



Northern States Power Company

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July 16, 1990

NRC Bulletin 90-01

Director of Nuclear Reactor Regulation
U S Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Response to NRC Bulletin No. 90-01
Loss of Fill-Oil in Transmitters Manufactured by Rosemount

The following information is provided in response to the reporting requirements contained in NRC Bulletin 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount."

Reporting Requirement No. 1 states:

Provide, within 120 days after receipt of this bulletin, a response that:

- a) Confirms that Items 1, 2, 3, 4, and 5 of Requested Actions for Operating Reactors have been completed.
- b) Identifies the indicated manufacturer; the model number; the system the transmitter was utilized in; the approximate amount of time at pressure; the corrective actions taken; and the disposition (e.g., returned to vendor for analysis) of Rosemount Model 1153 Series B, Model 1153 Series D, and Model 1154 transmitters that are believed to have exhibited symptoms indicative of loss of fill-oil or have been confirmed to have experienced a loss of fill-oil. This should include Model 1153 Model Series B, Model 1153 Series D and Model 1154 transmitters manufactured after July 11, 1989.
- c) Identifies the system in which the model 1153 Series B, 1153 Series D and Model 1154 transmitters from the manufacturing lots that have been identified by Rosemount as having a high failure fraction due to loss of fill-oil are utilized and provides a schedule for replacement of these transmitters which are in use in the reactor protection or engineered safety features actuation systems.

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Response

- a) Items 1, 2, 3, 4, and 5 of Requested Actions for Operating Reactors have been completed. Details regarding the completion of the Requested Actions for Operating Reactors are contained in Attachment 2.
- b) One transmitter has been confirmed to have experienced a loss of fill-oil, and a second has shown some symptoms indicative of loss of fill-oil. Neither transmitter was from the suspect lots reported by Rosemount. The requested information for these failures follows:

	<u>Failure 1</u>	<u>Failure 2</u>
Manufacturer	Rosemount	Rosemount
Model Number	1153GD9	1154HP5
Serial Number	41C286	416852
System	RCS	FW
In Service Date	03/19/86	05/05/87
Failure Date	09/11/86	08/28/88
Process Pressure	2235 psig	750 psig
Time at Pressure	~13410 psi-month	~10500 psi-month
Corrective Action	Replaced	Replaced
Disposition	Refurbished in 1990	Returned to Rosemount for Confirmation/ Repair - status presently undetermined by Rosemount

- c) There are no transmitters currently in use or in spare parts from manufacturing lots that have been identified by Rosemount as having a high failure fraction due to loss of fill-oil.

Reporting Requirement No. 2 stated:

Model 1153 Series B, 1153 Series D and Model 1154 transmitters that, subsequent to providing the response required by Item 1 above, exhibit symptoms of loss of fill-oil or are confirmed to have experienced a loss of fill-oil should be reviewed for reportability under existing NRC Regulations. If determined not to be reportable, addressees are requested to document and maintain, in accordance with existing plant procedures, information consistent with that requested in item 1b) above for each transmitter identified.

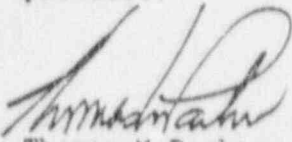
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Northern States Power Company

Response

Model 1153 Series B, Model 1153 Series D, and Model 1154 transmitters that, subsequent to providing this response, do not meet the operational acceptance criteria specified, will be reviewed for reportability under existing NRC regulations. If determined to be not reportable, the failures will be documented, with information consistent to that requested in Item 1 b) above, on the applicable calibration cards.

Please contact us if you have any questions related to the information we have provided.



Thomas M Parker
Manager
Nuclear Support Services

c: Regional Administrator - Region III, NRC
Senior Resident Inspector, NRC
NRR Project Manager, NRC
G Charkoff

Attachments

1. Affidavit
2. Prairie Island Response to Requested Actions for Operating Reactors

ATTACHMENT 1

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY


PRAIRIE ISLAND NUCLEAR GENERATING PLANT DOCKET NO. 50-282
50-306

LOSS OF FILL-OIL IN TRANSMITTERS
MANUFACTURED BY ROSEMOUNT

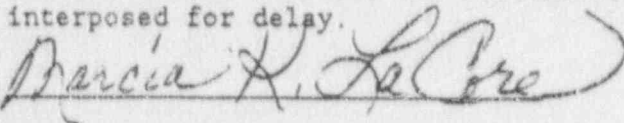
Northern States Power Company, a Minnesota corporation, with this letter is submitting information requested by NRC Bulletin 90-01.

This letter contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By 
Thomas M. Parker
Manager, Nuclear Support Services

On this 16th day of July, 1990 before me a notary public in and for said County, personally appeared Thomas M. Parker, Manager, Nuclear Support Services, and being first duly sworn acknowledged that he is authorized to execute this document on behalf of Northern States Power Company, that he knows the contents thereof, and that to the best of his knowledge, information, and belief the statements made in it are true and that it is not interposed for delay.





COMMENT 2

Response to Requested Actions for Operating Reactors

Requested Action No. 1

Identify Model 1153 Series B, 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).

Response

The following Rosemount 1153 Series B, 1153 Series D or Model 1154 pressure or differential pressure transmitters are installed in Prairie Island safety-related systems or ATWS-related systems:

<u>TAG NO.</u>	<u>DESCRIPTION</u>	<u>SYSTEM</u>
1FT-464	11 STEAM GENERATOR STEAM FLOW	RP
1FT-465	11 STEAM GENERATOR STEAM FLOW	RP
1FT-466	11 STEAM GENERATOR FEEDWATER FLOW *	FW
1FT-467	11 STEAM GENERATOR FEEDWATER FLOW *	FW
1FT-474	12 STEAM GENERATOR STEAM FLOW	RP
1FT-475	12 STEAM GENERATOR STEAM FLOW	RP
1FT-476	12 STEAM GENERATOR FEEDWATER FLOW *	FW
1FT-477	12 STEAM GENERATOR FEEDWATER FLOW *	FW
1PT-709	11 REACTOR COOLANT LOOP PRESSURE	EM
1PT-710	12 REACTOR COOLANT LOOP PRESSURE	EM
1PT-751	11 REACTOR COOLANT LOOP PRESSURE	EM
1PT-761	12 REACTOR COOLANT LOOP PRESSURE	EM
2FT-464	21 STEAM GENERATOR STEAM FLOW	RP
2FT-465	21 STEAM GENERATOR STEAM FLOW	RP
2FT-466	21 STEAM GENERATOR FEEDWATER FLOW *	FW
2FT-467	21 STEAM GENERATOR FEEDWATER FLOW *	FW
2FT-474	22 STEAM GENERATOR STEAM FLOW	RP
2FT-475	22 STEAM GENERATOR STEAM FLOW	RP
2FT-476	22 STEAM GENERATOR FEEDWATER FLOW *	FW
2FT-477	22 STEAM GENERATOR FEEDWATER FLOW *	FW
2PT-709	21 REACTOR COOLANT LOOP PRESSURE	EM
2PT-710	22 REACTOR COOLANT LOOP PRESSURE	EM
2PT-751	21 REACTOR COOLANT LOOP PRESSURE	EM
2PT-761	22 REACTOR COOLANT LOOP PRESSURE	EM

* - ATWS-Related

EM - Event Monitoring (post-accident)

FW - Feedwater Control

RP - Reactor Protection

Requested Action No. 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.

Response

Serial numbers for all installed and spare transmitters have been compared to Rosemount's list of suspect transmitters. No transmitters were identified as belonging to the subject lots. This was confirmed in a letter from Rosemount dated February 10, 1989. Spare transmitters manufactured prior to July 11, 1989 have been returned to Rosemount for remanufacture/replacement of sensing cell, O-rings and housing pursuant to post July 11, 1989 manufacturing specifications.

Requested Action No. 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.

Response

Operability acceptance criteria have been established for each transmitter. The acceptance criteria were calculated in accordance with Rosemount Technical Bulletin 4 Section 3.2, "Guidelines for Trending Calibration Data" and Table A1. Calibration data for each transmitter since installation were compared to the operability acceptance criteria. No transmitters currently installed have exhibited symptoms indicative of loss of fill-oil or exceeded the operability acceptance criteria.

Requested Action No. 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 that 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.

Response

- a) Operations has been informed via operations notes, formal class room training and a note added to the shift channel check surveillance procedure of the symptoms indicative of a loss of fill-oil.

Instrumentation and Control Personnel have been informed by distribution of Rosemount Technical Bulletins, pre-calibration briefings with supervisors and formal class room training. A Section

Work Instruction has been developed identifying responsibilities of Instrumentation and Control personnel during calibration of Rosemount transmitters.

- b) A Section Work Instruction has been developed that requires the System Engineer to monitor calibration data for sustained drift and take required actions if operability acceptance criteria are approached or exceeded.
- c) The post-trip review form (entitled Trip Report) is being revised to include acquiring plant computer time history data during the transient by the I&C Engineer or Computer Engineer and will be included in the System Engineer's Quarterly Monitoring file for comparison of response. (See response to e below)
- d) An Instrument Work Note has been developed instructing the technician to watch for sluggishness and calibration shift during calibration and specifying guidelines for transmitter response per Rosemount Technical Bulletin 4 Appendix B.
- e) The operations shift check procedure of control room instruments has been revised to monitor for changes or variations in process noise between redundant channels.

For safety-related transmitters that have not met time-in-service requirements per Rosemount Technical Bulletin 4, a Section Work Instruction has been generated requiring the system engineer to monitor process noise via the plant process computer system at a minimum of once per quarter. Monitoring transmitters after time-in-service requirements are met will be at the discretion of the system engineer. Any transmitter that has shown symptoms indicative of loss of fill-oil will be monitored regardless of time in service.

NSP is considering an additional data acquisition system that would enhance detection of changes in process noise response.

- f) No presently installed transmitters have indicated any symptoms of loss of fill-oil. Operability acceptance criteria have been developed for installed transmitters based on Rosemount Technical Bulletin 4 Table A1 criteria. If a transmitter exceeds these criteria or indicates that it will exceed these criteria prior to its next scheduled calibration and exhibits sluggishness or degradation in process noise response, the appropriate Technical Specification will be applied, or if no Technical Specification applies that transmitter will be replaced at the earliest appropriate opportunity. The operability acceptance criteria are specified in a Section Work Instruction.

Requested Action No. 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 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.

Response

No presently installed Rosemount 1153 or 1154 pressure or differential pressure transmitters have shown symptoms indicative of loss of fill-oil. If any Rosemount 1153 or 1154 transmitters are identified as showing symptoms indicative of loss of fill-oil and exceed operability acceptance criteria, the appropriate Technical Specification will be applied or if no Technical Specification applies that transmitter will be replaced at the earliest appropriate opportunity.