HITACHI

GE Hitachi Nuclear Energy

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March 22, 2010
MFN 10-123

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: **Part 21 60-Day Interim Report Notification:**
Failure of HPCI Turbine Overspeed Reset Control Valve Diaphragm

Reference: **NRC Event Notification Report 45227,**
HPCI Inoperable Due to Oil Leak in Mechanical Trip Hold Valve
NRC Event Notification Report issued July 24, 2009
NRC Event Notification Report retracted September 23, 2009

This letter provides information concerning an evaluation being performed by GE Hitachi Nuclear Energy (GEH) regarding the failure of a HPCI Turbine Overspeed Reset Control Valve Diaphragm discovered at Browns Ferry Unit 1. This condition was the subject of the referenced Event Report submitted by the Tennessee Valley Authority on July 24, 2009 and retracted on September 23, 2009. As stated herein, GEH has not concluded that this is a reportable condition in accordance with the requirements of 10CFR 21.21(d) and continued testing and evaluation is required to determine the root cause of this failure.

A description herein GEH includes in the investigation of this failure at Browns Ferry one additional diaphragm that was manufactured in the same lot (May, 15, 2006) as the failed diaphragm provided to Browns Ferry. All of the diaphragms from this lot have been returned to GEH for evaluation, including the diaphragm that failed.

The information required for a 60-Day Interim Report Notification per §21.21(a)(2) is provided in Attachment 3. The commitment for follow-on actions is provided in Attachment 3, item (vii).

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. Description of Evaluation
2. US Plants With GEH supplied diaphragms
3. 60-Day Interim Report Notification Information per §21.21(a)(2)

cc: S. S. Philpott, USNRC
J. F. Harrison, GEH
J. G. Head, GEH
P. L. Campbell, GEH Washington
A. A. Lingenfelter, GNF
PRC File
DRF Section No. 0000-0115-3176

Attachment 1 – Description of Evaluation

Summary:

GE Hitachi Nuclear Energy (GEH) became aware of a failure of a High Pressure Coolant Injection (HPCI) Turbine Overspeed Reset Control Valve Diaphragm (GEH Part Number Q25471-A2) at a domestic BWR. The evaluation of this failure has not determined the root cause of the failure or determined if a deviation from technical requirements was the cause of this failure. Additional testing and evaluation is required to determine if this is an isolated failure or represents a latent design error, manufacturing defect, or if the failure is a random occurrence.

GEH issues this 60-Day Interim Report in accordance with the requirements set forth in 10CFR 21.21(a)(2) for the delivered lot of diaphragms from which the identified failure occurred so that continued testing and subsequent evaluations can be completed.

Background

GEH initiated a 10CFR Part 21 evaluation due to a reported failure of a GEH supplied High Pressure Coolant Injection (HPCI) Turbine Overspeed Reset Control Valve Diaphragm (part number Q25471-A2) that failed at a domestic BWR. This failure was the subject of an Event Report filed with the NRC; therefore, the NRC is aware of this failure. The HPCI turbine overspeed reset control valve is a Robertshaw Model VC-210. The diaphragm is part of that Robertshaw valve. The utility, where the failure occurred, attributed the failure of the diaphragm to a lack of uniformity in reinforcing material throughout the diaphragm that may be regarded as a manufacturing defect. GEH is collaborating with the supplier of the diaphragm and Robertshaw to determine/confirm the root cause of the diaphragm failure. The failed diaphragm was one of three diaphragms purchased from Robertshaw that were supplied from a single lot manufactured on 5/15/2006. GEH has recalled and received these three diaphragms, which includes the failed diaphragm.

Safety Basis

Failure of the HPCI turbine overspeed reset control valve's diaphragm could result in a loss of lube and control oil through the failed diaphragm. This could result in a failure of the HPCI System resulting in a reduction in reactor vessel level below the top of active fuel during an accident. A Substantial Safety Hazard would not be created since no fuel damage would occur due to the availability of redundant ECCS systems such as ADS.

Corrective/Preventive Actions

GEH is collaborating with the diaphragm supplier and Robertshaw to determine the root cause of the diaphragm failure. Results of this analysis will make it possible to determine if a reportable condition exists within the context of 10CFR Part 21.21(d) and will provide input for the development of a solution to prevent future recurrence. Completion of the 10CFR Part 21 evaluation will be based upon the findings of this root cause analysis. Completion of this evaluation is scheduled for July 23, 2010.

Refer to Attachment 3, Item (vii) for corrective actions.

Attachment 2 – US Plants With Subject Diaphragms

	Utility	Plant
X	Florida Power and Light	Duane Arnold
X	Tennessee Valley Authority	Browns Ferry 1 - 3

<u>Attachment 3</u> – 60-Day Interim Report Notification Information per §21.21(a)(2)

(i) Name and address of the individual providing the information:

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

(ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States that contains a deviation or failure to comply:

The basic component that failed is a HPCI Turbine Overspeed Reset Control Valve Diaphragm; GE Hitachi Nuclear Energy Part Number Q25471-A2.

(iii) Identification of the firm constructing the facility or supplying the basic component which contains a deviation or failure to comply:

GE Hitachi Nuclear Energy

(iv) Nature of the defect or safety hazard which could be created by such a deviation or failure to comply:

GE Hitachi Nuclear Energy HPCI Overspeed Turbine Reset Control Valve Diaphragm Q25471-A2, failed for reasons yet to be determined, in the area adjacent to the outer edge of the diaphragm at a preformed radius. This failure could result in a failure of the HPCI System resulting in a reduction in reactor vessel level below the top of active fuel during an accident. A Substantial Safety Hazard would not be created since no fuel damage would occur due to the availability of redundant ECCS systems such as ADS.

(v) The date on which the information of such a deviation or failure to comply was obtained:

A Potential Reportable Condition Evaluation in accordance with 10CFR Part 21 was initiated on January 22, 2010.

(vi) In the case of a basic component which contains a deviation or failure to comply, the locations of all such components in use or being supplied:

Diaphragms from a single vendor lot, fabricated on May 15, 2006, are the primary suspect component and are the subject of this 60-Day Interim Report as listed below.

Plant	Quantity	Ship Date	Part Number
Duane Arnold	1	7/5/2007	Q25471-A2
Browns Ferry	2	10/5/2006	Q25471-A2

(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 (note, these are actions specifically associated with the identified deviation or failure to comply):

GEH Component Engineering is collaborating with the diaphragm supplier and Robertshaw to determine the root cause of the diaphragm failure. Results of this analysis will make it possible to determine if a reportable condition exists within the context of 10CFR Part 21.21(d), and will provide input for the development of a solution to prevent future recurrence. Completion of the 10CFR Part 21 evaluation will be based upon the findings of this root cause analysis. Completion of this evaluation is scheduled for July 23, 2010.

(viii) Any advice related to the deviation or failure to comply about the facility, activity, or basic component that has been, is being given to purchasers or licensees:

The failed diaphragm and all additional diaphragms from the suspect lot have been recalled by GEH for further analysis. All diaphragms from the suspect lot have been received by GEH. Any additional diaphragm failures should be reported to GEH.

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

There are no early site permit concerns.