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NL-08-0646

Docket Nos.: 50-321
50-366

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Edwin I Hatch Nuclear Plant
10 CFR 21 Report
GEH CR120A Relay/Relay Coil Wire Clamp Cracking

Ladies and Gentlemen:

In accordance with 10 CFR 21.21(d)(3), Southern Nuclear Operating Company (SNC) is making notification of a defect in a basic component supplied to Edwin I. Hatch Nuclear Plant. Accordingly, Enclosure 1 contains a 10 CFR 21 report regarding a defect associated with General Electric Hitachi Nuclear Energy (GEH) Model CR120A relays and relay coils. Enclosure 2 contains a copy of GEH's 10 CFR 21.21(b) notification to SNC dated March 19, 2008, indicating that a potential defect in these basic components exists.

This letter satisfies both the 2-day and 30-day reporting requirements contained in 10 CFR 21.21(d)(3). This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

A handwritten signature in black ink, appearing to read "D. H. Jones", written over a large, stylized, circular flourish.

D. H. Jones
Vice President – Engineering

DHJ/TMM/daj

Enclosures:

1. 10 CFR 21 Report- GEH CR120A Relay/Relay Coil Wire Clamp Cracking
2. GEH 10 CFR 21 Notification Letter to SNC dated March 19, 2008

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. D. R. Madison, Vice President – Hatch
RTYPE: CHA02.004

U. S. Nuclear Regulatory Commission
Mr. V. M. McCree, Acting Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Hatch
Mr. J. A. Hickey, Senior Resident Inspector – Hatch

Edwin I. Hatch Nuclear Plant

Enclosure 1

10 CFR 21 Report

GEH CR120A Relay/Relay Coil Wire Clamp Cracking

Enclosure 1

10 CFR 21 Report GEH CR120A Relay/Relay Coil Wire Clamp Cracking

The following 10 CFR 21 written report is provided by Southern Nuclear Operating Company (SNC) for Edwin I. Hatch Nuclear Plant. The contents are in accordance with 10 CFR 21.21(d)(4).

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

Mr. D. H. Jones
Vice President-Engineering
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, AL 35201

- (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.

Ninety-four (94) GEH Model CR120A relays and two (2) Model CR120A relay coils were supplied to Plant Hatch for replacement purposes.

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

General Electric Hitachi Nuclear Energy (GEH)
3901 Castle Hayne Road
Wilmington, NC 28402

- (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.

By letter dated March 19, 2008, GEH issued a 10 CFR 21.21(b) notification to SNC regarding a potential defect regarding the manufacture of certain Model CR120A and CR120AD relays and Model CR120A relay coils (Refer to Enclosure 2). GEH indicated that wire clamps supplied with these model relays and relay coils manufactured since May 2004 may be susceptible to cracking. The wire clamps serve to secure wire connections to the relays and relay coils. A total of ninety-four (94) Model CR120A relays and two (2) CR120A relay coils with suspect wire clamps were supplied to Plant Hatch which could possibly be installed in several safety related systems including the reactor protection system, primary containment isolation system, and main control room environmental control (MCREC) system. In the event a wire clamp should break (e.g., following a postulated seismic event) causing a wire connection to become dislodged, it could potentially render those systems in a condition unable to perform their design basis function. Consequently, their postulated failure in these potential applications could create a substantial safety hazard.

Enclosure 1

10 CFR 21 Report GEH CR120A Relay/Relay Coil Wire Clamp Cracking

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

GEH's March 19, 2008 notification letter was received by SNC on March 19, 2008.

- (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.

As identified in Enclosure 2, a total of ninety-six (96) suspect components were supplied to Plant Hatch which included ninety-four (94) CR120A relays and two (2) CR120A relay coils. Currently, there are thirty-seven (37) CR120A relays and one (1) CR120A relay coil installed. The remaining components are in stock and have been placed on hold. One replacement CR120A relay was found in the MCREC system. The remaining devices were installed in the source range monitor (SRM) system and intermediate range monitor (IRM) system.

- (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.

In accordance with the recommendations provided by GEH in Enclosure 2, the following actions have been taken:

- Wire clamps for the CR120A relay (1Z41K18A) found in the MCREC system were visually inspected and determined to not have any cracks.
- As a conservative measure for 1Z41K18A, wire clamps or the entire relay or coil will be replaced following receipt of replacement parts from GEH. Performance of this work is scheduled during the next system outage for the 'A' MCREC system currently scheduled for October 2008.
- Hold tags have been placed on the affected CR120A relays and CR120A relay coil in stock. Their wire clamps will be replaced within 60 days following receipt of replacement parts from GEH. Receipt of replacement parts is currently scheduled for June 18, 2008.
- Relay wire clamps in the SRM system and IRM system have been inspected and showed no signs of cracking. No further actions will be taken with regard to these relays.

- (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.

As recommended by GEH in Enclosure 2, a visual inspection of installed wire clamps should be performed to determine their acceptability and replaced if cracked. Replacement wire clamps can be ordered from GEH. Wire clamps for any in stock relays and relay coils should also be replaced.

Edwin I. Hatch Nuclear Plant

Enclosure 2

**GEH 10 CFR 21 Notification Letter to SNC
dated March 19, 2008**



HITACHI

10 CFR Part 21 Communication

SC08-04

March 19, 2008

To: Utilities (per Attachment 2)

Subject: CR120 Family Relay and Coil Wire Clamp Cracking

- | | |
|--|--|
| <input type="checkbox"/> Reportable Condition [21.21(d)] | <input type="checkbox"/> 60 Day Interim Report [21.21(a)(2)] |
| <input checked="" type="checkbox"/> Transfer of Information [21.21(b)] | <input type="checkbox"/> Safety Information Communication |

Summary:

GE Hitachi Nuclear Energy (GEH) has provided Safety Related CR120 Relays (CR120A and CR2120AD), and Safety Related CR120A Coils (coils for CR120A and CR120AD relays) to the plants listed on attachment 2. On September 26, 2003 Transfer of Information SC 03-19 was issued discussing the "Hydrogen Embrittlement of Wire Clamps in CR120A Relays". Subsequent to the issuance of this Transfer of Information additional testing was instituted to insure that component cracking did not occur, however, it has been recently reported from a non-safety related application, where testing was not required, that cracking in wire clamps has again been identified. The corrective actions associated with the 10CFR21 evaluation performed in 2003 addressed complete relays but did not address replacement coils for CR120 relays. No cracking in Safety Related components has been identified since 2003. As the parts listed in this communication have been supplied by GEH as "unspecified" to their respective plants, GEH does not know the application where each plant has utilized these parts and therefore can-not complete a determination as to the safety significance of a potential failure. GEH issues this Transfer of Information in accordance with 10CFR21.21(b) to allow each plant to determine if a Substantial Safety Hazard or Technical Specification Safety Limit could be created as a result of a potential failure of these parts.

Please contact me if there are any questions on this information.

Issued by:

Dale E. Porter, Safety Evaluation Program Manager
 GE Hitachi Nuclear Energy
 3901 Castle Hayne Road, Wilmington NC 28402
 (910) 602-4491

Notice: This 10 CFR Part 21 Notification pertains only to the plants or facilities specifically indicated as being affected. GE Hitachi Nuclear Energy (GEH) has not considered or evaluated the applicability, if any, of this information to any plants or facilities other than those specifically indicated as being affected and for which GEH supplied the equipment or services addressed in the Notification. Determination of applicability of this information to a particular plant or facility, and the decision of whether or not to take action based on the Notification, are the responsibilities of the Owner of that plant or facility.

Background:

A quality concern regarding commercial grade (non- safety related) CR120A coils supplied to a GE Hitachi Nuclear Energy (GEH) customer was identified in October of 2007. The customer reported that the wire clamps on the coil of a non-safety related CR120A relay were cracking during replacement. This order was processed though the GEH dedication facilities without dedication since the coils were supplied as non-safety related.

A review of the safety related history for CR120A relays revealed that a similar problem had been addressed in a 10CFR21 safety evaluation performed in 2003 related to hydrogen embrittlement on wire clamps (part number Q55-152195P001) used on CR120A and CR120AD relays. A review of that evaluation indicated that individual safety related coils were not addressed in the scope of that evaluation. Consequently the corrective actions recommending dedication of safety related CR120A relays, including wire clamps, did not include any dedication specification requirements for wire clamps when safety related coils were supplied independent of the relay.

Evaluation:

A review of the manufacturing and dedication process established to eliminate the re-occurrence of this deviation indicated that a torque test audit, on a sample size basis, was implemented on any lots for this part. Furthermore there are no documented indications that the standard manufacturing process had been deviated from since the torque test audit had been implemented. The only significant event on the history of the part since 2003 was a plating supplier change in fiscal week 20 of 2004.

A review of the GEH order database for safety related CR120A relays, CR120AD relays, and safety related CR120A coils has produced a total of 19 orders shipped since fiscal week 20 of 2004 that could be suspect for potential cracking of wire clamps. These relays and/or relay coils were supplied under several different purchase orders and part numbers as detailed below, in attachment 1.

From the previous 10CFR21 investigation performed in 2003, through the most recent occurrence, GEH would expect any fracture to be evident before or during installation of the relay or the replacement coils, as the clamp breaks into two or more pieces when the specified torque is applied when connecting the wire to the relay, or relay coil. In addition, for those wire clamps that do not fracture before or during wire installation, data from relays tested indicates no additional fracturing should occur.

Safety Basis:

For *unspecified* BWR and PWR applications GEH does not have sufficient information to determine if a Substantial Safety Hazard or Technical Specification Safety Limit violation could be created by this potential defect. The wire clamps will likely fracture before or during installation of the affected relay or during replacement of the coil. It is not expected that wire clamps that do not fracture before or during installation will fail during normal operation. This Transfer of Information is provided to the plants listed on attachment 2 to allow each plant to determine the Safety Significance of this potential component failure.

Corrective Actions - Recommendations:

For installed parts an option, if accessible, is to visually inspect the wire clamps for cracking and if found cracked the wire clamps should be replaced. For relays or coils not installed the recommendation is to replace the wire clamps with those manufactured after fiscal week 4 of 2008. The wire clamp part number for non-safety applications is 55-152195P001 and Q55-152195P001 for safety related applications.

Attachment 1 – Transfer of Information per §21.21(b)

- (i) Name and address of the individual providing the information:
Dale E. Porter, Safety Evaluation Program Manager; GE Hitachi Nuclear Energy, 3901 Castle Hayne Road, Wilmington NC 28402.
- (ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity that contains a deviation or failure to comply:
The potentially affected components are safety related relay and relay coil wire clamps, part number Q55-152195P001, supplied to the plants listed on attachment 2.
- (iii) Identification of the firm constructing the facility or supplying the basic component that contains a deviation or failure to comply:
The Basic components are manufactured by GE Consumer and Industrial Systems, 41 Woodford Avenue, Plainville CT 06062, USA, and were supplied to the customers listed on attachment 2 as safety related through GE Hitachi Nuclear Energy, 3901 Castle Hayne Road, Wilmington NC 28402.
- (iv) Nature of the defect or safety hazard that could be created by such a deviation or failure to comply:
The potential deviation from technical requirements is in the heat treatment of wire clamps, part number Q55-152195P001, used on safety related CR120A (including CR120AD) relays and CR120A relay coils. The potential deviation from technical requirements could result in a failure of the clamp before or during installation of the relay or replacement coils. This failure, if undetected, could result in a loss of functionality of the affected relay. GEH cannot determine if this could result in a Substantial Safety Hazard or lead to a Technical Specification Safety Limit violation since the application of the potentially affected relays is not known
- (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 23, 2008.
- (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:
A conservative list of the locations where this potential deviation from technical requirements could be located is provided in the list below:

GEH PART NUMBER	PLANT	P.O. #	ITEM #	Qty.
QCR120A02002AA	Browns Ferry	00001704 01516	0001	50
QCR120A04002AA	Browns Ferry	00001704 01516	0002	50
DJ188C7815P004	Browns Ferry	00001704 01652	0007	10
DJ239B7270P001	Browns Ferry	00001704 01317	0001	7
DJ239B7270P001	Browns Ferry	00001704 01652	0006	2
DJ239B7270P009	Browns Ferry	00001704 00662	0001	1
DJ239B7330P004	Cooper	4500067863	0002	2
DJ188C7815P004	Fermi	NM-418817	0001	2
DJ188C7815P004	Fermi	NM-418549	0001	38

DJ188C7815P004	Fermi	NM-424369	0001	23
QCR120A04202AA	Hatch	6042746	0001	2
DJ188C7815P004	Hatch	6060205	0002	2
DJ239B7270P001	Hatch	6068336	0001	5
DJ239B7270P001	Hatch	6072312	0001	87
DJ239B7270P001	Peach Bottom	90 158497 871992	0001	2
DJ239B7330P001	Peach Bottom	90 158497 31	0001	2
DJ239B7270P008	St. Lucie	00081329	0001	1
DJ239B7270P008	St. Lucie	00093348	0001	1
DJ239B7270P008	St. Lucie	00099901	0001	2

Note: All parts listed above were supplied with "Unspecified Applications" from each customer

- (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 is modifying the dedication specifications that will add a Wire Clamp Hydrogen Embrittlement check for coil deliveries as well as for relays. This check will provide reasonable assurance that future relays and coils will be supplied with wire clamps that will not crack prior to or during installation.

- (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:

GEH recommends that for installed parts, if accessible, visually inspect the wire clamps for cracking and if found cracked the wire clamps should be replaced. For relays or coils not installed the recommendation is to replace the wire clamps with those manufactured after fiscal week 04 of 2008. The wire clamp part number for non-safety applications is 55-152195P001 and Q55-152195P001 for safety related applications.

Attachment 2 - Affected Plants

US BWR and PWR Plants

	<u>Utility</u>	<u>Plant</u>
<u>X</u>	Tennessee Valley Authority	Browns Ferry
<u>X</u>	Nebraska Public Power District	Cooper
<u>X</u>	Detroit Edison Co.	Fermi
<u>X</u>	Southern Nuclear Operating Co.	Hatch
<u>X</u>	Exelon Generation Co.	Peach Bottom
<u>X</u>	Florida Power & Light Co.	St. Lucie

Note: All parts were supplied with "Unspecified Applications" from each customer

Attachment 3 – Recent GE Hitachi Nuclear Energy 10 CFR Part 21 Communications

The following is a list of recent 10 CFR Part 21 communications that GE Hitachi Nuclear Energy (GEH) has provided to affected licensees as Reportable Conditions (RC), Transfers of Information (TI), 60-Day Interim Reports (60 Day) or Safety Information Communications (SC).

<u>Number</u>	<u>Ref.</u>	<u>Subject</u>	<u>Date</u>
SC 08-01	PRC 07-39	Loose Sub-Assembly Base	1/7/2008
SC 08-02	PRC 07-43	BWR Suction Strainer LTR Head Loss	2/15/2008
SC 08-03	N/A	In Development – Not Issued	TBD
SC 08-04	PRC 08-02	Potential Cracking in Washers Associated with CR120 Relays	3/19/2008

Attachment 3
Safety Information Communication – Transfer of Information SC 03-19
Hydrogen Embrittlement of Wire Clamps in CR120A Relays



SC03-19.pdf



GE Nuclear Energy

10 CFR Part 21 Communication

SC03-19

September 26, 2003

To: Tennessee Valley Authority

Subject: Hydrogen Embrittlement of Wire Clamps in CR120A Relays

Reportable Condition [21.21(d)] 60 Day Interim Report [21.21(a)(2)]

Transfer of Information [21.21(b)] Safety Information Communication

Summary:

A deviation from technical requirements has occurred in the wire clamps installed on CR120A and CR120AD relays shipped to Tennessee Valley Authority (TVA) for Browns Ferry. GE Nuclear Energy (GENE) is unable to evaluate if this deviation could result in a significant safety concern since the relays were supplied for use in unspecified/BOP applications. Therefore, this information is being supplied as a Transfer of Information under 10CFR21.21(b).

Issued by: *Sumaditha Pradeep Saha* for _____
J. S. Post, Manager
Engineering Quality and Safety Evaluations
GE Nuclear Energy, M/C 772
175 Curtner Avenue, San Jose, CA 95125
(408) 925-5362

Notice: This 10 CFR Part 21 Notification pertains only to the plants or facilities specifically indicated as being affected. GE Nuclear Energy (GE-NE) has not considered or evaluated the applicability, if any, of this information to any plants or facilities other than those specifically indicated as being affected and for which GE-NE supplied the equipment or services addressed in the Notification. Determination of applicability of this information to a particular plant or facility, and the decision of whether or not to take action based on the Notification, are the responsibilities of the Owner of that plant or facility.

Background

GE Industrial Systems (GEIS) in Plainville Connecticut currently manufactures the Model CR120A (including CR120AD) and CR120C relays. GEIS advised GENE of a GEIS Quality Hold on all CR102A and CR120C relays. This quality hold resulted from an apparent wire clamp (55-152195P001) cracking issue. The affected date codes impacted range from VA301& through VA329&. Search of the GENE COMET database for CR120A relays revealed one purchase order had been received, processed and shipped during this time frame. Relays using wire clamps within the identified date code range were supplied under TVA, Browns Ferry purchase order number 00001704 00333, item 0006 and item 0008. Item 0006 of this purchase order is identified as a QCR120A04022AA, while item 0008 is identified as a QCR120A04047AA. These relays were all supplied as dedicated safety related Like-for-Like replacements.

The wire clamp fracturing was discovered in relays on the GEIS factory production floor. A GEIS Safety Council Review Meeting was held concerning CR120A and CR120C Control Relays. It was determined that the root cause of the defect is attributed to incorrect heat treatment of one production lot of wire clamps.

Safety Basis

No specified applications have been identified. GENE cannot evaluate the safety impact for unspecified/BOP applications. Therefore, this transfer of information is provided to support the licensee's evaluation to determine if this condition could create a substantial safety hazard or contribute to the exceeding of a technical specification safety limit.

Attachment 1 – Transfer of Information per 10CFR21.21(b)

1. Identification of the basic component or activity which contains the deviation.

The basic components applied are GE, Model QCR120A04022AA and QCR120AD040437AA.

2. The applications of concern are:

All items were sold by GENE unspecified. Therefore no applications are known.

A listing of GENE drawing Number, Plant, P.O., Item Number, quantity and MPL is found below.

GENE PART NUMBER	PLANT	P.O. #	ITEM #	Qty.	MPL
QCR120A04022AA	Browns Ferry (ERO)	00001704 00333	0006	25	UNS
QCR120AD040437AA	Browns Ferry (ERO)	00001704 00333	0006	9	UNS

3. Identification of the manufacturer or supplier of the basic component.

GE Industrial Systems, 41 Woodford Avenue, Plainville CT 06062, USA, currently manufactures the Model CR120A (including CR120AD) and CR120C relays.

4. A description of the deviation and the potential safety hazard which may be created.

The deviation from technical requirements is in the heat treatment of wire clamps, part number 55-152195P001, used on CR120A (including CR120AD) and CR120C relays. The deviation from technical requirements could result in failure of the clamp upon installation of the relay or during normal operation due to hydrogen embrittlement. This could result in loss of function of the affected relay. GENE cannot determine if this could result in a significant safety hazard since application of the affected relays is not known.

5. The date on which the information of the deviation was obtained.

The determination of the existence of a potentially reportable condition by GENE was made on August 1, 2003.

6. In the case of deviations in a basic component, provide the location of all such components, serial number, drawing numbers, etc.

The effected drawings and location has been defined in item 2 above.

7. Corrective or remedial Actions.

A return material authorization (RMA) was issued to TVA on 9/23/03 for the affected relays.

The dedication specifications for these relays will be revised to add a Rockwell ‘C’ hardness check based on QP70-118, table 3A, for embrittled wire clamps. These checks will provide reasonable assurance that future relays are shipped with wire clamps that meet the designed hardness specification.

8. Any advice related to the deviation that may be given to purchasers or licensees.

None.

Attachment 2 – Recent GENE 10 CFR Part 21 Communications

The following is a list of recent 10 CFR Part 21 communications that GE Nuclear Energy has provided to affected licensees as Reportable Conditions (RC), Transfers of Information (TI), 60 Day Interim Reports (60 Day) or Safety Information Communications (SC).

<u>Number</u>	<u>Ref.</u>	<u>Subject</u>	<u>Date</u>
SC02-05 Revision 1	PRC 02-13	Failure of CR105X Auxiliary Contacts (TI, SC)	5/19/03
SC03-01	PRC 02-61	Additional Material Consideration for TIP System Ball and Shear Valve Qualification (TI)	1/13/03
SC03-02	PRC 02-64	Stability Option III OPRM Armed Region Boundary (SC)	1/17/03
SC03-03	PRC 02-65	Etching on Marathon Control Rod Blade Square Tubing (TI)	1/17/03
SC03-04	PRC 03-02	Fuel Channel Bow (RC, 60 Day)	3/3/03
SC03-05	PRC 03-03	Use of RHR Shutdown Cooling Return Line in Appendix R Analysis (TI)	3/7/03
SC03-06	PRC 03-05	Potential Non-Conservative Fuel Handling Accident Analysis (TI)	3/21/03
SC03-07	PRC 03-14	Methodology for Break Flow Input to Annulus Pressurization Loads Analysis (TI)	4/18/03
SC03-08 Revision 1	PRC 03-02	Interim Surveillance Program for Fuel Channel Bow Monitoring (SC)	4/30/03
SC03-09 Revision 1	PRC 03-02	Bases for Interim Surveillance Program for Fuel Channel Bow Monitoring (SC)	7/15/03
SC03-10	PRC 03-23	Impact of Water Accumulation on Containment Vent Thrust Loads (TI)	6/4/03
SC03-11	PRC 03-02	Channel Bow Thermal Limits Impact, GNF-A ZR-2 Thick/Thin Channels, BWR/2-5 Plants (TI, SC)	6/6/03
SC03-12	PRC 03-28	ECCS Single Loop Operation MAPLHGR Multiplier (SC)	7/17/03
SC03-13	PRC 03-31	Evaluation of Channel Bow Impact on Control Rod Blade Deviations (60 Day)	7/18/03
SC03-14	PRC 03-32	TD-5 Relays Used in Medium Voltage Switchgear (TI)	7/22/03
SC03-15	PRC 03-38	Puffer Tube Assembly Q0213X0343R094 Used in AM 4.16-350-2H Magne-Blast Circuit Breaker (TI)	7/29/03
SC03-16	PRC 03-40	Power/Flow Operating Domain Upper Boundary (TI)	9/4/03
SC03-17	PRC 03-31	Status Report: Evaluation of Channel Bow Impact on Control Rod Blade Deviations (60 Day)	9/23/03
SC03-18	PRC 03-45	AKR-30 Low Voltage Power Circuit Breaker Upper Stud Assemblies (TI)	9/24/03
SC03-19	PRC 03-46	Hydrogen Embrittlement of Wire Clamps in CR120A Relays (TI)	9/26/03