



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406

Docket No. 50-423
File RI-89-A-0038

MAY 11 1989

[REDACTED]
Dear [REDACTED]

The purpose of this letter is to inform you of the status of your allegation concerning Rosemount pressure transmitters.

NRC follow-up on your inputs to Mr. William Raymond, the NRC Senior Resident Inspector at Millstone, and to Mr. Jamie Guillen of the NRC Office of Nuclear Reactor Regulation (NRR), resulted in dissemination of information about this issue to the nuclear industry. That dissemination was through NRR promulgation of NRC Information Notice No. 89-42, "Failure of Rosemount Models 1153 and 1154 Transmitters." A copy of that notice is enclosed for your information.

We understand that you have an associated discrimination concern and that you have the Department of Labor (DOL) regulations on filing a discrimination complaint. Please be aware that, in discrimination cases, the DOL is the federal agency which can order redress of wrongs against individuals. The NRC cannot order individual redress. DOL regulations call for submission of discrimination complaints within 30 days of the alleged discrimination.

NRC action in discrimination cases is distinct from the DOL actions which provide employee redress. The NRC takes action against licensees who discriminate against employees who perform protected activities. Protected activities include informing the NRC about violations of NRC requirements, asking the NRC to administer or enforce NRC requirements, or testifying in any NRC proceeding. We also monitor licensee performance in implementing programs for responding to nuclear safety concerns, and we maintain contact with the DOL to obtain input on their findings on discrimination complaints. To assist us in evaluating discrimination concerns, we appreciate being informed about any perceived discrimination by the individuals involved, in addition to any submittals to the DOL. Based on my May 9, 1989 telephone discussion with you, you are now pursuing your discrimination concern with your management and, at this point, believe that no tangible discrimination has occurred. Should this circumstance change significantly, the NRC would appreciate being informed.

Thank you for bringing your concerns to our attention. We appreciate the technical expertise and dedication you demonstrated in pursuing this issue. Further, your input was a tangible, positive contribution to reactor safety.

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PDR FOIA PDR
GUILD91-162

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MAY 11 1989

Please contact me if you have any additional information or questions.

Sincerely,

Ebe C. McCabe, Jr.

Ebe C. McCabe, Jr., Chief
Reactor Projects Section 1B
Division of Reactor Projects
Tel: (215) 337-5128

Enclosure: As Stated

bcc w/encl:
M. Perkins
S. Barr
W. Raymond
D. Holody

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

April 21, 1989

NRC INFORMATION NOTICE NO. 89-42: FAILURE OF ROSEMOUNT MODELS 1153 AND 1154
TRANSMITTERS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice is being provided to alert addressees about recent failures of Rosemount models 1153 and 1154 pressure and differential pressure transmitters. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

During 1986 and 1987, five Rosemount model 1153 HD5PC differential pressure transmitters malfunctioned at Northeast Utilities' (NU) Millstone Nuclear Power Station, Unit 3. During power operation, the Millstone operators noted that the signals from the Rosemount 1153 transmitters were deviating from redundant channel signals and that the transmitters were indicating reduced levels of process noise. The transmitters were declared out of service by NU personnel, and the affected channels were placed in the tripped condition. After attempts to calibrate the transmitters failed, NU returned the transmitters to Rosemount and informed them that the malfunctions had occurred with transmitters of the same model and related serial numbers. Destructive testing performed by Rosemount determined that the failures were caused by the loss of oil from the transmitter's sealed sensing module. However, Rosemount indicated that the failures appeared to be random and not related to any generic problem with Rosemount 1153 pressure transmitters. NU submitted a 10 CFR Part 21 notification to the NRC on this issue on March 25, 1988, and provided additional information on the failures via a letter dated April 13, 1989.

Discussion:

After additional evaluations by NU and Rosemount, Rosemount issued a letter to its customers on December 12, 1988, regarding the potential malfunction of models 1153 and 1154 pressure and differential pressure transmitters. The

Rosemount letter was supplemented with a letter dated February 7, 1989, to customers who had purchased transmitters from specific lots that were identified by Rosemount as being potentially defective. Rosemount issued a separate letter dated February 16, 1989, to customers who had purchased model 1153 and 1154 transmitters from lots that were not considered suspect. Rosemount indicated that transmitters from the suspect lots were susceptible to a loss of silicone oil from the transmitter sealed sensing module and to possible failure. According to Rosemount, as the oil leaks out of the sensing module the transmitter's performance gradually deteriorates and may eventually lead to a detectable failure.

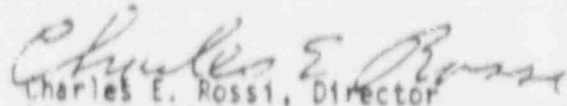
Some of the symptoms that have been observed during operation and before failure include slow drift in either direction of about 1/4 percent or more per month, lack of response over the transmitter's full range, increase in the transmitter's time response, deviation from the normal signal fluctuations, decrease in the detectable noise level, deviation of signals from one channel compared with redundant channels, "one sided" signal noise, and slow response to a transient or inability to follow a transient. Some of the symptoms observed by NU personnel during calibration include the inability to respond over the transmitter's entire range, slow response to either increasing or decreasing hydraulic test pressure, and drift of greater than 1% from the previous calibration.

Although some of the defective transmitters have shown certain symptoms before their failure, it has been reported that in some cases the failure of a transmitter may not be detectable during operation. In addition, Rosemount now indicates that the potential for malfunction may not be limited to the specified manufacturing lots previously identified in the February 1989 letter.

It is important for addressees to determine whether any Rosemount models 1153 and 1154 pressure and differential pressure transmitters, regardless of their manufacturing date, are installed in their facilities and to take whatever actions are deemed necessary to ensure that any potential failures of these transmitters are identified. Although it may not be possible to detect the onset of failure in all instances, some transmitters have exhibited some of the aforementioned symptoms before failure. It is important for potential failure modes to be identified and that operators be prepared for handling potential malfunctions. In addition, careful examination of plant data, calibration records, and operating experience may yield clues that identify potentially defective transmitters. Addressees may wish to contact Rosemount for assistance in determining appropriate corrective actions whenever any of the aforementioned symptoms are observed or if failures are identified.

On April 13, 1989, the NRC staff met and discussed this matter with Rosemount and several industry groups. Rosemount has launched a program to identify the root cause of the loss of oil from the sensing module and to determine recommendations for its customers to address potentially defective transmitters.

No specific action or written response is required by this information notice. If you have any questions regarding this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.


Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: Kamal Naidu, NRR
(301) 492-0980

Jaire Guillen, NRR
(301) 492-1170

Attachment: List of Recently Issued NRC Information Notices

(ACT. 82-87-A-6039)

ROUTING AND TRANSMITTAL SLIP

7/19/89

To: (Name, office symbol, room number, Building, Agency, Post)	Initials	Date
1. DICK BRADY, NRR/PTSB (OWTN MS 12 E4)		
2.		
3.		
4.		
5.		

Action	File	Note and Return
Approval	For Clearance	Per Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
Comment	Investigate	Signature
Coordination	Justify	

REMARKS

PER ALLEGATION PANEL MTG IN REGION I AND TELECON BETWEEN ACC AND VENDOR BRANCH THE ATTACHED SHOULD BE ADDED TO ROSEMONT TRANSMITTER ALLEGATION PACKAGE SUBMITTED BY ME TO YOU ON 4/10/89 FOR NRR ACTION. NO FURTHER REGION I ACTION.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, and similar actions.

FROM: *Michael A. Perkins* Room No.—Bldg.
 MICHAEL A. PERKINS
 MEM ASST, RMB, DRMA, REGION I Phone No.
 346-5174

5041-102

OPTIONAL FORM 41 (Rev. 7-76)
 Prescribed by GSA
 FPMR (41 CFR) 101-11.206

6/42

ALLEGATION RECEIPT REPORT

RI-89-A-0038
(SUPPLEMENT)

ALLEGER INFORMATION -

Name: _____
Phone: _____
Allegor's Employer: _____

Address: _____
City/State/Zip: _____
Position/ Title: _____
Materials License No. _____

- 1. If applicable, was the DDL policy explained to the allegor? YES ___ NO ___ (N/A)
- 2. Has a Confidentiality Agreement been signed or should one be sent to confirm the oral granting of Confidentiality? YES ? NO ___

Number of Concerns: 1 MILLSTONE 3 50-423

Brief Description of Each Allegation/Concern -

Rosemount 1151 transmitters have failed, contradicting the vendor's position that the stainless steel O-ring installed for EQ of 11520 [modifying them to 11530] was the cause of the oil sensing problem.

Type of Regulated Activity: (a) Reactor ___ (d) Safeguards
 ___ (b) Vendor ___ (e) Other: _____
 ___ (c) Materials (Specify)

Functional Area(s): (a) Operations ___ (e) Emergency Preparedness
 ___ (b) Construction ___ (f) Onsite Health & Safety
 ___ (c) Safeguards ___ (g) Offsite Health & Safety
 ___ (d) Transportation ___ (h) Other: _____

Date/Time Received: 12:55 pm / 7/12/89

Employee Receiving Allegation: Ch C (Cable)

Details: The Transmitter Shop in Houston, Tx has boxes and boxes of failed 1151 Rosemount Transmitters. The contact there is named [REDACTED]. [REDACTED] would like this input to be confidential & to safeguard his name. (I said I wouldn't divulge it pending Allegation Panel decision on whether to grant confidentiality)

The failures ~~made~~ indicate that the standard O-ring in the 11530 is not the basic cause of Rosemount XMTR failures

[REDACTED] said he didn't think of this input as an allegation but as identification of a safety concern. [REDACTED]

[REDACTED] I wanted to give ^{this} info to the NRC before going.

ALLEGATION RECEIPT REPORT

Date/Time Received: 7/28/89 10030

Allegation No. RI-89-40052
(leave blank)

Name: [REDACTED]
Phone: [REDACTED]

Address: _____
City/State/Zip: [REDACTED]

Confidentiality Requested: Yes _____ No X Implied _____

Allegor's Employer: GENERAL DYNAMICS
ELECTRIC BOAT DIV.

Position/Title: SECURITY GUARD

Facility: MILLSTONE #3

Docket No.: 50-423

Allegation Summary (brief description of concern(s)): ① Earthquake fault under containment; ② supervisor threatened QA inspections on concrete acceptability; ③ exterior wall of FHB poured with some form pieces missing.

Number of Concerns: 3 (for Allegation Panel Only)

Employee Receiving Allegation: D. J. COLLINS
(first two initials and last name)

Type of Regulated Activity: (a) X Reactor (d) _____ Safeguards
(b) _____ Vendor (e) _____ Other: _____
(c) _____ Materials (Specify)

Materials License No. (if applicable): _____

Functional Area(s): X (a) Operations _____ (e) Emergency Preparedness
(b) Construction _____ (f) Onsite Health and Safety
(c) Safeguards _____ (g) Offsite Health and Safety
(d) Transportation _____ (h) Other: _____

Detailed description of allegation:

[REDACTED] stated that he had been employed as a laborer at Millstone #3, Waterford, CT from [REDACTED]

1. During the excavation of the foundation area for the containment building, a geologic fault was identified in the rock face. The width was stated to be about four inches. The laborer force was provided and used paintbrushes for an entire shift to blend the earth/rock face so as to camouflage the fault. This was done prior to a big NRC inspection of the site. The labor force was told that the NRC didn't see the fault. The specific purpose for the paintbrush work was for concealment from the NRC.

2. During construction of the Fuel Handling Building exterior walls, there were apparently some words exchanged between construction supervisor [REDACTED] and QA inspectors. [REDACTED] stated that one inspector had refused to accept a load of concrete for quality reasons, that a second QA inspector was called by the supervisor. The second QA inspector also refused to accept the load of concrete. [REDACTED] said that then [REDACTED] told the QA inspectors that the alternatives were sign or be fired. [REDACTED] said the second QA inspector signed the acceptance paper.

3. Also during the Fuel Handling Building exterior wall construction, [REDACTED] stated that a pair of 2" x 12" form boards were not used and the ties were not fastened off. [REDACTED] stated there was a pregnant bulge at this location and that supervision knew the slats were missing prior to pouring the wall.

Allegor also told Dave Collins that he thinks the fault runs under the other two units.

W 5/2/89

50-423. RI-89-A-0052.

About 4:00 p.m., 5/10/89, Suresh Chaudhary, Acting Chief, DRS Materials and Processes Section, and I called [REDACTED] about his allegations. The following information was obtained.

- His concern about a geologic fault is based upon an event in 1973 or 1974. He and other workers used a pressure hose to clean rock for immediate NRC inspection/photography. One day when they had nothing to do, they dug down about 5 feet. Their boss complained, stating that the NRC would photograph every inch of rock. That supervisor was a construction foreman who, as far as the alleged knows had no training in geology. The alleged acknowledged that the Millstone site contains much fractured limestone, but said that he had taken a course in which the teacher said there was an old fault on the site. The alleged acknowledged that an old fault is one which has exhibited no motion for 5 million years, and that extensive borings and analyses were made to assess the suitability of the site. He stated that he can distinguish between cleavage and fractured rock and recognizes that 5 feet is not very deep, but that he is still convinced that there is a fault and that it is a very straight line. He remembered his supervisor's first name, Ray, but not his last.

- The alleged did not realize that it was not the NRC who photographed the rock faces he and others prepared. He also said that they knew a week ahead when the NRC was going to be on site and that everything was cleaned up in preparation. He maintained this assertion after the unannounced inspection policy in place at the time was described to him. Later, he stated that, in the '82-'86 time frame, every time the NRC came in, they would clean up in advance. Also, near the end of the conversation, he stated that Dave Collins, the inspector to whom he made his allegation [on 4/28/89], was his first face to face contact with the NRC. When I pointed out that there are full-time resident inspectors at Millstone, that didn't seem to register and the alleged continue to express his belief that inspections were prepared for.

- The instance of the supervisor [REDACTED] alleged to have ordered QA inspectors to sign off on substandard concrete was identified as having happened in the fuel building in the '82-'86 time frame. The pour was just off the main beam. There were 7 concrete trucks and there were supposed to be 2x6s used. The concrete didn't pass the slump test and the 2x6s weren't used. Two QA inspectors refused to sign off on the concrete. [REDACTED] hollered for about 20 minutes and said to sign off or get the hell off the job. One of the QA inspectors then signed off. Without the 2x6s the concrete didn't stay and the 2x6s had to be added and the pour redone. But the result wasn't O.K. because of failing the slump test. Also, during this time frame, whole section of concrete were poured with styrofoam in it. Also, the bulge in the fuel handling building exterior walls will not be fixed because it's already poured and it would cost too much to fix. The alleged acknowledged that a thicker wall did not affect the strength of the rebar-concrete, but continued to maintain that the wall would not be fixed because of the cost.

50-423. RI-89-A-0052.

The allegor also identified concern about having been contaminated with radon gas in the fuel building. This concern was unchanged by the whole body count he had received at the end of his employment, though he was told at the time that the whole body count showed no problem. He said he felt that any such contamination should have to be reported, and that this matter disturbed him because the HP who checked him out and said it was radon and there was no hazard was nervous (anxious) about it. I told him that response to and evaluation of such conditions was required, that licensees had to make annual radiation reports to the NRC, and that this one radon clothing contamination event posed no radiation hazard. The allegor acknowledged that alarms are provided to permit action before a problem became serious, but continued to insist that this contamination should be reported.

The allegor also asked about an event on a pig farm, just after the Three Mile Island accident. He had heard that all the flies on the farm had disappeared because of the radiation released. I described the inbred goat fertility and unsanitary farm, cattle death problems which had incorrectly been attributed to radiation, and said that I knew nothing about the flies but would suspect weather in such a case. The allegor also asked about a contamination event involving a large land area out west; I said I had no knowledge of such an event.

I asked the allegor why he hadn't identified his concerns to the NRC at the time the occurrences happened. He said that he felt nothing would be done. He did not specifically state that he feared retribution, but I inferred that to be one of his concerns. The allegor also stated several times that he was not a disgruntled employee, and that he did not expect anything to be done about his allegations, and that he had not even expected to get this call. For example, he stated that he did not expect anything to be done unless he had found something really grave and negligent, and that the President we had for the past 8 years had cut the EPA and the NRC and was for big business, so why bother. I told him that his safety concerns would be evaluated and we would inform him of the results, and that he could contact both the licensee and the State of Connecticut about safety concerns in addition to contacting the NRC. I also said that it was possible that he would disagree with our evaluation, and that it was his right as an American citizen to do so. He thanked us for the call and said he appreciated our taking the time to talk with him. The conversation ended on that amicable note, with no indication that the discussion had changed his viewpoint one iota.

Ebe C. McCabe, Jr.

Ebe C. McCabe, Jr., Chief,
Reactor Projects Section 1B

50-423. RI-89-A-0052.

P.S.

My recommendation is that we have another allegation panel meeting on this allegation, with DRS Engineering and OI attendance, to decide on further follow-up. The following appear to need consideration.

- DRS review of the technical allegations appears to be appropriate to determine whether there is valid reason to justify further inspection. A DRS memo to the allegation panel can then be used to provide their recommendation and bases for further inspection or evaluation, and to provide a basis for DRP development of a follow-up letter to the allegeder.

- On the indicators of potential retribution for not signing off on reportedly substandard concrete, and for identifying concerns to the NRC, OI can provide us with their assessment of the merit and need for further follow-up.

- On the licensee preparation for inspection aspect, the allegeder's basis seems inadequate to warrant follow-up, especially since the resident inspection program provides an on site presence which would necessitate continual readiness in most areas.

- On the concern about reporting radon contamination, I recommend that DRSS provide us a feeder input for inclusion in a letter to the allegeder. DRSS attendance at the allegation panel meeting would be welcome, but does not seem a justifiable time expenditure.

Ebe
Ebe

copy:
S. Barr
R. Bellamy
S. Chaudhary
W. Pasciak
M. Perkins
W. Raymond
J. Strosnider
C. White