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PENNDel, PENNSYLVANIA 19047 | 215-757-3704

DATE : July 28, 2000

TO : NRC OPERATIONS
Tel: 301-816-5100
Fax: 301-816-5151
→ Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Carolina Power & Light
Attn: Joe Hill - Mgr. Purchasing
Robinson Plant
Highway 151 & SC 23
Hartsville, SC 29550
Tel: 919-546-4286 Fax: 919-546-6750

Carolina Power & Light
Attn: Joe Hill - Mgr. Purchasing
Brunswick Steam Electric Plant
NC Highway 87 North
Southport, NC 28461
Tel: 919-546-4286 Fax: 919-546-6750

South Carolina Electric & Gas
Attn: John Parler - Supvr. Procurement Quality
V.C. Summer Station
Highway 215
Jenkinsville, SC 29065
Tel: 803-345-4318 Fax: 803-345-4270

FROM: PYCO Inc.
Mr. John V. Metzger Jr. - President & CEO
600 E. Lincoln Hwy.
Penndel, PA 19047
Tel: 215-757-3704 Fax: 215-757-3780

Subject: 10 CFR PART 21 - COMPLETION OF CORRECTIVE ACTION for NRC Event# 35406

SUMMARY : PYCO has completed all corrective action activities for NCR Event# 35406. All affected Power Utilities have completed an "Operability Evaluation and Determination of Acceptance" for potential thin-film RTD's in-service. PYCO has completed an x-ray evaluation of all returned in-service or in-stock assemblies and identified those containing the incorrect thin-film sensor. Assemblies found to have been manufactured with the correct wire-wound sensor were inspected, calibrated and returned to the utilities. Any assemblies found to contain the incorrect thin-film sensor were scrapped, and replacement assemblies containing the correct sensor were manufactured and shipped to the utilities.

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As required by 10CFR Part 21, the following information is to provide notification of **CORRECTIVE ACTION COMPLETION** in connection with certain 200 OHM duplex Resistance Temperature Detectors (RTD's) supplied to Carolina Power & Light - Robinson Plant and Brunswick Plant and South Carolina Electric & Gas - V.C. Summer Station:

1. Name and Address of individual informing Commission:

Mr. John V. Metzger Jr. - President & CEO
PYCO Inc.
600 E. Lincoln Hwy.
Penndel, PA 19047

2. Basic Component Supplied:

- . 200 OHM duplex Resistance Temperature Detector (RTD) Assemblies
- . PYCO Part Numbers/Customer Part Numbers - See Attachment A
- . Customer Purchase Order (PO) - See Attachment A
- . PYCO Serial Numbers (S/N) - See Attachment A
- . PYCO Shop Order (SO) - See Attachment A

3. Identification of the Firm supplying the basic component

PYCO Inc.
600 E. Lincoln Hwy.
Penndel, PA 19047



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4. Nature of Deviation

A deviation was detected that a limited number of 200 OHM DUPLEX RTD assemblies have been fabricated by PYCO using THIN-FILM RTD sensors instead of the WIRE-WOUND RTD sensors specified for the assembly.

RTD assemblies fabricated using wire-wound sensors have been tested and qualified by PYCO for nuclear use under our nuclear qualification test program. RTD assemblies fabricated using thin-film sensors have not been tested by PYCO to IEEE-323 and IEEE-344 requirements.

Externally thin-film and wire-wound RTD's have the same physical appearance, shape and electrical characteristics. Both the wire-wound and thin-film sensors meet the requirements of the International Industrial Standard IEC-751, "Industrial Platinum Resistance Thermometer Sensors".

5. Date Detected:

January 25, 1999 - Completion of Engineering Evaluation

Based on a query from our Purchasing Department to our supplier, it was identified that 200 OHM duplex Thin-Film RTD's were supplied for an open Purchase Order.

PYCO utilizes WIRE-WOUND RTD's for Nuclear use. Our Purchasing Department notified our Quality Assurance Department.

Quality requested an evaluation of the acceptability of the Thin-Film RTD's for nuclear use. The research was completed by our Engineering Department. PYCO High Reliability RTD's were qualified for nuclear applications through type testing in accordance with our nuclear qualification test program. All RTD assemblies qualified by the tests were fabricated using wire-wound RTD sensors. Thin-Film RTD assemblies have not been tested by PYCO in our nuclear qualification test program to equipment qualifications as defined in IEEE-323 and IEEE-344, therefore Engineering finds the Thin-Film RTD sensors unacceptable for use in fabrication of Nuclear RTD assemblies at PYCO.



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6. Location of Components:

A. Known locations of nonconforming assemblies:

1. Carolina Power & Light
H B Robinson Steam Plant
Highway 151 and SC 23
Hartsville, SC 29550
2. Carolina Power & Light
Brunswick Steam Electric Plant
NC Highway 87 North
Southport, NC 28461

B. Potential locations of nonconforming assemblies :

1. South Carolina Electric & Gas
V.C. Summer Station
Highway 215
Jenkinsville, SC 29065

7. Corrective Action:

- A. Identify 200 OHM Duplex RTD assemblies supplied to nuclear utilities
 1. Completed review of Nuclear QA Documents for all projects
 2. Identified the "Known and Potential" assemblies using the Thin-Film 200 OHM duplex RTD sensor.
 3. Activity Completed 02/04/99
- B. Review PYCO Purchase Orders to supplier and identify PO's with thin-film RTD's by supplier part numbers.
 1. Activity Completed 01/27/99
- C. Notify nuclear utilities affected by the deviation.
 1. CP&L - Robinson Plant - Notified 02/26/99 via Fax and Mail
 2. CP&L - Brunswick Plant - Notified 02/26/99 via Fax and Mail
 3. SCE&G - VC Summer Sta - Notified 02/26/99 via Fax and Mail



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- D. Contact nuclear utilities to identify existing status (stock, in-service, out-of-service) of PYCO assemblies supplied with a 200 OHM Duplex RTD.
1. CP&L - Robinson Plant - notification from Design Engineer on 03/01/99
 - a. 2 pcs In-Stock
 - b. 6 pcs In-Service
 - c. 7 pcs Previously Removed From Service
 2. CP&L - Brunswick Plant - notification from Project Analyst-letter dated 03/05/99
 - a. 19 pcs In-Stock
 - b. 2 pcs In-Service
 - c. 1 pc Discarded, no action required
 3. SCE&G - VC Summer Station - notification from Quality Engineer on 03/02/99
 - a. 4 pcs In-Stock
 - b. 6 pcs In-Service
 - c. 23 pcs Previously Removed From Service
- E. Generate a document to track replacement of nuclear utility stock and in-service 200 OHM duplex RTD elements manufactured by PYCO.
1. Generated tracking documentation for the return of customer assemblies, x-ray examination, disposition, inspection and return of assemblies to customer.
 2. Activity Completed July 26, 2000
- F. Review all applicable PYCO procedures for RTD sensors in connection with procurement, receiving and manufacturing.
1. Additional requirements provided to Purchasing for all RTD sensors used in Nuclear applications. Purchase Orders shall state that "Sensors Must Be Wire-Wound", and a Certificate of Conformance must be supplied with the order.
 2. Activity Completed 01/28/99



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G. Obtain Operability Acceptance documents from affected Power Utilities

1. CP&L - Robinson Plant -

Operability Determination Document # ESR-99-00077 Rev 0/1 (03/02/99) indicates that "the thin-film and wire-wound sensors are seismically qualified for use at the Robinson Plant."

In addition, "the presently installed RTD's are acceptable for long term use. A review of the production methods, materials and failure history do not indicate any reasons for concern over the operability of the system."

2. CP&L - Brunswick Plant -

CAPS AL No. 99-00513 (03/05/99) "The RTD's are for use in the Drywell Cooling HVAC system which is a non-safety related application. Both the wire-wound and thin-film sensors meet the requirements of the International Industrial Standard IEC-751, Industrial Platinum Resistance Thermometer Sensors and on this basis does not impact the seismic mounting of this device, the calibration or the indications provided."

3. SCE&G - VC Summer Station -

NCN#99-0171 Technical Evaluation Document (03/05/99) indicates that a "Justification for Continued Operations was performed and the plant history with the installed RTD's has not shown a loss of accuracy of these elements. PYCO to provide replacement RTD's in time for the scheduled outage (RF-11). Return any spares to PYCO for evaluation and replacement."

H. Basic Sensor Identification of Returned Assemblies

1. X-rayed all assemblies returned from the customer and determined the type of sensor used in fabrication of the RTD assembly:

- a. Wire-wound RTD assemblies as identified by X-Ray - generate Sales Order for calibration and return wire-wound assembly to customer.
- b. Thin-film RTD assemblies as identified by X-ray - scrap thin-film RTD and generate Sales Order to manufacture replacements for the customer.
- c. Activity Completed - 03/24/00



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- I. Generate Sales Orders for calibration verification or replacement of customer identified in-stock/in-service 200 ohm duplex RTD elements manufactured by PYCO.
1. CP&L Robinson Plant - PYCO P/N 122-4049-6-8
 - 03/02/99 - Notification from CP&L that 6 in-service thin-film assemblies will be replaced during scheduled outages.
 - 06/07/99 -SO# 75105, 8 replacement RTD assemblies supplied to customer.
 - 12/30/99 - 2 in-stock assemblies returned to PYCO for x-ray exam and disposal.
 2. CP&L Brunswick Plant - PYCO P/N 122-1021-(08)-12.0
 - 03/05/99 Notification from CP&L that 2 installed assemblies to remain in-service.
 - 05/27/99 - SO#53301-90, 4 Wire-Wound RTD's,
Calibrated and returned to customer.
 - 06/18/99 - SO#75409, 2 thin-film RTD's scrapped,
Replacement assemblies supplied to customer.
 - 08/03/99 - SO#75408, 4 thin-film RTD scrapped,
Replacement assemblies supplied to customer.
 - 05/30/00 - SO#53301-91, 9 wire-wound RTD's,
Calibrated and returned to customer.
 3. SCE&G - VC Summer Station - PYCO P/N 122-3006-04-12-B-240
 - 03/30/99 -SO#75131, 7 replacement RTD assemblies supplied to customer.
 - 04/26/99 -SO#75131-01, 3 replacement RTD assemblies supplied to customer.
 - 06/30/99 - Customer disposed 6 assemblies during their scheduled outage.
Customer returned 4 assemblies to PYCO for x-ray examination and disposal.

8. Advise Related to Deviation:

- A. The deviation identified is limited only to 200 OHM duplex RTD assemblies for the utilities identified.
- B. All other RTD assemblies fabricated by PYCO, including 100 OHM platinum simplex and duplex RTD's, meet the requirements of IEEE-323 and IEEE-344.
- C. As per manufacturer's documentation, both the wire-wound and thin-film RTD sensors meet the requirements of International Industrial Standard IEC-751, "Industrial Platinum Resistance Thermometer Sensors".

Sincerely,

John V. Metzger Jr. - President & CEO
PYCO Inc.
Attachment

KEY	PYCO SO#	CUST PO#	SHIP DATE	PYCO PART NUMBER	QTY	S/N or Tag#
CAROLINA POWER AND LIGHT - ROBINSON PLANT - Cust P/N 728-733-00						
A	068780-00	8N103CM	08/08/97	122-4049-6-8	1	S/N 15770
A	062674-00	8F6855CC	10/11/95	122-4049-6-8	1	S/N 15148
B	057436-00	7M0012CC	03/31/94	122-4049-6-8	1	S/N 14749
B	056873-00	7K6017CC	01/26/94	122-4049-6-8	1	S/N 14685
B	056508-00	7K5775CC	11/01/93	122-4049-6-8	2	S/N 14661, 14662
B	038668-00	616007CC	05/30/89	122-4049-6-8	1	S/N 13495
B	037531-00	605637CC	01/13/89	122-4049-6-8	3	S/N 13358, 13359, 13360
B	023175-00	HBR-12065	10/30/85	122-4049-6-8	5	S/N 11840 TAG# TE-423 S/N 11841 TAG# TE-433 SN 11842 TAG# TE-410 S/N 11851 TAG# TE-420 S/N 11844 TAG# TE-430
CAROLINA POWER AND LIGHT - BRUNSWICK PLANT - Cust P/N 738-841-24						
A	70024-00	8P5516CM	11/10/97	122-1021-(08)-12.0	2	S/N 15831, 15832
A	53301-00	7D0864CC	02/23/93	122-1021-(08)-12	20	S/N 14502 THRU 14521

KEY	PYCO SO#	CUST PO#	SHIP DATE	PYCO PART NUMBER	QTY	S/N or Tag#
SOUTH CAROLINA ELECT & GAS - V.C. SUMMER STATION						
B	002805-00	SN-10231-SR	10/01/80	122-3006	9	TAG# TE410 S/N 7404, TAG# TE423 S/N 7405, TAG# SPARE S/N 7406, TAG# TE420 S/N 7407, TAG# TE433 S/N 7408, TAG# TE413 S/N 7409, TAG# SPARE S/N 7410, TAG# TE430 S/N 7411, TAG# SPARE S/N 7412
B	010380-00	Q312667	07/30/82	122-3006-04-12-B-240	6	TAG# 1TE410, 413, 420, 423, 430, 433 S/N 9545, 9546, 9547, 9548, 9549, 9550
B	012142-00	Q-326094	02/24/83	122-3006-04-12-B-240	6	TAG#1TE410, 413, 420, 423, 430, 433 S/N 10089,10090,10093, 10095, 10096, 10097
B	012142-01	Q-326094	03/22/83	122-3006-04-12-B-240	6	TAG# 1TE410 S/N 10087 TAG# 1TE410 S/N 10088 TAG# 1TE420 S/N 10091 TAG# 1TE420 S/N 10092 TAG# 1TE423 S/N 10094 TAG# 1TE433 S/N 10098
B	021225-00	A390598	06/24/85	122-3006-04-12-B-240	6	TAG# 1TE-0410 S/N 11706, 11707, 11708, 11709, 11710, 11711