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October 11, 1985

Mr. James Taylor  
Nuclear Regulatory Commission  
Director of Inspection and Enforcement  
EWW/357  
Washington, DC 20555

Subject: ' 10CFR-21 Final Report on  
Rochester Instrument Systems - PR-2035  
QA ID No. 85-001-A

Gentlemen:

Attached please find our final report of defective Rochester Instrument Systems' PR-2035 in accordance with 10CFR-21 procedure.

Sincerely,

ROCHESTER INSTRUMENT SYSTEMS, INC.

*A. Wayne Engbrecht*  
A. Wayne Engbrecht  
Manager of Quality Assurance

AWE/kak

Attachment

cc: Mr. K. R. Naidu  
Nuclear Regulatory Commission  
EWW/357  
Washington, DC 20555

Mr. J. Carney  
Stone & Webster Corp.  
P.O. Box 2325  
Boston, MA 02107

*UPB for follow*

*\* 85-339  
85-428*

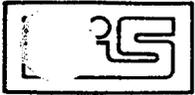
**ROCHESTER INSTRUMENT SYSTEMS, INC.**  
255 North Union Street, Rochester, New York 14605 U.S.A.  
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Canada:  
915 Kipling Avenue  
Toronto M8Z 5H4

*IE19*

Mr. James Taylor  
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cc: Mr. B. R. McCaffrey  
Project Engineer  
LILCO Project Office  
Shoreham Nuclear Power Station  
P.O. Box 618  
North Country Rd.  
Wading River, NY 11792

Mr. K. Shott  
Virginia Electric Power Corp.  
P.O. Box 26666  
Richmond, VA 23261

Supervisor, Quality Assurance Operation  
Baltimore Gas & Electric Co.  
Calvert Cliffs Nuclear Power Plant  
Lusby, MD 20657

Supervisor, Quality Assurance Operation  
Public Service Electric & Gas  
Salem Nuclear Generating Station  
200 Boyden Ave.  
Maplewood, NJ 07040

Mr. S. Rogoff - RiS  
Mr. T. Brown - RiS  
Mr. C. Buehler - RiS  
Mr. D. Hollands - RiS  
Mr. D. Seward - RiS  
Mr. C. Tomlinson - RiS  
Ms. D. Wood - RiS

REPORT OF DEFECTS AND NON-COMPLIANCE PER NRC 10CFR-21

A. Receipt of Information:

From: Stone & Webster Corp. Phone No: Unknown  
Address: P.O. Box 2325 Date: May 6, 1985  
Boston, MA 02107 Plant: Shoreham Nuclear Power  
Station Unit 1 - LILCO  
Reported by: J. Carney Title: Project Engineer  
  
Project: J. O. No. 11600.02  
Reference No: File Nos. 242.5, 242.41.1

Defect/Description of Problem: PR-2035 Under Voltage Relays have exhibited a  
tendency to drift from the designated set point and/or inability to maintain  
deadband adjustment. (Published specifications on Deadband Adjustments =  
Independent blind set from 0.5% to 10% of input range.)

Received by: Ms. D. J. Wood - Contracts

B. Action Plan for Evaluation/Investigation: Scheduled by: July 15, 1985  
Date  
LILCO to return 3 PR-2035 units for RiS to conduct "As Found Condition" tests.  
Units received at RiS September 3, 1985.

C. Evaluation: As found tests showed minimum deadband was out of tolerance as  
follows: S/N 71232-2 @ 1.4VAC, S/N 71232-3 @ 0.7VAC, S/N 71232-6 @ 0.9VAC  
(spec. computes to 0.6VAC). Also the L.E.D.'s associated with relays K1  
(High Trip) and K2 (Low Trip) exhibited a condition in which the L.E.D. would  
not consistently track the relay action.

D. Notification to NRC? Yes By Date: 9/25/85

Problem Not Generic - No Notification Required (Comments): \_\_\_\_\_

E. Probable Cause: Evaluation of the PR-2035 and its application showed that both circuitry and specification changes are necessary to insure proper operation.

F. Recommendation/Corrective Action: Rochester Instrument Systems will replace within the next 6 to 9 months the PR-2035 units sold under NRC-10CFR-50 and 10CFR-21 requirements. Customer and quantities are LILCO 17 units, VEPCO 59 units, PG&E 18 units and PSE&G 21 units. Continued on attached sheet.

G. Scheduled Corrective Action Completion Date: Complete replacements by July 31, 1986.

H. Approvals:

<u>A. Wayne Engbrecht</u> Manager of QA	<u>10/11/85</u> Date	<u>Sal H. Tomlinson</u> Product Manager	<u>10/14/85</u> Date
<u>J. H. Neelands</u> V.P. Engineering	<u>10/11/85</u> Date		

I. Follow Up/Verification: \_\_\_\_\_

Verified by: \_\_\_\_\_  
Title Date

Approved by: \_\_\_\_\_  
Date

J. Customer Notification Required: Yes \_\_\_\_\_ No \_\_\_\_\_

Completed by: \_\_\_\_\_  
Name Title Date

Send NRC Notifications to: Mr. James Taylor  
Nuclear Regulatory Commission  
Director of Inspection & Enforcement  
EWW/357  
Washington, DC 20555

cc: K. R. Naidu  
IE/VPB

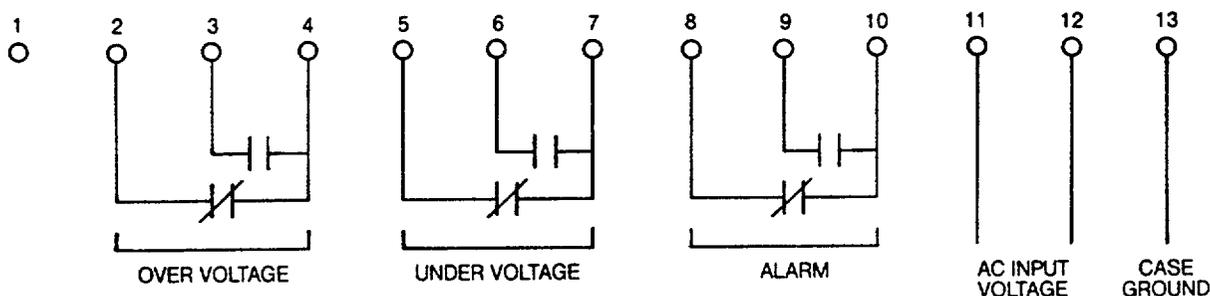
Recommendation/Corrective Action - (cont'd)

The new replacement units will have the latest product enhancements to meet the specifications.

Attached is the latest PR-2035 Product Data Bulletin with the changes highlighted and are further listed as follows for comparison purposes:

<u>SPECIFICATION</u>	<u>LATEST BULLETIN FCP 3/85 5M</u>	<u>PREVIOUS BULLETIN NA/C/5/380.</u>
Input Signal P4 Option	55-90VAC	50-90VAC
Input Frequency	50/60Hz	50-500Hz
Deadband Adjustment Independent Blind Set	< 1.0% to >10% of Input Range	0.5% to 10% of Input Range
Temperature Influence <u>±.5% Set Point Stability</u>	-20°C to 60°C	-20°C to 65°C
Operating Temperature Range	-20°C to 60°C	-20°C to 65°C

# Connection Diagram



ALL RELAYS SHOWN DE-ENERGIZED

## Specifications

### Input Signal:

OPTION	INPUT RANGE (vac)	BURDEN @ 50/60 HZ
P1	85-150	5/6 va @ 120 vac
P2	170-300	5/6 va @ 240 vac
P3	300-550	5/6 va @ 480 vac
P4	55-90	5/6 va @ 70 vac

### Input Frequency: 50/60 Hz

**Outputs:** three independent SPDT relays for over-voltage, under-voltage, and alarm

**Output Contact Rating:** 10 amp @ 120 Vac, non-inductive, 5 amp @ 240 Vac, non-inductive, 2.5 amp @ 480 Vac, non-inductive, 10 amp @ 70 Vac, non-inductive, 10 amp @ 28 Vac, non-inductive

**Output Response Time:** 0.5 seconds, maximum

**Tip Adjustments:** over-voltage and under-voltage set points are adjustable over complete input range, blind set

**Leadband Adjustments:** independent blind-set from <1.0% to >10% of input range

### Alarm Delay Adjustments:

OPTION	DELAY RANGE
T1	0 to 18 seconds, blind set
T2	0 to 180 seconds, blind set

**Alarm Status Lamps:** three LED lamps, over-voltage, under-voltage and alarm

**Repeatability:** ±0.1%, maximum at 25°C

**Temperature Influence:** ±0.5% set point stability from -20°C to +60°C

**Operating Temperature Range:** -20°C to +60°C

**Operating Humidity:** 0 to 99% non-condensing

**Surge Withstand Capability:** Per ANSI C37.90a-1974 and BEAMA No. 219

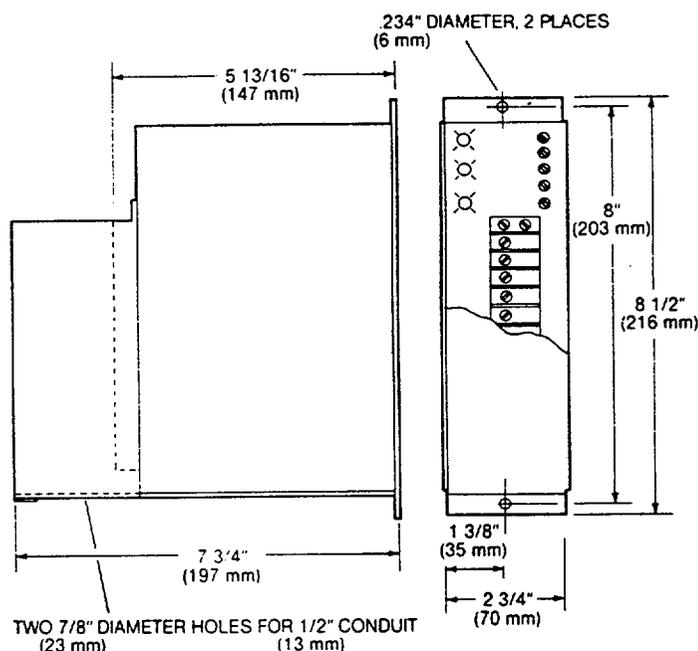
**Dielectric Test:** 2000 v rms

**Size:** See dimension drawing

**Weight:** 3.2 lbs (1.5 Kg)

Because RiS continually strives to improve its products, the specifications printed here are subject to change.

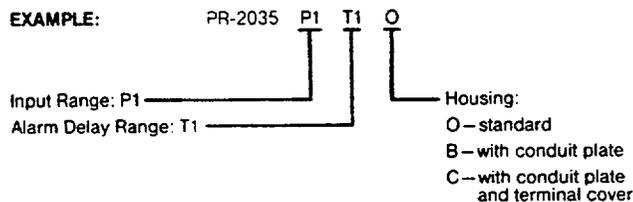
## Outline Dimensions



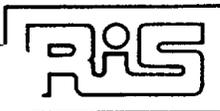
**OPTIONS:** (1) standard, suffix "O" (2) conduit mounting plates, suffix "B" (3) conduit mounting plate and terminal cover, suffix "C"

**ORDERING:** Specify complete Model number and suffixes.

### EXAMPLE:



**WARRANTY** — RiS warrants equipment of its own manufacture to be free from defects in material and workmanship, under normal conditions of use and service, and will replace any component found to be defective, on its return to RiS, transportation charges prepaid, within one year of its original purchase. RiS will extend the same warranty protection on accessories which is extended to RiS by the original manufacturer. RiS also assumes no liability, express or implied, beyond its obligation to replace any component involved. Such warranty is in lieu of all other warranties express or implied.



# ROCHESTER INSTRUMENT SYSTEMS

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