



**Constellation
Energy Group**

**Nine Mile Point
Nuclear Station**

**December 26, 2002
NMPIL 1704**

**United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555**

**Subject: Nine Mile Point Unit 1
Docket No. 50-220; DPR-63**

Licensee Event Report 02-002, "Loss of One Control Rod Drive Pump Train due to Circuit Breaker Failure"

Gentlemen:

In accordance with 10 CFR 50.73(a)(2)(i)(B), we are submitting Licensee Event Report 02-002, "Loss of One Control Rod Drive Pump Train due to Circuit Breaker Failure".

Very truly yours,

**Lawrence A. Hopkins
Plant General Manager**

LAH/IAA/jm
Attachment

**cc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector**

JE22

LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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TITLE (4)
Loss of One Control Rod Drive Pump Train due to Circuit Breaker Failure

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	17	2002	2002	002	00	12	27	2002		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)			
		20.2201(b)	20.2203(a)(3)(II)	50.73(a)(2)(I)(B)	50.73(a)(2)(ix)(A)
POWER LEVEL (10)	100	20.2201(d)	20.2203(a)(4)	50.73(a)(2)(II)	50.73(a)(2)(x)
		20.2203(a)(1)	50.36(c)(1)(I)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)
		20.2203(a)(2)(I)	50.36(c)(1)(II)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
		20.2203(a)(2)(II)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER
		20.2203(a)(2)(III)	50.46(a)(3)(II)	50.73(a)(2)(v)(C)	Specify in Abstract below or in
		20.2203(a)(2)(iv)	50.73(a)(2)(I)(A)	50.73(a)(2)(v)(D)	NRC Form 366A
		20.2203(a)(2)(v)	X 50.73(a)(2)(I)(B)	50.73(a)(2)(vii)	
		20.2203(a)(2)(vi)	50.73(a)(2)(I)(C)	50.73(a)(2)(vii)(A)	
		20.2203(a)(3)(I)	50.73(a)(2)(II)(A)	50.73(a)(2)(vii)(B)	

LICENSEE CONTACT FOR THIS LER (12)

NAME M. O. Pearce, Manager Maintenance	TELEPHONE NUMBER (Include Area Code) 315-349-4848
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
A	EC	52	G082	YES					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On October 17, 2002, at approximately 1100 hours, with Nine Mile Point Unit 1 (NMP1) at approximately 100 percent power, the #12 control rod drive (CRD) pump failed to start during performance of the quarterly surveillance. The pump was visually observed to begin rotation and then coast to a stop. Visual inspection of the pump supply circuit breaker found the breaker in the "OPEN" position. A 7-day limiting condition for operation action statement was entered, as required by Technical Specification 3.1.6b. The redundant #11 pump was verified operable as required by TS 4.1.6c. A spare breaker was identified and installed and the CRD pump successfully started. The #12 train was declared operable and the LCO action exited on October 19, 2002, at approximately 1315 hours. Subsequently, it was determined that the #12 CRD pump had been inoperable from September 24, 2002, until it was declared operable on October 19, 2002. Thus, the pump was inoperable for 25 days versus 7 days allowed by TS 3.1.6b.

The cause of this event was determined to be inadequate post maintenance testing. Contributing causes included a defective circuit breaker over current trip device (EC trip device), and lack of compliance with applicable higher level administrative procedures.

Corrective actions included replacement of the defective circuit breaker, a thorough review of similar model circuit breakers in safety-related and non-safety related applications at NMP1, and written guidance to personnel regarding post maintenance testing expectations.

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

I. Description of Event

On October 17, 2002, at approximately 1100 hours, with Nine Mile Point Unit 1 (NMP1) at approximately 100 percent power, the #12 control rod drive (CRD) pump failed to start during performance of the quarterly surveillance. The pump was visually observed to begin rotation and then coast to a stop. No abnormal conditions (sight, sound, odor etc.) were noticed at the pump. In-rush current on control room metering was observed at approximately 200 amperes, decaying to zero amperes. The green "OFF" indicator light did not go out and the red "ON" indicator never illuminated. Visual inspection found the circuit breaker in the "OPEN" position. The surveillance was placed on hold. The control room was notified and a 7-day limiting condition for operation (LCO) action statement, as required by Technical Specification (TS) 3.1.6b, was entered. The redundant #11 CRD pump was verified operable as required by TS 4.1.6c. Additionally, an Action Request was generated to perform troubleshooting of this event.

Troubleshooting confirmed that the circuit breaker (General Electric 600 Volt Model AK-2A-25) had attempted to shut and immediately tripped open. Review of the breaker's maintenance history revealed that its routine preventive maintenance had been completed on September 24, 2002. During that preventive maintenance, the breaker's original phase "A" instantaneous over current (type EC-2A) trip device had failed its "as-found" test and was replaced. The "as-left" EC trip device test was satisfactory. It is significant to note that post maintenance testing was conducted with the breaker racked out to the "Test" position rather than being in the "Racked In" position. Testing the breaker in this manner verifies functionality of the breaker's control circuit but does not pass load current through the instantaneous over current trip device, and therefore does not test the breaker's ability to perform its design function to start the pump. This is also contrary to the higher level procedure requiring that the applicable surveillance, including starting the pump in this particular case, be performed after any breaker maintenance.

During troubleshooting for this event, the "as-found" and "as-left" tests were successfully performed on the breaker's EC trip devices with no failures noted. However, during additional EC trip device testing, the phase "A" EC trip device trip set point was found to have drifted slightly below the lower tolerance limit. However, the low trip occurred only once out of five times during the troubleshooting. The breaker was quarantined for analysis. A spare breaker was then identified and installed after successful completion of the preventive maintenance procedure. The CRD pump was successfully started three times. The redundant #12 CRD train was declared operable and the LCO action exited on October 19, 2002 at approximately 1315 hours.

On November 4, 2002, it was determined that this event is reportable. This determination was based on an assessment that the #12 CRD pump had been inoperable from the time it was taken out of service for maintenance on September 24, 2002, until it was successfully tested and declared operable on October 19, 2002 (total of 25 days). This period of inoperability exceeded the 7-day LCO action statement in TS 3.1.6b.

II. Cause of Event

The cause of this event was determined to be inadequate post maintenance testing. Contributing causes included a defective circuit breaker over current trip device (EC trip device) where the set point drifted slightly below the lower tolerance limit, and lack of compliance with applicable higher level administrative procedures.

III. Analysis of Event

This event is reportable in accordance with 10CFR50.73(a)(2)(i) (B), "Any operation or condition which was prohibited by the plant's Technical Specifications...."

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

III. Analysis of Event (Cont'd.)

The # 11 and #12 CRD pumps are part of the control rod drive hydraulic system. This system is designed to change the control rod positions within the reactor core in response to manual control signals, charge the scram accumulators, and provide high pressure makeup to the reactor vessel for a "Twenty-five gallons per minute total leakage ...," as specified in TS 3.2.5, "Reactor Coolant System Leakage." The system can also provide core cooling in the event of a small line break (up to 0.003 square feet). Normal system operation is with one pump running and the other pump on standby. Electrical power for this system is normally available from the reserve transformer. Automatic initiation is provided to start each pump from its respective diesel generator in case offsite power is lost.

Each CRD pump can supply 50 gpm within 60 seconds of receipt of an automatic initiation signal. The 60-second delay in pump starting assures that automatic pressure blowdown is not actuated for the TS specified leakage rate of 25 gpm.

TS 3.1.6, "Control Rod Drive Pump Coolant Injection," requires the coolant injection system to be operable whenever irradiated fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F with one exception: if a redundant component (such as #11 or #12 CRD pump) becomes inoperable, the control rod drive pump coolant injection system shall be considered operable provided the inoperable component is returned to an operable condition within 7 days and the operability of the redundant component is verified "immediately and daily thereafter."

Currently, no credit is taken for the CRD high pressure coolant injection function to mitigate the consequences of a Loss of Coolant Accident (LOCA), as evaluated in the 10CFR50 Appendix K LOCA analysis. A probabilistic risk assessment evaluation concluded that the increase in core damage frequency due to this event is small (2.57E-7/year) and as such this event has low safety significance.

Based on the above, the event did not pose a threat to the health and safety of plant personnel or the public.

IV. Corrective Actions

1. Maintenance replaced the defective circuit breaker with a suitable spare breaker.
2. Maintenance conducted a thorough review of all safety-related and non-safety related 600 Volts AC GE Model AK circuit breakers installed at NMP1. Three circuit breakers were identified as needing further testing and the testing was successfully completed. No other GE Model AK circuit breakers at NMP1 are impacted by this event.
3. The Maintenance and Operations Managers issued written guidance to Operations, Work Control, Planning, and Maintenance organizations clarifying management expectations regarding conduct and control of post maintenance testing on circuit breakers to ensure compliance with the higher level procedure.

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

V. Additional Information

A. Failed components:

Circuit breaker General Electric 600 Volt Model AK-2A-25

B. Previous similar events:

During an event in 1999 (refueling outage number 15), shutdown cooling pump #13 tripped immediately on a start attempt. The other two shutdown cooling pumps were available and one was already running. The breaker (GE Model AK) EC trip devices were found to be tripping slightly low. Upon review, the set point specifications were found to be lower than design guidance. The calculation was revised and the set point specifications were changed to conform to design guidance. The trip devices were then reset accordingly.

C. Identification of components referred to in this Licensee Event Report:

<u>Components</u>	<u>IEEE 805 System ID</u>	<u>IEEE 803A Function</u>
Control Rod Drive System	AA	N/A
Reactor Core System	AC	N/A
Low Voltage Power System	EC	N/A
Emergency Diesel System	EK	N/A
Reactor Recirculation System	AD	N/A
Pump	AA	P
Circuit Breaker	EC, AA	52
Fuel Rod	AC	ROD
Control Rod	AA	ROD
Trip Device	EC	N/A
Indicator (Light)	EC	IL
Accumulator	AA	ACC