

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001

TELEPHONE
AREA CODE 716 546-2700

December 27, 1991

Attn: Jacque Durr
U.S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, Pennsylvania 19406

Dear Mr. Durr:

Per our telephone conversation on 12/27/91, please find the requested documentation for Corrective Action Report (CAR) 2010. This CAR was written to document and track corrective action and root cause analysis for the Undervoltage Relays (27 and 27B) being calibrated below Technical Specification Figure 2.3-1 (LER 90-008). This CAR is still open pending final review.

Joseph A. Widney for
Steven T. Adams
Technical Manager

9207080101 920629
PDR ADDCK 05000244
Q PDR



- a. CAR # 2010 Date 05/25/90 Ref. Doc.: A-25.1 #90-051
b. Reported by: S. Adams Verified by: J. St.Martin
c. NRC Reporting: Yes Report #: LER 90-008
d. Organization Affected: Ginna/Electric T & D
e. Identification of condition:

Several Undervoltage relays (27 and 27B) for busses 14, 16, 17, and 18, were found to be calibrated below the requirements of Technical Specifications.

f. Description of Condition:

Several Undervoltage relays (27 and 27B) for safeguards busses 14, 16, 17, and 18, were found to be calibrated below the requirements of Tech. Spec. Figure 2.3-1.

Method of Detection: Periodic Testing

Apparent Cause: To Be Determined

Imposed Restrictions: None

Activity/Organization restricted:

Date imposed:

Authority:

Restriction details:

g. PORC Review Date(s):

h. Assigned Responsibilities:

Cause Investigation: _____

Corrective Action Plan Interim: _____

Final: _____

Action Plan Implementation Interim: _____

Final: _____

i. Final PORC Review Date: _____

j. Quality Assurance Review: _____

Date: _____

k. Stop Work Released By: _____

Date: _____

l. Closeout Approval: _____

Date: _____

Central Records Category: 5.6



CORRECTIVE ACTION REPORT

CAR # 2010

06/04/90
Page 2

m. Cause Investigation:

A meeting was held on 05/29/90. This event will result in LER 90-008.
A corrective action plan was agreed to. (J. St.Martin - 06/04/90)

Completed by: J. St.Martin

Date: 06/04/90

Attachment: _____

n. Corrective Action Plan
ITEM

	DESCRIPTION	RESP GROUP	TCD	ACD
01	Provide sequence of events for this concern to Operations.	TECH-RT	06/08/90	
02	Provide determination of root cause to Operations.	TECH-MGMT	06/08/90	
03	Provide list of recommended corrective actions to Operations.	TECH-MGMT	06/08/90	
04	Prepare draft LER 90-008 for the problem with undervoltage relays.	OPER	06/18/90	
05	Review draft LER 90-008 with MOPAR, Engineering, and Electric T&D personnel.	TECH-MGMT	06/20/90	
06	Submit LER 90-008 to the Division Manager, Nuclear Production. NRC Due Date is 06/25/90.	PM-CA1	06/22/90	
07	Review LER 90-008, and determine root cause. Revise this plan.	PM-CA1	07/15/90	

Completed by: J. T. St. MartinDate: 6-4-90

Attachment: _____

o. 10 CFR 21 Evaluations Required: _____ YES _____ NO

Determined by: _____

Date: _____

p. Action Plan Implementation: _____ Initial _____ Interim _____ Final

Item #Response

Completed by: _____

Date: _____

Attachment: _____

m. Cause Investigation:

A meeting was held on 05/29/90. This event will result in LER 90-008. A corrective action plan was agreed to. (J. St.Martin - 06/04/90)

Based on a meeting held on 06/22/90 to review draft LER 90-008, commitments were made to the NRC. Additional concerns were expressed concerning any generic concerns for setpoint tolerances. The root cause was determined to be inadequate setpoint tolerance on a Tech Spec Setpoint. See new Actions 08 through 14. (J. St.Martin - 07/24/90)

Completed by: J. St.Martin

Date: 06/04/90

Attachment: _____

n. Corrective Action Plan

ITEM	DESCRIPTION	RESP GROUP	TCD	ACD
01	Provide sequence of events for this concern to Operations.	TECH-RT	06/08/90	06/15/90
02	Provide determination of root cause to Operations.	TECH-MGMT	06/08/90	06/15/90
03	Provide list of recommended corrective actions to Operations.	TECH-MGMT	06/08/90	06/15/90
04	Prepare draft LER 90-008 for the problem with undervoltage relays.	OPER	06/18/90	06/18/90
05	Review draft LER 90-008 with MOPAR, Engineering, and Electric T&D personnel.	TECH-MGMT	06/20/90	06/22/90
06	Submit LER 90-008 to the Division Manager, Nuclear Production. NRC Due Date is 06/25/90.	PM-CA1	06/22/90	06/25/90
07	Review LER 90-008, and determine root cause. Revise this plan.	PM-CA1	07/15/90	07/24/90
08	Evaluate the test conditions that existed on 04/26/90, for impact on the relay calibrations.	JEFF ROAD	06/25/90	06/25/90
09	Based on the evaluation from Action 08, recommend improvements in this testing and calibration.	JEFF ROAD	10/01/90	
10	Identify any relays calibrated after 04/25/90, and review the results of these calibrations for generic concerns with test conditions.	JEFF ROAD	06/25/90	06/25/90
11	Perform an analysis to obtain the optimum setpoint and setpoint tolerance for the Degraded Voltage Relays.	ENG-ELEC	09/01/90	



CAR 2010
1.2 of 2

- Revise PR-1.1 to incorporate new setpoints and setpoint tolerances. TECH-RT 10/01/90
- 13 Incorporate a new testing methodology into PT-9.1. TECH-RT 09/01/90
- 14 Evaluate the setpoint tolerances for similar Ginna relays, (especially any relays that have Tech Spec setpoints), to determine if there is a generic concern in this area. ENG-ELEC 12/01/90

Completed by: J. T. A. Martin Date: 7-27-96 Attachment: _____

o. 10 CFR 21 Evaluations Required: _____ YES _____ NO

Determined by: _____ Date: _____

p. Action Plan Implementation: _____ Initial _____ Interim _____ Final

Item # Response

Completed by: _____ Date: _____ Attachment: _____



10 Inform the NRC of intended corrective actions for potential short circuit problems during monthly test of the diesel generator. (Tracked by the CATS)

ENG-ELEC 12/04/90 11/30/90

ACTION TAKEN: Letter discussing probabilistic risk analysis of corrective actions sent to NRC. (R. Mecredy - 11/30/90)

11 Modify plant procedures for starting main feed pumps, if required by the results of the reevaluation of the analysis listed in Action 09.

OPER 05/01/91 07/17/91

ACTION TAKEN: As a result of past experience, Operations has concluded that it is not necessary to change procedures for starting Main Feedwater Pumps. (T. Schuler - 07/17/91)

CAR: 2010 NRC REPORTING: Yes REFERENCE DOCUMENT: A-25.1 #90-051

TITLE: Several Undervoltage relays (27 and 27B) for busses 14, 16, 17, and 18, were found to be calibrated below the requirements of Technical Specifications.

DESCRIPTION: Several Undervoltage relays (27 and 27B) for safeguards busses 14, 16, 17, and 18, were found to be calibrated below the requirements of Tech. Spec. Figure 2.3-1.

APPARENT CAUSE: To Be Determined

ACTUAL CAUSE: No Tolerance on Tech Spec Setpoint in calibration procedure.

CAUSE INVESTIGATION:

A meeting was held on 05/29/90. This event will result in LER 90-008. A corrective action plan was agreed to. (J. St.Martin - 06/04/90)

Based on a meeting held on 06/22/90 to review draft LER 90-008, commitments were made to the NRC. Additional concerns were expressed concerning any generic concerns for setpoint tolerances. The root cause was determined to be inadequate setpoint tolerance on a Tech Spec Setpoint. See new Actions 08 through 14. (J. St.Martin - 07/24/90)

ITEM	ACTION REQUIRED	RESP GROUP	TCD	ACD
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01 Provide sequence of events for TECH-RT 06/08/90 06/15/90
this concern to Operations.

ACTION TAKEN: The sequence of events was provided, to support
preparation of the LER, prior to 06/15/90.

02 Provide determination of root TECH-MGMT 06/08/90 06/15/90
cause to Operations.

ACTION TAKEN: The results of the root cause determination were provided,
prior to 06/15/90, to support preparation of the LER.

03 Provide list of recommended TECH-MGMT 06/08/90 06/15/90
corrective actions to Operations.

ACTION TAKEN: A list of recommended corrective action was provided,
prior to 06/15/90, to support preparation of the LER.

04 Prepare draft LER 90-008 for the OPER 06/18/90 06/18/90
problem with undervoltage relays.

ACTION TAKEN: Draft LER was prepared prior to 06/18/90.

05 Review draft LER 90-008 with TECH-MGMT 06/20/90 06/22/90
MOPAR, Engineering, and Electric
T&D personnel.

ACTION TAKEN: Draft LER was reviewed 06/22/90.

06 Submit LER 90-008 to the Division PM-CA1 06/22/90 06/25/90
Manager, Nuclear Production. NRC
Due Date is 06/25/90.

ACTION TAKEN: LER was submitted to the NRC on 06/25/90.

07 Review LER 90-008, and determine PM-CA1 07/15/90 07/24/90
root cause. Revise this plan.

ACTION TAKEN: LER 90-008 was reviewed, and a new CAR Action plan was
issued on 07/24/90.



08 Evaluate the test conditions that existed on 04/26/90, for impact on the relay calibrations. JEFF ROAD 06/25/90 06/25/90

ACTION TAKEN: This evaluation was completed. See D. Miller memo dated 06/25/90, which noted that voltage supplied to the trailer was fluctuating heavily while the PR-1.1 was performed.

09 Based on the evaluation from Action 08, recommend improvements in this testing and calibration. JEFF ROAD 10/01/90 08/07/90

ACTION TAKEN: Per letter dated 08/07/90 from D. Miller and confirmation from L. Hubbard, item is complete. Letter stated necessary items for the Relay Section Test Area at Ginna.

10 Identify any relays calibrated after 04/25/90, and review the results of these calibrations for generic concerns with test conditions. JEFF ROAD 06/25/90 06/25/90

ACTION TAKEN: As per D. Miller memo of 06/25/90, the five undervoltage relays calibrated on 04/26/90 were the only relays to be affected. No other relays were calibrated after this date or five days prior to this date.

11 Perform an analysis to obtain the optimum setpoint and setpoint tolerance for the Degraded Voltage Relays. ENG-ELEC 09/01/90 09/06/90

ACTION TAKEN: The required analysis was provided under cover of the attached letter dated 09/06/90 from P. Swift to S. Adams. This constitutes the Engr's response.

12 Revise PR-1.1 to incorporate new setpoints and setpoint tolerances. TECH-RT 02/01/91 01/11/91

ACTION TAKEN:



13 Incorporate a new testing methodology into PT-9.1.

TECH-RT

02/01/91 01/18/91

ACTION TAKEN:

14 Evaluate the setpoint tolerances for similar Ginna relays. (especially any relays that have Tech Spec setpoints). to determine if there is a generic concern in this area.

ENG-ELEC

12/01/90 11/15/90

ACTION TAKEN:

CAR: 2021 NRC REPORTING: Yes REFERENCE DOCUMENT: A-25.1 #90-125

TITLE: Failure of an output card in the Bus 14 Undervoltage protection system resulted in the start of the "A" diesel generator.

DESCRIPTION: The "A" diesel generator automatically started on a spurious undervoltage signal from the Bus 14 UV system. An output card failed in the Bus 14 UV system, which initiated a 1/4 logic to start the diesel.

APPARENT CAUSE: Failed Internal Electronic Component

ACTUAL CAUSE: Random Component Failure

CAUSE INVESTIGATION:

Based on results of troubleshooting, and the need to submit LER 90-015, an interim Action Plan is being issued, to track required actions. (J. St.Martin - 12/26/90)

A meeting was held on 02/12/91 to review the root cause and the contents of LER 90-015. New Actions 06 through 10 were added to this plan. The root cause, as stated in LER 90-015, is a random component failure in the undervoltage protection system. (J. St.Martin - 03/21/91)

ITEM	ACTION REQUIRED	RESP GROUP	TCD	ACD
01	Determine the root cause of the component failure in the Bus 14 Undervoltage system.	MAINT-ELEC	12/19/90	12/15/90

ACTION TAKEN:

ROCHESTER GAS AND ELECTRIC CORPORATION

CAR 2010

CAR 2022

Inter-Office Correspondence

April 20, 1991

Subject: PT-9.1 Acceptance Criteria - 480 Volt Degraded Voltage (27) and Loss of Voltage (27D) Relays

To: Steve Adams
✓ Gregg Joss

After reviewing the results of the 1991 calibrations per PR-1.1, subsequent PT-9.1 tests, and PR-1.1 re-calibrations, more has been learned about the discrepancies induced by the built-in test cabinets for the 480 volt undervoltage relays. Also, we have more closely evaluated the test and how the acceptance criteria shows compliance with Tech. Specs. This memo is intended to define the additional criteria to be used to determine operability of the relays based on the results of the monthly PT-9.1 tests.

The existing method of using the "benchmark" PT-9.1 as a baseline and comparing subsequent monthly results to the benchmark values is presently the only method available to give indication of drifting relay setpoints. However, variations of the test power source revealed larger monthly test result variances than previously recorded. Therefore, a relay "failing" the ± 1 volt acceptance criteria does not need to be declared inoperable. Instead, the anomaly needs to be reviewed to determine if the discrepancy could be indicating that the relay is outside of the Tech. Spec. required range.

Following are the bases for justification to allow relays which "fail" the ± 1 volt criteria to remain operable. Also included is the final basis for declaring a relay "inoperable", which requires relay retest, recalibration, or replacement.

The critical Tech. Spec. requirements pertain to the relay dropout voltage. To meet Tech. Spec. (fig. 2.3-1), the relays cannot drop out BELOW the appropriate voltage (92 volts for the 27D relays, 103.5 volts for the 27 relays). The yearly calibration procedure (PR-1.1) sets these relays at least 1 volt above the limit, allowing -1 volt of variance in the relays' response. If the relay responds at a HIGHER voltage, it still meets Tech Specs, as it is moving in the conservative direction. PT-9.1 results which show higher than +1 volt drift need only be trend evaluated to determine if relay failure appears imminent (signified by drift over +5 volts) to assure the relay is not continually drifting away from its setpoint.

27D relays (loss of voltage) can be tested monthly for both dropout and pickup (reset). Since only the dropout voltage is applicable to Tech. Spec. requirements, pickup values that fall outside of the ± 1 volt criteria will not indicate a question of operability, but will be trended to monitor for continued drift. Relays exhibiting drift over +5 volts should be retested, recalibrated or

replaced. Dropout variance over -1 volt could potentially indicate it has drifted below Tech. Spec. limits. To determine if there is additional margin before declaring the relay inoperable, a review of the calibration "As-Left" dropout value may show additional margin allowances during calibration (i.e. a relay calibrated at 93.2 volts has a -1.2 volt drift allowance). If the relay has drifted below the absolute lowest allowance, then it should be declared inoperable, and be retested, recalibrated, or replaced.

27D Relay Acceptance Criteria:

Pickup voltage = Benchmark voltage \pm 5 volts

Dropout voltage = Benchmark voltage +5/-1 volt*

* Review of calibration margin may allow $>$ -1 volt.

Review individual PR-1.1 relay results.

Since the 27 relays (degraded voltage) have a time delay, the dropout voltage cannot be measured directly during the PT-9.1 test. We rely on the pickup voltage to indicate any relay drift. Again, positive drift is acceptable to the point of imminent failure, so variances $>$ +1 volt will be trended, variances $>$ +5 volts require retest, recalibration or replacement. Downward variances $>$ -1 volt indicate that the relay setpoint may potentially go below the Tech. Spec. limit. As with the 27Ds, a review of the calibration pickup "As-Left" values may provide an additional drift allowance. If the relay variance from benchmark is greater than the calibration margin, the relay should be declared inoperable and retested, recalibrated, or replaced.

27 Relay Acceptance Criteria:

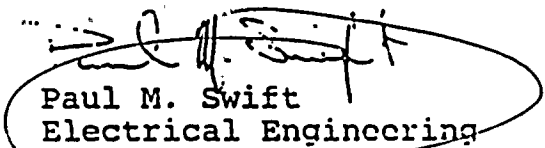
Pickup Voltage = Benchmark voltage +5/-1 volt*

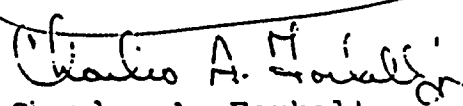
* Review of calibration margin may allow $>$ -1 volt.

Review individual PR-1.1 relay results.

All PT-9.1 results will be trended every month so that we can more closely monitor and evaluate perturbations of the relay test data.

Please contact myself or Ted Miller here at engineering to discuss any of these points in more detail, and also to review future monthly test results.


Paul M. Swift
Electrical Engineering


Charles A. Forkell
Manager, Elect. Engineering

xc: T. Miller
D. Gent
G. Wrobel
Document Control File
Elec. Eng. File

COPY TO CAR

A-25.1:6 2010

GINNA STATION EVENT REPORT
(Refer to A-25.1 for Instructions)

A. CONDITIONS PRIOR TO EVENT:

EVENT NUMBER: 91-62

~ 97% Steady State Power Operative

B. BRIEF DESCRIPTION OF EVENT: TIME OF EVENT: 1100 DATE: 6-5-91

(Include pertinent alarms and parameters. Use additional sheets as necessary).

DURING review of PR-1.1 data which was performed during the 1991 AZRO, it was determined that the 'as-found' setpoints for the drop-out of relays 27B/14, 27/16, and 27B/18 was below the technical specification limit of 103.5 volts.

These relays were recalibrated during the outage and are presently set above the 103.5 limit and are tested monthly, therefore, these relays are fully operable. This A-25.1 is written to assess reportability, not question operability.

Inspection date:
5/6 - 6/7/91

Reporting Individual: [Signature]

Position: Technical Manager

Date: 6-5-91

GINNA STATION EVENT REPORTSHIFT SUPERVISOR ASSESSMENT:EVENT NUMBER: 91-62

1. Technical Specification Violation?

If "Yes" or "Possible, list applicable section(s) of Technical Specifications.
If "No", and clarification may be needed, list the applicable section(s) and the basis for no violation.

No ☒ Yes ☐ Possible ☐Section(s) _____
Basis: _____

2. Reportable to NRC, State, or Counties within 24 hours? (See 0-9.3 for criteria.)

If "Yes", verify that a copy of "0-9.3 Attachment 1" is attached to this A-25.1 report, and list the applicable "Source of Requirement" subparagraph(s), as detailed in 0-9.3.
If "No", and clarification may be needed, list the applicable subparagraph(s).

No ☒ Yes ☐

Subparagraph(s) _____

3. Persons Notified:

a. Duty Engineer	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
b. Shift Technical Advisor	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
c. Operations Manager	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
d. Plant Superintendent	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
e. NRC Resident Inspector	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
f. Computer Systems Tech.	No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	(See para. 3.3.5)

4. Maintenance Work Request and Trouble Report? No ☒ Yes ☐

If "Yes", list MWRATR # _____

5. Actions Taken (if required):

*relays were recalibrated*Head Control Operator: *(Signature)*

Original: Duty Engineer

Copy: Operations Manager
NRC Resident Inspector
Supervisor of Nuclear Plant Security
Shift Supervisor
Maintenance Office/NPRDS
Onsite Emergency Planner

Control Room Foreman: *(Signature)*Shift Supervisor: *(Signature)*



GINNA STATION EVENT REPORTD. DUTY ENGINEER ASSESSMENT:EVENT NUMBER: 91-62

1. Technical Specification Violation?

No ☒ Yes ☐

If "Yes", list applicable section(s) of Technical Specifications and the basis for the violation. If "No", and clarification may be needed, list the applicable section(s) and the basis for no violation.

Section(s) 2.3.3.1
Basis: NUREG 1022 Suppl. I
para 2.3.

2. Reportable to NRC within 24 hours?

(See 0-9.3 for criteria)

No ☒ Yes ☐

If "Yes", verify that a copy of "0-9.3 Attachment 1" is attached to this A-25.1 report, and list the applicable "Source of Requirement" subparagraph(s), as detailed in 0-9.3. If "No", and clarification may be needed, list the applicable subparagraph(s).

Subparagraph(s) _____

3. Reportable to NRC within 30 days? (See A-25.6 for criteria.)

No ☒ Yes ☐ Possible ☐

If "Yes" or "Possible", list the applicable "Source of Requirement" subparagraph(s), as detailed in A-25.6. If "No" and clarification may be needed, list the applicable subparagraph(s).

Subparagraph(s) _____

4. Reportable to NRC in other reports, as listed in Technical Specifications, Section 6.9 or USNRC Regulatory Guide 10.1?

No ☒ Yes ☐ Possible ☐

If "Yes" or "Possible", notify PORC for the potential need to notify the NRC.

5. Procedure Inadequacy?

No ☒ Yes ☐ Possible ☐

If "Yes" or "Possible", list affected procedure(s) _____

6. Root Cause Determined?

Yes ☒ No ☐

If "No", notify PORC for the need to determine the root cause.

Root Cause Relay setpoint drift7. Incident resulted in complete loss of plant electrical output No ☒ Yes ☐

a. If "Yes", was loss due to either personnel error or design flaw?

No ☐ Yes ☐

b. If "Yes" to both 7 and 7a, then complete A-25.7, Electric System Incident Report

8. Actions taken (if required):

Reviewed T.S. 2.3.3 and 2.3.3.1 and NUREG 1022/Supplement 1,
Paragraph 2.3

9. Forward this report to Plant Superintendent.

Duty Engineer: C. Rich



GINNA STATION EVENT REPORT

E.

PLANT SUPERINTENDENT REVIEW:

EVENT NUMBER: 91-62

1. Concurrence with Action Taken?
2. Concurrence that Root Cause has been determined.

Yes ☒ No ☐Yes ☒ No ☐

- a. If "No", then assign responsibility for Root Cause Determination, or mark "N/A"

Responsibility: _____ N/A ☒

3. CAR/NCR Required?

No ☒ Yes ☐

If "Yes", list #

4. PORC Review and Recommendations

- a. Technical Specification Violations?

No ☒ Yes ☐

- 1) If "Yes", is it reportable to NRC, or SVP, or NSARB?

SVP or NSARB No ☒ Yes ☐
NRC No ☒ Yes ☐

- b. Potential Safety Hazard?

No ☒ Yes ☐

- c. Generic Implication?

None ☒ Yes ☐

- 1) If "Yes", is timely notification to other utilities required?

No ☐ Yes ☐

- d. Training of Technical Staff Implication?

No ☒ Yes ☐

- 1) If "Yes" then send a copy of this report to Training.

- e. Potential 10CFR21 Report?

No ☒ Yes ☐

- 1) If "Yes", then list CAR/NCR/AFCAR #

CAR/NCR/AFCAR # N/A

- f. Other

5. Further Actions Required?

None ☒* Yes ☐ Thommas AMur

* This event will be revisited in the NRC's Final EDSFI Inspection Report. Based on final receipt of this report, it may trigger further action.

PORC Meeting #: 91-101 Date: 6-20-91PORC Secretary [Signature] Date: 6-28-91

(Verification that Part "E" has been performed.)

Original: Central Records
Copy: Shift Supervisor
NRC Resident Inspector
Corrective Action Coordinator

Technical Staff Training Coordinator (Only if E.4.d. is checked "Yes")



WO-9120337

PR-1.1:15

DEVICE: 27/14 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 14 TYPE: ITE-27
 MOD OR STYLE #: 211B1175D BULLETIN #: 18.4.7-2
 SERIAL #: 3174-1 PHASE: A - B
 CURVE #: T.V.C. 605817 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
104.5V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	103.72 \checkmark	103.66V	104.5V-105.0V (As close to 104.5V as is practical)	104.50V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
6TL 120V to 92V = 40" Suddenly Applied	36.0" - 44.0"	40.47 "	39.0" - 41.0"	40.34 "

DROPOUT TIME AT MINIMUM TECH SPEC LIMIT

ACCEPTANCE CRITERIA	APPLIED VOLTS	PRESENT AS LEFT	CHECK ONE	
			PASS	FAIL
0 to 300"	120V to 103.5V Suddenly Applied	74.02 "	<input checked="" type="checkbox"/>	<input type="checkbox"/>

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
104.86V

COMPLETED BY: W. L. Mills
 REVIEWED BY: D. J. Mills

DATE: 3-23-91
 DATE: 3-23-91



DEVICE: 27D/14 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 14 TYPE: ITE-27D
 MOD OR STYLE #: 211B6175D BULLETIN #: 18.4.7-2
 SERIAL #: 3176-2 PHASE: A - B
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
93.0V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	93.3V	93.98V	93.0V-93.5V (As close to 93.0V as is practical)	93.08V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
4TL 94V to 0V = .5" Suddenly Applied	.45" - .55"	.494"	.45" - .55"	.494"

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
95.27V

COMPLETED BY: W F Miller DATE: 3-25-91
 REVIEWED BY: D J Miller DATE: 3-25-91

DEVICE: 27B/14 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 14 TYPE: ITE-27
 MOD OR STYLE #: 211B1175D BULLETIN #: 18.4.7-2
 SERIAL #: 3175-1 PHASE: B - C
 CURVE #: T.V.C. 605817 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
104.5V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	104.0V	103.39V	104.5V-105.0V (As close to 104.5V as is practical)	104.50V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
6TL 120V to 92V = 40" Suddenly Applied	36.0" - 44.0"	39.88"	39.0" - 41.0"	40.47"

DROPOUT TIME AT MINIMUM TECH SPEC LIMIT

ACCEPTANCE CRITERIA	APPLIED VOLTS	PRESENT AS LEFT	CHECK ONE	
			PASS	FAIL
0 to 300"	120V to 103.5V Suddenly Applied	77.940"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
104.80V

COMPLETED BY: W F Miller DATE: 3-25-9
 REVIEWED BY: D A Miller DATE: 3-25-9



DEVICE: 27D/B/14 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 14 TYPE: ITE-27D
 MOD OR STYLE #: 211B6175D BULLETIN #: 18.4.7-2
 SERIAL #: 3175-2 PHASE: B - C
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
93.0V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	93.0V	93.20V	93.0V-93.5V (As close to 93.0V as is practical)	93.18V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
4TL 94V to 0V = .5" Suddenly Applied	.45" - .55"	.503"	.45" - .55"	.500"

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
94.66V

COMPLETED BY:

WJ MillerDATE: 3-25-91

REVIEWED BY:

DH MillerDATE: 3-25-91



DEVICE: 64/14 RELAY APPLICATION: GROUND DETECTION
 CIRCUIT: BUS 14 TYPE: CV-8
 MOD OR STYLE #: 1875527A BULLETIN #: 41-201J
 SERIAL #: 768120 PHASE: GRND
 CURVE #: 418252 P.T. RATIO: 480V/120V

TIME DELAY ELEMENT TESTS

TIME TOLERANCE = $\pm 5\%$ OF RELAY CURVE.

DEV. NO.	SETTING	TEST VOLTS APPLIED	TIME TOLERANCES	--TEST TIME--	
				OVERVOLTAGE FOUND	LEFT
64/14	16.5V/1 TLS	0 - 132V	.475"-.525"	.481"	.475"

PICKUP TEST

PICKUP TOLERANCE = $\pm 5\%$

DEV. NO.	SETTING	PICKUP VOLTS	
		FOUND	LEFT
64/14	16.5V/1 TLS	16.30	16.50

COMPLETED BY: WJ Miller
 REVIEWED BY: DJ Miller

DATE: 3-26-91
 DATE: 4-1-91

REMARKS:



DEVICE: 27/16 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 16 TYPE: ITE-27
 MOD OR STYLE #: 211B1175D BULLETIN #: 18.4.7-2
 SERIAL #: 3181-1 PHASE: A - B
 CURVE #: T.V.C. 605817 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
104.5V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	103.65V	103.07V	104.5V-105.0V (As close to 104.5V as is practical)	104.50V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
6TL 120V to 92V = 40" Suddenly Applied	36.0" - 44.0"	41.98"	39.0" - 41.0"	40.97"

DROPOUT TIME AT MINIMUM TECH SPEC LIMIT

ACCEPTANCE CRITERIA	APPLIED VOLTS	PRESENT AS LEFT	CHECK ONE	
			PASS	FAIL
0 to 300"	120V to 103.5V Suddenly Applied	79.86"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

PICK UP TEST (REFERENCE FOR PT-9.1, ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
104.80 V

COMPLETED BY:

W F MillerDATE: 3-26-91

REVIEWED BY:

D M MillerDATE: 3-26-91



DEVICE: 27D/16 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 16 TYPE: ITE-27D
 MOD OR STYLE #: 211B6175D BULLETIN #: 18.4.7-2
 SERIAL #: 3177-2 PHASE: A - B
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
93.0V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	93.1 ✓	93.23 ✓	93.0V-93.5V (As close to 93.0V as is practical)	93.0 ✓

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
4TL 94V to 0V = .5" Suddenly Applied	.45" - .55"	.490"	.45" - .55"	.493"

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
95.25 ✓

COMPLETED BY: WJ Miller DATE: 3-26-91
 REVIEWED BY: DJ Miller DATE: 3-26-91



DEVICE: 27B/16 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 16 TYPE: ITE-27
 MOD OR STYLE #: 211B1175D BULLETIN #: 18.4.7-2
 SERIAL #: 3180-1 PHASE: B - C
 CURVE #: T.V.C. 605817 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
104.5V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	103.72v	103.78v	104.5V-105.0V (As close to 104.5V as is practical)	104.54v

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
6TL 120V to 92V = 40" Suddenly Applied	36.0" - 44.0"	41.50"	39.0" - 41.0"	40.73"

DROPOUT TIME AT MINIMUM TECH SPEC LIMIT

ACCEPTANCE CRITERIA	APPLIED VOLTS	PRESENT AS LEFT	CHECK ONE	
			PASS	FAIL
0 to 300"	120V to 103.5V Suddenly Applied	76.39"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
104.67v

COMPLETED BY: W F Miller DATE: 3-27-91
 REVIEWED BY: D M Miller DATE: 3-27-91



DEVICE: 27D/B/16 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 16 TYPE: ITE-27D
 MOD OR STYLE #: 211B6175D BULLETIN #: 18.4.7-2
 SERIAL #: 3188-2 PHASE: B - C
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
93.0V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	93.04v	93.00v	93.0V-93.5V (As close to 93.0V as is practical)	93.09v

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
4TL 94V. to 0V = .5" Suddenly Applied	.45" - .55"	.498"	.45" - .55"	.497

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
95.50v

COMPLETED BY: W F MillerDATE: 3-26-91REVIEWED BY: D H MillerDATE: 3-27-91

DEVICE: 64/16 RELAY APPLICATION: GROUND DETECTION
 CIRCUIT: BUS 16 TYPE: CV-8
 MOD OR STYLE #: 1875527A BULLETIN #: 41-201J
 SERIAL #: 768121 PHASE: GRND
 CURVE #: 418252 P.T. RATIO: 480V/120V

TIME DELAY ELEMENT TESTS

TIME TOLERANCE = $\pm 5\%$ OF RELAY CURVE.

DEV. NO.	SETTING	TEST VOLTS APPLIED	TIME TOLERANCES	--TEST TIME--	
				OVERVOLTAGE FOUND	LEFT
64/16	16.5V/1 TLS	0 - 132V	.475"-.525"	.498"	.508"

PICKUP TEST

PICKUP TOLERANCE = $\pm 5\%$

DEV. NO.	SETTING	PICKUP VOLTS	
		FOUND	LEFT
64/16	16.5V/1 TLS	16.40v	16.50v

COMPLETED BY: WJ Mull DATE: 3-27-91
 REVIEWED BY: DH Muller DATE: 4-1-91

REMARKS:



DEVICE: 27/17 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 17 TYPE: ITE-27
 MOD OR STYLE #: 211B1175D BULLETIN #: 18.4.7-2
 SERIAL #: 3176-1 PHASE: A - B
 CURVE #: T.V.C. 605817 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
104.5V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	103.71V	103.62V	104.5V-105.0V (As close to 104.5V as is practical)	104.71V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
6TL 120V to 92V = 40" Suddenly Applied	36.0" - 44.0"	41.42"	39.0" - 41.0"	39.845"

DROPOUT TIME AT MINIMUM TECH SPEC LIMIT

ACCEPTANCE CRITERIA	APPLIED VOLTS	PRESENT AS LEFT	CHECK ONE	
			PASS	FAIL
0 to 300"	120V to 103.5V Suddenly Applied	74.51"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
105.24V

COMPLETED BY:

Thuy L. Schaap

DATE:

3/29/91

REVIEWED BY:

Del Miller

DATE:

3 30 91

DEVICE: 27D/17 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 17 TYPE: ITE-27D
 MOD OR STYLE #: 211B6175D BULLETIN #: 18.4.7-2
 SERIAL #: 3186-2 PHASE: A - B
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
93.0V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	93.12V	94.03V	93.0V-93.5V (As close to 93.0V as is practical)	93.12V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
4TL 94V to 0V = .5" Suddenly Applied	.45" - .55"	.496"	.45" - .55"	.493"

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS 95.59V

COMPLETED BY:

Terry L. Schaepp

DATE:

3/29/91

REVIEWED BY:

D H Miller

DATE:

3-30-91

DEVICE: 27B/17 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 17 TYPE: ITE-27
 MOD OR STYLE #: 211B1175D BULLETIN #: 18.4.7-2
 SERIAL #: 3179-1 PHASE: B - C
 CURVE #: T.V.C. 605817 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
104.5V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	103.74V	103.86V	104.5V-105.0V (As close to 104.5V as is practical)	104.67V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
6TL 120V to 92V = 40" Suddenly Applied	36.0" - 44.0"	40.641"	39.0" - 41.0"	39.256"

DROPOUT TIME AT MINIMUM TECH SPEC LIMIT

ACCEPTANCE CRITERIA	APPLIED VOLTS	PRESENT AS LEFT	CHECK ONE	
			PASS	FAIL
0 to 300"	120V to 103.5V Suddenly Applied	69.869"	✓	

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
105.03V

COMPLETED BY:

Terry L. Schaefer

DATE:

3/29/93/29/9

REVIEWED BY:

D. J. Miller

DATE:

3-30-91



DEVICE: 27D/B/17 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 17 TYPE: ITE-27D
 MOD OR STYLE #: 211B6175D BULLETIN #: 18.4.7-2
 SERIAL #: 3184-2 PHASE: B - C
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
93.0V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	93.0V	92.96V	93.0V-93.5V (As close to 93.0V as is practical)	93.10V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
4TL 94V to 0V = .5" Suddenly Applied	.45" - .55"	.501"	.45" - .55"	.501"

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS 95.21V

COMPLETED BY: Terry L SchaapDATE: 3/29/91REVIEWED BY: D J MillerDATE: 3-30-91



DEVICE: 64/17 RELAY APPLICATION: GROUND DETECTION
 CIRCUIT: BUS 17 TYPE: CV-8
 MOD OR STYLE #: 1875527A BULLETIN #: 41-201J
 SERIAL #: 768108 PHASE: GRND
 CURVE #: 418252 P.T. RATIO: 480/120

TIME DELAY ELEMENT TESTS

TIME TOLERANCE = $\pm 5\%$ OF RELAY CURVE.

DEV. NO.	SETTING	TEST VOLTS APPLIED	TIME TOLERANCES	--TEST TIME--	
				OVERVOLTAGE FOUND	LEFT
64/17	16.5V/1TLS	0-132V	.475"-.525"	.505"	.518"

PICKUP TEST

PICKUP TOLERANCE = $\pm 5\%$

DEV. NO.	SETTING	PICKUP VOLTS	
		FOUND	LEFT
64/17	16.5V/1TLS	15.94	16.50

COMPLETED BY: W J MillerDATE: 3-30-91REVIEWED BY: D H MillerDATE: 4-1-91

REMARKS:



DEVICE: 27/18 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 18 TYPE: ITE-27
 MOD OR STYLE #: 211B1175D BULLETIN #: 18.4.7-2
 SERIAL #: 3173-1 PHASE: A - B
 CURVE #: T.V.C. 605817 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
104.5V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	103.65V	103.53V	104.5V-105.0V (As close to 104.5V as is practical)	104.51V

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
6TL 120V to 92V = 40" Suddenly Applied	36.0" - 44.0"	39.57"	39.0" - 41.0"	40.15"

DROPOUT TIME AT MINIMUM TECH SPEC LIMIT

ACCEPTANCE CRITERIA	APPLIED VOLTS	PRESENT AS LEFT	CHECK ONE	
			PASS	FAIL
0 to 300"	120V to 103.5V Suddenly Applied	75.39"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
104.72V

COMPLETED BY: W.F. Miller DATE: 3-31-91
 REVIEWED BY: O.J. Miller DATE: 3-31-91



DEVICE: 27D/18 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 18 TYPE: ITE-27D
 MOD OR STYLE #: 211B6175D BULLETIN #: 18.4.7-2
 SERIAL #: 3179-2 PHASE: A - B
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
93.0V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	93.1 ✓	93.50v	93.0V-93.5V (As close to 93.0V as is practical)	93.02v

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
4TL 94V to 0V = .5" Suddenly Applied	.45" - .55"	.497"	.45" - .55"	.502'

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
95.46v

COMPLETED BY: Wf MillerDATE: 3-31-91REVIEWED BY: DA MillerDATE: 3-31-91



DEVICE: 27B/18 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 18 TYPE: ITE-27
 MOD OR STYLE #: 211B1175D BULLETIN #: 18.4.7-2
 SERIAL #: 3177-1 PHASE: B - C
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
104.5V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	103.8 \checkmark	103.38 \checkmark	104.5V-105.0V (As close to 104.5V as is practical)	104.51 \checkmark

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
6TL 120V to 92V = 40" Suddenly Applied	36.0" - 44.0"	40.71"	39.0" - 41.0"	39.97"

DROPOUT TIME AT MINIMUM TECH SPEC LIMIT

ACCEPTANCE CRITERIA	APPLIED VOLTS	PRESENT AS LEFT	CHECK ONE	
			PASS	FAIL
0 to 300"	120V to 103.5V Suddenly Applied	73.47 "	\checkmark	

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage **VERY SLOWLY** until relay picks up.

AS LEFT PICK UP VOLTS
104.71 \checkmark

COMPLETED BY: W.L. MillerDATE: 3-31-91REVIEWED BY: D.J. MillerDATE: 3-31-91

DEVICE: 27D/B/18 RELAY APPLICATION: BUS UNDERVOLTAGE
 CIRCUIT: BUS 18 TYPE: ITE-27D
 MOD OR STYLE #: 211B6175D BULLETIN #: 18.4.7-2
 SERIAL #: 3178-2 PHASE: B - C
 CURVE #: T.V.C. 605820 P.T. RATIO: 480V/120V

DROPOUT TEST

SETTING	AS FOUND TOLERANCE	PREVIOUS "AS LEFT" DROPOUT VOLTAGE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
93.0V	WITHIN ± 1 VOLT OF PREVIOUS "AS LEFT" TEST	93.1v	93.32v	93.0V-93.5V (As close to 93.0V as is practical)	93.08v

DROPOUT TIME TEST

SETTING	AS FOUND TOLERANCE	PRESENT AS FOUND	AS LEFT TOLERANCE	PRESENT AS LEFT
4TL 94V to 0V = .5" Suddenly Applied	.45" - .55"	.498"	.45" - .55"	.500"

PICK UP TEST (REFERENCE FOR PT-9.1 ONLY)

NOTE: Raise voltage VERY SLOWLY until relay picks up.

AS LEFT PICK UP VOLTS
94.79v

COMPLETED BY: WJ MillerDATE: 3-31-91REVIEWED BY: DA MillerDATE: 3-31-91



DEVICE: 64/18 RELAY APPLICATION: GROUND DETECTION
 CIRCUIT: BUS 18 TYPE: CV-8
 MOD OR STYLE #: 1875527A BULLETIN #: 41-201J
 SERIAL #: 768110 PHASE: GRND
 CURVE #: 418252 P.T. RATIO: 480/120

TIME DELAY ELEMENT TESTS

TIME TOLERANCE = $\pm 5\%$ OF RELAY CURVE.

DEV. NO.	SETTING	TEST VOLTS APPLIED	TIME TOLERANCES	--TEST TIME--	
				OVERVOLTAGE FOUND	LEFT
64/18	16.5V/1 TLS	0 - 132V	.475"-.525"	.494"	.495"

PICKUP TEST

PICKUP TOLERANCE = $\pm 5\%$

DEV. NO.	SETTING	PICKUP VOLTS	
		FOUND	LEFT
64/18	16.5V/1 TLS	16.3V	16.5V

COMPLETED BY: W F Miller DATE: 4-1-91
 REVIEWED BY: D M Miller DATE: 4-1-91

REMARKS:

DEVICE NO.	RELAY APPLICATION	MFR., RELAY TYPE & RATING	INSTR. TRANSFORMER RATIO USED		CALCULATED RELAY SETTINGS BASIS FOR SETTINGS	REMARKS
			C.T.'S	P.T.'S		
27	Bus #14	ITE-27 60-110V, 1-6 TL		480/120	194.5 Volt Dropout - 6 TLS	Class 1E
27D	Bus #14	ITE-27D 60-110V, 1-6 TL		480/120	93 Volt Dropout - 4 TLS (0.5 seconds)	Class 1E
27B	Bus #14	ITE-27 60-110V, 1-6 TL		480/120	104.5 Volt Dropout - 6 TLS	Class 1E
27D/B	Bus #14	ITE-27D 60-110V, 1-6 TL		480/120	93 Volt Dropout - 4 TLS (0.5 seconds)	Class 1E
24/14	Bus #14	CV-8 16-40V, .5-11 TL		480/120	16.5 Volt Pickup - 1 TLS	Class 1E
27	Bus #16	ITE-27 60-110V, 1-6 TL		480/120	104.5 Volt Dropout - 6 TLS	Class 1E
27D	Bus #16	ITE-27D 60-110V, 1-6 TL		480/120	93 Volt Dropout - 4 TLS (0.5 seconds)	Class 1E
27B	Bus #16	ITE-27 60-110V, 1-6 TL		480/120	104.5 Volt Dropout - 6 TLS	Class 1E
27D/B	Bus #16	ITE-27D 60-110V, 1-6 TL		480/120	93 Volt Dropout - 4 TLS (0.5 seconds)	Class 1E
24/16	Bus #16	CV-8 16-40V, .5-11 TL		480/120	16.5 Volt Pickup - 1 TLS	Class 1E

ELECTRIC TRANSMISSION
AND DISTRIBUTION DIVISION

Category 14441

Reviewed R. Calus

MAR 20 1991

Static: 13
Circuit: 480 Volt Bus #14
480 Volt Bus #16

This drawing includes portions
of Class 1E Electrical systems.
Refer to notes and specifications
to determine specific QA program
applicability.

CONSTRUCTION	
LIMITED CONSTRUCTION: AS NOTED	
PRELIMINARY NOT FOR CONSTRUCTION	
BIDDING PURPOSES	
DATE	RELEASED FOR
	ENGR

COMPILED	J. T. Chapman	DATE	04/30/84
REVIEWED	R. Calus	DATE	8/18/84
APPROVED		DATE	5/6
REV. NO.	1	DATE	01/21/91

ROCHESTER GAS & ELECTRIC CORP
ELECTRIC SYSTEM PROTECTION
RELAY SETTINGS

NO. 11253-1

SH. 3 OF 11



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ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER N.Y. 14649-0001

ROBERT C. MCCRERY
Vice President
General Manager, Production

TELEPHONE
AREA CODE 548-2700

August 20, 1990

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

Subject: LER 90-008 (Revision 01), 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 10CFR50.73, 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 (Revision 01) is hereby submitted. This revision is necessary to address applicable Technical Specification action statements and to clarify recalibration methodology.

Very truly yours,

Robert C. MCCRERY

Robert C. MCCRERY

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

Ginna USNRC Senior Resident Inspector



FACILITY NAME (1)										DOCKET NUMBER (2)										PAGE (3)					
R.E. Ginna Nuclear Power Plant										0 8 0 0 0 2 4 4										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 NAME					DOCKET NUMBER (9)											
														0 8 0 0 0											
0 5	2 4	9 0	9 0	- 0 0 8	- 0 1 0 8	2 0	9 0							0 8 0 0 0											
OPERATING MODE (1)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)																						
POWER LEVEL (10) 0, 9, 8		20.000W		20.000W(1)		00.73W(12)W		73.71W(1)																	
		20.000W(11)B		00.73W(12)H		73.71W(2)																			
		20.000W(11)S		00.73W(12)M		OTHER (Specify in Appendix B and in Test, HAC Form 386A)																			
		20.000W(11)U	X	00.73W(12)N																					
		20.000W(11)V		00.73W(12)O																					
		20.000W(11)W		00.73W(12)P																					
LICENSEE CONTACT FOR THIS LER (13)																									
NAME Wesley H. Backus Technical Assistant to the Operations Manager										AREA CODE		TELEPHONE NUMBER													
										311 15		51 2141-14 14 141													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC?																
				N																					
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR											
YES (If yes, provide expected submission date)				X NO																					

ABSTRACT 14441 IS 1400 approx. i.e. approximately 17000 approx 19000 approx 19000

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.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED NRC NO. 3150-0104
EXPIRES 8/31/95

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
R. E. Ginna Nuclear Power Plant	0 5 1 0 0 0 2 4 4 9 0	-	0 0 8	-	0 1	0 1 2	OF 0 8

TEXT: If more space is required, use additional NRC Form 308A (11/77)

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:

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED JUNE 40 3150-3104
EXPIRES 8/31 95

UTILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
R. E. Ginna Nuclear Power Plant	0 15 10 0 0 2 4 4	9 0	— 0 0 8	— 0 1	0 13	OF 0	8

TEXT (if more space is required, use additional NRC Form 308A 17)

- o 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.
- o 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 $\pm 5\%$ 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 \pm tolerance allowed by the procedure some of the relays were calibrated to less than the "desired" 103.5 volts which was considered acceptable.
- o 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.
- o 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



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED JMS NO 3150-3104

EXPIRES 8/31/95

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
R. E. Ginna Nuclear Power Plant	0 5 1 0 0 0 1 2 4 4	9 0	- 0 0 8	- 0 1	0 4	OF	0 8

TEXT: If more space is required, use additional NRC Form 306A (11/17)

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. Since the PT-9.1 only tested the reset voltage for each relay an actual recalibration must be performed to determine the "as found" dropout voltage.
- 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. The degraded voltage relay was recalibrated and tested prior to being declared operable, then the four additional relays in question were tested in the same manner. Technical Specification Table 3.5-1, action statement 7, was entered prior to the calibration of each relay and the calibrated relay was subsequently deemed operable following successful completion of PT-9.1. A review of the "as found" calibration date showed that the dropout voltages of the other 4 relays were also below the Technical Specification limit of 103.5 volts. This condition was determined to be reportable in accordance with 10CFR50.73 (a)(2)(i)(B).
- 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.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
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R. E. Ginna Nuclear Power Plant	0 15 10 0 0 2 4 4	9 0	— 0 0 8	— 0 1	0 5	OF	0 8

TEXT: If more space is required, use additional NRC Form 306A (11/77)

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

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-3104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		0 1 5 1 0	0 1 0 2	4 4	9 0	— 0 0 8	— 0 1 0 6 OF 0 8

R. E. Ginna Nuclear Power Plant

TEXT IF MORE SPACE IS REQUIRED, USE SEPARATE NRC Form 305A (11-17)

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 \pm 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:



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
R. E. Ginna Nuclear Power Plant	0 15 10 0 0 2 4 4	9 0	- 0 0 8	- 0 1	0 17	OF 0	8

TEXT IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC Form 358A (11/77)

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:

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

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
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R. E. Ginna Nuclear Power Plant	0 15 10 10 0 12 4 4	9 0	- 0 0 8	- 0 1	0 8	OF	0 8

TEXT: If more space is required, use additional NRC Form 306A's (17)

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- o 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.
- o Any relays calibrated after April 25, 1990, will be identified. The results of these calibrations will be reviewed for generic concerns with test conditions.
- o An analysis will be performed to obtain the optimum setpoint and setpoint tolerance for the Degraded Voltage Relays.
- o Calibration procedure PR-1.1 will be revised to incorporate these new setpoints and setpoint tolerances.
- o 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.

ROCHESTER GAS & ELECTRIC CORPORATION
CAR Meeting Report
Ginna Station
July 24, 1990

CAR#: 2010, Setpoint Tolerances on degraded Voltage Relays

DATE OF MEETING: June 22, 1990

ATTENDEES: T. Miller B. Calus D. Miller
 S. Bryant H. Curry D. Morrill
 S. Adams G. Joss N. Goodenough
 J. St.Martin

COPY TO: Attendees S. Spector B. Mecredy
 T. Marlow J. Bodine M. Lilley
 J. Widay J. Hauber R. Sperduto
 C. Forkell P. Wilkens P. Brown
 T. Harding D. Gent C. Edgar
 M. Farnan B. Popp J. Fischer
 P. Swift C. Rauber

- ACTIONS:
1. Draft LER 90-008 was reviewed and modified. In particular, Part V, Corrective Action, was rewritten.
 2. New actions are added to CAR 2010 to track these NRC commitments. See Actions 08 through 14. Note that Actions 08 and 10 are already completed.
 3. See the attached CAR action plan. Target Completion Dates have been assigned, mostly based on schedules discussed at a previous CAR meeting. If these TCDs are not correct, please notify me, so that I can update the CAR database.

J. T. St. Martin
(J. T. St. Martin
Corrective Action Coordinator

JTS:jts

- a. CAR # 2010 Date 05/25/90 Ref. Doc.: A-25.1 #90-051
b. Reported by: S. Adams Verified by: J. St.Martin
c. NRC Reporting: Yes Report #: LER 90-008
d. Organization Affected: Ginna/Electric T & D
e. Identification of condition:

Several Undervoltage relays (27 and 27B) for busses 14, 16, 17, and 18, were found to be calibrated below the requirements of Technical Specifications.

f. Description of Condition:

Several Undervoltage relays (27 and 27B) for safeguards busses 14, 16, 17, and 18, were found to be calibrated below the requirements of Tech. Spec. Figure 2.3-1.

Method of Detection: Periodic Testing

Apparent Cause: To Be Determined

Imposed Restrictions: None

Activity/Organization restricted:

Date imposed:

Authority:

Restriction details:

g. PORC Review Date(s):

h. Assigned Responsibilities:

Cause Investigation: _____

Corrective Action Plan Interim: _____

Final: _____

Action Plan Implementation Interim: _____

Final: _____

i. Final PORC Review Date: _____

j. Quality Assurance Review: _____

Date: _____

k. Stop Work Released By: _____

Date: _____

l. Closeout Approval: _____

Date: _____

Central Records Category: 5.6

m. Cause Investigation:

A meeting was held on 05/29/90. This event will result in LER 90-008. A corrective action plan was agreed to. (J. St.Martin - 06/04/90)

Based on a meeting held on 06/22/90 to review draft LER 90-008, commitments were made to the NRC. Additional concerns were expressed concerning any generic concerns for setpoint tolerances. The root cause was determined to be inadequate setpoint tolerance on a Tech Spec Setpoint. See new Actions 08 through 14. (J. St.Martin - 07/24/90)

Completed by: J. St.Martin

Date: 06/04/90

Attachment: _____

n. Corrective Action Plan

ITEM	DESCRIPTION	RESP GROUP	TCD	ACD
01	Provide sequence of events for this concern to Operations.	TECH-RT	06/08/90	06/15/90
02	Provide determination of root cause to Operations.	TECH-MGMT	06/08/90	06/15/90
03	Provide list of recommended corrective actions to Operations.	TECH-MGMT	06/08/90	06/15/90
04	Prepare draft LER 90-008 for the problem with undervoltage relays.	OPER	06/18/90	06/18/90
05	Review draft LER 90-008 with MOPAR, Engineering, and Electric T&D personnel.	TECH-MGMT	06/20/90	06/22/90
06	Submit LER 90-008 to the Division Manager, Nuclear Production. NRC Due Date is 06/25/90.	PM-CA1	06/22/90	06/25/90
07	Review LER 90-008, and determine root cause. Revise this plan.	PM-CA1	07/15/90	07/24/90
08	Evaluate the test conditions that existed on 04/26/90, for impact on the relay calibrations.	JEFF ROAD	06/25/90	06/25/90
09	Based on the evaluation from Action 08, recommend improvements in this testing and calibration.	JEFF ROAD	10/01/90	
10	Identify any relays calibrated after 04/25/90, and review the results of these calibrations for generic concerns with test conditions.	JEFF ROAD	06/25/90	06/25/90
11	Perform an analysis to obtain the optimum setpoint and setpoint tolerance for the Degraded Voltage Relays.	ENG-ELEC	09/01/90	



CAR 2013
1262

- 12 Revise PR-1.1 to incorporate new setpoints and setpoint tolerances. TECH-RT 10/01/90
- 13 Incorporate a new testing methodology into PT-9.1. TECH-RT 09/01/90
- 14 Evaluate the setpoint tolerances for similar Ginna relays, (especially any relays that have Tech Spec setpoints), to determine if there is a generic concern in this area. ENG-ELEC 12/01/90

Completed by: W. T. J. J. J. J. Date: 7-27-90 Attachment: _____

o. 10 CFR 21 Evaluations Required: _____ YES _____ NO

Determined by: _____ Date: _____

p. Action Plan Implementation: _____ Initial _____ Interim _____ Final

Item # Response

Completed by: _____ Date: _____ Attachment: _____





NEW
YORK
STATE

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001

TELEPHONE
AREA CODE 716 546-2700

June 25, 1990

Dear Jack St. Martin:

In regards to testing of the Degraded Voltage Relays on April 26, 1990, one observation in particular was noted. On that date, the voltage supplied to the trailer was fluctuating heavily while the PR1.1 was performed. This was noticed on the Dranetz Polymeter (voltmeter).

The five undervoltage relays calibrated that day were the only relays to be effected. No other relays were calibrated after this date or five days prior to this date.

Dave Miller
Relay Maintenance foreman
Electric Substations Department

DM/mje

R

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001

CAR 2010

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. Mccredy
Robert C. Mccredy
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

APPROVED CAGE NO. 3122-0104
EXPIRES - 9/31/83



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/95

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R.E. Ginna Nuclear Power Plant	0 5 0 0 0 2 4 4	9 0	- 0 0 8	- 0 0	0 2	OF	0 8

TEXT (If more space is required, use additional NRC Form 388A's) (17)

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:

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES 8/31/95

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
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		90	008	00	03	OF	08

R.E. Ginna Nuclear Power Plant

050024490-008-0003 OF 08

TEXT (if more space is required, use additional NRC Form 386A's) (17)

- o 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.
- o 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 $\pm 5\%$ 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 \pm tolerance allowed by the procedure some of the relays were calibrated to less than the "desired" 103.5 volts which was considered acceptable.
- o 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.
- o 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

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO 3150-0104
EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
R.E. Ginna Nuclear Power Plant	0 5 0 0 0 2 4 4	9 0	- 0 0 8	- 0 0	0 4	OF	0 8

TEXT (If more space is required, use additional NRC Form 306A's (117))

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.

- o 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.
- o 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.
- o 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.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104
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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
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		0 5 0 0 0 2 4 4 9 0	— 0 0 8	— 0 0	0 5	OF	0 8

TEXT IF more space is required, use additional NRC Form 305A's (17)

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

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (2)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
R.E. Ginna Nuclear Power Plant	0 5 1 0 0 0 2 4 4	9 0	0 0 8	0 0	0 6	OF	0 8

TEXT (If more space is required, use additional NRC Form 388A's) (17)

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 \pm 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:



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
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R.E. Ginna Nuclear Power Plant	0 5 0 0 0 2 4 4	9 0	- 0 0 8	- 0 0	0 7	OF	0 8

TEXT (If more space is required, use additional NRC Form 308A's) (17)

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:

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

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
R.E. Ginna Nuclear Power Plant	0 5 0 0 0 2 4 4 9 0	—	0 0 8	—	0 0	0 8	OF 0 8

TEXT (If more space is required, use additional NRC Form 306A's) (17)

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- o 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.
- o Any relays calibrated after April 25, 1990, will be identified. The results of these calibrations will be reviewed for generic concerns with test conditions.
- o An analysis will be performed to obtain the optimum setpoint and setpoint tolerance for the Degraded Voltage Relays.
- o Calibration procedure PR-1.1 will be revised to incorporate these new setpoints and setpoint tolerances.
- o 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.



ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001



TELEPHONE
AREA CODE 716 546-2700

June 25, 1990

Dear Jack St. Martin:

In regards to testing of the Degraded Voltage Relays on April 26, 1990, one observation in particular was noted. On that date, the voltage supplied to the trailer was fluctuating heavily while the PR1.1 was performed. This was noticed on the Dranetz Polymeter (voltmeter).

The five undervoltage relays calibrated that day were the only relays to be effected. No other relays were calibrated after this date or five days prior to this date.

Dave Miller
Relay Maintenance foreman
Electric Substations Department

DM/mje

ROCHESTER GAS & ELECTRIC CORPORATION
CAR Meeting Report
Ginna Station
June 4, 1990

CAR#: 2010, Undervoltage Relays

DATE OF MEETING: May 29, 1990

ATTENDEES:	D. Gent	C. Rauber	J. St.Martin
	M. Farnan	G. Joss	S. Adams
	B. Popp	T. Miller	B. Calus
	P. Swift	G. Dann	J. Widay

COPY TO:	Attendees	S. Spector	B. Mecredy
	T. Marlow	J. Bodine	M. Lilley
	J. Widay	W. Backus	C. Forkell
	P. Wilkens	P. Brown	C. Edgar
	T. Harding	R. Davis	T. Schuler
	G. Wrobel	J. Hauber	

- ACTIONS:
1. Background data and the calibration history of the 27 and 27B relays were discussed. There is a lack of documentation for the setpoints for these relays, which dates from the original installation of these relays under EWR 1444.
 2. It appears that procedure PR-1.1 has not been compared with Tech Spec 2.3.3, and that these relays have recently been recalibrated BELOW the limits of Tech Spec 2.3.3.
 3. An Interim Action Plan was agreed to, to support preparation of LER 90-008. More detailed actions were discussed:
 - a. The need for test acceptance criteria for the monthly PT-9.1 test.
 - b. The usefulness of PT-9.1 data in determining the operability of these relays.
 - c. The basis for setpoints to be used for annual calibration using PR-1.1.
 - d. The stability of the test voltage source used at Ginna during on-site calibration.These actions will be discussed in more detail during the review of draft LER 90-008.
 4. See the attached CAR action plan.

J. T. St. Martin
J. T. St.Martin

Corrective Action Coordinator

JTS:jts



- a. CAR # 2010 Date 05/25/90 Ref. Doc.: A-25.1 #90-051
b. Reported by: S. Adams Verified by: J. St.Martin
c. NRC Reporting: Yes Report #: LER 90-008
d. Organization Affected: Ginna/Electric T & D
e. Identification of condition:

Several Undervoltage relays (27 and 27B) for busses 14, 16, 17, and 18, were found to be calibrated below the requirements of Technical Specifications.

f. Description of Condition:

Several Undervoltage relays (27 and 27B) for safeguards busses 14, 16, 17, and 18, were found to be calibrated below the requirements of Tech. Spec. Figure 2.3-1.

Method of Detection: Periodic Testing

Apparent Cause: To Be Determined

Imposed Restrictions: None

Activity/Organization restricted:

Date imposed:

Authority:

Restriction details:

g. PORC Review Date(s):

h. Assigned Responsibilities:

Cause Investigation: _____

Corrective Action Plan Interim: _____

Final: _____

Action Plan Implementation Interim: _____

Final: _____

i. Final PORC Review Date: _____

j. Quality Assurance Review: _____

Date: _____

k. Stop Work Released By: _____

Date: _____

l. Closeout Approval: _____

Date: _____

Central Records Category: 5.6



CORRECTIVE ACTION REPORT

CAR # 2010

06/04/90

Page 2

m. Cause Investigation:

A meeting was held on 05/29/90. This event will result in LER 90-008.
A corrective action plan was agreed to. (J. St.Martin - 06/04/90)

Completed by: J. St.Martin

Date: 06/04/90

Attachment: _____

n. Corrective Action Plan
ITEM

	DESCRIPTION	RESP GROUP	TCD	ACD
01	Provide sequence of events for this concern to Operations.	TECH-RT	06/08/90	
02	Provide determination of root cause to Operations.	TECH-MGMT	06/08/90	
03	Provide list of recommended corrective actions to Operations.	TECH-MGMT	06/08/90	
04	Prepare draft LER 90-008 for the problem with undervoltage relays.	OPER	06/18/90	
05	Review draft LER 90-008 with MOPAR, Engineering, and Electric T&D personnel.	TECH-MGMT	06/20/90	
06	Submit LER 90-008 to the Division Manager, Nuclear Production. NRC Due Date is 06/25/90.	PM-CA1	06/22/90	
07	Review LER 90-008, and determine root cause. Revise this plan.	PM-CA1	07/15/90	

Completed by: J.T.H. MartinDate: 6-4-90

Attachment: _____

o. 10 CFR 21 Evaluations Required: _____ YES _____ NO

Determined by: _____

Date: _____

p. Action Plan Implementation: _____ Initial _____ Interim _____ Final

Item #Response

Completed by: _____

Date: _____

Attachment: _____



PRELIM.

A-25.1:6

CAR 2010

GINNA STATION EVENT REPORT
(Refer to A-25.1 for Instructions)

A. CONDITIONS PRIOR TO EVENT:

EVENT NUMBER: 90-51

Plant operating @ 100% power, performing PR-1.1
480 Volt Undervoltage and Ground Alarm Scheme.

B. BRIEF DESCRIPTION OF EVENT: TIME OF EVENT: 1115 DATE: 5/24/90

(Include pertinent alarms and parameters. Use additional sheets as necessary).

Stemming from data that was obtained during the performance of PT-9.1 (Monthly 480 volt vital bus UV testing) and a desire to validate the calibration of the associate relays, PR-1.1 was performed for relays 27/14, 27B/16, 27/17, 27B/17 and 27/18. PR-1.1 revealed that all five relays were calibrated such that relay actuation would not occur within the limits of Tech. Spec. ~~figure~~ ^{page} 2.3-10, figure 2.3-1. All five relays were recalibrated and tested utilizing PT-9.1. The relays were restored to service upon completion of testing.

Reporting Individual: DEJ

Position: R&T Supervisor

Date: 5/24/90

GINNA STATION EVENT REPORTSHIFT SUPERVISOR ASSESSMENT:EVENT NUMBER: 90-51

1. Technical Specification Violation?

If "Yes" or "Possible", list applicable section(s) of Technical Specifications.
If "No", and clarification may be needed, list the applicable section(s) and the basis for no violation.

No ☐ Yes ☒ Possible ☐

Section(s) 2.3.3.2 & 2.3-1
Basis: 5 of 8 Relays were out side of Curve for degraded voltage relays.

2. Reportable to NRC, State, or Counties within 24 hours? (See 0-9.3 for criteria.)

If "Yes", verify that a copy of "0-9.3 Attachment 1" is attached to this A-25.1 report, and list the applicable "Source of Requirement" subparagraph(s), as detailed in 0-9.3.

If "No", and clarification may be needed, list the applicable subparagraph(s).

No ☒ Yes ☐Subparagraph(s) N/A

3. Persons Notified:

a. Duty Engineer	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
b. Shift Technical Advisor	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
c. Operations Manager	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
d. Plant Superintendent	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
e. NRC Resident Inspector	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4) <i>by mail</i>
f. Computer Systems Tech.	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.5) <i>by mail</i>

4. Maintenance Work Request and Trouble Report? No ☒ Yes ☐

If "Yes", list MWRATR # _____

5. Actions Taken (if required):

As stated on prior page, relays were calibrated and tested one at a time.

Head Control Operator: R6

Original: Duty Engineer

Copy: Operations Manager
QC Engineer
Shift Technical Advisor
NPRDS Project Manager

NRC Resident Inspector
Supervisor of Nuclear Plant Security
Shift Supervisor
Maintenance Planning & Scheduling Manager

Control Room Foreman: [Signature]Shift Supervisor: [Signature]

Jack,

A-25.1:6

CAR 2010

GINNA STATION EVENT REPORT
(Refer to A-25.1 for Instructions)

A. CONDITIONS PRIOR TO EVENT:

EVENT NUMBER: 90-51

Plant operating @ 100% power, performing PR-1.1
480 Volt Undervoltage and Ground Alarm Scheme.

B. BRIEF DESCRIPTION OF EVENT:

TIME OF EVENT: 1115 DATE: 5/24/90

(Include pertinent alarms and parameters. Use additional sheets as necessary).

Stemming from data that was obtained during the performance of PT-9.1 (Monthly 480 volt vital bus UV testing) and a desire to validate the calibration of the associate relays, PR-1.1 was performed for relays 27/14, 27B/16, 27/17, 27B/17 and 27/18. PR-1.1 revealed that all five relays were calibrated such that relay actuation would not occur within the limits of Tech. Spec. ~~figure~~ ^{page} 2.3-10, figure 2.3-1. All five relays were recalibrated and tested utilizing PT-9.1. The relays were restored to service upon completion of testing.

Reporting Individual: DeJon

Position: R&T Supervisor

Date: 5/24/90



GINNA STATION EVENT REPORTSHIFT SUPERVISOR ASSESSMENT:EVENT NUMBER: 90-51

1. Technical Specification Violation?

If "Yes" or "Possible", list applicable section(s) of Technical Specifications.
If "No", and clarification may be needed, list the applicable section(s) and the basis for no violation.

No ☐ Yes ☒ Possible ☐

Section(s) 2.3.3.2 & 2.3-1
Basis: 5 of 8 Relays which out side of Curve for degraded voltage relays.

2. Reportable to NRC, State, or Counties within 24 hours? (See O-9.3 for criteria.)

If "Yes", verify that a copy of "O-9.3 Attachment 1" is attached to this A-25.1 report, and list the applicable "Source of Requirement" subparagraph(s), as detailed in O-9.3.

If "No", and clarification may be needed, list the applicable subparagraph(s).

No ☒ Yes ☐Subparagraph(s) N/A

3. Persons Notified:

a. Duty Engineer	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
b. Shift Technical Advisor	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
c. Operations Manager	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
d. Plant Superintendent	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4)
e. NRC Resident Inspector	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.4) <i>by mail</i>
f. Computer Systems Tech.	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	(See para. 3.3.5) <i>by mail</i>

4. Maintenance Work Request and Trouble Report? No ☒ Yes ☐

If "Yes", list MWRATR # _____

5. Actions Taken (if required):

As stated on prior page, relays were calibrated and tested one at a time.

Head Control Operator: R6

Original: Duty Engineer

Copy: Operations Manager
QC Engineer
Shift Technical Advisor
NPRDS Project Manager

NRC Resident Inspector
Supervisor of Nuclear Plant Security
Shift Supervisor
Maintenance Planning & Scheduling Manager

Control Room Foreman: [Signature]Shift Supervisor: [Signature]



GINNA STATION EVENT REPORTDUTY ENGINEER ASSESSMENT:EVENT NUMBER: 90-51

1. Technical Specification Violation?

No ☐ Yes ☒

If "Yes", list applicable section(s) of Technical Specifications and the basis for the violation. If "No", and clarification may be needed, list the applicable section(s) and the basis for no violation.

Section(s) 2. 3 3 2
Basis: Outside of curve

2. Reportable to NRC within 24 hours?

(See 0-9.3 for criteria)

No ☒ Yes ☐

If "Yes", verify that a copy of "0-9.3 Attachment 1" is attached to this A-25.1 report, and list the applicable "Source of Requirement" subparagraph(s), as detailed in 0-9.3. If "No", and clarification may be needed, list the applicable subparagraph(s).

Subparagraph(s) _____

3. Reportable to NRC within 30 days? (See A-25.6 for criteria.)

No ☐ Yes ☒ Possible ☐

If "Yes" or "Possible", list the applicable "Source of Requirement" subparagraph(s), as detailed in A-25.6. If "No" and clarification may be needed, list the applicable subparagraph(s).

Subparagraph(s) 50.73 (a) (2)(vi)

4. Reportable to NRC in other reports, as listed in Technical Specifications, Section 6.9 or USNRC Regulatory Guide 10.1?

No ☒ Yes ☐ Possible ☐

If "Yes" or "Possible", notify PORC for the potential need to notify the NRC.

5. Procedure Inadequacy?

No ☐ Yes ☒ Possible ☐

If "Yes" or "Possible", list affected procedure(s) PR-1.1

6. Root Cause Determined?

Yes ☐ No ☒

If "No", notify PORC for the need to determine the root cause.

Root Cause TO BE DETERMINED BY CAR 20107. Incident resulted in complete loss of plant electrical output No ☒ Yes ☐

a. If "Yes", was loss due to either personnel error or design flaw?

No ☐ Yes ☐

b. If "Yes" to both 7 and 7a, then complete A-25.7, Electric System Incident Report

8. Actions taken (if required): To be tracked by CAR 2010

9. Forward this report to Plant Superintendent.

Duty Engineer: J.T. Martin

GINNA STATION EVENT REPORT

PLANT SUPERINTENDENT REVIEW:

EVENT NUMBER: 90-51

1. Concurrence with Action Taken? Yes ☒ No ☐
2. Concurrence that Root Cause has been determined. Yes ☒ No ☐
- a. If "No", then assign responsibility for Root Cause Determination, or mark "N/A" Responsibility: _____ N/A ☐
3. CAR/NCR Required? No ☐ Yes ☒
- If "Yes", list # 2010
4. PORC Review and Recommendations
- a. Technical Specification Violations? No ☐ Yes ☒
- 1) If "Yes", is it reportable to NRC, or SVP, or NSARB? SVP or NSARB No ☐ Yes ☐
NRC No ☐ Yes ☐
- b. Potential Safety Hazard? No ☒ Yes ☐
- c. Generic Implication? None ☒ Yes ☐
- 1) If "Yes", is timely notification to other utilities required? No ☐ Yes ☐
- d. Training of Technical Staff Implication? No ☒ Yes ☐
- 1) If "Yes" then send a copy of this report to Training.
- e. Potential 10CFR21 Report? No ☒ Yes ☐
- 1) If "Yes", then list CAR/NCR/AFCAR # CAR/NCR/AFCAR # _____
- f. Other
5. Further Actions Required? None ☐ Yes ☒ _____

Submitted of LER pending - to be tracked via CAR 2010

PORC Meeting #: 90-085 Date: 6/16/90

PORC Secretary [Signature] Date: 6-13-90
(Verification that Part "E" has been performed.)

Original:
Copy:

Central Records
Shift Supervisor
NRC Resident Inspector
Corrective Action Coordinator
Technical Staff Training Coordinator (Only if E.4.d. is checked "Yes")

VOLTAGE RELAY # 27 / BUS 14

PR-1.1 DATA

Dropout Volts	15 Feb 1986	13 Feb 1987	16 Feb 1988	05 Apr 1989	04 Apr 1990	26 Apr 1990	24 May 1990
Found	102.97	103.0	103.4	103.4	103.47	103.47	98.42
Left	102.97	103.0	103.4	103.4	103.47	103.72	103.69

PT-9.1 DATA
(60 Volt Setting)

	19 Mar 1986	17 Feb 1987	20 Feb 1988	18 Apr 1989	12 Apr 1990	11 May 1990	24 May 1990	29 May 1990
Response Time (sec)	22.42	22.21	22.20	22.26	22.24	23.26	21.73	22.11
Reset Voltage	103.8	103.8	104.6	104.2	104.9	100.7	104.8	104.8

** NOTE- The PT-9.1 data is from the first test following the PR-1.1

VOLTAGE RELAY # 27B/ BUS 16

PR-1.1 DATA

Dropout Volts	15 Feb 1986	13 Feb 1987	16 Feb 1988	05 Apr 1989	04 Apr 1990	26 Apr 1990	24 May 1990
Found	103.1	102.9	103.1	103.8	103.3	103.3	102.4
Left	103.1	102.9	103.1	103.8	103.3	103.72	103.68

PT-9.1 DATA
(60 Volt Setting)

	19 Mar 1986	17 Feb 1987	20 Feb 1988	18 Apr 1989	12 Apr 1990	11 May 1990	24 May 1990	29 May 1990
Response Time (sec)	22.52	22.45	22.49	22.31	22.55	23.55	22.14	22.39
Reset Voltage	104.0	104.0	103.9	103.8	103.9	103.5	104.0	104.1

** NOTE- The PT-9.1 data is from the first test following the PR-1.1

VOLTAGE RELAY # 27 / BUS 17

PR-1.1 DATA

Dropout Volts	15 Feb 1986	13 Feb 1987	16 Feb 1988	05 Apr 1989	04 Apr 1990	26 Apr 1990	24 May 1990
Found	103.1	103.1	102.7	103.5	103.5	103.5	102.44
Left	103.1	103.1	102.7	103.5	103.5	103.71	103.63

PT-9.1 DATA
(60 Volt Setting)

	19 Mar 1986	17 Feb 1987	20 Feb 1988	18 Apr 1989	12 Apr 1990	11 May 1990	24 May 1990	29 May 1990
Response Time (sec)	22.78	22.73	22.53	22.64	22.46	23.61	22.34	22.40
Reset Voltage	104.0	103.8	104.1	104.3	103.7	102.9	103.7	103.6

** NOTE- The PT-9.1 data is from the first test following the PR-1.1

VOLTAGE RELAY # 27B/ BUS 17

PR-1.1 DATA

Dropout Volts	15 Feb 1986	13 Feb 1987	16 Feb 1988	05 Apr 1989	04 Apr 1990	26 Apr 1990	24 May 1990
Found	102.9	103.4	102.6	103.3	103.5	103.5	102.66
Left	102.9	103.4	102.6	103.3	103.5	103.74	103.65

PT-9.1 DATA
(60 Volt Setting)

	19 Mar 1986	17 Feb 1987	20 Feb 1988	18 Apr 1989	12 Apr 1990	11 May 1990	24 May 1990	29 May 1990
Response Time (sec)	21.83	21.76	21.51	21.79	22.39	22.40	22.14	22.45
Reset Voltage	104.0	103.9	104.1	103.9	103.6	102.8	103.4	103.7

** NOTE- The PT-9.1 data is from the first test following the PR-1.1



VOLTAGE RELAY # 27 / BUS 18

PR-1.1 DATA

Dropout Volts	15 Feb 1986	13 Feb 1987	16 Feb 1988	05 Apr 1989	04 Apr 1990	26 Apr 1990	24 May 1990
Found	102.9	103.2	103.2	103.4	103.5	103.5	102.2
Left	102.9	103.2	103.2	103.4	103.5	103.65	103.65

PT-9.1 DATA
(60 Volt Setting)

	19 Mar 1986	17 Feb 1987	20 Feb 1988	18 Apr 1989	12 Apr 1990	11 May 1990	24 May 1990	29 May 1990
Response Time (sec)	21.95	22.11	22.90	22.96	22.82	23.81	22.46	21.74
Reset Voltage	104.1	104.4	104.5	104.1	104.1	102.8	103.8	103.5

** NOTE- The PT-9.1 data is from the first test following the PR-1.1

BDSP1 NRC 1R 9-80

as-found timer values against the UFSAR load running times instead of the established timer setpoints in EWR 4960-1 since the EWR already has considered the UFSAR values in the analysis. Use of the setpoints from the EWR would ensure that all loads, including the subject MOVs, are properly evaluated. The licensee agreed that the ~~EWR criteria will be incorporated into the RSSP-2.7.2 procedure.~~ The out-of-band MOV timer values were subsequently evaluated and were determined to be adequate such that the swing SI pump IC would still have been able to operate during an accident since there was sufficient margin in the setpoint value.

The team had no further questions.

COPY TO: CAR 2010
CAR 2022
CAR 2040
SEE A-25.1 # 9/1-62

4.3.3 Undervoltage and Degraded Voltage Relays

Ginna Station Technical Specifications (TS) Section 2.3 specifies the Limiting Safety System Settings for Protective Instrumentation. Section 2.3.3.1 specifies that 480 V undervoltage relays will be tested to ensure that they operate in accordance with their design characteristics. Figure 2.3-1 identifies the loss of voltage and undervoltage relay operating ranges. In accordance with TS Table 4.1-1, each channel is required to be tested on a monthly basis and calibrated every refueling outage.

Ginna Station procedure PT-9.1 "Undervoltage Protection - 480 Volt Safeguard Busses" provides instructions for testing the operability of the loss of voltage and degraded voltage relays associated with 480 V Safeguard buses 14, 16, 17, and 18. This procedure implements the TS monthly surveillance test requirements. Procedure PR-1.1 "Protective Relay Calibration 480 V Undervoltage and Ground Alarm Scheme For Buses 14, 16, 17 and 18" provides instructions for the calibration of protective relays. It implements the refueling outage TS Surveillance requirement.

Review of procedure PR-1.1 calibration results performed during the 1991 refueling outage (March 1991) indicated that three (3) as-found relay values were below the TS limits specified in TS Figure 2.3-1. Specifically, the as-found relay dropout voltage settings were less than the TS limit of 103.5 V (equivalent to 414 V at the 480 V buses). These are denoted below.

<u>Relay</u>	<u>As-Found Dropout [V]</u>	<u>Voltage at 480 V Bus</u>
27B/14	103.39	413.6
27/16	103.07	412.3
27B/18	103.38	413.5

Although the above as-found values were below the TS limits, ~~the results review performed by the licensee did not identify this condition.~~ Therefore, no evaluation was performed to determine whether safety-related motors would still have been able to operate at reduced voltages prior to the relays dropping out. In response to the team's concern, the licensee performed an evaluation and determined that no adverse effect on the safety related motors would result due to the small voltage deviation. In addition, the licensee initiated a

A-25.1 # 97-62
Ginna Station Event Report to document and evaluate the above condition for reportability.

Procedure PR-1.1 "Protective Relay Calibration 480 V Undervoltage and Ground Alarm Scheme for Buses 14, 16, 17 and 18", section 5.3 requires an I&C/Electrical Equipment Failure Safety Related Report be prepared to evaluate those relays that exceed the calibrated tolerance.

Failure to prepare the I&C/Electrical Equipment Failure Safety Related Report for the protective relays described above constitutes a violation of Ginna Technical Specifications, Section 6.8.1, which requires that written procedures be established and implemented for surveillance and test activities of safety related equipment (50-244791-80-04).

4.4 Conclusion

The licensee has implemented controls to maintain electrical system configuration. Equipment inspected was observed to be well-maintained and an effective fuse control program was evident. The development of the molded case circuit breaker test program is ongoing. The testing attributes being addressed are comprehensive and thorough. A deficiency was identified in handling the as-found data of the protective relay testing. The dropout voltage settings of three protective relays drifted below the Technical Specification limits during the 1991 refueling outage yet no evaluation was performed as required by station procedures.

5.0 Engineering and Technical Support

The team assessed the capability and performance of the licensee's organization to provide engineering and technical support by examining the interfaces between the technical disciplines internal to the engineering organization and the interfaces between the engineering organization and the technical support groups responsible for plant operations.

The team also reviewed a sampling of the licensee's Potential Conditions Adverse to Quality (PCAQ) reports, Nonconformance Reports (NCRs), Licensee Event Reports (LERs), major, minor and temporary modification programs, training, quality assurance (QA) audits, root-cause investigation and corrective action programs, and self assessment programs.

5.1 Organization and Key Staff

The Engineering and Technical support for the Ginna Station is provided by the Corporate Nuclear Engineering Services staff at Rochester, New York, the Site Technical Engineering group and Site Modification Support group.

The Corporate Nuclear Engineering Services group is headed by the Manager, Nuclear Engineering Services. The Corporate Engineering support for the electrical distribution system is provided by the Electrical Engineering group within Nuclear Engineering Services Division. The Site Technical Engineering

ROCHESTER GAS AND ELECTRIC CORPORATION

ELECTRIC SUBSTATIONS DEPARTMENT

INTER-OFFICE CORRESPONDENCE

August 7, 1990

CAR # 2010	ITEM # 09
ANSWER	ADMIN.
ACD	8-7-90
FILE ONLY	
TCD	
REVIEWER: J. Martin	

TO: Jack St. Martin

This letter is in regards to the requirements and desires for a Relay Section test area at Ginna. Our 1990 problems are apparent, but there also were problems in 1989, while we were located in the mux room. I can supply details if you request them.

The following is a list of desirable items:

1. Permanent area for our testing needs and storage of 2 large cabinets. We used to have the aux. oper. room at the end of bus 15.
2. D.C. power supply (125 volt) - until we lost our other spot, we used battery voltage from the station batteries. The last two years we had to use a large battery charger (we had to transport it).
3. A.C. power supply shall be a regulated supply, free from great fluxuations caused by system loading etc. I believe 50 amps would suffice. A separate 15 amp circuit is also needed for various other power needs (nonregulated is ok).
4. The room should be approximately 225 sq. ft. (15 x 15 for example) to accommodate 4 test personnel, 4 tables, test equipment and 2 permanent cabinets for storage.
5. The room should be near the relays to be tested - most are in east end of building by the 4Kv gear, main control board, diesel rooms, screen house and relay racks.
6. The room should have heat and air conditioning, be quiet, well lit, dry and have easy access because heavy equipment has to be brought in as well as delicate relays.
7. An outside phone and grey page are required.
8. We prefer to be able to eat in the area if possible.

I hope this list will help these needs available before the 1991 outage. At this time our cabinets are buried in the west storage building behind everyone elses supplies. The only way to access the area is to get a supply person to let us in. We do work at Ginna on a monthly basis as well as shut down and trouble calls and need to access our equipment frequently.

If you have any questions or concerns, please contact me at extension 8415.

Dave Miller
Relay Maintenance Foreman
Electric Substations Department

8-30-90

J. Huber confirmed that this
answers Action 09.

CORRECTIVE ACTION REPORT

Car # 2010

ACTION ITEM 11

M. Cause Investigation / Designation of Apparent Cause:

☐ Attachment

Completed By: _____ Date: _____

N. Corrective Action Plan:

☐ Interim

Date Req'd: _____

☐ Final

CAR # <u>2010</u>	ITEM # <u>11</u>
ANSWER _____	ADMIN. _____
ACD <u>9-6-90</u>	
FILE ONLY _____	
TCD _____	
REVIEWER: <u>[Signature]</u>	

☐ Attachment

Completed By: _____ Date: _____

O. 10C FR21 Further Evaluation Required: ☐ Yes ☐ No

Determined By: _____ Date: _____

P. CA Plan Implementation: *The required analysis was provided under cover of the attached letter dated 9-6-90 from P. Swift to S. Adams. This constitutes the Engineering response to action item 11.*

☒ AttachmentCompleted By: [Signature] Date: 9-7-90

ROCHESTER GAS AND ELECTRIC CORPORATION

INTEROFFICE CORRESPONDENCE

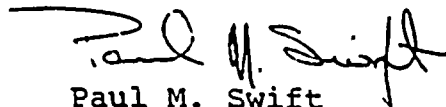
September 6, 1990

SUBJECT: Design Analysis for 480 Volt Undervoltage Relays

TO: Steve Adams
Technical Engineering Manager

Attached is the design analysis which defines New set points and acceptance criteria for the undervoltage relays on the 480 volt 1E busses at Ginna. The analysis specifies changes to calibration procedure PR-1.1 for the setting of these relays, and to periodic test procedure PT-9.1 for the monthly testing of these relays. New setpoints were determined to provide margin from the Tech. Spec. operating limits, and new acceptance criteria were defined to assure that these margins would not be exceeded.

If there are any questions or concerns about the analysis, please contact me at ext. 8422.


Paul M. Swift
Electrical Engineering

Attachments

xc: R. Calus w/attach.
G. Joss w/attach.
D. Gent w/attach.
✓T. Miller w/attach.
C. Forkell w/attach.
B. Hunn w/attach.
Document Control File w/o attach.
Electrical Engineering File w/o attach.

13N1-RR-L2942

LIST OF CAR ACTIONS
COMING DUE IN THE
NEXT WEEK

CAR #	ITEM#	GROUP	DUE DATE	ACTION REQUIRED
2010	01	TECH-NONE	05/11/91	Provide Control room alarm for increased PCN pressure (less than current 410 psia setpoint).
2010	12	TECH-RT	02/01/91	Revise PR-1.1 to incorporate new setpoints and setpoint tolerances.
2010	13	TECH-RT	02/01/91	Incorporate a new testing methodology into PT-9.1.

The following procedures were changed to comply with the action required as per CAR-2010.

PCN# 91-4004 PR-1.1 new setpoints/tolerances
effective date 1/11/91

PCN# 91-4005 PT-9.1 New Test methodology
effective date 1/18/91

All items are
complete

SEJ
4/4/91

CAR # 2010	ITEM # 12, 13
ANSWER _____	ADMIN. _____
ACD 12: 1-11-91	13: 1-18-91
FILE ONLY _____	
TCD _____	
REVIEWER: <i>JTB</i>	



ROCHESTER GAS AND ELECTRIC CORPORATION
INTEROFFICE CORRESPONDENCE

November 15, 1990

SUBJECT: CAR 2010, Action Item 14

TO: Jack St. Martin

CAR 2010, Item 14 required engineering to evaluate the setpoint tolerances for Ginna relays similar to the undervoltage relays to determine if there is a generic concern in this area. A review of Ginna's Technical Specifications and setpoint tolerances have not identified any generic concerns.

Theodore H. Miller
Theodore H. Miller
Electrical Engineer

NC: C. Forkell
N. Love
Elec. Eng. File

13N1-RR-L3012

CAR # 2010	ITEM # 14
ANSWER _____	ADMIN. _____
ACD _____	11-15-90
FILE ONLY _____	
TCD _____	
REVIEWER: <i>J. St. Martin</i>	

