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Proprietary Notice

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

MFN 08-541
June 25, 2008

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

Subject: Clarification of Stability Evaluations - NEDC-33173P (TAC No. MD0277)

GEH has determined that a statement in Reference 1 (Methods LTR) could be misinterpreted as a revision to the NRC-approved methodology documented in licensing topical reports (LTR) and guidelines issued by the Boiling Water Reactor Owners Group (BWROG) for the evaluation of the cycle-specific DIVOM (References 2 though 6). GEH has discussed the statement with representatives of the NRC to clarify that the Methods LTR did not intend such a change. Based on those discussions with the NRC, GEH has agreed to clarify the statement with the issuance of the 'A' version of the Methods LTR consistent with Enclosure 1.

Specifically, Sections 2.6.2.1, 2.6.2.2, and 2.6.2.3 of the Methods LTR each have a statement that reads:

> Since the TRACG-based evaluation is based on the limiting bundle on limits, the cycle-specific DIVOM evaluation captures any variation in bundle power uncertainty.

That statement in the Methods LTR is not clear. The TRACG-based DIVOM evaluations do not put the limiting bundle on limits. Rather, the LTR intended to document that sufficient conservatisms are applied, consistent with the applicable BWROG's LTR and guidelines (References 2 thru 6), to address any variation in bundle power uncertainty.

The applicable BWROG LTR and guidelines specify that TRACG-based DIVOM evaluations use the nominal rod pattern and that plant-specific conservatisms are applied to the limiting channel. Typically, the radial peaking is increased by 10% or by the amount that would put the core (not the limiting DIVOM channel) on the OLMCPR (Operating Limit Minimum Critical Power Ratio), whichever is less.

The Stability Long Term Solutions Option III, II and 1-D licensing analysis methodology consists of three major components or steps:

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1. A determination of the MCPR (Minimum Critical Power Ratio) margin that exists prior to the onset of the oscillation. This is referred to as the DIRPT (Delta CPR over Initial CPR for a Reactor Pump Trip) for a two-recirculation pump trip (2RPT) flow reduction event.

2. A statistical treatment of various parameters that influence the magnitude of the peak channel power oscillation. This statistical analysis calculates the hot channel oscillation magnitude or HCOM prior to termination of the instability.

3. A relationship between the change in channel CPR and channel power oscillation magnitude. This relationship is defined as the Delta CPR over Initial MCPR Versus the Oscillation Magnitude or DIVOM curve.

The conservatisms in each step, when combined together, ensure a setpoint (OPRM Amplitude setpoint for Option III and the APRM scram for Options II and 1-D) that would prevent SLMCPR violation during a stability event.

The LTR (Reference 2) identifies conservatisms assumed in each step as well as overall conservatisms in the final solution.

- The smallest or bounding DIRPT is used in the analysis.
- The HCOM analysis provides a conservative value of HCOM at a 95% probability with a 95% confidence level.
- The DIVOM analysis, as described in Reference 2, provided a generic slope for use for current fuel types and vendors. However, this generic slope was replaced with a plant-specific slope as outlined in the BWROG guidelines (References 5 and 6). Because of significant conservatisms in the DIRPT and HCOM analyses, the DIVOM analysis is reasonably conservative but not necessarily bounding. In particular, the nominal rod pattern is used with a radial peaking analysis to account for any variations.
- The most responsive or limiting channel is assumed to be on the OLMCPR prior to the event. Realistically, the most limiting channel tends to be a high harmonic channel (for regional oscillations), which tends to be a lower power channel far from the OLMCPR.

These assumptions and conservatisms are specified in the GEH procedures and are consistent with the applicable BWROG's LTR and guidelines. They provide sufficient conservatisms such that the SLMCPR would not be violated during a stability event.

Therefore, as agreed in discussions with the NRC, GEH has agreed to clarify the statement with the issuance of the 'A' version of the Methods LTR consistent with Enclosure 1.

If you have any questions, please contact Mike Lalor at (408) 925-2443 or me.

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, Methods Licensing
Regulatory Affairs
GE Hitachi Nuclear Energy

Project No. 710

References

1. NEDC-33173P, "Licensing Topical Report, Applicability of GE Methods to Expanded Operating Domains," February 2006.
2. NEDO-32465-A, "Licensing Topical Report, Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications," August 1996.
3. "Application of Stability Long-Term Solution Option II to Nine Mile Point Nuclear Station Unit 1, LTR", GENE-A13-00360-02, Rev. 1, November 1998.
4. "Application of Stability Long-Term Solution Option II to Oyster Creek", NEDC-33065P, April 2002.
5. "Plant-Specific Regional Mode DIVOM Procedure Guideline," GE-NE-0000-0028-9714-R1, June 2005
6. "Plant-Specific Core-Wide Mode DIVOM Procedure Guideline," GE-NE-0000-0031-6498-R0, June 2005

Enclosure:

1. Clarification of Stability Evaluations - Proprietary
2. Clarification of Stability Evaluations - Non-proprietary
3. Affidavit

cc: M Honcharik, NRC
eDRF Section 0000-0082-8237
eDRF 0000-0055-0345

If you have any questions, please contact Mike Lalor at (408) 925-2443 or me.

Sincerely,

Richard E. Kingston

Richard E. Kingston
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References

1. NEDC-33173P, "Licensing Topical Report, Applicability of GE Methods to Expanded Operating Domains," February 2006.
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6. "Plant-Specific Core-Wide Mode DIVOM Procedure Guideline," GE-NE-0000-0031-6498-R0, June 2005

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1. Clarification of Stability Evaluations - Proprietary
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cc: M Honcharik, NRC
eDRF Section 0000-0082-8237
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ENCLOSURE 2

MFN 08-541

Clarification of Stability Evaluations

Non-Proprietary Version

IMPORTANT NOTICE

This is a non-proprietary version of Enclosure 1 to MFN 08-541, from which the proprietary information has been removed. Portions of the enclosure that have been removed are indicated by an open and closed bracket as shown here [[ ]].

2.6.1 Fuel Parameters That Affect Stability

The fuel parameters identified previously, i.e., the local pin power peaking, void reactivity coefficient, and [[ ]], affect stability performance to differing extents.

2.6.2 Treatment of Fuel Parameter Uncertainties

The treatment of the fuel parameter uncertainties for each of the long-term stability solutions listed above is provided in the following discussion.

2.6.2.1 Option I-D

Option I-D has (1) "prevention" elements and (2) a "detect & suppress" element. The prevention portion of the solution includes separate administratively controlled exclusion and buffer regions, which are evaluated for every reload. The detect-and-suppress portion of the solution is a flow-biased APRM flux scram trip that prevents oscillations of significant magnitude. This scram ensures the Fuel Cladding Integrity SLMCPR is protected for the dominant core wide mode of coupled thermal-hydraulic/neutronic reactor instability.

Stability analyses for both the EPU and fuel cycle specific conditions are performed to define the exclusion and buffer regions as well as to confirm that the scram setpoints meet the design basis. With respect to power distribution uncertainties of the nuclear simulator data, the results pertaining to the exclusion region may be slightly affected, but this is not considered to have any safety significance for reasons described below. The power distribution uncertainties of the nuclear simulator data are considered in the determination of the limiting bundle conditions and therefore have insignificant impact on the flow-biased APRM flux scram trip setpoint and the SLMCPR protection. An increase to the void reactivity used in the GE stability analysis models (the frequency domain code ODYSY and the time-domain code TRACG) may also affect the predicted results. However, the current stability models have been used to model actual instability events, and the decay ratio acceptance criteria have been established consistent with the uncertainty as documented in the approved licensing reports. Furthermore, recent instability events at two domestic BWRs have also been evaluated with the stability models and shown to meet the previously established criteria. This provides high confidence that the GE methodology is adequately simulating recent fuel designs and fuel power densities. Therefore, no adjustment to stability models or analysis is necessary due to potential void reactivity uncertainties.

Exclusion Region Calculation

The NRC-approved ODYSY methodology (NEDC-32992P-A) is used in the exclusion region calculation for every reload [Reference 28]. The calculation of the exclusion region boundary is based on a very conservative core wide decay ratio ([[ ]]) that may be influenced by the core wide axial power distribution calculation. [[

]] An additional protection feature includes a cycle-specific buffer region, which is 5% in rated core power or 5% in rated core flow, beyond the exclusion region. Manual monitoring of the decay ratio is required while operating in the buffer region.

The decay ratio calculation includes a cycle-specific confirmation that core wide oscillation is the predominant reactor instability mode and that regional mode instability is not probable. The dominance of the core-wide mode oscillation is confirmed for every reload at the most limiting state point on the EPU power/flow map. The calculation to confirm that the regional mode of instability is not likely to be affected by uncertainties in power distribution because it considers the limiting bundle power. [[

]] Therefore, reasonable potential local or bundle power distribution uncertainties do not affect the confirmation that regional oscillations are not likely for plants with the Option I-D stability solution.

Detect and Suppress Calculation

The detect and suppress evaluation for Option I-D plants is performed under the approved LTR basis (NEDO-32465-A) [Reference 29]. The flow-biased APRM scram setpoints are initially established with conservative margin such that they are found applicable to future fuel cycles during reload confirmation calculations. The calculation of the scram setpoints is based on the limiting fuel bundle being at the Operating Limit MCPR (OLMCPR) and the SLMCPR not being exceeded during the instability oscillation.

The detect and suppress calculation requires the use of the DIVOM (which is defined as the Delta CPR over Initial MCPR Versus the Oscillation Magnitude) curve. Per the BWROG Guideline, Plant-Specific Core-Wide Mode DIVOM Procedure Guideline, [Reference 30] a plant and cycle-specific DIVOM evaluation is used to establish the plant specific relationship between the Hot Channel Oscillation Magnitude (HCOM) and the relative change in MCPR

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]] The scram setpoint analytical limit is established such that the hot channel power is maintained below acceptable values.

Bypass Voiding

The following discussion provides an assessment of the impact of bypass voiding on the effectiveness of the flow-biased APRM scram to provide SLMCPR protection for Option I-D. The primary effect of voiding in the bypass region on the neutron detectors (LPRMs and TIPs) is to reduce the detector response, assuming the same power in the adjacent fuel. This reduction is due to a decrease in the moderation caused by the presence of voids, which decreases the thermal neutron flux incident on the detectors for the same neutron flux generated in the adjacent fuel. There is also the potential for some additional noise in the neutron flux signal, but that has a minor impact on steady state operation. These impacts are greatest for the highest elevation LPRM (D level) where the highest bypass voiding occurs.

For the Option I-D stability solution, the APRM flow-biased scram is used to mitigate stability transients. The analytical limit for the scram setpoint is based on assuring that the scram occurs before power oscillations become large enough to cause the MCPR to approach the SLMCPR. High bypass voids can potentially reduce the APRM reading, and so the margin to scram would increase and this could be non-conservative from the stability mitigation point of view since it would take higher amplitude oscillations to initiate an APRM scram.

The worst-case impact is at natural circulation (following a two recirculation pump trip) when the bypass voids are highest. An evaluation was performed at this condition for the Vermont Yankee plant (49.4% power and 31.3% core flow). [[

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The flow-biased APRM scram setpoint analytical limits are initially established with conservative margin such that they are found applicable to future fuel cycles during reload confirmation calculations. The calculation of the scram setpoint analytical limits is based on the limiting fuel bundle being at the OLMCPR and the SLMCPR not being exceeded during the power oscillation. The detect and suppress evaluation for Vermont Yankee Cycle 24 under EPU conditions was reevaluated to assess the impact of bypass voiding on the safety margins. The detect and suppress calculation assumes a flow runback along the rated licensing rodline to natural circulation flow. The flow-biased APRM trip analytical limit at natural circulation is 53.7% of rated power. [[

]] Hence, the SLMCPR is fully protected for Option 1-D plants, including the effects of bypass voiding.

The noise due to bypass voids slightly increases the overall APRM neutron noise at off-rated conditions where the voids may be significant. However, the impact of this noise on the APRM scram setpoint is negligible because the setpoint (derived from the analytical limit by considering noise and other instrument errors) is based on the normal (no void) noise at rated conditions (~2% of rated power), and this bounds the increased noise at off-rated conditions because the decrease in normal noise at off-rated conditions is more than the increase due to bypass voiding. Additional detail can be found in the accepted VYNPS response for RAIs SRXB-A-44 and SRXB-A-55 [See Appendix B].

An assessment of the impact of the 40% void depletion history assumption on stability can be summarized as follows. As stated in Section 2.2.2.2, [[

]] A similar assessment can be made for the axial and radial power distributions. Therefore, based on these assessments and those provided above, no adjustment to stability models or analysis is necessary due to potential void coefficient or power distribution uncertainties.

An assessment of the impact of extrapolating beyond 70% voids on stability can be summarized as follows. As stated in Section 2.2.2.2, [[

]] Therefore, no adjustment to stability models or analysis is necessary due to potential void coefficient uncertainties.

There may be differences in bypass voiding between GE and non-GE fuel due to their geometric and lattice differences, however the impact on stability is insignificant because of the need for thermal-hydraulic compatibility of the fuel types in the core.

2.6.2.2 Option II

Option II has (1) a "prevention" element and (2) a "detect & suppress" element. The prevention portion of the solution includes an administratively controlled exclusion region, which is evaluated for every reload. The detect-and-suppress portion of the solution is a quadrant-based flow-biased APRM flux scram trip that prevents oscillations of significant magnitude. This scram ensures the Fuel Cladding Integrity SLMCPR is protected for both the core wide and regional modes of coupled thermal-hydraulic/neutronic reactor instability. Option II differs from Option I-D in that it has no buffer region and the quadrant-based APRM is able to detect both regional and core-wide mode oscillations.

Stability analyses for both the EPU and fuel cycle specific conditions are performed to define the exclusion region as well as to confirm that the scram setpoints meet the design basis. With respect to power distribution uncertainties of the nuclear simulator data, the results pertaining to the exclusion region may be slightly affected, but this is not considered to have any safety significance for reasons described below. The power distribution uncertainties of the nuclear simulator data are considered in the determination of the limiting bundle conditions and therefore have insignificant impact on the flow-biased APRM flux scram trip setpoint and the SLMCPR protection. An increase to the void reactivity used in the GE stability analysis models (the frequency domain code ODYSY and the time-domain code TRACG) may also affect the predicted results. However, the current stability models have been used to model actual instability events, and the decay ratio acceptance criteria have been established consistent with the uncertainty as documented in the approved licensing reports. Furthermore, recent instability events at two domestic BWRs have also been evaluated with the stability models and shown to meet the previously established criteria. This provides high confidence that the GE methodology is adequately simulating recent fuel designs and fuel power densities. Therefore, no adjustment to stability models or analysis is necessary due to potential void reactivity uncertainties.

Exclusion Region Calculation

The NRC-approved ODYSY methodology [Reference 28] is used in the exclusion region calculation for every reload. The calculation of the exclusion region boundary is based on a very conservative core wide decay ratio ([[ ]]) that may be influenced by the core wide axial power distribution calculation. [[

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Detect and Suppress Calculation

The detect and suppress evaluation for Option II plants is performed under the approved LTR basis [Reference 29]. The flow-biased APRM scram setpoints are initially established with conservative margin such that they are found applicable to future fuel cycles during reload confirmation calculations. The calculation of the scram setpoints is based on the limiting fuel bundle being at the OLMCPR and the SLMCPR not being exceeded during the instability oscillation.

The detect and suppress calculation requires the use of the DIVOM curve. Per the BWROG Guideline, "Plant-Specific Regional Mode DIVOM Procedure Guideline" [Reference 31], a plant- and cycle-specific DIVOM evaluation is used to establish the plant specific relationship between the HCOM and the relative change in MCPR

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]] The scram setpoint analytical limit is established such that the hot channel power is maintained below acceptable values.

Bypass Voiding

The bypass voiding discussion provided in Section 2.6.2.1 for Option I-D is fully applicable to Option II because both stability solutions use the flow-biased APRM scram to provide SLMCPR protection.

2.6.2.3 Option III

Option III is a "detect & suppress" solution that combines closely spaced Local Power Range Monitor (LPRM) detectors into Oscillation Power Range Monitor (OPRM) "cells" to detect either core-wide or regional (local) modes of reactor instability. The detect and suppress evaluation for Option III plants is performed under the approved LTR basis [Reference 29]. The OPRM scram setpoints are established such that the SLMCPR is not exceeded during the instability oscillation.

The examination of core and fuel stability behavior begins with fuel assumed to be at the OLMCPR and terminates once power oscillations cause fuel critical power to reach the SLMCPR. Therefore, if any uncertainties are increased and applied to the SLMCPR, they are directly incorporated into the stability methodology. As discussed before in relation to nodal and core reactivity, uncertainties or biases in depletion isotopics at high exposure and void conditions from prediction, which might have a postulated effect on the void reactivity coefficient, would manifest themselves in separately observable differences in local and core power and reactivity. The variation of void reactivity coefficient across the GE BWR fleet encompasses significant variations in bundle and core exposures and void fraction and is well behaved. The effect of the void reactivity coefficient on instability events is well understood via existing code qualification parametric studies. Large unknown uncertainties in the void reactivity coefficient would be noticeable and be manifest as an inability to reasonably model instability events. The existing GE thermal-hydraulic stability models reasonably and adequately model the magnitude and period of industry thermal-hydraulic instability events. Both the GE stability codes (frequency domain code ODYSY and time-domain code TRACG) model past events relatively well, including the recent thermal-hydraulic instability events at two domestic BWRs. This demonstrates the accuracy of the void model in the GE methodology and provides high confidence in the simulation of recent fuel designs and fuel power densities. Because the transient analysis results (delta/initial) are not affected and the difference between OLMCPR and SLMCPR remains unchanged, the stability envelope will not be affected.

Key inputs to the stability-based OLMCPR analysis are the DIVOM slope and HCOM. These inputs would not be affected by an increase in the OLMCPR or the SLMCPR. Key HCOM inputs are LPRM to OPRM assignments, total scram delay time, RPS trip logic, and averaging/conditioning filter cutoff frequencies. A new HCOM is required only if one of these key (but unrelated to OLMCPR or SLMCPR) parameters changes. If the current SLMCPR is increased by 0.02, the overall effect on the stability based OLMCPRs (note these values are determined at OPRM amplitude setpoints from 1.05 to 1.15 or 1.20) would be that they would increase by the ratio of the new SLMCPR to the old SLMCPR. But the acceptance criteria for selecting the appropriate OPRM setpoint, i.e., the transient OLMCPR, would also increase. Consequently, the OPRM setpoint would remain essentially unchanged if there were a change in SLMCPR and OLMCPR.

Further, a 5-10% uncertainty in radial peaking factor is applied in this analysis, primarily to address variations in bundle peaking from initial rod pattern selection. This relatively large radial peaking factor reasonably encompasses the small (<~1%) increase in bundle power uncertainty (described above) for the SLMCPR determination, in particular because the stability analysis is otherwise conservative for plant specific conditions or settings.

Per the BWROG Guideline, "Plant-Specific Regional Mode DIVOM Procedure Guideline" [Reference 31], a plant- and cycle-specific DIVOM evaluation is used to establish the plant specific relationship between HCOM and the relative change in MCPR

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]] The scram setpoint analytical limit is established such that the hot channel power is maintained below acceptable values.

ENCLOSURE 3

MFN 08-541

Affidavit

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, Richard E Kingston, state as follows:

(1) I am Vice President, Methods Licensing, Regulatory Affairs, GE-Hitachi Nuclear Energy Americas LLC ("GEH"), 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 GEH letter, MFN 08-541, Clarification of Stability Evaluations - NEDC-33173P, dated June 25, 2008. The proprietary information in Enclosure 1 entitled, *Clarification of Stability Evaluations*, is identified by a double 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, 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), above, is classified as proprietary because it contains detailed results and conclusions regarding GE Methods supporting evaluations of the safety-significant changes necessary to demonstrate the regulatory acceptability for the expanded power/flow operating domains including Extended Power Uprates, Constant Pressure Power Uprates, and the MELLLA+ domain for a GE BWR, utilizing analytical models and methods, including computer codes, which GE has developed, obtained NRC approval of, and applied to perform evaluations of transient and accident events in the GE Boiling Water Reactor ("BWR"). The development and approval of these system, component, and thermal hydraulic models and computer codes was achieved at a significant cost to GE, on the order of several million dollars.

The development of the evaluation process along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major GE asset.

(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 25th day of June, 2008.

Richard E. Kingston

Richard E Kingston
GE-Hitachi Nuclear Energy Americas LLC