



Commonwealth Edison

Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242-9740
Telephone 309/654-2241

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RLB-92-101

April 24, 1992

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) 92-009, 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 resulted in manual or automatic actuation of any Engineered safety feature.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD CITIES NUCLEAR POWER STATION

Handwritten signature of R. L. Bax

R. L. Bax
Station Manager

RLB/TB/plm

Enclosure

cc: J. Schrage
T. Taylor
INPO Records Center
NRC Region III

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MAY 11 1992

LICENSEE EVENT R.PORT (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 | 0 | 5
 Title (4) 2C and 2D RHR Pumps Auto-Starting Due To A Personnel Error Which Resulted In Incorrect Work Package Instructions

Event Date (5) Month: 0 | 3 | Day: 2 | 7 | Year: 9 | 2
 LER Number (6) Sequential Number: 0 | 0 | 9 | Revision Number: 0 | 0
 Report Date (7) Month: 0 | 4 | Day: 2 | 4 | Year: 9 | 2
 Other Facilities Involved (8) Facility Names: | Docket Number(s): 0 | 5 | 0 | 0 | 0 | |

OPERATING MODE (9) 1
 POWER LEVEL (10) 0 | 0 | 0
 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)
 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) | 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: Michael Ford, Ext. 2118
 TELEPHONE NUMBER: AREA CODE: 3 | 0 | 9 | 6 | 5 | 4 | - | 6 | 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) | Month: | Day: | Year: |
 Yes (If yes, complete EXPECTED SUBMISSION DATE) | NO

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

ABSTRACT:

On March 27, 1992, at 0559 hours, Unit Two was in the SHUTDOWN mode in the cold condition. While Electrical Maintenance personnel were testing relay 10A-K17B, the 2C and 2D Residual Heat Removal (RHR) system pumps auto-started. This condition constitutes an automatic actuation of an Engineered Safety Feature (ESF).

The ESF actuation was due to personnel error which resulted in incorrect work package instructions that directed the placement of a jumper causing the 2C and 2D RHR pumps to auto-start.

The Electrical Maintenance Work Analyst that developed the work package was involved in the process of determining the cause of the auto start, and revising the work package. The need to review all circuit paths affected when placing a jumper was emphasized to the work analyst, as well as the need for continual attention to detail required when building any work package.

This report is being submitted to comply with the requirements of 10CFR50.73(a)(2)(iv).

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Quad Cities Unit Two		0	5	0	0	0	2	6	5	9	2	-	0	0	9	-	0	0	0	0	2	0	F	0	5
TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]																									

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 MWT rated core thermal power.

EVENT IDENTIFICATION: 2C and 2D RHR Pumps Auto-Starting Due To A Personnel Error Which Resulted In Incorrect Work Package Instructions.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two	Event Date: March 27, 1992	Event Time: 0559
Reactor Mode: 1	Mode Name: SHUTDOWN	Power Level: 00%

This report was initiated by Deviation Report D-4-2-92-045.

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 March 27, 1992, at 0559 hours, Unit Two was in the SHUTDOWN mode in the cold condition. At this time the Electrical Maintenance (EM) Department was performing work package Q99102 to calibrate relay [RLY] 10A-K17B. While testing the relay the 2C and 2D Residual Heat Removal (RHR) [BO] system pumps [P] unexpectedly auto-started. This condition constitutes an automatic actuation of an Engineered Safety Feature (ESF).

On March 20, at 1847 hours, the EM department performed QCEMS 350-1, Auto Blowdown Logic Test. During this test, relay 10A-K17B failed to energize. Deviation report 4-2-92-041 was initiated, and Work Request Q99102 was written to investigate and repair.

On March 27, relay 10A-K17B was removed. The relay was recalibrated, successfully bench tested and then reinstalled.

On March 27, at 0559 hours, a jumper was installed per work package instructions to test the relay. The work package directed the placement of a jumper at panel 902-33-3E, from terminal board points CC-70 to CC-74. This jumper simulated a portion of the low low reactor water level logic for the B-loop of RHR. The jumper energized three relays. Relay 10A-K17B energized as anticipated. Relays 10A-K9-B and 10A-K10B were also energized unexpectedly, causing the auto initiation of the 2C and 2D RHR pumps.

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

The Shift Control Room Engineer (SCRE) contacted the EM foreman and informed him of the actuation. The EM's removed the jumper. The Unit Two Nuclear Station Operation (NSO) verified that it was not a valid start signal and secured the RHR pumps in approximately two minutes. A review of the system line up was performed, and verified that only the minimum flow valve for the pumps had opened. No other automatic actuation had occurred.

A review of the work package determined that the installation of the jumper to test the relay was copied from the Auto Blowdown logic test procedure. The logic test verifies the proper energizing of the relay by placement of the jumper. During performance of the logic test, blocks are installed that prevent the auto start function of the RHR pumps. However, this had not been incorporated into the work package instructions.

The work package was revised to include the installation of blocks to prevent the auto start function. The required blocks were installed and the relay was successfully tested.

On March 28, at 1618 hours relay 10A-K17B was returned to service.

C. APPARENT CAUSE OF EVENT:

This report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(iv), which requires the reporting of any event that results in the manual or automatic actuation of any Engineered Safety Feature.

The Emergency Safety Feature actuation was due to personnel error which resulted in incorrect work package instructions. The instructions directed the placement of a jumper causing the 2C and 2D RHR pumps to auto-start.

The work package was written to remove, inspect and repair the relay. The work package test was copied from step I.128 of QCEMS 350-1, that was used to verify proper function during the logic test. Proceeding steps in the logic test that isolated unnecessary actuations had not been included.

The work package post maintenance testing and verification (PMT/V) form stated that the continuity of the relay's contacts be verified. Specific guidance for the placement of the jumper was provided in the station traveler.

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

The work package directed the placement of a jumper at panel 902-33-3E, from terminal board points CC-70 to CC-74. This jumper simulated a portion of the low low reactor water level logic for the B-loop of RHR. Because the reactor was at a low pressure (less than 325 pounds per square inch gauge) contacts were closed-in which caused the jumper to also actuate the high drywell pressure relays.

At an initial review of the logic diagram, relay 10A-K17B appears to be isolated from relays 10A-K9B and 10A-K10B, that started the RHR pumps. A connecting contact is shown in the normally open position, that in fact was closed due to low reactor pressure. This allowed the test jumper to energize all three relays. During package construction and the review process, focus was on the effect that actuating relay 10A-K17B would have on the system. Because relay 10A-K17B appeared to be isolated, the effect the jumper had on other relays in the RHR logic was not thoroughly investigated.

D. SAFETY ANALYSIS OF EVENT:

The safety consequences of this event were minimal. The auto starting of the RHR pumps did not result in damage to the RHR system, plant operating parameters or to station personnel.

The placement of the jumper simulated a high drywell pressure and low low reactor water level of the B-loop logic circuit. The RHR pumps started as the logic directed. The jumper only completed a portion of the logic. Since no actual low low level or high drywell pressure existed, the system did not inject into the vessel.

While the pumps were on, the minimum flow valve opened. This was the correct function to protect the pumps during low flow conditions. This allowed a flow path to the torus. The RHR pump's suction was from the torus, therefore no Reactor Inventory loss resulted from this event.

E. CORRECTIVE ACTIONS:

The immediate corrective action was to secure the RHR system after verifying that it was not a valid start signal. The Electrical Maintenance personnel removed the jumper, stopped the verification, and reviewed the package and logic to determine the cause of the auto start.

The work package was revised to include blocks on associated relays to prevent the auto start function. The verification was reperformed, and the relay was shown to function properly.

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

The Electrical Maintenance Work Analyst that developed the work package was involved in the process of determining the cause of the auto start, and revising the work package. The need to review all circuit paths affected when placing a jumper was emphasized by the Master Electrician to the work analyst, as well as the need for continual attention to detail when building any work package.

On April 9, a "Time Out" meeting was held with all departments to emphasize the need for attention to detail. Performing "Error Free" work, and applying individual self-improvements to all projects was stressed.

F. PREVIOUS EVENTS:

A Licensee Report (LER) previous events search was conducted dating back to 1990, focusing on personnel error LERs for the Electrical Maintenance department. No similar events were identified in which the cause was personnel error resulting from inadequate work instructions.

Another search was conducted dating back to 1990, focussing on all personnel error LERs for all departments. This search was restricted to events occurring while the Reactor mode switch was in SHUTDOWN or REFUEL. Again, no similar events were identified.

G. COMPONENT FAILURE DATA:

There was no component failure associated with this event.