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PERRY NUCLEAR POWER PLANT

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Michael D. Lyster
VICE PRESIDENT - NUCLEAR

June 4, 1992
PY-CEI/NRR-1508 L

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

Perry Nuclear Power Plant
Docket No. 50-440
LER 92-012

Dear Sir:

Enclosed is Licensee Event Report 92-012 for the Perry Nuclear Power Plant.

Sincerely,

Frank R. Stead for

Michael D. Lyster

MDL:CRE:ss

Enclosure: LER 92-012

cc: NRC Project Manager
NRC Sr. Resident Inspector
NRC Region III

9206100223 920604
PDR ADDCK 05000440
S PDR

Operating Companies
Cleveland Electric Illuminating
Toledo Edison

JUN 8 1992

IE22

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P 530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) **Perry Nuclear Power Plant, Unit 1** DOCKET NUMBER (2) **050004401** PAGE (3) **1 OF 04**

TITLE (4) **Inappropriate Adjustment of Valve Limit Switch Results in Residual Heat Removal System "A" Pump Trip and a Technical Specification Violation**

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)																					
05	05	92	92	012	00	06	04	92			050000																					
<p>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)</p> <table border="1"> <tr> <td><input type="checkbox"/> 20.402(b)</td> <td><input type="checkbox"/> 20.408(a)</td> <td><input type="checkbox"/> 50.73(a)(2)(iv)</td> <td><input type="checkbox"/> 73.71(b)</td> </tr> <tr> <td><input type="checkbox"/> 20.406(a)(1)(ii)</td> <td><input type="checkbox"/> 50.38(a)(1)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)</td> <td><input type="checkbox"/> 73.71(a)</td> </tr> <tr> <td><input type="checkbox"/> 20.406(a)(1)(iii)</td> <td><input type="checkbox"/> 50.58(a)(2)</td> <td><input type="checkbox"/> 50.73(a)(2)(vi)</td> <td rowspan="4">OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td><input type="checkbox"/> 20.406(a)(1)(iv)</td> <td><input checked="" type="checkbox"/> 50.73(a)(2)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(vii)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.406(a)(1)(v)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)</td> <td><input type="checkbox"/> 50.73(a)(2)(vii)(B)</td> </tr> <tr> <td><input type="checkbox"/> 20.406(a)(1)(vi)</td> <td><input type="checkbox"/> 50.73(a)(2)(iii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ix)</td> </tr> </table>												<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.408(a)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.38(a)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(a)	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.58(a)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	<input type="checkbox"/> 20.406(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)	<input type="checkbox"/> 20.406(a)(1)(vi)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)
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OPERATING MODE (9) _____

POWER LEVEL (10) _____

LICENSEE CONTACT FOR THIS LER (12)

NAME: **Henry L. Hegrat, Compliance Engineer, Extension 5185**

TELEPHONE NUMBER: **215 259-3737**

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15) _____

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

On May 5, 1992, at 2231, a Residual Heat Removal (RHR) System "A" pump tripped due to an inappropriately adjusted valve limit switch. RHR system "B" pump was started to provide decay heat removal and reactor coolant circulation functions. Troubleshooting efforts were initiated to determine the cause of the RHR "A" pump trip; however, the operators were not able to demonstrate the operability of a second alternate method of decay heat removal as required by Technical Specification LCO 3.9.11.2 ACTION a.

The cause of this event is a program weakness. Although a generic electrical instruction provided directions for setting the switches, the design drawing did not provide the necessary level of detail on switch positions. Due to lack of detail, the Shutdown Cooling suction valve limit switch had been previously adjusted too close to where the valve stopped when the valve was electrically opened. When the setting of the limit switch varied its normal expected amount due to vibration and mechanical tolerances, the switch intermittently closed and caused the pump to trip.

The Shutdown Cooling suction valve pump control limit switch was reset to preclude its tripping the RHR "A" pump when the valve is open. Engineering personnel performed an evaluation to determine which positioners were subject to potential previous inappropriate adjustment, and the appropriate valve limit switches were adjusted. Appropriate design drawings are being revised to provide detail for the affected limit switch settings. The instruction is being revised to include the appropriate detailed guidance to ensure the proper adjustment of limit switches. As part of the established requalification training program, all licensed operators will be instructed on the lessons learned from this event.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Perry Nuclear Power Plant, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 4 0 9 2	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0	1	2	0	0 2 OF 0 4

TEXT: If more space is required, use additional NRC Form 386A's (1/7)

I. Introduction

On May 5, 1992, at 2231, a Residual Heat Removal (RHR) System [B0] "A" pump tripped due to an inappropriately adjusted valve limit switch [33]. An alternate method of decay heat removal was not verified in accordance with the ACTION requirement of Technical Specification 3.9.11.2. At the time of the event, the plant was in the third refueling outage in Operational Condition 5 (Refuel). The Reactor Pressure Vessel [RPV] head was removed and reactor coolant temperature was at approximately 88 degrees Fahrenheit. This event is being reported under 10CFR50.73(a)(2)(i)(B).

II. Description of Event

On May 3, 1992, at 0213, the LCO Action for Technical Specification 3.9.11.2 was entered due to both Shutdown Cooling Mode loops of RHR being inoperable and reactor vessel water level being less than 22 feet 10 inches above the top of the reactor pressure vessel flange. The Shutdown Cooling mode loops of RHR were inoperable by the Technical Specification definition (two were required) due to maintenance on heat exchangers and snubbers; however, each loop was capable of decay heat removal and was acceptable as an alternate method of decay heat removal in accordance with Technical Specification LCO 3.9.11.2 ACTION a. The reactor vessel water level was lowered as part of the vessel reassembly activities.

On May 5, 1992, at 2131, the RHR "A" pump tripped while running to provide decay heat removal. Off Normal Instruction (ONI-E12-2), "Loss of Shutdown Cooling" was entered and at 2147, RHR system "B" pump was started to provide decay heat removal and reactor coolant circulation functions. Troubleshooting efforts were initiated to determine the cause of the RHR "A" pump trip; however, due to the RHR "A" pump being tripped, the operators were not able to demonstrate the operability of a second alternate method of decay heat removal (both Shutdown Cooling mode loops of RHR were still inoperable) as required by Technical Specification LCO 3.9.11.2 ACTION a. The Fuel Pool Cooling and Cleaning system, Reactor Water Cleanup system, and flowpath through the Safety Relief valves to the Suppression Pool were not available as alternate method of decay heat removal due to planned outage activities involving these systems.

On May 6, 1992, at 0415, troubleshooting efforts determined that the intermittent closing of a limit switch on the Shutdown Cooling suction valve caused the RHR "A" pump to trip. The suction valve was manually backseated, which allows the limit switch to stay opened, and at 0530, the RHR "A" pump was started in Shutdown Cooling. At 0536, the RHR "B" pump was placed in standby and, at 0540, ONI-E12-2 was exited.

III. Cause of Event

Troubleshooting efforts by maintenance personnel have determined that this was a switch adjustment problem and not equipment failure. The cause of the event is a

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 300 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530) U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20585, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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Perry Nuclear Power Plant, Unit 1	0 5 0 0 0 4 4 0	9 2	0 1 2	0 0	0 3	OF 0 4

INSTRUCT (if more space is required, use additional NRC Form 388A's) (17)

program weakness. Generic Electric Instruction, (GEI-0014) "Limitorque Limit/Torque Switch Adjustment" and the design drawing did not provide the necessary level of detailed guidance to properly adjust the third and fourth train rotor limit switches, in relation to the switches on the first and second rotor, on four train rotor type positioners. The drawing merely provided vendor generic switch development for rotor settings, and was literally used in adjusting switch positions. Due to lack of detailed guidance, the Shutdown Cooling suction valve third rotor limit switch had been previously adjusted too close to where the valve stopped when the valve was electrically opened. When the setting of the limit switch varied its normal expected amount due to mechanical tolerances, normal vibration caused the switch to close intermittently, causing the pump to trip.

The guidance provided by GEI-0014 for the first and second rotors is considered to be adequate. The primary functions of the switches on the first and second rotors are to control valve openings and closure and to provide position indication. The proper operation of these functions is apparent when the valves are in service. The third and fourth rotors are typically used in logic for annunciation or control of other equipment.

IV. Analysis of Event

The Technical Specification 3.9.11.2 requirement to have two shutdown cooling mode loops operable when there is less than 22 feet 10 inches of water above the reactor vessel flange ensures that a single failure of the operating loop will not result in a complete loss of residual heat removal capability. Prior to this event, an alternate method of decay heat removal had been established for each of the two inoperable RHR shutdown cooling mode loops. When the RHR "A" pump tripped, the requirements of Technical Specification LCO 3.9.11.2 ACTION b. (to establish reactor coolant circulation by an alternate method within one hour and monitor reactor coolant temperature at least once per hour) were met, and this event is not considered to be safety significant. However, if any of the similar functioning limit switches on valves in the RHR "B" channel were also inappropriately adjusted and closed intermittently in the same time period as the switch on the RHR "A" suction valve, the ability to establish reactor coolant circulation to the core by an alternate method within one hour could have been in question. No events of inappropriate adjustment of Limitorque valve positioner limit switches causing equipment logic malfunctions have been previously reported.

V. Corrective Actions

The Shutdown Cooling suction valve pump control limit switch was reset to preclude its tripping the RHR "A" pump when the valve is open. Engineering personnel performed an evaluation to determine which four train rotor type positioners used in control/interlock applications were subject to potential previous misadjustment, and the appropriate valve limit switches were adjusted. The appropriate design drawings for the valves that were adjusted will be revised

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 TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (PA30), U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Perry Nuclear Power Plant, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 4 0 9 2 - 0 1 2 - 0 0 0 4 OF 0 4	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

TEXT (If more space is required, use additional NRC Form 306A's) (17)

to provide detail for setting control/interlock limit switches on the third and fourth rotors. GEI-014 is being revised to include the appropriate detailed guidance to ensure the proper adjustment of third and fourth rotor limit switches. As part of the established requalification training program, all licensed operators will be instructed on the lessons learned from this event.

Energy Industry Identification System Codes are identified in the text as [XX].