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Dresden Generating Station
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ComEd

August 31, 1995

TPJLTR 95-0101

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

Licensee Event Report 93-023, Revision 2, Docket 50-237 is being submitted as required by Technical Specification 6.6 and 10CFR50.73(a)(2)(v)(D), 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.

This supplement is being submitted to report the root cause and corrective actions taken for the leaking High Pressure Coolant Injection Valve (M02-2301-3).

Sincerely,

Thomas P. Joyce
Site Vice President

TPJ/JK:bjk

Enclosure

cc: H. Miller, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Dresden Nuclear Power Station, Unit 2	05000237	1 OF 4

TITLE (4)
High Pressure Coolant Injection (HPCI) Declared Inoperable Due to Internal Wear of MO2-2301-3

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
10	12	93	93	-- 023 --	02	09	01	95	None	
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	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	TELEPHONE NUMBER (Include Area Code)
John Kish, System Engineering Ext. 2360	(815) 942-2920

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)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO				

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

On October 12, 1993 at 1018 hours, with Unit 2 at 100% rated core thermal power, annunciator 902-3 C-11, High Pressure Coolant Injection (HPCI) Exhaust Drain Pot High Level, was received on Unit 2. The Nuclear Station Operator followed Dresden Annunciator Procedure (DAN) 902-3,C-11 in an attempt to clear the alarm. The alarm reset approximately 25 minutes after it was received. An initial walkdown could not determine a problem with the Exhaust Drain Pot. A second 902-3 C-11 annunciator was received at 1631 hours. A second walkdown revealed leakage past the MO2-2301-3, HPCI Turbine Main Steam Isolation Valve. The HPCI system was isolated and declared inoperable and a seven day Limiting Condition for Operation was entered per Technical Specification 3.5. An investigation determined that the valve was not leaking past the seat. Further actions included cycling the valve to obtain a Motor Signature and VOTES trace. A review of these traces could not identify any problems. As a future preventative measure a monitoring system was developed to take temperature every shift on the MO2-2301-3 leak-off line to identify any leakage in the future. The system was placed in a standby line up and the seven day LCO was terminated on October 14, 1993 at 1425 hours.

EVENT IDENTIFICATION:

High Pressure Coolant Injection (HPCI) Declared Inoperable Due to Internal Wear of MO2-2301-3

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 2 Event Date: 10/12/93 Event Time: 1745

Reactor Mode: N Mode Name: Run Power Level: 100%

Reactor Coolant System Pressure: 997 psig

B. DESCRIPTION OF EVENT:

On October 12, 1993 at 1018 hours, with Unit 2 at 100% rated core thermal power, annunciator 902-3 C-11, HPCI [BJ] Exhaust Drain Pot High Level, was received on Unit 2. The Nuclear Station Operator (NSO) (Licensed reactor operator) followed Dresden Annunciator Procedure (DAN) 902-3,C-11 in an attempt to clear the alarm. The alarm reset approximately 25 minutes after it was received. The system engineer (non-licensed) was dispatched to the room to investigate the alarm. An inspection of the steam drain piping to the exhaust drain pot was conducted to determine if steam leakage was occurring. The temperatures of the piping were all ambient, which indicated that there was not a direct steam leak to the drain pot. It was initially concluded that painting in the room may have "jarred" the level switch causing actuation. However, the Unit NSO was instructed to immediately report any future 902-3 C-11 alarms. A second 902-3 C-11 annunciator was received at 1631 hours. The system engineer immediately went to the room to follow up on the alarm. The second walkdown revealed leakage past the MO2-2301-3, HPCI Turbine Main Steam Isolation Valve. The System Engineer recommended to the Shift Supervisor (Licensed senior reactor operator) that the HPCI system should be declared inoperable and isolated immediately. The system was declared inoperable and a seven day Limiting Condition for Operation (LCO) was entered at 1745 hours. The piping downstream of the of the MO2-2301-3 was drained to the HPCI sump through AO2-2301-64 and AO2-2301-65, HPCI Stop Valve Above Seat Drain. The MO2-2301-3 was cycled, and the HPCI Steam Inlet piping was unisolated. The Stop Valve Above Seat Drain line was monitored to determine if leakage past MO2-2301-3 continued. An inspection conducted several hours later detected no leakage. In order to insure that an actuator problem did not exist, a motor signature and an informational VOTES trace was obtained. The testing gave no indications that a seating problem was occurring. Following the successful testing of MO2-2301-3 the system was placed in a standby line up and declared operable on October 14, 1993 at 1825 hours. Monitoring of the HPCI Stop Valve Above Seat Drain is continuing on a once per shift basis in order to detect any leakage.

C. CAUSE OF EVENT:

This report is being submitted in accordance with 10CFR50.73 (a)(2)(v)(D), any condition that could have prevented the fulfillment of a safety system needed to mitigate the consequences of an accident. It should be noted, however, that this condition would not have prevented initial HPCI initiation for core injection.

The HPCI system is designed with several drain paths to prevent condensate build-up that could adversely affect the turbine operation. One drain path is the Stop Valve Above Seat Drain between the normally closed MO2-2301-3 and the normally closed HPCI Turbine Stop Valve. The drain line is normally open to the HPCI Sump during standby conditions in order to remove any condensate caused by leakage past the MO2-2301-3 or condensate build-up following turbine operation. The HPCI Stop Valve Below Seat Drain is routed to the Exhaust Drain Pot. In this event water leaked past MO2-2301-3 and the HPCI Stop Valve thus filling the Exhaust Drain Pot and giving 902-3,C-11 alarm.

Following the initial discovery of the condensate build up, the valve was cycled and the HPCI system was unisolated. The Above Seat Drain Line was monitored to determine if any leakage was occurring. After several hours of monitoring the valve was found not to be leaking by. In order to insure that an actuator problem did not exist, which could prevent the valve from closing fully, a Motor Signature and an informational VOTES trace was obtained. The testing gave no indications that a seating problem was occurring or the valve was not closing properly. The leak-off line has been monitored weekly by the HPCI system engineer during walkdowns. There has not been any indications of leakage past MO2-2301-3 in the previous five months.

Based on the results of the troubleshooting, it appears that the root cause of condensate build-up is not due to seat leakage of the MO2-2301-3 valve. Instead, it appears that MO2-2301-3 was not fully closed causing condensate build-up between the MO2-2301-3 and the HPCI Turbine Stop Valve. The rate of condensate build-up was such that the existing leak-off line could not remove the condensate fast enough. The root cause of leakage past the MO2-2301-3 valve was internal wear in the valve. Additionally, the HPCI Stop Valve Above Seat Drain is being monitored to identify if this problem recurred.

A maintenance history review indicated that the Unit 3 MO3-2301-3 valve was apparently leaking by causing elevated temperatures on the HPCI Stop Valve Above Seat Drain line. Presently, the leakage is small enough to be handled by the leak-off line. Nuclear Work Request D21144 was performed during Refuel Outage D3R13. The inspection showed some signs of galling between the disc guide and wedge. In addition, the seats were lapped to provide better contact.

D. SAFETY ANALYSIS:

In this event the HPCI Turbine would have ingested the slug of water that was between MO2-2301-3 and the HPCI Turbine Stop Valve. On initiation, the water would have been entrained in steam flowing through the turbine. The HPCI turbine design is capable of ingesting a water slug without casing damage occurring. The amount of water which would have actually entered the turbine in this event is unknown. However, during HPCI initiation approximately 10 seconds elapse from the time MO2-2301-3 valve opens to the time the turbine control valves begin to open. The amount of water entering the turbine casing would have been reduced from the additional drains which are opened and the "flashing" of the water that would of occurred during the 10 seconds.

In this event the HPCI system was declared inoperable upon discovery of the leaking MO2-2301-3 valve in order to prevent any unnecessary challenges to the HPCI Turbine. Therefore, since the HPCI system would have initiated and all other Emergency Core Cooling Systems required by Technical Specification

3.5.C.2.a were operable throughout this event the safety significance is minimal.

E. CORRECTIVE ACTIONS:

The initial corrective actions isolated and drained the system to prevent any possible turbine damage from occurring. The HPCI system was then placed back into a standby line up in order to monitor MO2-2301-3 leakage. Since the initial event there has been no leakage past MO2-2301-3.

Nuclear Work Request D22249 was written to troubleshoot the valve actuator to determine if the valve was experiencing closing difficulties. The motor signature and VOTES traces showed no problems with the valve when operated. No further VOTES testing on the valve is planned.

The HPCI Stop Valve Above Seat Drain is monitored once a shift during plant operation and the results will be recorded in APPENDIX F, Unit 2 B Operator round.

The HPCI Stop Valve Above Seat Drain is monitored once a shift during plant operation and the results will be recorded in APPENDIX G, Unit 3 B Operator round.

During D2R14, the MO2-2301-03 valve was disassembled and inspected. The inspection determined that the horseshoe guide showed evidence of hard rubbing. A review of the VOTES data taken in October, 1993, together with the inspection results concluded that this rubbing was of a continuous nature and would not have been detected by the VOTES testing. Initial repairs were to include replacing the guide and wedge. However, further inspection found the seats to be deteriorated. If a new wedge would have been installed, the machining process utilized to achieve fit-up would have machined off the remaining seat material. Weld buildup of the existing seats was determined not to be an option due to uncertainty with its success. Instead, a hardened horseshoe guide was installed with the old wedge. A contact check of the wedge to the seat was performed and it indicated full 360 degree contact around the seat. Permanent repair which would include weld buildup of the existing seats or seat replacement was postponed until D2R15 to ensure the proper repair could be performed. This will be tracked to completion by NTS# 237-180-93-02301S2.

F. PREVIOUS OCCURRENCES:

None.

G. COMPONENT FAILURE DATA:

None.