



Northern States Power Company

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March 1, 1993

NRC Bulletin 90-01
Supplement 1

US 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 Supplement 1
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, Supplement 1, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount."

Reporting Requirement No. 1 states:

[Provide within 60 days] a statement whether the licensee will take the actions requested [by NRC Bulletin 90-01, Supplement 1].

Response

The actions requested by NRC Bulletin 90-01, Supplement 1, that are applicable to the Rosemount transmitters located at the Prairie Island Nuclear Generating Plant, have been taken and completed.

Reporting Requirement No. 2 states:

With regard to the action requested above that the licensee is taking [provide]:

- a. A list of the specific actions that the licensee will complete to meet Item 1 of Requested Actions for Operating Reactors provided in [NRC Bulletin 90-01, Supplement 1.]
- b. The schedule for completing licensee action to meet Item 1 of Requested Action provided in [NRC Bulletin 90-01, Supplement 1.]
- c. When completed, a statement confirming that Items 1 and 2 of requested Actions for Operating Reactors provided in [NRC Bulletin 90-01, Supplement 1] have been completed.

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Response

- a. Details of specific actions taken and/or justifications are contained in Attachment 2.
- b. All actions required to meet Item 1 of the Requested Actions are currently being performed at Prairie Island. The actions to meet Item 1 of the Requested Actions have been performed at Prairie Island since our response to the original Bulletin 90-01. The high pressure transmitters have been voluntarily monitored at Prairie Island on quarterly and/or refueling intervals.
- c. All the actions required to meet Items 1 and 2 of the Requested Actions are currently being performed. We consider the actions to meet Items 1 and 2 of the Requested Actions to be complete. The actions to meet Items 1 and 2 of the Requested Actions of Supplement 1 have been performed at Prairie Island since our response to the original Bulletin 90-01.

Reporting Requirement No. 3 states:

[Provide] a statement identifying those actions requested by the NRC that the licensee is not taking and an evaluation which provides the bases for not taking the requested actions.

Response

Actions to meet Item 1 and 2 of the Requested Actions have been completed as applicable. See Attachment 2 for additional detail.

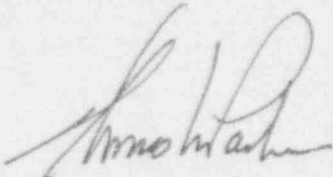
With this response we are making the following new commitments:

1. The eight Rosemount transmitters used for post accident monitoring of reactor coolant system pressure and as such are installed in a safety-related application that has a normal operating pressure greater than 1500 psi, will be monitored, using an enhanced surveillance program, at least once each refueling cycle, but not exceeding every 24 months.
2. The sixteen transmitters installed in reactor protection trip systems, ESF actuation systems, or ATWS systems that have a normal operating pressure greater than or equal to 500 psi and less than or equal to 1500 psi will be monitored at least once each refueling cycle, not to exceed every 24 months, using an enhanced surveillance program until the transmitter reaches the appropriate psi-month threshold criterion recommended by Rosemount.
3. Three Spare Transmitters for the reactor protection trip systems, ESF actuation systems, or ATWS systems that have a normal operating pressure greater than or equal to 500 psi and less than or equal to 1500 psi will be returned to Rosemount for refurbishment.

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Please contact Gene Eckholt (612) 388-1121 ext 4663 if you have any questions related to the information we have provided.



Thomas M Parker
Director
Nuclear Licensing

c: Regional Administrator - III, NRC
NRR Project Manager, NRC
Sr Resident Inspector, NRC
State of Minnesota
Attn: Kris Sanda
J Silberg

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

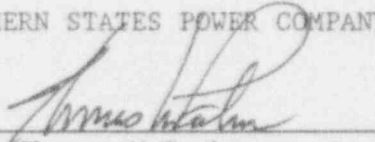
LOSS OF FILL-OIL IN TRANSMITTERS
MANUFACTURED BY ROSEMOUNT

Northern States Power Company, a Minnesota corporation, with this letter is submitting information requested by NRC Bulletin 90-01, Supplement 1.

This letter contains no restricted or other defense information.

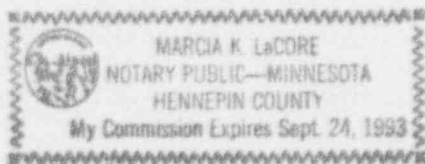
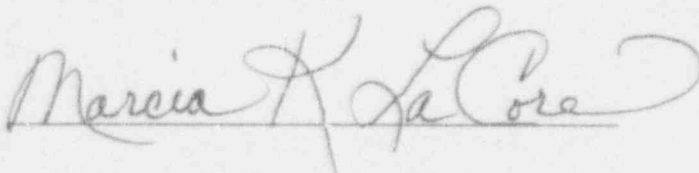
NORTHERN STATES POWER COMPANY

By



Thomas M Parker
Director
Nuclear Licensing

On this 1st day of March 1993 before me a notary public in and for said County, personally appeared Thomas M Parker, Director Nuclear Licensing, 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.



ATTACHMENT 2

Prairie Island Response to Requested Actions for Operating Reactors

Requested Action No. 1

Review plant records and identify any Rosemount Model 1153 Series B, Model 1153 Series D, and Model 1154 transmitters manufactured before July 11, 1989, that are used or may be used in the future in either safety-related systems or systems installed in accordance with 10 CFR 50.62 (the ATWS rule), and

- a. Expeditiously replace, or monitor for the life of the transmitter on a monthly basis using an enhanced surveillance monitoring program, any transmitters that have a normal operating pressure greater than 1500 psi and that are installed in reactor protection trip systems, ESF actuation systems or ATWS systems. Action for those transmitters that have not met the Rosemount psi-month threshold criterion should be expedited. At their discretion, licenses may monitor using an enhanced surveillance program at least once every refueling cycle, but not exceeding 24 months, transmitters in this category if the appropriate psi-month threshold criterion recommended by Rosemount has been reached, and the monitoring interval is justified based upon transmitter performance in service and its specific safety function. The justification should show that a sufficiently high level of reliability for the function is provided by the redundancy or diversity of applicable instrumentation and control systems, commensurate with the importance of the function, when considered in conjunction with the overall performance of the reactor protection trip system, ESF actuation systems, or ATWS system. Provide to the NRC a copy of the licensee justification to extend the enhanced surveillance program beyond the monthly test interval for transmitters that have reached the appropriate psi-month threshold criterion recommended by Rosemount.
- b. Replace, or monitor for the life of the transmitter on a quarterly basis using an enhanced surveillance monitoring program, any transmitters that have a normal operating pressure greater than 1500 psi and that are used in safety-related applications but are not installed in reactor protection trip systems, ESF actuation systems, or ATWS systems. At their discretion, licensees may monitor using an enhanced surveillance program at least once every refueling cycle, but not exceeding 24 months, transmitters in this category if the appropriate psi-month threshold criterion recommended by Rosemount has been reached, and the monitoring interval is justified based upon transmitter performance in service and its specific function. Provide to the NRC a copy of the licensee justification to extend the enhanced surveillance program beyond the quarterly test interval for transmitters that have reached the appropriate psi-month threshold criterion recommended by Rosemount.
- c. [For BWRs] Replace, or monitor on a monthly basis using an enhanced surveillance monitoring program, until the transmitter reaches the appropriate psi-month threshold criterion recommended by Rosemount, any transmitters that have a normal operating pressure greater than 1000 psi and less than or equal to 1500 psi, that are installed in reactor protection trip systems, ESF actuation systems or ATWS systems. On a case-by-case basis except for transmitters that initiate reactor protection or ATWS trips for high pressure or low water level, licensees

Prairie Island Response to Requested Actions for Operating Reactors

may monitor using an enhanced surveillance program at least once every refueling cycle, but not exceeding 24 months, if sufficient justification is provided based upon transmitter performance in service and its specific safety function. The justification should show that a sufficiently high level of reliability for the function is provided by the redundancy or diversity of applicable instrumentation and control systems, commensurate with the importance of the function, when considered in conjunction with the overall performance of the reactor protection trip system, ESF actuation systems, or ATWS system. Provide to the NRC a copy of the licensee justification to extend the enhanced surveillance program beyond the monthly test interval.

[For PWRs] Replace, or monitor at least once every refueling cycle, but not exceeding 24 months, using an enhanced surveillance program until the transmitter reaches the appropriate psi-month threshold criterion recommended by Rosemount, any transmitters that have a normal operating pressure greater than 500 psi and less than or equal to 1500 psi and that are installed in reactor protection trip systems, ESF actuation systems, or ATWS systems.

- d. Replace, or monitor at least once every refueling cycle, but not exceeding 24 months, using an enhanced surveillance monitoring program until the transmitter reaches the appropriate psi-month threshold criterion recommended by Rosemount, any transmitters used in safety-related systems that have a normal operating pressure greater than 500 psi and less than or equal to 1500 psi, and that are not installed in reactor protection trip systems, ESF actuation systems, or ATWS systems.
- e. At licensee discretion, exclude from the enhanced surveillance program any transmitters that have a normal operating pressure greater than 500 psi and less than or equal to 1500 psi that have reached the appropriate psi-month threshold criterion recommended by Rosemount (60,000 psi-months or 130,000 psi-months depending on the range code of the transmitter). A high degree of confidence should be maintained for detecting failure of these transmitters caused by a loss of fill-oil and a high degree of reliability should be maintained for the function consistent with its safety significance.
- f. At licensee discretion, exclude from the enhanced surveillance program any transmitters that have a normal operating pressure less than or equal to 500 psi. A high degree of confidence should be maintained for detecting failure of these transmitters caused by a loss of fill-oil and a high degree of reliability should be maintained for the function consistent with its safety significance.

Prairie Island Response to Requested Actions for Operating Reactors

Response

Plant records have been reviewed and Rosemount Model 1153 Series B, Model 1153 Series D, and Model 1154 transmitters manufactured before July 11, 1989 that are used or may be used in the future in either safety-related systems or systems installed in accordance with 10 CFR 50.62 (ATWS) have been identified as follows:

<u>TAG NO</u>	<u>DESCRIPTION</u>	<u>SYSTEM</u>	<u>PRESS</u>
1FT-177	11 RCP SEAL LEAKOFF FLOW	VC	50
1FT-178	12 RCP SEAL LEAKOFF FLOW	VC	50
1FT-464	11 STEAM GENERATOR STEAM FLOW	RP	710
1FT-465	11 STEAM GENERATOR STEAM FLOW	RP	710
1FT-466	11 STEAM GENERATOR FEEDWATER FLOW *	FW	1130
1FT-467	11 STEAM GENERATOR FEEDWATER FLOW *	FW	1130
1FT-474	12 STEAM GENERATOR STEAM FLOW	RP	710
1FT-475	12 STEAM GENERATOR STEAM FLOW	RP	710
1FT-476	12 STEAM GENERATOR FEEDWATER FLOW *	FW	1130
1FT-477	12 STEAM GENERATOR FEEDWATER FLOW *	FW	1130
1FT-924	1 SI RX VESSEL INJ LINE FLOW	SI	2200†
1FT-925	1 SI COLD LEG INJ LINE FLOW	SI	2200†
1PT-709	11 REACTOR COOLANT LOOP PRESSURE	EM	2235
1PT-710	12 REACTOR COOLANT LOOP PRESSURE	EM	2235
1PT-751	11 REACTOR COOLANT LOOP PRESSURE	EM	2235
1PT-761	12 REACTOR COOLANT LOOP PRESSURE	EM	2235
2FT-177	21 RCP SEAL LEAKOFF FLOW	VC	50
2FT-178	22 RCP SEAL LEAKOFF FLOW	VC	50
2FT-464	21 STEAM GENERATOR STEAM FLOW	RP	710
2FT-465	21 STEAM GENERATOR STEAM FLOW	RP	710
2FT-466	21 STEAM GENERATOR FEEDWATER FLOW *	FW	1130
2FT-467	21 STEAM GENERATOR FEEDWATER FLOW *	FW	1130
2FT-474	22 STEAM GENERATOR STEAM FLOW	RP	710
2FT-475	22 STEAM GENERATOR STEAM FLOW	RP	710
2FT-476	22 STEAM GENERATOR FEEDWATER FLOW *	FW	1130
2FT-477	22 STEAM GENERATOR FEEDWATER FLOW *	FW	1130

Prairie Island Response to Requested Actions for Operating Reactors

<u>TAG NO</u>	<u>DESCRIPTION</u>	<u>SYSTEM</u>	<u>PRESS</u>
2FT-924	2 SI RX VESSEL INJ LINE FLOW	SI	2200†
2FT-925	2 SI COLD LEG INJ LINE FLOW	SI	2200†
2PT-709	21 REACTOR COOLANT LOOP PRESSURE	EM	2235
2PT-710	22 REACTOR COOLANT LOOP PRESSURE	EM	2235
2PT-751	21 REACTOR COOLANT LOOP PRESSURE	EM	2235
2PT-761	22 REACTOR COOLANT LOOP PRESSURE	EM	2235
415083	Spare Xmtr Model 1153HD6RC	N/A	N/A
409658	Spare Xmtr Model 1153HD6RC	N/A	N/A
409659	Spare Xmtr Model 1153HD6RC	N/A	N/A

* - ATWS Related
† - Normally at Ambient Pressure
EM - Event Monitoring (post-accident)
FW - Feedwater Control
RP - Reactor Protection
SI - Safety Injection (Non-Safety Related)
VC - Volume Control (Non-Safety Related)
N/A - Not Applicable

- a. No Rosemount Model 1153 Series B, Model 1153 Series D or Model 1154 transmitters manufactured prior to July 11, 1989 are currently installed in reactor protection trip, ESF actuation or ATWS systems that have a normal operating pressure of greater than 1500 psi.
- b. Eight of the transmitters listed above, which monitor Reactor Coolant Pressure, are installed in safety-related applications that have a normal operating pressure greater than 1500 psi. These eight transmitters will be monitored at least once each refueling cycle, but not exceeding every 24 months.

Justification:

These eight transmitters were installed to monitor Reactor Coolant System Pressure to satisfy Regulatory Guide 1.97 and NUREG-0737 requirements for Post-Accident Monitoring. These instruments provide control room indication for use during the performance of the Emergency Operating Procedures. Multiple redundant sources of Reactor Coolant Pressure are available. The operators are provided training to use redundant indication when available. The plant Emergency Response Computer System automatically alarms when redundant indication deviates by more than a pre-set amount, alerting the operator to the degraded information. These transmitters have been part of an enhanced surveillance program since the original Bulletin 90-01 was issued. This program included trending calibration information since installation of the transmitters, in accordance with the published manufacturer guidelines. None of the transmitters have shown indication of loss of fill-oil as evidenced by calibration trending and/or quarterly process noise analysis. Each of these transmitters were installed between

Prairie Island Response to Requested Actions for Operating Reactors

December 1981 and December 1987. Normal process pressure for each of the transmitters is 2235 psi. Each of the transmitters has well exceeded the time at pressure criteria of 60,000 psi-months and is considered mature. Actual transmitter maturity ranges from 124,000 to 270,000 psi-months.

- c. Sixteen of the transmitters listed above, are installed in reactor protection trip systems, ESF actuation systems, or ATWS systems that have a normal operating pressure greater than or equal to 500 psi and less than or equal to 1500 psi. Each of these transmitters will be monitored at least once each refueling cycle, not to exceed every 24 months, using an enhanced surveillance program until the transmitter reaches the appropriate psi-month threshold criterion recommended by Rosemount. Three Spare transmitters for these functions are listed above. These transmitters will be returned to Rosemount for refurbishment.
- d. No Rosemount Model 1153 Series B, Model 1153 Series D or Model 1154 transmitters manufactured prior to July 11, 1989 are currently installed in safety-related systems other than reactor protection trip, ESF actuation or ATWS systems that have a normal operating pressure of greater than 500 psi and less than 1500 psi.
- e. Safety-Related transmitters that have a normal operating pressure greater than 500 psi and less than 1500 psi that reach the appropriate psi-month threshold criteria recommended by Rosemount will be excluded from the enhanced surveillance program at Northern States Power's discretion. Existing administrative controls for Instrument and Control, Operations and Engineering ensure a high degree of confidence in detection of a loss of fill oil problem. Redundant and diverse transmitters exist to ensure that a high degree of reliability is maintained for the applicable functions.

Four transmitters are installed in non-safety related applications that have a normal operating pressure greater than 500 psi and less than 1500 psi. These transmitters only see normal operating pressure for one hour per month during testing of the associated system. For the remainder of the month these transmitters see ambient pressure. The average pressure for these transmitters is well below 500 psi. Therefore, these transmitters will be excluded from the enhanced surveillance program at Northern States Power's discretion. Existing administrative controls for Instrument and Control, Operations and Engineering ensure a high degree of confidence in detecting a loss of fill oil problem. The low average pressure for this application precludes the mechanism for oil-loss, thus a high degree of reliability will be maintained.

- f. Four of the transmitters listed above have normal operating pressures less than 500 psi. These transmitters will be excluded from the enhanced surveillance program at Northern States Power's discretion. Existing administrative controls for Instrument and Control, Operations and Engineering ensure a high degree of confidence in detecting a loss of fill oil problem. The low operating pressure for this application precludes the mechanism for oil-loss thus a high degree of reliability will be maintained.

Prairie Island Response to Requested Actions for Operating Reactors

Requested Action No. 2

Evaluate the enhanced surveillance monitoring program to ensure that the program provides measurement data with an accuracy range consistent with that needed for comparison with manufacturer drift data criteria for determining degradation caused by a loss of fill-oil.

Response

The enhanced surveillance program consists of trending accumulative transmitter zero and span drift and comparison with Rosemount specified drift acceptance criteria. The program requires additional testing be performed if cumulative drift exceeds the acceptance criteria. This testing is consistent with that recommended by Rosemount. Zero and Span data are recorded during refueling interval calibrations using calibrated test equipment. Data is recorded to an accuracy consistent with that to permit comparison with manufacturer drift acceptance criteria.