

NRC FORM 366 (5-92)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95							
<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.				
FACILITY NAME (1) Dresden Nuclear Power Station, Unit 2					DOCKET NUMBER (2) 05000237			PAGE (3) 1 of 4				
TITLE (4) HPCI System Declared Inoperable Due to Excessive Cycling of the Gland Seal Condenser Hotwell Drain Pump due to Pump Stop Level Switch Malfunction.												
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 NAME	DOCKET NUMBER		
06	06	97	97	-- 013 --	00	06	26	97	FACILITY NAME	DOCKET NUMBER		
OPERATING MODE (9)		1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)		100		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)		50.73(a)(2)(iv)		73.71(c)		
				20.2203(a)(2)(i)		20.2203(a)(4)		X 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)				
LICENSEE CONTACT FOR THIS LER (12)												
NAME D. Smith - Plant Engineering                      Ext. 3087							TELEPHONE NUMBER (Include Area Code) (815) 942-2920					
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)												
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TC NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		
X	BJ	LS	M235	Y								
SUPPLEMENTAL REPORT EXPECTED (14)												
YES (If yes, complete EXPECTED SUBMISSION DATE).					X	NO		EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR

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

On June 6, 1997 at 0122 hours with Unit 2 in Mode 1(Run), while performing the scheduled quarterly Dresden Operability Surveillance (DOS) 2300-03, High Pressure Coolant Injection System Operability Verification, the High Pressure Coolant Injection (HPCI) Gland Seal Leak Off (GSLC) condenser hotwell drain pump began cycling on/off (excessively) on a 1 to 2 second interval. The cause for the excessive pump cycling is failure of the HPCI condenser hotwell pump level control switch 2-2300-LCS-1. The failed level switch was replaced. The high and low level switch/pump control, and level alarm switch operations were functionally verified. DOS 2300-03 was successfully performed. The safety significance of this event is minimal.

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LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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

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] and are obtained from IEEE Standard 805-1984, IEEE Recommendation Practice for System Identification in Nuclear Power Plants and Related Facilities.

EVENT IDENTIFICATION:

HPCI System Declared Inoperable Due to Excessive Cycling of the Gland Seal Condenser Hotwell Drain Pump due to Pump Stop Level Switch Malfunction.

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 2                                      Event Date: 06/06/97                                      Event Time: 0122 hrs  
 Reactor Mode: 1                                      Mode Name: Run                                      Power Level: 100  
 Reactor Coolant System Pressure: 1000 psig

B. DESCRIPTION OF EVENT:

This LER is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(D) which requires reporting of any event or condition that alone could have prevented the fulfillment of the safety function of a system required to mitigate the consequence of an accident.

On June 6, 1997, at 0122 hours with Unit 2 in Mode 1(Run), while performing the scheduled quarterly Dresden Instrument Surveillance (DOS) 2300-03, High Pressure Coolant Injection System Operability Verification, the High Pressure Coolant Injection (HPCI) [BJ]Gland Seal Leak Off (GSLO) condenser hotwell drain pump began cycling on/off (excessively) on a 1 to 2 second interval. This occurred during HPCI turbine warmup at 2500 rpm. The Nuclear Station Operator (NSO) secured the HPCI System and placed the GSLO pump in the pull-to-lock position. The HPCI System was declared inoperable and a 14 day LCO was entered in accordance with Technical Specification 3.5.A.

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The HPCI condenser hotwell level alarm and control system is comprised of four level switches. Level switches 2300-LLAS-1 and 2300-LLAS-2 provide the respective condenser hot well High and Low level alarms in the Main Control Room. Level switches 2300-LCS-1 and 2300-LCS-2 provide for hotwell level control pump start and stop operation. Instrument Maintenance Department trouble shooting (Work Request 960087536) identified the cause for the excessive pump cycling as level control switch 2-2300-LCS-1 sticking in the open position. LCS 2-2300-LCS-1 provides pump shutoff at the condenser low level position. With this switch failed open, the pump would cycle solely on the condenser high level (pump start) level switch without the required pump shutoff level control. The failed level switch was replaced, the high and low level pump operation control, and level alarm switch operation were functionally verified (WR 960087536) and DOS 2300-03 successfully performed. The HPCI system was declared operable on June 7, 1997 at 0200 hours.

The failed level switch is a Mercoid Corp, Model Number 123, consisting of a float chamber and a mercury switch. This switch is designed to close when water level rises approximately mid-way up the float chamber body. During the initial IM Department trouble shooting inspection, the condenser hotwell sight glass indicated water level greater than 1 foot above LCS-1 with the switch contacts in the open position instead of the expected closed position. During further trouble shooting, LCS-1 was heard to change position. Visual external inspection of level switch LCS-1, linkage, and mercury bulb did not indicate any abnormalities. An internal inspection of the level switch (float chamber) was not performed due to the high internal contamination. The failed float assembly was subsequently disposed of without an internal inspection being performed. A review on maintenance history did not identify any previous failures or replacements for this specific (LCS-1) switch. Maintenance history for the related switches indicated that the linkage on all four level switches was realigned in 1989.

The HPCI condenser drain pump and alarm level switches are factory set. Switch operation is determined by the vertical placement on the condenser hotwell instrument piping. The alarm and pump control level switches are functionally tested annually during performance of DIS 2300-15, High Pressure Coolant Injection System (HPCI) Gland Seal Condenser Level Control/Alarm Switch Functional Test. This surveillance was last successfully performed on May 6, 1997. Condenser pump control level switches are demonstrated operable during performance of operating surveillances DOS 2300-03, High Pressure Coolant Injection System Operability Verification (Quarterly), and DOS 2300-07, High Pressure Coolant Injection Fast Initiation Test (Post Refuel Outage). Both of these surveillances require the LPCI, Core Spray, Automatic Pressure Relief (ADS) and Isolation Condenser systems operable as test pre-requisites. Surveillance acceptance criteria also requires the GSLO drain pump to operate normally, maintaining condenser hotwell level between -8 and -21.5 inches.

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C. CAUSE OF EVENT:

The cause of the HPCI System being declared inoperable was failure of the hotwell condenser pump stop level switch [NRC cause code X]. The cause of the pump stop level control switch failing in the open position could not be determined as the switch was disposed of before an internal inspection could be performed.

D. SAFETY ANALYSIS:

Following HPCI System initiation, leakoff collected by the HPCI turbine gland seal system is routed to the GSLO condenser hotwell. The condensate is then returned to the HPCI pump suction via the GSLO condenser hotwell drain pump. If the GSLO condenser drain pump were to become inoperable, the GSLO condenser would flood and steam would no longer be drawn off of the turbine shaft glands, stop valve stem, or control valve stems. Initially, this occurrence alone would not prevent the HPCI system from functioning during a design basis accident. Continued steam leakage into the HPCI room could result in a HPCI system isolation (Group IV) due to high room temperature.

Had the HPCI System become inoperable due to GSLO condenser overflow, the Isolation Condenser, Automatic Depressurization System, and Low Pressure Emergency Core Cooling Systems (LPCI, Core Spray) were available to provide reactor pressure and inventory control during any postulated design Basis Accident. For these reasons, the safety significance of this event is considered to be minimal.

E. CORRECTIVE ACTIONS:

The failed level switch was replaced, functionally verified, and the HPCI system operability verified. (Complete)

F. PRIOR SIMILAR OCCURRENCES:

No previous occurrences were identified.

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number
Mercoid Corporation	Level Switch	123

An industry wide NPRDS data base search was performed on Mercoid Corporation, Model 123 level switches for HPCI System application. One level switch failure was identified. Failure was caused by the mercury bulb coming loose from its holder.