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SUBJECT: Forwards confirmation of completion of NRC Bulletin 90-001, Actions 1-5,re loss of fill-oil in Rosemount transmitters.

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July 18, 1990

PG&E Letter No. DCL-90-187

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Response to NRC Bulletin 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount"

Gentlemen:

In accordance with reporting requirement 1 of NRC Bulletin 90-01 (Bulletin), dated March 9, 1990, enclosed is PG&E's confirmation of completion of Bulletin Actions 1, 2, 3, 4, and 5 for Diablo Canyon Power Plant Units 1 and 2. The completion of these actions fulfills all requirements of the Bulletin.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Subscribed to in San Francisco, California this 18th day of July 1990.

Respectfully submitted,

Pacific Gas and Electric Company

By _____
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Senior Vice President and
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OFFICIAL SEAL
BIANCA E. ZELNIK
NOTARY PUBLIC - CALIFORNIA
San Francisco County
My Commission Expires July 30, 1991

Subscribed and sworn to before me
this 18th day of July 1990

_____
Bianca E. Zelnik, Notary Public
for the City and County of San Francisco
State of California

My commission expires July 30, 1991.

3258S/0084K

IE39
1/1

cc: A. P. Hodgdon
J. B. Martin
P. P. Narbut
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CPUC
Diablo Distribution

Enclosure

3258S/0084K/ALN/2242

ENCLOSURE

DIABLO CANYON UNITS 1 and 2
RESPONSE TO NRC BULLETIN 90-01,
"LOSS OF FILL-OIL IN TRANSMITTERS MANUFACTURED BY ROSEMOUNT"

In accordance with reporting requirement 1 of NRC Bulletin 90-01 (Bulletin), dated March 9, 1990, the following provides PG&E's confirmation of Bulletin Actions 1, 2, 3, 4, and 5 for Diablo Canyon Power (DCPP) Units 1 and 2.

Bulletin Action 1

Identify Model 1153 Series D, and Model 1154 pressure or differential pressure transmitters, excluding Model 1153 Series B, 1153 Series D, and Model 1154 transmitters manufactured by Rosemount subsequent to July 11, 1989, that are currently utilized in either safety-related systems or systems installed in accordance with 10 CFR 50.62 (the ATWS rule).

PG&E Response

PG&E has identified all subject Rosemount transmitters with the specified model numbers that are currently installed in safety-related systems, including transmitters installed in accordance with 10 CFR 50.62. These transmitters have been reviewed by application and serial number for actions as described below. The NRC had also identified a group of eleven other vendors which had used Rosemount transmitters or parts in equipment furnished to utilities; the review for this Bulletin Action determined that no transmitters from this group of eleven were used in any safety-related services or systems installed in accordance with the ATWS rule at DCPP.

Bulletin Action 2

Determine whether any transmitters identified in Item 1 are from the manufacturing lots that have been identified by Rosemount as having a high failure fraction due to loss of fill-oil. Addressees are requested not to utilize transmitters from these suspect lots in the reactor protection or engineered safety features actuation systems; therefore, addressees are requested to develop and implement a program to replace, at the earliest appropriate opportunity, transmitters from these suspect lots in use in the reactor protection or engineered safety features actuation systems.

PG&E Response

Of the transmitters identified in response to Bulletin Action 1 above, a total of sixteen transmitters from the suspect manufacturing lots having a high failure fraction were installed in DCPP reactor protection and engineered safety features actuation systems.

Seven of these transmitters were in Unit 1 and were replaced during the Unit 1 third refueling outage, which was completed on December 15, 1989. The remaining nine transmitters were in Unit 2 and were replaced during the Unit 2 third refueling outage, which was completed on April 30, 1990.

Additionally, Rosemount transmitters in warehouse inventory were reviewed. Several transmitters from the high failure fraction lots were identified and returned to Rosemount.

Bulletin Action 3

Review plant records (for example, the three most recent calibration records) associated with the transmitters identified in Item 1 above to determine whether any of these transmitters may have already exhibited symptoms indicative of loss of fill-oil. Appropriate operability acceptance criteria should be developed and applied to transmitters identified as having exhibited symptoms indicative of loss of fill-oil from this plant record review. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria should be addressed in accordance with the applicable technical specification. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria and are not addressed in the technical specifications should be replaced at the earliest appropriate opportunity.

PG&E Response

PG&E has reviewed the calibration records of the transmitters identified in response to Bulletin Action 1 above to determine whether any of those transmitters exhibited symptoms indicative of loss of fill-oil. Calibration records from the beginning of commercial operation to the present were reviewed. The criteria from Rosemount Technical Bulletin No. 4 were used to identify transmitters that required further investigation. This review identified several previously replaced transmitters (see Attachment 1), and five currently installed transmitters, that exhibited symptoms indicative of fill-oil loss.

An engineering review of the records for the currently installed transmitters was performed. Four of the five transmitters showed random drift characteristics that were determined to be due to variance in the calibration process rather than fill-oil loss. One transmitter, 1LT-921, exhibited sustained zero shift that was indicative of possible fill-oil loss. This transmitter is one of three (two Rosemount, one Barton) redundant transmitters used to indicate refueling water storage tank water level. In accordance with the operability acceptance criteria established by PG&E, this transmitter has been scheduled for recalibration. Further actions for this transmitter will be taken as needed in accordance with procedures described in Bulletin Action 4 based on the results of the recalibration.

Bulletin Action 4

Develop and implement an enhanced surveillance program to monitor transmitters identified in Item 1 for symptoms of loss of fill-oil. This enhanced surveillance program should consider the following or equally effective actions.

a. Ensuring appropriate licensee personnel are aware of the symptoms that a transmitter, both during operation and during calibration activities, may exhibit if it is experiencing a loss of fill-oil and the need for prompt identification of transmitters than may exhibit these symptoms;

b. Enhanced transmitter monitoring to identify sustained transmitter drift;

c. Review of transmitter performance following planned or unplanned plant transients or tests to identify sluggish transmitter response;

d. Enhanced awareness of sluggish transmitter response to either increasing or decreasing test pressures during calibration activities;

e. Development and implementation of a program to detect changes in process noise; and

f. Development and application to transmitters identified as having exhibited symptoms indicative of loss of fill-oil of an appropriate operability acceptance criteria. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria should be addressed in accordance with the applicable technical specification. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria and are not addressed in the technical specifications should be replaced at the earliest appropriate opportunity.

PG&E Response

PG&E has developed a surveillance program as described in Temporary Work Instruction PTRE 90-01, "Enhanced Monitoring Program for Rosemount Transmitters-Interim Work Instruction for IE Bulletin 90-01," to monitor all redundant Rosemount transmitters. This Temporary Work Instruction will be replaced by an Administrative Procedure prior to October 31, 1990. The program includes review of transmitter performance following plant transients and revision of calibration procedures to include cautions regarding transmitter sluggishness during calibration activities. This program also incorporates Bulletin 90-01 reporting requirement 2. In addition, the program will monitor drift for those Rosemount transmitters installed in reactor protection, engineered safety features, and ATWS systems. Other transmitters

that have automatic control functions and are normally exposed to process pressures and are installed in redundant service may also be monitored for drift.

This surveillance program uses data taken through connections to the Units 1 and 2 plant computers. This data is then analyzed to detect instrument output that deviates from redundant instruments. When deviation beyond those limits recommended by the Rosemount Technical Bulletin No. 4 is detected, steps will be taken in accordance with approved plant procedures to perform further diagnostic actions, and to take corrective actions if necessary. PG&E does not intend, however, to use Item e) of Bulletin Action 4 since information from Rosemount and others indicates that process noise monitoring is not a viable method for detection of fill-oil loss.

Trending via computer for all identified Unit 2 Rosemount transmitters began in July 1990. Trending via computer also started in July 1990 for Unit 1, with the exception of approximately 30 percent of the Unit 1 transmitters. The data for this 30 percent group are currently updated at only 15 minute intervals. This update interval does not support the accuracy required for drift trending. PG&E will upgrade the Unit 1 computer system in the upcoming Unit 1 fourth refueling outage, currently scheduled to begin on approximately February 15, 1991. Upon completion of this upgrade, all identified Unit 1 transmitters will be trended via computer data. In the interim, PG&E intends to trend these Unit 1 transmitters from the 30 percent group using calibration data.

With respect to the training of appropriate personnel, training for licensed personnel was included in the licensed operator requalification training program during Session 89-7, and was completed on June 22, 1990. Instrumentation and Controls (I&C) technicians are receiving information during quarterly seminars. In addition, all recurring task work packages for calibration or time response testing of Rosemount transmitters contain a requirement to read PG&E I&C Maintenance Bulletin 90-05 that describes the loss of fill-oil failure mechanism and the resulting symptoms. This Bulletin also provides actions to be taken by Operations and Maintenance personnel when fill-oil loss symptoms are exhibited.

Bulletin Action 5

Document and maintain in accordance with existing plant procedures a basis for continued plant operation covering the time period from the present until such time that the Model 1153 Series B, 1153 Series D, and Model 1154 transmitters from the manufacturing lots that have been identified by the Rosemount as having a high failure fraction due to loss of fill-oil in use in the reactor protection or engineered safety features actuation systems can be replaced. In addition, while performing the actions requested above, addressees may identify transmitters exhibiting symptoms indicative of loss of fill-oil that do not conform to the established operability acceptance criteria and are not addressed in the technical specifications. As these transmitters are identified, this basis for continued plant operation should be updated to address these transmitters covering the time period from the time these transmitters are identified until such time that these transmitters can be replaced. When developing and updating this basis for continued plant operation, addressees may wish to consider transmitter diversity and redundancy, diverse trip functions (a separate trip function that may also provide a corresponding trip signal), special system and/or component tests, or (if necessary) immediate replacement of certain suspect transmitters.

PG&E Response

In accordance with approved plant procedures, a Justification for Continued Operation (JCO) was prepared to address the transmitters from the manufacturing lots identified to have a high failure fraction that were installed in reactor protection and engineered safety features systems, and was in force until all those transmitters were replaced, at which time the JCO was closed. Currently, there are no suspect lot transmitters installed in the reactor protection, engineered safety features, or ATWS systems at DCPP. If PG&E receives notification of further suspect lots of Rosemount transmitters and identifies suspect lot transmitters in these systems, a JCO will be prepared.

Attachment

LIST OF DCPP ROSEMOUNT TRANSMITTERS AS REQUESTED BY
BULLETIN REPORTING REQUIREMENT 1.b)

Attachment

LIST OF DCPP ROSEMOUNT TRANSMITTERS
AS REQUESTED BY BULLETIN REPORTING REQUIREMENT 1.b)

Tag #	Serial#/Model#	Date Installed	Symptoms	Corrective Action/ Disposition	System Where Installed
1FT-532	408233/1153DD4	approx. 4/85	Slow response.	Replaced transmitter 4/87. Sent to Rosemount for failure analysis. Failure due to oil loss from sensing module.	Main Steam System (MSS)/ Steam Generator (SG) 1-3 steam flow
1FT-542	408496/1153DD4	approx. 4/85	Slow response.	Replaced transmitter 3/87. Sent to Rosemount for failure analysis. Failure due to oil loss from sensing module.	MSS/SG 1-4 steam flow
1LT-517	419006/1153DP4	03/21/88	Zero and span shifted.	Replaced transmitter 6/88. Sent to Rosemount for failure analysis. Failure due to oil loss from sensing module.	MSS/SG 1-1 level
2FT-414	412047/1153HD5	approx. 6/85	Zero and span shifted.	Replaced transmitter 10/87.	Reactor Coolant System (RCS)/ Loop 1 flow
2FT-415	413040/1153HD5	02/05/86	Non-responsive compared to redundant transmitters.	Replaced transmitter 9/86. Transmitter discarded.	RCS/Loop 1 flow
2FT-426	413197/1153HD5	08/07/85	Sluggish response.	Replaced transmitter 6/86.	RCS/Loop 2 flow
2FT-513	410033/1153HD5	approx. 10/85	Zero and span shifted.	Replaced transmitter 01/87. Sent to Rosemount for failure analysis. Failure due to oil loss from sensing module.	MSS/SG 2-1 steam flow

Attachment (Cont.)

LIST OF DCPP ROSEMOUNT TRANSMITTERS
AS REQUESTED BY BULLETIN REPORTING REQUIREMENT 1.b)

Tag #	Serial#/Model#	Date Installed	Symptoms	Corrective Action/ Disposition	System Where Installed
2FT-542	410114/1153HD5	approx. 10/84	Slow response.	Replaced transmitter 09/86. Sent to Rosemount for failure analysis. Failure due to oil loss from sensing module.	MSS/SG 2-4 steam flow
2FT-543	410115/1153HD5	approx. 10/85	Slow response.	Replaced transmitter 05/87. Sent to Rosemount for failure analysis. Failure due to oil loss from sensing module.	MSS/SG 2-4 steam flow
2LT-459	410170/1153HD5	01/28/85	Slow response.	Replaced transmitter 05/87.	RCS/Pressurizer level
2LT-460	413045/1153HD5	08/85	Sluggish response. Zero and span shifted.	Replaced transmitter 04/86. Sent to Rose-mount for failure analysis. Failure due to low oil in module.	RCS/Pressurizer level
2LT-461	410172/1153HD5	01/85	Zero and span shifted. Unable to calibrate.	Replaced transmitter 03/86. Sent to Rose-mount for failure analysis. Failure due to low oil in module.	RCS/Pressurizer level
2LT-461	413046/1153HD5	03/86	Sluggish response.	Replaced transmitter 12/86. Sent to Rose-mount for failure analysis. Failure due to low oil in module.	RCS/Pressurizer level