



Northern States Power Company

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April 22, 1991

10 CFR Part 50
Section 50.73

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

Auto-start of Control Room Special Ventilation System
Due to Spike on Newly Installed Radiation Monitor

The Licensee Event Report for this occurrence is attached.

This event was reported via the Emergency Notification System in accordance with 10 CFR Part 50, Section 50.72, on March 23, 1991. Please contact us if you require additional information related to this event.

Thomas M Parker
Manager
Nuclear Support Services

c: Regional Administrator - Region III, NRC
NRR Project Manager, NRC
Senior Resident Inspector, NRC
MPCA
Attn: Dr J W Ferman

Attachment

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PDR ADOCK 05000282
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IE 22
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 300 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT 1

DOCKET NUMBER (2)

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PAGE (3)

TITLE (4)

Auto-Start of Control Room Special Ventilation System
Due to Spike on Newly Installed Radiation Monitor

EVENT DATE (5)

LER NUMBER (6)

REPORT DATE (7)

OTHER FACILITIES INVOLVED (8)

MONTH

DAY

YEAR

YEAR

SEQUENTIA

NUMBER

REVISION

NUMBER

MONTH

DAY

YEAR

FACILITY NAMES

DOCKET NUMBER(S)

0

3

2

3

9

1

9

1

0

0

2

0

0

4

2

2

9

1

Prairie Island Unit 2

0 5 0 0 0 1 3 1 0 1 6

OPERATING
MODE (9)

N

20.402(b)

20.406(a)

X

50.73(a)(2)(vi)

73.71(b)

POWER
LEVEL
(10)

1 1 0 1 0

20.406(a)(1)(i)

50.36(a)(1)

50.73(a)(2)(vi)

73.71(a)

20.406(a)(1)(ii)

50.36(a)(2)

50.73(a)(2)(vii)

OTHER (Specify in Appendix
B and in Test, NRC Form
366A)

20.406(a)(1)(iii)

50.73(a)(2)(i)

50.73(a)(2)(viii)(A)

20.406(a)(1)(iv)

50.73(a)(2)(ii)

50.73(a)(2)(viii)(B)

20.406(a)(1)(v)

50.73(a)(2)(iii)

50.73(a)(2)(ix)

LICENSEE CONTACT FOR THIS LER (12)

NAME

TELEPHONE NUMBER

Arne Hunstad, Staff Engineer

AREA CODE

6 1 1 2 3 1 8 1 8 1 - 1 1 1 1 2 1 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NRC
B	VII	MIOINI	NI31015	Yes					

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED
SUBMISSION
DATE (15)

MONTH

DAY

YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE)

XX

NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately 300 single-spaced typewritten lines) (16)

On March 23, 1991, both units were operating at full power. At 0019 hours a spike on radiation monitor R-23 caused control room annunciation of control room High Radiation Train A, which resulted in auto-start of No. 121 Control Room Cleanup Fan and isolation of the control room outside air supply.

Several unplanned actuations of ESF ventilation systems had taken place over a period of several years as a result of spiking in the circuitry of radiation monitors. To help prevent recurrences, upgraded monitor modules had been ordered from the manufacturer. Upgraded monitor modules had been recently received and installed. Spurious high radiation alarms occurred in these new monitors in the first few hours of operation. No spurious alarms occurred on any of the new modules after 100 hours of operation. In communication with the manufacturer, it was determined that the 100-hour factory "burn-in" test specified in the purchase order had not been done. Had the burn-in requirement been met, no spurious alarms would have occurred after installation.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Prairie Island Nuclear Plant Unit 1	0 5 0 0 0 2 8 2	9 1	0 0 2	0 0	0 2	OF	0 4

TEXT (IF THERE ARE MORE THAN 1000 WORDS) NRC Form 286A (5-89)

EVENT DESCRIPTION

On March 23, 1991, both units were operating at full power. At 0019 hours a spike on radiation monitor R-23 (EHS Component Identifier: MON) caused control room annunciation of control room High Radiation Train A, which resulted in auto-start of No. 121 Control Room Cleanup Fan and isolation of the control room outside air supply. Upon investigation, the control room operator found radiation monitor R-23 in alarm with the meter reading at normal background levels. Redundant monitor R-24 was also reading at normal background levels. When operators had determined that the monitor actions were spurious, they removed radiation monitor R-23 from service and returned the control room ventilation system to normal.

Several unplanned actuations of Engineered Safety Feature systems (Auxiliary Building Special Ventilation and Spent Fuel Pool Special Ventilation) had taken place over a period of several years as a result of spiking in the circuitry of radiation monitors. These events were reported as Unit 1 LER's 88-007, 88-011, 89-008, 89-016, 89-018 and 90-005. To help prevent recurrences, upgraded monitor modules had been ordered from the manufacturer Nuclear Measurements Corporation. The upgrades were intended to eliminate unwanted actions caused by either intermittent component failures or poor connectors within the monitor; another monitor improvement would provide time-delay circuitry to prevent actuation of control functions even if a spike was generated.

Four upgraded monitor modules were recently received and three of these were installed in radiation monitors R-23 (Control Room Air Supply Radiation Monitor), R-25 (Spent Fuel Pool Air Monitor) and 1R-37 (Auxiliary Building Ventilation Gas Monitor). Monitor R-23, which was installed on March 22, produced a spurious high radiation alarm in its first few hours of service. Since wiring changes to provide the time delay feature of the module had not yet been made, the spurious high radiation alarm produced an auto-start of No. 121 Control Room Cleanup Fan. Additional spurious high radiation alarms were produced on monitors R-23 and 1R-37 within their first 100 hours of service, but the time delay feature on those monitors had been enabled so that actuation of ESF equipment was prevented.

Because of the spurious alarms seen on the installed monitors, a fourth module was bench-tested from March 27 through April 8. Two spurious high radiation alarms occurred on this test module, both within the first 100 hours of operation. No spurious alarms occurred on any of the new modules after 100 hours of operation. (The module in R-25 had been energized for more than 100 hours prior to installation while being bench tested.)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-301, U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

YEAR SEQUENTIAL REVISION
NUMBER NUMBER NUMBER

Prairie Island Nuclear Plant Unit 1 0 5 0 0 0 2 8 2 9 1 0 0 2 0 0 0 3 OF 0 4

TEXT (if more space is required, use additional NRC Form 365A's) (17)

As a result of these findings and communication with the manufacturer, it was determined that the factory "burn-in" test specified in the purchase order had not been done. The manufacturer was requested to withhold shipment of the other four modules ordered until the requested 100-hour burn-in test at the factory was documented.

CAUSE OF THE EVENT

The manufacturer had not provided a 100-hour burn-in test at the factory before shipment, as specified in the purchase order. This burn-in time was requested to expose any design deficiencies prior to shipment and to provide time for electronic components to settle into their operational characteristics. Had the burn-in requirement been met, no spurious alarms would have occurred after installation.

Had the time delay feature of monitor R-23 been enabled before placing the monitor in service, the spurious alarm would not have caused an unplanned actuation of ESF equipment. The installation procedure did not provide for making the wiring changes to enable the time delay feature before placing the monitor in service. This order of installation was intentional and was a result of evaluation of the risks of inadvertently causing an ESF actuation during all parts of the modification process.

ANALYSIS OF THE EVENT

The functional response of the automatic actuation of the control room cleanup fan and isolation of the outside air to the control room was according to design. The purpose of this isolation is to protect control room personnel from exposure to airborne radioactivity. Since this occurrence was not triggered by the presence of airborne radioactivity, there was no threat to the operation of the plant. Therefore, this event did not affect the health and safety of the public.

CORRECTIVE ACTION

After experiencing multiple spurious alarms in two of the three installed new modules, the fourth was bench tested for several days. The manufacturer was then requested to withhold shipment of the other four modules ordered until the requested 100-hour burn-in test at the factory was documented. Those four modules have now been received and will be installed shortly. Wiring changes to provide the time delay feature for the remaining four modules have been made.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPL. WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

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PAGE (3)

Prairie Island Nuclear Plant Unit 1

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9 1 -- 0 0 2 -- 0 0 0 4 OF 0 4

TEXT (If more space is required, use additional NRC Form 356A's) (17)

We had previously reported that the monitor improvements would be completed by March 31, 1991. As discussed above, the modifications were interrupted March 23, 1991, pending resolution of the problems. The monitor improvements both to the modules and the time delay circuits now appear to be effective if the burn-in time specification is observed. Therefore, the remaining modules will be installed shortly.

The failure of the vendor to comply with the purchase order requirements will be pursued by our vendor quality assurance group.

FAILED COMPONENT IDENTIFICATION

Nuclear Measurements Corporation Model APM-625 gas monitor with totalizer.

PREVIOUS SIMILAR EVENTS

Similar events were reported as Unit 1 LER's 88-007, 88-011 89-008, 89-016, 89-018 and 90-005.