

ATTACHED IS A PART 21 REPORT FROM IE MAIL UNIT - ROOM 359E/W

PART 21 IDENTIFICATION NO. 80-228-0004001 COMPANY NAME Rosemount elec

DATE OF LETTER 3/14/80 DOCKET NO. _____

DATE DISTRIBUTED 3/26/80 5/30 ORIGINAL REPORT SUPPLEMENTARY

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AD/RCI

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~~CENTRAL FILES~~

CENTRAL FILES-SS-396

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CENTRAL FILES (CHRON)

CENTRAL FILES(CHRON)
(016)

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LOEB/MPA MNB 5715

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LOEB/MPA MNB 5715

AEOD - MNB-7602

CENTRAL FILES - SS-396

AEOD MNB-7602

LOEB/MPA MNB 5715

AEOD MNB-7602

ACTION:

PRELIMINARY EVALUATION OF THE ATTACHED REPORT INDICATES LEAD RESPONSIBILITY FOR FOLLOW-UP AS SHOWN BELOW:

IE

NRR

NMSS

OTHER

RCI
ROI
SG
FFMSI

8006120363

REV.



ROSEMOUNT INC., 12001 WEST 78th STREET / EDEN PRAIRIE, MINNESOTA 55344
Mailing Address: P.O. BOX 35129 / MINNEAPOLIS, MINNESOTA 55435
TEL: (612) 941-5560 TWX: 910-576-3103 TELEX: 29-0183

March 14, 1980

80-228-000

Attention:

Subject: Report of a Potential "Defect" or "Deviation"

Reference: 10 CFR Part 21

Dear

We have identified a potential "defect" or "deviation", as defined in the referenced regulations, in components that have been supplied to you. As indicated in the attached report, Rosemount has the capability to make recommendations concerning the potential "defect" or "deviation" but we do not have the capability to make the required evaluation as to whether the affected component is a "basic component" and if the potential "defect" or "deviation" could create a "substantial safety hazard" within the meaning of 10 CFR part 21. Accordingly, we are hereby providing you with our report detailing the currently available information with which you may perform the evaluation as required by the referenced regulations.

If your evaluation indicates that reporting to the Nuclear Regulatory Commission is required, kindly provide us with a copy of the report which you submit.

Sincerely,

Ronald A. Ward
Senior Vice President, Operations
Acting Director of
Quality Assurance

10 CFR Part 21 Report

- (i) Name and address of the individual or individuals informing the Commission.

Not Applicable.

- (ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which is affected by the potential application problem.

Rosemount Model 1152 Pressure Transmitters with output codes "A" or "D".

- (iii) Identification of the firm making the report.

Rosemount, Inc.
12001 W. 78th St.
Eden Prairie, MN 55344

- (iv) Nature of the potential applications problem.

Rosemount's Model 1152 Pressure Transmitter provides a specified linear output of 4 to 20 mA throughout the calibrated range of operation. Transmitter output at pressures over and under the calibrated range is not specified by Rosemount. It has been observed in a limited number of transmitters that an output between 4 and 20 mA can occur with input pressures either over or under the calibrated range.

For an over range condition, the ambiguous output is due to a unique condition in the transmitter electronics. The result is that the output current may drop below 20 mA. In a limited sample size, the over range ambiguous output occurred in 5% of the transmitters at ambient conditions. Referring to the attached graph, this does not occur until the over range condition exceeds 140% of the upper range limit. At that point a discontinuity occurs and the output current potentially will be less than 20 mA.

For an under range condition, the ambiguous output is due to a different unique condition in the transmitter electronics. The result is that the output current may exceed 4 mA. In a limited sample size, the under range ambiguous output occurred in 55% of the transmitters at ambient conditions. Again referring to the attached graph, this does not occur until the under range condition exceeds 100% of the calibrated span. At that point, the output current potentially will be greater than 4 mA.

In both the over range and under range conditions, the transmitter reverts to specified operation when pressure is again within the calibrated pressure range, provided the over or under pressure condition was within specified limits. Also, for both over range and under range conditions, there is an increased probability that the transmitter output will return to the 4 to 20 mA operating range if the transmitter is exposed to either a radiation or elevated temperature environments.

Rosemount is reporting this situation so that this information may be fully analyzed by those responsible for the safety analysis of the licensed activity.

- (v) The date on which the information of the potential applications problem was obtained.

March 12, 1980

- (vi) The number and location of all in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part.

Non Applicable

- (vii) The corrective action recommended to negate this potential application problem.

The safety system should be analyzed to determine if a potential application problem exists and appropriate corrections to the safety system should be implemented.

- (viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.

Not Applicable.

If you have any questions or need more data, please contact Rosemount Incorporated.

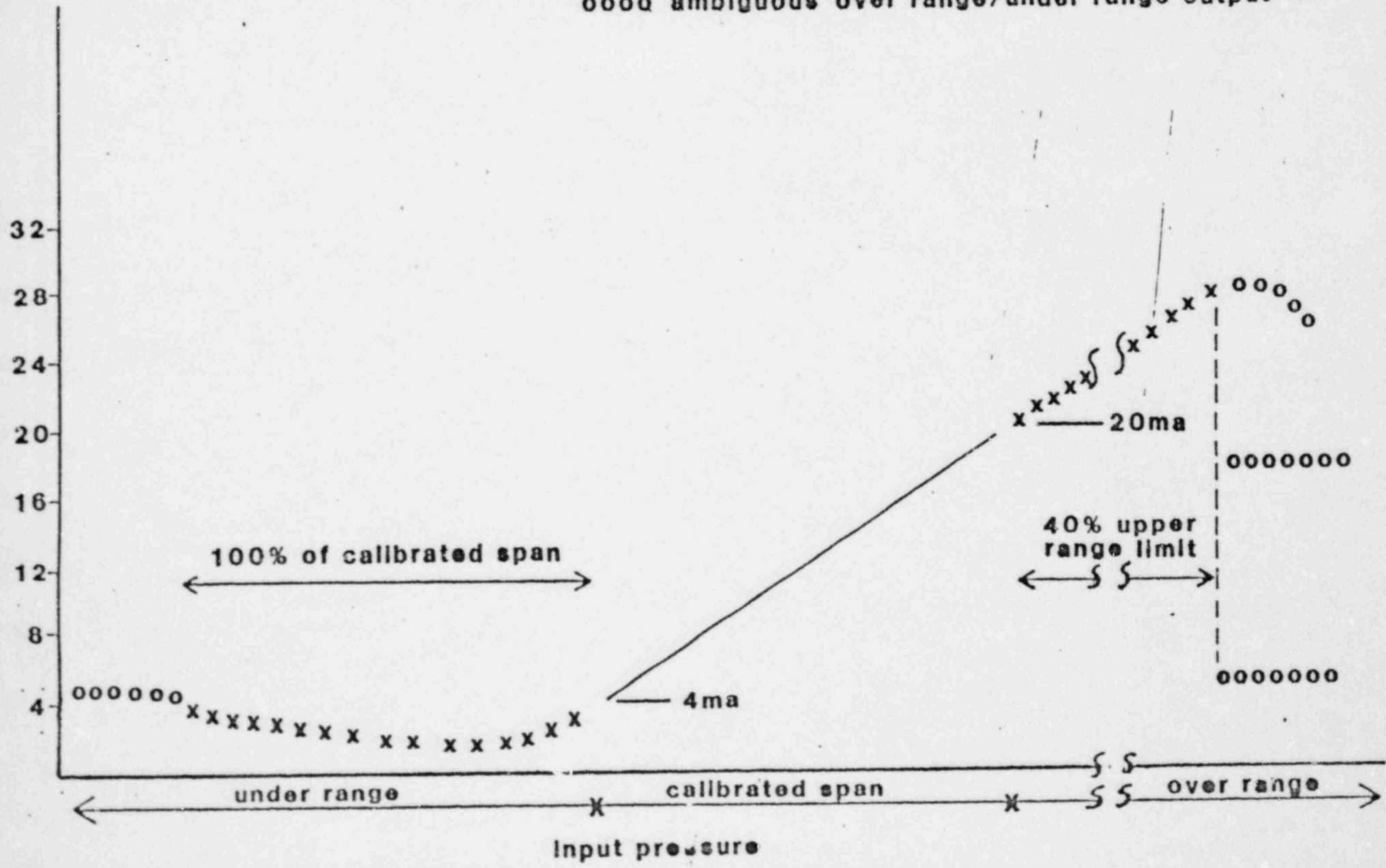
Rosemount, Inc.
12001 West 78th St.
Eden Prairie, MN 55344

Attn: Chuck Odgaard
Nuclear Operations Manager

Phone: (612) 941-5560 Ext. 433

— 4-20ma Rosemount specified linear output
 xxxx over range/under range region
 ---- discontinuity point
 oooo ambiguous over range/under range output

1152 Pressure Transmitter Output Signal (milli amper)





ROSEMOUNT INC., 12001 WEST 78th STREET / EDEN PRAIRIE, MINNESOTA 55344
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TEL: (612) 941-5560 TWX: 910-576-3103 TELEX: 29-0183

March 28, 1980

80-228-001

Attention:

Subject: Report of a Potential "Defect" or "Deviation"

Reference: 10 CFR Part 21

Dear

Attached please find supplement one to our report written under the referenced regulations and mailed to you under cover of my letter of March 14, 1980. This supplement is intended to clarify certain areas that our customers have indicated that it would be helpful to amplify. The supplementing and amending information is provided to you so that you may more fully analyze this potential applications problem.

Sincerely,

Ronald A. Ward
Senior Vice President, Operations
Acting Director of
Quality Assurance

RW:rh

SUPPLEMENT #1 TO

10 CFR Part 21 Report of March 14, 1980

- (i) Name and address of the individual or individuals informing the Commission.

Not Applicable.

- (ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which is affected by the potential application problem.

Rosemount Model 1152 Pressure Transmitters with output codes "A" or "D".

- (iii) Identification of the firm making the report.

Rosemount Inc.
12001 W. 78th St.
Eden Prairie, MN. 55344

- (iv) Nature of the potential applications problem.

Rosemount's Model 1152 Pressure Transmitter provides a specified linear output of 4 to 20 mA throughout the range. Transmitter output at pressures over and under the range is not specified by Rosemount. It has been observed in a limited number of transmitters that an output between 4 and 20 mA can occur with certain input pressures either over or under the range. These ambiguous outputs in the over and under-range conditions arise from different causes and are related to different transmitter parameters. The occurrence of an over-range condition ambiguous output is related to the upper range-limit of the transmitter. For the purposes of this report, an over-range condition shall be defined as a input pressure exceeding the upper range-limit. The occurrence of an under-range condition ambiguous output is related to the span of the transmitter. For the purposes of this report, an under-range condition shall be defined as a input pressure that is less than the lower range-value. The terms "upper range-limit", "span", "range", "upper range-value, and "lower range-value" as used herein are as defined in SAMA standard PMC20.1-1973 Process Measurement and Control Terminology.

For the over-range condition, the ambiguous output is due to a certain condition in the transmitter electronics. The result is that the output current may drop below 20 mA. In a limited sample size, the over-range condition ambiguous output occurred in 5% of the transmitters at ambient conditions. Referring to the attached graph, this does not occur until the over-range condition exceeds 140% of the upper range limit. At that point a discontinuity can occur with the output current instantaneously decreasing to less than 20 mA. As an example of this problem, the upper range-limit of a range 5 1152 DP (Model 1152 DP5A22) transmitter is 750" H₂O. The range of this transmitter can be set to 0-150" H₂O. If the ambiguous output in the over-range condition is to occur, it will occur at 140% or more of upper range-limit or, in this case, at approximately 1050" H₂O. The transmitter then would give an output within 4 to 20 mA at a pressure that is, in this example, seven times (1050" H₂O ÷ 150" H₂O) the set upper range-value. Due to the effects of radiation and elevated temperature, we believe that the frequency of occurrence of the ambiguous output from an over-range condition will be greater in a radiated or an elevated temperature environment than was experienced in our limited sample size testing, which was in a non-radiated, ambient temperature environment.

For the under-range condition, the ambiguous output is due to a different condition in the transmitter electronics. The result is that the output current may exceed 4 mA with an input pressure less than the lower range-value. In a limited sample size, the under-range condition ambiguous output occurred in 55% of the transmitters at ambient conditions. Referring to the attached graph, this does not occur until the under-range condition exceeds 100% of the span. At that point, the output current potentially will be greater than 4 mA.

In both of the over-range and under-range conditions, the transmitter reverts to specified operation when input pressure is again within the range, provided the over or under pressure is again within the range, provided the over or under pressure was within the limits specified by Rosemount.

We envision that a problem could occur, for example, as follows: initially the over/under-range condition triggers an alarm. If the alarm is unlatched, the alarm condition will not be indicated once the transmitter reaches the region of ambiguous output, or, if the alarm is latched and "alarm acknowledge" is selected, the alarm will not reappear if the transmitter is operating in the ambiguous output region. In either event, the control system is receiving an indication that the pressure is within range when in

fact an over/under-range condition exists. It should be noted that the problem will not exist in the hypothetical case indicated on the graph at T_1 , due to an under-range condition since the output current in the ambiguous region is less than the trip point current. The potential problem will be present with T_2 set at the output current indicated on the graph, but would not occur in the over-range condition if T_2 current was set less than the ambiguous output current.

The attached graph is Revision A of the graph submitted with our report dated March 14, 1980. Please note the changes.

Rosemount is supplementing and amending the report of this potential problem so that the information may be more fully analyzed.

- (v) The date on which the information of the potential applications problem was obtained.

Amended to March 6, 1980.

- (vi) The number and location of all in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part.

Not applicable.

- (vii) The corrective action recommended to negate this potential application problem.

The safety system should be analyzed in view of this supplementary report to determine if a potential application problem exists and appropriate corrections to the safety system should be implemented.

- (viii) Any related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given or purchasers or licensees.

Not applicable.

If you have any questions or need more data, please contact Rosemount Incorporated.

Rosemount Inc.
12001 West 78th St.
Eden Prairie, MN. 55344

Attn: Chuck Odgaard
Nuclear Operations Manager
Phone: (612) 937-3433

