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PGHLTR 95-0028

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

Licensee Event Report 95-018, Docket 50-249 is being submitted pursuant to 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.

Sincerely,

Peter G. Holland
Regulatory Assurance Supervisor

PGH/:pt

Enclosure

cc: H. Miller, Regional Administrator, Region III
NRC Resident Inspector's Office
Document Control Desk, ComEd Licensing
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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 3	05000249	1 OF 4

TITLE (4)
Manual Trip of High Pressure Coolant Injection Turbine Due to Exhaust Drain Pot High Level Alarm Caused by Procedural Deficiency

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	95	95	-- 018 --	00	11	09	95	None	
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	020	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, 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

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	NO				

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

On October 12, 1995, at 1722 hours, with Unit 3 in the run mode at 20% core thermal power, annunciator C-11, High Pressure Coolant Injection (HPCI) Exhaust Drain Pot Level High was received during performance of the monthly HPCI surveillance. The HPCI turbine was manually tripped and the HPCI system declared inoperable. The alarm did not reset until the exhaust drain pot was manually drained the next day. The level switch was determined to be functional and the alarm was determined to be legitimate. Cause of the excessive accumulated fluid in the Drain Pot was due to inadequate procedural preparation for the surveillance. The exhaust pot was drained and the surveillance was successfully performed on October 13, 1995.

EVENT IDENTIFICATION:

Manual Trip of High Pressure Coolant Injection Turbine Due to Exhaust Drain Pot High Level Alarm Caused By Procedural Deficiency

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: 10/12/95 Event Time: 1722

Reactor Mode: Run Mode Name: N Power Level: 20%

Reactor Coolant System Pressure: 920 psig

B. DESCRIPTION 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.

On October 12, 1995, at 1722 hours, with Unit 3 in the run mode at 20% rated core thermal power, during performance of the monthly surveillance, DOS 2300-03 High Pressure Coolant Injection (HPCI) [BJ] System Operability Verification, annunciator C-11, HPCI [BJ] Exhaust Drain Pot High Level alarmed. The HPCI turbine stop valve had been opened to warm up the HPCI turbine, per procedure, three minutes prior to the alarm coming in. After the alarm came in, the NSO immediately notified the Plant Engineer (PE) who was located in the HPCI room at the time performing visual inspection on the HPCI turbine piping. The PE observed level rising in the Gland Seal Leakoff Condenser sightglass which indicated the HPCI Turbine Exhaust Drain Pot Condensate Drain to Condenser valve (3-2301-32) valve had opened. The HPCI turbine exhaust drain pot is designed to normally drain to the suppression pool (torus) utilizing HPCI turbine exhaust pressure. However, the actual drain flow during warmup conditions is not adequate to fully drain the vessel. During warmup there is insufficient pressure in the exhaust line pot to overcome the elevation difference for flow to the torus. This means that the vessel will fill up beyond the alarm point during warm-up evolutions if water is present in the vessel at the beginning of the warm-up operation.

Up until the alarm was received, the HPCI system would still have been able to perform its design function. Per annunciator C-11 procedure requirements, the HPCI turbine was manually tripped and the system isolated. After the HPCI turbine was tripped, a conservative decision was made to declare the system inoperable in order to minimize any challenges against the system. The HPCI system is a single train safety system. Rendering of the system inoperable and subsequently isolating the system for maintenance created the reportable condition.

Annunciator procedure C-11, HPCI Turbine Exhaust Drain Pot Level High, was revised in August, 1995, to implement lessons learned from the Quad Cities diaphragm rupture event. The revisions specified:

1) if the HPCI turbine stop valve were opened and the alarm received to trip the HPCI turbine, and

2) if the HPCI turbine is running and the alarm received in conjunction with either the Gland Seal Leakoff Blower off, annunciator H-11, HPCI Gland Seal Condenser Hotwell High Level alarmed, annunciator F-11, HPCI Turbine Gland Seal Drain Pressure High alarmed or HPCI turbine speed is oscillating to trip the HPCI turbine.

The revisions were made to prevent HPCI turbine operation with condensate in the turbine casing which could lead to an exhaust line diaphragm rupture event.

Investigation and testing on the HPCI turbine inlet drain pot level switch, LS 3-2369, determined that the level alarm was legitimate and the level switch was functional. The HPCI turbine exhaust drain pot was manually drained following the event and the alarm was observed to clear. The HPCI turbine exhaust drain pot was then completely drained.

The surveillance was performed satisfactorily on October 13, 1995, at 2300.

Investigation during this event determined that the warm-up period was commenced with water already existing in the drain pot. This water collects after the performance of the surveillance due to condensation and cooldown of the HPCI turbine and the connected piping. This is a normal occurrence. The five minute turbine warm-up period, specified in the surveillance, is an Original Equipment Manufacturer (OEM) (GE) recommendation and begins after the HPCI turbine stop valve is opened. The warm-up period will result in the addition of condensed water to the HPCI turbine exhaust drain pot due to the relative coolness of the HPCI turbine. Normally, the HPCI turbine exhaust drain pot drains to the torus utilizing turbine exhaust line pressure as the driving force. When the alarm occurs, the 3-2301-32 valve opens, but without sufficient driving force (i.e. turbine exhaust pressure) the exhaust drain pot high level condition will not clear. Existing water in the pot, plus additional water from the warm-up period will result in the exhaust drain pot high level. The only alternative is to manually trip the turbine. Prior to successfully performing the surveillance in September, 1995, the HPCI turbine exhaust drain pot was completely drained during troubleshooting activity associated with the exhaust pot level switches. There were no alarms observed at this time.

A review of HPCI system procedures has determined that DOS 2300-03, High Pressure Coolant Injection System Operability Verification is the only procedure that specifies a five minute warm-up period for the HPCI turbine.

During the warming period, there was some vibration observed of the level switch. Inspection of the level switch found a cracked and loose terminal block and a loose cap. These conditions were attributed to the vibration. Subsequent testing verified operability of the level switch at all times during the event. There were no equipment malfunctions associated with this event. The vibration was not observed during the previous surveillances performed in September or the one performed on October 13, 1995. These surveillances were performed with the HPCI turbine exhaust drain pot drained. The vibration has been attributed to the steam/water flow that occurred during the warm-up period. The level switch was repaired prior to the performance of the surveillance on October 13, 1995.

C. CAUSE OF EVENT:

The root cause of this event was inadequate procedural preparation for the surveillance which allowed excessive accumulated fluid in the exhaust line drain pot. The water that was present in the drain pot was condensation accumulated after the performance of the last surveillance. The surveillance does not require draining of the drain pot prior to the performance of the test. Since the pot will fill up beyond the alarm point if water is present at the beginning of the test it should be drained prior to the test.

D. SAFETY ANALYSIS:

It has been determined that prior to receiving the HPCI turbine exhaust drain pot high level alarm, the HPCI system would have operated as designed. During the events that would require system operation, there is no time allotted for HPCI turbine warm-up. During a normal start-up, the steam admission valve, stop valve, and control valves open quickly thus eliminating the collection of water that occurs during the warm-up period. A quick start also results in high steam flow velocities through the steam supply system and turbine which quickly transports any residual moisture through the HPCI turbine and exhaust line. This will result in the drain pot being quickly purged of its contents to the torus.

Although vibration was observed on the level switch, subsequent testing determined it was still functional and had no affect on operability of the system. Minor repairs were performed, which included replacement of the terminal block and internals.

After the alarm was received, the HPCI turbine was manually tripped and a conservative decision made to isolate the system to prevent unnecessary challenges while in this condition. The surveillance was successfully re-performed the next day. Based on the above and the fact that 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:

Immediate corrective actions were to trip the HPCI turbine and isolate the system.

DOS 2300-03, High Pressure Coolant Injection System Operability Verification has been revised to require draining of the HPCI turbine exhaust drain pot before performing the five minute warm-up period.

F. PREVIOUS OCCURRENCES:

During the performance of the surveillance on September 11, 1995, the HPCI turbine was manually tripped due to an exhaust pot high level alarm that would not clear. This event is not related to this LER.

G. COMPONENT FAILURE DATA:

None.