NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Perry Nuclear Power Plant, Unit 1	0 5 0 0 0 4 4 0	1 OF 0 3

TITLE (4) Reactor Core Isolation Cooling System Containment Isolation Caused By Failed Leak Detection Transmitter

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 9	0 1	8 8	8 8	0 3 3	0 0	0 9	0 8	8 8		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
Gregory A. Dunn, Compliance Engineer, Extension 6484	2 1 6 2 5 9 - 1 7 1 7

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	I S	P D T	R 3 6 9	N							

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On September 1, 1988 at 0546 a Reactor Core Isolation Cooling (RCIC) system inboard containment isolation occurred due to a Leak Detection (LD) transmitter failure. The differential pressure transmitter for the LD RCIC high steam flow channel B failed off-scale low resulting in the isolation. The RCIC system was placed in a secured status.

The cause of the event was failure of the LD transmitter believed to be caused by an internal short circuit between the center diaphragm and the low side capacitor plate. The transmitter has been replaced and the RCIC system was returned to standby readiness at 1958 on September 3. The failed transmitter is being returned to the vendor for inspection and further evaluation.

IE22
1/1

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 8	— 0 3 3	— 0 0	0 2 OF 0 3

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

On September 1, 1988 at 0546 a Reactor Core Isolation Cooling (RCIC) [BN] system containment isolation occurred due to a Leak Detection (LD) [IS] RCIC high steam flow transmitter failure. At the time of the event the plant was in Operational Condition 1 (Power Operation) with reactor thermal power approximately 100 percent of rated and reactor vessel [RPV] pressure approximately 1010 psig.

On August 31, 1988 the LD RCIC high steam flow channel B transmitter performed sluggishly during a calibration surveillance. The differential pressure transmitter (Rosemount model 1153DB5) was replaced and returned to service at 0230 on September 1. At 0546 the transmitter failed off-scale low resulting in a RCIC LD actuation and automatic RCIC system inboard containment isolation. The LD RCIC high steam flow channel B instrument was declared inoperable and the RCIC system was placed in a secured status. The failed transmitter was replaced and the RCIC system returned to standby readiness at 1958 on September 3, 1988.

The cause of the event was a failed differential pressure transmitter which had been in service for a very short time. The failure mechanism of the transmitter is suspected to be a temporary offscale failure syndrome. This syndrome is characterized by an instantaneous output signal shift, off-scale high or low, not accompanied by a shift in the actual process pressure. According to Rosemount Incorporated, microscopic conductive particles in the sensor module fill fluid act as a short circuit between the center diaphragm of the transmitter and a capacitor plate on either the high or low side of the sensor cell. Although manufacturer information does not identify the low range transmitters as previously experiencing the syndrome, all of the parameters existed which contribute to the syndrome failure mechanism. These paratmeters include the transmitter being subject to high pressure and high vibration, recently installed as a replacement and failing after a short service time.

The RCIC steam supply line is monitored for breaks by the LD system pressure and differential pressure detectors mounted on RCIC system flow elbows. The RCIC system receives an isolation signal on a high steam flow condition or low pressure as detected by either the Division 1 or Division 2 instruments. 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 or Engineered Safety Feature. Should the RCIC system become inoperable 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. The containment isolation occurred as designed, therefore, this event is not considered safety significant.

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 8	— 0 3 3	— 0 0	0 3 OF 0 3

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

Previous events have occurred in which RCIC containment isolations occurred due to the LD RCIC steam flow trip unit reading downscale (LERs 86-054, 87-006, 87-040 and 87-044). Several problems contributed to these events: instrument isolation valve failure, instrument impulse line slope problems, LD instrumentation response time at low flow conditions, personnel error, condensation forming in the high side instrument line and pressure oscillations in the process instrument lines. Corrective actions completed to prevent recurrence include: repair or replacement of instrument isolation valves, rerouting the instrument impulse lines, addition of a time delay in the instrumentation circuitry, training of appropriate personnel and installation of snubbers. Additionally, on July 28 and August 1, 1986, three separate Main Steam Line Leak Detection differential pressure transmitters failed downscale due to the syndrome (LER 86-040). These transmitters are higher range than the RCIC transmitters. The faulty transmitters were replaced. This most recent event was caused by a component failure which had not been previously identified as a problem for the low range differential pressure transmitters.

The LD RCIC high steam flow channel B transmitter has been replaced and is operating properly. The failed transmitter is being shipped to Rosemount Incorporated for troubleshooting and further evaluation.

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