



4300 Winfield Road
Warrenville, IL 60555
630 657 2000 Office

Enclosure 1 of the Attachment contains proprietary information. Withhold from public disclosure under 10 CFR 2.390. When Enclosure 1 of the Attachment is separated, the remainder of the Attachment and this cover letter are decontrolled.

RS-14-148

April 28, 2014

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

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Transmittal of Proprietary Meeting Slides

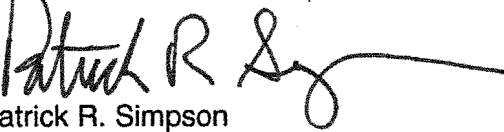
The purpose of this letter is to transmit the proprietary slides generated by GE Hitachi (GEH) for Facility Operating License No. NPF-62 for Clinton Power Station (CPS) in support of the pre-submittal meeting conducted on April 9, 2014. The pre-submittal meeting was conducted to discuss the planned CPS amendment request to use the GEH Simplified Stability Solution (GS3) methodology. The GS3 methodology has been submitted by GEH as a topical report; however, the report has not yet been approved by the NRC for use by Licensees. The CPS amendment request will be a plant specific application of this methodology to CPS.

This letter provides Global Nuclear Fuel (GNF) letter CFL-EXN-LH1-14-031, "GEH Presentation for NRC Pre-Application Meeting for Clinton Power Station Application to use the GE Hitachi Simplified Stability Solution (GS3) Methodology," dated April 4, 2014, which GEH considers to contain proprietary information. The proprietary information is identified by bracketed text. GEH requests that the proprietary information in Enclosure 1 of the Attachment be withheld from public disclosure, in accordance with the requirements of 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," paragraph (a)(4). A signed affidavit supporting this request is provided in Enclosure 3 of the Attachment to this letter. Enclosure 2 of the Attachment provides a non-proprietary version of the GEH presentation.

Enclosure 1 of the Attachment contains proprietary information. Withhold from public disclosure under 10 CFR 2.390. When Enclosure 1 of the Attachment is separated, the remainder of the Attachment and this cover letter are decontrolled.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Mr. Timothy A. Byam at (630) 657-2818.

Respectfully,

A handwritten signature in black ink, appearing to read "Patrick R. Simpson", with a long horizontal flourish extending to the right.

Patrick R. Simpson
Manager – Licensing

Attachment: Global Nuclear Fuel (GNF) letter CFL-EXN-LH1-14-031, "GEH Presentation for NRC Pre-Application Meeting for Clinton Power Station Application to use the GE Hitachi Simplified Stability Solution (GS3) Methodology," dated April 4, 2014

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bcc: NRC Project Manager – Clinton Power Station
Director – Licensing and Regulatory Affairs (Midwest) (w/o attachment)
Manager – Licensing – Clinton, Dresden, and Quad Cities (w/o attachment)
Site Vice President – Clinton Power Station (w/o attachment)
Regulatory Assurance Manager – Clinton Power Station (w/o attachment)
Exelon Document Control Desk – Licensing (Hard Copy)
Commitment Coordinator – Cantera (w/o attachment)
Michael Reitmeyer, Kennett Square (w/o attachment)
James L. Peterson – Clinton (w/o attachment)
Charles Lamb, GNF (w/o attachment)
James Harrison, GNF (w/o attachment)
Andy Olson (w/o attachment)
James Tusar (w/o attachment)

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ATTACHMENT

Global Nuclear Fuel (GNF) letter CFL-EXN-LH1-14-031, "GEH Presentation for NRC Pre-Application Meeting for Clinton Power Station Application to use the GE Hitachi Simplified Stability Solution (GS3) Methodology," dated April 4, 2014

Enclosure 1 of the Attachment contains proprietary information. Withhold from public disclosure under 10 CFR 2.390. When Enclosure 1 of the Attachment is separated, the remainder of the Attachment and this cover letter are decontrolled.

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

Global Nuclear Fuel – Americas, LLC
Castle Hayne Road, Wilmington, NC 28402
(910) 819-5613, charlesf.lamb@ge.com

Charles F. Lamb
Customer Project Manager

CFL-EXN-LH1-14-031
April 4, 2014

Mr. Rob Lee
Exelon Generation Company
4300 Winfield Way
Warrenville, IL 60555

Subject: GEH Presentation for NRC Pre-Application Meeting for Clinton Power Station
Application to use the GE Hitachi Simplified Stability Solution (GS3) Methodology

References:

1. "Proposal for Plant Specific Licensing Topical Report for GS3 for Clinton," GNF Proposal No. 318759, Revision 2, CFL-EXN-LH1-14-020, March 3, 2014.
2. "Contract between Amergen Energy Company, LLC, and Global Nuclear Fuel, LLC, and General Electric Company for Fuel Fabrication and Related Components and Services for Unit 1 of the Clinton Power Station," dated January 12, 2001, as amended ("Fuel Contract").

Dear Mr. Lee:

This letter transmits the GEH presentation to support the NRC pre-application meeting with Exelon for Clinton Power Station (CPS) to use the GE Hitachi Simplified Stability Solution (GS3) Methodology. This presentation is provided in conjunction with the agreement in Reference 1.

Please note that Enclosure 1 contains proprietary information of the type that GEH maintains in confidence and withholds from public disclosure. The information has been handled and classified as proprietary to GEH 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 GEH. GEH 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.

GEH 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 "GEH Proprietary Information – Class II (Internal)" 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 affidavit.

"The enclosed presentation contains proprietary information as defined by 10 CFR 2.390. GEH, 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 Exelon Generation Company in a GNF transmittal that is referenced by the affidavit. The proprietary information has been faithfully reproduced in the enclosed presentation such that the affidavit remains applicable. GEH 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 presentation also is provided."

A signed copy of this letter is included in PLM Specification 000N7813 R0. Please contact me if you have any questions regarding this information.

Sincerely,



Charles F. Lamb
Customer Project Manager

Enclosures:

1. Presentation Slides for Pre-Application Meeting, "Application to Clinton Power Station (CPS) of the GE Hitachi Simplified Stability Solution (GS3) – NEDC-33851P Rev. 0," April 2014 - GEH Proprietary Information – Class II (Internal)
2. Presentation Slides for Pre-Application Meeting, "Application to Clinton Power Station (CPS) of the GE Hitachi Simplified Stability Solution (GS3) – NEDC-33851P Rev. 0," April 2014 - Non-Proprietary Information – Class I (Public)
3. Affidavit for Enclosure 1

ENCLOSURE 2

CFL-EXN-LH1-14-031

Presentation Slides for Pre-Application Meeting, "Application to Clinton Power Station (CPS) of the GE Hitachi Simplified Stability Solution (GS3) – NEDC-33851P Rev. 0," April 2014

Non-Proprietary Information – Class I (Public)

INFORMATION NOTICE

This is a non-proprietary version of CFL-EXN-LH1-14-031 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 [[]].

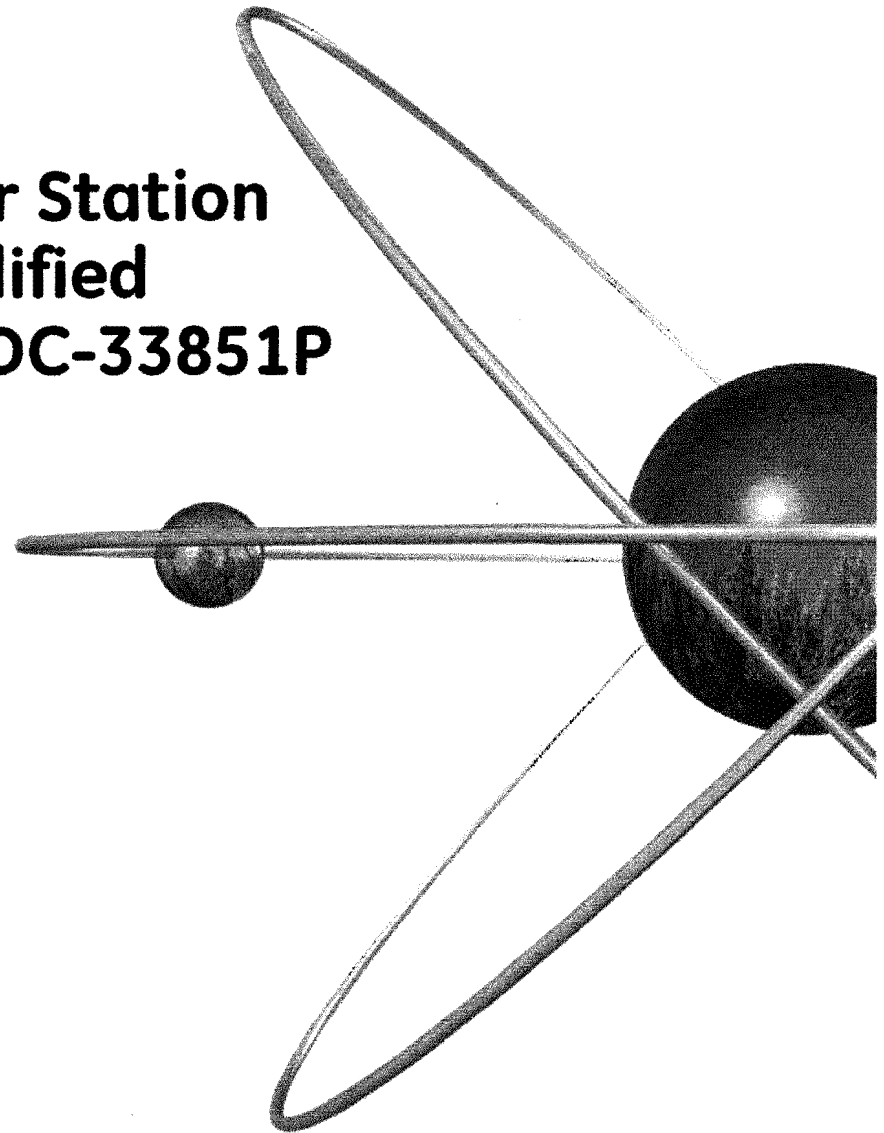
GE Hitachi
Nuclear Energy

Non-Proprietary Information - Class I (Public)

Application to Clinton Power Station (CPS) of the GE Hitachi Simplified Stability Solution (GS3) - NEDC-33851P Rev.0

Pre-Application Meeting
Date: April 9, 2014

Juswald Vedovi
Tyler Schweitzer
Justin Lamy



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Table of Contents

1. **GS3 Motivation and Basis**
2. **SAR Content**
3. **Sample Demonstration Results**



Non-Proprietary Information - Class I (Public)

1-GS3 Motivation and Basis



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Best-Estimate vs. Conservative

- Stability LTS Options 1-D, II, and III worked well, but are based on conservative methodologies (DIVOM , HCOM, DIRPT)
- Excessive conservatisms:
 - Impacting core designs/plant operation
 - Not always beneficial to safety (unrealistic uncertainty clouds understanding of the phenomena)
- Best-estimate Plus Uncertainty (BEPU) methodologies advance the technology and understanding of simulated safety analyses
- TRACG BEPU methodologies based on NRC Code Scaling , Applicability and Uncertainty (CSAU in NUREG/CR-5249) have been extensively reviewed, approved and supported by the US NRC and other world-wide regulatory bodies for LOCA, Transient and Stability analyses



Stability LTS Implemented in US Plants

Stability LTS	Methodology Approach	# of Units with LTS	Max Licensable P/F Domain
Option 1-D	Conservative	5	EPU/MELLLA
Option II	Conservative	2	CLTP/ELLLA
Option III	Conservative	26 ^(*)	EPU/MELLLA
Option E1-A	Conservative	1	EPU/MELLLA
DSS-CD	BEPU	1	EPU/MELLLA+

*Expecting at least 2 or 3 Units transitioning to DSS-CD in relatively short-term as part of MELLLA+ transition



GS3 built on approved methodologies

- The TRACG code is used to determine the Minimum Critical Power Ratio (MCPR) margin during reasonably limiting instability event simulations for GS3 application to Clinton
- GS3 leverages experience and CSAU approaches
 - Build on previous applications
 - AOO LTR (NEDE-32906P-A)
 - ESBWR Stability LTR (NEDC-33083P-A Suppl. 1)
 - DSS-CD LTRs (NEDE-33147P-A R4, NEDC-33075P-A R8)
- Uncertainty methodology based on NRC Code Scaling, Applicability and Uncertainty (CSAU in NUREG/CR-5249)

Non-Proprietary Information - Class I (Public)

2-SAR Content



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Clinton GS3 SAR Content

- 1. Introduction.....
- 1.1 Background.....
- 1.2 TRACG Qualification.....
- 1.3 Purpose and Scope.....
- 2. Licensing Requirements And Scope of Application.....
- 2.1 Licensing Compliance.....
- 2.2 TRACG Analysis Approach for Licensing Compliance.....
 - 2.2.1 CSAU Methodology Application.....
- 3. Phenomena Identification And Ranking.....
- 4. Applicability Of TRACG To GS3 Applications.....
- 5. Model Biases And Uncertainties.....
- 6. Application Uncertainty And Biases.....
- 7. Combination Of Uncertainties.....
- 8. Example Demonstration Analyses.....
- 9. Licensing Basis for Generic Envelope And Fuel Reload Applications..
- 10. Plant Specific Applications.....
- 11. Conclusions.....
- 12. References.....



Clinton GS3 SAR Content Summary and Key Aspects

- This Safety Analysis Report (SAR) provides the GS3 licensing basis for application to Clinton Power Station

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GS3 Process Summary

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Overall GS3 Process Outline

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GS3 Matrix of Cases Analyzed for Clinton Application

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Analyzed BWR/6 Bounding Conditions with respect to Clinton

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Key Specific Values Comparison

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14-Step CSAU Methodology Applied to Clinton Power Station

CSAU Step	Step Description	GS3
1	Scenario Specification	[[]]
2	Nuclear Power Plant Selection	Bounding BWR/6
3	Phenomena Identification and Ranking	Addressed in Table 3-1 of NEDE-33147P-A R3 and Section 3
4	Frozen Code Version Selection	TRACG04P
5	Code Documentation	TRACG Model Description and Qualification LTRs
6	Determination of Code Applicability	Table 4-1 of NEDE-33147P-A R3
7	Establishment of Assessment Matrix	Table 4-2 of NEDE-33147P-A R3
8	Nuclear Power Plant Nodalization Definition	Nodalization defined. Plant nodalization study performed. Consistent with NEDE-33147P-A R3
9	Definition of Code and Experimental Accuracy	Consistent with NEDE-33147P-A R3
10	Determination of Effect of Scale	Full scale data available, addressed in Section 2.2.1, Item 10 of NEDE-33147P-A R3
11	Determination of the Effect of Reactor Input Parameters and State	Addressed in Tables 3-1, 5-1 and 6-1 of NEDE-33147P-A R3; Table 5-1 and Table 6-1 of this LTR
12	Performance of Nuclear Power Plant Sensitivity Calculations	Addressed in Tables 5-1 and 6-1 of NEDE-33147P-A R3; Table 5-1 and Table 6-1 of this LTR
13	Determination of Combined Bias and Uncertainty	Perform statistical calculations, See Sections 7 and 8, and NEDE-33147P-A R3
14	Determination of Total Uncertainty	See Sections 7, 8, and 9. GS3 statistical calculations demonstrate that Clinton $FMCPR \geq SLMCPR$



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TRACG Statistical Analyses

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3-Sample Demonstration Results



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GS3 Process Outline for Example

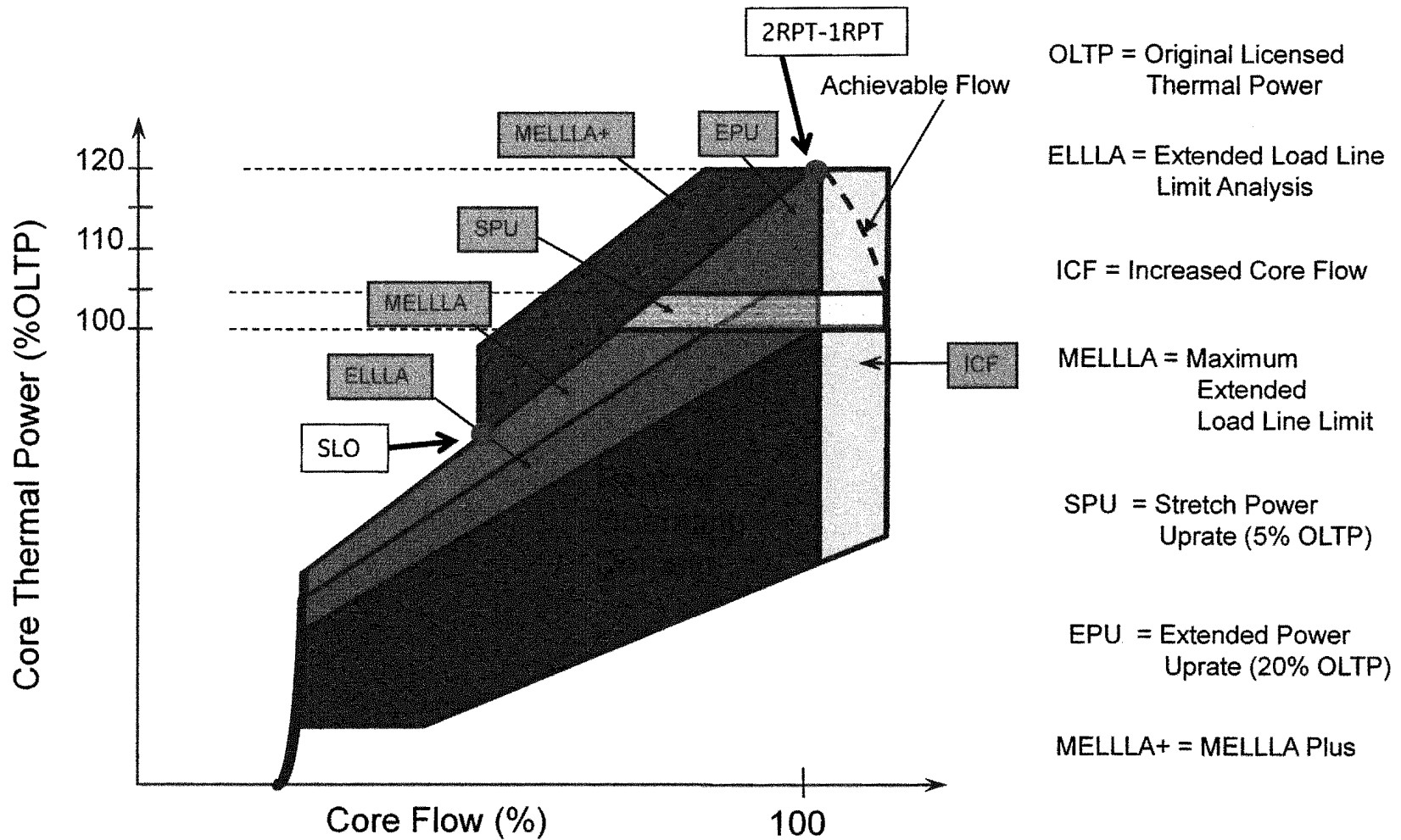
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Extended BWR Power Flow Map



[[TRACG Sample Key Output for Each Run



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MCPR transient response of the limiting channel and leading OPRM cell

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Clinton GS3-SAR-Pre-Application

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Clinton GS3-SAR-Pre-Application

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Non-Proprietary Information - Class I (Public)

Application of BEPU Results for Clinton GS3 SAR

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Application of BEPU Results for Clinton GS3 SAR (cont'd)

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Clinton GS3-SAR-Pre-Application

Non-Proprietary Information - Class I (Public)

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Conclusions

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- **GS3 Methodology provides quantification of uncertainty and contains right amount of conservatism to ensure SLMCPR protection without impacting Clinton plant-operation**
- **TRACG GS3 Methodology and CSAU application built and based on the approved TRACG DSS-CD and TRACG AOO LTRs**



ENCLOSURE 3

CFL-EXN-LH1-14-031

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, **James F. Harrison**, state as follows:

- (1) I am Vice President, Fuel Licensing, Regulatory Affairs, GE-Hitachi Nuclear Energy Americas LLC (“GEH”), 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 letter, CFL-EXN-LH1-14-031, C.F. Lamb (GNF) to R.C. Lee (Exelon) Subject: GEH Presentation for NRC Pre-Application Meeting with Exelon for Clinton Power Station Application to use the GE Hitachi Simplified Stability Solution (GS3) Methodology, dated April 4, 2014. GEH proprietary information in Enclosure 1, which is entitled “Presentation Slides for Pre-Application Meeting, “Application to Clinton Power Station (CPS) of the GE Hitachi Simplified Stability Solution (GS3) – NEDC-33851P Rev. 0,” April 2014”, is identified by double square brackets [[This sentence is an example.⁽³⁾]]. Figures and large objects containing GEH proprietary information are identified with double square brackets before and after the object. 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, GEH 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, 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 GEH's competitors without license from GEH 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 GEH customer-funded development plans and programs, resulting in potential products to GEH;
- 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 GEH, 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 GEH, 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 GEH.
- (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 for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GEH 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 the GE Hitachi Simplified Stability Solution (GS3) design and licensing methodology, and research and development activities of GEH or its licensor.

The development of this methodology is derived from an extensive experience database that constitutes a major asset of GEH or its licensor.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GEH's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GEH'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 GEH.

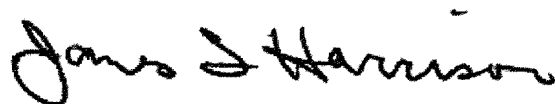
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GEH's competitive advantage will be lost if its competitors are able to use the results of the GEH 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 GEH 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 GEH 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 4th day of April 2014.



James F. Harrison
Vice President, Fuel Licensing,
Regulatory Affairs
GE-Hitachi Nuclear Energy Americas LLC
3901 Castle Hayne Road
Wilmington, NC 28401