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GE Hitachi Nuclear Energy

Dale E. Porter

GE-Hitachi Nuclear Energy Americas LLC
Safety Evaluation Program Manager

3901 Castle Hayne Rd.,
Wilmington, NC 28401
USA

T 910 819-4491
Dale.Porter@GE.Com

October 20, 2010
MFN 10-327

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

Subject: **Part 21 60-Day Interim Report Notification:**
Crack Indications in Marathon Control Rod Blades

Reference: NEDE-31758P-A, "GE Marathon Control Rod Assembly," October 1991.

This letter provides information concerning an evaluation being performed by GE Hitachi Nuclear Energy (GEH) regarding the identification on crack indications in Marathon Control Rod Blades at a non-domestic BWR/6 plant. 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 evaluation is required to determine the impact and extent of this condition.

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 Potentially Affected
3. 60-Day Interim Report Notification Information per §21.21(a)(2)

cc: S. S. Philpott, USNRC
S. J. Pannier, USNRC
O. Tabatabai-Yazdi, USNRC
J. F. Harrison, GEH
J. G. Head, GEH
P. L. Campbell, GEH Washington
A. A. Lingenfelter, GNF
PRC File
DRF Section No. 0000-0124-3633

Attachment 1 – Description of Evaluation

Summary

A recent inspection of near "End-of-Life" Marathon Control Rod Blades (CRB) at an international BWR/6 has revealed crack indications. The CRB assemblies in question were manufactured in 1997. GE Hitachi Nuclear Energy (GEH) continues to investigate the cause(s) of the crack indications. Once the cause of the crack indications is determined, GEH will evaluate the nuclear and mechanical lifetime limits of the Marathon Control Rod Blade design in light of the new inspection data, and make revised lifetime recommendations if necessary.

This 60-day interim notification, in accordance with 10CFR Part 21.21(a)(2), is sent for all plants that are D lattice, BWR/2-4 or S lattice, BWR/6 plants. Since there have been no reported cracking occurrences in C lattice assemblies to date, these CRBs are tentatively eliminated from the investigation. C lattice, BWR/4-5 plants have been included on Attachment 2 for identification. Should the results of the investigation implicate the C lattice plants, the final resolution to this 10CFR Part 21 evaluation will include the C lattice plants.

Background

GE Hitachi Nuclear Energy (GEH) provides Marathon Control Rod Blades (CRB) to BWR's throughout the fleet, inclusive of D lattice, BWR/2-4 plants, S lattice, BWR/ 6 plants, and C lattice, BWR/4-5 plants, as well as to other reactor vendor plants with similar configurations. GEH maintains a continuous surveillance program to monitor Marathon CRB performance in the BWR fleet as required by the NRC Safety Evaluation (NEDE-31758P-A) for the Marathon Control Rod Blade. This surveillance program primarily consists of visual inspections of highly irradiated near "End-of-Life" Marathon CRBs. The most recent update report for the Marathon surveillance program was provided to the BWR fleet in May 2010; report number 0000-0071-8269-R2. This report was also sent to the NRC via MFN 10-153 on May 14, 2010. Since that update was released, GEH has completed the planned visual inspection of four-discharged Marathon CRBs at an international BWR/6, identified as 'Plant O' in the surveillance report. The visual inspection of these assemblies has revealed crack indications on all four CRBs. Some of the crack indications are larger when compared to those previously observed and reported in the surveillance report, and occur at locations of lower reported local boron-10 depletion than previously documented.

Discussion

The CRBs in question were manufactured in 1997. To date, no obvious characteristic of manufacturing or operation have provided an indication as to why these specific blades deviate from other Marathon CRBs that have successfully operated to higher control rod depletions. GEH continues to investigate the cause(s) of the crack indications, including the examination of manufacturing records, material properties, water chemistry, specific operational history and duty. GEH will determine if there is a nuclear safety concern that is reportable under 10CFR Part 21.21(d) based on this investigation. GEH is also evaluating the nuclear and mechanical lifetime limits of the Marathon CRB design in light of the new inspection data, and will make revised lifetime recommendations, if necessary.

Crack indications at this plant occurred in “S” lattice CRB assemblies, which have a similar configuration to “D” lattice Marathon CRB assemblies. As reported in the surveillance report, crack indications have only been observed in D and S lattice Marathon CRBs. Therefore D and S lattice CRBs are the primary focus of the on-going investigation and the subject of this 60-day interim notification. Since there have been no reported cracking occurrences in C lattice assemblies to date, these CRBs are tentatively eliminated from the investigation. Should the results of the investigation implicate the C lattice plants, the final resolution to this 10CFR Part 21 evaluation will include the C lattice plants.

ABWR and ESBWR Design Certification Documentation Applicability

The issues described above have been reviewed for applicability to documentation associated with 10CFR 52 and it has been determined that there is no affect on the technical information contained in either the ABWR certified design or the ESBWR design in certification.

Corrective/Preventive Actions

GEH will complete the evaluations by February 15, 2011.

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

Attachment 2 – US Plants Potentially Affected

D & S Lattice Plants	C Lattice Plants	Utility	Plant
X		Constellation Nuclear	Nine Mile Point 1
	X	Constellation Nuclear.	Nine Mile Point 2
	X	Detroit Edison Co.	Fermi 2
X		Dominion Generation	Millstone 1
	X	Energy Northwest	Columbia
X		Entergy Nuclear Northeast	FitzPatrick
X		Entergy Nuclear Northeast	Pilgrim
X		Entergy Nuclear Northeast	Vermont Yankee
X		Entergy Operations, Inc.	Grand Gulf
X		Entergy Operations, Inc.	River Bend
X		Exelon Generation Co.	Clinton
X		Exelon Generation Co.	Oyster Creek
X		Exelon Generation Co.	Dresden 2 & 3
	X	Exelon Generation Co.	LaSalle 1 & 2
	X	Exelon Generation Co.	Limerick 1 & 2
X		Exelon Generation Co.	Peach Bottom 2 & 3
X		Exelon Generation Co.	Quad Cities 1 & 2
X		FirstEnergy Nuclear Operating Co.	Perry 1
X		FPL Energy	Duane Arnold
X		Nebraska Public Power District	Cooper
X		Nuclear Management Co.	Monticello
	X	PPL Susquehanna LLC.	Susquehanna 1 & 2
X		Progress Energy	Brunswick 1 & 2
X		Southern Nuclear Operating Co.	Hatch 1 & 2
X		Tennessee Valley Authority	Browns Ferry 1 - 3

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

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

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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 or such activity within the United States which fails to comply or contains a defect.

The basic component that contains a defect is Marathon Control Rod Blades for D and S lattice plants. See Attachment 2 for a list of potentially affected plants.

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

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(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.

GE Hitachi Nuclear Energy Marathon Control Rod Blade 107E1425G001, developed cracks on the outer surface of absorber tubes containing boron carbide capsules. Cracking of the absorber tubes could result in loss of boron carbide, which functions as a neutron absorber.

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

A Potential Reportable Condition Evaluation in accordance with 10CFR Part 21 was initiated on August 24, 2010.

(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.

Marathon CRBs 107E1425G001, manufactured in 1997, and installed at an international utility are the primary object of the evaluation. The failure investigation will identify the extent of condition and identify if any other CRBs are affected and at which sites they are located. Preliminary information indicates that the potential for cracking could include high depletion Marathon Control Rods Blades installed in BWR/2-4, D lattice plants and BWR/6, S lattice plants. A list of all plants that have been supplied these types of Marathon Control Rod Blades is shown in Attachment 2. The list in Attachment 2 also identifies non-GEH BWRs that have been supplied

with Marathon Control Rod Blades that employ the same absorber tube and capsule combination as Marathon Control Rod Blades supplied to D lattice and S lattice GEH BWRs.

(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 is performing a failure analysis of Control Rod Blades. The 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 failure analysis. Completion of this evaluation is scheduled for February 15, 2011.

(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.

For all plants containing D and S lattice Marathon Control Blades, continue to monitor for Boron and Tritium in reactor water chemistry, which could indicate potential leaching of boron carbide from control rod tubes. If significant increases in Boron and Tritium are identified, a visual inspection of any suspect CRBs should be scheduled for the next refueling outage.

(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.