

William R. Kanda  
Vice President - Nuclear440-280-5579  
Fax: 440-280-8029April 22, 2003  
PY-CEI/NRR-2706LUnited States Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555Perry Nuclear Power Plant  
Docket No. 50-440  
Supplement to License Amendment Request Pursuant to 10CFR50.90: Revision of the  
Minimum Critical Power Ratio (MCPR) Safety Limit

Ladies and Gentlemen:

The Nuclear Regulatory Commission (NRC) forwarded a Request for Additional Information (RAI) dated March 31, 2003 pertaining to a Perry Nuclear Power Plant (PNPP) License Amendment Request (LAR) submitted on January 30, 2003 (PY-CEI/NRR-2665L). Subsequent to receipt of the RAI, the PNPP staff requested and received a clarification to the first RAI question on April 15, 2003. This letter provides the responses to the NRC RAI, as clarified.

The proposed amendment would modify the existing Minimum Critical Power Ratio (MCPR) Safety Limit contained in Technical Specification 2.1.1.2. Specifically, the change modifies the MCPR Safety Limit values, as calculated by Global Nuclear Fuel (GNF), by decreasing the limit for two recirculation loop operation from 1.10 to 1.07, and decreasing the limit for single recirculation loop operation from 1.11 to 1.08.

The Significant Hazards Consideration provided with the January 30, 2003 letter remains unchanged by this supplemental letter.

The GNF report detailing the RAI responses is attached as both a proprietary and non-proprietary version. GNF considers proprietary information to be controlled pursuant to 10 CFR 2.790(a)(4). Therefore, an affidavit requesting that GNF proprietary information be withheld from disclosure is also attached.

**Attachment 3 contains Proprietary Information as described in 10 CFR 2.790(a)(4). Upon separation of Attachment 3, this letter may be decontrolled.**

AP01

There are no regulatory commitments included in this letter or its attachments. If you have questions or require additional information, please contact Mr. Vernon K. Higaki, Manager - Regulatory Affairs, at (440) 280-5294.

Very truly yours,

A handwritten signature in black ink, appearing to be 'M. Higaki', written in a cursive style.

Attachments:

1. FirstEnergy Nuclear Operating Company Affidavit
2. GNF Responses to the RAI - Non-proprietary Report
3. GNF Responses to the RAI - Proprietary Report
4. GNF Affidavit

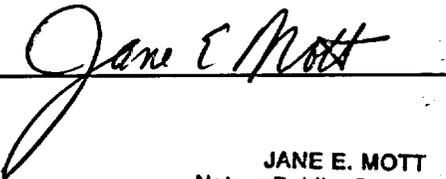
cc: NRC Project Manager  
NRC Resident Inspector  
NRC Region III  
State of Ohio

**Attachment 3 contains Proprietary Information as described in 10 CFR 2.790(a)(4). Upon separation of Attachment 3, this letter may be decontrolled.**

I, William R. Kanda, hereby affirm that (1) I am Vice President - Perry, of the FirstEnergy Nuclear Operating Company, (2) I am duly authorized to execute and file this certification as the duly authorized agent for The Cleveland Electric Illuminating Company, Toledo Edison Company, Ohio Edison Company, and Pennsylvania Power Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

  
\_\_\_\_\_  
William R. Kanda

Subscribed to and affirmed before me, the 22<sup>nd</sup> day of April, 2003

  
\_\_\_\_\_

JANE E. MOTT  
Notary Public, State of Ohio  
My Commission Expires Feb. 20, 2005  
(Recorded in Lake County)

April 4, 2003

**REQUEST FOR ADDITIONAL INFORMATION**  
**RELATING TO REQUEST FOR SLMCPR AMENDMENT FOR**  
**PERRY NUCLEAR POWER PLANT, UNIT 1**  
**DOCKET NO. 50-440**

1. It was shown (in Table 1 of Attachment 6 of the January 30, 2003 submittal) that both Cycle 9 and Cycle 10 used same power distribution uncertainty and non-power distribution uncertainty for the SLMCPR calculation. Please provide the basis for the proposed large reduction of the SLMCPR value in a summary table for both Cycle 9 and Cycle 10. Also, provide the impact on SLMCPR reduction relative to Cycle 9 value due to flatness of the core bundle-by-bundle MCPR distributions and flatness of the bundle pin-by-pin power/R-factor distributions.

**RESPONSE**

The difference between the Perry Unit 1 Cycle 10 and Cycle 9 SLMCPR values is due to differences in the core and bundle designs between the two cycles. In general, two key design characteristics dominate the calculated SLMCPR. These two characteristics are: (1) flatness of the core bundle-by-bundle MCPR distributions [[ ]] and (2) flatness of the bundle pin-by-pin power/R-factor distributions [[ ]]. Decreased flatness in either characteristic yields fewer rods susceptible to boiling transition and thus a lower calculated SLMCPR. Both characteristics indicate that Cycle 10 is significantly more peaked (less flat) than Cycle 9, thus the Cycle 10 calculated SLMCPR is expected to be substantially lower than the calculated SLMCPR value for Cycle 9. [[ ]] The following table summarizes the differences in the core and bundle designs in terms of these parameters along with the estimated SLMCPR [[ ]]. As can be seen from the table, the Monte Carlo calculated SLMCPR values for Cycle 9 and Cycle 10 are consistent with the estimated values [[ ]]. This provides additional confirmation that the large reduction in the SLMCPR from Cycle 9 to Cycle 10 is appropriate.

Quantity	Cycle 9	Cycle 10
Monte Carlo SLMCPR	1.101 ± 0.005	1.065 ± 0.005
[[ ]]		]]
[[ ]]		]]
[[ ]]		]]
[[ ]]	[[ ]]	[[ ]]
[[ ]]		

April 4, 2003

2. Describe the detailed calculation process to model the core design through entire cycle to show any impact on the safety limit minimum critical power ratio value for both two loop operation (TLO) and single loop operation (SLO) due to end-of-cycle penalty of top-peaked power shape.

## **RESPONSE**

The axial power profile of bundles participating in the SLMCPR for TLO and SLO were examined. This examination showed that the axial power profile of these bundles were not top-peaked at any point in the cycle. Therefore, there is no impact on the SLMCPR for TLO or SLO due to top-peaked axial power shapes.



**Global Nuclear Fuel**

A Joint Venture of GE, Toshiba, & Hitachi

**Affidavit**

**I, Margaret E. Harding, 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, “Request For Additional Information Relating To Request For SLMCPR Amendment For Perry Nuclear Power Plant, Unit 1 Docket No. 50-440,” April 4, 2003.
- (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.

Affidavit

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

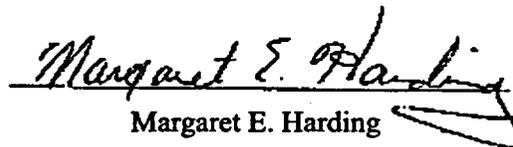
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 4th day of April, 2003.



Margaret E. Harding  
Global Nuclear Fuel – Americas, LLC