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

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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 5

TITLE (4) HPCI Declared Inoperable Due to Water in Lube Oil Reservoir From Lube Oil Cooler Tube Leakage

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
11	27	96	96	-- 018 --	00	12	23	96	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	099

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)
Mr. J. Kish, System Engineer 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
X	BJ	CTW	G080	Y						

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X	YES (If yes, complete EXPECTED SUBMISSION DATE).		NO		5	30	97

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

On November 27, 1996, at 1315, with Unit 2 in the run mode at 99 percent rated core thermal power the High Pressure Coolant Injection (HPCI) system was declared inoperable due to suspected water in-leakage into the HPCI oil reservoir. The system was placed in a 7 day Limiting Condition of Operation (LCO) per Technical Specification 3.5.C.2.a. Subsequent investigation revealed that several tubes had failed on the lubricating oil cooler heat exchanger. Due to the higher head of the cooling water this allowed the cooling water to drain into the reservoir. The lubricating oil cooler heat exchanger was disassembled, inspected, and repaired. The system was then tested per DOS 2300-03 "High Pressure Coolant Injection System Operability Verification" and declared operable on December 1, 1996.

The root cause of the failure is being investigated and will be reported in a supplement to this report. Since the lubricating and heat removal capacity of the HPCI lube oil system was not impacted, the safety significance of this event is 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 Recommendation Practice for System Identification in Nuclear Power Plants and Related Facilities.

EVENT IDENTIFICATION:

HPCI Declared Inoperable Due to Water In Lube Oil Reservoir From Lube Oil Cooler Tube Leakage.

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 2 Event Date: 11/27/96 Event Time: 1315

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

Reactor Coolant System Pressure: 1000 psig

B. DESCRIPTION OF EVENT:

This issue is reportable pursuant to 10CFR50.73(a)(2)(v)(D) which requires that the licensee report 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.

On Wednesday, November 27, 1996, at 1315 hours the High Pressure Coolant Injection (HPCI)[BJ] system was declared inoperable due to water in-leakage into the HPCI lube oil reservoir.

The day before, Tuesday, November 26, a high oil level alarm was received in the Control Room. An operator was dispatched to the HPCI Room to investigate and verified that the local indicator was indicating slightly high but he was able to reset it and the Control Room annunciator cleared. At this time it was decided to periodically sample the oil with the auxiliary oil pump operating. The first sample indicated a water content of 0.25 percent. In consultation with the System Engineer, and others, it was determined that HPCI was still operable.

A high oil level was again received in the Control Room early Wednesday. An operator was once again sent to investigate and this time the local indication appeared to indicate a higher level than previously noted; in addition the operator was unable to reset the local indicator. Additional samples taken and analyzed revealed an increase in water content. A sample was prepared for transmittal to the utility Central Testing Facility. At approximately 1500 hours the decision was made to declare the Unit 2 HPCI system inoperable retroactively to 1315 hours, November 27, 1996, based on water sample analyses and the appearance of the oil.

Since the most likely source of water was from the oil cooler, preparations were begun to take the oil cooler out-of-service and disassemble it for inspection. The water side (tube side) channel head cover was removed and the inlet and outlet tube sheets inspected. This inspection revealed no obvious flaws, however, the channel head cover was found to be rotated one bolt hole and a rag was found in the cooling water inlet side. The rag exhibited an appreciable amount of contamination and since the oil cooler had not been disassembled since construction, it was concluded that both conditions had existed since startup of the plant with no apparent adverse affect on oil cooler performance.

The cooler was then pressurized with oil (shell side), at normal system pressure, and the tubes visually inspected for oil leakage. Three tubes were found to leak oil, one on the inlet and two on the outlet. All three were located on the bottom of the tube bundle. The rear bonnet of the cooler was then removed to verify that no oil leakage was occurring from any different tubes not detectable from the channel end.

In addition, an air test was performed on each tube at 70 psig as a second check for tube leakage. This test revealed an additional leaking tube at the inlet side, bottom, for a total of four failed tubes. The four failed tubes were plugged after an evaluation by the vendor, General Electric, that determined that a maximum of seven tubes could be plugged without a detrimental affect on oil cooler performance.

During reassembly, a garlock gasket was used in place of the original asbestos flexitallic gasket at the channel end and a replacement Buna-N O-ring packing, 0.250" in diameter, fabricated for the floating end of the tube bundle after evaluation by Materials Engineering and Plant Engineering.

Upon reassembly of the oil cooler and after the water contaminated oil had been replaced, the HPCI unit was placed on turning gear, the control valves stroked, and the turbine tripped to flush any moisture out as recommended by the vendor, General Electric. This sequence was repeated several times.

The HPCI system was then successfully operated per DOS 2300-03 " High Pressure Coolant Injection System Operability Verification ". The oil was then sampled to verify water content was acceptable (less than or equal to 0.1 percent) and the HPCI System declared operable on Sunday, December 1, 1996.

No structures, systems, or components were inoperable at the start of or during this event which could have contributed to this event. In addition, no manual or automatic engineered safety features (ESF) actuation occurred as a result of this event.

C. CAUSE OF THE EVENT:

The purpose of the HPCI lube oil cooler heat exchanger is to remove heat from the HPCI turbine lube oil to keep it at an acceptable temperature in order for it to perform its design function. The lube oil heat exchanger utilizes HPCI booster pump discharge water or Condensate Storage Tank (CST) water as the cooling medium. In the standby condition, the lube oil cooler heat exchanger is aligned to the CST. The CST is approximately 25 feet above the lube oil heat exchanger.

It is believed that tube failures in the heat exchanger allowed the CST water to gravity drain into the lube oil heat exchanger and ultimately into the lube oil reservoir. A review of the work history for the lube oil coolers indicates that the oil side (shell side) has been opened up before due to other problems with the oil system. There is no record that indicates the water side (tube side) has ever been disassembled and inspected.

This is the first known tube leak with these heat exchangers. The cause of this event will be determined and reported in a supplement to this report.

Since this is the first time this heat exchanger has been disassembled on the tube side, it is believed that the gasket mis-orientation and FME conditions have been present from construction. Based on the location of these deficiencies, and the location of the tube failures, it is believed that these conditions had no affect on the tube degradation.

D. SAFETY SIGNIFICANCE:

Up until the system was declared inoperable due to the water intrusion, it is believed that the HPCI system would have operated as designed. This is based on observations made during previous surveillances for both Unit 2 and Unit 3.

During performance of the operability surveillance, in order to keep the lubricating oil within its allowable temperature band, throttling of the cooling water is required. During an actual system initiation the throttling valve would be full open. Therefore it is concluded that even with the conditions found on the Unit 2 heat exchanger, its heat transfer performance would not have been impacted.

In discussion with the lube oil vendor, it was determined that although the oil had water in it, for the application (low pressure-200 psig) and amount of time the condition was present, the lubrication function would not be adversely impacted. The condition was detected via the tank level monitoring system before water level had increased to where the lubrication system could not perform.

Because the heat removal capability of the heat exchanger and the lubrication capacity were not significantly impacted when the problem was identified, the HPCI system would still have been able to perform its safety function. Had an event occurred that required HPCI to operate, and it was not available, the Automatic Depressurization System and the Isolation Condenser would have been available to reduce pressure to within the capacity of the Low Pressure Coolant Injection system, and removed decay heat while providing cooling water as designed. As a result, the safety significance is minimal.

Based on the pressure test that was performed on the Unit 2 heat exchanger, it is believed the that the heat exchanger will be able to perform its design function for the remaining cycle. It will then be dis-assembled and inspected. The pressure test subjected the tubes to a pressure 40% higher than what they are normally exposed to. No leaks were detected.

E. CORRECTIVE ACTIONS:

1. The lube oil heat exchanger was dis-assembled, inspected, and repaired. Four tubes were found to have leaks and plugged. The water contaminated oil was removed and replaced. The system was flushed to remove any moisture and the oil sampled. (Complete)

2. The Unit 3 HPCI lube oil heat exchanger tube side was drained and internally inspected. This was performed on December 6, 1996, utilizing a boroscope. The tube side inlet cavity and the interface of the head and partition plate were inspected. No abnormalities were detected on the Unit 3 heat exchanger. There has not been any indication of a tube leak on the Unit 3 heat exchanger. (Complete)

3. Both Unit 2 and Unit 3 HPCI lube oil heat exchangers were placed in the Station's heat exchanger reliability program. This will insure that the heat exchangers are monitored in a systematic and cost effective way to assure their operation for the life of the plant. Inspection criteria are in the process of being formulated. (2371809601802)

4. The Unit 3 heat exchanger will be dis-assembled and further inspections performed during D3R14. (2371809601801)

5. The Unit 2 heat exchanger will be dis-assembled during D2R15, inspected and repaired accordingly. (2371809601803)

6. Dresden is aware of historic FME problems. A plan has been implemented to inspect various Unit 3 systems during D3R14 for FME intrusion. (2371009501001C)

7. A supplemental report will be issued upon determination of the root cause of the failure. (2371809601804)

F. PRIOR SIMILAR OCCURRENCES:

There have been no previous failures of the HPCI lube oil heat exchangers at Dresden Station.

G. COMPONENT FAILURE DATA

Manufacturer	Nomenclature	Model Number
General Electric	Heat Exchanger	MHTP-2-S(4)-STL