

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Perry Nuclear Power Plant, Unit 1 DOCKET NUMBER (2) 050004401 OF 03

TITLE (4)

Leak Detection Design Problem Results In RCIC Isolation And Inoperable RCIC System

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)
02	08	87	87	006	100	03	06	87			050004401

OPERATING MODE (9) 2 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)

POWER LEVEL (10) 01013	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)
	20.405(a)(1)(ii)	50.36(e)(1)	X	50.73(a)(2)(iv)	73.71(c)
	20.405(a)(1)(iii)	50.36(e)(2)		50.73(a)(2)(vii)	
	20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(ix)	

OTHER (Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12) NAME Gregory A. Dunn, Compliance Engineer, ext. 6484 TELEPHONE NUMBER 2116 2519-137317

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) X NO

EXPECTED SUBMISSION DATE (15)

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

On February 8, 1987 at 1540, an unexpected Reactor Core Isolation Cooling (RCIC) system isolation occurred due to indicated minimum differential pressure from the leak detection (LD) system. On February 10 at 0919, the RCIC system was declared inoperable after the LD instrument for the RCIC system steamline high flow was declared inoperable.

The cause of these events has been attributed to steam condensing in the high side process connection for the instrument impulse line to 1E31-N084A. The connection of the instrument impulse line high side tap on the elbow of the RCIC steamline allowed steam to condense forming a water column in the impulse line that created an incorrect indicated differential pressure.

As a result of this event, an engineering design change has been implemented to reroute the instrument impulse lines for 1E31-N084A to the same elbow tap instrument impulse lines used by 1E31-N084B. Retesting following this change indicated the problem has been resolved with the indicated differential pressure for 1E31-N084A reading normal.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Perry Nuclear Power Plant, Unit 1	0 5 0 0 0 4 4 0	8 7	— 0 0 6	— 0 0	0 2	OF	0 3

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

February 8, 1987 at 1540, an unexpected Reactor Core Isolation Cooling (RCIC)[BN] system isolation occurred due to indicated minimum differential pressure from the Leak Detection (LD)[IJ] system. On February 10 at 0919, the RCIC system was declared inoperable after the LD instrument for the RCIC system steamline high flow was declared inoperable. At the time of the February 8 event, the plant was in Operational Condition 2 (Startup) with RCIC pump testing in progress (see LER 87-003). Reactor power was approximately 3 percent of rated thermal power, reactor coolant temperature was approximately 530 degrees and reactor vessel [RPV] pressure was approximately 920 psig. At the time of the February 10 event, the plant was in Operational Condition 2 with reactor power approximately 4 percent of rated thermal power. Reactor coolant temperature was approximately 540 degrees and reactor vessel was approximately 1020 psig.

On February 8 at 1532 while operating the RCIC system in the Condensate Storage Tank (CST) to CST mode during the performance of Surveillance Instruction (SVI)-E51-T2001, "RCIC Pump and Valve Operability Test," LD instrument 1E31-N684A, Residual Heat Removal (RHR)[BO]/RCIC Steamline Flow-High, indicated downscale and was declared inoperable. At 1540 a Division 1 RCIC containment isolation occurred when 1E31-N684A reached the isolation setpoint. Plant operators verified that no actual RCIC steamline leak existed and placed RCIC in the secured status. The RCIC system responded to the isolation signal as designed, causing an immediate actuation of the divisional outboard containment isolation valves to their closed position. A review of the data indicated that 1E31-N684A started trending low once the RCIC system was started. LD instrument 1E31-N684B indicated correctly during the operation of the RCIC system. On February 10 while SVI-E51-T2001 was being reperformed, the indication for 1E31-N684A was again observed to be trending downscale during the operation of the RCIC system. The RCIC system was secured and 1E31-N684A and RCIC were declared inoperable. As part of the troubleshooting activities, the transmitter for 1E31-N684A (1E31-N084A) and valve manifold were replaced. Operation of the RCIC system after the replacement of the transmitter and manifold again resulted in the indication for 1E31-N684A trending downscale. Additionally, verification of electrical isolation of the LD system channels was performed.

The cause of these events has been attributed to steam condensing in the high side process connection for the instrument impulse line to 1E31-N084A. The connection of the instrument impulse line high side tap on the elbow of the RCIC steamline allowed steam to condense forming a water column in the impulse line that created an incorrect indicated differential pressure.

A previous similar event (see LER 86-054) was identified. This event determined that RCIC system isolations were being caused by water condensing in the horizontal runs of the instrument impulse lines for the LD differential pressure instruments. Engineering design changes had been implemented prior to the February 8 event to modify the slope on the instrument lines for 1E31-N083A & B and 1E31-N084A & B and ensure adequate insulation was present.

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

This corrected the instrument anomalies for all the LD differential pressure instruments except for 1E31-N084A which had an additional problem experienced at operating steam flow due to the connection of the high side elbow tap.

The RCIC system is designed to maintain sufficient reactor water inventory should the vessel lose feedwater supply during a reactor vessel isolation condition. RCIC is not classified as an Emergency Core Cooling System. RCIC system is monitored for steam line leaks and/or breaks by the LD system by utilizing differential pressure instruments mounted on RCIC system flow elbows. The minimum differential pressure isolation setpoint indicates an instrument line break and provides a RCIC isolation. Should the RCIC system isolate when it is required to be in service during a loss of feedwater and reactor vessel isolation condition, the High Pressure Core Spray (HPCS)[BG] system provides protection against a single failure event by performing the redundant function of maintaining reactor water inventory and adequate core cooling. For these reasons, these events are not considered safety significant.

As a result of this event, an engineering design change has been implemented to reroute the instrument impulse lines for 1E31-N084A to the same elbow tap instrument impulse lines used by 1E31-N084B. Retesting following this change indicated the problem has been resolved with the indicated differential pressure for 1E31-N684A reading normal.

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