

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8807140279 DOC.DATE: 88/07/05 NOTARIZED: NO DOCKET #
 FACIL:50-263 Monticello Nuclear Generating Plant, Northern States 05000263
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 PUDLICK,L.E. Northern States Power Co.
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 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 83-022-01:on 831024,abnormal wear of sleeve bearings
 causes failure of recirculation pump MG set breaker to trip.
 W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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INTERNAL:	ACRS MICHELSON		1	1		ACRS MOELLER		2	2	
	AEOD/DOA		1	1		AEOD/DSP/NAS		1	1	
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	RGN3 FILE 01		1	1						
EXTERNAL:	EG&G WILLIAMS,S		4	4		FORD BLDG HOY,A		1	1	
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		YEAR	SEQUENTIAL	REVISION		
		NUMBER	NUMBER	NUMBER		
Monticello	050000 2 6 4	83	0	2 2	0 1	0 2 OF 0 4

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

DESCRIPTION

On October 24, 1983, at 1340 CST, a turbine lockout due to reactor high water level following a reactor scram from 91.2% power initiated an automatic close circuit transfer of station auxiliary load from the auxiliary transformer (XFMR) to the reserve transformer (XFMR). Control Room operators noticed that a 4KV bus (BU) had not successfully transferred to the reserve transformer. Subsequent Control Room operator action at 1341 CST, manually transferred the bus to the reserve transformer from the Control Room. Upon re-energization of the bus, Control Room operators noticed that No. 11 Reactor Recirc. pump MG set (AD) was running. Control Room operators' attempts to remotely trip the No. 11 Reactor Recirc. pump MG set drive motor air circuit breaker, ACB, (52) failed. At 1352 CST, the bus was de-energized from the Control Room and the Reactor Recirc. pump MG set drive motor ACB was then tripped locally (manually). At 1411 CST, power was restored to the bus from the reserve transformer and normal post scram recovery actions continued. All systems involved in this event were considered operable.

CAUSE

Initial investigation and original LER submittal for this event designated the failure of the ACB to trip as a result of a defective trip coil which was then replaced. However, this ACB again failed to trip during a remote shutdown of the recirculation pump MG set on February 5, 1984, (LER 84-007). Subsequent investigation revealed that abnormal wear of the sleeve bearings associated with the operating mechanism of the ACB caused binding of the trip linkage and subsequent failure of the ACB to trip remotely. The ACB operating mechanism employed a Tuf-Loc sleeve bearing that consisted of teflon-coated fiberglass. General Electric, the ACB manufacturer, stated that past history of this sleeve bearing has shown it to wear abnormally during years of operation. The result was excessive play in the linkages and pawls which caused difficulty in maintaining the required tolerances for proper ACB operation. In 1975, General Electric abandoned the Tuf-Loc Teflon coated fiberglass sleeve bearing design. All 4KV ACBs manufactured since have employed aluminum bronze sleeve bearings.

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ANALYSIS

The failure of the recirculation pump MG set ACB to trip on demand in this event prevented the successful automatic transfer of a station auxiliary 4KV bus and had the potential of affecting loop differential pressure used as input to the Low Pressure Coolant Injection system (BO) loop selection logic.

In this event, the unsuccessful transfer of the 4KV station auxiliary bus and its associated reactor feedpump (SJ) was of no consequence since the reactor feedpump was automatically tripped due to reactor high water level prior to bus transfer. Loss of the feedwater pump during an event requiring reactor vessel water makeup would reduce the available sources of water makeup to the vessel.

The impact of a failure of the recirculation pumps to trip during postulated loss of coolant accidents (LOCAs) was analyzed by General Electric (Evaluation #MDE-16-0186, "Assessment of the ECCS Performance of the Monticello Nuclear Generating Plant with no Recirculation Pump Trips"). The evaluation concluded that the postulated recirculation pump trip failure will only affect LPCI operation during a small break LOCA and only when operating the plant with one recirculation loop out of service (i.e., during single loop operation). The plant was, however, in two loop operation prior to this event.

The potential effect is to inject LPCI into the broken recirculation loop for break sizes smaller than 0.5 sq. ft. when operating in the single loop mode (the detection threshold is normally 0.1 sq. ft). This can cause the peak fuel cladding temperatures (PCT) to increase for postulated small breaks between 0.1 sq. ft. and 0.5 sq. ft. This increase is however not large enough to exceed the PCT of the limiting LOCA event which is the basis for the plant license. Based on this evaluation, the postulated recirculation pump trip failure would not have reduced design basis safety margins.

This event could have occurred under other conditions that would have more serious consequences such as small break loss of coolant accident or need for reactor vessel water makeup. However, this failure would not have caused safety limits to be exceeded.

CORRECTIVE ACTION

In order to prevent reoccurrence of a similar event, all 4KV ACB sleeve bearings were replaced with General Electric supplied aluminum bronze sleeve bearings. This work was completed during the 1984 Refueling and Maintenance Outage.

LICENSEE EVENT REPORT (LER)

Expires 8/31/85

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TITLE (4) Abnormal Wear

of Sleeve Bearings Causes Failure of the No. 11 Recirc MG Set Breaker to Trip

EVENT DATE (5) LER NUMBER (6) REPORT DATE (7) OTHER FACILITIES INVOLVED (8)

MONTH	DAY	YEAR	YEAR	SEQUENTIAL	REVISION	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBERS
				NUMBER	NUMBER					

1	0	2	4	8	3	8	3	-	0	2	2	-	0	1	0	7	0	5	8	8	0	5	0	0	0		
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OPERATING THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS

MODE (9) N OF 10 CFR §: (Check one or more of the following) (11)

POWER			20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)
LEVEL			20.405(a)(1)(i)			50.36(c)(1)		X	50.73(a)(2)(v)			73.71(c)
(10)	0	9	1			20.405(a)(1)(ii)			50.73(a)(2)(vii)			OTHER
			20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)			(Specify in
			20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)			Abstract
			20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)			below and
												in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Lawrence E. Pudlick, Production Engineer	6 1 2 2 9 1 5 - 1 5 1 5 1

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

CAUSE	SYSTEM	COMPONENT	TURER	TO NPRDS	CAUSE	SYSTEM	COMPONENT	TURER	TO NPRDS
B	E/A	0 0 5 2	G 0 8 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X/NO	DATE (15)

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

On October 24, 1983, the No. 11 Recirculation pump MG set drive motor air circuit breaker, ACB, failed to trip during an attempted automatic close circuit 4KV bus transfer. This failure prevented its 4KV bus from transferring to the reserve transformer during an automatic close circuit bus transfer.

As described in plant Technical Specification 6.7.B.1.e, this event is reportable because the failure of this ACB to trip could prevent by itself the fulfillment of the functional requirements of the LPCI System used to cope with accidents analyzed in the Plant Safety Analysis Report.

Initial investigation and original LER submittal for this event designated the failure of the ACB to trip as a result of a defective trip coil which was then replaced. However, this ACB again failed to trip during a remote shutdown of the recirc MG set on February 5, 1984, (LER 84-007). Subsequent investigation into this failure revealed that abnormal wear of the sleeve bearings caused binding of the trip linkage and subsequent failure of the ACB to trip electrically.

The corrective action consisted of replacing the existing sleeve bearings with aluminum bronze sleeve bearings during the 1984 Refueling Outage.

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ADDITIONAL INFORMATION

Failed Component Identification

The 4KV ACB is a General Electric Magne-Blast Air Circuit Breaker, model AMH-4.76-OD. The failed trip coil is also manufactured by General Electric, Cat.#006174582G001, and is designed for 125V DC operation.

PREVIOUS SIMILAR EVENTS

A subsequent similar event is described in LER 84-007.



Northern States Power Company

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July 5, 1988

Report Required by
10 CFR Part 50, Section 50.73

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Licensee Event Report 83-022
Abnormal Wear of Sleeve Bearings Causes
Failure of the No. 11 Recirc MG Set Breaker to Trip

A revised Licensee Event Report for this occurrence is attached.

Monica Vik
for David Musolf
Manager - Nuclear Support Services

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

Attachment

TF22
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