

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Nine Mile Point Unit #1										DOCKET NUMBER (2) 0 5 0 0 0 2 2 0				PAGE (3) 1 OF 4		
TITLE (4) Fialure of Type AK Breakers																
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				DOCKET NUMBER(S)			
3	2	0	8	4	0 0 1	0	0	0	4	1	9	8	4	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)														
POWER LEVEL (10) 0 10 10		20.402(b)				20.405(e)				80.73(a)(2)(v)				73.71(b)		
		20.405(a)(1)(i)				80.36(a)(1)				XX 80.73(a)(2)(v)				73.71(c)		
		20.405(a)(1)(ii)				80.36(a)(2)				80.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 365A)		
		20.405(a)(1)(iii)				80.73(a)(2)(i)				80.73(a)(2)(vii)(A)						
		20.405(a)(1)(iv)				80.73(a)(2)(ii)				80.73(a)(2)(vii)(B)						
		20.405(a)(1)(v)				80.73(a)(2)(iii)				80.73(a)(2)(x)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME Robert G. Randall										TELEPHONE NUMBER AREA CODE 3 1 5 3 4 9 - 2 4 4 5						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																
CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS						
B	EID	BKIR	GIO 8 10	Y		B	BIO	BKIR	GIO 8 10	Y						
B	BIO	BKIR	GIO 8 10	Y		B	AJA	BKIR	GIO 8 10	Y						
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO				

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

ABSTRACT

During and just prior to the current refueling outage, problems with the operation and testing of General Electric type AK circuit breakers were encountered which resulted in failure to trip and/or in premature trip on overcurrent. The failures are attributed to age induced hardening of grommets in the EC-2A electro mechanical overcurrent device. This device can be used on AK-15, AK-25, and AK-50 series breakers.

Corrective actions taken or planned include replacement with new or newly rebuilt EC-2A devices and establishment of an adequate preventive maintenance surveillance interval.

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

NRC FORM 366B
(9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (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 366A's) (17)

NARRATIVE

On March 8, 1984, during power operation, while attempting to start Battery Charger Motor Generator Set 161 following maintenance, the circuit breaker tripped on overcurrent.

On March 20, 1984, while maintaining cold shutdown on #12 Shutdown Cooling (SDC) Pump, an unsuccessful attempt was made to start #11 Shutdown Cooling Pump. The circuit breaker was replaced with the circuit breaker from the inoperable #13 Shutdown Cooling Pump, and again SDC Pump #11 failed to start. A third attempt to start SDC Pump #11 was successful using the circuit breaker from #12 control rod drive (CRD) pump. All transfer of breakers was done in conformance with Technical Specifications.

Based on these three failures, bench testing was conducted on the three circuit breakers. This testing revealed that one phase of the circuit breaker for Battery Charger 161 tripped prematurely, while the other two phases failed to trip. Testing of the circuit breakers for SDC Pump 11 and 13 revealed not a problem with premature tripping, but a problem with failing to trip at the specified time-overcurrent values.

A program was established to test all safety related and selected non safety related AK breakers. As of this date, no further premature tripping has been discovered, but failure to trip on at least one phase on time-overcurrent has been found to occur on these additional safety related breakers:

- (1) Liquid poison pump #12 (type AK-2A-25)
- (2) Liquid poison pump #11 (type AK-2A-25)
- (3) CRD pump 12 (used to successfully start SDC pump #11 (type AK-2A-25)
- (4) SDC pump 12 (type AK-2A-25)

Tripping will occur if only one of the three phase devices operates correctly.

The failure to trip and the premature trip are both attributed to age induced hardening of grommets which form an oil seal on the pivot arm of the oil dashpot linkage of the type EC-2A overcurrent device. The hardening causes a loss of oil which allows the dashpot to move freely, resulting in premature trip. Alternately, the hardening and/or loss of oil can cause binding of the pivot arm which causes a failure to trip. This failure mechanism apparently results in erratic behavior, in that SDC pump breakers 11 and 13 tripped prematurely, and then when bench tested, failed to trip. This erratic behavior was not demonstrated by load testing, but can be demonstrated when actuating a removed EC-2A unit by hand.

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

ASSESSMENT OF SAFETY CONSEQUENCES

No premature tripping was actually experienced on pumps or loads covered by Technical Specifications. The required periodic surveillances were successfully completed during the previous operating cycle. Since the one failure to start that was experienced prior to shutdown was found when returning a battery charger to service, and backup means to charge the battery was available, no adverse consequences were experienced. Since the remaining failures to start occurred while the plant was shutdown, and redundant means were available, no adverse consequences were experienced.

The potential consequences include:

- 1) Loss of ability to start a safety related load upon actual demand. Because the failure mode results in erratic behavior, successful completion of surveillance tests does not necessarily mean the premature trip won't be experienced, particularly if the pump is not full flow tested or started under actual surge current conditions. (ie, the pump is throttled when started for surveillance tests but is not throttled on an actual demand.) Nine Mile Point uses a full flow starting method wherever possible.
- 2) Failure to trip on an actual electrical fault. Failure to trip on time-overcurrent could result in damage to the component. Should the short circuit current be high enough, it could cause the trip of the circuit breaker feeding the power board, causing the loss of all safety related loads on the power board.

CORRECTIVE ACTIONS

All safety related AK breakers as well as selected non safety related AK breakers are being bench tested for overcurrent tripping, and breakers with one or more malfunctioning EC-2A overcurrent trips devices are having all 3 EC-2A units replaced with new or newly rebuilt units. Overcurrent trip testing will be conducted on a periodic basis, which will be adjusted as experience dictates.

April 19, 1984

U.S. Nuclear Regulatory
Commission
Document Control Desk
Washington, DC 20555

Re: Docket No. 50-220
LER 84-01

Gentlemen:

In accordance with 10 CFR 50.73:

84-01 which is being submitted in accordance with
10 CFR 50.73 (a)(2)(V)(D), "Any event or
condition that alone could have prevented
the fulfillment of the safety function of
structures or systems that are needed to
mitigate the consequences of an accident."

The report was completed in the format designated in NUREG-1022,
dated September 1983.

Very truly yours,

Thomas E. Lempjes

Thomas E. Lempjes
Vice President
Nuclear Generation

TEL/jkr
Attachments (3 copies)
cc: Dr. Thomas E. Murley,
Regional Administrator

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