NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Dresden Nuclear Power Station, Unit 3	0 5 0 0 0 2 4 9	1 OF 0 4

TITLE (4) Manual Reactor Scram Due to High Condensate Temperature and Main Condenser Low Vacuum Caused by Broken Turbine Bearing Water and Oil Drain

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 NAMES	DOCKET NUMBER(S)
									N/A	0 5 0 0 0
0 4	0 9	8 7	8 7	— 0 1 0	— 0 0	0 5	0 1	8 7	N/A	0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 4 3	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Michael E. Moy Technical Staff Engineer (X-489)	AREA CODE 8 1 5 — 9 4 2 - 2 9 2 0

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	S D	D R N	X X X X	N		X	S G	X X X	X X X X	Y	
X	S H	D R N	X X X X	N							

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 fifteen single-space typewritten lines) (16)

On April 9, 1987 at 2335 hours with Unit 3 in the run mode at approximately 43% rated thermal power, the reactor was manually scrammed due to high condensate demineralizer inlet temperature of 130°F and main condenser low vacuum decreasing to the scram setpoint of 23 inches of mercury.

The root cause of the event was component failure. The "C" low pressure turbine bearing cone waste water and oil drain to the Turbine Building equipment sump was determined to have broken inside the condenser.

The safety significance of the event was minimal since the Reactor Operators and Shift Supervisors controlled the plant in a conservative condition in accordance with approved procedures for loss of condenser vacuum.

Corrective actions were to cut the turbine bearing cone drains and install plugs at the inlet and outlet for each low pressure turbine bearing cone. Repairs were completed under Work Request D64292.

A similar previous event was reported by Licensee Event Report #87-16 on Docket #050237.

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TEXT (If more space is required, use additional NRC Form 366A's) (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].

EVENT IDENTIFICATION:

Manual Reactor Scram Due to High Condensate Temperature and Main Condenser Low Vacuum Caused by Broken Turbine Bearing Water and Oil Drain.

A. CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: April 9, 1987 Event Time: 2335
Reactor Mode: N Mode Name: Run Power Level: 43%
Reactor Temperature: 540°F Reactor Pressure: 1019.1 psig

B. DESCRIPTION OF EVENT:

On April 9, 1987 at 2335 hours with Unit 3 in the run mode at approximately 43% reactor power, the reactor was manually scrammed due to high condensate demineralizer inlet temperature [SD] and main condenser low vacuum [SH]. Condensate demineralizer inlet temperature was approximately 130°F and increasing (normal condensate [SD] temperature is less than 120°F) and main condenser [SG] vacuum was decreasing to the scram setpoint of 23 inches of mercury. Prior to the manual scram several attempts had been made to identify the source of main condenser [SG] inleakage and increased steam jet air ejector (SJAE) [SG] flow. Normal SJAE [SG] flow at low power levels is approximately 40 scfm and at high power levels approximately 140 scfm. SJAE [SG] flow during steady state operation prior to the scram was fluctuating between 200 and 225 scfm. A drop of vacuum in the "A" main condenser [SG] hood section was noted and unit load was decreased at the rate of 100 megawatts electric/hour in an attempt to stabilize vacuum. At 2310 with SJAE [SG] flow erratic and condenser [SG] vacuum continuing to decrease, the "B" SJAE train was started and the "A" SJAE [SG] train (operating at the time) was isolated. However, vacuum continued to decrease. At 2327 hours reactor recirculation water [AD] pump speed was decreased to minimum flow, power was transferred from the unit auxiliary transformer [EL] to the reserve auxiliary transformer [EA], and insertion of CRAM arrays [AA] was initiated reducing power to 170.5 MWe/1078.2 MWt due to the expected loss of main condenser [SG] vacuum. Based on the high condensate demineralizer [SF] inlet temperature of 130°F and high main condenser [SG] hotwell temperature of 135°F the unit was manually scrammed. The Reactor Protection System [JD] functioned as expected. The scram signal was reset at 2340 hours.

C. APPARENT CAUSE OF EVENT:

This event is being submitted to comply with 10 CFR 50.73 (a)(2)(iv) which requires the reporting of any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature [JE], including the Reactor Protection System [JS].

The root cause of this event was component failure. The "C" low pressure turbine bearing cone waste water and oil drain piping [TF] to the Turbine Building equipment sump [WK], which is routed through the main condenser [SG], was determined to have broken. This drain piping [TF], which normally is at Turbine Building [NM] ambient pressure, was discovered to be under vacuum. This indicated that it had broken inside the main condenser [SG], resulting in air inleakage at the bearing collection and sump [WK] ends of the drain piping [TF].

D. SAFETY ANALYSIS OF THE EVENT:

An increased off-gas flow had been observed since startup of Unit 3 from a scram which occurred on March 21, 1987. Visual inspections and checks performed by Technical Staff personnel using inleakage detection equipment were unsuccessful in pinpointing the inleakage source. On April 9, 1987, the inleakage increased sharply. The Reactor Operators and Shift Supervisors promptly responded to this event in accordance with Dresden Operating Abnormal Procedure (DOA) 3300-2, "Loss of Condenser Vacuum". Due to the rapid vacuum loss, the Shift Supervisor ordered that a manual scram be performed. A comprehensive leakage detection effort was then initiated to find any sources of inleakage and repairs were performed prior to startup. For these reasons, the safety significance of this event was minimal.

E. CORRECTIVE ACTIONS:

Repairs to the "C" low pressure turbine bearing cone drain were completed under Work Request #D64292 on April 23, 1987 at approxiamtely 1000 hours. In addition to the "C" drain, the drains for each low pressure turbine bearing cone (3 total) were cut and plugged at the inlet and outlet with expandable plugs. Allowing the drains to remain plugged during power operation does not degrade system operation since the drains were associated with the turbine bearing fire deluge system which was removed from both Units 2 and 3 under modification 12-2(3)-82-1. These repairs, while performed under the work request, were considered a temporary system alteration and authorized in accordance with Dresden Administrative Procedure (DAP) 7-4, "Control of Temporary System Alterations". Work Request Numbers D64483 and D64535 (Unit 2 and Unit 3 respectively) were written requesting initiation of permanent corrective actions to prevent recurrence of this event.

F. PREVIOUS EVENTS:

LER Number/Docket	Title
86-16/50-237	Reactor Scram on Low Condenser Vacuum Due to Disconnected Drain Pipe Union.

Corrective actions were to reconnect the disconnected drain pipe union.

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TEXT *(If more space is required, use additional NRC Form 366A's)* (17)

G. COMPONENT FAILURE DATA:

Manufacturer: N/A

Nomenclature: Turbine bearing waste water and oil drain

Model Number: N/A

Mfg. Part Number: N/A

This component failure in itself is not reportable according to industry NPRDS guidelines, however, the loss of main condenser vacuum is being reported on the NPRDS system data base. No similar events were listed in the NPRDS data base.

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Telephone 815/942-2920

May 1, 1987

EDE LTR #87-288

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

Licensee Event Report #87-010-0, Docket #050249 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73 (a)(2)(iv).

E.D. Eenigenburg
Station Manager
Dresden Nuclear Power Station

EDE/kjl

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
File/NRC
File/Numerical

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