

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Quad Cities Unit Two Docket Number (2) 0 | 5 | 0 | 0 | 0 | 2 | 6 | 5 Page (3) 1 of 6

Title (4) High Pressure Coolant Injection Isolation Caused by Instrument Maintenance Error

Event Date (5)			LEP 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 8	2 3	8 8	8 8	0 2 5	0 0	0 9	1 3	8 8		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9) 4

POWER LEVEL (10) 0 | 9 | 9

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	in Abstract
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	below and in
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	Text)

LICENSEE CONTACT FOR THIS LER (12)

Name: K. J. Hill, Technical Staff Engineer, Ext. 2150

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	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15) X | NO

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

ABSTRACT:

On August 23, 1988, Unit Two was in the RUN mode at 99 percent reactor thermal power. At 1910 hours, while performing Special Test 2-85, High Pressure Coolant Injection (HPCI) Steam Line Setpoint Check, an Instrument Mechanic (IM) mistakenly connected multimeter leads to the wrong connections, resulting in a HPCI system isolation. The leads were removed and put on the correct connections, and the isolation was reset. NRC notification was completed at 2120 hours on August 23, 1988, to comply with 10CFR50.72.

The apparent cause of this event is inadequate work instructions, with a contributing cause of personnel error.

The corrective actions are to initiate a program to upgrade IM work packages, discuss this event with Technical Staff and IM personnel, rep'ace missing screws in the terminals for this type of transmitter as equipment becomes available or in conjunction with other maintenance work, and counsel the IM involved.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev 2.0

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)		
		Year	Sequential Number	Revision Number			
Quad Cities Unit Two	0 5 0 0 0 2 6 5	8 8	- 0 2 5	- 0 0	0 3	OF	0 6

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

At 1910 hours on August 23, 1988, the Unit Two HPCI system isolated (valves MO-2-2301-4 and 5 [ISV] closed) due to HPCI Steam Line High Flow. The installation of the multimeter across the LOAD (signal) terminals shorted out the transmitter through the low impedance shunt of the instrument. This simulated a high differential pressure. The IM noted that the multimeter read approximately 70 mA instead of the expected value of 12 mA and immediately removed the connectors. The IM then connected the multimeter to the test terminals and noted normal current readings.

The Engineer and the IM confirmed the isolation coincided with the installation of the connections, but that the connections had since been corrected. The Unit Two Nuclear Station Operator (NSO) then reset the isolation, and the test was completed without further problems.

NRC notification of the event via the Emergency Notification System (ENS) was completed at 2120 hours on August 23, 1988, to comply with the requirements of 10CFR50.72.

C. APPARENT CAUSE OF EVENT:

This event is being reported according to 10CFR50.73(a)(2)(iv): the licensee shall report any event or condition that results in manual or automatic actuation of any Engineered Safety Feature (ESF).

The cause of this event has been attributed to inadequate work instructions with personnel error as a contributing factor. The Instrument Mechanic connected a multimeter to the LOAD terminals of the transmitter instead of the TEST terminals. This resulted in a HPCI system isolation (Group IV) from Steam Line High Flow. The IM was not given sufficient information.

The IM was told by his Foreman that the TEST terminals would contain two screws with holes bored in the center to allow the use of pin-type test connectors [CON]. In training, the IM's are trained on transmitters with these screws installed in the TEST terminals. When the IM was checking the transmitter for the connection, the screws in the TEST terminals were missing, but the LOAD terminals did contain two screws as described by the Foreman. The IM assumed that the terminals with the two screws were the correct terminals. After the event, several new transmitters in the storeroom were checked, and it was found that there were no screws with holes in them installed in any of the terminals of the transmitters as supplied to the station.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)		
		Year	Sequential Number	Revision Number			
Quad Cities Unit Two	0 5 0 0 0 2 6 5	8 8	- 0 2 5	- 0 0	0 4	OF	0 6

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

The special test incorrectly identified the TEST terminals as "the output terminals. The Foreman had only informed the IM that the TEST terminals would contain the special screws. The IM was not cautioned to check the terminals prior to making the connection or told of the fact that the LOAD terminals had wires landed to them whereas the TEST terminals were bare.

There was no work request generated for this task. QTP 010-4 (Preparation, Performance, and Review of Special Operational Tests) states, "Initiate a Nuclear Work Request when there are maintenance aspects required to perform this test (i.e., component disassembly, removal and/or replacement of parts, bypasses installed requiring maintenance action (disassembly and installation of jumpers, pipe, or tubing; rerouting; etc.)). Contact Tech. Staff Supervisor if any questions arise." The cover of the transmitter had to be removed in order to get to the TEST connections. Reinstallation of this cover required special procedures in order to meet Environmental Qualifications for the transmitter. Instead of writing a work request, it was decided to use an existing procedure, QIP 150-S28, to document reinstallation of the cover and record the equipment and parts used. Since QIP 150-S28 is normally performed independent of a work request, none was written for this task.

Personnel error was determined to be a contributing cause in this event. The IM failed to check the terminals prior to connecting the instrument. The terminals were identified on the transmitter by having LOAD and TEST stamped next to the corresponding terminals. The IM did have prior experience and had been trained with this type of transmitter.

D. SAFETY ANALYSIS OF EVENT:

The safety of the plant and personnel was not affected during this event. The HPCI system is designed to auto-initiate and supply make-up water to the reactor vessel upon receipt of a low-low reactor water level signal (-59 inches) [JE] of a high drywell pressure signal (+2.5 psig). The HPCI system is designed to auto-isolate upon receipt of a low reactor pressure signal (100 psig), a steam line high flow signal (300 percent flow for more than three seconds), or an area high temperature signal (200 degrees Fahrenheit).

The differential pressure transmitter involved in this event is one of two installed in the HPCI Steam Line High Flow instrumentation. The output of the two transmitters is fed to two pairs of switches [IS] (four total). One switch of a pair is set to trip at a positive differential pressure and the other switch at a negative differential pressure. The logic is such that a trip of any one switch of the four (4) installed will cause an isolation of the HPCI system. A time delay of approximately three (3) seconds is provided to prevent spurious trips. This trip is provided to isolate the system in the event of a HPCI steam line break. In this event, the system isolation was the result of a false signal and not the result of actual plant conditions.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)	
		Year	Sequential Number	Revision Number		
Quad Cities Unit Two	0 5 0 0 0 2 6 5	8 8	- 0 2 5	- 0 0	0 5	OF 0 6
TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]						

The Shift Engineer and Control Room personnel were aware of the special test, and the SCRE was notified immediately prior to the test connection being made. The total amount of time that the HPCI system was isolated was less than ten (10) minutes. The HPCI steam line high flow isolation may be reset at any time once the isolation signal is removed. However, the isolation must be reset in order for the HPCI system to auto-initiate. If an auto-initiation of the HPCI system had occurred during this event, the operator could have taken immediate action to manually start the HPCI turbine.

All other ECC systems were available throughout this event to bring the reactor to a cold shutdown condition in an emergency.

E. CORRECTIVE ACTIONS:

The immediate corrective action was to remove the test connections and reset the isolation.

In order to prevent possible recurrence of this event, a program will be developed to upgrade the level of detail in IM work packages (NTS 2652008805101). Utilizing detailed written instructions instead of relying on verbal directions should provide the mechanic(s) with sufficient guidance to perform the work. This event has already been discussed at a meeting of Instrument Maintenance personnel on August 25, 1988. Adequate preparation and planning were stressed to both mechanics and foremen as being necessary in order to develop a thorough understanding of a task and avoid errors.

This event will be discussed with Technical Staff and Instrument Maintenance personnel to emphasize the importance of following procedures in general and, in particular, of using a work request in performing maintenance activities in association with special tests (NTS 2652008805102).

In addition, IM personnel will replace any missing screws in order to make all the transmitters similar to the one in the event consistent with respect to TEST terminals and LOAD terminals. This will be done as equipment becomes available or in conjunction with other maintenance work. The procedures associated with these instruments will be revised to warn that the screws are not always present and to instruct the IM's to install them when they are found to be missing (NTS 2652008805103). Also, Production Training Center will be contacted for possible revision of their training program (NTS 2652008805104).

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)	
		Year	Sequential Number	Revision Number		
Quad Cities Unit Two	0 5 0 0 0 2 6 5	8 8	- 0 2 5	- 0 0	0 6	OF 0 6
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The Master Instrument Mechanic discussed the details of the event with the IM involved. The IM was instructed to use extreme caution in the future. If conditions in the field do not exactly match the conditions as described by the foreman, the work should be stopped immediately and the foreman contacted to resolve the discrepancy. Wiring or terminations should be verified to be correct prior to making any test connections.

The IM's performance is being reviewed and further action as necessary will be taken.

F. PREVIOUS EVENTS:

There are eight (8) previous reportable events since 1984 involving Instrument Maintenance personnel error. Five (5) events involved a reactor scram [JC], two (2) events involved an ESF actuation, and one (1) event involved a Technical Specification violation. The most recent of these events is documented in Licensee Event Report 254/88-012. In this event, an instrument air line to a flow control valve on a Standby Gas Treatment System (SBGTS) [BH] was unintentionally left isolated following an instrument calibration. This resulted in excessive air flow in the standby gas train.

Two of these previous events involved the IM associated with this event (see Corrective Actions).

G. COMPONENT FAILURE DATA:

There was no component failure associated with this event.



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Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242
Telephone 309/654-2241

RLB-88-309

September 13, 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) 88-025, 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)(iv): The licensee shall
report any event or condition that results in manual or automatic actuation of
any Engineered Safety Feature.

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