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Dresden Nuclear Power Station
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Licensee Event Report #88-015-1, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(v)(D). This supplemental report provides the results of a manufacturer inspection of a High Pressure Coolant Injection System flow transmitter.

E. D. Eenigenburg
Station Manager
Dresden Nuclear Power Station

EDE/ade

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

(ZDVR/321)

IE22 1/1

LICENSEE EVENT REPORT (LER)

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Unit 2	0 5 0 0 0 2 3 7	1 of 0 3

Title (4) High Pressure Coolant Injection (HPCI) Isolated Upon Discovery of a Failed High Steam Flow Isolation Flow Transmitter Due to Loss of Oil

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)
										N/A	
0 8	2 5	8 8	8 8	---	0 1 5	0 1	0 9	2 3	8 8	N/A	

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)									
N		___ 20.402(b)	___ 20.405(c)	___ 50.73(a)(2)(iv)	___ 73.71(b)						
POWER LEVEL (10)	0 7 7	___ 20.405(a)(1)(i)	___ 50.36(c)(1)	X 50.73(a)(2)(v)	___ 73.71(c)						
		___ 20.405(a)(1)(ii)	___ 50.36(c)(2)	___ 50.73(a)(2)(vii)(A)	___ Other (Specify in Abstract below and in Text)						
		___ 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
Mark Churilla, Technical Staff System Engineer Ext. 2788	8 1 5 9 4 2 - 2 9 2 0

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
X	B J	F T	R 3 6 9	Y						

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)

At 0400 hours on August 25, 1988, with Unit 2 at 77% rated core thermal power while performing Dresden Instrument Surveillance (DIS) 2300-10, High Pressure Coolant Injection (HPCI) Steam Line High Flow Isolation Differential Pressure Transmitters 2352 and 2353 Calibration and Maintenance Inspection, HPCI steam line high flow isolation flow transmitter 2-2352 exhibited a trip setpoint of 156.25 inches of water differential pressure. This is in violation of Technical Specification (TS) Table 3.2.1, which requires these instruments to have setpoints of </= 150 inches of water differential pressure. Also, the time delay setting on flow transmitter 2-2352 was observed to exceed the required three to nine second band. The HPCI System was then isolated in accordance with TS Table 3.2.1 and operability surveillances of redundant safety systems were initiated per TS 4.5.C.2. Steam line flow transmitter 2-2352 was replaced, and the HPCI system was declared operable at 1341 hours on August 25, 1988. The cause of failure was loss of sensor module oil; comprehensive actions were implemented to address this failure mode.

The safety significance of this event was minimal since the redundant HPCI steam line high flow isolation flow transmitter 2-2353 was operable and would have provided an automatic HPCI System isolation had the postulated HPCI steam line break occurred.

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 MWt rated core thermal power.

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

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX)

DESCRIPTION OF EVENT:

High Pressure Coolant Injection (HPCI) [BJ] System Isolated Upon Discovery of a Failed High Steam Flow Isolation Flow Transmitter Due to Loss of Oil

A. CONDITION PRIOR TO EVENT:

Unit: 2 Event Date: August 25, 1988 Event Time: 0400 hours

Reactor Mode: N Mode Name: Run Power Level: 77%

Reactor Coolant System (RCS) Pressure: 967 psig

B. DESCRIPTION OF EVENT:

On August 25, 1988, while performing Dresden Instrument Surveillance (DIS) 2300-10, HPCI Steam Line High Flow Isolation Differential Pressure Transmitters 2352 and 2353 Calibration and Inspection, HPCI steam line flow transmitter 2-2352 exhibited a trip setting of 156.25 inches of water differential pressure. Also, the isolation time delay setting for flow transmitter 2-2352 was observed to exceed the required three to nine second band. This was in violation of Technical Specification (TS) Table 3.2.1, which requires the HPCI steam line high flow isolation transmitters to have trip settings of </= 150 inches of water differential pressure with an isolation time delay setting of between three and nine seconds. Upon discovery of this anomaly, the HPCI System isolation valves 2-2301-4 and 2-2301-5 were closed in accordance with TS Table 3.2.1 Action D. The required Title 10 Code of Federal Regulations (10 CFR) 50.72 notification was made at 0516 hours reporting the inoperable status of the HPCI System.

As was required by TS 4.5.C.2 whenever the HPCI System is determined to be inoperable, the Low Pressure Coolant Injection (LPCI) [BO] System, Core Spray [BM] System, and the motor operated isolation valves and shell side water make-up supply valves for the Isolation Condenser [BL] were demonstrated to be operable. The Automatic Depressurization System (ADS) [SB] is also required to be demonstrated operable, but in this case the HPCI System was declared operable prior to the completion of the ADS operability surveillance. The HPCI System was declared operable following replacement of flow transmitter 2-2352 at 1341 hours on August 25, 1988.

C. APPARENT CAUSE OF EVENT:

Testing performed on the failed transmitter by Instrument Maintenance Department (IMD) personnel under Work Request 77919 verified that an electronic failure of the transmitter amplifier card was not the cause. The failed transmitter was returned to the manufacturer (Rosemount Corp.) for further testing and inspection, in an attempt to determine the failure mode. The manufacturer investigation concluded that failure is due to a loss of sensor module oil via a separation in a glass to metal cell cup.

This failure mode was notified to the industry on February 7, 1989 and later on May 10, 1989 in accordance with 10CFR Part 21. Dresden Station implemented comprehensive corrective actions concerning this model transmitter, including response time testing and phased-in replacement with an improved design not susceptible to this failure mode.

Because a redundant instrument was available to provide the high steam flow isolation function of transmitter 2-2252, its failure is in itself not reportable under 10CFR50.73. However, upon discovery of this anomaly, the HPCI System steam line isolation valves were closed as required by TS Table 3.2.1. Since the isolation valves were closed, the HPCI System was declared inoperable. This report is therefore submitted in accordance with 10CFR50.73 (a)(2)(v)(D), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

D. SAFETY ANALYSIS OF EVENT:

The automatic isolation of the HPCI System following the postulated HPCI steam line break event is provided by two redundant flow transmitters, 2-2352 and 2-2353. A time delay is provided to prevent spurious system isolations. The safety significance of this event was minimal since the redundant HPCI steam line high flow isolation flow transmitter 2-2353 was verified to have a proper trip setpoint, and would have provided an automatic HPCI System isolation had a HPCI steam line break event occurred. An automatic HPCI System isolation is also provided on high HPCI area temperature. The ADS and low pressure Emergency Core Cooling Systems (ECCSs) [BO, BM] were also available to provide redundant means for reactor inventory and pressure control under design basis accident conditions.

E. CORRECTIVE ACTIONS:

HPCI steam line flow transmitter 2-2352 was replaced by the Instrument Maintenance Department under Work Request 77919. The replacement transmitter was then tested satisfactorily in accordance with DIS 2300-10. Since the root cause of the flow transmitter failure could not be readily identified, the transmitter was sent to the manufacturer for further investigation in order to determine the failure mode (237-200-88-10001). As stated previously in Section C of this report, comprehensive actions were taken to address this type of failure. The Unit 2 and Unit 3 HPCI flow transmitters have been replaced with the improved design not susceptible to this failure mode.

F. PREVIOUS EVENTS:

A review of maintenance records indicates no previous trend concerning failure of the HPCI steam line high flow isolation flow transmitters.

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	MFG Part Number
Rosemount	2-2352	N/A	1153DB5PA

An industry-wide NPRDS data base search was performed and two similar incidences involving Rosemount transmitters were found. The first event occurred at Salem Unit 2 on January 28, 1985, when a service water flow transmitter would not calibrate properly and it had to be replaced. The exact cause of the failure was unknown. The second event occurred at Turkey Point Unit 3 on April 7, 1985, when a reactor coolant flow transmitter responded slowly to indication of actual flow. The cause was determined to be a damaged amplifier card and a bad sensing element. The system performed satisfactorily upon replacement of these elements.