



**Constellation
Nuclear**

**Nine Mile Point
Nuclear Station**

*A Member of the
Constellation Energy Group*

May 2, 2002
NMP2L 2056

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

RE: Nine Mile Point Unit 2
Docket No. 50-410
NPF-69

Subject: *Licensee Event Report 01-001, "Reactor Scram Due to Relay Failure in
Electro Hydraulic Control System"*

Gentlemen:

In accordance with 10CFR50.73(a)(2)(iv)(A), we are submitting Supplement 1 to Licensee Event Report (LER) 01-001, "Reactor Scram Due to Relay Failure in Electro Hydraulic Control System," dated July 17, 2001. Supplement 1 revises item 2 of Section IV, titled "Corrective Actions," of LER 01-001. This revision reflects a change in the commitment to add parallel contacts for relay KT106 by the end of refueling outage number 8 (RFO8). Instead of adding parallel contacts to the existing relay, a relay with contacts of an alternate, more reliable design was installed during RFO8.

Very truly yours,

Michael F. Peckham
Unit 2 Plant General Manager

MFP/IAA/jm
Attachment

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

JE22

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 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.

FACILITY NAME (1)

Nine Mile Point, Unit 2

DOCKET NUMBER (2)

05000410

PAGE (3)

1 OF 4

TITLE (4)

Reactor Scram Due to Relay Failure in Electro Hydraulic Control System

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
05	16	2001	2001	001	01	05	02	2002		05000
										05000

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)			
1	090	20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
		20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
		20.2203(a)(1)	50.36(c)(1)(i)(A)	X 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 Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	
		20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)	
		20.2203(a)(2)(v)	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)(viii)(A)	
		20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
D. P. Bosnic	315-349-7952

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
B	TG	RLY	Agastat	Y					

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 May 16, 2001, at 1019 hours, Nine Mile Point Unit 2 automatically scrambled from 90 percent core thermal power due to Turbine Stop Valve closure.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an automatic actuation of the Reactor Protection System that resulted in a reactor scram.

The cause of the reactor scram was high resistance in a normally closed contact of relay KT106. A contributing cause was inadequate preventative actions associated with GE TIL 1212-2 recommendations for relay KT106.

The immediate corrective action was to replace the KT106 relay. Preventive actions are establishing a replacement frequency for the KT106 relay, and evaluating methods for reducing the susceptibility to reactor scrams as a result of KT106 relay failure.

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FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)	
Nine Mile Point, Unit 2	05000410	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2	OF 4
		2001	-- 001	-- 01		

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

I. Description of Event

On May 16, 2001, at 1019 hours, Nine Mile Point Unit 2 automatically scrammed from 90 percent core thermal power due to Turbine Stop Valve closure. The plant was at 90 percent power because of loss of position feedback signal for the "B" Recirculation loop Flow Control Valve. The cause of the Combined Intercept Valve and Stop Valve closure was a failure of Electro Hydraulic Control System (EHC) Hydraulic Trip Pressure Relay KT106.

After the initial scram level transient, reactor water level was recovered with "A" and "C" feedwater pumps. Due to known level control valve leak-by, the "C" feedwater pump was removed from service with reactor water level rising to 197 inches. The "A" feedwater pump automatically tripped moments later on level 8 (202.3 inches). After the level 8 trip cleared and was reset, the "A" feedwater pump was restarted and level was stabilized in the normal level band. Minimum reactor water level reached 140 inches while the maximum level was 213 inches, during scram recovery actions.

Pressure control was maintained using the Turbine Bypass Valves in automatic following the scram. None of the Safety Relief Valves lifted as a result of a high pressure condition nor were they expected to lift as a result of the scram. Cooldown rate remained less than 100 degrees Fahrenheit per hour during the scram recovery.

All Control Rods fully inserted following the scram.

Primary containment isolation valve group 4 (Residual Heat Removal (RHS) radwaste discharge and sampling valves) and group 5 (Shutdown cooling and other RHS system valves) received isolation signals due to reactor water level going below the level 3-isolation setpoint (159.3 inches). The primary containment isolation group 4 and group 5 valves were in their normal, closed position; therefore the valves did not change position.

There were no Emergency Core Cooling System (ECCS) automatic initiation signals received during the transient. The Reactor Core Isolation Cooling system remained in standby during the transient.

At 1204 hours a plant cooldown began and at 2002 hours the plant was in cold shutdown.

Reactor scram was caused by Turbine Stop Valve greater than 7 percent closed position signal resulting from failure of Turbine EHC Hydraulic Trip Pressure relay KT106. Contact 3-8 of relay KT106 provides power to downstream relays which if de-energized ultimately result in the closure of the Combined Intercept Valves, Control Valves and Stop Valves. The failure mechanism for Relay KT106 was a high resistance contact causing an "all valves closed" signal for the turbine. A new relay was tested satisfactorily and installed.

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

I. Description of Event (cont'd)

During the cause investigation, it was identified that in 1997 General Electric (GE) had issued Technical Information Letter (TIL) 1212-2, "Plant Scram Frequency Reduction Features for BWR and PWR Nuclear Turbines with MK I or MK II EHC Controls," which included recommendations to address potential problems associated with relay KT106. KT106 is an Agastat 125 volt direct current (VDC) relay whose contacts are used in a 24 VDC application. Use of 125 VDC relays in low voltage and low current applications causes the normally closed contacts to develop an oxide buildup resulting in high resistance. GE TIL 1212-2 recommended wiring a parallel contact for KT106. NMPC decided not to implement the parallel contacts but rather to monitor contact resistance. GE TIL 1212-2 recommended replacing the relay when contact resistance exceeded 1.0 ohms. Post scram resistance measurements of contact 3-8 ranged between 0.4 and 62 ohms. The most recent resistance measurement taken during Refueling Outage 7 (RFO7) was 0.28 ohms which had increased from 0.15 ohms when measured in RFO6.

II. Cause of Event

The cause of the reactor scram was high resistance in normally closed contact 3-8 of relay KT106. The high resistance led to relays downstream de-energizing and closing the Combined Intercept Valves, Turbine Stop Valves and Control Valves. The reactor scram resulted from the Turbine Stop Valves being greater than 7 percent closed. A contributing cause was inadequate preventative actions in that GE TIL 1212-2, item A11, recommendations for relay KT106 were not fully utilized to eliminate the scram potential nor was a replacement frequency for the relay established.

III. Analysis of Event

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an automatic actuation of the Reactor Protection System that resulted in a reactor scram.

All Control Rods fully inserted following the scram as verified by use of the Rod Sequence Control System and full core displays. During the event, no Emergency Core Cooling equipment started or should have started. The Reactor Core Isolation Cooling system remained in standby during the transient. Cooldown rate remained less than 100 degrees Fahrenheit per hour during the scram recovery.

A PRA screening of the event concluded that the event was not risk significant. The PRA Analysis determined a Core Damage Probability of 8.2E-7 for this event.

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. The relay was replaced and satisfactorily tested.
2. A design change was implemented during Refueling Outage 8 in March-April, 2002, to replace the existing trip relay KT106 with a relay having contacts of an alternate, more reliable design.
3. A determination has been made to periodically replace KT106.

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

V. Additional Information

1. Failed Components

Relay KT106, Agastat 125VDC relay, Manufactured by Agastat, Part Number 117D9900G0001

2. Previous similar events: None

3. Identification of components referred to in this Licensee Event Report

<u>Components</u>	<u>IEEE 805 System ID</u>	<u>IEEE 803A Function</u>
Recirculation System	AD	N/A
Reactor Protection System	JC	N/A
Feedwater System	SJ	N/A
Electro Hydraulic Control System	TG	N/A
Main Steam System	SB	N/A
Containment Isolation System	JM	N/A
Turbine Bypass Control System	Jl	N/A
Emergency Core Cooling Systems	BG,BM,BO	N/A
Residual Heat Removal System	BO	N/A
Isolation Cooling System	BN	N/A
Control Rod Drive System	AA	N/A
Valve	AD,SB	FCV
Valve	SJ	LCV
Valve	BO	SMV
Valve	SB,Jl	ISV, RV
Relay	TG	RLY
Contact	TG	N/A
Pump	SJ	P
Control Rod	AC	ROD