



**CENTERIOR
ENERGY**

PERRY NUCLEAR POWER PLANT

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Michael D. Lyster
VICE PRESIDENT - NUCLEAR

May 2, 1991
PY-CEI/NRR-1354 L

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

Perry Nuclear Power Plant
Docket No. 50-440
LER 91-010

Dear Sir:

Enclosed is Licensee Event Report 91-010 for the Perry Nuclear Power Plant.

Sincerely,

Michael D. Lyster

MDL:CRE:njc

Enclosure: LER 91-010

cc: NRC Project Manager
NRC Sr. Resident Inspector

U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

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PDR ADDCK 0500G440
S PDR

Operating Companies
Cleveland Electric Illuminating
Chicago Edison

060024

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 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) 0 5 0 0 0 4 4 0				PAGE (3) 1 OF 14							
TITLE (4) Faulty Contactor Results in Shutdown of Plant in Accordance with Technical Specification Action Requirements																					
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)								
0	4	0	2	9	1	9	1	0	1	0	0	5	0	2	9	1	0	5	0	0	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																			
1		20.402(b)				20.406(c)				50.73(a)(2)(iv)				73.71(b)							
POWER LEVEL (10)		20.406(a)(1)(i)				50.36(a)(1)				50.73(a)(2)(v)				73.71(c)							
0		3				9				50.36(a)(2)				OTHER (Specify in Abstract Below and in Text, NRC Form 366A)							
		20.406(a)(1)(ii)				50.73(a)(2)(i)				50.73(a)(2)(vii)(A)											
		20.406(a)(1)(iii)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(B)											
		20.406(a)(1)(iv)				50.73(a)(2)(iii)				50.73(a)(2)(ix)											
		20.406(a)(1)(v)				50.73(a)(2)(iv)															
LICENSEE CONTACT FOR THIS LER (12)																					
NAME Henry L. Hegrat, Compliance Engineer, Extension 5185										TELEPHONE NUMBER 2 1 6 2 5 9 - 3 7 3 7											
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	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC							
X	A	D	C	N	T	R	G	0	8	0	N										
SUPPLEMENTAL REPORT EXPECTED (14)																					
YES (If yes, complete EXPECTED SUBMISSION DATE)										X		NO		MONTH DAY YEAR							

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (15)

On April 1, 1991 at 2000, reactor power was being reduced to allow drywell entry to investigate an increase in drywell unidentified leakage. An attempt to downshift Reactor Recirculation Pump "A" to slow speed was unsuccessful and resulted in a pump trip. Reactor Recirculation Loop A was declared inoperable and after an additional attempt to start the Reactor Recirculation Pump "A" was unsuccessful, the plant was shut down on April 2, 1991, at 0658 in accordance with Technical Specification Action 3.4.1.1.a. The source of the leakage was a weld on a vent valve for the Reactor Recirculation Loop "B" Suction Isolation Valve.

The cause of the Reactor Recirculation Pump failure to operate in slow speed was a component malfunction. A contactor (General Electric Company, Model Number CR205K00AAD) in the voltage regulator circuit of the Low Frequency Motor Generator (LFMG) failed to close its contacts when energized which resulted in no LFMG output. The cause of the leak on the vent valve weld has not yet been determined but penetrant tests of other similar weld configurations do not indicate that this is a generic problem.

To prevent recurrence, the contactor was replaced and the Reactor Recirculation Pump A was verified to operate properly in low speed. Procedures for cleaning the cubicles, in which the contactors are located, are being developed. The same contactor for the Recirculation Pump "B" circuitry will also be inspected. The vent valve weld configuration that leaked is being sent off site for analysis to determine the cause of the leak. As a part of the established requalification training program, all plant 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 (P-830), 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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Perry Nuclear Power Plant, Unit 1	0501044091	0	10	0	0	2 OF 4

TEXT (If more space is required, use additional NRC Form 366A's) (17)

I. Introduction

On April 2, 1991, at 0650, operators completed shutdown of the plant in accordance with Technical Specification Action 3.4.1.1.a after a faulty contactor resulted in the reactor recirculation pump "A" failure to start in slow speed. Just prior to the Recirculation Pump Failure, the plant was in Operational Condition 1 (Power Operation) at approximately 39% of rated thermal power with the Reactor Pressure Vessel [RPV] at saturated condition at approximately 980 psig.

II. Description of Event

On March 30, 1991, it was noted that drywell unidentified leakage was increasing slowly over time. The trend of increased leakage continued and on April 1, 1991, at 2000, reactor power was being reduced to allow drywell entry to investigate the leakage. During an attempt to shift Reactor Recirculation Pump "A" to slow speed, the pump tripped from fast speed, but failed to transfer to slow speed. The plant entered Off Normal Instruction (ONI-B33-2) "Loss of One or Both Recirculation Pumps (Unit 1)" and operators verified that reactor power and flow conditions were within the acceptable range. Reactor Recirculation Loop "A" was declared inoperable and an additional attempt to start the Reactor Recirculation Pump "A" in slow speed was unsuccessful. On April 2, 1991 at approximately 0513, entry was made into the drywell and it was discovered that a weld on a vent valve for the Reactor Recirculation Loop B Suction Isolation Valve was the source of the leakage. At 0658 the plant was placed in "Shutdown" in response to the Reactor Recirculation Pump A failure to run in slow speed.

The drywell unidentified leakage was monitored by operators throughout the event using the Leak Detection System Drywell Floor Drain Sump level and Rate Recorder. At no time during this event did the leakage exceed the 5 gpm limit required by Technical Specification 3.4.3.2.b and the leak was not Pressure Boundary Leakage; therefore, entry into the Emergency Plan was not required. The leak event does not meet the reporting criteria of 10CFR50.73 but is being reported as pertinent information.

Troubleshooting efforts determined that a malfunctioning contactor in the voltage regulator circuit of the Low Frequency Motor Generator (LFMG) was the cause of the Reactor Recirculation Pump "A" failure to operate in slow speed. On April 2, 1991, at approximately 1700, the contactor was replaced and at 1930 the Reactor Recirculation Pump "A" was started and tested satisfactorily in slow speed. Reactor Recirculation Loop "A" was declared operable on April 3, 1991 at 0911. The vent valve configuration for the Reactor Recirculation Loop B Suction Isolation Valve was removed and replaced with a plug on April 4, 1991 and the repair was tested satisfactorily on April 17, 1991.

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FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

YEAR SEQUENTIAL REVISION
NUMBER NUMBER NUMBER

Perry Nuclear Power Plant, Unit 1

0 6 0 0 0 4 4 0 9 1 - 0 1 0 - 0 0 0 3 OF 0 4

TEXT (If more space is required, use additional NRC Form 365A (1/17))

III. Cause Analysis

The cause of the leak on the vent valve weld has not yet been determined. In June, 1990, the site received a Service Information Letter (SIL) No. 512 from General Electric Company that addressed unsupported valve configurations similar to those installed at Perry. The SIL noted that they have a potential to leak as a result of vibration fatigue cracking. The site response to this notification was to schedule inspections in accordance with the site repetitive task program. Prior to this event, three of the suspect welds were nondestructively inspected using the liquid penetrant method. No fatigue cracks were identified. Based on those results, the inspections were extended to be completed over a longer period of time. During research into this problem it was also discovered that fourteen weld configurations (including the leak) on small diameter valves and pipes attached to Reactor Recirculation System piping did not meet design drawing specifications. Penetrant test inspection of the thirteen non-leaking welds revealed that no fatigue cracking was present. Preliminary examination did not indicate that the failure mechanism that caused the leak was the same as the one described in SIL No. 512 so the vent valve configuration with the weld in question was removed from the piping and is being sent off site for analysis.

The cause of the Reactor Recirculation Pump failure to operate in slow speed was a component malfunction. A contactor (General Electric Company, Model Number CR205K00AAD) in the voltage regulator circuit of the Low Frequency Motor Generator (LFMG) failed to close its contacts when energized which resulted in no LFMG output. Upon inspection of the contactor, no physical damage was noted and repeated testing revealed no abnormalities. No binding was noted during testing, however, it is believed that dirt/dust prevented correct operation within the contactor and that is the major contributor to this event.

IV. Safety Analysis

The reactor recirculation system consists of the two parallel recirculation pump loops external to the reactor vessel. These loops provide the piping path for the driving flow of water to the reactor vessel jet pumps. Each external loop contains one high capacity, motor driven recirculation pump, a flow control valve, and two motor operator gate valves for pump maintenance. The system has been designed to assure adequate fuel barrier thermal margin during postulated transients, to ensure that a failure of piping integrity does not compromise the ability of the reactor vessel internals to provide a refloodable volume, and to maintain pressure integrity during adverse combinations of loadings and forces occurring during abnormal, accident and special event conditions. During this event, the inoperability of Reactor Recirculation Loop A resulted in an entry into Technical Specification Action 3.4.1.1.a. Plant Operators responded to all required actions and shut down the plant using approved plant procedures. This event is not considered to be safety significant. A review of previous Reactor Recirculation Pump breaker problems indicates that this particular contactor malfunction is an isolated occurrence. No other events of Technical Specification required shutdown due to single loop Reactor Recirculation System operation have been previously reported.

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PAGE (3)

YEAR

SEQUENTIAL
NUMBERREVISION
NUMBER

Perry Nuclear Power Plant, Unit 1

0 5 0 0 0 4 4 0 9 1 - 0 1 0 - 0 10 0 4 OF 0 4

TEXT (if more space is required, use additional NRC Form 366A's) (17)

V. Corrective Actions

To prevent recurrence, the contactor was replaced and the Reactor Recirculation Pump A was verified to operate properly in slow speed. Repetitive tasks for cleaning the A and B cubicles, in which the contactors are located, have been developed. The vent valve weld configuration that leaked was replaced with a welded plug and the failed configuration is being sent off site for analysis to determine if the cause of the leak is the same as described in SIL No. 512. Additional corrective actions, if necessary, will be based on the results of this analysis. The other thirteen non-leaking welds not meeting the design drawing specification on the recirculation lines were reworked to meet design drawing specifications with the exception of that associated with Reactor Recirculation Loop "A" Suction Isolation valve vent valves, which was removed and replaced with a plug similar to loop B. As a part of the established requalification training program, all plant licensed operators will be instructed on the lessons learned from this event.

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