

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Quad-Cities Nuclear Power Station, Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 2 6 5	PAGE (3) 1 OF 0 4
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TITLE (4)  
Unit 2 HPCI Inoperable

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)					
0	1	29	8	5	8	5	0	0	2	0	0	0	5	0	0	0
									NA		0	5	0	0	0	

OPERATING MODE (9) 4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)										
POWER LEVEL (10) 1 0 0	20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)							
	20.406(a)(1)(i)	50.36(e)(1)	X 50.73(a)(2)(v)	73.71(c)							
	20.406(a)(1)(ii)	50.36(e)(2)	50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
	20.406(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(vii)(A)								
	20.406(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(vii)(B)								
	20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(viii)								

LICENSEE CONTACT FOR THIS LER (12)

NAME J. Carney	TELEPHONE NUMBER
	AREA CODE: 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 NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS
X	BJ	J S	L 2 0 0	Y					
X	BJ	C A P	G 0 8 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO						

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

On January 29, 1985, Unit 2 was operating at 100 percent thermal power. At 2300 hours it was discovered that the High Pressure Coolant Injection (HPCI) (BJ) System's Motor Gear Unit (MGU) failed to stay at its High Speed Stop. HPCI was declared inoperable and the required Technical Specifications surveillances were initiated. A jumper was placed on the HPCI's MGU. HPCI was then declared operable and HPCI operability tests were performed. During these operability tests, HPCI injection valve, MO 2-2301-8, would not open when it was given an OPEN signal from the Control Room. HPCI was declared inoperable again. At 0300 hours a Generating Station Emergency Procedure (GSEP) Unusual Event was declared when the decision was made to shutdown.

The cause of the HPCI MGU's failure and the MO 2-2301-8's failure were corrected and the GSEP Unusual Event was terminated at 1530 hours on January 30, 1985.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

Event Description

On January 29, 1985, at 2300 hours, Unit 2 was in the RUN mode at approximately 100 percent thermal power. During routine panel checks the Nuclear Reactor Operator (NSO) discovered that the High Pressure Coolant Injection (HPCI) (BJ) System's Motor Gear Unit (MGU) was at its Low Speed Stop (LSS). Normal operation calls for the MGU to be set at its High Speed Stop (HSS). The NSO raised the MGU to its HSS using the manual control switch (a spring-return-to-normal switch), but the MGU returned to its LSS when the control switch was released. The HPCI System was declared inoperable and the Technical Specifications required surveillances were immediately initiated.

At 0030 hours, on January 30, 1985, a jumper was placed on the HPCI MGU to bypass the MGU signal convertor. This allowed the MGU to remain at its High Speed Stop. The HPCI System was then declared operable and the in progress surveillances were terminated. It was then decided to perform the HPCI Valve and HPCI Pump Operability Tests to verify HPCI System operability.

While performing QOS 2300-S3, HPCI Valve Operability Test, MO 2-2301-8 would not open when given an OPEN signal from the Control Room. The HPCI System was again declared inoperable and the required surveillance testing was resumed at 0120 hours. The 2-2301-8 valve was manually lifted off its seat and given an OPEN signal from the Control Room, but it failed to open.

At 0030 hours the NSO started dropping load and at 0315 hours a Generating Station Emergency Procedure (GSEP) Unusual Event was declared due to the unit shutdown because of a Limiting Condition for Operation.

The safety implications of this event were minimal since all other Emergency Core Cooling Systems were available to perform their intended functions. If the HPCI System was needed, the 2-2301-8 valve could have been opened manually and the HPCI System flow could have been controlled via the manual control of the MGU.

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

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

Cause

The failure of the Motor Gear Unit (MGU) to remain at its High Speed Stop was traced to a failed capacitor in the circuit which acts as a power supply to the signal convertor. This failed capacitor caused a lower than normal supply voltage input to the MGU signal convertor amplifiers. This lowered the output signal to the MGU and drove it back to its Low Speed Stop. This capacitor is an Electrolytic-type capacitor, G.E. #44B211536P016, and is rated at 1000  $\mu$ FD and 50 VDC.

After testing the failed capacitor, it appeared that it had reached the end of its useful life. This is not an uncommon occurrence with Electrolytic-type capacitors. After long term use, the electrolytic material inside the capacitor eventually dries up causing the capacitor to fail.

The failure of the HPCI 2-2301-8 valve to open was found to be the torque switch which is located in the valve's motor operator. The support arm, which holds the "OPEN" finger contact assembly of the torque switch, was found to be broken. Thus, when the valve received an OPEN signal, valve travel was limited to that which was allowed by the parallel limit switch/close contact. The torque switch is a Model Number 3B1003-G and is manufactured by Limitorque Corporation.

When the torque switch is activated in either the OPEN or CLOSE position, a pointer comes in contact with the OPEN/CLOSE finger contact assembly and OPENS/CLOSES the contact. These contact assemblies are supported by arms which pivot on the shaft of the torque switch. It is not known how the support arm became broken.

Corrective Action

Station Work Request Q40141 was written to repair the HPCI MGU. The failed capacitor was replaced with a Mallory, Model Number HC5010A, 1000  $\mu$ FD, 50 VDC Electrolytic capacitor. Before the new capacitor was installed, the Instrument Maintenance Department performed a capacitance test on it to verify correct capacitance value.

At 1200 hours, on January 30, 1985, the jumper was removed from the MGU and the MGU was successfully stroke tested three times. The HPCI MGU was inoperable for approximately 12 hours. A similar occurrence of this type, where a resistor in the flow control circuit of the Unit 1 MGU failed, is documented in Deviation Report D-4-1-83-11 (LER/RO 83-5/03L-0).

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

Corrective Action (continued)

Station Work Request Q40142 was written to repair the HPCI MO 2-2301-8 valve. The failed torque switch was replaced with a like-for-like Limitorque Model 3B1003-G torque switch. After the new torque switch was installed, the valve was satisfactorily stroke tested three times from the Control Room. Also, the following surveillances were successfully performed: QOS 2300-S6, HPCI System Power Operated Valve Testing; QOS 2300-S3, HPCI Valve Operability Test and QOS 2300-S2, HPCI Pump Operability Test. After the completion of these surveillances, at 1530 hours, the GSEP Unusual Event was terminated. The HPCI 2-2301-8 valve was inoperable for approximately 12 hours. There have been no previous occurrences of a torque switch failure of this type. This is considered an isolated incident and no further corrective action is deemed necessary.



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NJK-85-52

February 19, 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) 85-002, 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)-(v), which requires reporting of any event or condition that alone could have prevented the fulfillment of the safety function of structures that are needed to mitigate the consequences of an accident.

Respectfully,

COMMONWEALTH EDISON COMPANY  
QUAD-CITIES NUCLEAR POWER STATION

*L. J. Kervin 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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