			]]	None
[[			]]	None
				[[ ]]
Total Impact on Tech Spec SLMCPR and SLO SLMCPR				
Calculated SLMCPR	[[			]]
Calculated SLO SLMCPR	[[			]]
Recommended Tech Spec SLMCPR	1.09	[[ ]]	1.07	[[ ]]
Recommended Tech Spec SLO SLMCPR	1.11	[[ ]]	1.09	[[ ]]

Figure 1 Reference Core Loading Pattern – Cycle 14



	Bundle Name	Number in Core	Cycle Loaded
A	GE14-P10DNAB410-14GZ-100T-150-T-2468	56	14
B	GE14-P10DNAB411-14GZ-100T-150-T-2466	80	14
C	GE14-P10DNAB410-14GZ-100T-150-T-2468	68	14
D	GE14-P10DNAB411-14GZ-100T-150-T-2466	8	14
E	GE14-P10DNAB410-14GZ-100T-150-T-2468	48	14
F	GE14-P10DNAB411-14GZ-100T-150-T-2468	24	14
G	GE13-P9DTB400-13GZ-100T-146-T	204	12
H	GE13-P9DTB404-13GZ-100T-146-T	188	13
I	GE13-P9DTB407-14GZ-100T-146-T	88	13

Figure 2 Reference Core Loading Pattern – Cycle 15



	Bundle Name	Number in Core	Cycle Loaded
A	GE14-P10DNAB410-14GZ-100T-150-T6-2469	56	14
B	GE14-P10DNAB411-14GZ-100T-150-T6-2467	80	14
C	GE14-P10DNAB410-14GZ-100T-150-T6-2469	68	14
D	GE14-P10DNAB411-14GZ-100T-150-T6-2467	8	14
E	GE14-P10DNAB410-14GZ-100T-150-T6-2469	48	14
F	GE14-P10DNAB411-14GZ-100T-150-T6-2467	24	14
G	GE14-P10DNAB415-15GZ-100T-150-T6-2642	236	15
H	GE14-P10DNAB416-15GZ-100T-150-T6-2643	48	15
I	GE13-P9DTB404-13GZ-100T-146-T6	148	13
J	GE13-P9DTB407-14GZ-100T-146-T6	48	13