



Northern States Power
Company

Prairie Island Nuclear Generating Plant

1717 Wakonade Dr. East
Welch, Minnesota 55089

February 8, 1996

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

Inadvertent Opening of Supply Disconnect Switch to Safeguards Electrical Bus 15

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 January 10, 1996. Please contact us if you require additional information related to this event.

Michael D Wadley
Plant Manager
Prairie Island Nuclear Generating Plant

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

Attachment

9602120322 960208
PDR ADOCK 05000282
S PDR

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) 1 OF 5
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TITLE (4)
Inadvertent Opening of Supply Disconnect Switch to Safeguards Electrical Bus 15

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
01	09	96	96	002	0	96	08	96		05000
			--	--						05000

OPERATING MODE (9) N

POWER LEVEL (10) 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)

20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)
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)	X	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 Jack Leveille	TELEPHONE NUMBER (Include Area Code) 612-388-1121
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 1/9/96 Unit 1 was at refueling shutdown, with the reactor coolant system drained to the top of the loops and the pressurizer) manway removed. Decay heat was being removed via Train B residual heat removal system which was powered by safeguards electrical Bus 16. Back up power sources were being maintained available to safeguards electrical busses to maintain defense in depth. An auxiliary operator was given a task to install Hold Cards on 4160V disconnect switches on reserve transformer 1RX supply to non-safeguards busses. The operator mistakenly opened 1RY C phase disconnect switch. At the time of the event, 1RY was supplying safeguards Train A 4160V Bus 15. No 4160V loads were energized from Bus 15 at the time of the event. However some 480V loads were energized by Bus 15 via a transformer. The design of the sequencer is such that transfer to an alternate power supply is not automatically initiated on loss of a single phase. The existing parameters would not allow manual paralleling of Bus 15 with an alternate power supply, therefore the operators manually opened Bkr 15-3, Bus 15 Source from 1RY transformer, in order to actuate the sequencer which then caused Bkr 15-7, Bus 15 Source from Bus CT11, to close. Various 480V loads tripped as a result of the loss of C phase and were subsequently restored.

The loss of 1R as a source to Train A did not affect the availability of any of the other sources available to Trains A or B. No interruption of decay heat removal occurred.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Prairie Island Nuclear Generating Plant Unit 1	05000 282	96	-- 002 --	0	2 OF 5

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

EVENT DESCRIPTION

On 1/9/96 Unit 1 was at refueling shutdown, with the reactor coolant system (EISS System Identifier - AB) drained to the top of the loops and the pressurizer (EISS Component Identifier - PZR) manway removed. Decay heat was being removed via Train B residual heat removal system (RHR) (EISS System Identifier - BP) which was powered by safeguards electrical Bus 16 (EISS Component Identifier - BU). Back up power sources were being maintained available to safeguards electrical busses to maintain defense in depth. A simplified diagram of the 4160V electrical system (EISS System Identifier - EA) is shown in Figure 1. An auxiliary operator was given a task to install Hold Cards on 4160V disconnect switches (EISS Component Identifier - DISC) on reserve transformer (EISS Component Identifier - XFMR) 1RX supply to non-safeguards busses in accordance with Work Order 9506728 Isolation and Restoration (I&R). These disconnects are provided to allow isolation for maintenance. The auxiliary operator mis-identified the 1RY disconnects as the 1RX disconnects. Observing that the disconnects he believed to be 1RX were closed while the I&R required them to be open, and having been informed that the equipment was de-energized, the operator took steps to place the disconnects in the condition required by the I&R. This is normal practice with I&Rs. Thus, the operator mistakenly opened 1RY C phase disconnect switch (each disconnect consists of one individually operated switch for each of the three phases), instead of the 1RX disconnect. When the C phase disconnect switch was opened, the auxiliary operator observed a flash and stopped any further switching. Opening this disconnect switch caused a dimming of lights in the control room and numerous control room alarms. Knowing that the only work associated with electrical systems was being done by this auxiliary operator, the control room operators immediately paged him. The auxiliary operator promptly answered the page, as he was already on the way to a phone to inform the control room of what he had done. At the time of the event, 1RY was supplying safeguards Train A 4160V Bus 15. No 4160V loads were energized from Bus 15 at the time of the event. However some 480V loads were energized by Bus 15 via a transformer. The design of the sequencer is such that transfer to an alternate power supply is not automatically initiated on loss of a single phase. The existing parameters would not allow manual paralleling of Bus 15 with an alternate power supply, therefore the operators manually opened Bkr 15-3 (EISS Component Identifier - BKR), Bus 15 Source from 1RY transformer, in order to actuate the sequencer which then caused Bkr 15-7, Bus 15 Source from Bus CT11, to close. This was an intentional, but unplanned, actuation of engineered safety feature (ESF) equipment (the load sequencer). Various 480V loads tripped as a result of the loss of C phase and were subsequently restored.

Several Train A radiation monitor (EISS Component Identifier - DET) sample pumps (EISS Component Identifier - P) tripped while 480 Volt power was degraded. Redundant Train B monitors continued to monitor those systems. At the time of this event the silica gel sampler for tritium was lined up to the 1R-22 sample pump. During recovery from the event there was a 32 minute period of time during which ventilation was being discharged via the shield building discharge stack while 1R-22 sample pump was off. During this 32 minute period the silica gel sampler was not in service as required by Technical Specification Table 4.17-4 (as it existed at the time of the event). The specification required continuous monitoring during discharge. Since there is no redundant monitor for the tritium monitoring, even a momentary loss of the monitor constituted a violation of the specification. Prior to this event a License

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Prairie Island Nuclear Generating Plant Unit 1	05000 282	96	-- 002 --	0	3 OF 5

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

Amendment Request had been submitted to remove this requirement from the Technical Specifications and relocate it to PI Operations Manual section H4, Offsite Dose Calculation. Subsequently, the License Amendment has been issued.

CAUSE OF THE EVENT

Personnel error - after locating what he thought was the 1RX disconnects (actually misreading the label on the 1RY disconnect door) the operator did not adequately apply self-checking to ensure that the correct component had been located. The operator left and returned with the necessary switching gear but did not apply self-checking to ensure the intended action was going to be performed on the correct component. Temporary scaffolding erected under 1RY and 1RX disconnects contributed to the misreading. The scaffolding prevented the operator from getting directly under the disconnect door to read the labels, thus the operator viewed the disconnect doors from the side. Depending on from where the label was viewed, part of the letter Y or X was blocked from view. Also, the top portion of the two letters are similar in appearance.

ANALYSIS OF THE EVENT

At the time of the event, decay heat removal was being supplied by 12 RHR Pump (EIS Component Identifier - P) (Train B). As shown on Figure 1, the following sources of power were being maintained available for Bus 16 (Train B): CT11, bus tie to Unit 2 Train B, and D2 safeguards diesel generator (EIS Component Identifier - DG). The following sources of power were being maintained available for Bus 15 (Train A): CT11, bus tie to Unit 2 Train A, and D1 safeguards diesel generator. The loss of 1R as a source to Train A did not affect the availability of any of the other sources available to Trains A or B. No interruption of decay heat removal occurred. When the 1RY C phase disconnect switch was opened, the control room noticed some dimming of lights and received numerous annunciators. Some 480V loads were lost. No 4160V loads were being supplied via this bus at the time. Normal voltage was restored to the 4160V and 480V busses in about 5 minutes and 26 seconds. During this time, 11 FHR Pump was not available. Thus, the planned degree of defense in depth for decay heat removal was reduced during this 5 minutes and 26 second period. Damage to the 1RY-C phase disconnect switch was minimal, requiring only cleaning of contacts. A limited scope analysis assuming that Bus 15 power was restored but subsequently that all decay heat removal was lost and that all inventory makeup to the RCS failed yielded a conditional core damage probability of less than 1E-6. For these reasons, there was no adverse effect on the health and safety of the public.

During the 32 minute period of time when the shield building ventilation stack was discharging without tritium monitoring, the discharge was monitored for particulates, iodine, and noble gases and there was no detectable activity for these. The tritium levels are typically much higher when the refueling cavity is filled but it was not flooded during this period of time. The tritium effluent monitoring is averaged over a month's period of time (about 43,000 minutes) and this event resulted in only 32 minutes without monitoring and we have no reason to believe there were any tritium spikes during those 32 minutes. For these reasons, there was no adverse effect on the health and safety of the public.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Prairie Island Nuclear Generating Plant Unit 1	05000 282	96	-- 002	-- 0	4	OF 5

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

This event is reportable pursuant to 10CFR50.73(a)(2)(iv) since there was an unplanned actuation of an engineered safety feature, the load sequencer. In addition, it is reportable pursuant to 10CFR50.73(a)(2)(i)(B), since the shield building ventilation discharge was not being monitored continuously for tritium.

CORRECTIVE ACTION

Power was restored to Bus 15 by the operators manually opening Bkr 15-3, Bus 15 Source From 1RY transformer, and allowing Bkr 15-7, Bus 15 Source From Bus CT11, to be automatically closed by the action on the load sequencer. Various 480V loads were restarted manually as required.

The operator was counseled on self-checking.

Improved labels were installed in multiple locations on the outside of all disconnect doors on Unit 1. Similar labels on Unit 2 will also be improved.

The appropriate sections of administrative work instruction 5AWI 3.10.0, Control and Operation of Plant Equipment, were changed to explicitly require 2 person crews to connect/close or disconnect/open any switchgear greater than 480V. Plant personnel were informed of management's expectations regarding this practice.

Additional administrative controls for maintaining safeguard power supplies during reduced inventory operations have been developed. These controls will be used at the next reduced inventory condition.

Self-checking and pre-job briefing refresher training was conducted with all operations personnel. This was accomplished using the plant video "Right From The Start".

The plant's non-conformance process is being used to disposition any concerns associated with Train A 480V equipment that was in service at the time.

FAILED COMPONENT IDENTIFICATION

There were no failed components.

PREVIOUS SIMILAR EVENTS

No previous Prairie Island LERs are similar to this event.

LICENSEE EVENT REPORT (LER)

TEXT CONTINUATION

FACILITY NAME (1) Prairie Island Nuclear Generating Plant Unit 1		DOCKET NUMBER 05000 282		LER NUMBER (6) 96 - 002 - - - 0		PAGE (3) 5 OF 5	
REVISION NUMBER 0		YEAR 96		SEQUENTIAL NUMBER 002		REVISION NUMBER 0	

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

SOURCES TO UNIT 1 SAFEGUARDS BUSES

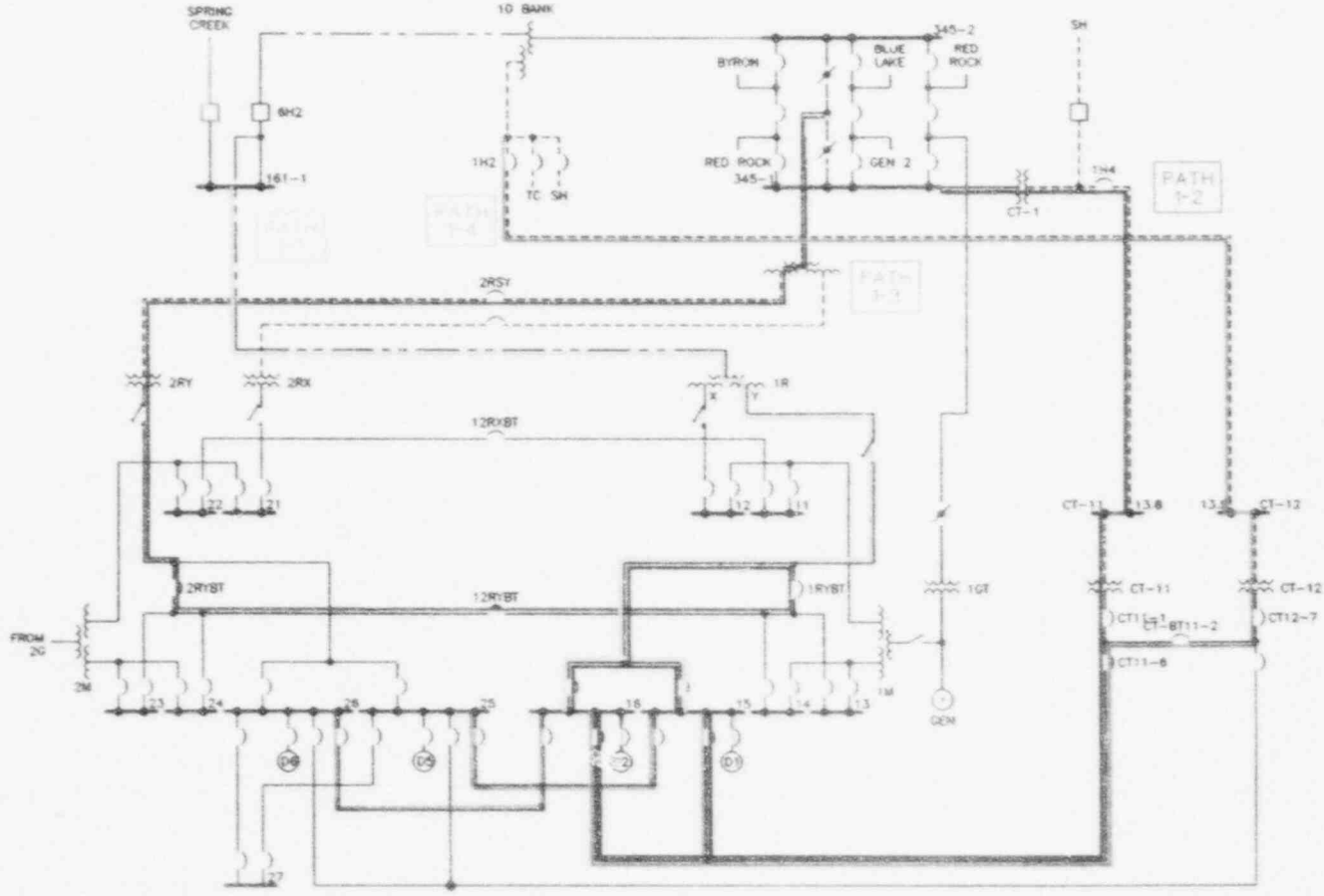


FIGURE 1