
Enclosure 6 to PLA-6484

Non PROPRIETARY VERSION

**“Revised Susquehanna Replacement Steam
Dryer Limit Curves –
Main Steam Line Mounted Instrumentation.”**



HITACHI

GE Hitachi Nuclear Energy

3901 Castle Hayne Rd
Wilmington, NC 28401

Non-Proprietary Version

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Class I

February 2009

Engineering Report

**Revised Susquehanna Replacement
Steam Dryer Limit Curves – Main
Steam Line Mounted Instrumentation**

**IMPORTANT NOTICE REGARDING THE
CONTENTS OF THIS REPORT**

Please Read Carefully

NON-PROPRIETARY NOTICE

This is a non-proprietary version of the document 0000-0096-5766-P-R1, which has the proprietary information removed. Portions of the document that have been removed are indicated by an open and closed double brackets as shown here [[]].

**IMPORTANT NOTICE REGARDING
CONTENTS OF THIS REPORT**

Please Read Carefully

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REVISION SUMMARY

Rev	Changes Incorporated in Current Revision
0	Initial Issue
1	Figures 2 and 3 revised

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ACRONYMS AND ABBREVIATIONS

Item	Short Form	Description
1	ACM	Acoustic Circuit Model
2	ASME	American Society of Mechanical Engineers
3	EPU	Extended Power Uprate Power, 3952 MWt
4	FE	Finite Element
5	GEH	GE Hitachi Nuclear Energy
6	Hz	Hertz
7	LCF	Limit Curve Factor
8	MSIV	Main Steam Isolation Valve
9	MSL	Main Steam Line
10	MWt	Megawatt Thermal
11	NRC	Nuclear Regulatory Commission
12	OLTP	Original Licensed Thermal Power, 3293 MWt
13	PPL	PPL Susquehanna, LLC
14	PSD	Power Spectral Density
15	Psi	Pounds per square inch
16	RMS	Root-Mean-Squared
17	S/RV	Safety/Relief Valve
18	SG	Strain Gage
19	SRSS	Square Root Sum of Squares
20	SSES	Susquehanna Steam Electric Station
21	Stdev	Standard Deviation
22	SUPF	Stress Under Prediction Factor
23	TC	Test Condition
24	VPF	Vane Passing Frequency

1. EXECUTIVE SUMMARY

As part of the Susquehanna Steam Electric Station (SSES) license for Extended Power Uprate (EPU), PPL is required to provide the Main Steam Line (MSL) limit curves to the Nuclear Regulatory Commission 90 days prior to operating above 3489 MWt. On-dryer instrumentation data measured on the Susquehanna Unit 1 replacement dryer became available after May 2008. These on-dryer instrumentation data were used to develop the limit curve factor for Unit 1. Baseline curves for Unit 1 were developed from Unit 1 MSL strain gage measurements. Limit curves for Unit 1 were then developed from scaling the baseline curves by the limit curve factor.

MSL strain gage measurements were compared between Unit 1 and Unit 2. The

[[
]] The two SSES units are similar in design and operating conditions; therefore it is expected that the pressure loading on the steam dryer will be similar. The Unit 2 MSL strain gauge measurements are very similar to those for Unit 1. Therefore, the Unit 1 limit curves provided are applicable for use at Unit 2 as well.

Figures 4 through 11 provide the updated limit curves. These figures include the Level 1 and Level 2 limit curves for the eight strain gage MSL monitoring locations on SSES Unit 1. Assuring that the Level 1 acceptance limits are met will minimize the potential for fatigue damage to the PPL replacement dryer. If a measurement exceeds the Level 1 criteria, a reduction in power to the previously acceptable power level is required. If a measurement exceeds the Level 2 criteria, the plant shall hold at the current power level and re-evaluate the dryer loading and structural response.

PPL will monitor the main steam line (MSL) strain gauges during power ascension testing above 3489 MWt (Unit 2) and 3733 MWt (Unit 1) for increasing pressure fluctuations in the steam lines along with reactor pressure vessel water level instrumentation and MSL piping accelerometers. If resonance frequencies are identified as increasing above nominal levels PPL will stop power ascension and re-evaluate the dryer loading and structural response.

2. BASIS FOR DEFINING THE SUSQUEHANNA MSL LIMIT CURVES

GEH developed revised MSL limit curves in March 2008 [1] based on the as-built dryer stress analysis [2] for the purpose of monitoring the MSL strain gage response during the SSES Unit 1 EPU power ascension from 3489 MWt (Pre-EPU licensed thermal power) through 3733 MWt (94.4% EPU). For this first EPU power ascension step, dryer monitoring and conformance with the acceptance criteria were based on the measured strain response of on-dryer instrumentation [3]. During the SSES Unit 1 power ascension in 2008, both MSL strain gage data and on-dryer strain and pressure data were gathered, which allow the development of revised MSL limit curves based on MSL strain gage measurements from partial EPU testing and [[

]]

2.1 [[BIAS AND UNCERTAINTY]]

Reference 4 provides the results of the SSES Unit 1 power ascension testing for the replacement steam dryer through the first two power ascension steps to a core power of [[

]] In addition, at each test condition, PPL gathered data from the MSL strain gage instrumentation that was synchronous with the on-dryer data. GEH performed an evaluation of the instrumented steam dryer data to perform an update of the Reference 2 stress report, the update of which is contained in Reference 5.

[[

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In the previous limit curve development [1], [[

]]

The SSES Unit 1 replacement dryer was [[

]]

A baseline curve for the MSL limit curves was developed from the raw steam line data from the MSL testing at [[]] Consistent with the previous MSL limit curve report [1], [[

]]
which is consistent with the previous MSL baseline curve development [1].

Table 1 provides a summary of [[

]]
Table 1 [[**]] Data Statistics**
[[

]]
Consistent with Reference 1, [[

]]
Consistent with the Reference 1 assessment, the data in Table 2 [[

]]

Table 2 [[Data Statistics
[[

]]

Table 3 summarizes a comparison of [[

Table 3 provides [[The lower row in
]] from Table 2. The
[[

]] In Reference 1, these [[

]] shown in Table 3. Therefore in this
assessment, [[
]]

Table 3 [[

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[[

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In order to address the [[

]]

Figures 1a through 1j provide [[

]]

In Reference 3, [[

]]

3. REVISED STRESS FREQUENCY FACTORS

The stress results from the GEH finite element stress analysis of the as-fabricated dryer [2] were used in developing the MSL limit curves. [[

]] to the 13,600 endurance limit after application of the stress under prediction (SUPF) and EPU factors.

In order to address the [[

]]

The peak stress values for the [[]]

are presented in Table 3-1 of Reference 2.

The Level 1 limit curves were developed by [[

]] The Level 2 limit curves were developed using the same approach [[

]]

The time history stress data from the [[

]]

The LCF1 factor, [[

]]

The previous limit curve factor developed in Reference 1 was [[

]]

4. APPLICABILITY OF LIMIT CURVES TO SSES UNIT 2.

The MSL limit curves developed in Section 3 are based on the measurements taken during the power ascension at Susquehanna Unit 1. These limit curves will also be applied to Unit 2 to monitor the power ascension to full EPU operation.

SSES Units 1 and 2 are both 251-inch BWR/4 reactors in Mark II containments. The reactor and containment geometry and operating conditions are essentially the same for the two units. [[

]]

All four MSLs on each unit were instrumented with strain gauges in order to measure the acoustic pressures within the steamlines. Each steamline was instrumented near the top and the bottom of the vertical riser. Four strain gauges were used at each measurement location. The MSL strain gage measurements

were compared between Unit 1 and Unit 2. [[

]] Figures 2 and 3

[[

]]

The MSL measurements for both Unit 1 and Unit 2 [[

]] show that the significant pressure loading occurs in the low frequency range. The replacement dryer was designed [[

]]

The limit curve factors and limit curves in Sections 2 and 3 were developed [[

]] As discussed above, the reactor operating conditions and reactor geometry are the same for the two units. A comparison of the Unit 1 and Unit 2

MSL geometry found no significant difference that would lead to a substantially different pressure loading on the Unit 2 steam dryer. The MSL measurements for both Unit 1 and Unit 2 as well as [[]]

show that the significant pressure loading occurs in the low frequency range. The MSL measurements show that the frequency content in the pressure loading is similar between the two units. Because of the similarity in the expected pressure loading between the two units, the Unit 1 limit curves provided are applicable for use at Unit 2 as well.

5. LIMIT CURVES FOR MSL MOUNTED STRAIN GAGE INSTRUMENTATION

Figures 4 through 11 show the revised Level 1 and Level 2 limit curves based on [[]] and MSL measurements taken at Unit 1 through the first power ascension step to a power level of [[]]. These figures also include the baseline curves used in the development of the limit curves. The filtered and unfiltered strain gage test data at [[]] is included to illustrate the noise filtered from the raw MSL measurements.

The limit curves are based [[

]]

7. REFERENCES

- [1] "Susquehanna Replacement Steam Dryer Limit Curves – Main Steam Line Mounted Instrumentation", GE-NE-0000-0080-8732-P-R0, March 2008.
- [2] "Susquehanna Replacement Steam Dryer Stress Analysis at Extended Power Uprate Conditions", GE-NE-0000-0079-2250-P-R0, January 2008
- [3] "Susquehanna Replacement Steam Dryer Instrumentation Acceptance Criteria – Dryer Mounted Instrumentation," GE-NE-0000-0080-2994-P-R4, April 2008.
- [4] "Susquehanna Unit 1 Replacement Steam Dryer Vibration Instrumentation Program NRC Summary," GE-NE-0000-0085-2413-P-R0, July 2008.
- [5] "Susquehanna Replacement Steam Dryer Updated Stress Analysis at Extended Power Uprate Conditions," 0000-0095-2113-P-R0, February 2009.
- [6] "Susquehanna-1 Steam Dryer Vibration Steady State and Transient Response – Final Report," MDE #199-0985-P, Revision 1, January 1986.

[[

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Figure 1a [[

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(Green Measured, Blue FE Model)

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Figure 1b [[

(Green Measured, Blue FE Model)

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Figure 1c ||

(Green Measured, Blue FE Model)

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Figure 1d [[

(Green Measured, Blue FE Model)

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Figure 1e]]

(Green Measured, Blue FE Model)

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Figure 1f [[

(Green Measured, Blue FE Model)

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Figure 1g [[

(Green Measured, Blue FE Model)

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Figure 1h [[

(Green Measured, Blue FE Model)

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Figure 1i [[

(Green Measured, Blue FE Model)

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Figure 1j [[

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(Green Measured, Blue FE Model)

[[

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Figure 2 MSL Strain Gauge Comparison – MSL A-Upper

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Figure 3 MSL Strain Gauge Comparison – MSL A-Lower

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Figure 4 Limit Curve for Line A-Upper

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Figure 5 Limit Curve for Line A-Lower

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Figure 6 Limit Curve for Line B-Upper

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Figure 7 Limit Curve for Line B-Lower

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Figure 8 Limit Curve for Line C-Upper

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Figure 9 Limit Curve for Line C-Lower

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Figure 10 Limit Curve for Line D-Upper

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Figure 11 Limit Curve for Line D-Lower

Enclosure 7 to PLA-6484

Non PROPRIETARY VERSION

**“SSES Dryer Component Worst Case Fatigue
Margin Under Projected EPU Conditions”**

Enclosure 8 to PLA-6484

Cross Reference of GEH Documents

GEH References / PPL To NRC Transmittal Cross Reference Matrix

Reference # In Updated Dryer Stress Report 0000-0094-2113-P-R0	Reference Description	Originally Transmitted To NRC via PPL Letter
1 - Section 9	GE-NE-0000-0079-2250-P-R0, "Susquehanna Replacement Steam Dryer Stress Analysis at Extended Power Uprate Conditions", January 2008	PLA-6323 , "Susquehanna Steam Electric Station Proposed Amendment No. 285 For Unit 1 Operating License No. NPF-14 And proposed License Amendment 252 For Unit 2 Operating License No. NPF-22 Constant Pressure Power Uprate Application", B.T. McKinney to USNRC, January 25, 2008
2 - Section 9	GE-NE-0000-0085-2413-P-R0, "Susquehanna Unit 1 Replacement Steam Dryer Vibration Instrumentation Program NRC Summary Report", July 2008	PLA-6408 , "Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License Condition 2.C.(36)(b)7", B.T. McKinney to USNRC, September 26, 2008
1 - Appendix "A"	GE-NE-0000-0080-2994-P-R4, "Susquehanna Replacement Steam Dryer Instrumentation Acceptance Criteria – Dryer Mounted Instrumentation", April 2008	PLA-6332 , "Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License Condition 2.C.(36)(b)1", B.T. McKinney to USNRC, February 23, 2008 <i>As Amended By:</i> PLA-6349 , "Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License Condition 2.C.(36)(b)1", B.T. McKinney to USNRC, April 11, 2008
2 - Appendix "A"	GE-NE-0000-0085-2413-P-R0, "Susquehanna Unit 1 Replacement Steam Dryer Vibration Instrumentation Program NRC Summary Report", July 2008	PLA-6408 , "Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License Condition 2.C.(36)(b)7", B.T. McKinney to USNRC, September 26, 2008
3 - Appendix "A"	GE-NE-0000-0079-2250-P-R0, "Susquehanna Replacement Steam Dryer Stress Analysis at Extended Power Uprate Conditions", January 2008	PLA-6323 , "Susquehanna Steam Electric Station Proposed Amendment No. 285 For Unit 1 Operating License No. NPF-14 And proposed License Amendment 252 For Unit 2 Operating License No. NPF-22 Constant Pressure Power Uprate Application", B.T. McKinney to USNRC, January 25, 2008
4 - Appendix "A"	ASME B&PV Code, Section III, 1989 Edition with no Addenda	Document was not transmitted by PPL to NRC

GEH References / PPL To NRC Transmittal Cross Reference Matrix

Reference # In Updated Steam Dryer MSL Limit Curve Report 0000-0096-5766-P-R0	Reference Description	Originally Transmitted To NRC via PPL Letter
1	GE-NE-0000-0080-8732-P-R0, "Susquehanna Replacement Steam Dryer Limit Curves – Main Steam Line Mounted Instrumentation", March 2008	PLA-6346 , "Susquehanna Steam Electric Station Unit 1 Main Steam Line Limit Curves", B.T. McKinney to USNRC, April 1, 2008 <i>Note: The entire report was not transmitted; only the limit curves themselves were provided.</i>
2	GE-NE-0000-0079-2250-P-R0, "Susquehanna Replacement Steam Dryer Stress Analysis at Extended Power Uprate Conditions", January 2008	PLA-6323 , "Susquehanna Steam Electric Station Proposed Amendment No. 285 For Unit 1 Operating License No. NPF-14 And proposed License Amendment 252 For Unit 2 Operating License No. NPF-22 Constant Pressure Power Uprate Application", B.T. McKinney to USNRC, January 25, 2008
3	GE-NE-0000-0080-2994-P-R4, "Susquehanna Replacement Steam Dryer Instrumentation Acceptance Criteria – Dryer Mounted Instrumentation", April 2008	PLA-6332 , "Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License Condition 2.C.(36)(b)1", B.T. McKinney to USNRC, February 23, 2008 <i>As Amended By:</i> PLA-6349 , "Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License Condition 2.C.(36)(b)1", B.T. McKinney to USNRC, April 11, 2008
4	GE-NE-0000-0085-2413-P-R0, "Susquehanna Unit 1 Replacement Steam Dryer Vibration Instrumentation Program NRC Summary", July 2008	PLA-6408 , "Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License Condition 2.C.(36)(b)7", B.T. McKinney to USNRC, September 26, 2008
5	0000-0095-2113-P-R0, "Susquehanna Replacement Steam Dryer Updated Stress Analysis at Extended Power Uprate Conditions", February 2009	PLA-6484 , Enclosure 1
6	MDE #199-0985-P, Revision 1, "Susquehanna-1 Steam Dryer Vibration Steady State and Transient Response – Final Report", January 1986	PLA-6138 , "Susquehanna Steam Electric Station Proposed License Amendment No. 285 For Unit 1 Operating License No. NPF-14 And Proposed License Amendment No. 253 for Unit 2 Operating License No. NPF-22 Constant Pressure Power Uprate – Supplement", B.T. McKinney to USNRC, December 4, 2006

Enclosure 9 to PLA-6484

Affidavits

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, **Tim E. Abney**, state as follows:

- (1) I am Vice President, Services 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 GEH report, GE-NE-0000-0095-2113-P-R0, Susquehanna Replacement Steam Dryer Updated Stress Analysis at Extended Power Uprate Conditions, February 2009. The proprietary information is identified by a dotted underline inside double square brackets. ~~[[This sentence is an example.⁽³⁾]]~~ In each case, the superscript notation ⁽³⁾ refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, 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 results and details of structural analysis methods and techniques developed by GEH for evaluations of BWR Steam Dryers. Development of these methods, techniques, and information and their application to the design, modification, and analyses methodologies and processes for the Steam Dryer Program was achieved at a significant cost to GEH.

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 GEH 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.

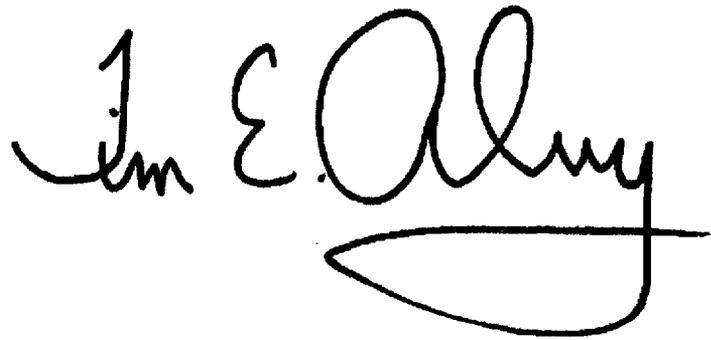
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 23rd day of February 2009.

A handwritten signature in black ink, reading "Tim E. Abney". The signature is written in a cursive style with a large, sweeping flourish at the end.

Tim E. Abney
Vice President, Services Licensing
GE-Hitachi Nuclear Energy Americas LLC

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

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- (8) The information identified in paragraph (2) above is classified as proprietary because it contains results and details of structural analysis methods and techniques developed by GEH for evaluations of BWR Steam Dryers. Development of these methods, techniques, and information and their application to the design, modification, and analyses methodologies and processes for the Steam Dryer Program was achieved at a significant cost to GEH.

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 GEH 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.

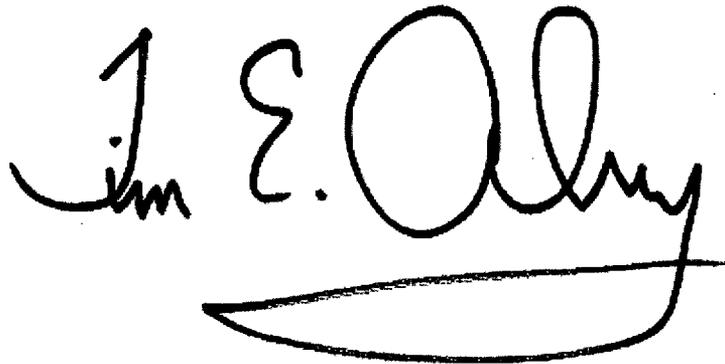
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 26th day of February 2009.

A handwritten signature in black ink that reads "Tim E. Abney". The signature is written in a cursive style with a large, looped "A" and a long horizontal stroke at the bottom.

Tim E. Abney
Vice President, Services Licensing
GE-Hitachi Nuclear Energy Americas LLC

GE-Hitachi Nuclear Energy Americas LLC

AFFIDAVIT

I, **Tim E. Abney**, state as follows:

- (1) I am Vice President, Services 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 GEH letter, 142215-PCR3-20090224-01, *Enclosure 4 of PLA Letter 6484 - Dryer Stress Components Table*, dated February 24, 2009. The proprietary information in Enclosure 1 entitled, *Enclosure 4 of PLA Letter 6484 - Dryer Stress Components Table*, is identified by a dotted underline inside double square brackets. [[This sentence is an example.^{3}]] In each case, the superscript notation ^{3} refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, 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 results and details of structural analysis methods and techniques developed by GEH for evaluations of BWR Steam Dryers. Development of these methods, techniques, and information and their application to the design, modification, and analyses methodologies and processes for the Steam Dryer Program was achieved at a significant cost to GEH.

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 GEH 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.

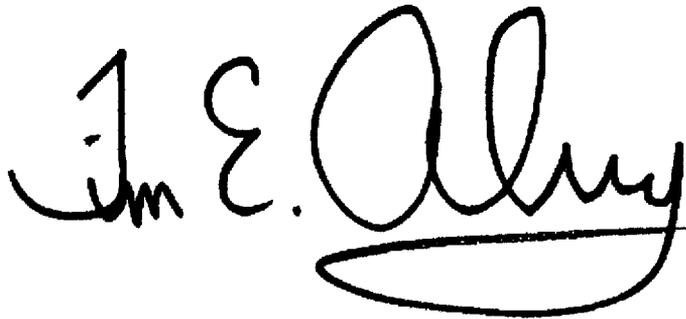
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 24th day of February 2009.

A handwritten signature in black ink, reading "Tim E. Abney". The signature is written in a cursive style with a large, prominent "A" and "B".

Tim E. Abney
Vice President, Services Licensing
GE-Hitachi Nuclear Energy Americas LLC