

Arizona Public Service Company

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November 2, 1984
ANPP-31043-TDS/LBS

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, California 94596-5368

Attention: Mr. T. W. Bishop, Director
Division of Reactor Safety and Projects

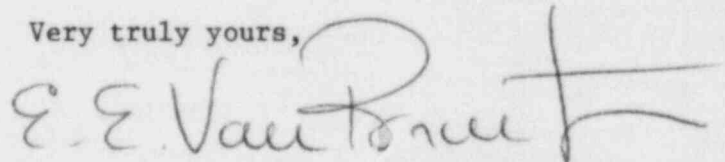
Subject: Final Report - DER 84-77
A 50.55(e) Reportable Condition Relating To Rosemount
Transmitter - Potential Leakage Path In The Seal Of The
Threads Between The Sensor Module And The Electronic Housing.
File: 84-019-026; D.4.33.2

Reference: A) Telephone Conversation between D. Hollenbach and T. Bradish
on October 3, 1984

Dear Sir:

Attached is our final written report of the Reportable Deficiency under
10CFR50.55(e), referenced above.

Very truly yours,



E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVB/LBS/nj
Attachment

cc: See Page Two

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Mr. T. W. Bishop
DER 84-77
Page Two

cc: Richard DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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D. B. Karner
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Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
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FINAL REPORT - DER 84-77
DEFICIENCY EVALUATION 50.55(e)
ARIZONA PUBLIC SERVICE COMPANY (APS)
PVNGS UNITS 1, 2, 3

I. Description of Deficiency

Rosemount, Inc. has notified PVNGS under 10CFR Part 21 that Model 1153, Series B pressure transmitters manufactured after January 10, 1984, may have a leakage path in the seal of the threads between the sensor module and the electronics housing. Moisture from the surrounding environment could enter the electronics housing (Note: Transmitter pressure boundary integrity is not affected).

Evaluation

Rosemount pressure transmitters are used in many safety-related applications throughout the PVNGS, so a faulty transmitter could cause malfunction of safety-related systems.

Rosemount pressure transmitters, which are affected, are identified in NCRs JX-1185 and JF-1186 and listed below:

<u>P.O. No.</u>	<u>Serial No.</u>	<u>Held By</u>	<u>Disposition</u>
10407-F-163459	408675	Bechtel Warehouse (Q5-2)	Quarantined
10407-F-164171	409152	APS Warehouse	Quarantined
10407-F-164171	409153	APS Warehouse	Quarantined
10407-F-164171	409154	APS Warehouse	Quarantined
10407-F-164171	409084	APS Warehouse	Quarantined

All five transmitters involved have been quarantined to the APS and Bechtel warehouses. The root cause of the leakage path is a manufacturing error which is being addressed by the manufacturer. This condition is not one that could be expected to be detected during receiving inspection.

II. Analysis of Safety Implications

Based on the above, this condition if left uncorrected, is evaluated as a significant safety hazard since one or all of the identified transmitters could possibly have been installed in a safety-related system. This condition is therefore evaluated as reportable under 10CFR50.55(e).

This condition is evaluated as reportable under 10CFR Part 21. The supplier, Rosemount, Inc., has previously made notification as required by this regulation.

III. Corrective Action

1. All defective transmitters identified by serial number shall be returned to Rosemount for either refurbishment or replacement and brought into compliance with JM-311 specification for Q Class transmitters. Documentation will be requested to be provided to verify that refurbishment or replacement of transmitters was completed.
2. Rosemount has formally addressed the manufacturing problem in writing, outlining the corrective steps they will take to preclude recurrence of a similar problem in the future, and is included as Attachment B. All subsequent findings shall refer to this DER for the necessary corrective action.

IV. References/Attachments

1. Attachment A - Rosemount to APS Letter of Notification required under 10CFR Part 21 Regulations dated 9/10/84.
2. Attachment B - Rosemount to Bechtel letter dated 10/15/84 which includes a Rosemount Intracompany Memo of 10/11/84.
3. Attachment C - Bechtel to Rosemount letter informing Rosemount of our requirements to refurbish twelve 1153 Series B transmitters.

ATTACHMENT A

ROSEMOUNT INC.

12001 West 78th Street
Eden Prairie, Minnesota 55344 U.S.A.
Tel: (612) 941-5560
TWX 910-576-3103 TELEX 29-0183

Rosemount

September 10, 1984

Arizona Public Service Co.
P.O. Box 21666, M.S. 3003
Phoenix, AZ 85036
Attention: Darryl Palmer

Subject: Notification Under 10CFR Part 21 Regulations

Reference: Purchase Order 10407-F-164171-HO/Rosemount H.O.
416071

Gentlemen:

Rosemount has determined that a notification to you, our customer, is required under the regulations called out in 10CFR Part 21. This notification applies only to any Model 1153 Series B Pressure Transmitter manufactured after January 10, 1984 and does not affect any other model. The situation is as follows:

Rosemount has identified a potential leakage path in the seal of the threads between the sensor module and the electronics housing. There is a possibility that this leak path could allow moisture from the ambient surrounding environment to enter the electronics housing during abnormal operating conditions. This moisture may cause the transmitter to stop functioning (i.e. the output signal will saturate high, approximately 27 mA, saturate low, approximately 3 mA, or become unstable.) This leak in no way affects the pressure integrity of the transmitter pressure boundary.

As part of the Rosemount periodic quality audit a sample of transmitters is tested for electronic housing pressure integrity. The test is performed using a 5 PSI (air) pressure source to pressurize the internal electronics housing. "Snoop" is then used to detect leaks on all sealing interfaces.

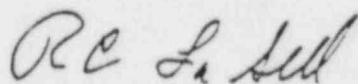
NCR NO. IX-1185
PAGE 2 OF 3

During the most recent audit, a leak was observed on two out of twelve pressure transmitters tested. These units were randomly selected from product hardware by Q.A. for the Product Audit. Based on these failures, an additional 87 production units were leak tested per the Product Audit Procedure. Eight of the 87 units failed the test.

The validity of the Product Audit leak test is being verified by subjecting several of these units to a LOCA simulation. This LOCA simulation is also being used to help determine the cause of the leak path and what ambient temperature/pressure levels these pressure transmitters will withstand.

The Model 1153 Series B Pressure Transmitter has been placed on hold for both production and shipment. Testing is underway to determine a specific cause for the leak path. Once the specific cause has been identified (we anticipate in about two weeks), a corrective action will be established. An update letter will be sent to you when further data is available regarding the units that you have and any corrective action that may be necessary. Should you have any questions prior to receipt of that update letter, please contact us.

Very truly yours,



Richard C. LaSelle
Manager

/jka

ATTACHMENT A

Purchase Order No. 10407-F-163459-H0

Rosemount Order No. 415691

Tag Numbers

N/A

Serial Numbers

408675

ROSEMOUNT INC.

12001 West 78th Street
Eden Prairie, Minnesota 55344 U.S.A.
Tel. (612) 941-5560
TWX 910-576-3103 TELEX 29-0183

ROSEMOUNT

October 15, 1984

Mr. Wayne Sutton
Arizona Public Service Co.
P.O. Box 21666, M.S. 3003
Phoenix, AZ 85036

Subject: Our September 10, 1984 Notification Under 10CFR 21

Reference: Purchase Order 10407-F-163459-HO/RMT Order 415691

Gentlemen:

This letter updates our findings and defines corrective action on the potential neck seal problem previously reported.

The past few weeks have been dedicated to investigating the problem, including the review of all associated production processes, piece part modifications and any other variation which could be possible contributors. A summary of our findings and corrective action is detailed in the attached memo of October 11, 1984. Some of the 1153 Series B transmitters manufactured from January 1984 to August 1984 may be affected by questionable integrity of the neck seal and will require resealing. The transmitters serial numbers listed on the enclosure were manufactured in this timeframe. We are unable to determine which of these units will leak, and therefore recommend rework of all units produced during this period.

Current production units have been successfully tested to LOCA conditions. We are prepared to receive, rework, and return to you, certified, all transmitters identified in the enclosure. The complete rework and retest facilities of the factory are available to accomplish and certify the resealing. We encourage the return of these transmitters to our Eden Prairie, MN. facility.

The rework efforts are being coordinated by Robert VandenBoom of our Nuclear Marketing Department at our Eden Prairie facility. Bob can be reached at A/C 612-828-3540.

It is our intention to perform this repair in the shortest time possible to minimize your inconvenience while considering each customer's particular need. We are confident of your cooperation and understanding during this period.

Very truly,

R.C. LaSell

R.C. LaSell
Manager

Enclosure

Rosemount INTRACOMPANY MEMO

CIRCULATE TO:

Jerry Anderson	A8
John Berra	A26
Andy Habiger	C6

DATE: October 11, 1984
TO: Dick LaSell - Manager, Nuclear Products (A10)
FROM: Bill Koch - Director, Quality Assurance (A3)
SUBJECT: MODULE NECK SEAL - MODEL 1153B

BACKGROUND

Process Control Audits on Nuclear Pressure Transmitters were started as an internal control procedure in March, 1981. Between 3/81 and 6/84, 146 units were checked for seal integrity by pressurizing the inside of the transmitter to 5 psi and checking the module/housing interface point for leaking with a special soap solution.

Of the 146 units, nine were found to be questionable and worthy of further investigation. Seven of the questionable units were detected in April and May of 1982. These units were found to have lower than specified torque on the lock nut and lacked the usually visible excess sealant at the housing/module neck joint. Qualification testing (which included a LOCA Simulation Test) was being conducted on units built at about the same time as the questionable units and there was no other information to indicate a change in process may have occurred. An in-depth study brought forth no assignable cause. All units passed the LOCA Simulation Test and the process was determined to be "in control." To add assurance, operators were reinstructed regarding proper torquing techniques and to use an increased amount of sealant. Subsequent process control checks were found to be acceptable throughout 1982.

In June of 1983, two more questionable units were detected. Casting flash on the housing lock nut interface was determined to be causing low torque values. Qualification testing on units produced shortly after the audit test units (same process) were found to pass the LOCA Simulation Test. This indicated the process was "in control" as determined by the only true indicator we have -- the LOCA Simulation Test (a destructive test). Subsequently, the 5 psi process control seal integrity checks produced no questionable units until June, 1984. The June, 1984 check initiated the sequence of actions which resulted in the 9/10/84 notification to affected customers.

10/11/84

EVENTS LEADING TO NOTIFICATION

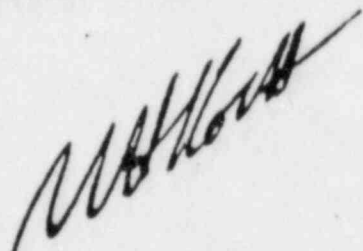
During Product Audit Testing conducted in June, 1984, two questionable neck seals were detected. The in-depth followup investigation was unable to identify an assignable cause. No qualification program that included a LOCA Simulation Test was ongoing or planned at that time; therefore, a special LOCA Simulation Test (completed 8/29/84) was planned and performed to determine if a true leakage problem existed. During this LOCA Simulation Test, 5 of 8 units failed to complete the 72-hour test. All five units were found to have moisture in the electronics housing. A hold notice had been previously issued on 8/22/84. Following the completion of the LOCA Simulation Test, the matter was referred to the Nuclear Review Committee. Additional investigation of the process and the units which failed in the LOCA Simulation Test resulted in a Nuclear Review Committee meeting on 9/5/84. The Committee recommended a customer notification be issued. A notification letter was issued on 9/10/84 to all affected customers. To determine the block of units which could be affected, the manufacturing date of 1/13/84 was used. All units prior to this date are considered to be conforming, based on the previous acceptable product audit and LOCA Simulation Test results. Although this approach may include a large number of conforming units, it appears to be a reasonable criteria under the circumstances.

CORRECTIVE ACTION

Detailed information regarding all materials and parts was accumulated. The most significant information obtained indicated that 12 hours of curing at elevated temperatures provides a more predictable seal. Six test samples were produced with this process change. These samples were successfully tested in a LOCA Simulation Test ending on 10/3/84. The hold notice was conditionally released on 10/9/84. All units manufactured after this date will include this process change in order to assure only qualification level units are shipped.

REMEDIAL ACTION

All units within the block of potentially questionable units in customer control should be disassembled, cleaned, and reassembled per our new process (including elevated temperature cure for 12 hours at 200°F). This can be accomplished in the factory at Eden Prairie, Minnesota.

A handwritten signature in black ink, appearing to read "W. H. H. H.", is located in the bottom right corner of the page.

Bechtel Construction, Inc.

Palo Verde Nuclear Generating Station
P.O. Box 49
Palo Verde, Arizona 85343



October 29, 1984
B/RI-K-14129-J
FLN 24209

Rosemount, Inc.
12001 West 78th Street
Eden Prairie, Minn. 55344

Attention: Mr. Bob VandenBoom

Subject: Palo Verde Nuclear Generating Station
Bechtel Job No. 10407
10CFR 21 Notification
Rosemount Model 1153 Series B Neck Seal Rework
File: JM-311

- Reference:
- a) Rosemount Letter dated Sept. 10, 1984
 - b) Rosemount Letter dated Oct. 9, 1984
 - c) Rosemount Letter dated Oct. 26, 1984
RMA No. VA207621

Gentlemen:

This letter serves to inform you of Bechtel Construction, Inc.'s schedule requirements for the refurbishment of the reference twelve (12) 1153 Series B transmitters.

<u>SERIAL NUMBER</u>	<u>TAG NUMBER</u>	<u>DATE REQUIRED</u>
* 286398	1J-SIA-LT-704	11-30-84 or before
* 286399	1J-SIB-LT-705	11-30-84 or before
362483	2J-SIA-LT-704	1-11-85
362484	2J-SIB-LT-705	1-11-85
286400	3J-SIA-LT-704	3- 1-85
286401	3J-SIB-LT-705	3- 1-85
286318	N/A	5- 1-85
408675	N/A	5- 1-85
409152	N/A	5- 1-85
409153	N/A	5- 1-85
409154	N/A	5- 1-85
409084	N/A	5- 1-85

* CRITICAL ITEMS

Bechtel Construction, Inc.

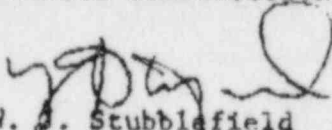
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Mr. Bob VandenBoom
October 29, 1984
Page 2

The first six (6) items will be returned to your facility on a rotating schedule, (i.e., Unit 3 will be returned first and installed in Unit 1. Unit 1 will be returned and installed in Unit 2. Unit 2 will be returned and installed in Unit 3). The latter six (6) will be returned with the first shipment for refurbishment at your convenience. Your cooperation in supporting these construction schedules will be greatly appreciated.

If you have any questions or concerns, your contact at PVNGS will be Ron Rhodes (602) 271-5087.

Very truly yours,

BECHTEL CONSTRUCTION, INC.


W. J. Stubblefield
Field Construction Manager

mk
WJS:RR:kmd