

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Quad-Cities Nuclear Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 1 5 4	PAGE (3) 1 OF 0 3
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TITLE (4)
MO 1-1001-29A and 1-1001-29B Failure

EVENT DATE (6)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																																					
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES			DOCKET NUMBER(S)																																		
0 8	0 8	8 4	8 4	0 1 4	0 0	0 8	1 4	8 4	None			0 5 0 0 0																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">OPERATING MODE (9) 2</td> <td colspan="11">THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)</td> </tr> <tr> <td rowspan="5">POWER LEVEL (10) 0 1 0</td> <td>20.402(b)</td> <td>20.406(e)</td> <td>60.73(a)(2)(iv)</td> <td>73.71(b)</td> </tr> <tr> <td>20.406(a)(1)(i)</td> <td>60.36(c)(1)</td> <td>60.73(a)(2)(v)</td> <td>73.71(e)</td> </tr> <tr> <td>20.406(a)(1)(ii)</td> <td>60.36(c)(2)</td> <td>60.73(a)(2)(vii)</td> <td rowspan="3">OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td>20.406(a)(1)(iii)</td> <td>60.73(a)(2)(i)</td> <td>60.73(a)(2)(viii)(A)</td> </tr> <tr> <td>20.406(a)(1)(iv)</td> <td>60.73(a)(2)(ii)</td> <td>60.73(a)(2)(viii)(B)</td> </tr> <tr> <td>20.406(a)(1)(v)</td> <td>60.73(a)(2)(iii)</td> <td>60.73(a)(2)(ix)</td> <td></td> </tr> </table>												OPERATING MODE (9) 2	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)											POWER LEVEL (10) 0 1 0	20.402(b)	20.406(e)	60.73(a)(2)(iv)	73.71(b)	20.406(a)(1)(i)	60.36(c)(1)	60.73(a)(2)(v)	73.71(e)	20.406(a)(1)(ii)	60.36(c)(2)	60.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	20.406(a)(1)(iii)	60.73(a)(2)(i)	60.73(a)(2)(viii)(A)	20.406(a)(1)(iv)	60.73(a)(2)(ii)	60.73(a)(2)(viii)(B)	20.406(a)(1)(v)	60.73(a)(2)(iii)	60.73(a)(2)(ix)	
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LICENSEE CONTACT FOR THIS LER (12)

NAME David B. Cook	TELEPHONE NUMBER 3 0 9 6 5 4 - 2 2 4 1
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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)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

During the Cycle 7 Refueling Outage, on August 8, 1984, at 4:25 p.m., it was discovered that both the 1-1001-29A and 1-1001-29B Low Pressure Coolant Injection Valves would not open. This was discovered as the Operator was in the process of starting the Shutdown Cooling mode of the Residual Heat Removal System. The Core Spray and Feedwater Systems were available to maintain level. Residual Heat Removal could be accomplished using the Reactor Water Clean-up System and the Residual Heat Removal System with the 1-1001-29B valve still 25 percent open.

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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

During the Cycle 7 Refueling Outage, on August 8, 1984, at 4:25 p.m., while the Operator was in the process of starting the Shutdown Cooling mode of the Residual Heat Removal System (B0) (RHRS), it was discovered that both the 1-1001-29A and 1-1001-29B Low Pressure Coolant Injection (B0) (LPCI) valves would not open. The Core Spray (BM), Feedwater (SJ), and Control Rod Drive (AA) systems were all available to maintain level, and therefore the consequences of this event were minimal. Residual Heat Removal could be accomplished using the Reactor Water Clean-up System and the RHRS with the 1-1001-29B valve 25 percent open. This report is being submitted as required by the Code of Federal Regulations 10 CFR 50.73(a)(2)(v).

Cause

The cause of this deviation was personnel error. In 1980, Modification M-4-1-73-76 was installed. This modification consisted of a change in the logic circuits of the 1-1001-29A and 1-1001-29B valves in order to prevent them from hammering. Hammering is a condition where the motor continues to drive the valve closed until a high torque signal stops the motor. When the motor is stopped, the valve relaxes and the high torque signal is removed. With a close signal still present, the motor then again tries to drive the valve closed, until high torque is experienced. This chattering continues until the breaker is tripped or the close signal is removed.

The logic design was originated from the Station Nuclear Engineering Department (SNED). The Station was sent schematic diagrams of the designs and the wiring diagrams were then originated here at the Station. A mistake was made when the wiring diagrams were drawn. In 1980, these logic circuits were installed as per the faulty wiring diagrams and thus, the possibility of hammering still existed. No problems were experienced with these two valves after the installation of the modification however, because the motor operators present on the valves at that time were equipped with brakes. The intended purpose of the brakes is to stop the momentum of the valve at the desired valve position. An additional feature of the brakes is that the brakes also stopped the valve at the end of its closed stroke and thus, prevented the hammering condition. During the past refueling outage these motor operators were replaced with Environmentally Qualified motors. Brakes cannot be qualified for Environmentally Qualified motors and these valve operators were analyzed as not requiring brakes.

When these valves experienced a continuous closed signal, as from a control switch held in the closed position, or a LPCI Loop Select signal during surveillance testing, they continuously tried to close and both valve stems were damaged. The damage was such that the valves would no longer fully open.

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

Cause (continued)

They were visually inspected immediately and the 29B valve was found to be 25 percent open and the 29A valve was found fully closed. The wiring diagram problem affected only the anti-hammer circuit of the 29A and 29B valves and did not affect their LPCI Loop Select logic.

Corrective Action

The valve stems were removed and are being replaced. The wiring correction has been done and the wiring diagram has been corrected to reflect that change. With our new modification program, there is no longer the possibility of a personnel error of this type. Drawings that are now sent to the Station from SNED, schematics and wiring diagrams are now both drawn by them, receive a Technical Review by Engineers on the Station Technical Staff before the modification can be implemented. The Station has investigated all circuits modified under M-4-1-73-76 and, also M-4-2-73-76 performed on Unit 2. The Unit 2 1001-29A and B were found to have the same mistake and were corrected. Additionally, all motor operators and motors that were replaced to comply with Bulletin 79-01B, Environmental Qualifications, were checked to determine if the wiring diagrams and schematics were functionally the same. This investigation revealed that the High Pressure Coolant Injection (BJ) (HPCI) valve 1-2301-3 did not have the anti-hammering circuit installed. The anti-hammering circuit will be installed under Modification M-4-1-84-24. No other discrepancies were found. The Station feels no further corrective action is deemed necessary.



Commonwealth Edison

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NJK-84-243

August 14, 1984

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

Reference: Quad-Cities Nuclear Power Station
Docket Number 50-254, DPR-29, Unit One

Enclosed please find Licensee Event Report Number (LER) 84-014
for Quad-Cities Nuclear Power Station.

This report is submitted to you in accordance with the require-
ments 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 or
systems that are needed to remove residual heat.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

N. J. Kalivianakis
Station Superintendent

NJK:DBC/bb

Enclosure

cc B. Rybak
A. Morrongiello
INPO Records
NRC Region III

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