

<b>NRC FORM 366</b> (5-92)		<b>U.S. NUCLEAR REGULATORY COMMISSION</b>			<b>APPROVED BY OMB NO. 3150-0104</b> <b>EXPIRES 5/31/95</b>									
<b>LICENSEE EVENT REPORT (LER)</b>										ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.				
<b>FACILITY NAME (1)</b> Dresden Nuclear Power Station, Unit 3							<b>DOCKET NUMBER (2)</b> 05000249			<b>PAGE (3)</b> 1 OF 4				
<b>TITLE (4)</b> High Pressure Coolant Injection Declared Inoperable Due to Broken Room Cooler Drive														
<b>EVENT DATE (5)</b>			<b>LER NUMBER (6)</b>			<b>REPORT DATE (7)</b>			<b>OTHER FACILITIES INVOLVED (8)</b>					
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER				
11	01	93	93	-- 017 --	01	11	17	93	None	None				
<b>OPERATING MODE (9)</b> N			<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>											
<b>POWER LEVEL (10)</b> 099			20.2201(b)			20.2203(a)(3)(i)			50.73(a)(2)(iii)		73.71(b)			
			20.2203(a)(1)			20.2203(a)(3)(ii)			X 50.73(a)(2)(iv)		73.71(c)			
			20.2203(a)(2)(i)			20.2203(a)(4)			50.73(a)(2)(v)		OTHER			
			20.2203(a)(2)(ii)			50.36(c)(1)			50.73(a)(2)(vii)		(Specify in Abstract below and in Text, NRC Form 366A)			
			20.2203(a)(2)(iii)			50.36(c)(2)			50.73(a)(2)(viii)(A)					
			20.2203(a)(2)(iv)			50.73(a)(2)(i)			50.73(a)(2)(viii)(B)					
			20.2203(a)(2)(v)			50.73(a)(2)(ii)			50.73(a)(2)(x)					
<b>LICENSEE CONTACT FOR THIS LER (12)</b>														
<b>NAME</b> Gerrine M. Paramore, System Engineer								<b>TELEPHONE NUMBER (Include Area Code)</b> Ext. 2364 (815) 942-2920						
<b>COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)</b>														
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS				
X	BJ	CLR	XXXX	N										
<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>														
<b>YES</b> (If yes, complete EXPECTED SUBMISSION DATE).					X NO		<b>EXPECTED SUBMISSION DATE (15)</b>		MONTH	DAY	YEAR			

**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 1, 1993 at 2250 hours, with Unit 3 at 99% rated core thermal power, after successfully performing Dresden Operational Surveillance (DOS) 2300-0-3, High Pressure Coolant Injection System Operability Verification, it was discovered that the HPCI room cooler drive belts had broken subsequent to the completion of DOS 2300-03. The HPCI System was declared inoperable and a seven day Limiting Condition for Operation (LCO) was entered per Technical Specification (TS) 3.5. The Electrical Maintenance Department (EMD) replaced the drive belts per Nuclear Work Request (NWR) D21492 as an immediate corrective action. Dresden Electrical Procedure (DEP) 5700-04, HPCI Room Cooler Fan Preventive Maintenance was successfully completed. Additionally, long term corrective actions have been initiated to prevent recurrence. The LCO was terminated on November 3, 1993. The Safety Significance of this event is minimal since all other Emergency Core Cooling Systems (ECCS) required by TS 3.5.C.2.a were operable. A similar previous occurrence was reported by LER 89-022 on docket 050237.

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NRC FORM 366A (5-92)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95	
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

# **EVENT IDENTIFICATION:**

High Pressure Coolant Injection Declared Inoperable Due to Broken Room Cooler Drive Belts

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

Unit: 3                                      Event Date: 11/1/93                                      Event Time: 1130

Reactor Mode: N                                      Mode Name: Run                                      Power Level: 99%

Reactor Coolant System Pressure: 1000 psig

## **B. DESCRIPTION OF EVENT:**

On November 1, 1993 at 2250 hours, with Unit 3 at 99% rated core thermal power, after successfully performing Dresden Operating Surveillance (DOS) 2300-03, High Pressure Coolant Injection System Operability Verification, it was discovered that the HPCI room cooler drive belts had broken subsequent to the completion of DOS 2300-03. The HPCI system was declared inoperable and a seven day Limiting Condition for Operation (LCO) was entered per Technical Specification (TS) 3.5. The EMD took immediate actions to install new drive belts and adjust them to proper tension requirements, and replaced loose screws in the belt guard. Dresden Electrical Procedure (DEP) 5700-04 was successfully completed. The HPCI system was returned to service and the LCO was terminated on at 1730 hours on November 3, 1993. The safety significance of this event was determined to be minimal since the HPCI system remained capable of automatically initiating, and all other Emergency Core Cooling Systems (ECCS) required by T.S. 3.5.c.2 were operable.

## **C. CAUSE OF EVENT:**

This report is being submitted in accordance with 10CFR50.73 (a)(2)(v)(D), which requires the reporting of any condition that could have prevented the fulfillment of a safety system needed to mitigate the consequences of an accident. Although failure of the HPCI room cooler would not have defeated the design function of the HPCI system, the room cooler fans are required for recirculation of cool air in the event of a postulated design basis accident. Therefore, the system was declared inoperable.

The apparent cause of the HPCI inoperability was due to the broken room cooler drive belts. The root cause of the broken drive belts can be attributed to excessive fan motor vibrations and possible misalignment. The current motor mounting supplied with the cooler is poorly designed which causes the belt pulleys to become misaligned. It is this misalignment which puts abnormal stress on the cooler drive belts and motor bearings.

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A maintenance history review was performed and indicated that the drive belts were replaced on the following dates:

NWR D88016	10/23/89	
NWR D99207	03/07/91	(17 months between belt replacements)
NWR D00745	05/24/91	(2 months between belt replacements)
NWR D21492	11/03/93	(30 months between belt replacements)

It can be concluded from the above that the time between cooler belt replacements was approximately thirty months. It should be noted, however, that the actual operating time of Dresden Unit 3 was approximately eighteen of the thirty months, due to a five month refuel outage (D3R13), and an eight month forced outage. Subsequently, during those periods of Cold Shutdown the HPCI cooler was not required for operation, since the HPCI room ambient temperatures were normal. Thus, the belts were replaced per the recommend PM frequency of refuel outage.

In addition to establishing PM frequencies for replacing the belts, the root cause of the HPCI room cooler belt failures had been determined through engineering evaluations, and several corrective actions were in progress prior to this event. The corrective actions that were completed prior to this event were the following:

1. To reduce the HPCI room ambient temperature, additional insulation has been installed on HPCI piping.
2. Engineering evaluation titled "HPCI Room Cooler Repair and Upgrade", dated 11/02/93, was performed to evaluate the root cause of motor mounting problems and belt failures, and to provide recommendations.
3. NWR D21492 was written in September 1993, for planned maintenance of the room cooler prior to the next Unit 3 refuel outage, and was scheduled to be performed in December 1993.

#### D. SAFETY ANALYSIS:

The HPCI system is designed to pump water into the reactor vessel under loss-of-coolant conditions which do not result in rapid depressurization of the pressure vessel. The loss of coolant might be due to a loss of reactor feedwater or to a small line break which does not cause immediate depressurization of the reactor vessel.

Although the HPCI system was declared inoperable, the automatic function of the HPCI system was not hindered. It was determined through engineering calculations, however, that the HPCI room cooler fans are required for circulation (without cooling water) during the event of a postulated accident. This analysis can be documented in the Nuclear Fuel Services Report RSA-D-92-06. Additionally all other Emergency Core Cooling Systems (ECCS) required by T.S. 3.5.c.2 were operable.

Therefore, for the above reasons, the safety significance of this event was considered minimal.

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E. CORRECTIVE ACTIONS:

The corrective actions are listed below:

1. The immediate corrective actions included replacement of the HPCI cooler drive belts per NWR D21492.
2. HPCI room cooler drive belts and pulleys, and motor bracket will be upgraded during the next Unit 3 refuel outage scheduled for March 1994. NWR D01475 has been scheduled (249-180-93-01701).
3. HPCI room cooler drive belts and pulleys, and motor brackets will be upgraded during the next Unit 2 refuel outage or short outage as plant conditions permit. NWR D01474 has been scheduled (249-180-93-01702).
4. The Unit 2 HPCI room cooler belt replacement and planned maintenance is tentatively scheduled for the next Unit 2 HPCI LCO in June 1994 (249-180-93-01703).

F. PREVIOUS OCCURRENCES:

<u>LER/Docket Number</u>	<u>Title</u>
89-022/050249	HPCI Inoperable Due to Broken Room cooler Belts  The HPCI system was inoperable due to the failure of room cooler drive belts. The failure of the belt were attributed to increased frequency of cooler operation due to elevated HPCI room ambient temperatures.

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>Mfg. Part Number</u>
Optibelt	V-belt	B-51	

The belt drive is not reportable to NPRDS.