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) Flow Indication Inaccuracy Coupled With Oversensitive Flow Control Valves Result In Indicated High Differential Flow and Reactor Water Cleanup System Isolation

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 5 0 0 0
0 4	2 7	8 8	8 8	0 1 3	0 0	0 5	2 7	8 8		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
3	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 0	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 - 3 7 3 7

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

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 April 27, 1988 at 2248, a Reactor Water Cleanup (RWCU) system containment isolation occurred due to indicated high differential flow. The isolation occurred during an attempt to restart the system following reactor scram and balance of plant isolation on low reactor water level (reference LER 88012). In response to the isolation, plant operators verified no actual system leakage existed and returned the RWCU system to service at 2253.

As a result of this and previous similar events, an increase of the differential flow trip setpoint and/or time delay has been under evaluation to allow additional operating margin for the indicated RWCU differential flow. Additionally, an engineering design change to replace the RWCU flow control valves had previously been initiated. However, due to operational contraints, this change is not expected to be implemented until the first refueling outage.

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

On April 27, 1988 at 2248, a Reactor Water Cleanup System (RWCU) [CE] containment isolation occurred due to indicated high differential flow during an attempt to restart the system following an earlier isclation. At the time of the event, the plant was in Operational Condition 3 (Hot Shutdown). Reactor vessel pressure was approximately 920 psig, and reactor coolant temperature was approximately 530 degrees.

Prior to this event, a loss of Feedwater System [SJ] flow had caused an unplanned reactor scram at 2209 (reference LER 88012). During that transient, reactor water level decreased to less than level 2 (129.8 inches above top of active fuel), initiating an automatic isolation of the RWCU system, as designed. During the recovery from these events, operators restored from the isolation, and restarted RWCU pump A, at 2247. Operators noted high differential flow signals on both Leak Detection System Channels A and B [IJ]. While the operator was preparing to shutdown RWCU pump A, the isolation signal was received on both channels at 2248. The RWCU system responded to the high differential flow isolation signal as designed, causing an immediate actuation and closure of the inboard and outboard containment isolation valves [ISV]. In addition, RWCU pump A automatically shutdown on low flow as designed following the isolation. After verifying no actual leakage existed, plant operators reset the isolation signals, completed the required valve lineups and restarted the system using RWCU pump B. No differential flow indicators were observed, and the system was completely restored to service at 2253. All operations were performed in accordance with approved operating instructions.

The Leak Detection System compares RWCU suction flow to the flow returning to the reactor vessel and flow being blowndown to radwaste or the main condenser. All three flows are summed to generate an indication of differential flow. An RWCU high differential flow signal indicates the suction flow entering the system is not being discharged via normal flowpaths (reactor vessel, and blowdown to radwaste or main condenser). This could be the result of a line break in the RWCU system. High differential flow for a duration of 45 seconds generates an isolation signal from the Leak Detection System. The 45 second time delay normally allows for system flow transients when changing operational configurations. If an RWCU containment isolation were to occur at high reactor power, the loss of the RWCU system may cause reactor coolant conductivity to slowly increase until the system is returned to service. In addition, during shutdown with little or no internal recirculation flow, reactor vessel thermal stratification may also occur. However, the time out-of-service for RWCU during this event was short and these effects minimal. Since no actual RWCU high differential flow existed and the system did respond as designed to the high differential flow isolation, the event is not considered safety significant.

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

Other recent events involving RWCU containment isolations have been discussed in LERs 87-074, and 88-002. Over sensitive RWCU flow control valves and flow indication inaccuracies have been identified as contributing factors to these events. No additional design deficiencies, procedural inadequacies, or operator actions have been identified as causes for the April 27 event.

As a result of this and previous similar events, an increase of the differential flow trip setpoint and/or time delay has been under evaluation to allow additional operating margin for the indicated RWCU differential flow. Additionally, an engineering design change to replace the RWCU flow control valves has been initiated. However, due to operational contraints, this change is not expected to be implemented until the first refueling outage. Other Corrective Actions previously completed as a result of prior events are described in their respective LER's.

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