FENOC
FirstEnergy Nuclear Operating Company

Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081

William R. Kanda
Vice President - Nuclear

440-280-5579
Fax: 440-280-8029

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United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
LER 2003-001-00

Ladies and Gentlemen:

Enclosed is Licensee Event Report (LER) 2003-001, Manual Actuation of the Reactor Protection System With All Control Rods Inserted During Testing. This event is being reported in accordance with 10CFR50.73(a)(2)(iv)(A), as an event or condition that resulted in manual or automatic actuation of the reactor protection system. There are no regulatory commitments contained in this letter. Any actions discussed in this document that represent intended or planned actions, are described for the NRC's information, and are not regulatory commitments.

If you have questions or require additional information, please contact Mr. Vernon K. Higaki, Manager – Regulatory Affairs, at (440)-280-5294.

Very truly yours

for W.R Kanda

for William R. Kanda
Enclosure: LER 2003-001

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III

IE22

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. 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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Manual Actuation of the Reactor Protection System With All Control Rods Inserted During Testing

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	10	2003	2003	-- 001 --	00	07	03	2003	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	5
10. POWER LEVEL	0%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

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)	✓ 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)	

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Kenneth Russell, Compliance Engineer	440 280-5580

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	LD	RLY	TYCO	Yes					

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	✓ NO				

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

On May 10, 2003, the reactor was in Mode 5, Refueling with the "Low Pressure Core Spray / Low Pressure Coolant Injection A Initiation and EH11 Response Time Test" in progress. This test verifies the plant response for a simulated Division 1 loss of offsite power / loss of coolant accident. One of the expected results of the test is the closure of instrument air containment isolation valve. After closure of instrument air containment isolation valve, the procedure requires the valve to be opened from the Control Room using the LOCA override control switch. When this was attempted, the valve did not open. The loss of instrument air to containment resulted in a decreasing scram air header pressure that if allowed to continue to decrease would result in opening of the scram pilot valves and then the scram valves. Due to the decreasing scram air header pressure, a manual scram was initiated at 1509 hours The NRC Incident Response Center was notified at 2054 hours in accordance with 10CFR50.72(b)(3)(iv)(A) and this report is being submitted per 10CFR50.73(a)(2)(iv)(A) as any event or condition that resulted in a manual or automatic actuation of the Reactor Protection System. The failure of the valve to open was caused by a manufacturing defect of an Agastat relay. This event had minimal safety significance and a very small increase in risk. A new relay was installed and tested satisfactorily.

LICENSEE EVENT REPORT (LER)

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

I. INTRODUCTION

On May 10, 2003, the reactor was shutdown and in Mode 5, Refueling, with "Low Pressure Core Spray / Low Pressure Coolant Injection A Initiation and EH11 Response Time Test," SVI-R43-T5366 in progress. The scope of this test verifies the plant response for a Division 1 loss of offsite power / loss of coolant accident (LOOP/LOCA). The reactor head was removed and level was being controlled in the upper containment pools greater than 22 feet 9 inches above the reactor pressure vessel (RPV) flange. The main steam isolation valves (MSIV) [SB-ISV] were closed and the temporary main steam line plugs were installed. Reactor water level and temperature were being controlled by the fuel pool cooling and cleanup system [DA]. Residual heat removal [BO] pump C was operable and available for emergency core cooling injection. All control rods [ROD] were inserted, however they were not removed from service.

II. EVENT DESCRIPTION

During the performance of the LOOP/LOCA testing, a simultaneous loss of offsite power and a loss of coolant accident are simulated. One of the expected results of the test is the closure of instrument air containment isolation valve, 1P52-F200 [LD-ISV]. After closure of instrument air containment isolation valve, the procedure requires the valve to be opened from the control room using the LOCA override control switch [HS] that verifies the capability to override the isolation signal. When this was attempted, the amber override light illuminated as expected, but the valve did not open. Two attempts were made to override the valve to open with no response from the valve.

The inability to open the instrument air containment isolation valve resulted in the inability to restore instrument air to containment. The loss of instrument air to containment resulted in a decreasing scram valve air header pressure that if allowed to continue to decrease would result in opening of the scram pilot valves and then the scram valves on each of the control rod drive hydraulic control units [AA]. The normal scram valve air header pressure is 80 psig. At a scram air header pressure of approximately 38 psig, the scram valves will begin to open. Control room personnel initiated the actions of the off-normal instruction for loss of service and/or instrument air. Due to the decreasing scram air header pressure, with pressure approximately 60 psig, a manual scram was initiated at 1509 hours that closed the scram discharge volume drain valves and opened all scram valves. This action was taken to prevent the loss of water inventory from the RPV through the two-inch scram discharge volume drain line to the suppression pool. The Unit Supervisor also directed the instrument air containment isolation valve 1P52-F200 to be down powered and manually opened. Instrument air was restored to the containment and the drywell by 1543 hours.

The manual scram signal was evaluated as a valid signal and since the reactor protection system (RPS) [JC] and control rod drive systems had not been removed from service, it was determined that a reportable RPS actuation had occurred. The NRC Incident Response Center was notified at 2054 hours in accordance with 10CFR50.72(b)(3)(iv)(A) of a valid actuation of the RPS specified in 10CFR50.72(b)(3)(iv)(B)(1). This Licensee Event Report is being submitted in accordance with 10CFR50.73(a)(2)(iv)(A), any event or condition that resulted in a manual or automatic actuation of the RPS specified in 10CFR50.73(a)(2)(iv)(B)(1).

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

III. CAUSE OF EVENT

The reactor was scrammed when the instrument air containment isolation valve would not open using the LOCA override control switch. Failure of the valve to open was caused by an override relay [RLY] function failure. Failure analysis for the override relay performed at the FirstEnergy Corporation BETA laboratory determined that an internal coil lead wire for the relay was disconnected and may have been improperly crimped in the connector. The most likely cause is an isolated manufacturing defect. It is planned to send the relay to the vendor for component failure analysis.

IV. SAFETY ANALYSIS

The instrument air containment isolation valve, discussed in this event, has override capability to allow it to be re-opened in the presence of an isolation signal. Given an isolation signal and failure of the valve to re-open, instrument air would be lost to containment loads, which include the MSIVs and safety relief valves (SRV) [RV].

With the reactor shutdown, the upper fuel pools flooded and main steam line plugs installed, no measurable change to core damage frequency could be calculated for this event. Therefore, a more conservative calculation was performed using the probabilistic safety analysis model that assumed the plant was at full power prior to a LOOP/LOCA. The instrument air containment isolation valve was assumed to fail closed. The results indicated an increase of 1.1E-08 per year in the core damage frequency. This is a very small increase in risk. It should be noted that the plant does not rely upon instrument air as the only mode of force to operate the SRVs or MSIVs. The MSIVs located outside of containment as well as the SRVs designated as automatic depressurization system valves have a backup safety-related instrument air supply. Additionally, credit is also taken in the model for aligning compressed air cylinders in the event of the failure of the safety-related instrument air supply for the SRVs. The multiple redundant air supplies contribute to the reduction in importance of the instrument air containment isolation valve failure. In the actual event, operators down powered and manually opened the valve, which restored instrument air to containment loads within the hour.

V. CORRECTIVE ACTIONS

The above event has been entered in the Corrective Action Program at the PNPP as a root cause evaluation in Condition Report 03-03130.

A new relay was installed and tested satisfactorily.

It is planned to send the failed relay to the vendor for further evaluation to determine if additional corrective actions are needed.

VI. PREVIOUS SIMILAR EVENTS

No similar events involving the failure of an Agastat relay due to an internal wiring problem have occurred at Perry within the last two years.

Energy Industry Identification System (EIIS) codes are identified in the text as [xx].