



Northern States Power Company

Prairie Island Nuclear Generating Plant

1717 Wakonade Dr. East
Welch, Minnesota 55089

December 6, 1999

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

**LER 1-99-08: Engineered Safety Features Actuation Following
Bus Lockout Caused by an Accidental Actuation of a Lock Out Relay**

The Licensee Event Report for this occurrence is attached. In the report, we made no new NRC commitments. This event was reported via the Emergency Notification System in accordance with 10 CFR Part 50, Section 50.72, on November 4, 1999. Please contact us if you require additional information related to this event.

Joel P. Sorensen
Site General Manager
Prairie Island Nuclear Generating Plant

c: Regional Administrator - Region III, NRC
NRR Project Manager, NRC
Senior Resident Inspector, NRC
Steve Minn, State of Minnesota

Attachment

IE22

PAZ Adoca 05000282

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, 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)

05000 282

PAGE (3)

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TITLE (4)

Engineered Safety Features Actuation Following Bus Lockout Caused by an Accidental Actuation of a Lock Out Relay

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 NAME	DOCKET NUMBER	
11	04	99	99	-- 08 --	00	12	06	99	Prairie Island Unit 2	05000 306	
									FACILITY NAME	DOCKET NUMBER	
										05000	
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
1		20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10)											
100		20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)		50.73(a)(2)(x)	
		20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)		73.71	
		20.2203(a)(2)(ii)			20.2203(a)(4)			<input checked="" type="checkbox"/> 50.73(a)(2)(iv)		OTHER	
		20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
		20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)			

LICENSEE CONTACT FOR THIS LER (12)

NAME
Jeff Kivi

TELEPHONE NUMBER (Include Area Code)
651-388-1121

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).

NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 4, 1999, with both units at 100% power, Breaker CT11-1 was being aligned to be placed into its cubicle following maintenance when the breaker primary stabs came in contact with terminals 1 and 2 of the A-phase Overcurrent Relay, 51A. This caused actuation of the Bus CT11 Lock Out Relay (LOR), 86B/CT11. The LOR, 86B/CT11, tripped Breaker CT11-6 and Breaker CT-BT112. Trip of Breaker CT-BT112 caused Bus CT11 to go dead. Trip of Breaker CT11-6 caused Bus 16 (Unit 1 Train B Safeguards 4160V Bus) to go dead. Upon undervoltage on Bus 16, 12 Component Cooling Water Pump tripped and the load sequencer re-aligned Bus 16 to the 1R Source. Technical Specification 3.7.B, loss of one of the two required paths from the grid to the unit 4 kV safeguards distribution system, was entered. The 11 Component Cooling Water Pump also auto-started on low pressure in the Component Cooling Water system resulting from the trip of the 12 Component Cooling Water Pump.

Inspection of Breaker CT11-1 and the associated 51A relay showed no obvious signs of damage due to the contact. Therefore, the breaker was placed into cubicle CT11-1 in preparation for post maintenance testing.

After evaluation by the System Engineer of the apparent cause and effects, the Bus CT11 LOR, 86B/CT11, was reset and Breaker CT-BT112 and Breaker CT11-6 were closed. Bus 16 was realigned to the CT source.

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

EVENT DESCRIPTION

On November 4, 1999, with both units at 100% power, breaker crew personnel were aligning Breaker¹ CT11-1 to be placed into its cubicle following maintenance when one of the breaker primary stabs came in contact with the exposed terminals of the A-phase Overcurrent Relay², 51A. This caused actuation of the Bus CT11 Lock Out Relay (LOR), 86B/CT11. The LOR, 86B/CT11, tripped Breaker CT11-6 and Breaker CT-BT112. The trip of Breaker CT-BT112 caused Bus³ CT11 to go dead. Trip of Breaker CT11-6 caused Bus 16 (Unit 1 Train B Safeguards 4160V⁴ Bus) to go dead. Upon undervoltage on Bus 16, the 12 Component Cooling Water⁵ Pump⁶ tripped and the load sequencer re-aligned Bus 16 to the 1R Source. Technical Specification 3.7.B, loss of one of the two required paths from the grid to the unit 4 kV safeguards distribution system, was entered. The 11 Component Cooling Water Pump auto-started on low Component Cooling Water system pressure caused by the 12 Component Cooling Water Pump trip.

Inspection of Breaker CT11-1 and the associated 51A relay showed no obvious signs of damage due to the contact. Therefore, the breaker was placed into cubicle CT11-1 in preparation for post maintenance testing.

After evaluation by the System Engineer of the apparent cause and effects, the Bus CT11 LOR, 86B/CT11, was reset and Breaker CT-BT112 and Breaker CT11-6 were closed. Bus 16 was realigned to the CT source.

All automatic functions operated as designed and Bus 16 remained operable throughout the event.

CAUSE OF THE EVENT

The contact between the Breaker CT11-1 primary stabs and the 51A Overcurrent Relay terminals caused the event. The contact was caused when the maintenance workers were maneuvering the breaker back into the cubicle. One worker was maneuvering the breaker and one was providing guidance. The worker providing guidance was aware of the relay and instructed the worker maneuvering the breaker to stop prior to contacting the relay, however, the breaker was too heavy (1750 pounds) and contacted the relay before it could be stopped.

¹ (EIS Component Identifier: BKR)

² (EIS Component Identifier: RLY)

³ (EIS Component Identifier: BU)

⁴ (EIS System Identifier: EK)

⁵ (EIS System Identifier: BI)

⁶ (EIS Component Identifier: P)

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

Environmental Conditions were the primary cause of the event. The layout of switchgear in the cooling tower equipment house, the size and weight of the breaker, and the opening angle of the cubicle door made it very difficult to maneuver the breaker into the cubicle. Work Organization/Planning and Managerial Methods were possible secondary causes of this event.

Preparation of the work plan for the week of 10/30/99 through 11/5/99 included the potential for a loss of the CT source to the safeguard buses. To reduce the risk of such an event no other work on risk significant safeguards equipment was planned for the duration of the CT bus work. Switching the safeguard bus to the R source for the duration of this work was considered, but was determined to pose as great a risk as leaving the safeguard bus on the CT source. Protective relays were not isolated as part of the work preparation. Isolation of the protective relays on the cubicle door would not have prevented the accidental contact with the relay, but would have prevented actuation of the tripping scheme.

ANALYSIS OF THE EVENT

As a result of the loss of Bus CT-11 the load sequencer automatically repowered safeguards Bus 16 from the 1R source (see Figure 1). This momentary interruption of Bus 16 caused some equipment to trip. Most notably, the 11 Component Cooling Water Pump automatically started on low system pressure (caused by the loss of the 12 Component Cooling Water Pump, which tripped when power to Bus 16 was interrupted).

With the loss of one offsite source, the Technical Specification, Section 3.7.b.2, seven day Limiting Condition for Operation (LCO) was entered. Within two hours of the initial event, Breaker CT-BT112 and Breaker CT11-6 were reclosed and Bus 16 was realigned to the CT source. The LCO was exited upon restoration of the CT-11 bus.

Following the initiation of this event, all plant systems behaved as expected and operators took effective actions to mitigate the loss of safeguards Bus 16 and restore it to its normal offsite source in a safe and orderly manner.

Loss Of Safety Function (Pilot Inspection Program Item)

As a result of this event safeguards power was automatically switched to an alternate offsite source. Offsite supplies to safeguards power were not completely lost during this event, nor were there any implications of a common mode failure that could have caused a complete loss of offsite power. Thus, this event was not an event or condition that prevented, or could have prevented, the fulfillment of the safety function of structures or systems that are needed to:

- (a) Shut down the reactor and maintain it in a safe shutdown condition;

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- (b) Remove residual heat;
- (c) Control the release of radioactive material; or
- (d) Mitigate the consequences of an accident.

Therefore, this event did not represent a loss of safety function.

Significance Determination (Pilot Inspection Program Item)

This event only affected the Mitigation Systems cornerstone. The path from the grid to the Unit 1 safeguards buses was restored within the Technical Specification Limiting Condition for Operation (LCO) time limit. Relay 51A for breaker CT11-1 was inspected and tested during test tripping following completion of maintenance. Thus, this event did not affect operability of any system, structure, or component. The impact of this event is considered to be significantly less than increasing the likelihood of an uncomplicated reactor trip.

Therefore, the guidance of the 05/07/99 draft of the NRC Inspection Manual Chapter 06XX indicates that this event is characterized as having little or no risk potential impact.

This event is reportable per 10CFR 50.73(a)(2)(iv) because the loss of the normal offsite source to Bus 16 resulted in an automatic, unplanned actuation of Engineered Safety Features.

CORRECTIVE ACTION

Operability of the affected components was verified and the normal offsite source to safeguards Bus 16 was restored as described above.

Actions to prevent recurrence will be initiated and tracked within the Prairie Island corrective action program.

FAILED COMPONENT IDENTIFICATION

None.

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PREVIOUS SIMILAR EVENTS

Inadvertent relay actuation due to work activities has occurred before as noted in Prairie Island Licensee Event Report No. 1-93-05. However, the causes of the 1993 event and the current event are substantially different.

Figure 1 - Electrical Distribution

