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 MECREDY, R.C. Rochester Gas & Electric Corp.
 RECIP.NAME RECIPIENT AFFILIATION
 VISSING, G.S. Records Management Branch (Document Control Desk)

SUBJECT: Part 21 rept re defects & noncomplianse, 10CFR21(d)(3)(ii),
 which requires "Written notification to NRC on
 identification of defect or failure to comply." Relays were
 returned to Eaton for evaluation & root cause analysis.

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ROBERT C. MECREDY
Vice President
Nuclear Operations

June 16, 1999

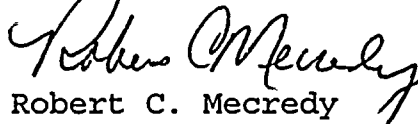
U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Guy S. Vissing
Project Directorate I-1
Washington, D.C. 20555

Subject: 10 CFR Part 21 30 Day Report
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Vissing:

The attached 10 CFR 21 report is submitted in accordance with 10 CFR Part 21, Reporting of Defects and Noncompliance, Section 21 (d) (3) (ii), which requires "Written notification to the NRC ... on the identification of a defect or a failure to comply".

Very truly yours,


Robert C. Mecredy

Attachment

xc: Mr. Guy S. Vissing (Mail Stop 8C2)
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

U.S. NRC Ginna Senior Resident Inspector

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10CFR21 30 DAY WRITTEN REPORT

I. NAME AND ADDRESS OF THE INDIVIDUAL INFORMING THE COMMISSION:

NAME: Robert C. Mecredy
Vice President Nuclear Operations Group

ADDRESS: Rochester Gas & Electric Corporation
89 East Avenue
Rochester, New York 14649

II. IDENTIFICATION OF THE FACILITY, THE ACTIVITY, OR THE BASIC COMPONENT SUPPLIED FOR SUCH FACILITY WHICH FAILS TO COMPLY OR CONTAINS A DEFECT:

The basic component is the NBFD65NR Control Relay, supplied by Eaton Corporation, Inc. This component was purchased safety-related for use in various locations at Ginna Station, and is installed in reactor protection and safeguards systems for use as control logic relays.

III. IDENTIFICATION OF THE FIRM CONSTRUCTING THE FACILITY OR SUPPLYING THE BASIC COMPONENT WHICH FAILS TO COMPLY OR CONTAINS A DEFECT:

The relays were supplied to Rochester Gas and Electric Corporation (RG&E) by:

Eaton Corporation Inc.
21 South Street
Danbury, CT 06810

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:

Per RG&E Technical Evaluation 90-145, NBFD65NR relays were evaluated as suitable replacements for NBFDXXS relays. Ginna Station Technical Specifications allows a minimum voltage of 108.6 VDC at the battery terminals. According to a letter from Westinghouse to RG&E, "Maximum and Minimum DC Voltage and Operating Currents for Relays", dated September 13, 1993, the NBFD65NR relay would operate at voltages as low as 100 volts.

Fifteen (15) NBFD65NR relays failed to perform per the requirements of the purchase specifications during pre-installation bench testing at Ginna Station. As the relays were gradually energized, the contacts would start to chatter at approximately 70 VDC, and eventually fully pick up at 125 VDC. The energized relays would chatter below 125 VDC, and completely drop out below 70 VDC. Purchase

specifications were: 125 VDC Nominal operating voltage and a Certificate of Compliance that the relays met all performance specifications. These specifications included testing at degraded voltage, which is defined as 90 volts. The deviation was detected by RG&E during testing prior to installation into a reactor protection or safeguards system. No actual safety hazard existed.

The nature of the defect consisted of a manufacturing deficiency. Upon investigation, by Eaton, it was determined that the relay coil had been incorrectly wired. The internal coil design includes two coils, a pick up and a hold coil, which are designed to operate in series. The hold coil is shorted by a normally closed contact when the relay is de-energized, and inserted in the circuit in series with the pick up coil when the relay energizes and opens the contact. Due to the incorrect wiring, the coils opposed each other when the contact opened. At low voltages, this caused the relay to drop out as soon as the hold coil was energized, resulting in relay chatter and preventing a solid pick up.

At Ginna Station, an NBFD65NR can be used for a safety-related function, such as Containment Spray. For this application, relays are normally de-energized, and energize to generate the protection logic. The relays could have caused containment spray not to function at allowed voltage levels below 125 VDC. Therefore, the use of the deficient NBFD65NR relays, in this application, could have created a substantial safety hazard.

V. THE DATE ON WHICH THE INFORMATION OF SUCH DEFECT OR FAILURE TO COMPLY WAS OBTAINED:

The information was obtained on April 2, 1999, during the pre-installation testing of the relays.

VI. IN THE CASE OF A BASIC COMPONENT WHICH CONTAINS A DEFECT OR FAILS TO COMPLY, THE NUMBER AND LOCATION OF ALL SUCH COMPONENTS IN USE AT, SUPPLIED FOR, OR BEING SUPPLIED FOR GINNA STATION:

There are numerous NBFD65NR relays in safety-related applications in various locations at Ginna Station. Eaton supplied 50 of the model NBFD65NR relays to RG&E for installation in the Ginna Station reactor protection and safeguards systems during the 1999 outage. None of the deficient relays had ever been installed or used at Ginna Station.

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:

After the deviation was discovered by RG&E, the relays were returned to Eaton for evaluation and root cause analysis. An RG&E QA Engineer was present during the root cause investigation. At the factory the relays were tested and passed the bench test, but the sound of the relays chattering was not detected because factory noise masked the chattering sound. Upon further investigation, it was discovered that one of the two relay coils was wired backwards on all the relays in question.

According to the vendor, the coil winding problem was isolated to the RG&E order only. The deficient relay coils were replaced and the relays were retested using enhanced test procedures which included checking for relay chatter.

The incorrect wiring was attributed to insufficient training and subsequent poor workmanship of a new employee. Inadequate factory testing failed to detect the chattering relays. According to Eaton, their training program has been revised and the work location has been enhanced with visual aids to ensure the relays are correctly constructed and tested.

RG&E has currently imposed a Source Surveillance requirement on Eaton, and will consider the need to include Source Surveillance and/or to perform receipt testing of relays purchased from Eaton as a condition of acceptance for future orders.

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:

Performance of receipt inspection testing of relays and/or performance of a source surveillance of the vendor's testing practices may be appropriate.

