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Vice President-Nuclear440-280-5579
Fax: 440-280-8029December 6, 2004
PY-CEI/NRR-2843LUnited States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555Perry Nuclear Power Plant
Docket No. 50-440
Response to a Request for Additional Information (RAI) Associated with a License
Amendment Request for Revision of the Minimum Critical Power Ratio Safety Limit

Ladies and Gentlemen:

By letter dated April 5, 2004 (PY-CEI/NRR-2753L), the Perry Nuclear Power Plant (PNPP) staff submitted a license amendment request to the Nuclear Regulatory Commission (NRC) for review and approval. The proposed amendment would modify the existing Minimum Critical Power Ratio (MCPR) Safety Limit contained in Technical Specification 2.1.1.2. On September 23, 2004, the PNPP staff received a Request for Additional Information (RAI) for the license amendment request. Attachments 2 through 4 provide the responses to the RAI.

The Global Nuclear Fuels (GNF) report, which provides several of the RAI responses, is attached in both proprietary and non-proprietary versions. 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.

On August 24, 2004 GNF and General Electric Nuclear Energy (GENE) notified the NRC that the process for determining the MCPR Safety Limit could result in non-conservative MCPR Safety Limits. By letter dated September 29, 2004 GNF and GENE notified the NRC that a number of Boiling Water Reactors are unaffected by this issue. PNPP was one of the facilities listed as being unaffected by this issue. Therefore, the changes in the MCPR Safety Limit values proposed by this License Amendment Request do not have to be revised.

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

APD1

There are no regulatory commitments included in this letter or its attachments. If you have questions or require additional information, please contact Mr. Henry L. Hegrat, FirstEnergy Nuclear Operating Company, Fleet Licensing, at (330) 315-6944.

Very truly yours,



Attachments:

1. Notarized FirstEnergy Nuclear Operating Company Affidavit
2. Request for Additional Information and Responses
3. GNF Non-proprietary Report
4. GNF Proprietary Report
5. GNF Affidavit

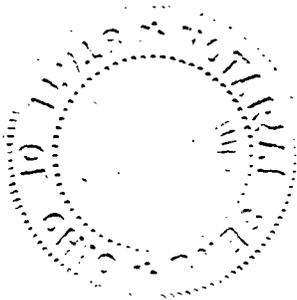
cc: NRC Project Manager
NRC Resident Inspector
NRC Region III
State of Ohio

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

I, Richard L. Anderson, 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 FirstEnergy Nuclear Operating Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

Richard L. Anderson
Richard L. Anderson

Subscribed to and affirmed before me, the 6th day of December, 2004



Brenda Alward
my commission expires 8-15-06

Request for Additional Information and Responses

The following Nuclear Regulatory Commission (NRC) questions were received by letter dated September 23, 2004, regarding a License Amendment Request (LAR) submitted by the Perry Nuclear Power Plant (PNPP), which proposed to 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 1.08, and decreasing the limit for single recirculation loop operation from 1.11 to 1.10. The questions and their responses are provided below.

NRC QUESTION 1

The calculated values of maintenance improvement program (MIP) and reactor internal pump (RIP) were used to compare quantities that impact the calculated SLMCPR value for the Perry Unit 1, Cycle 10. Based on these comparisons, the licensee concluded that the core bundle-by-bundle MCPR distribution is slightly flatter than the distribution evaluated for Cycle 9 (as indicated by MIP); whereas, Cycle 10 has a more peaked in-bundle pin-by-pin power distribution (as indicated by RIP) than what was used for Cycle 9. It was stated in the submittal that 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. It was further stated that greater flatness in either parameter yields more rods susceptible to boiling transition; and consequently, the necessity of a higher (more conservative) calculated SLMCPR.

Contrary to the above statement in the submittal, the staff noted that although the bundle-by-bundle MCPR distribution is flatter for Cycle 10, the proposed SLMCPR for Cycle 10 is lower (less conservative) than Cycle 9. The staff requests the licensee to explain this apparent contradiction.

RESPONSE

Refer to Attachments 3 and 4 for non-proprietary and proprietary versions of the response, respectively.

NRC QUESTION 2

The proposed cycle-specific determination of the SLMCPR values for Perry Unit 1, Cycle 10 are acceptable to the staff provided that the conditions stated in the staff evaluation report (SER) approving Amendment No. 25 and two licensing technical reviews on uncertainties for SLMCPR evaluations (Reference 1) are met. The staff, therefore, requests the licensee to affirm that all the conditions discussed in the SER have been satisfied. In order for the licensee to generate the proposed SLMCPR values, if it was

necessary to deviate from any of the assumptions and the conditions outlined in the staff SER for cycle-specific determination of the SLMCPR, then the licensee should discuss those deviations and provide the technical justifications for their acceptability.

RESPONSE

The PNPP SLMCPR calculation complies with the conditions stated in the NRC staff's evaluation of the SLMCPR methodology. For additional information, refer to Attachments 3 and 4 for non-proprietary and proprietary versions of the response, respectively.

NRC QUESTION 3

The staff requests the licensee to confirm whether the proposed SLMCPR values for Perry Unit 1, Cycle 10 are only applicable for the currently approved (for Cycle 9) operating conditions, and that operation beyond the currently approved conditions and power level is not anticipated for Cycle 10.

RESPONSE

PNPP Unit 1 is licensed for a maximum of 3758 megawatts thermal, and is operated in accordance with the conditions described within the PNPP Updated Final Safety Analysis Report [e.g., Maximum Extended Operating Domain (MEOD)]. The Perry staff does not currently have a license amendment to change the power level or operating conditions either in progress or before the NRC for review.

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Response to Request for Additional Information

Perry Unit 1, Cycle 10

October 14, 2004

RESPONSE to REQUEST FOR ADDITIONAL INFORMATION
RELATING TO PROPOSED AMENDMENT TO LICENSE NO. NPF-58

PERRY UNIT 1 GENERATING STATION
DOCKET NO. 50-440

RAI #1: The calculated values of maintenance improvement program MIP and reactor internal pump RIP were used to compare quantities that impact the calculated SLMCPR value for the Perry Unit 1, Cycle 10. Based on these comparisons, the licensee concluded that the core bundle-by-bundle MCPR distribution is slightly flatter than the distribution evaluated for Cycle 9 (as indicated by MIP); whereas, Cycle 10 has a more peaked in-bundle pin-by-pin power distribution (as indicated by RIP) than what was used for Cycle 9. It was stated in the submittal that 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. It was further stated that greater flatness in either parameter yields more rods susceptible to boiling transition; and consequently, the necessity of a higher (more conservative) calculated SLMCPR.

Contrary to the above statement in the submittal, the staff noted that although the bundle-by-bundle MCPR distribution is flatter for Cycle 10, the proposed SLMCPR for Cycle 10 is lower (less conservative) than Cycle 9. The staff requests the licensee to explain this apparent contradiction.

Response to RAI #1: It is noted that the acronyms for MIP and RIP contained in RAI #1 above are not correct and the correct acronyms are contained in the submittal. The submittal statement "Greater flatness in either parameter yields more rods susceptible to boiling transition" means that if all other parameters are held constant then if the core bundle-by-bundle MCPR distributions showed greater flatness this would yield more rods susceptible to boiling transition. On the other hand, if all other parameters were held constant then if the bundle pin-by-pin power/R-factor distributions showed greater flatness this would yield more rods susceptible to boiling transition. [[

(3)]]].

[[

(3)]] the cycle 10 MONTE CARLO SLMCPR is as expected

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Response to Request for Additional Information

Perry Unit 1, Cycle 10

October 14, 2004

whereas [[(3)]] the cycle 9 MONTE CARLO SLMCPR is on the high side. In conclusion, the cycle 10 MONTE CARLO SLMCPR value of 1.08 is as expected [[(3)]] for cycle 10 compared to cycle 9 dominates over the [[(3)]] value for cycle 10 compared to cycle 9, thus leading to a lower calculated SLMCPR [[(3)]].

RAI #2: The proposed cycle-specific determination of the SLMCPR values for Perry Unit 1, Cycle 10 are acceptable to the staff provided that the conditions stated in the staff safety evaluation report (SER) approving Amendment No. 25 and two licensing technical reviews on uncertainties for SLMCPR evaluations (Reference 1) are met. The staff, therefore, requests the licensee to affirm that all the conditions discussed in the SER have been satisfied. In order for the licensee to generate the proposed SLMCPR values, if it was necessary to deviate from any of the assumptions and the conditions outlined in the staff SER for a cycle-specific determination of the SLMCPR, then the licensee should discuss those deviations and provide the technical justifications for their acceptability.

Response to RAI #2: The conditions cited are identified as restrictions (1) through (4) on Page 3 of the NRC's Safety Evaluation relating to the General Electric Licensing Topical Reports NEDC-32601P, NEDC-32694P, and Amendment 25 to NEDE-24011-P-A (March 11, 1999).

The SLMCPR calculation for Perry Unit 1 Cycle 10 specifically complies with all restrictions [(1) through (4)] associated with the NRC-approved SLMCPR licensing methodology. Restrictions (1) and (2) are satisfied since the GE14 and GE12 fuel in the Perry Unit 1 core were specifically covered in NEDC-32601P and the change to R-factor methodology covered in Reference 2 of the Attachment of the submittal. Restriction (3) discusses the bundle-by-bundle MCPR distribution criteria parameter value that needs to be attained during the evaluation to assure that the limiting core conditions used in the SLMCPR evaluation will result in conservative SLMCPR values (higher values) compared to values that would be obtained for expected operation of the plant. This criterion is still considered to be applicable to current fuel and core designs. Restriction (4) refers specifically to use of the reduced power uncertainties as defined in NEDC-32694P. The Cycle 10 SLMCPR evaluation was performed using GETAB NEDO-10958-A power uncertainties. Therefore, Restriction (4) does not apply to the Perry Unit 1 Cycle 10 SLMCPR evaluation.

RAI #3: The staff requests the licensee to confirm whether the proposed SLMCPR values for Perry Unit 1, Cycle 10 are only applicable for the currently approved (for Cycle 9) operating conditions, and that operation beyond the currently approved conditions and power level is not anticipated for Cycle 10.

Response to RAI #3: FENOC to respond to RAI #3.

Affidavit

Affidavit

I, Jens G. M. Andersen, state as follows:

- (1) I am Fellow and project manager, TRACG Development, 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, “RESPONSE to REQUEST FOR ADDITIONAL INFORMATION RELATING TO PROPOSED AMENDMENT TO LICENSE NO. NPF-58,” October 14, 2004. GNF proprietary information is indicated by enclosing it in double brackets. In each case, the superscript notation ⁽³⁾ refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (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 2.390(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) To address the 10 CFR 2.390 (b) (4), 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 29th day of October, 2004.

Jens G. M. Andersen

Jens G. M. Andersen

Global Nuclear Fuel – Americas, LLC