

## LICENSEE EVENT REPORT (LER)

Facility Name (1) QUAD-CITIES NUCLEAR POWER STATION, UNIT TWO										Docket Number (2) 0   5   0   0   0   2   6   5					Page (3) 1   of   0   5				
Title (4) Failure of Motor Control Center 28/29-5 Main Feed Swapover due to Unlanded Lead Caused by Installation Error																			
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   6	2   2	8   8	8   8	0   2   3	0   0	0   7	2   1	8   3			0   5   0   0   0   1   1								
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																
POWER LEVEL (10) 0   0   0			20.402(b)			20.405(c)			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)							
			20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)										
			20.405(a)(1)(iv)			x 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 M. Sievert, Technical Staff Engineer, Ext. 2162										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 NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS									
SUPPLEMENTAL REPORT EXPECTED (14)										Expected Submission Date (15)									
Yes (If yes, complete EXPECTED SUBMISSION DATE)										x   NO									
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																			

On June 22, 1988, Quad Cities Unit Two was in the SHUTDOWN mode at 0 percent thermal power. At 1700 hours, while performing a modification test for modification M-4-2-88-06A, it was discovered that motor control center (MCC) 28/29-5 would not automatically transfer from the Bus 29 feed to the Bus 28 feed. Troubleshooting of this problem revealed that a wire was not landed per the approved electrical drawing. It appeared that the wire had not been landed since installation in the early 1970's. NRC notification of this condition was completed at 1950 hours to comply with the requirements of 10CFR50.72.

This condition was apparently caused by installation error during original plant construction. Also, methods were not in place to completely test the automatic transfer circuit.

Upon discovery, the wire was landed and the modification test was successfully completed. A visual inspection of similar Unit One wiring was performed with no discrepancies noted. An action plan for reviewing untested components for possible failures has been developed and will be implemented.

This report is provided to satisfy 10CFR50.73(a)(2)(ii).

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TEXT										

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 Mwt rated core thermal power. Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

EVENT IDENTIFICATION: Failure of Motor Control Center 28/29-5 to swapover during modification testing due to an unlanded electrical lead.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two	Event Date: June 22, 1988	Event Time: 1700
Reactor Mode: One	Mode Name: Shutdown	Power Level: 00%

This report was initiated by Deviation Report D-4-2-88-045.

Shutdown Mode (1) - In this position, a reactor scram is initiated, power to the control rod drives is removed, and the reactor protection trip systems have been deenergized for 10 seconds prior to permissive for manual reset.

B. DESCRIPTION OF EVENT:

On June 22, 1988, Quad Cities Unit Two was in the SHUTDOWN mode for a scheduled refueling outage at 0 percent rated thermal power. At approximately 1700 hours, an attempt was made to perform the modification test for modification M-4-2-88-06A. Modification M-4-2-88-06A had been installed to permit the automatic transfer of the swirly Motor Control Center (MCC) 28/29-5 [ED, MCC], despite the postulated loss of Division II DC control power.

The modification test for modification M-4-2-88-06A consisted of two major parts. The first part of the test was to simulate a loss of AC power to Bus 29 [ED, BU]. The second portion of the modification test simulated a loss of AC power to Bus 29 concurrent with a loss of Division II DC control power. Upon performing the first section of the test, it was found that MCC 28/29-5 would not auto-transfer from the Bus 29 feed to the Bus 28 feed, because the feed breaker at Bus 29 would not trip. At this time, troubleshooting began, to determine the cause for the failure of MCC 28/29-5 to auto-transfer. The troubleshooting revealed that the WHITE conductor of cable number 22373 [CBL3] was not landed at terminal point E-76 in the 902-8 panel. This wire was totally unrelated to any of the wiring disturbed as part of modification M-4-2-88-06A.

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Work Request Q67675 was written to land the WHITE conductor of cable number 22373 to terminal point E-76 in the 902-8 panel per the approved drawing. Upon landing the WHITE conductor of cable number 22373, the modification test for MCC 28/29-5 was again attempted. It was completed without any discrepancies.

NRC notification of this condition was completed at 1950 hours to comply with the requirements of 10CFR50.72.

C. APPARENT CAUSE OF EVENT:

This report is submitted to comply with 10CFR50.73(a)(2)(ii): The licensee shall report any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant.

The root cause of the event is the failure of the conductor to be landed. It appeared that the conductor was not landed during initial installation in the early 1970's. There were no signs of the conductor ever being lugged. In addition, the conductor was found taped together with an unused conductor of the same cable, with the bundle being labeled as "SPARE."

An intermediate cause of the event was that methods were not in place to completely test the auto-transfer circuit. Previously, the circuit had been tested by manually tripping the Bus 29 feed to MCC 28/29-5 and verifying that the transfer to the Bus 28 feed would take place. This method did not test the trip function of the Bus 29 feed breaker on loss of power to the bus. Consequently, the fact that a load was not landed in the Bus 29 feed to MCC 28/29-5 breaker's trip logic was not discovered until an attempt was made to perform the modification test for M-4-2-88-06A.

D. SAFETY ANALYSIS OF EVENT:

The automatic transfer function of MCC 28/29-5 is needed in the event of a Loss of Coolant Accident (LOCA) concurrent with a Loss of Offsite Power (LOOP) and a

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failure of the Unit Two Diesel Generator. MCC 28/29-5 supplies power to the following valves:

MO 2-202-6A	Recirculation Loop Equalizing Valve 2A [AD, 20]
MO 2-202-4A	Recirculation Pump Suction Valve 2A
MO 2-202-5A	Recirculation Pump Discharge Valve 2A
MO 2-1001-29A	Residual Heat Removal (RHR) [BO] Inboard Shutoff Valve to Recirculation Line 2A
MO 2-1001-28A	RHR Outboard Shutoff Valve to Recirculation Line 2A
MO 2-202-9A	Recirculation Loop Equalizing Bypass Valve 2A
MO 2-202-6B	Recirculation Loop Equalizing Valve 2B
MO 2-202-4B	Recirculation Pump Suction Valve 2B
MO 2-202-5B	Recirculation Pump Discharge Valve 2B
MO 2-1001-29B	RHR Inboard Shutoff Valve to Recirculation Line 2B
MO 2-1001-28B	RHR Outboard Shutoff Valve to Recirculation Line 2B
MO 2-202-9B	Recirculation Loop Equalizing Bypass Valve 2B

With the wiring error, in the event of a LOCA, concurrent with a LOOP and a Unit Two Diesel Generator failure, MCC 28/29-5 would not have been available to supply power to the RHR injection valves, unless the feed for MCC 28/29-5 was manually transferred to Bus 28, by tripping the Bus 29 feed. The wiring error did not have any affect on the ability to manually transfer the feed for MCC 28/29-5 to Bus 28 from the control room with the associated control switch.

In the event that power is lost to MCC 28/29-5, the position indication for the valves previously listed is also lost. This fact would give the Nuclear Station Operator (NSO) an indication that there is a problem with the power supply to MCC 28/29-5. Upon noting this problem, the NSO would be able to manually trip the Bus 29 feed, causing a transfer to the Bus 28 feed. The transferring to the Bus 28 feed would allow for the proper positioning of the RHR injection valves.

E. CORRECTIVE ACTIONS:

The immediate corrective action taken was to initiate Work Request Q67675 to land the WHITE conductor of cable number 22373 to terminal point E-76 in the 902-8 panel. Once the conductor was landed, the auto-transfer logic for MCC 28/29-5 was tested per the modification test for M-4-2-88-06A. The modification test was completed without any discrepancies.



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In addition to the immediate corrective action previously described, a visual inspection was performed on Unit One on the wiring for the trip circuit on the Bus 19 feed to MCC 18/19-5 breaker. It was determined that the problem associated with the MCC 28/29-5 transfer logic did not exist on the MCC 18/19-5 transfer logic.

Due to the years of successful station operation, routinely performed surveillance testing (including logic testing), and years of maintenance activities that have not identified original construction wiring errors as a prevalent problem, the station feels that this event is an isolated case. To add further assurance, an action plan has been developed for reviewing untested components for possible failures. This plan will, first, provide a list of all safety related auto-transfer devices. This list will be used to check that surveillances are being performed to verify the proper operation of the auto-transfer devices. If any additional testing is required to ensure operability of the auto-transfer devices, those tests will be included in station surveillance procedures. Second, a list of equipment having more than one method for starting or tripping a safety related component will be generated. This list will also be used to check that surveillances are being performed to verify the proper operation of all equipment in parallel paths for the starting or tripping of safety related equipment. Furthermore, circuit diagrams will be reviewed to determine if a postulated failed component or unlabeled wire could exist which would prevent operation of this safety related equipment and go undetected under current surveillance testing methods. If any additional surveillance testing is required to ensure operability of equipment, those tests will be included in station surveillance procedures. This project will be tracked by Nuclear Tracking System number 2652008804501.

F. PREVIOUS EVENTS:

A review of Quad Cities Nuclear Power Station's records indicated that there have been no occurrences of wiring errors found from original construction that resulted in a Licensee Event Report (LER).

G. COMPONENT FAILURE DATA:

There was no component failure involved in this event.



**Commonwealth Edison**

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RLB-88-233

July 12, 1988

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 is Licensee Event Report (LER) 88-023, Revision 00, for  
Quad-Cities Nuclear Power Station.

This report is submitted in accordance with the requirements of the Code  
of Federal Regulations, Title 10, Part 50.73(a)(2)(ii): The licensee shall  
report any event or condition that resulted in the condition of the nuclear  
power plant, including its principal safety barriers, being seriously  
degraded, or that resulted in the nuclear power plant being in a condition  
that was outside the design basis of the plant.

Respectfully,

COMMONWEALTH EDISON COMPANY  
QUAD-CITIES NUCLEAR POWER STATION

R. L. Bax  
Station Manager

RLB/DWH/ad

Enclosure

cc: I. Johnson  
R. Higgins  
INPO Records Center  
NRC Region III

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