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ComEd

October 8, 1997

JSPLTR #97-0176

U.S. Nuclear Regulatory Commission
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Washington, D.C. 20555

Enclosed is Licensee Event Report 97-010, Docket 50-249, which is being submitted in accordance with 10CFR50.73(a)(2)(v), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of systems that are needed to mitigate the consequences of an accident.

The report contains no commitments as a result of this event.

If you have any questions, please contact Frank Spangenberg, Dresden Regulatory Assurance Manager at (815) 942-2920 extension 3800.

Sincerely,

J. Stephen Perry
Site Vice President
Dresden Station

Enclosure

cc: A. Bill Beach, Regional Administrator, Region III
NRC Resident Inspector's Office

IE22

140091

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 3	05000249	1 OF 5

TITLE (4)
High Pressure Coolant Injection Declared Inoperable Due to Turbine Interlock Dump Valve Being Out of Adjustment and Stuck in the Closed Position Induced by Normal Wear and Varnish Buildup

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
09	09	97	97	-- 010 --	00	10	08	97	None	
									FACILITY NAME	DOCKET NUMBER

		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
OPERATING MODE (9)	1		20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		73.71(b)
POWER LEVEL (10)	098		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, Plant 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
E	BJ	TRB	G080	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 15 single-spaced typewritten lines) (16)

On September 9, 1997, during a High Pressure Coolant Injection (HPCI) system walkdown by a Component Engineer, the interlock dump valve on the Unit 3 HPCI turbine was observed to be out of adjustment. Subsequent evaluation by the Component Engineer determined that this condition could negatively affect operation of the HPCI turbine. The HPCI System was declared inoperable at 1236 on September 9, 1997. The interlock dump valve was disassembled and inspected. The inspection revealed that the valve was out of adjustment and stuck in the closed position. The interlock dump valve was reassembled and adjusted utilizing the HPCI turbine oil system. Upon completion of the adjustment, the HPCI system operability surveillance was successfully performed on September 10, 1997, and the system declared operable at 2000. The valve being stuck is attributed to normal wear and varnish buildup. Since there is no record that maintenance was performed on the interlock dump valve, the out of adjustment appears to have been be an existing condition. There were no previous instances of interlock dump valve adjustment or sticking issues. The safety significance of this condition was minimal.

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 Recommended Practice for System Identification in Nuclear Power Plants and Related Facilities.

EVENT IDENTIFICATION:

High Pressure Coolant Injection Declared Inoperable Due To the Turbine Interlock Dump Valve Being Out of Adjustment and Stuck in the Closed Position Induced by Normal Wear and Varnish Buildup

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: September 09, 1997 Event Time: 1236

Reactor Mode: 1 Mode Name: Run Power Level: 98%

Reactor Coolant System Pressure: 1000 psig

B. DESCRIPTION OF EVENT:

This report is being 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. There were no structures, systems or components inoperable at the time of this discovery which would have contributed to this event.

During a High Pressure Coolant Injection (HPCI)[BJ] system walkdown on the morning of September 9, 1997, the interlock dump valve was observed to be out of adjustment.

The HPCI turbine interlock dump valve is located in the front standard of the HPCI turbine. When correctly adjusted, the top of interlock dump valve adjustment bolt is positioned against the bottom of the electric positioner lever arm. A quarter of an inch gap was observed to exist between the lever arm and the adjustment bolt. It was also determined that the interlock dump valve was stuck in the closed position since the turbine was in standby condition with its electric positioner at its low speed stop.

The purpose of the interlock dump valve is to allow the interlock valve to perform its two functions. The functions are 1) to provide for automatic tripping of the turbine control valves to their closed position when the stop valve is tripped closed (i.e., allow reset of the control valves) and 2) to prevent opening of the control valves unless the electric positioner is at its low speed stop. The first function resets the control valves which allows the starting of the turbine. The second function prevents uncontrolled opening of the control valves upon receipt of a turbine initiation signal until the electric positioner is positioned to allow a controlled start and turbine acceleration.

Proper adjustment of the interlock dump valve is required for the interlock valve to function properly. The relationship between the two is as follows: The interlock dump valve is closed with the turbine in the standby condition due to the electric positioner lever arm pushing it downward to the close position. This allows oil pressure to build up and shuttle the interlock valve on a turbine initiation. If the interlock dump valve was open, no oil pressure would be supplied to the interlock valve and shuttling would not occur; thereby preventing HPCI turbine operation. If the interlock dump valve was closed due to being stuck or being out of adjustment (the as found condition), oil pressure would be available to shuttle the interlock valve and allow the control valves to open prior to the electric positioner lever arm reaching the low speed stop. Therefore, upon a turbine re-initiation signal, all the turbine control valves could immediately travel full open and possibly overspeed the turbine or overpressurize the turbine exhaust or injection lines prior to reaching the electric positioner control valves closed position.

Realizing these possibilities, the system was declared inoperable and removed from service for repair. The interlock dump valve was disassembled and inspected. It was determined that the interlock dump valve was stuck in the closed position and out of adjustment. Sticking is attributed to normal wear (minor surface scratching) and varnish buildup. Varnish buildup is a normal process for stagnant oil conditions as found in the HPCI interlock dump valve system. Furthermore, there is no hydraulic pressure to return the interlock dump valve to the open position. The interlock dump valve repositioning relies on mechanical spring force to return the dump valve to the open position. The spring was inspected and found to be acceptable. No foreign material was found in the system. The out of adjustment determination was based on the fact that the electric positioner lever will only depress the adjustment bolt down to a fixed position, (i.e., no gap should be present unless the adjustment bolt had throttled the interlock dump valve further in the closed direction).

The valve was cleaned and re-assembled. The valve was then adjusted and verified to properly function per instructions contained in the General Electric HPCI turbine manual. Upon completion of the interlock dump valve adjustment, the HPCI system operability surveillance, DOS 2300-03, "High Pressure Coolant Injection System Operability Verification" was successfully performed and the system declared operable on September 10, 1997, at 2000.

A review of the work history for the Unit 3 HPCI turbine indicates that no maintenance activities were identified which would have resulted in the interlock dump valve being readjusted. Current surveillances do not subject the turbine to the conditions required for the control valves going immediately open. Therefore, normal surveillances would not have detected this condition. No anomalies had been detected during previous turbine operations.

Additionally, the Unit 2 HPCI turbine and the associated interlock dump valve were inspected and appeared to be correctly adjusted. The Unit 2 interlock dump valve was successfully tested on October 6, 1997 by raising and lowering the Motor Speed Changer with normal control oil pressure. This was done to verify that a similar condition did not exist on the Unit 2 HPCI. An Action Request (AR 970073242) was initiated to disassemble and inspect the Unit 2 HPCI interlock dump valve and is to be scheduled for the next (D2R15) Unit 2 refuel outage.

The interlock dump valve was not specified in the vendor's recommended monitoring program. As such, it was not included in the initial turbine inspection program. A 1995 Performance Centered Maintenance analysis of the HPCI front standard identified the interlock dump valve as one of the components which should be incorporated into the HPCI front standard maintenance inspection program. The inspections was scheduled to be performed during D3R18 consistent with the established HPCI front Standard maintenance inspection program.

C. CAUSE OF EVENT:

The valve being stuck is attributed to normal wear and varnish buildup which caused valve binding. Varnish buildup is a normal process for stagnant oil conditions as found in the HPCI interlock dump valve system. Since there is no record that maintenance was performed on the interlock dump valve, the out of adjustment appears to be an existing condition. The onset of this condition is indeterminate.

D. SAFETY ANALYSIS:

In this condition, the HPCI turbine interlock dump valve could have adversely affected operation of the turbine. The valve being in this condition, did not prevent the turbine from operating as proven by the successful tests which were performed prior to discovery of this condition. However, had the valve become dislodged and open while out of adjustment, it is possible that the turbine would not have started since no oil pressure could be supplied to the interlock valve allowing it to shuttle for a control valve reset. In light of all the successful system tests performed, it is apparent that the valve would have remained in the closed position indefinitely. Although it was highly unlikely that the interlock dump valve would open, this condition was also considered in the evaluation. It is believed that the HPCI system would have started and been available to perform its intended safety function.

As previously discussed, a second adverse effect potentially existed with the interlock dump valve in this condition. The HPCI system is designed to be available for restart during an accident if needed. After the initiating signal has cleared and HPCI tripped, the electric positioner will reposition to its control valves closed position by design. Until the electric positioner gets to its control valves closed position, the control valves cannot open because the interlock dump valve is still open thus preventing the interlock valve from resetting the control valves. This feature prevents uncontrolled opening of the control valves and possible turbine overspeed, or overpressurization of the turbine exhaust, or injection piping. However, if the interlock dump valve is stuck in the closed position and out of adjustment, the turbine does not require the electric positioner to reposition to the control valves closed position for a restart. Upon a second start signal, the HPCI turbine control valves would open to the electric positioner position. Recent testing during the previous outage on the Unit 3 turbine determined that the Motor Speed Changer takes approximately 11 seconds to reposition from the high speed stop to the low speed stop. During this time period the turbine would be vulnerable to the potential consequences described above. This time period is relatively small considering the time required for a restart. Therefore, it was improbable that the second scenario would occur. The HPCI system would still be able to perform its design function.

Based on the above and the fact that while the HPCI system was out of service for repairs, 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, the safety significance is minimal. The health and safety of the public were not compromised as a result of this condition.

E. CORRECTIVE ACTIONS:

Upon identification, the Unit 3 HPCI system was declared inoperable in order to correct the as found condition. The Unit 3 interlock dump valve was disassembled and inspected, reassembled, adjusted, and functionally verified. The system was then tested to demonstrate operability.

F. PREVIOUS OCCURRENCES:

This event has not occurred before.

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
General Electric	Turbine	DRV-231	101A192FX 165A23BD

An industry wide NPRDS database search was performed on General Electric HPCI turbine There were no similar failures identified.