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January 20, 2009

L-MT-09-007
10 CFR 50.90

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

Monticello Nuclear Generating Plant
Docket 50-263
Renewed Facility Operating License No. DPR-22

Response to November 14, 2008, Request for Additional Information for License Amendment Request: Revision to the Allowable Value and Channel Calibration Surveillance Interval for the Recirculation Riser Differential Pressure – High Function (TAC No. MD6864)

References: 1) Letter NMC to NRC, "License Amendment Request: Revision to the Allowable Value and Channel Calibration Surveillance Interval for the Recirculation Riser Differential Pressure – High Function," (L-MT-07-055), dated September 25, 2007.

2) Email from P. Tam (NRC) to R. Loeffler (NMC) dated November 14, 2008, "FW: Monticello Recirc Riser Round 2 RAIs." --- RAI Questions 1 through 3.

On September 25, 2007, the Nuclear Management Company, (NMC) LLC a predecessor license holder to the Northern States Power Company – a Minnesota corporation (NSPM),[1] submitted a license amendment request (LAR) to revise the allowable value and channel calibration surveillance interval for the Recirculation Riser Differential Pressure – High function (Function 2.j in Technical Specification Table 3.3.5.1-1 (Reference 1). This proposed change was based on a reanalysis of the small break Loss of Coolant Accident which determined a new minimum detectable break area for the Low Pressure Coolant Injection loop select logic.

The U.S. Nuclear Regulatory Commission (NRC) requested additional information (RAI) on the basis for this proposed change by e-mail on November 14, 2008 (Reference 2). On November 21, 2008, a teleconference was held between the NRC and NSPM to review the scope of these RAI questions and also to clarify that there was no dependency between this LAR and the Extended Power Uprate LAR, they are independent submittals.

1. NSPM is incorporated as a wholly owned subsidiary of Xcel Energy, Inc. Transfer of operating authority from the NMC to NSPM occurred on September 15, 2008.

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NRR

The November 14, 2008, RAI requested information considered proprietary by General Electric – Hitachi (GEH) pursuant to 10 CFR 2.390. A non-proprietary response to each RAI is provided in Enclosure 1.[2]

GEH, as the owner of the proprietary information, has executed the affidavit provided in Enclosure 2, which identifies that the information provided within Enclosure 3 has been handled and classified as proprietary, is customarily held in confidence, and has been withheld from public disclosure. The proprietary information contained in Enclosure 3 was provided to the MNGP in a GEH transmittal referenced by the affidavit. GEH requests that the enclosed proprietary information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 10 CFR 9.17.

In accordance with 10 CFR 50.91, a non-proprietary copy of this response is being provided to the designated Minnesota official.

Summary of Commitments

No new commitments or changes to any existing commitments are proposed by this letter.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on January 20, 2009.

Timothy J. O'Connor
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power Company – Minnesota

cc: Administrator, Region III, USNRC (w/o Enclosure 3)
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC (w/o Enclosure 3)
Minnesota Department of Commerce (w/o Enclosure 3)

2. Enclosures 1, 2 and 3 are taken directly from the GEH to NSPM transmittal letter GEH-MNGP-LPCI-02, dated January 8, 2009.

# ENCLOSURE 1

# GEH-MNGP-LPCI-02

# GEH Responses to Monticello Third Round RAIs 1 through 3

# Non-Proprietary Version

**IMPORTANT NOTICE**

This is a non-proprietary version of Enclosure 3 GEH-MNGP-LPCI-02, which has the proprietary information removed. Portions of the document that have been removed are indicated by white space inside open and closed bracket as shown here [[ ]].

# Monticello LPCI Loop Select Logic Detectable Break Analysis – Third Round RAI Response, RAI 1 through 3

Three additional Requests for Additional Information have been received as a result of the NRC review of the submittal requesting a change in the minimum detectable break for the LPCI Loop Select Logic System to 0.4 square feet. The analysis performed to support this change was documented in Reference 1. Previous responses were offered in References 2 & 3. For the current set, responses reflect discussion with the NRC reviewer held November 21, 2008. Proposed responses to these three Requests for Additional Information are presented on the following pages.

Reference:


1. ***Monticello Nuclear Generating Plant SAFER/GESTR ECCS-LOCA Analysis - LPCI Loop Selection Detectable Break Area***, GE-NE-0000-0052-3113-P-R0, September 2006.

2. ***Monticello LPCI Loop Select Logic Detectable Break Analysis – Response to RAI 2 through 4***, GE-NE-0000-0084-9696-R0, June 2008.

3. ***Response to Monticello LPCI Loop Select Logic System Second Round RAIs 2-4***, 0000-0091-9429-R0, October 2008.

1) Regarding RAI2 on re-zeroing the LB PCT

The licensee should understand that the LB PCT should be based on an analysis reflecting the current state of the plant and the methodology used. If a methodology element has changed, i.e. in this case the limiting axial power shape from mid-peaked to top-peaked, then the analysis should have considered the impact of the change on all potentially limiting scenarios.

The licensee stated in the latest response that, "When proposing to re-zero the Licensing Basis PCT, the limiting PCT is required to be identified for the licensing action under consideration." This shows an incomplete view of licensing basis PCT. The current LAR reflects a methodology change to use the top-peaked power shape. A prudent submittal would have applied the top-peaked power shape to large break in addition to the small break which was included in the LAR, and based the licensing basis PCT on the limiting break.

With the latest letter, the licensee withdrew the portion of the application to "re-zero" the LB PCT. However, the question still remains whether small break is indeed the limiting accident as claimed in the submittal, since the licensee does not provide the applicable large break results for comparison.

**Response:**

Analyses using the SAFER Evaluation Model have historically been performed with a mid-peaked power shape as limiting for large break. This was investigated at the time of the SAFER model approval showing compliance with the Appendix K requirement that a "range of power distribution shapes and peaking factors representing power distributions that may occur over the core lifetime must be studied." As discussed in GEH 10 CFR 50.46 Notification Letter 2006-01, (Reference 4), "Past small break ECCS-LOCA analyses have assumed a mid-peaked power shape, consistent with the [design basis accident] DBA analyses. Recently it has been determined for small break cases, a top-peaked power shape can result in higher peak cladding temperature (PCT)."

For the Monticello LPCI minimum detectable break area application, the current analysis basis remains applicable as to the mid-peaked power shape being the limiting power shape for a large break. As stated in Notification Letter 2006-01, "A study involving the DBA large break ECCS-LOCA analysis determined that it is not significantly affected by the axial power shape assumption. No change is reported in any analysis cases assuming DBA breaks." The current LPCI minimum detectable break area LAR does not reflect a methodology change with respect to the large break accident; the mid-peaked power shape has been determined to be limiting, and, hence, further analysis was not, and is not, required to be performed. For the small break accident, as expressed in Notification Letter 2006-01, an additional requirement was imposed to verify, for the small break cases, that the mid-peaked power shape was bounding by the performance of small break cases with top-peaked power shape. If the top-peaked power shape cases became limiting, these small break cases would be represented for demonstration of compliance to Acceptance Criteria (be used as the basis for Licensing Basis PCT.)

As discussed in Section 3.3, "Axial Power Shape," of the proprietary version of the LPCI loop selection minimum detectable break area report (Reference 5), this issue was addressed for Monticello, citing these former sensitivity studies. Further, it is noted in Section 5.1, "Large Recirculation Line Breaks," of this report that the change imposed by the detectable break area for the LPCI Loop Select Logic System will not have any effect on the DBA or Large Break analysis, that all previous cases for the Large Break would remain valid. Based on these sensitivity studies all potentially limiting scenarios were considered and it was unnecessary to perform a large break accident with a top-peaked power shape.

The question as to the bounding power shape has been asked on several applications since the time of original model licensing and subsequent investigations have confirmed the mid-peaked shape as limiting for large break cases. With review of both References 1 and 2 for MELLLA+ and Interim Methods for

Expanded Operating Domains, GEH received a limitation from the NRC on the LTRs that required both the small and large break ECCS-LOCA analysis to include top peaked and mid-peaked power shape in establishing MAPLHGR and determining the PCT. However, the LPCI loop selection minimum detectable break area analysis (Reference 5) for Monticello was performed before these limitations were put into effect, and they are only required for implementation of expanded operating domains, EPU and MELLLA+, neither of which Monticello is requesting under the LPCI loop selection minimum detectable break area analysis. Review and approval of the Monticello EPU application is occurring as a separate licensing action. The EPU application will be the first application for Monticello to be submitted following imposition of this limitation.

Confirmation of the Bounding Power Shape

While the LPCI loop selection minimum detectable break area analysis was not performed for the large break case, the recently submitted Monticello EPU was performed with the LPCI loop selection minimum detectable break area change and confirms that the mid-peaked shape is still limiting for the limiting large break case. The reported limiting Appendix K large break PCT, with a mid-peaked power shape, for EPU (from Reference 3) was [[ ]], assuming the current licensed thermal power (CLTP) case with MELLLA flow. The same CLTP case with MELLLA flow, repeated with a top-peaked power shape assumption resulted in a PCT of [[ ]]. This Monticello EPU result substantiates the historical position that the mid-peaked power shape is the limiting Large Break power shape assumption, and validates the conclusion of LPCI loop selection minimum detectable break area analysis performed for Monticello that the limiting power shape would not change for a large break.

As an aside, the EPU analysis includes a change of basis, where three ADS valves are available instead of the previously assumed two, which is beneficial in the blowdown for the small break scenario. The PCT for a small break accident is reduced by inclusion of this additional ADS valve such that the DBA, or large break, case returns to be the limiting case for Acceptance Criterion compliance when that analysis is approved.


1. NEDC-33006P, ***LICENSING TOPICAL REPORT GENERAL ELECTRIC BOILING WATER REACTOR MAXIMUM EXTENDED LOAD LINE LIMIT ANALYSIS PLUS***, Revision 2, November 2005.
2. NEDC-33173P, ***LICENSING TOPICAL REPORT Applicability of GE Methods to Expanded Operating Domains***, February 2006.
3. NEDC-33322P, ***SAFETY ANALYSIS REPORT FOR MONTICELLO CONSTANT PRESSURE POWER UPRATE***, Revision 3, October 2008.
4. 10 CFR 50.46 Notification Letter 2006-01, ***Impact of Top Peaked Power Shape for Small Break LOCA Analysis,*** July 28, 2006 (inclusion, pg. 112 of NEDC-32950P.)
5. GE-NE-0000-0052-3113-P-R0, Monticello Nuclear Generating Plant SAFER/GESTR ECCS-LOCA Analysis - LPCI Loop Selection Detectable Break Area, September 2006.

2) Regarding RAI3 on identifying the limiting small break
Please explain why the limiting Appendix K calculations are not based on the limiting Nominal break. The limiting break based on Nominal calculation is 0.06 ft2 (1336F), but the Appendix K calculations are based on 0.09 ft2 and 0.10 ft2. The staff's understanding of the SAFER/GESTR application methodology is to 1) determine the limiting break based on Nominal calculations and then 2) determine the Appendix K PCT based on the limiting break from the Nominal calculations. The approach in the submittal seems inconsistent with the approved methodology (NEDE-23785-1-PA).

**Response:**

The current Monticello analysis basis retains the 1600°F limit on Upper Bound PCT, which was a limitation imposed by the NRC on the original approval of the SAFER/GESTR model. Subsequently GEH received NRC approval to remove this constraint from the general SAFER/GESTR model, but a plant-specific application is required for each individual licensee to receive NRC approval for Upper Bound PCT limit removal. This Upper Bound PCT constraint is to be removed with the Monticello EPU analysis but remains in effect as part of the present analysis basis, and consequently was applied to the LPCI loop selection minimum detectable break area analysis.

[[

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The general SAFER/GESTR application methodology calls for the determination of the limiting break based on Nominal calculations and then to determine the Appendix K PCT based on the limiting break from the Nominal calculations. It was recognized from experience that the Nominal PCT cases, with the required modeling refinements to show Upper Bound PCT under the 1600°F limit, would change the Nominal case results such that a limiting break size for Nominal assumptions would not necessarily correspond with the limiting break size for Appendix K PCT. Guided by the ultimate goal of showing acceptability to the 2200°F Acceptance Criteria of 10 CFR 50.46, it was needful to find the limiting Appendix K PCT by performing those cases (assuming both mid-peaked and top-peaked power shape.)

Referring to the proprietary version of the LPCI loop selection minimum detectable break area report (Reference 1) and the results summary of Table 4, the cases in the third column of Table 4 are small break cases spanning the worst break size, including top-peaked power shape and Appendix K assumptions.
[[ ]]

To demonstrate that the break area (0.06 $ft^2$) associated with the small break Nominal PCT case (with a top-peaked power shape) that produced the highest PCT of [[ ]], does not necessarily produce the highest small break Appendix K PCT (with a top-peaked power shape), this case was re-performed resulting in a PCT of [[ ]]. This result confirms the previous determination of the limiting break size as 0.09 $ft^2$ and shows the general trend of PCT across the span of break sizes. This illustrates that a minimum number of break sizes is sufficient to calculate and identify the limiting break size.

Were the calculation pursued with the limiting PCT Nominal case solely defining the case for the follow-on application of Appendix K assumptions, it would lead to an unrecognized non-conservative result. This is illustrated by noting the impact of the modeling changes to comply with the 1600°F limit on Upper Bound PCT on the corresponding Appendix K calculation.

Because of the nature of the conservatisms (again, as explained in RAI No. 3, below), it is useful to consider both the recirculation suction leg break and the recirculation discharge leg break. The limiting break size for the Nominal, top-peaked power shape would be the 0.06 ft2 case as shown, with the listed PCT of [| ]] for the recirculation discharge leg break. The corresponding recirculation suction leg break case PCT is [[ ]].

Calculating the Appendix K case with the same modeling as the result of Column 4 for the Nominal, top-peaked power shape case, the result of the recirculation discharge leg break, top-peaked power shape, Appendix K case PCT would be [| ]]. The corresponding recirculation suction leg break, top-peaked power shape, Appendix K case PCT would be [| ]].

This result shows the extent to which the 1600°F limit on Upper Bound PCT distorts the indicated limiting Nominal PCT and the need to portray an overall limiting Licensing Basis PCT for Acceptance Criterion compliance. Strict correspondence to the limiting Nominal case, which would support the Upper Bound PCT limit, would result in a non-bounding Appendix K case, which would not be limiting for purpose of compliance to the Acceptance Criterion.


1. GE-NE-0000-0054-3113-P-R0, ***Monticello Nuclear Generating Plant SAFER/GESTR ECCS-LOCA Analysis - LPCI Loop Selection Detectable Break Area***, September 2006.

3) Regarding RAI4 on potential ECCS flow lost through recirc discharge line break
The licensee state in the latest response that, "Regarding the bounding break location, the Generic Studies presented in Reference 8 [NEDE-23785-1-PA], which form the basis for the MNGP ECCS analysis, addressed this question and consistently demonstrated that the recirculation suction line break (with maximum loss of reactor vessel inventory) would result in the limiting for ECCS-LOCA PCT determination for the BWR/3 design."

Please point to the specific location in NEDE-23785-1-PA supporting the assertion being made for the small break scenarios in question at MNGP. The BWR/4 ECCS system modeled in NEDE-23785-1-PA differs from that of MNGP. NEDE-23785-1-PA does not provide a comparison of small break in discharge line vs. suction line.

The nominal small break results provided in GENE-0000-0052-3113-P-R0 identify the discharge line as the limiting break. Please resolve this apparent contradiction.

**Response:**

The specific location referred to is Section 2.2 of Reference 1 where it states a sensitivity study was performed for the BWR/4 ECCS system with the proviso that the results obtained for the BWR/4 are typical of the response expected for a BWR/3 plant, since both product lines have similar ECCS configurations and injection locations. Though a specific comparison of discharge vs. suction line breaks is not presented in Reference 1 for the small break size, the model has been applied in such a way as to maximize the dominant effects of either a discharge or suction line break.

An additional consideration in the small break event is not just the lost LPCI flow, which injects into the discharge side of the recirculation line, but also the bottom head drain (BHD) line, which connects from the vessel into the suction side of the recirculation line (see Figure 1). [[

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The response to this RAI is best addressed by stepping through the modeling that was applied on the Monticello LPCI Loop Select Detectable Break Area analysis and offering intermediate results not conveyed in the report.

Generalized Recirculation Loop Break Modeling in SAFER

The objective of the LPCI Loop Select System is to direct the LPCI flow in the event of an accident to inject only into the intact recirculation loop, assuring its delivery to the vessel. For breaks smaller than the minimum detectable break area, the conservative position is for the LPCI Loop Select System to be assumed to fail, with all LPCI flow being injected into the broken recirculation loop.

For smaller break areas, the break flow is determined by back pressure and break area, as the break flow for much of the time is choked. Due to the choked break flow, when LPCI does initiate, not all the LPCI flow will be lost out the break. Some fraction of the LPCI flow may exit through the break but the remaining flow in the recirculation leg is available for delivery to the vessel. As to the limiting break location, one can see competing effects as to what source of water will dominate break flow; the LPCI flow lost out of the break vs. the vessel inventory loss to the break. Ultimately, the PCT for small break is determined by how much the core becomes uncovered and the duration of this condition until the water level again recovers the core.

For the generalized modeling in SAFER, [[

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For the Monticello application, this generalized suction leg break modeling of the recirculation loop was employed for the initial survey of break sizes (Reference 2, column 2 of Table 4). Also, this modeling was applied for the cases investigating the top-peaked power shape (Reference 2, column 3 of Table 4). This was done to determine conservative results for the Appendix K cases.

The initial approach to calculate the Nominal assumption cases for these small break sizes used the same generalized suction leg break modeling. A break size range consistent with the Appendix K assumption case range of break sizes (Reference 2, column 3 of Table 4) was pursued. Also, investigation of the mid-peak and top-peak power shape was performed.

Generalized Recirculation Loop Break Model in SAFER with BHD Venting Credit

As noted in LPCI loop selection minimum detectable break area report (Reference 2), Monticello is licensed to the limitation that Upper Bound PCT be less than 1600°F. This requirement is the reason behind the 15% setdown of MAPLHGR imposed on the plant. The Upper Bound PCT is based on the limiting Nominal assumption case. Knowing from previously performed Monticello analyses (e.g., the GE14 NFI) that margin to the Upper Bound PCT would be expected to be tight (1600°F); an effort to refine the Nominal cases was made.

[[

]]. The results of these cases, using the generalized recirculation loop break modeling as described above, but with this BHD venting credit, are shown below. These results also indicate that the top-peaked power shape is limiting.

| **Nominal Assumptions Applied. Credit for Delay in BHD Venting. Generalized Recirc. Suction Leg Break.** | **Break Size** | **Nominal PCT** |
|---|---|---|
| | SQ. FT. | (°F) |
| Mid-peaked Power shape | 0.07 | [[ ]] |
| Mid-peaked Power shape | 0.08 | [[ ]] |
| Mid-peaked Power shape | 0.09 | [[ ]] |
| | | |
| Top-peaked power shape | 0.07 | [[ ]] |
| Top-peaked power shape | 0.08 | [[ ]] |
| Top-peaked power shape | 0.09 | [[ ]] |

Were it not required to address the 1600°F Upper Bound PCT limitation, the analysis would have been considered complete at this point, since it consistently reported the limiting recirculation suction leg break using the standard modeling, with coincident break sizes for the Nominal and Appendix K assumptions.

But, based on these Nominal case results, and the calculated sensitivity study results from the Monticello analysis of record defining an Upper Bound PCT, it was expected that the Upper Bound PCT would be projected to be in violation (greater then 1600°F) by several degrees. In other words, after application of uncertainties for the Upper Bound PCT was included, (based on this [[ ]] result), the PCT would exceed the 1600°F Upper Bound PCT limit. Therefore, it was necessary to further refine the Nominal cases in order to comply with the 1600°F limit on Upper Bound PCT.

Location Specific Recirculation Loop Break Model in SAFER with BHD Venting Credit (Top-Peaked Power Shape)

By procedure, a more explicit modeling of the recirculation loop is allowed which was next employed for the Nominal assumption cases. [[

]] Explicit calculations of the recirculation suction leg break and the recirculation discharge leg break are required by the procedure in this instance. By either treatment, incrementally more water is made available to the vessel for refilling.

A first calculation was performed, modeling the recirculation break location directly, [[

]] Only the top-peaked power shape was applied for these later cases, having determined that as the limiting assumption in the prior calculations.

| **Nominal Assumptions Applied.**<br>**Credit for Delay in BHD Venting.**<br>**Top Peaked Power Shape.**<br>**Explicit Break Location Applied**<br>**With Recirc Pump Discharge Valve Closed** | **Break Size** | **Nominal PCT** |
|---|---|---|
| | SQ. FT. | (°F) |
| Recirculation Discharge Leg Break: | 0.05 | [[ |
| | 0.06 | |
| | 0.07 | |
| | 0.08 | |
| | 0.09 | |
| Recirculation Suction Leg Break: | 0.05 | |
| | 0.06 | |
| | 0.07 | |
| | 0.08 | |
| | 0.09 | ]] |

The results above are instructive in seeing a shift in limiting break size. They confirm the recirculation suction leg break location to be apparently limiting.

However, it was questioned by the analyst as to whether these results were sufficiently conservative. [[

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This leads to the result presented in Column 4 of Table 4 of Reference 2, which is for the recirculation discharge leg break. [[

]] The PCT effect is then principally which of these effects will more quickly refill the core and arrest the cladding temperature excursion.

| **Nominal Assumptions Applied.<br>Credit for Delay in BHD Venting.<br>Top Peaked Power Shape.<br>Generalized Recirc. Suction Leg Break followed by Explicit Break Location Applied (After Recirc Pump Discharge Valve calculated to be closed).** | **Break Size** | **Nominal PCT** |
|---|---|---|
| | SQ. FT. | (°F) |
| Recirculation Discharge Leg Break: | 0.05 | [[ |
| | 0.06 | |
| | 0.07 | |
| | 0.08 | |
| Recirculation Suction Leg Break: | 0.05 | |
| | 0.06 | |
| | 0.07 | |
| | 0.08 | ]] |

The explanation as to why the recirculation discharge leg break appears to be more limiting in this instance, then, comes from the fact that it was conservatively affected by both factors, [[

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Regardless, it is reiterated that the only reason that the tailoring of the Nominal Case PCT results are relevant is to comply with the imposed 1600°F limit on Upper Bound PCT. After the application of uncertainties for the Upper Bound PCT is included, (based on this [] ]] result), the Upper Bound PCT is 1570 °F. Thus, the recirculation discharge line break, due to the present Monticello licensing requirement to comply with the 1600°F Upper Bound PCT limit, becomes the limiting break case, and is shown in compliance.


1. NEDC-23785PA, "The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident, Volume III, SAFER/GESTR Application Methodology", General Electric Company, Revision 1, October 1984.
2. GE-NE-0000-0054-3113-P-R0, ***Monticello Nuclear Generating Plant SAFER/GESTR ECCS-LOCA Analysis - LPCI Loop Selection Detectable Break Area***, September 2006.

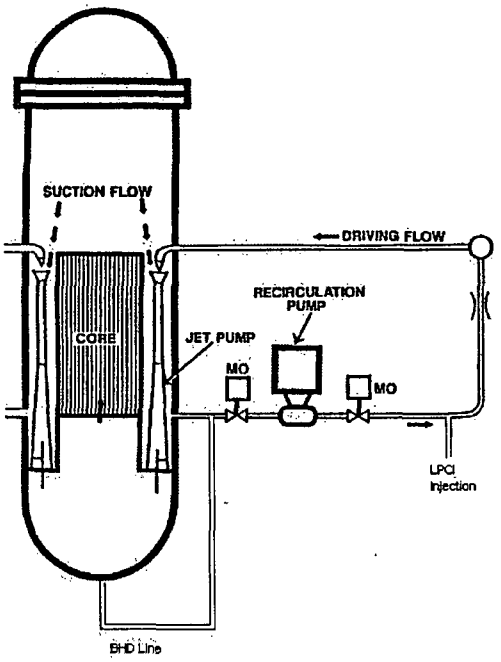


Figure 1: Simplified Recirculation Loop

ENCLOSURE 2

GEH-MNGP-LPCI-02

Affidavit

## GE-Hitachi Nuclear Energy Americas LLC

## AFFIDAVIT

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

(1) I am Vice President, Fuel Licensing, Regulatory Affairs, GE-Hitachi Nuclear Energy Americas LLC ("GEH"), 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 3 of GEH letter, GEH-MNGP-LPCI-02, Jeff A. Hren (GEH) to Alan V. Wojchouski (Nuclear Management Company), *Monticello Nuclear Generating Plant Transmittal - Responses to additional NRC Questions re GEH LPCI Selection Report - Follow up,* dated January 8, 2009. The GEH proprietary information in Enclosure 1, which is entitled *GEH Responses to Questions 1 through 3 - Proprietary,* is identified by a dotted underline inside double square brackets [[This sentence is an example.{3}]]. Figures and large equation objects containing GEH proprietary information are identified with double square brackets before and after the object. In each case, the superscript notation {3} refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.

(3) In making this application for withholding of proprietary information of which it is the owner or licensee, GEH relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

(4) Some examples of categories of information which fit into the definition of proprietary information are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GEH's competitors without license from GEH constitutes a competitive economic advantage over other companies;

b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals aspects of past, present, or future GEH customer-funded development plans and programs, resulting in potential products to GEH;

d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. above.

(5) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GEH, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GEH, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties, including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or subject to the terms under which it was licensed to GEH. 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 from evaluations, 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 modes and computer codes were 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 8th day of January 2009.

James F. Harrison
Vice President, Fuel Licensing
Regulatory Affairs
GE-Hitachi Nuclear Energy Americas LLC