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)
Quad-Cities Nuclear Power Station, Unit 2	0 5 0 0 0 2 6 5	1 OF 0 3

TITLE (4)

Reactor Scram Caused by the Loss of Condenser Vacuum

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)
											NA	0 5 0 0 0
0 1	1 6	8 5	8 5	–	0 0 3	–	0 0	0 2	1 3	8 5		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)					
	4	20.402(b)	20.405(c)	XX	50.73(a)(2)(iv)	73.71(b)	
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)	
	1 0 0	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
	AREA CODE
Hien Q. Do	3 0 9 6 5 4 – 2 2 4 1

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 I G	E I X I J I	X 9 9 9	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 January 16, 1985, Unit 2 was operating at approximately 100 percent core thermal power. At 6:28 a.m. a Reactor scram occurred due to low condenser vacuum. The Main Steam Isolation Valves also closed causing the Reactor pressure to increase. A second Reactor scram occurred at 6:47 a.m. due to high Reactor pressure. The High Pressure Coolant Injection (BJ) was manually put on to help control Reactor pressure. At 6:52 a.m. the 'A' and 'B' Recirculation Motor-Generator Sets tripped and a high Containment pressure signal initiated the Unit 2's Emergency Diesel Generator (EK), the Residual Heat Removal (BO) pumps, and the Core Spray (BM) pumps. Only the High Pressure Coolant Injection actually injected water into the Reactor vessel as a result of this high Containment pressure signal.

The loss of vacuum was caused by the failure of the rubber expansion joint connecting the Condenser and the Turbine casing. The expansion joint was replaced. No safety limits were exceeded and all safety systems functioned as designed; therefore, the safety implications of this event were minimal.

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

Event Description

On January 16, 1985, Unit 2 was operating at approximately 100 percent core thermal power. At 6:22 a.m. an alarm was received in the Control Room for Unit 2 "Steam Jet Air Ejector to Off Gas High Flow", and the Condenser (SG) vacuum started to decline. The Shift Engineer and the Shift Control Room Engineer were notified, and a load reduction was initiated. At 6:28 a.m. the Condenser vacuum was low enough to cause a Reactor scram. The Main Steam Isolation Valves also closed when a Group I Isolation signal was received. The Main Steam Isolation Valve closure caused the Reactor pressure to increase. Although the Reactor Core Isolation Cooling (BN) was put on at 6:43 a.m. to control the Reactor pressure; a second Reactor scram occurred at 6:47 a.m. due to high Reactor pressure. The High Pressure Coolant Injection (HPCI) (BJ) was promptly started in an additional attempt to control pressure. At 6:52 a.m. both the 'A' and 'B' Recirculation Motor-Generator Sets tripped. A high Primary Containment pressure initiated a Group II Isolation which initiated a HPCI auto injection and started the Unit 2's Emergency Diesel Generator (EK), the Residual Heat Removal (BO) pumps, and the Core Spray (BM) pumps. High Primary Containment pressure was caused mainly by the additional heat load that was added to the Reactor Building Closed Cooling Water System (CC) when Reactor water was rejected to the Condenser via the Reactor Water Clean-up System's (CE) non-regenerative heat exchangers. The temperature rise in the Reactor Building Closed Cooling Water System translated to a rise in temperature (and pressure) in the Drywell due to the decreased efficiency of the Drywell coolers.

The Reactor protection safely shutdown the Reactor as designed, and at no time any safety limits were exceeded; the only auto injection occurring was that of HPCI. Therefore, the safety consequences of this event were minimal.

This report is being submitted as required by the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(iv).

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

Cause

The root cause of the loss of Condenser vacuum was equipment failure. The rubber expansion joint connecting the Turbine casing to the 'C' section of the Condenser developed a large leak. The expansion joint was original equipment and it had deteriorated to the point that the rubber became embrittled. The average expected life of the expansion joint is approximately 10 years.

The expansion joint is manufactured by the Maryland Corporation.

Corrective Action

The immediate corrective action was to initiate a normal scram recovery.

The expansion joint of the 'C' section was replaced with a new expansion joint under Work Request Q39855, which was completed on January 21, 1985. The expansion joints for the 'A' and 'B' sections of Unit 2's Condenser will be replaced during the upcoming Unit 2 Refueling Outage in March, 1985.

A Condenser expansion joint leak has happened previously at Quad-Cities Station. However, this was the first time that a large enough leak was developed to cause a Reactor scram. The Condenser expansion joints on Unit 1 were replaced in 1984 during a refueling outage.

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NJK-85-46

February 13, 1985

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

Reference: Quad-Cities Nuclear Power Station
Docket Number 50-265, DPR-30, Unit Two

Enclosed please find Licensee Event Report (LER) 85-003, revision 0, for Quad-Cities Nuclear Power Station.

This report is submitted to you in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(iv), which requires reporting of any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature, including the Reactor Protection System.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

L. F. Gerner for
N. J. Kalivianakis
Station Superintendent

NJK:HQD/bb

Enclosure

cc B. Rybak
A. Madison
INPO Records Center
NRC Region III

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