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Proprietary Notice
This letter forwards proprietary information in accordance with 10CFR2.390. Upon the removal of Enclosure 1, the balance of this letter may be considered non-proprietary.

MFN 09-119

Docket No. 52-010

February 16, 2009

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Response to Portion of NRC Request for Additional Information Letter No. 254 – Related To ESBWR Design Certification Application – RAI Number 21.6-111 Supplement 1**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent by the Reference 1 NRC letter. GEH response to RAI Number 21.6-111 Supplement 1 is addressed in Enclosures 1, 2, 3 and 4.

Enclosure 1 contains GEH proprietary information as defined by 10 CFR 2.390. GEH customarily maintains this information in confidence and withholds it from public disclosure. Enclosure 2 is the non-proprietary version, which does not contain proprietary information and is suitable for public disclosure.

The affidavit contained in Enclosure 4 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 10 CFR 9.17.

If you have any questions or require additional information, please contact me.

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, ESBWR Licensing

D068
NRO

References:

1. MFN 08-700 Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, GEH, *Request For Additional Information Letter No. 254 Related To ESBWR Design Certification Application,* dated September 8, 2008

Enclosures:

1. MFN 09-119 – Response to Portion of NRC Request for Additional Information Letter No. 254 – Related To ESBWR Design Certification Application – RAI Number 21.6-111 S01 – GEH Proprietary Information
2. MFN 09-119 – Response to Portion of NRC Request for Additional Information Letter No. 254 – Related To ESBWR Design Certification Application – RAI Number 21.6-111 S01 – Non-Proprietary Version
3. MFN 09-119 – Response to Portion of NRC Request for Additional Information Letter No. 254 – Related To ESBWR Design Certification Application – RAI Number 21.6-111 S01 – DCD Markups
4. MFN 09-119 – Response to Portion of NRC Request for Additional Information Letter No. 254 – Related To ESBWR Design Certification Application – RAI Number 21.6-111 S01 – Affidavit

cc:	AE Cubbage	USNRC (with enclosures)
	RE Brown	GEH/Wilmington (with enclosures)
	DH Hinds	GEH/Wilmington (with enclosures)
	eDRF	0000-0094-4874

Enclosure 2

MFN 09-119

Response to Portion of NRC Request for

Additional Information Letter No. 254

Related to ESBWR Design Certification Application

RAI Number 21.6-111 S01

Non-Proprietary Version

NRC RAI 21.6-111 S01

Quantify the effect of void fraction uncertainty on TRACG04 results

a) *Provide a quantitative assessment of the performance of the TRACG04 interfacial shear model for GE14E fuel based on critical power pressure drop test data. Perform this quantitative assessment in a manner similar to the proposed method for quantifying void fraction uncertainty in the Findlay-Dix void quality correlation described in Reference 1.*

b) *Propose a means of calculating the initial TRACG04 power and void distribution using the interfacial shear model (i.e., using PANAC11 cross sections but void and power distribution not initialized to the PANAC11 solution) and provide a code to code comparison of the "independent" TRACG04 solution to the TRACG04 solution initialized to the PANAC11 conditions (i.e., using Findlay-Dix void correlation). The means documented in Reference 2 is acceptable for this purpose.*

c) *Using the aforementioned modified TRACG04 methodology provide quantitative assessment of the sensitivity of the transient ΔCPR/ICPR for the ESBWR at operating points SP0, SP1, and SP2 for the potentially limiting cool down events for the equilibrium core of GE14E fuel.*

d) *If the sensitivity calculated in response to (c) is greater than the threshold of significance (a change of 0.005) propose a means for capturing this effect in the current and future licensing analyses.*

References

(1) MFN-06-435, Brown, R., General Electric, letter to the US Nuclear Regulatory Commission, "Commitment to update GE's void fraction data," November 30, 2006

(2) MFN-08-604, Brown, R., General Electric Hitachi Nuclear Energy Americas, letter to US Nuclear Regulatory Commission, "Transmittal of Response to NRC Request for Additional Information - NEDC-32906P, Supplement 3, "Migration to TRACG04/PANACII from TRACG02/PANACI0 for TRACG AOO and ATWS Overpressure Transients," (TAC No. MD2569)," July 30, 2008

In addition, please add Reference 2 above to Design Certification Document, Tier 2, Sections 1.5.2.1 "TRACG" and 1.5.4 "References", and also Table 1.6-1 "Referenced GE/GEH Reports".

GEH Response

A) In Reference 7, GE committed to perform an assessment of the void fraction model against pressure drop data for 10X10 fuel. Reference 5 was submitted in August of 2007 in response to this commitment. In that report the Findlay-Dix void fraction correlation was assessed through pressure drop comparisons to full-scale 10X10 GE14 and GNF2 fuel data. The predicted pressure drop consists of the sum of the static pressure drop, the frictional pressure drop and a pressure drop due to spatial acceleration:

$$\Delta P_{\text{Predicted}} = \Delta P_{\text{Static}} + \Delta P_{\text{Friction}} + \Delta P_{\text{Acceleration}} \qquad (1)$$

The static head is a function of the void fraction in the bundle. The frictional pressure drop consists of the wall friction and local losses. The last term is due to spatial acceleration caused by vapor generation in the bundle and any pressure drop due to area changes.

For high flow or high power the frictional and acceleration terms are more dominant and are the major contributors to the total pressure drop. Correspondingly, the static head becomes a smaller fraction of the total pressure drop. At these conditions the errors in a predicted versus measured pressure drop are therefore more a representation of the error in the models for frictional and acceleration pressure drops, and the pressure drop comparisons cannot be used to assess the accuracy of the void fraction model. For low flow and low power, the frictional pressure drop is small and similarly, as the vapor generation is low for low power, the acceleration pressure drop is small. The static head is therefore the dominant contributor to the pressure drop for low flow and power. The error in a predicted pressure drop versus a measured pressure drop is therefore a representation of an error in a predicted average void fraction for a bundle. The void fraction error can consequently be evaluated as:

$$\overline{\frac{\Delta P_{Measured} - \Delta P_{Calculated}}{g \cdot L \cdot \left(\rho_{Vapor} - \rho_{Liquid}\right)}} = \overline{\partial \alpha} \qquad (2)$$

Here, L is the length of the bundle, or more accurately, the length between the pressure taps, g is the gravitational acceleration and ρ is density. Reference 5 assessed the accuracy of the Findlay-Dix model by comparisons to low flow, less than or equal to 407 kg/m^2-sec (0.3 Mlb/ft^2-hr), and low power, less than or equal to 3 MW. This assessment concluded that the accuracy of the Findlay-Dix correlation for 10X10 GE14 and GNF2 fuels was similar to the accuracy that was previously reported for the Findlay-Dix correlation in Reference 8.

Using a similar approach, the TRACG04 model (Reference 9), was compared to the GE14E low flow and low power pressure drop data using Equation 2. The results of such a comparison are summarized in Table 21.6-111S01-1.

Table 21.6-111S01-1. TRACG04 Comparison to GE14E Pressure Drop Data

[[					

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Using Equation 2, an average void fraction error was calculated to be [[ ]]. This result is consistent with the accuracy of the void fraction model reported in the TRACG Qualification Report, Reference 1.

B) The GEH response to RAI 4.4-39S02 contained in Reference 3 provides an ESBWR analysis that follows the same process from Reference 2 that the NRC staff finds to be acceptable for operating BWRs plants for this purpose.

C) The modified initialization process is outlined in Reference 3 and described in more detail in Reference 2. Inadvertent initiation of the isolation condenser is the limiting cold water scenario for determining the minimum CPR. This scenario was analyzed at three power/flow conditions using both the original and the modified initialization processes. The results from the six TRACG calculations summarized in Table 21.6-111S01-2 compare the values for the channel with the minimum CPR for each of the three power/flow points so that the differences between the two initialization processes can be assessed.

Table 21.6-111S01-2: CPR Comparisons for the Original and Modified Initialization Processes

[[				
				]]

D) The sensitivity calculated in the response to (C) is not greater than the threshold of significance.

Traditionally, the threshold of significance for transients has been an increase by no more than 0.01 in ΔCPR/iCPR for the limiting event. The 0.005 threshold has traditionally been applied to the Safety Limit MCPR (SLMCPR) which is determined from a steady state calculation. Nevertheless, the calculated differences in ΔCPR/iCPR from Table 21.6-111S01-2 are not greater than +0.005, which indicates that the modified process is not significantly less conservative than the original initialization process. More importantly, the original initialization process is actually **more** conservative than the modified process because it produces transient MCPR values that are [[ ]] lower. This outcome is largely due to the fact that the iCPR values stemming from the original method are lower than those for the modified initialization process. The differences in iCPR values between the two processes are [[ ]] more important than the differences in ΔCPR thus causing the MCPR values to be dominated by the iCPR values.

An understanding of why the iCPR values are higher for the modified initialization process even though the total core power and flow are essentially the same, helps in understanding why the transient ΔCPRs for the modified process are also slightly more severe. The slight shift upward in the axial power shape for the modified process results in a lower flow which results in a lower actual power without much change in the critical power hence the iCPR increases. This effect is more prevalent in the channels that have higher powers. The radial peaking decreases in these channels and more of the initial total power is carried by the bulk of the remaining channels in the core that experience a slight increase in flow so that the total core flow remains unchanged. For the lower initial flow in the limiting channels the slope of the critical power correlation as a function of flow is slightly steeper so that the transient response as measured by ΔCPR is slightly more severe.

One final point. Small changes in the ΔCPR/iCPR values as calculated here are well within the uncertainty that is already accounted for in the statistical methodology for determining the licensing basis Operating Limit MCPR (OLMCPR). Section 8.4.2.1 of Reference 4 and 8.4.2.4 of Reference 6 suggest a typical standard deviation of [[ ]] for ΔCPR/iCPR.

In summary: (1) the original initialization process is more conservative than the modified process in terms of MCPR; (2) insignificant variations in ΔCPR/iCPR are already covered by the statistical process for determining OLMCPR. There is no need for ESBWR applications to change the original initialization process that has historically been used in TRACG and qualified against operating BWR transient data.

References

1. GE-Hitachi Nuclear Energy, "Transmittal of GEH Topical Report, NEDE 32177P, Revision 3, TRACG Qualification, August 2007," August 2007.
2. MFN-08-604, Brown, R., General Electric Hitachi Nuclear Energy Americas, letter to US Nuclear Regulatory Commission, "Transmittal of Response to NRC Request for Additional Information - NEDC-32906P, Supplement 3, "Migration to TRACG04/PANACII from TRACG02/PANACI0 for TRACG AOO and ATWS Overpressure Transients," (TAC No. MD2569)," July 30, 2008
3. MFN-08-949, Brown, R., General Electric Hitachi Nuclear Energy Americas, letter to US Nuclear Regulatory Commission, "Response to Portion of NRC Request for Additional Information Letter No. 106 - Related To ESBWR Design Certification Application - RAI Number 4.4-39 Supplement 2," December 15, 2008.
4. GE Nuclear Energy, "TRACG Application for Anticipated Operational Occurrences (AOO) Transient Analysis," NEDE-32906P-A, Class III, Revision 3, September 2006.
5. MFN-07-478, Brown, R., General Electric Hitachi Nuclear Energy Americas, letter to US Nuclear Regulatory Commission, "Transmittal of Supplement 1 to NEDC-33173R, Void Fraction Error Based on 10X10 Fuel Pressure Drop Data (TAC No. MD0277)," August 29, 2007.
6. GE-Hitachi Nuclear Energy, "TRACG Application for ESBWR Transient Analysis," NEDE-33083P Supplement 3, Class III, Revision 1, December 2007.
7. MFN-06-435, Brown, R., General Electric, letter to US Nuclear Regulatory Commission, "Commitment to Update GE's Void Fraction Data", November 30, 2006.

8. NEDE-21565, "BWR Void Fraction Correlation and Data", January 1977.
9. NEDE-32176P, "TRACG Model Description", Revision 4, January 2008.

DCD Impact

GEH will add reference to NEDE-33083 Supplement 3 to Design Certification Document, Tier 2, Section 1.5.2.1 "TRACG" and 1.5.4 "References." Table 1.6-1 "Referenced GE/GEH Reports" will also be revised to show that NEDE-33083 Supplement 3 is referenced in DCD Section 1.5.

This RAI response will be added, along with the NRC SER to NEDE-33083 Supplement 3 when it is issued as a –PA document.

The Reference 2 letter MFN 08-604 is referenced in this RAI response, and therefore will be included by reference in the –PA document.

The above is the usual process for referencing LTRs, and including RAI MFNs in LTRs.

GEH MFN letters containing responses to RAIs are not included as direct reference in the DCD.

DCD Tier 2, Sections 1.5.2.1, 1.5.4 and Table 1.6-1 will be revised as noted in the markup in enclosure 3.

Enclosure 3

MFN 09-119

Response to Portion of NRC Request for

Additional Information Letter No. 254

Related to ESBWR Design Certification Application

DCD Markups

1.5.2.1 TRACG

The TRACG Code and its application to the ESBWR are documented in a series of GE Nuclear Energy Topical Reports, References 1.5-1 through 1.5-5, 1.5-15, and 1.5-16.

TRACG is a GEH proprietary version of the Transient Reactor Analysis Code (TRAC). It is a best-estimate code for analysis of BWR transients ranging from simple operational transients to design basis LOCAs, stability, and anticipated transients without scram (ATWS).

Background

TRAC was originally developed for pressurized water reactor (PWR) analysis by Los Alamos National Laboratory, the first PWR version of TRAC being TRAC-P1A. The development of a BWR version of TRAC started in 1979 in a close collaboration between GE and Idaho National Engineering Laboratory. The objective of this cooperation was the development of a version of TRAC capable of simulating BWR LOCAs. The main tasks consisted of improving the basic models in TRAC for BWR applications and developing models for the specific BWR components. This work culminated in the mid-eighties with the development of TRACB04 at GE and TRAC-BD1/MOD1 at Idaho National Engineering Laboratory, which were the first major versions of TRAC having BWR LOCA capability. Due to the joint development effort, these versions were very similar, having virtually identical basic and component models. The GE contributions were jointly funded by GE, the Nuclear Regulatory Commission (NRC) and Electric Power Research Institute (EPRI) under the REFILL/REFLOOD and FIST programs.

The development of the BWR version has continued at GE/GEH since 1985. The objective of this development was to upgrade the capabilities of the code to include transient, stability and ATWS applications. During this phase, major developments included the implementation of a core kinetics model and addition of an implicit integration scheme into TRAC. The containment models were upgraded for simplified boiling water reactor (SBWR) applications, and the simulation of the BWR fuel bundle was also improved. TRACG was the end result of this development.

Scope and Capabilities

TRACG is based on a multi-dimensional two-fluid model for the reactor thermal hydraulics and a three-dimensional neutron kinetics model.

The two-fluid model used for the thermal hydraulics solves the conservation equations for mass, momentum and energy for the gas and liquid phases. TRACG does not include any assumptions of thermal or mechanical equilibrium between phases. The gas phase may consist of a mixture of steam and a noncondensable gas, and the liquid phase may contain dissolved boron. The thermal-hydraulic model is a multi-dimensional formulation for the vessel component and a one-dimensional formulation for all other components.

The conservation equations for mass, momentum and energy are closed through an extensive set of basic models consisting of constitutive correlations for shear and heat transfer at the gas/liquid interface as well as at the wall. The constitutive correlations are flow regime dependent and are determined based on a single flow regime map, which is used consistently throughout the code.

In addition to the basic thermal-hydraulic models, TRACG contains a set of component models for BWR components, such as channels, steam separators and dryers. TRACG also contains a

1.5-13 GE Nuclear Energy, "Scaling of the SBWR Related Tests," NEDC-32288P, Class III (GE proprietary), Rev. 1, October 1995.

1.5-14 GE Nuclear Energy, "ESBWR Scaling Report," NEDC-33082P, Class III (GE proprietary), Revision 1, January 2006, and NEDO-33082, Class I (Non-proprietary), Revision 1, January 2006.

1.5-15 GE Hitachi Nuclear Energy, "TRACG Application for ESBWR Anticipated Transient Without Scram Analysis," NEDE-33083P, Class III (GEH proprietary), Supplement 2, Revision 1, February 2008, and NEDO-33083, Class I (Non-proprietary), Supplement 2, Revision 1, February 2008.

1.5-16 GE-Hitachi Nuclear Energy, "TRACG Application for ESBWR Transient Analysis," NEDE-33083P Supplement 3, Class III, Revision 0, December 2007, NEDO-33083 Supplement 3, Class I, Revision 0, December 2007.

Table 1.6-1

Referenced GE / GEH Reports

Report No.	Title	Section No.
NEDC-33081P	GE Nuclear Energy, "ESBWR Test Report," Class III (Proprietary), Revision 1, May 2005	1.5
NEDC-33082P NEDO-33082	GE Nuclear Energy, "ESBWR Scaling Report," NEDC-33082P, Class III (Proprietary), Revision 1, January 2006 and NEDO-33082, Class I (Non-proprietary), Revision 1, January 2006.	1.5, 6.2, 6.3
NEDC-33083P-A NEDO-33083-A	GE Nuclear Energy, "TRACG Application for ESBWR," NEDC-33083P-A, Class III (Proprietary), March 2005 and NEDO-33083-A, Class I (Non-proprietary), October 2005.	1.5, 4.4, 4D, 6.2, 6.3, 6A, 6B Chapter 16 B2.1.1
NEDE-33083P-A, Supplement 1 NEDO-33083-A Supplement 1	GE Nuclear Energy, B.S.Shiralkar, et al, "TRACG Application for ESBWR Stability Analysis," NEDE-33083P-A, Supplement 1, Revision 1, Class III (Proprietary), January 2008 and NEDO-33083-A, Supplement 1, Revision 1, Class I (Non-proprietary), January 2008.	1.1, 1.5, 1.9, 4.3, 4D
NEDE-33083P, Supplement 2 NEDO-33083 Supplement 2	GE Hitachi Nuclear Energy, "TRACG Application for ESBWR Anticipated Transient Without Scram Analysis," NEDE-33083P, Supplement 2, Revision 1, Class III (Proprietary), February 2008 and NEDO-33083, Supplement 2, Revision 1, Class 1 (Non-proprietary).	1.5, 15.5
NEDE-33083P, Supplement 3 NEDO-33083 Supplement 3	GE Hitachi Nuclear Energy, "TRACG Application for ESBWR Transient Analysis," NEDE-33083P, Supplement 3, Class III (Proprietary), and NEDO-33083, Supplement 3, Class 1 (Non-proprietary), December 2007.	1.5, 15.2, 15.3, 15.5 Chapter 16 Sect. 5.6.3
NEDC-33139P-A	GE Nuclear Energy, "Cladding Creep Collapse," NEDC-33139P-A, Class III (Proprietary), July 2005.	4.2
NEDO-33181	GE Hitachi Nuclear Energy, "NP-2010 COL Demonstration Project Quality Assurance Plan," NEDO-33181, Revision 5, February 2008.	17.0, 17.1

Enclosure 4

MFN 09-119

Response to Portion of NRC Request for

Additional Information Letter No. 254

Related to ESBWR Design Certification Application

RAI Number 21.6-111 S01

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, David H. Hinds, state as follows:

(1) I am General Manager, New Units Engineering, GE Hitachi Nuclear Energy ("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 GEH's letter, MFN 09-119, Mr. Richard E. Kingston to U.S. Nuclear Energy Commission, entitled "*Response to Portion of NRC Request for Additional Information Letter No. 254 – Related to ESBWR Design Certification Application – RAI Number 21.6-111 Supplement 1,*" dated February 16, 2009. The proprietary information in enclosure 1, which is entitled "*MFN 09-119 – Response to Portion of NRC Request for Additional Information Letter No. 254 – Related to ESBWR Design Certification Application – RAI Number 21.6-111 S01 – GEH Proprietary Information,*" is delineated by a [[dotted underline inside double square brackets{3}]]. Figures and large equation objects 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. Access to such documents within GEH 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 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 GEH's 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 to GEH..

(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 16th day of February 2009.

David H. Hinds
GE-Hitachi Nuclear Energy Americas LLC