

Proprietary Information – Withhold from Public Disclosure Under 10 CFR 2.390

RS-13-050

10 CFR 50.90

February 20, 2013

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

LaSalle County Station, Unit 2
Facility Operating License No. NPF-18
NRC Docket No. 50-374

Subject: Additional Information Supporting License Amendment Request to Revise
Technical Specification 2.1.1.2 for Minimum Critical Power Ratio Safety Limit –
LaSalle County Station, Unit 2, Cycle 15

- References:
- 1) Letter from D. M. Gullott (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission, "Request to Revise Technical Specification 2.1.1.2 for Minimum Critical Power Ratio Safety Limit – LaSalle County Station, Unit 2, Cycle 15," dated October 11, 2012
 - 2) Letter from D. M. Gullott (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission, "Response to Request for Additional Information Supporting License Amendment Request to Revise Technical Specification 2.1.1.2 for Minimum Critical Power Ratio Safety Limit – LaSalle County Station, Unit 2, Cycle 15," dated January 17, 2013
 - 3) Email from N. J. DiFrancesco (U. S. Nuclear Regulatory Commission) to L. A. Simpson (Exelon Generation Company, LLC), "February 14, 2013, Request for Additional Information RE: NRC Review of the LaSalle Unit 2 SLMCPR Change (TAC NO. ME9769)," dated February 14, 2013

In Reference 1, Exelon Generation Company, LLC, (EGC) submitted a license amendment request proposing to revise the safety limit minimum critical power ratio (SLMCPR) values contained in Technical Specifications (TS) 2.1.1, "Reactor Core SLs," for LaSalle County Station (LSCS), Unit 2. The proposed changes support upcoming Cycle 15 operation for LSCS, Unit 2. EGC supplemented Reference 1 with a letter dated January 17, 2013 (Reference 2).

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In Reference 3, the U. S. Nuclear Regulatory Commission (NRC) requested additional information to complete its review of References 1 and 2. EGC met with the NRC on January 31 and February 11, 2013, via teleconference to discuss aspects of the referenced submittal. The attachments to this submittal provide the requested information.

The information in Attachment 2 contains proprietary information as defined by 10 CFR 2.390, "Public inspections, exemptions, requests for withholding." Global Nuclear Fuel (GNF), as the owner of the proprietary information, has executed the enclosed affidavit (Attachment 4), which identifies that the 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 Exelon Nuclear in a GNF transmittal that is referenced by the affidavit. The proprietary information has been faithfully reproduced in the attached RAI responses such that the affidavit remains applicable. GNF hereby requests that the attached proprietary information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 10 CFR 9.17.

A Non-Proprietary version of the information contained in Attachment 2 is provided in Attachment 3. The affidavit is provided in Attachment 4.

EGC has reviewed the information supporting a finding of no significant hazards consideration and the environmental consideration that were previously provided to the NRC in Attachment 1 of Reference 1. The additional information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. In addition, the additional information provided in this submittal does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), a copy of this letter and its attachments are being provided to the designated State of Illinois official.

There are no regulatory commitments contained in this submittal. Should you have any questions concerning this letter, please contact Ms. Lisa A. Simpson at (630) 657-2815.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 20th day of February 2013.

Respectfully,



David M. Gullott
Manager – Licensing
Exelon Generation Company, LLC

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Attachments:

- 1) Additional Information Supporting License Amendment Request to Revise Technical Specification 2.1.1.2 for Minimum Critical Power Ratio Safety Limit – LaSalle County Station, Unit 2, Cycle 15
- 2) Response to NRC Supplemental RAIs for LaSalle County Station, Unit 2, Cycle 15 SLMCPR Submittal (PROPRIETARY)
- 3) Response to NRC Supplemental RAIs for LaSalle County Station, Unit 2, Cycle 15 SLMCPR Submittal (NON-PROPRIETARY)
- 4) Global Nuclear Fuel Affidavit Supporting Proprietary Nature of Information in Attachment 2

cc: Illinois Emergency Management Agency – Division of Nuclear Safety

ATTACHMENT 1
Additional Information Supporting License Amendment Request to Revise
Technical Specification 2.1.1.2 for Minimum Critical Power Ratio Safety Limit –
LaSalle County Station, Unit 2, Cycle 15

By letters to the U. S. Nuclear Regulatory Commission (NRC) dated October 11, 2012, and January 17, 2013, Exelon Generation Company, LLC, (EGC) submitted a license amendment request proposing to revise the safety limit minimum critical power ratio (SLMCPR) values contained in Technical Specifications (TS) 2.1.1, "Reactor Core SLs," for LaSalle County Station (LSCS), Unit 2. The proposed changes support upcoming Cycle 15 operation for LSCS, Unit 2. In an email dated February 14, 2013, the NRC requested additional information to complete the review.

RAI-01:

Regarding the second question under RAI-02. Please provide technical justification for the magnitude of the increase of the SLMCPR values by 0.03 and 0.05 for two recirculation loop operation and single loop operation, respectively. What factors contribute to the change?

Response to RAI-01:

Attachment 2 of this submittal discusses the contribution of the change to GNF2 fuel on SLMCPR values. In addition to the fuel related factors, another contributor is the fact that the existing Cycle 14 SLMCPR values were developed by Areva using their NRC approved methodology. The proposed SLMCPR values for Cycle 15 were developed by GNF using their NRC approved methodology. Both vendors' methodologies for calculating SLMCPR values are approved by the NRC and can yield different results.

RAI-02:

Please provide evaluation or design documents which demonstrate that the conclusion in 'GNF Response to RAI-03' are applicable to the LaSalle Unit 2, GNF2 fuel design with Areva Atrium-10 fuel for the following items:

- Item 1) TGBLA fuel rod power calculation uncertainty for ATRIUM-10,
- Item 2) the R-factor uncertainty for ATRIUM-10, and
- Item 4) the bundle power uncertainty associated the core monitoring system applied to ATRIUM-10.

Response to RAI-02, Items 1 and 2:

The response to RAI-02, Items 1 and 2, are provided in Attachment 2 to this submittal.

Response to RAI-02, Item 4:

The bundle power uncertainty reflects the core monitoring system's ability to predict the bundle power. This uncertainty is associated with the specific core monitoring system and in-core nuclear instrumentation that is in use at the plant. GNF provided EGC with the bundle power uncertainty value as originally documented in NEDO-10958-A (Reference 1). The GNF bundle power uncertainty value is identified as the "overall LPRM-extrapolated TIP uncertainty of 4.3%" in NEDO-10958-A, Appendix VII, page VII-40. GNF requested that EGC confirm the applicability of this uncertainty since the core monitoring system in use at LSCS is AREVA's

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POWERPLEX-III, and GNF is not knowledgeable of the associated POWERPLEX-III uncertainties.

EGC contacted AREVA, and AREVA provided the bundle power uncertainty that is associated with POWERPLEX-III. In Topical Report EMF-2158(P)(A) (Reference 2), the total bundle power uncertainty is provided in Table 2.3, "SPC BWR Core Simulator Code Measured Power Distribution Uncertainty Verification," for Radial Bundle Power uncertainty as applied to C-Lattice plants (e.g., LaSalle). By letter dated October 18, 1999, the NRC approved EMF-2158(P) (Reference 3).

EGC compared the GNF and AREVA bundle power uncertainties, which involved a comparison of the one uncertainty value provided by GNF to the one uncertainty value provided by AREVA. EGC determined that the GNF bundle power uncertainty bounded the AREVA bundle power uncertainty. Therefore, for the determination of the LSCS, Unit 2, Cycle 15 SLMCPR, EGC notified GNF that the use of the GNF bundle power uncertainty is appropriate and conservative.

References:

- (1) NEDO-10958-A, "General Electric BWR Thermal Analysis Basis (GETAB): Data, Correlation and Design Application," dated January 31, 1977, ADAMS Accession Number ML102290144
- (2) Topical Report EMF-2158(P)(A), Revision 0, "Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2," TOPICAL REPORT EMF-2158(P), dated October 1999
- (3) Letter from S. Dembek (NRC) to J. F. Mallay (Siemens Power Corporation), "Acceptance for Referencing of Licensing Topical Report EMF-2158(P), Revision 0, 'Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/Microburn-B2' (TAC No. MA4592)," dated October 18, 1999

RAI-03:

In follow-up to, "GNF Response to RAI-04-2," please provide analysis which demonstrate that items 1, 2, 3, and 4, for ATRIUM-10 nuclear fuel are applicable and will remain applicable to future cycles. Although, the licensee evaluated the expand application range change through a 50.59 evaluation based on a Columbia license amendment approval. Please provide technical justification and analysis which demonstrates the expanded application range is appropriate for the Atrium-10 fuel for LaSalle Unit 2. Please discuss whether the expanded range of application is being utilized for the proposed LaSalle Cycle 15 core design. Lastly, please confirm that the NRC Part 21 Log No. 2007-29-00 (ADAMS No. ML072830334) regarding ATRIUM-10 MCPR remains dispositioned for LaSalle Unit 2, Cycle 15.

Response to RAI-03:

The data for the GEXL97 development was generated by AREVA. The database consisted of ATRIUM-10 sub-bundle and full bundle critical power data generated by the sub-channel code XCOBRA, as incorporated in the NRC-approved SPCB correlation. This database contains

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ATRIUM-10 fuel performance data that is dependent on physical boundary conditions (e.g., flow, power, pressure), but is independent of any specific plant or core design. The database for the development of the GEXL97 correlation used for LSCS, Unit 2, Cycle 15 includes ATRIUM-10 fuel performance data provided by AREVA to address NRC Part 21 Log No. 2007-29-00 (ADAMS No. ML072830334) regarding ATRIUM-10 MCPR.

The data collection encompasses cosine, top-peaked, bottom-peaked, and double-humped axial power shapes. These data were generated to cover the complete range of expected operation of the ATRIUM-10 fuel. These data were used to generate a database of predicted critical power values for a range of operating conditions corresponding to the ATRIUM-10 fuel performance. The GEXL97 correlation used for LSCS, Unit 2, Cycle 15 uses the same functional form as previous GEXL correlations with different constants for the GEXL correlation coefficient parameters. The range of application of the GEXL97 correlation was determined by the range of data for ATRIUM-10 fuel provided by AREVA and in accordance with the NRC-approved methodology used by GNF for the development of a transition boiling correlation. Therefore, because the range of applicability of the correlation is based on the range of data in the database used to develop the correlation and the data in the database is independent of plant or core design, the range of applicability is appropriate for any application with GNF methods modeling ATRIUM-10 fuel, including LSCS, Unit 2.

As described above, the revised GEXL97 correlation used to calculate the LSCS, Unit 2, Cycle 15 Safety Limit included the ATRIUM-10 fuel performance data provided by AREVA to address NRC Part 21 Log No. 2007-29-00. This did not change the GEXL97 correlation coefficients or additive constants, but it did result in a slightly higher overall correlation uncertainty relative to NEDC-33106P, "GEXL97 Correlation for ATRIUM-10 Fuel," Revision 2 (GEXL97 Rev. 2). The pressure and R-Factor parameters used in the calculation of the LSCS, Unit 2, Cycle 15 SLMCPR were determined to be within the range of applicability of GEXL97 Rev. 2. Therefore, the LSCS, Unit 2, Cycle 15 SLMCPR calculation did not utilize the expanded range of applicability identified in "GNF Response to RAI-04-2," items 1 and 2. Item 3 of "GNF Response to RAI-04-2," is a minimum allowable annular flow length, not implemented previously in GEXL97 Rev. 2. The annular flow lengths used in the critical power calculations for ATRIUM-10 fuel assemblies in Cycle 15 were shown to be greater than the minimum value allowed in GEXL97 Rev 4. The increased overall correlation uncertainty identified in item 4 of "GNF Response to RAI-04-2" corresponds to the GEXL97 uncertainty including the Part 21 ATRIUM-10 data. Therefore, the expanded range of applicability identified in items 1 and 2, and the restriction on annular flow length described in item 3 of "GNF Response to RAI-04-2" were not utilized in the calculation of the LaSalle Unit 2 Cycle 15 SLMCPR, and the uncertainty identified in item 4 of "GNF Response to RAI-04-2" incorporates the NRC Part 21 Log No. 2007-29-00 issue.

In letter "Columbia Generating Station – Issuance of Amendment Re: Core Operating Limits Report and Scram Time Testing (TAC No. MD9247)" issued May 5, 2009, the NRC reviewed NEDC-33419-P, "GEXL97 Correlation Applicable to ATRIUM-10 Fuel," which contains the GEXL97 correlation developed by GNF using ATRIUM-10 data corrected for the AREVA Part 21 error. The NRC determined that the GNF method was a reasonable engineering approach to dealing with mixed core fuel and that the use of the GEXL97 correlation within the limits of the analytical database, as bounded by experimental limits derived from actual test data for the ATRIUM-10 database, is acceptable.

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The same GEXL97 correlation documented in NEDC-33419-P is being applied in total at LaSalle for the same intended use and with the same terms, limitations and conditions. The GEXL97 correlation used to determine transition boiling for LSCS, Unit 2, is mathematically exactly the same GEXL97 correlation based on the same AREVA data that was reviewed by the NRC for use at Columbia. The analysis to demonstrate the applicability of items 1, 2, 3, and 4 of RAI-04-2 to ATRIUM-10 fuel are included in NEDC-33419-P, "GEXL97 Correlation Applicable to ATRIUM-10 Fuel." EGC understands that at this time the NRC does not intend to approve the use of the expanded ranges of applicability documented in NEDC-33106P, "GEXL97 Correlation for ATRIUM-10 Fuel," Revision 4 for Safety Limit MCPR calculations at LaSalle Station. As discussed above, the Unit 2 Cycle 15 Safety Limit did not utilize these expanded ranges and future LSCS Safety Limit calculations will be in compliance with the terms and licensing conditions applicable to the correlation used.

ATTACHMENT 3

Response to NRC Supplemental RAIs for LaSalle County Station, Unit 2, Cycle 15
SLMCPR Submittal

(NON-PROPRIETARY)

6 pages follow

ENCLOSURE 2

CFL-EXN-HA2-13-022

Response to NRC Supplemental RAIs for LaSalle Unit 2 Cycle 15
SLMCPR Submittal

Non-Proprietary Information – Class I (Public)

INFORMATION NOTICE

This is a non-proprietary version of CFL-EXN-HA2-13-022 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 [[]].

Enclosure 2 to
CFL-EXN-HA2-13-022

RAI-01

Regarding the second question under RAI-02. Please provide technical justification for the magnitude of the increase of the SLMCPR values by 0.03 and 0.05 for two recirculation loop operation and single loop operation, respectively. What factors contribute to the change?.

GNF Response to RAI-01

The most significant factors contributing to the high SLMCPR for LaSalle 2 Cycle 15 are the switch to GNF2 fuel and a flat core power distribution.

Prior to Cycle 15, GNF last performed the safety limit analysis for LaSalle 2 Cycle 11. This analysis supported the current Technical Specification SLMCPR values of 1.11 and 1.12 for TLO and SLO, respectively¹. The increase of the Technical Specification values by 0.03 TLO and 0.05 SLO can be understood by comparing Cycles 11 and 15, since both utilized the GNF approved SLMCPR methodology. Figure 1 shows several data points: the [[

]]; the LaSalle 2 Cycle 11 SLMCPR results; and the LaSalle 2 Cycle 15 SLMCPR results.

[[

]] The calculated limiting TLO SLMCPR (1.14) for LaSalle 2 Cycle 15 is within expectations and consistent with observed trends for GNF2 fuel with GETAB uncertainties.

The current SLMCPR difference between TLO and SLO of 0.02 is consistent with [[
]] Therefore, the calculated limiting SLO SLMCPR (1.17) for LaSalle 2 Cycle 15 is within expectations and consistent with observed trends for GNF2 fuel with GETAB uncertainties.

In conclusion, there are two major factors that contribute to the increased core SLMCPR values for both TLO and SLO: 1) a flat core power distribution in Cycle 15 and 2) the switch to GNF2, and both of these are within expectations.

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Enclosure 2 to
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RAI-02

Please provide evaluation or design documents which demonstrate that the conclusion in 'GNF Response to RAI-03' are applicable to the LaSalle Unit 2, GNF2 fuel design with Areva Atrium-10 fuel for the following items:

- Item 1) TGBLA fuel rod power calculation uncertainty for ATRIUM-10,
- Item 2) the R-factor uncertainty for ATRIUM-10, and
- Item 4) the bundle power uncertainty associated the core monitoring system applied to ATRIUM-10.

GNF Response to RAI-02, Item 1:

This item is in the context of the first of the four actions in the safety evaluation for the approved NEDC-32601P-A and NEDC-32694P-A. It is stated as:

The TGBLA fuel rod power calculational uncertainty should be verified when applied to fuel designs not included in the benchmark comparisons of Table 3.1 of NEDC-32601P-A, since changes in fuel design can have a significant effect on calculation accuracy.

Table 3.1 in NEDC-32601P-A summarizes the RMS differences between the MCNP and TGBLA pin power comparisons for different configurations that cover eight different 8x8, 9x9 and 10x10 lattice designs. The weighted average difference is [[]].

In a similar manner, the pin power comparisons for five representative ATRIUM-10 lattice designs were performed using results from MCNP and TGBLA. Table RAI-02-01 below summarizes the standard deviations for the lattices [[]]

[[]], consistent with Table 3.1 in NEDC-32601P-A. The weighted average value for the ATRIUM-10 lattice designs is [[]], which is smaller compared to the [[]] for the lattice designs listed in Table 3.1 of NEDC-32601P-A.

Therefore, this evaluation confirms that the TGBLA design basis fuel rod power calculational uncertainty of [[]] is conservative when applied to the ATRIUM-10 fuel. This completes the requirements for the first of the four actions stated in the safety evaluation for the approved NEDC-32601P-A and NEDC-32694P-A.

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GNF Response to RAI-02, Item 2:

Per Section 3 of NEDC-32601P-A, GNF's SLMCPR methodology Licensing Topical Report,

[[]]

The overall R-factor uncertainty calculation process is outlined in Appendix C of NEDC-32601P-A. [[

Enclosure 2 to
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]] Therefore the R-factor uncertainty still applies and is applicable to ATRIUM-10 fuel in LaSalle Unit 2.

ATTACHMENT 4

Global Nuclear Fuel Affidavit Supporting Proprietary Nature of Information in Attachment 2

4 pages follow

ENCLOSURE 3

CFL-EXN-HA2-13-022

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 Enclosure 1 of GNF's letter, CFL-EXN-HA2-13-022, C. Lamb (GNF-A) to J. Fisher (Exelon), entitled "GNF Response to NRC Supplemental RAIs for LaSalle Unit 2 Cycle 15 SLMCPR Submittal," February 16, 2013. The GNF-A proprietary information in Enclosure 1, which is entitled "Response to NRC Supplemental RAIs for LaSalle Unit 2 Cycle 15 SLMCPR Submittal," identified by a dotted underline inside double square brackets. [[This sentence is an example.⁽³⁾]] Large figures and tables containing GEH proprietary information are identified with double square brackets before and after the object. In each case, the 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 16th day of February 2013.

A handwritten signature in black ink, appearing to read 'L. Trosman', with a long horizontal flourish extending to the right.

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