

LICENSEE EVENT REPORT (LER)

Facility Name (1) Dresden Nuclear Power Station, Unit 2 Docket Number (2) 0 | 5 | 0 | 0 | 0 | 2 | 3 | 7 Page (3) 1 | of | 0 | 4

Title (4) High Pressure Coolant Injection System Inoperable Due to Steam Leak

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)														
1	0	1	8	7	8	7	0	2	9	0	0	1	0	2	7	8	7	N/A	0	5	0	0	0		
																		N/A	0	5	0	0	0		

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

POWER LEVEL (10) 0   9   7	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name Jerry Lizalek Technical Staff Nuclear Engineer (X-421) TELEPHONE NUMBER AREA CODE 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	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15) X | NO

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

On October 1, 1987 at 1450 hours, with Unit 2 at 97% rated thermal power while performing Dresden Operating Surveillance (DOS) 2300-3 High Pressure Coolant Injection (HPCI) System Pump Test, and DOS 2300-6, Monthly HPCI System Pump Test for In-Service Testing (IST) Program, the HPCI system was conservatively declared inoperable as a result of a steam leak in the vicinity of the HPCI turbine shaft seal. The exact cause of this leakage is unknown; investigation by Operations and Maintenance personnel verified proper operation of the gland seal leakoff system. Corrective action included observations of the HPCI system on three individual startups in which no leakage was observed in the seal area.

The safety significance was minimal because HPCI was capable of initiation in this condition and due to the availability of the Automatic Depressurization, Isolation Condenser, Low Pressure Injection, and Core Spray systems to provide redundant means of reactor inventory and pressure control during any design basis accident. A previous event involving an inoperable HPCI system is reported by LER #87-17 on Docket #050249.

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TEXT

**PLANT AND SYSTEM IDENTIFICATION:**

General Electric boiling water reactor - 2527 Mwt rated core thermal power. Energy industry identification systems (EIIS) codes are identified in the text as [XX].

**EVENT IDENTIFICATION:**

While performing surveillance testing of the High Pressure Coolant Injection (HPCI) [BJ] system, a steam leak was identified in the vicinity of the HPCI turbine shaft seals. The HPCI system was conservatively declared inoperable and investigation by Mechanical Maintenance personnel regarding the cause of the steam leak was initiated.

**A. PLANT CONDITIONS PRIOR TO EVENT:**

Unit: 2	Event Date: October 1, 1987	Event Time: 1450 hours
Reactor Mode: N	Mode Name: Run	Power Level: 97%
Reactor Coolant System (RCS) Pressure: 1000 psig		

**B. DESCRIPTION OF EVENT:**

On October 1, 1987 at 1450 hours, with Dresden Unit 2 operating at 97% rated thermal power while conducting Dresden Operating Surveillance (DOS) 2300-3, HPCI System Pump Test, and DOS 2300-6, Monthly HPCI System Pump Test for the In-Service Testing (IST) Program, a steam leak in the vicinity of the HPCI turbine shaft seal was observed. After discussion between the Shift Supervisor, Operating Engineer, and Maintenance personnel, the HPCI system was conservatively declared inoperable.

Technical Specification 4.5.C.2 requires the Low Pressure Coolant Injection (LPCI) [BM] subsystem, both Core Spray [BN] subsystems, the Automatic Depressurization [XX] subsystem, and the motor-operated isolation valves and shell side make-up system for the Isolation Condenser [BL] system be demonstrated to be operable immediately after discovering the HPCI system inoperable. These required surveillances were immediately performed satisfactorily. Work Request #69322 was initiated to investigate and repair the steam leak.

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TEXT

**C. APPARENT CAUSE OF EVENT:**

This report is submitted in accordance with 10 CFR 50.73(a)(2)(v), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident.

The exact cause of this event is unknown. A possible cause considered was a momentary misalignment of the HPCI turbine spring loaded labyrinth shaft seals. Interviews with personnel in the HPCI room during the event indicated that the steam was exiting the turbine from the shaft seal area. Subsequent discussion with the Mechanical Maintenance Department suggested that it is possible for the spring loaded labyrinth seal to become momentarily misaligned due to the starting vibrations of the HPCI turbine. These seals should then realign themselves, stopping any leakage.

**D. SAFETY ANALYSIS OF EVENT:**

Safety significance of operation with an inoperable HPCI system is mitigated by the following factors:

1. Although the HPCI turbine seals were leaking momentarily the HPCI system would have been able to automatically initiate and inject into the reactor vessel if necessary during a design-basis accident. Continued operation of the HPCI system with shaft seal leakage could, however, be postulated to cause increased HPCI room temperatures and radiation levels. This could result in automatic isolation of the HPCI system on high HPCI room temperature (Technical Specification setpoint 200°F). It is believed that the seals would have realigned themselves prior to this condition.
2. During this event, the Isolation Condenser was operable. Automatic Depressurization and Low Pressure Emergency Core Cooling systems were also available to provide reactor pressure and inventory control during any postulated design basis accident.

**D. CORRECTIVE ACTIONS:**

After investigation by a Shift Foreman and Technical Staff Engineer, HPCI was secured. Discussion between Shift Supervision and the Operating Engineer determined that HPCI should be conservatively declared inoperable at 1450 hours on October 1, 1987. Maintenance personnel were dispatched to the HPCI room, and upon their request, a second run of the HPCI system was performed at 1845 hours on October 1, 1987 with Maintenance and Operations personnel in attendance. No steam leakage was observed. HPCI was then secured, and maintenance personnel then performed an additional inspection of the HPCI Gland Seal Leakoff system with no problems observed. At 1345 hours on October 2, 1987, HPCI was run a third time with no leakage observed; HPCI was then declared operable. The HPCI system was also operated on October 29, 1987 for a routine surveillance with satisfactory performance observed. Monthly HPCI system surveillances will continue to be performed in order to verify its operability in accordance with the Technical Specification.

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**E. PREVIOUS EVENTS:**

Recent previous events involving the HPCI systems are as follows:

<u>LER Number/Docket</u>	<u>Title</u>
87-14/050249 (Unit 3)	Plant Shutdown Due to Inoperable HPCI and Isolation Condenser Systems.
87-15/050249 (Unit 3)	HPCI System Inoperable Due to Failure of Minimum Flow Valve.
87-17/050249 (Unit 3)	HPCI System Inoperable Due to Tripping of the Gland Seal Leakoff Blower Caused by Condenser Overflow.

None of the above events involved a steam leakage through the labyrinth shaft seals.

**F. COMPONENT FAILURE DATA:**

Since the labyrinth seal misalignment was not believed to be a component failure, this section is not applicable.



**Commonwealth Edison**

Dresden Nuclear Power Station

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October 27, 1987

EDE LTR #87-720

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

Licensee Event Report #87-029-0, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(v).

E.D. Eenigenburg  
Station Manager  
Dresden Nuclear Power Station

EDE/kjl

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III  
File/NRC  
File/Numerical

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