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BACKUS,W.H. Rochester Gas & Electric Corp.
MECREDY,R.C. Rochester Gas & Electric Corp.
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SUBJECT: LER 90-008-00:on 900524,safeguards buses degraded voltage relays miscalibrated de to procedure inadequacy.
W/9 ltr.

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June 25, 1990

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

Subject: LER 90-008, Safeguards Buses Degraded Voltage Relays Miscalibrated Due To Procedure Inadequacy Causes a Condition Prohibited By Plant Technical Specifications
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

In accordance with 10 CFR 50.73, Licensee Event Report System, Item (a)(2)(i)(B), which requires a report of "any operation prohibited by the plant's Technical Specifications", the attached Licensee Event Report LER 90-008 is hereby submitted.

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

Very truly yours,

Robert C. Mecredy
Division Manager
Nuclear Production

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

xc: Ginna USNRC Senior Resident Inspector

Cert No P340957245

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1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

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 8

TITLE (4): Safeguards Buses Degraded Voltage Relays Miscalibrated Due To Procedure Inadequacy Causes A Condition Prohibited By Plant Technical Specifications

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)
0 5	2 4	9 0	9 0	0 0 8	0 0	0 6	2 5	9 0		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 0 9 8

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: Wesley H. Backus
Technical Assistant to the Operations Manager

TELEPHONE NUMBER: AREA CODE 3 1 5 5 2 4 1 - 1 4 4 6

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
				N					

SUPPLEMENTAL REPORT EXPECTED (14)

[ ] YES (If yes, complete EXPECTED SUBMISSION DATE)
[X] NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On May 24, 1990 at 1604 EDST with the reactor at approximately 98% full power, an evaluation of undervoltage relay test data revealed that five (5) of the eight (8) Degraded Voltage Relays on 480 volt safeguard buses were calibrated such that relay actuation would not occur within the limits of Technical Specifications.

As this was a setpoint problem with the degraded voltage relays, no immediate plant or operator responses were necessary.

The underlying cause of the event was attributed to the wrong setpoint and setpoint tolerance being specified in a calibration procedure.

Immediate corrective action was to calibrate the Degraded Voltage Relays to a setpoint on the conservative side of the tolerance. Subsequent to the calibration, the degraded voltage relays were tested satisfactorily and returned to service.

I. PRE-EVENT PLANT CONDITIONS

The unit was at approximately 98% reactor power. The Results and Test Department and an Electrical Engineering representative were observing the Relay Department performing protective relay calibration procedure PR-1.1 (480 Volt Undervoltage And Ground Alarm Scheme For Buses 14, 16, 17 and 18.)

II. DESCRIPTION OF EVENT

A. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

- o Modification installation in 1982: Event date
- o May 24, 1990, 1115 EDST: Discovery date and time of the first of five relays found below the limit of Technical Specifications.
- o May 24, 1990, 1604 EDST: All affected relays recalibrated, tested satisfactorily and restored to service.

B. EVENT:

On May 24, 1990 at 1604 EDST, with the reactor at approximately 98% full power PR-1.1 was completed. Evaluation of the PR-1.1 data revealed that five (5) of the eight (8) Degraded Voltage Relays on 480 volt safeguards buses 14, 16, 17, and 18 had been calibrated such that relay actuation would not occur within the limits of Technical Specifications, page 2.3-10, Figure 2.3-1. The relays affected were as follows: relays 27/14 on Bus 14, 27B/16 on Bus 16, 27/17 and 27B/17 on Bus 17 and 27/18 on Bus 18. This determination occurred after evaluation and analysis of test data and Technical Specification requirements as follows:

- The current 480 volt safeguards bus undervoltage system was first put in service in 1982. Setpoints were specified by Corporate Electrical Engineering, and these setpoints (with tolerances established by the Relay and Test Department) were used to calibrate these relays over the past eight years.

- On April 4, 1990 the normal annual calibration was performed on the 480 volt safeguards buses Degraded Voltage Relays, per PR-1.1. This procedure checks and calibrates the dropout voltage of the relays. The procedure specified a ± 5% calibration tolerance on the dropout setpoint with a "desired" specified setpoint of 103.5 volts. All Degraded Voltage Relays were calibrated to these specifications. Because of the ± tolerance allowed by the procedure some of the relays were calibrated to less than the "desired" 103.5 volts which was considered acceptable.

- On April 12, 1990 the normal post calibration test was performed on the 480 volt safeguards buses Degraded Voltage Relays per periodic test procedure PT-9.1 (Undervoltage Protection - 480 Volt Safeguard Buses). This procedure checks the reset voltage of the relays and also the dropout response time, but does not check the dropout voltage. All Degraded Voltage Relays were found to be within the specifications of the procedure.

- Prior to April 26, 1990 a review of the calibration data from April 4, 1990 and a review of plant Technical Specifications was performed by the ISI/IST Coordinator and an Electrical Engineering representative. Following this review, these individuals requested that all Degraded Voltage

Relays that were found at or below 103.5 volts be adjusted to greater than 103.5 volts. The greater than 103.5 volts was requested to ensure that all relays were within the Technical Specification limit of 103.5 volts prior to entering the plant mode for which these relays are required to be operable. Five Degraded Voltage Relays were adjusted on April 26, 1990.

- On May 11, 1990 the normal monthly PT-9.1 was performed on all 480 volt safeguards buses Degraded Voltage Relays. This test was witnessed by an Electrical Engineering representative. After review of the test data, the Electrical Engineering representative expressed a concern that, based on the test reset data, actual dropout voltage of 5 of the Degraded Voltage Relays may be below the Technical Specification 103.5 volt limit.

- On May 24, 1990 PR-1.1 was reperformed on the 5 Degraded Voltage Relays to verify their dropout voltage setpoint. At 1115 EDST, the dropout voltage of the first relay was checked and found below the Technical Specification limit of 103.5 volts. Subsequently, the dropout voltages of the other 4 relays were also found below the Technical Specification limit of 103.5 volts. The affected relays were recalibrated to greater than 103.5 volts and PT-9.1 was performed on each relay as it was restored to service following calibration. All relays subsequently tested satisfactorily.

- On May 29, 1990 PT-9.1 was reperformed on all 480 volt safeguards buses Degraded Voltage Relays to check for possible setpoint drift. All relays tested satisfactorily.

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

None.

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None.

E. METHOD OF DISCOVERY:

The event was made apparent during the performance of PR-1.1 on May 24, 1990.

F. OPERATOR ACTION:

As this was a setpoint problem with the Degraded Voltage Relays, no immediate operator action was necessary.

G. SAFETY SYSTEM RESPONSES:

None.

III. CAUSE OF EVENT

A. IMMEDIATE CAUSE:

The immediate cause of the event was due to 5 of 8 Degraded Voltage Relays on 480 volt safeguard buses 14, 16, 17, and 18 being calibrated such that relay actuation would not occur within the limits of Technical Specifications.

B. ROOT CAUSE:

The root cause of the event discovered on May 24, 1990, was attributed to the calibration conditions that existed on April 26, 1990, during the previous calibration of the five Degraded Voltage Relays. The underlying

cause of finding setpoints below limits (in the past) is now evident and is due to the wrong setpoint and setpoint tolerance being specified in a calibration procedure. The calibration procedure for the safeguard bus Degraded Voltage Relays (PR-1.1) specified an acceptance criteria of 103.5 volts ± 5%. Ginna Technical Specification figure 2.3-1 requires the Degraded Voltage Relays to actuate when the relay voltages drop to 103.5 volts (AC) which corresponds to 414 volts on the 480 volt safeguard bus. The relay setpoint of 103.5 volts was determined by RG&E Corporate Engineering and provided to Relay and Test Department for use in the calibration of these relays. However, no definitive tolerance band was provided with the desired setpoint. Normal vendor recommended tolerances were applied upon development of the calibration procedure. This resulted in the actual setpoint of these relays to be acceptable when left below the required minimum dropout voltage of 103.5 volts.

IV. ANALYSIS OF EVENT

This event is reportable in accordance with 10 CFR 50.73, Licensee Event Report System, item (a)(2)(i)(B), which requires a report of, "any operation prohibited by the plant's Technical Specifications." The 5 out of 8 Degraded Voltage Relays being calibrated such that relay actuation would not occur within the limits of Technical Specifications was an operation prohibited by the plant Technical Specifications.

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 5 of 8 Degraded Voltage Relays on 480 volt safeguard buses 14, 16, 17, and 18 being calibrated such that relay actuation would not occur within the limits of Technical Specifications because of designed relay redundancy and required operator actions.

Each safeguard bus is provided with two Degraded Voltage Relays and two loss of voltage relays. Any one of these relays will start the corresponding emergency diesel generator. Two out of two of either the Degraded Voltage Relays or the Loss of Voltage Relays will strip the safeguards bus and close the diesel tie breaker onto the safeguards bus. The miscalibration of the Degraded Voltage Relays would not have prevented the diesel generator from supplying emergency power to the safeguards bus upon a loss of voltage.

Ginna abnormal operating procedure AP-ELEC.2, (Safeguards Buses Low Voltage or System Low Frequency), requires both emergency diesel generators to be started manually if any safeguards bus voltage falls below 420 volts. In addition, if any safeguards bus voltage decreases to 414 volts, the operator is directed to transfer all safeguard bus power supplies to
the emergency diesel generators. Since Technical Specification Figure 2.3-1 allows approximately 20 minutes of continued operation at the lowest miscalibrated relay setpoint, ample time was allotted for operators to perform required action of AP-ELEC.2.

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:

- The affected relays were recalibrated to greater than the 103.5 volts Technical Specification limit, tested satisfactorily and restored to service.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- The test conditions that existed on April 26, 1990, will be evaluated. As a result of this evaluation, it is expected that improvements will be recommended.
- Any relays calibrated after April 25, 1990, will be identified. The results of these calibrations will be reviewed for generic concerns with test conditions.
- An analysis will be performed to obtain the optimum setpoint and setpoint tolerance for the Degraded Voltage Relays.
- Calibration procedure PR-1.1 will be revised to incorporate these new setpoints and setpoint tolerances.
- A new methodology for testing these relays will be incorporated into Periodic Test procedure PT-9.1.

VI. ADDITIONAL INFORMATION

A. AFFECTED COMPONENTS:

The Degraded Voltage Relays are a Model 211B1175D Type ITE-27 relay manufactured by ITE Corporation.

B. PREVIOUS LER'S ON SIMILAR EVENTS:

A similar LER event historical search was conducted with the following results: no documentation of similar LER events with the same root cause at Ginna Station could be identified.

C. SPECIAL COMMENTS:

None.