



Northern States Power Company

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April 23, 1990

10 CFR Part 50
Section 50.73

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

Automatic Start of a Safeguards Cooling Water Pump
Caused by Inadequate Procedures

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, 1990. 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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LICENSEE EVENT REPORT (LER)

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) Prairie Island Nuclear Generating Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 2	PAGE (3) 1 OF 0 5
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TITLE (4)
Automatic Start of a Safeguards Cooling Water Pump Caused by Inadequate Procedures

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		
0	3	23	9	0	9	0	0	3	Prairie Island Unit 2		
0	3	23	9	0	9	0	0	3	0 5 0 0 0 3 10 6		
0	3	23	9	0	9	0	0	3	0 5 0 0 0		

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)									
	20.402(b)	<input type="checkbox"/>	20.406(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	73.71(b)	<input type="checkbox"/>		
POWER LEVEL (10) 11010	20.406(a)(1)(i)	<input type="checkbox"/>	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	73.71(c)	<input type="checkbox"/>		
	20.406(a)(1)(ii)	<input type="checkbox"/>	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Text, NRC Form 366A)			
	20.406(a)(1)(iii)	<input type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	<input type="checkbox"/>				
	20.406(a)(1)(iv)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	<input type="checkbox"/>				
	20.406(a)(1)(v)	<input type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	50.73(a)(2)(ix)	<input type="checkbox"/>				

LICENSEE CONTACT FOR THIS LER (12)

NAME Arne A Hunstad	TELEPHONE NUMBER AREA CODE 6 1 2 3 8 8 - 1 1 2 1
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS
B	K	G	P	W 3 1 8	Yes				

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On March 23, 1990, both units were operating at full power. The monthly operability test of No. 22 Diesel-Driven Cooling Water Pump was in progress. Immediately prior to the event, No. 22 Diesel-Driven Cooling Water Pump was running (and supplying the cooling water header) and No. 21 Motor-Driven Cooling Water Pump was off. When No. 21 Motor-Driven Cooling Water Pump was restarted, some indications were that the pump was operating normally, so No. 22 Diesel-Driven Cooling Water Pump was prepared to be stopped. (Though indications were that No. 21 Motor-Driven Cooling Water Pump had assumed some cooling water load, in fact the pump was air bound and was not pumping.) When the speed of No. 22 Diesel-Driven Cooling Water Pump was reduced (in accordance with the procedure), cooling water header pressure dropped to the setpoint for automatic start of the other Diesel-Driven Cooling Water Pump; No. 12 Diesel-Driven Cooling Water Pump started at 0350. This was a non-ESF actuation of ESF equipment.

The cause of the event was procedural inadequacy. Plant procedures did not give adequate guidance for the operator to detect loss of prime in a cooling water pump. The cause of the loss of prime of No. 21 Motor-Driven Cooling Water Pump was pump wear, allowing excessive air in-leakage while it was idle.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 30.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-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 Gen Plant Unit 1	DOCKET NUMBER (2) 105000282	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		90	003	00	02	OF 05

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

EVENT DESCRIPTION

On March 23, 1990, both units were operating at full power. Prairie Island has 5 cooling water pumps (EIS Component Identifier: P): 3 non-safeguards motor-driven pumps (EIS System Identifier Code: KG) and 2 safeguards diesel-driven pumps (EIS System Identifier Code: BI). The monthly operability test of No. 22 Diesel-Driven Cooling Water Pump was in progress. In this test, No. 22 Diesel-Driven Cooling Water Pump is started, allowed to pick up some of the cooling water system load, and then No. 21 Motor-Driven Cooling Water Pump is shut down. The diesel-driven cooling water pump is run for one hour and then the motor-driven cooling water pump is restarted and the diesel-driven cooling water pump shut down. Immediately prior to the event, No. 22 Diesel-Driven Cooling Water Pump was running (and supplying the cooling water header) and No. 21 Motor-Driven Cooling Water Pump was off and No. 12 Diesel-Driven Cooling Water Pump was off. When No. 21 Motor-Driven Cooling Water Pump was restarted, some indications were that the pump was operating normally (even though it was not), so No. 22 Diesel-Driven Cooling Water Pump was prepared to be stopped. When the speed of No. 22 Diesel-Driven Cooling Water Pump was reduced (in accordance with the procedure), cooling water header pressure dropped to the setpoint for automatic start of the other diesel-driven cooling water pump; No. 12 Diesel-Driven Cooling Water Pump started at 0350. This was a non-ESF actuation of ESF equipment.

The procedure asks the licensed control room operator to observe an increase in cooling water header pressure as an indication that the oncoming motor-driven cooling water pump has assumed some cooling water load. The control room operator observed a slight increase in cooling water header pressure, and then a slight decrease was observed. The outplant operator stationed locally at the cooling water pumps reported that a cooling water strainer had just entered its backwash cycle, an action that would explain the decrease in header pressure.

The procedure also asks the non-licensed operator to observe a temporary increase in speed of the diesel-driven cooling water pump as an indication that the motor-driven cooling water pump has assumed some of the cooling water load. The operator stationed locally reported he heard a temporary increase in speed.

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 (P-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 Gen Plant Unit 1	DOCKET NUMBER (2) 0500028290	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		90	0103	010	3	OF 05

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Though observation of those two parameters (header pressure and engine speed) indicated that No. 21 Motor-Driven Cooling Water Pump had assumed some cooling water load, in fact the pump was air bound and was not pumping. Therefore, when the speed of No. 22 Diesel-Driven Cooling Water Pump was reduced, header pressure dropped to the start setpoint of the other diesel-driven cooling water pump.

No. 12 Diesel-Driven Cooling Water Pump was stopped and placed in AUTO at 0530. No. 22 Diesel-Driven Cooling Water Pump was stopped and the surveillance test completed at 0625.

CAUSE OF THE EVENT

The cause of the event was procedural inadequacy. Plant procedures had been revised as a result of a previous event (Unit 1 LER 87-008), but the revision was not effective in preventing recurrence. The revision had asked the operator to verify proper pump operation by observing secondary indicators of system response to starting a pump. Since these indicators can be affected by other system perturbations, the indicators do not provide specific enough information to assure proper pump operation.

The cause of the loss of prime of No. 21 Motor-Driven Cooling Water Pump was pump wear, allowing excessive air in-leakage while it was idle.

ANALYSIS OF THE EVENT

This event is reported under 10CFR50.73(a)(2)(iv).

The health and safety of the public were not affected since the systems operated as expected.

CORRECTIVE ACTION

Procedures have been revised to improve guidance for detecting loss of prime.

The start setpoint for No. 121 Motor-Driven Cooling Water Pump, a non-safeguards backup pump, has been raised slightly to be sure it will start automatically before the diesel-driven cooling water pumps.

No. 21 Motor-Driven Cooling Water Pump will be replaced shortly after its replacement pump, which was ordered in 1989, is received.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-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 Gen Plt Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 2	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 385A's) (17)

FAILED COMPONENT IDENTIFICATION

No. 21 Motor-Driven Cooling Water Pump is a Worthington type 16-LN-28 centrifugal pump.

PREVIOUS SIMILAR EVENTS

Previous similar events (cooling water pumps loss of prime) have been reported as Unit 1 LER's 87-008 and 88-002.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 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 (8)

PAGE (3)

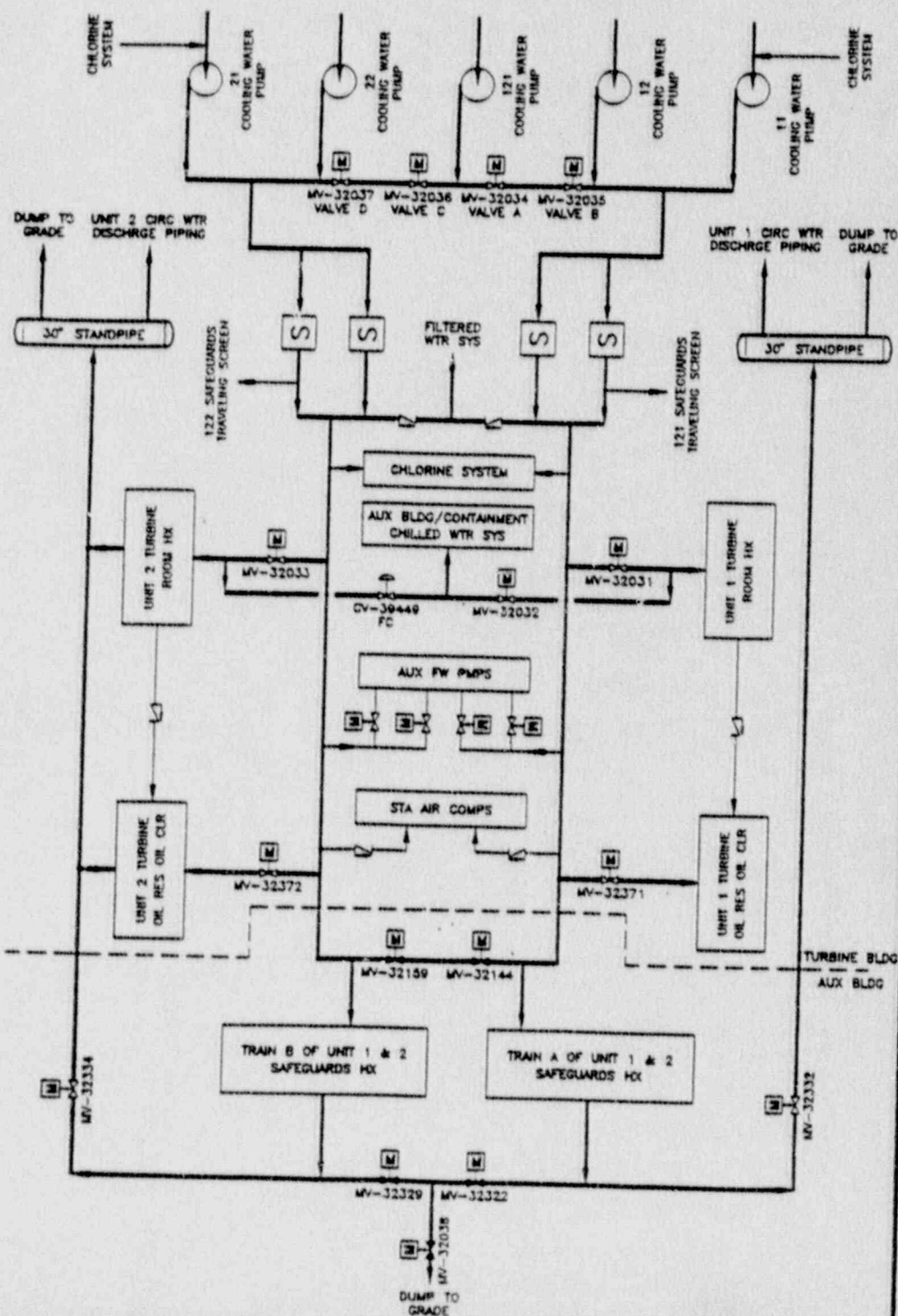
Prairie Island Nuclear Gen Plt Unit 1

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YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
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TEXT IF more space is required, use additional NRC Form 366A (a) (17)



B35-1

REVISION: 1
DATE: 1/30/89

DRAWN BY: M. PEG-ORIK
REVIEWED BY: *[Signature]*

COOLING WATER SYSTEM

PRAIRIE ISLAND TRAINING CENTER
RED WING, MINNESOTA