



**Commonwealth Edison**

Quad Cities Nuclear Power Station  
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D-6-B

RLB-92-034

January 31, 1992

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 is Licensee Event Report (LER) 92-001, 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

R. L. Bax  
Station Manager

RLB/TB/plm

Enclosure

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

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Quad Cities Unit One  
 Title (4) Reactor Water Cleanup Isolation On Non-Regen Hx High Outlet Temperature  
 Docket Number (2) 0 | 5 | 0 | 0 | 0 | 2 | 5 | 4  
 Page (3) 1 | of | 0 | 6

Event Date (5) 0 | 1 | 0 | 6 | 9 | 2  
 LER Number (6) 0 | 0 | 1 | 1  
 Report Date (7) 0 | 2 | 0 | 3 | 9 | 2  
 Other Facilities Involved (8)  
 Facility Names  
 Docket Number(s) 0 | 5 | 0 | 0 | 0 | 1 | 1

OPERATING MODE (9) 4  
 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 Mark A. Plumadore, Tech Staff Engineer, Ext. 2819  
 TELEPHONE NUMBER 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
X	C   E	V		N					

SUPPLEMENTAL REPORT EXPECTED (14)  
 Expected Submission Date (15) \_\_\_\_\_  
 Yes (If yes, complete EXPECTED SUBMISSION DATE)  NO

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

ABSTRACT:

On January 6, 1992, at 1115 hours, Unit One was in the RUN mode at 100 percent of rated core thermal power. While returning the Reactor Water Clean-Up (RWCU)\* system to service, a non-regenerative heat exchanger (NRHX)\* high temperature alarm was received. Although not an Engineered Safety Feature (ESF)\*, Group III isolation, this resulted in challenge to the ESF logic and a system isolation. The 1-1299-9 valve, RWCU Hotley suction Isolation Valve was closed. The RWCU system was returned to service at 1445 hours. An EMERGENCY NOTIFICATION SYSTEM (ENS) phone notification was made at 1447 hours in accordance with 10CFR50.72(b)(11). The primary cause was determined to be personnel error with a mechanical problem as a contributing factor.

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



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

At 0730 hours, on January 5, 1992, the 1-1299-9 gate valve [V], the Reactor Water Clean-Up (RWCU) [CE] hot leg pump suction valve, was found to be leaking badly. At 0910 hours it was determined that the packing was blown and Work Request #Q97187 was written to repack the valve. The RWCU system was taken out of service (OOS) on OOS 3921. The 1-1299-9 valve was not taken out of service but in the "Special Instructions" section of the OOS stated "OPEN 1299-9 AND PUT ON BACKSEAT." The work was completed on January 5, 1992, and the RWCU system was returned to service. At 0545 hours, on January 6, 1992, the Communications Center Senior Reactor Operator (SRO) incorrectly identified that the 1-1299-9 valve was closed as he was doing the return to service paperwork. This was reported to the Shift Engineer and operations proceeded with this misinformation. At 0620 hours, on January 6, 1992, operations started to fill and vent the RWCU system per QOP 1200-1 Rev. 8, "Clean-Up System Fill and Vent and Startup." The system did not respond as expected. Higher temperatures were being seen at the outlet of the regenerative heat exchangers [HX], 470 and 430 degrees Fahrenheit on the A and B trains respectively. The system engineer was consulted and stated these temperatures were not a concern, so long as no pumps were running. A high temperature at the combined outlet of the regenerative heat exchangers would be a problem indicative of the 1299-9 valve being open or the Reactor Building Closed Cooling Water (RBCCW) [CC] being valved out to the non-regenerative heat exchangers. The Shift Foreman attempted to contact the personnel from Mechanical Maintenance involved in the repair of the 1-1299-9 valve and the Operations personnel involved in the return to service (OOS 3921) of the system but was unable to make contact with anyone who could verify the position of the 1-1299-9 valve.

The foreman then entered the regen non-regen heat exchanger room to verify the 1-1299-9 valve closed. The foreman attempted to close the valve, but the valve would not turn, and the foreman did not want to use excessive force for fear of damaging the valve seat. Then the foreman compared the valve stem position with other valves in the area to further determine the 1-1299-9 valve was apparently closed.

At 1115 hours, the system isolated on "Non-Regenerative Heat Exchanger High Outlet Temperature" (panel 901-4, F-12). At 1130 hours, the high outlet temperature alarm reset. A second Shift Foreman entered the Regen Non-Regen heat exchanger room and closed the 1-1299-9, Clean-Up hotleg valve. At 1445 hours, the Reactor Water Clean-Up System was returned to service with two pumps [P] and two demineralizers [FDM] on line. NRC notification was completed on January 6, 1992, at 1447 hours to comply with 10CFR50.72.(b)(2)(ii).

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

C. APPARENT CAUSE OF EVENT:

The root cause of this event was due to a personnel error by the communications center SRO that led to the 1-1299-9 valve, the hot leg pump suction valve being left open during the attempted start up. In performing the return to service he misidentified the position of the 1-1299-9 valve as closed and reported this to the Shift Engineer. This was the first and principle error that occurred that led to this event. The "Special Instructions section did not mention that the valve had to be closed before returning but this was understood by the operating personnel.

The second error that occurred was when the Shift Foreman failed to close the 1-1299-9 valve before the high temperature alarm was received. This was a personnel error but the condition of the valve was a major contributing factor.

The 1-1299-9 valve is a four inch gate valve that was installed under M4-1-79-10, to reroute the RWCU pump suction so the flow runs through the heat exchangers before the pumps. This valve was installed with a motor operator but the motor was never electrically connected. The valve is operated manually by engaging the fingers of the limitorque operators and turning the hand wheel. The 1-1299-9 valve is only manipulated during the RWCU decontaminations to divert flow. The 1-1299-9 has a history of maintenance problems and being hard to operate.

D. SAFETY ANALYSIS OF EVENT:

Reactor Water Clean-Up System isolation due to high temperature downstream of the non-regenerative heat exchanger is reportable as an Engineered Safety Feature (ESF). Although the isolation does not provide any safety function, it does use a portion of the primary containment (Group III) isolation logic and a trip is therefore considered a challenge to an ESF. When the RWCU system is operating the high temperature trip is used to protect the resins used in the filter demineralizers. The safety significance of this event was negligible. There was no danger to the plant equipment at any time during this event because the filter demineralizers were isolated from the rest of the RWCU system. There was no danger to the general public as the RWCU system remained closed and there was no danger of leakage at any time during this event.

E. CORRECTIVE ACTIONS:

The immediate corrective action was to send a second Shift Foreman in to the regen non-regen heat exchanger room and close the 1-1299-9 valve. This was done promptly and the RWCU system was started without further incident.

The Communication Center SRO has been counselled on the importance of attention to detail. The SRO involved knew that the 1-1299-9 valve had to be closed and just misidentified the valve position.

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Procedure QAP 300-14, "Equipment Out of Service," REV. 31 January, 1992 is being evaluated by Operating to see if it can be revised to take OOS the valve that is being worked on. Currently the valve that is being worked on is not taken OOS so the Maintenance Department can perform the work and test the valve without unnecessary constraints. A system is being considered which would list the valve on the OOS and verify the position on the return to service, but no card would be hung on the valve (NTS #254 200 92 00101).

The short term corrective action is to mark the stem and the yoke of the 1-1299-9 valve in the closed position. This will give operating a clear indication of valve position. This will be done by the Mechanical Maintenance Department during the next Unit 1 outage where scheduling allows. In addition to the 1-1299-9 valve, five other valves that were installed under the same modification, M4-1-79-10, will be marked. The 1-1299-10, 11, 12, 13, and 14, valves will also have the "match marks" put on the stem and yoke (NTS #254 200 92 00102). Unit 2 has a different type of valve for the 2-1299-9 and corresponding valves that already have a built in position indicator. After the marking is completed an operating tailgate session will provide detailed information about the valve position indication to operating personnel (NTS #254 200 92 00103).

The long term corrective action is to remove the 1-1299-9 valve under partial A of M4-1-91-027, RWCU Non Safety Related Pipe Replacement. This is scheduled to start in January, 1994. This will eliminate the RWCU isolation problem (NTS #254 200 92 00104).

#### F. PREVIOUS EVENTS:

There have been no previous events where the RWCU system isolated due to this valve being left open. A search of personnel errors where an out of service was involved produced four events. None of these events related to a valve that was being worked on being left in an incorrect position.

1. DVR 04-02-88-038, LER 88-019, involved a fuse [FU] being pulled that caused an auto-start of the Standby Gas Treatment System [BH]. This was an ESF actuation. The root cause was identified as not performing an adequate review of the OOS. The corrective action was to counsel the personnel involved.
2. DVR 04-01-80-071, LER 89-13, involved misinterpretation of Technical Specifications. The annunciator [ANN] panel [PL] that monitored stack gas flow was taken OOS. Technical Specifications for monitoring low stack gas flow were misinterpreted. The corrective action was to stress the importance of thorough reviews of OOS's.
3. DVR 04-01-89-104, LER 89-20, involved a SCRAM due to loss of both the A and B power source to the Intermediate Range Monitors of the neutron monitoring system [IG]. This occurred during an OOS for the 24/48 volt-direct current battery [BTRY] discharge test. The root cause was personnel error due to inadequate review of the OOS. The corrective action was additional training of operating personnel.

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

- DVR 04-01-91-002, LER 91-001, involved pulling a pipe that caused several primary containment valves [ISV] to close resulting in a Group II isolation. The root cause was inadequate review of the OOS. The corrective action was to revise the OOS request form to allow more room for expected reactions.

G. COMPONENT FAILURE DATA:

The component that failed was a four inch gate valve that had the hand wheel of the electrically unconnected motor operator stick in the open position. This contributed to the second error but not the first primary error. This failure is attributed to a lack of usage and misapplication of the motor operator rather than a problem with the valve or the actuator separately.