



**HITACHI**

**GE Hitachi Nuclear Energy**

**Proprietary Notice**

This letter transmits proprietary information in accordance with 10 CFR 2.390. Upon removal of Enclosure 1, the balance of this letter may be considered non-proprietary.

**Dale E. Porter**

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December 5, 2013

MFN 13-094

U.S. Nuclear Regulatory Commission

Attn: Document Control Desk

Washington, DC 20555-0001

**Subject: Part 21 Reportable Condition Notification:  
Failure of Relay Logic Card Modules in 2 Out of 4 Voters**

This letter provides information concerning an evaluation performed by GE Hitachi Nuclear Energy (GEH) regarding the failure of Relay Logic Card Modules in 2 out of 4 Voters.

Based upon the evaluation, GEH has determined that a Reportable Condition under 10CFR Part 21 exists for plants listed herein. This determination does not apply to the ABWR or ESBWR Design Control Document's (DCD). The information contained in this document informs the NRC of the conclusions and recommendations derived from GEH's evaluation of this issue.

If you have any questions, please call me at (910) 819-4491.

Sincerely,

Dale E. Porter

Safety Evaluation Program Manager

GE-Hitachi Nuclear Energy Americas LLC

Attachments:

1. US Plants Potentially Affected
2. Report Notification Information per §21.21(a)(2)

Enclosures:

1. Description of Evaluation – GEH Proprietary Information – Class III (Confidential)
2. Description of Evaluation – Non-Proprietary Information – Class I (Public)
3. Affidavit – Dated December 5, 2013

cc: J. Golla, USNRC  
S. S. Philpott, USNRC  
S. J. Pannier, USNRC  
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PRC File  
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Document Components:

- 001 MFN 13-094 Cover Letter.pdf
- 002 MFN 13-094 Enclosure 1 Proprietary.pdf
- 003 MFN 13-094 Enclosure 2 Non-Proprietary.pdf
- 004 MFN 13-094 Enclosure 3 Affidavit.pdf

**Attachment 1**

**US Plants Potentially Affected**

*US BWR Plants and Associated Facilities*

<u>X</u>	<b><u>Utility</u></b>	<b><u>Plant</u></b>
<u>X</u>	Constellation Energy	Nine Mile Point 2
<u>X</u>	Detroit Edison Co.	Fermi 2
<u>X</u>	Entergy	Grand Gulf
<u>X</u>	Exelon	Limerick 1-2
<u>X</u>	Exelon	Peach Bottom 2-3
<u>X</u>	PPL Susquehanna LLC	Susquehanna 1-2
<u>X</u>	Duke Energy - Progress	Brunswick 1-2
<u>X</u>	Southern Nuclear Operating Co.	Hatch 1-2
<u>X</u>	Tennessee Valley Authority	Browns Ferry 1-3
<u>X</u>	Xcel Energy	Monticello
<u>X</u>	Energy Northwest	Columbia

**Attachment 2**

**Report Notification Information per §21.21(a)(2)**

**(i) Name and address of the individual or individuals informing the Commission.**

Dale E. Porter  
GE Hitachi Nuclear Energy  
Safety Evaluation Program Manager  
3901 Castle Hayne Road, Wilmington, NC 28401

**(ii) Identification of the facility, the activity, or the basic component supplied for such facility which fails to comply or contains a defect.**

Two-Out-of-Four Logic Modules (Voters) are installed at the following plants:

<b>Site Unit</b>	<b>Two-out-of Four Logic Module Part Number</b>	<b>PRNM Installed</b>
Hatch 1	304A3807G002	1996
Hatch 2	304A3807G002	1997
Browns Ferry 2	304A3807G004	1997
Browns Ferry 3	304A3807G004	1998
Fermi 2	304A3807G003	1998
NMP-2	304A3807G005	1998
Peach Bottom 2	304A3807G006	1999
Peach Bottom 3	304A3807G006	2000
Limerick 1	304A3807G007	2000
Limerick 2	304A3807G007	2001
Brunswick 1	304A3807G009	2002
Brunswick 2	304A3807G009	2003
Susquehanna 1	304A3807WJG001	2006
Browns Ferry 1	304A3807G011	2007
Susquehanna 2	304A3807WJG001	2007
Monticello	304A3807NFG001	2009
Columbia (Note 1)	304A3807TCG001	2011
Grand Gulf	304A3807WAG001	2012

Note 1: The Columbia PRNM System was delivered to Columbia in 2011 but the system has not been installed as of this date. Installation is currently scheduled for 2015.

**(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.**

The Two-Out-of-Four Logic Modules (Voters) listed in section (ii) were designed and fabricated by GE Hitachi Nuclear Energy.

**(iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.**

The observed aging characteristics of the Solid State Relays on two particular Voter Relay Logic Cards Modules present a future challenge to the Power Range Neutron Monitoring System's ability to reliably insert the Average Power Range Monitor (APRM) High-High/INOP Scram and/or the Oscillating Power Range Monitor (OPRM) Scram to the Reactor Protection System (RPS) if plant conditions warrant such action.

**(v) The date on which the information of such defect or failure to comply was obtained.**

A Potential Reportable Condition Evaluation in accordance with 10 CFR Part 21 was initiated on October 9, 2013.

**(vi) In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured, or being manufactured for one or more facilities or activities subject to the regulations in this part.**

See sub-paragraph (ii).

**(vii) The corrective action, which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.**

GEH investigated these failures under 10 CFR Part 21. Following completion of the 10 CFR Part 21 Investigation, GEH advises potentially affected customers to replace the Relay Logic Card Modules containing the aging Solid State Relays if they have been in-service for ten years or longer and on a ten-year periodicity thereafter.

**(viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.**

GEH advised affected customers to replace the Relay Logic Card Modules containing the aging Solid State Relays if they have been in-service for ten years or longer at the first reasonable opportunity and on a ten-year periodicity thereafter.

**(ix) In the case of an early site permit, the entities to whom an early site permit was transferred.**

This is not an early site permit concern.