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ACCESSION NBR:9101160165 DOC.DATE: 91/01/11 NOTARIZED: NO DOCKET #
 FACIL:50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
 AUTH.NAME AUTHOR AFFILIATION
 BACKUS,W.H. Rochester Gas & Electric Corp.
 MECREDY,R.C. Rochester Gas & Electric Corp.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-015-00:on 901212,automatic start of EDG A occurred
 due to initiation signal from Bus 14 undervoltage monitoring
 sys.Caused by failure of solid state switch printed circuit
 board.Circuit board replaced.W/910111 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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INTERNAL:	ACNW		2	2		AEOD/DOA		1	1
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	REG FILE 02		1	1		RES/DSIR/EIB		1	1
	RGNI FILE 01		1	1					
EXTERNAL:	EG&G BRYCE,J.H		3	3		L ST LOBBY WARD		1	1
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ROBERT C. MECREDY
Vice President
Ginna Nuclear Production

TELEPHONE
AREA CODE 716 546-2700



January 11, 1991

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: LER 90-015, Safeguards Bus Undervoltage Relay Actuation
Due to a Failed Solid State Switch Causes an Automatic
Start of the "A" Emergency Diesel Generator.
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

In accordance with 10 CFR 50.73, Licensee Event Report System,
item (a)(2)(iv), which requires a report of, "any event or
condition that resulted in manual or automatic actuation of any
Engineered Safety Feature (ESF) including the Reactor Protection
System (RPS)", the attached Licensee Event Report LER 90-015 is
hereby submitted.

This event has in no way affected the public's health and
safety.

Very truly yours,

Robert C. Mecredy
Robert C. Mecredy

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

Ginna USNRC Senior Resident Inspector

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LICENSEE EVENT REPORT (LER)

APPROVED OMS NO. 3180-0104
EXPIRES 9/31/85

FACILITY NAME (1) R.E. Ginna Nuclear Power Plant										DOCKET NUMBER (2) 0 5 0 0 0 2 4 4										PAGE (3) 1 OF 0 7																													
TITLE (4) Safeguards Bus Undervoltage Relay Actuation Due to Failed Solid State Switch Causes an Automatic Start of the "A" Emergency Diesel Generator																																																	
EVENT DATE (5)										LER NUMBER (6)										REPORT DATE (7)										OTHER FACILITIES INVOLVED (8)																			
MONTH			DAY			YEAR			YEAR			SEQUENTIAL NUMBER			REVISION NUMBER			MONTH			DAY			YEAR			FACILITY NAMES										DOCKET NUMBER(S)												
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OPERATING MODE (9) N										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																																							
POWER LEVEL (10) 0 0 3										20.402(b)										20.406(e)										<input checked="" type="checkbox"/> 80.734(12)(w)										73.71(b)									
										20.406(a)(1)(i)										80.36(a)(1)										<input type="checkbox"/> 80.734(12)(v)										73.71(a)									
										20.406(a)(1)(ii)										80.36(a)(2)										<input type="checkbox"/> 80.734(12)(w)										OTHER (Specify in Abstract below and in Text, NRC Form 364A)									
										20.406(a)(1)(iii)										80.734(12)(u)										<input type="checkbox"/> 80.734(12)(w)(A)																			
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LICENSEE CONTACT FOR THIS LER (13)																																																	
NAME Wesley H. Backus Technical Assistant to the Operations Manager																				TELEPHONE NUMBER 3 1 5 5 2 4 - 4 4 4 6																													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (14)																																																	
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC																																							
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SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)										MONTH DAY YEAR																											
YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO																																					
ABSTRACT (Limit to 1600 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																																																	
<p>On December 12, 1990 at 2044 EST, with the reactor at approximately 3% full power, the "A" Emergency Diesel Generator started automatically due to an initiation signal from the Bus 14 Undervoltage Monitoring System.</p> <p>The "A" Emergency Diesel Generator, after starting, attained proper voltage and frequency. By design, it did not close into Bus 14 because Bus 14 was at its proper voltage fed from its normal power supply.</p> <p>Immediate operator action was to verify that Bus 14 was energized and that the "A" Emergency Diesel Generator was operating properly. Subsequently, the Control Room operators transferred Bus 14 from its normal supply to the "A" Emergency Diesel Generator as part of the repair procedure for the Bus 14 Undervoltage Monitoring System.</p> <p>The cause of the event was determined to be a failure of a solid state switch printed circuit board.</p> <p>Corrective action taken was to replace the solid state switch printed circuit board with a qualified spare, followed by a satisfactory test and return to service. Long term corrective actions are discussed in Section V. B.</p>																																																	

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

I. PRE-EVENT PLANT CONDITIONS

The plant was in the process of starting up subsequent to the plant trip of 12/11/90 (discussed in LER 90-013). The reactor was at approximately 3% full power, awaiting clearance that secondary chemistry parameters were within specification.

II. DESCRIPTION OF EVENT

A. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

- o December 12, 1990, 2044 EST: Event Date and Time
- o December 12, 1990, 2044 EST: Discovery Date and Time
- o December 12, 1990, 2322 EST: Safeguards Bus 14 power supply manually transferred to "A" Emergency Diesel Generator
- o December 13, 1990, 0644 EST: Safeguards Bus 14 normal power restored
- o December 13, 1990, 0644 EST: Safeguards Bus 14 "A" Emergency Diesel Generator power supply terminated and "A" Emergency Diesel Generator stopped and lined up for auto standby.

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TEXT (If more space is required, use additional NRC Form 364A's) (17)

B. EVENT:

On December 12, 1990 at 2044 EST, with the reactor at approximately 3% full power, the Control Room received the following alarm: L-14 (Bus 14 Undervoltage Safeguards). Control Room operators immediately verified proper voltage on Bus 14 and that the normal power supply breaker was closed. The Control Room operators also verified that the "A" Emergency Diesel Generator had started and displayed proper voltage and frequency. By design, the "A" Emergency Diesel Generator did not close into Bus 14, as the Bus Voltage was normal and was still being supplied by its normal power supply.

Subsequently, at 2322 EST, the power supply to Bus 14 was transferred from the normal supply to the "A" Emergency Diesel Generator per Maintenance Procedure M-48.14 (Isolation of Bus 14 Undervoltage System for Maintenance, Troubleshooting, Rework and Testing). This transfer was done so the Maintenance Department could troubleshoot, repair, test, and return to service the Bus 14 Undervoltage Monitoring System.

At 0644 EST, December 13, 1990, subsequent to the repair and return to service of the Bus 14 Undervoltage Monitoring System, Bus 14 normal power supply was restored and the "A" Emergency Diesel Generator was stopped and realigned for automatic standby.

C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

None.

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 364A's) (17)

E. METHOD OF DISCOVERY:

The event was immediately apparent due to alarms and indications in the Control Room.

F. OPERATOR ACTION:

Following the Bus 14 undervoltage alarm and the "A" Emergency Diesel Generator automatic start, the Control Room operators immediately verified proper voltage on Bus 14 via the normal power supply and that the "A" Emergency Diesel Generator displayed proper voltage and frequency.

Subsequently, the Control Room operators transferred Bus 14 from its normal supply to the "A" Emergency Diesel Generator per M-48.14 to facilitate troubleshooting, repairing, and testing of the Bus 14 Undervoltage Monitoring System.

G. SAFETY SYSTEM RESPONSES:

The "A" Emergency Diesel Generator automatically started and displayed proper voltage and frequency.

III. CAUSE OF EVENT

A. IMMEDIATE CAUSE:

The automatic actuation of the "A" Emergency Diesel Generator was due to an undervoltage signal from the Bus 14 Undervoltage Monitoring System.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 364A's) (17)

B. INTERMEDIATE CAUSE:

The undervoltage signal from the Bus 14 Undervoltage Monitoring System was due to the internal failure of the system's solid state switch printed circuit board number two (2). This solid state switch printed circuit board is the interface mechanism between the solid state undervoltage monitoring relays and the mechanical actuation relays.

C. ROOT CAUSE:

The root cause was determined to be a failure of an electronic component.

IV. ANALYSIS OF EVENT

This event is reportable in accordance with 10 CFR 50.73, Licensee Event Report System, item (a)(2)(iv), which requires reporting of "any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)". The starting of the "A" Emergency Diesel Generator was an automatic actuation of an ESF system.

An assessment was performed considering both the safety consequences and implications of this event with the following results and conclusions:

There were no operational or safety consequences or implications attributed to the starting and loading of the "A" Emergency Diesel Generator because;

- o The "A" Emergency Diesel Generator operated as designed.
- o Both Bus 14 power supplies (i.e. normal and emergency) were either in use or available throughout the event.

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TEXT (If more space is required, use additional NRC Form 364A's) (17)

- o The Bus 14 Undervoltage Monitoring System failure was in the conservative direction, (i.e. The failure actuated the "A" Emergency Diesel Generator).

Based on the above, it can be concluded that the public's health and safety was assured at all times.

V. CORRECTIVE ACTION

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

- o The Maintenance Department, after troubleshooting the Bus 14 Undervoltage Monitoring System, determined that the problem was a solid state switch printed circuit board in the system.
- o The Maintenance Department replaced the solid state switch printed circuit board with a qualified spare, tested the system satisfactorily, and returned it to service.
- o Operations, after the Bus 14 Undervoltage Monitoring System was restored to service, returned Bus 14 to its normal power supply and stopped the "A" Emergency Diesel Generator and realigned it for automatic standby.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- o Thermography of the failed solid state switch printed circuit board was performed.
- o Results of this thermography will be provided to Electro-Mechanics, the system designer.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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TEXT (If more space is required, use additional NRC Form 364A's) (17)

- o Based on the review of thermography results by RG&E and Electro-Mechanics, the need for establishing a program for replacement of existing solid state switch printed circuit boards will be evaluated.

VI. ADDITIONAL INFORMATION

A. FAILED COMPONENTS:

The failed solid state switch printed circuit board number 2 was supplied by Electro-Mechanics, part number 33013; assembly number 03021-288.

B. PREVIOUS LERs ON SIMILAR EVENTS:

A similar LER event historical search was conducted with the following results: LER 88-008 (Safeguards Bus Undervoltage Relay Actuation Due to a Failed Solid State Switch Caused Automatic Start of "B" Emergency Diesel Generator) was a similar event. The root cause of LER 88-008 was a random failure of an electronic component, and no corrective action was deemed necessary to prevent recurrence.

C. SPECIAL COMMENTS:

See LER 90-016 for a discussion of the Reactor Trip that occurred during this repair activity, and LER 90-017 for a discussion of other events caused by this repair activity.