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Michael Perito
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Grand Gulf Nuclear Station

GNRO-2012/00005

January 26, 2012

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

SUBJECT: Request for Additional Information Regarding the License Amendment
Request to Revise Technical Specification 2.1.1.2
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License NPF-29

- References:
1. NRC letter to Entergy, *Request for Additional Information Regarding License Amendment Request to Revise Technical Specification 2.1.1.2*, dated January 4, 2012 (GNRI-2012/00010)
 2. Entergy letter to NRC, *License Amendment Request to Revise Technical Specification 2.1.1.2* dated October 28, 2011 (GNRO-2011/0064)
 3. GE Nuclear Energy, "Applicability of GE Methods to Expanded Operating Domains," NEDC-33173P, Revision 0, February 2006.

Dear Sir or Madam:


By the letter in Reference 1, the NRC issued a request for additional information (RAI) for the License Amendment Request to Revise Technical Specification 2.1.1.2 (Reference 2). Attachment 1 to this letter provides the RAI response requested within 30 days.

Global Nuclear Fuels – Americas (GNF-A) considers portions of the information provided in Attachment 1 to be proprietary and therefore exempt from public disclosure pursuant to 10 CFR 2.390. An affidavit for withholding information, executed by GNF-A, is provided in Enclosure 3 of Attachment 1. The proprietary information was provided to Entergy in a GNF-A transmittal that is referenced in the affidavit. Therefore, on behalf of GNF-A, Entergy requests to withhold Enclosure 1 of Attachment 1 from public disclosure in accordance with 10 CFR 2.390(b)(1). A non-proprietary version is provided in Enclosure 2 of Attachment 1.

There are no new commitments contained in this submittal. If you need any additional information, please contact Christina L. Perino at 601-437-6299.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 26, 2012.

Sincerely,

Jeremy Browning GMPD GGWS acting VP for Mike Perito

MP/JAS

Attachment 1: Request for Additional Information Regarding the License Amendment
Request to Revise Technical Specification 2.1.1.2

Enclosure 1 to Attachment 1: LRW-ENO-JB1-12-003 Response to NRC RAIs for Grand
Gulf Cycle 19 SLMCPR Submittal GNF Proprietary
Information – Class III (Confidential)

Enclosure 2 to Attachment 1: LRW-ENO-JB1-12-003 Response to NRC RAIs for Grand
Gulf Cycle 19 SLMCPR Submittal Non-Proprietary
Information – Class I (Public)

Enclosure 3 to Attachment 1: LRW-ENO-JB1-12-003 Affidavit

cc: Mr. Elmo Collins Jr.
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
1600 East Lamar Boulevard
Arlington, TX 76011-4511

Mr. Richard Smith
NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

U. S. Nuclear Regulatory Commission
ATTN: Mr. A. B. Wang, NRR/DORL
Mail Stop OWFN/8 B1
Washington, DC 20555-0001

Attachment 1 to

GNRO-2012/00005

**Request for Additional Information Regarding the License Amendment Request to
Revise Technical Specification 2.1.1.2**

Proprietary Notice

This letter transmits proprietary information in accordance with 10 CFR 2.390. Upon the removal of Enclosure 1, the balance of the letter may be considered non-proprietary.



Global Nuclear Fuel

A Joint Venture of GE, Toshiba, & Hitachi

Lauren Watts
Customer Project Manager

Global Nuclear Fuel – Americas, LLC

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(910) 819-6442 Lauren.Watts@ge.com

LRW-ENO-JB1-12-003

January 12, 2012

ecc: Jim Lee (Entergy)
Guy Spikes (Entergy)
Ed Gibbs (GNF)
Paul Different (Entergy)

Mr. Jim Head
Entergy Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213

Subject: GNF Response to NRC RAIs for Grand Gulf Cycle 19 SLMCPR Submittal

References:

1. Entergy Operations, Inc. Fixed Services Agreement for the Supply of Fuel and Fuel Related Work to GGNS with Global Nuclear Fuel-Americas, LLC, Agreement Number 10134077, as amended

Mr. Head:

This letter transmits the Global Nuclear Fuel (GNF) response to the Nuclear Regulatory Commission (NRC) Requests for Additional Information (RAIs) for the Grand Gulf Cycle 19 Safety Limit Minimum Critical Power Ratio (SLMCPR) submittal.

Enclosure 1 contains the GNF response to the subject RAIs. Please note that Enclosure 1 contains proprietary information of the type that GNF maintains in confidence and withholds from public disclosure. The information has been handled and classified as proprietary to GNF as indicated in the enclosed affidavit. The affidavit contained in Enclosure 3 identifies that the information contained in Enclosure 1 has been handled and classified as proprietary to GNF. GNF hereby requests that the information in Enclosure 1 be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 9.17.

GNF requests that any transmittal of this proprietary information to the NRC be accompanied by the enclosed affidavit and proprietary notice. In order to maintain the applicability of the affidavit and to meet the requirements of 10 CFR 2.390, the transmittal to the NRC should:

- 1) Faithfully reproduce the proprietary information,
- 2) Preserve the proprietary annotations, and
- 3) Include the words similar to "GNF Proprietary Information" at the top of first page and each page containing the proprietary information.

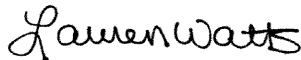
Further, 10 CFR 2.390 requires that the proprietary information be incorporated, as far as possible, into separate paper. Therefore, Enclosure 1 hereto contains proprietary information, and the non-proprietary and redacted information is provided in Enclosure 2.

Based on past discussions with the NRC, GNF has been encouraged to request its customers to provide a paragraph similar to the following in the customer letters transmitting proprietary information to the NRC in order to clearly indicate the proprietary nature of the information and to document the source of the proprietary information as indicated in the GNF affidavit.

“The enclosed RAI responses contain proprietary information as defined by 10 CFR 2.390. GNF, as the owner of the proprietary information, has executed the enclosed affidavit, which identifies that the enclosed proprietary information has been handled and classified as proprietary, is customarily held in confidence, and has been withheld from public disclosure. The proprietary information was provided to Entergy in a GNF transmittal that is referenced by the affidavit. The proprietary information has been faithfully reproduced in the enclosed RAI responses such that the affidavit remains applicable. GNF hereby requests that the enclosed proprietary information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 9.17. A non-proprietary version of the RAI responses also is provided.”

The verified inputs associated with these RAI responses are included in eDRF Section 0000-0143-0844. A signed copy of this letter is included in eDRF Section 0000-0143-2599. Please contact me if you have any questions regarding this information.

Thank You,



Lauren Watts
Customer Project Manager

Enclosures:

1. Response to NRC RAIs for Grand Gulf Cycle 19 SLMCPR Submittal, GNF Proprietary Information – Class III (Confidential)
2. Response to NRC RAIs for Grand Gulf Cycle 19 SLMCPR Submittal, Non - Proprietary Information – Class I (Public)
3. Affidavit for Enclosure 1

ENCLOSURE 2

LRW-ENO-JB1-12-003

Response to NRC RAIs for Grand Gulf Cycle 19 SLMCPR Submittal

Non-Proprietary Information – Class I (Public)

INFORMATION NOTICE

This is a non-proprietary version of LRW-ENO-JB1-12-003 Enclosure 1, which has the proprietary information removed. Portions of the document that have been removed are indicated by white space inside an open and closed bracket as shown here [[]].

By letter dated October 28, 2011 (Agencywide Documents Access and Management System, Accession No. ML1113060150), Entergy Operations, Inc. (Entergy, the licensee), submitted a request to amend the Facility Operating License No. NPF-29 for Grand Gulf Nuclear Station, Unit 1 (GGNS). The licensee proposed a license amendment request (LAR) to revise Minimum Critical Power Ratio Safety Limit (MCPR) values for both two loop and single loop operation in accordance with the requirements set forth in GE Nuclear Energy Topical Report NEDC-33173P, "Applicability fo GE Methods to Expanded Operating Domains, Rev. 0." As a result of our review, the U.S. Nuclear Regulatory Commission (NRC) staff has determined that the following additional information is needed for the NRC staff to complete our review of this amendment . This request for additional information (RAI) was discussed with Mr. Jeff Seiter of your staff on January 4, 2011, and it was agreed that a response would be provided within 30 days of receipt of this E-mail. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-1445 or via e-mail at Alan.Wang@nrc.gov.

On page 7 of Attachment 3 of the submittal [Ref. 1], it was stated, "In approving the Fitzpatrick Safety Limit MCPR change, the NRC accepted this evaluation method for assessing the effect of the GNF2 bent spacer wing." It appears that Entergy relied on the Fitzpatrick evaluation method to justify acceptability of GNF2 bent spacer wing fuels in GGNS Cycle 19 core (first EPU cycle). Please provide the following additional information:

- a) In Cycle 19 of GGNS (first EPU cycle), how many GNF2 fuel rods with bent spacer wing will be residing in the core?

Response: All 308 GNF2 bundles delivered to GGNS for the Cycle 18 reload will remain in the GGNS Cycle 19 core; the corner rods in these bundles are subject to the potential for bent spacer wings that can affect that critical power. The number of corner rods potentially affected is set by conservatively applying a 95/95 confidence interval on the observed defect rate. The confidence interval is based on the size of the batch affected by the defect. Translating the observed defect rate to a 95/95 confidence level provides an estimated [[]] fuel rods with bent spacer wings in corner rod locations residing in the Cycle 19 core. Hereafter, reference to spacer wings refers to spacer wings in corner rod locations.

- b) If the number of fuel rods in response to part (a) is higher than the number of rods used in Fitzpatrick (Cycle 20), then explain how the FitzPatrick evaluation method is still applicable to GGNS having a larger number of defective rods in the core compared to that of Fitzpatrick.

Response: The number of potentially affected GNF2 fuel bundles in the GGNS Cycle 19 core, and thus the total number of corner rods potentially affected by the bent spacer wing defect, is higher than in the FitzPatrick Cycle 20 core. FitzPatrick, with 200 potentially affected bundles, has a conservatively estimated [[]] fuel rods with bent spacer wings residing in the Cycle 20 core. However, the number of potentially affected corner rods per fuel bundle is the same for both Grand Gulf and FitzPatrick. This is because the

manufacturing process which created this defect was the same for both these fuel reloads. The evaluation method applied to FitzPatrick is applicable to Grand Gulf because it applies the defect rate on a percentage basis.

The approved MCPR Safety Limit (MCPR-SL) calculation method described in GESTAR II is not changed; it continues to apply the same statistical convolution of uncertainties. However, to conservatively account for the effects of the bent spacer wing defect, the acceptance criterion for the number of rods entering boiling transition is changed. Instead of using <0.1% as the criterion, the evaluation method uses <0.1% minus the number of corner rods potentially affected in bundles with potential to contribute rods to boiling transition. That is, any corner rod which may experience the defect, in a bundle with potential to contribute rods to boiling transition, is assumed to enter boiling transition at the 95/95 defect rate. Thus, the MCPR-SL continues to ensure that >99.9% of the rods in the Cycle 19 core avoid boiling transition, which is consistent with the Technical Specification requirement. Therefore, the GGNS Cycle 19 application of this method includes an appropriate estimate of the total number of rods subject to the bent spacer wing defect and an appropriate reduction in the number of rods allowed to enter boiling transition. For Grand Gulf Cycle 19, at the limiting MCPR-SL point in the cycle, this results in [[]] rods assumed to enter boiling transition because of the bent spacer wing defect on corner rod locations. This reduces the acceptance criterion to [[]] of rods allowed to enter boiling transition, as calculated by the approved Monte Carlo method for the establishment of the MCPR-SL.

This method was applied to GGNS Cycle 18 and Cycle 19 and found to yield acceptable results.

- c) Discuss how the Fitzpatrick evaluation method is still applicable to GGNS Cycle 19 which has a significantly higher power level and a flatter power profile due to EPU.

Response: As discussed in the response to Question 2; the approved MCPR-SL method for addressing uncertainties has not changed; the method inherently addresses application of the Extended Power Uprate (EPU) related operating parameters. As previously explained an acceptance criterion more restrictive than normal is applied for the number of rods allowed to enter boiling transition to account for the spacer wing defect. The manufacturing defect rates used for establishment of the more restrictive acceptance criterion are independent of EPU conditions. The number of bundles that have the potential to contribute rods to boiling transition is ascertained from the limiting core state established for the MCPR-SL analysis. The limiting core state accounts for the higher power level and flatter radial power profile associated with EPU.

In summary, the evaluation method described in the FitzPatrick documentation is a generalized method for assessment of the effect of bent spacer wings in corner locations. Plant/cycle specific application of the evaluation method utilizes appropriate plant/cycle specific conditions and appropriate assessments of the number of potential bent spacer wing defects in that plant/cycle.

ENCLOSURE 3

LRW-ENO-JB1-12-003

Affidavit

Global Nuclear Fuel – Americas
AFFIDAVIT

I, Lukas Trosman, state as follows:

- (1) I am Engineering Manager, Reload Design and Analysis, Global Nuclear Fuel – Americas, LLC (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 Enclosures 1 of GNF’s letter, LRW-ENO-JB1-12-003, L. Watts (GNF-A) to J. Head (Entergy), entitled “GNF Response to NRC RAIs for Grand Gulf Cycle 19 SLMCPR Submittal,” dated January 12, 2012. GNF-A proprietary information in Enclosure 1, which is entitled “Response to NRC RAIs for Grand Gulf Cycle 19 SLMCPR Submittal,” is identified by a dotted underline inside double square brackets. [[This sentence is an example.^{3}]] 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” (Exemption 4). The material for which exemption from disclosure is here sought 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, 975 F2d 871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704 F2d 1280 (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 aspects of past, present, or future GNF-A customer-funded development plans and programs, resulting in potential products to GNF-A;
 - d. 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) To address 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. 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. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.
- (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 this methodology, along with the testing, development and approval was achieved at a significant cost to GNF-A.

The development of the fuel design and licensing methodology along with the interpretation and application of the analytical results is derived from an extensive experience database that constitutes a major GNF-A asset.

- (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 information 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.

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 on this 12th day of January 2012.



Lukas Trosman
Engineering Manager, Reload Design and Analysis
Global Nuclear Fuel – Americas, LLC