

10 CFR 50.90

August 2, 2002

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555Peach Bottom Atomic Power Station, Unit 2  
Facility Operating License No. DPR-44  
NRC Docket No. 50-277Subject: License Amendment Request 02-00304  
Response to Request for Additional Information Concerning Safety Limit  
Minimum Critical Power Ratio (SLMCPR) ChangeReferences: Letter from M. P. Gallagher (Exelon Generation Company, LLC) to U. S.  
Nuclear Regulatory Commission, dated June 10, 2002

Dear Sir/Madam:

In the referenced letter, Exelon Generation Company, LLC (Exelon), requested an 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 revises 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 2, Cycle 15.

The purpose of this letter is to provide additional information (Attachment 1) in response to NRC's request for additional information as discussed in a conference call on July 24, 2002. Enclosure 1 of Attachment 1 contains information proprietary to Global Nuclear Fuel. Accordingly, it is requested that Enclosure 1 of Attachment 1 be withheld from public disclosure. An affidavit certifying the basis for this application for withholding as required by 10 CFR 2.790(b)(1) is provided in Enclosure 2 of Attachment 1. Enclosure 3 of Attachment 1 provides a non-proprietary version.

Additionally, there are no commitments contained within this letter.

A-001

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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,

08-02-02  
Executed on

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

Attachment: 1- Letter from Global Nuclear Fuel

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

ENCLOSURE 2  
GNF Affidavit



**Global Nuclear Fuel**

A Joint Venture of GE, Toshiba, & Hitachi

## Affidavit

I, **Glen A. Watford**, 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 Enclosure 1 to the letter, T. G. Orr (GNF) to T. Loomis (Exelon), “Response for NRC Peach Bottom 2 Safety Limit MCPR RAI”, August 1, 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.

Affidavit

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.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed at Wilmington, North Carolina this 1st day of August, 2002



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Glen A. Watford  
Global Nuclear Fuel – Americas, LLC

### ENCLOSURE 3

#### Non-Proprietary Responses to NRC RAIs on Peach Bottom 2, Cycle 15 SLMCPR Submittal

1. In Attachment 1 of Section 5.0 Technical Analysis, the SLMCPR values are calculated to include cycle-specific parameters such as the actual core loading, conservative variations of projected control blade patterns, the actual bundle parameters, and the full cycle exposure range. However, Figures 1 and 2 in Attachment 4 only provide Reference Core Loading pattern. Please describe under what conditions the difference between the actual core loading and the reference core loading may exist and a possible impact on the SLMCPR calculation and the proposed technical specification change if the difference does exist. Also, show that there is no difference between the actual and reference core loading for Cycles 14 and 15 MCPDR calculations.

#### RESPONSE

All the cycle-specific parameters are embodied in the reference loading pattern (RLP). A hard bottom burn is conservatively assumed to obtain the cycle exposure conditions that are analyzed to get the most limiting SLMCPR value for the cycle. The core-specific details that are relevant to the SLMCPR determination have been summarized in Table 1 of *Attachment 4*. Detailed bundle designs are provided periodically to the NRC through regular updates and supplements to the *GE Fuel Bundle Designs (NEDE-31152P)*. GESTAR II as approved by the NRC (NEDE-24011-P-A-14) stipulates in Section 3.4.2 the acceptable ways that the as-loaded core (ALC) can deviate from the RLP that is used to perform the licensing calculations. These licensing calculations include the SLMCPR calculation. All of the deviations from the RLP allowed in GESTAR II are in the direction that would cause an increase in the conservatism of the licensing calculations. Any potential impact on the SLMCPR is negligible and in any case is in the direction to cause the calculated SLMCPR to be conservative. The cycle 14 ALC is currently operating. It meets the requirements stipulated in Section 3.4.2 of GESTAR II. At this time, there is no indication that the ALC core for cycle 15 will be different from the cycle 15 RLP that has been used for licensing. If the requirements given in Section 3.4.2 of GESTAR II are not met, then the licensing calculations must be redone as stipulated in Section 3.4.3 of GESTAR II.

2. Provide details to justify that the calculated 1.07 Monte Carlo SLMCPR for Peach Bottom Unit 2 Cycle 15 is appropriate using the combination correlation of core bundle-by-bundle MCPDR distribution and bundle pin-by-pin power/R-factor distribution, including real values used for parameters such as the constant "c" and the standard deviation " $\sigma$ " for the GETAB method and uncertainties, and identify the cause of this 0.02 decrease of SLMCPR value from that of the previous Cycle 14 operation. Describe the approach used for verification of the conservatisms of the calculated SLMCPR values in terms of the constant "c" and the standard deviation " $\sigma$ " and identify whether "c" and " $\sigma$ " are fuel dependent and provide their numerical number for GE14 and other GE fuels if applicable.

## RESPONSE

The attachment titled "Additional Information Regarding the Cycle Specific SLMCPR for Peach Bottom Unit 2 Cycle 15" and dated May 3, 2002 is referred to as *Attachment 4* in NRC RAI #1 above. The two paragraphs at the top of page 2 of *Attachment 4* explain how the core MCPR distribution for Cycle 15 is flatter than it was for Cycle 14 while the bundle R-factor distributions are substantially more peaked for Cycle 15 compared to Cycle 14. In the second paragraph in the section named "Summary" on page 2 of *Attachment 4* it is stated: "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.

[[

]] agrees very well with the actual calculated Monte Carlo value of 1.07 from the NRC-approved process in view of the inherent uncertainty of these calculations.

[[

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The Monte Carlo SLMCPR value obtained using GETAB uncertainties is known to be higher than values that can be obtained using the NRC-approved reduced uncertainties. The amount of conservatism [[

]]

For this particular case the conservatism in the calculated 1.07 SLMCPR due to using the GETAB uncertainty inputs is approximately [[ ]]. It is important to note that the SLMCPR calculation process is a nominal calculation to define the SLMCPR that will result in 99.9% of the fuel rods avoiding boiling transition in the event of the worst-case AOO transient; thus, there are many inherent uncertainties with this process especially those that presume the core is operating initially with no CPR margin.

3. Clarify the number provided in Table 2 of Attachment 4 is consistent with the statement shown in the first paragraph of the page 5 of 8 “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.

#### RESPONSE

The value in the row corresponding to step “2,3” of Table 2 indicates that a penalty of [[ ]] for both the “Dual Loop Operation” and the “Single Loop Operation”. In accordance with “step 4” of the evaluation process documented in Reference [6] of Attachment 4, it is appropriate to take credit for the NRC-approved reduced power distribution uncertainties for SLMCPR evaluations (Reference [1] of Attachment 4) for those plants/cores where the reduced values apply. That is what has been done in this case. The net result is that no penalty is assessed to the Tech Spec SLMCPR value for Peach Bottom Unit 2, Cycle 15. This point would be better made if the first sentence on the top of page 5 of 8 of Attachment 4 were replaced by the following:

As indicated in Table 2, the SLMCPR penalty [[ ]] for Peach Bottom Unit 2, Cycle 15 is offset by a credit for the reduced power distribution uncertainties that could have been used in the calculation such that no net penalty to the proposed Tech Spec SLMCPR is required.

4. Provide details for the explanation of the 0.05 values used to determine when the penalty should be applied is reasonable cutoff since as seen in Figure 4.3 of Reference 1. Also provide a copy of Reference 7 “Peach Bottom 2 Cycle 15 – Safety Limit MCPR (SLMCPR)” to support staff review of this amendment request.

#### RESPONSE

Please see the third paragraph on page 5 of 8 of Attachment 4. Figure 4.3 refers to the figure on page 4-6 of NEDC-32601P-A. In that figure the y-axis corresponds to [[ ]]. The x-axis is the  $\Delta$ CPR representing how much greater the MCPR is for a particular bundle “n” relevant to the bundle in the core with the minimum MCPR. The initial minimum MCPR bundle for the core is the bundle that defines the SLMCPR as the CPR distribution is shifted closer to 1.0. The plot in Figure 4.3 shows that the bundle with smallest MCPR has the greatest probability of contributing to the number of rods susceptible to boiling transition (NRSBT). The plot is normalized to 100 so that if the minimum MCPR bundle has a 100% probability of contributing to NRSBT, then a bundle that has a CPR value that is 0.05 higher will have only a 10% probability. Bundles with CPR values greater than 0.05 are not considered for purposes of determining the SLMCPR penalty. The consequence of not considering these bundles can be assessed in terms of the potential that these bundles will contribute to NRSBT by considering the area under the curve in Figure 4.3 from 0.05 to infinity and comparing this to the area under the curve from 0.0 to 0.05. The area in the tail beyond 0.05 is less than 5% of the total area under the curve. Therefore, for a total penalty of 0.024 in the calculated SLMCPR, the portion that is not being considered is less than  $0.05 \times 0.024 = 0.0011$ . This contribution is deemed to be negligible since it is much less than the 0.005 inherent uncertainty in the calculated SLMCPR.

The information from Reference 7 that is directly relevant to the determination of the SLMCPR has already been provided in Attachment 4. Reference 7 is cited in Attachment 4 because in other similar communications with the NRC, the NRC staff requested that a source be cited in the event that the NRC staff wished to perform a detailed audit.