



Commonwealth Edison

Quad Cities Nuclear Power Station
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RLB-92-059

March 6, 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) 92-002, 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)(v)(D). The licensee shall report any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD CITIES NUCLEAR POWER STATION

RLB

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) HPCI Inoperable Due To Inadequate Weld Procedure Repair On Stop Valve Cover And Poppet Guide
 Docket Number (2) 015101012154
 Page (3) 1 of 06

Event Date (5) 02/06/92
 LER Number (6) 01012
 Report Date (7) 03/06/92
 Other Facilities Involved (8)
 Facility Names Docket Number(s)
 015101012154

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR
 (Check one or more of the following) (11)
 OPERATING MODE (9) 4
 POWER LEVEL (10) 099
 20.402(b) 20.405(c) 50.73(a)(2)(iv) 73.71(b)
 20.405(a)(1)(i) 50.36(c)(1) X 50.73(a)(2)(v) 73.71(c)
 20.405(a)(1)(ii) 50.36(c)(2) 50.73(a)(2)(vii) Other (Specify
 20.405(a)(1)(iii) 50.73(a)(2)(i) 50.73(a)(2)(viii)(A) in Abstract
 20.405(a)(1)(iv) 50.73(a)(2)(ii) 50.73(a)(2)(viii)(B) below and in
 20.405(a)(1)(v) 50.73(a)(2)(iii) 50.73(a)(2)(x) Text)

LICENSEE CONTACT FOR THIS LER (12)

Name Nick Radloff, Technical Staff, Ext. 2942
 TELEPHONE NUMBER
 AREA CODE 309
 6154-2241

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
D	B	J	S	C	V	A	5	B	5

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15) X NO
 Yes (If yes, complete EXPECTED SUBMISSION DATE)

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

ABSTRACT:

At 1138 hours on February 6, 1992, Unit One was in the RUN mode at 99 percent rated core thermal power. At this time, Unit One High Pressure Coolant Injection (HPCI) system was declared inoperable after the stop valve was verified stuck in the open position. The HPCI stop valve failed while an operator was testing the pushbutton latch on the HPCI remote trip pushbutton.

Upon investigating the problem, it was identified that weld at the base of the poppet guide of the stop valve had drawn the guide over enough to bind up the main poppet disk during operation.

The failure of HPCI was due to inadequate work instructions for the overhaul of the valve. The stop valve was successfully repaired, tested, and declared operable on February 19, 1992, at 0510 hours.

This event is being reported in accordance with 10CFR50.73(a)(2)(v)(D).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT Energy Industry Identification System (EIIIS) 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: HPCI Inoperable due to inadequate weld procedure repair on stop valve cover and poppet guide.

A. CONDITIONS PRIOR TO EVENT:

Unit: One Event Date: February 6, 1992 Event Time: 1138
Reactor Mode: 4 Mode Name: RUN Power Level: 99%

This report was initiated by Deviation Report D-4-1-92-010

RUN Mode (4) - In this position the reactor system pressure is at or above 825 psig, and the reactor protection system is energized, with APRM protection and RBM interlocks in service (excluding the 15% high flux scram).

B. DESCRIPTION OF EVENT:

On February 6, 1992, at 1138 hours, Unit One was in the RUN mode at 99 percent rated core thermal power. Prior to this, the Nuclear Station Operator (NSO) was testing the High Pressure Coolant Injection (HPCI) [BJ] remote trip function with a locking pushbutton because of a new procedure. The NSO noticed the light indication [SCV] on the 901-3 panel did not display a full close signal when HPCI stop valve, 1-2317, was tripped the second time. An Equipment Attendant (EA) investigated and found the valve not fully closed.

Unit One HPCI was declared inoperable at 1138 hours on February 6, 1992, and QCOS 2300-2, HPCI Outage Report was initiated. The HPCI MOI-2301-3, HPCI Steam Supply Valve, was taken out of service in order to prevent steam to the HPCI turbine in case of an auto-initiation signal.

The Nuclear Station Operator (NSO) tried to stroke the valve again. The valve opened, but the EA reported the valve did not close when the valve was tripped. Also, no stop valve light indication for full open and full closed positions were received in the control room during this test.

A Shift Foreman, (SF) and Mechanical Maintenance Foreman were sent to investigate the problem. They verified the HPCI stop valve was stuck near the full open position.

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At 1308 hours on February 6, 1992, the NRC was notified of the event via the Emergency Notification System in order to comply with the requirements of 10CFR50.72(b)(2)(iii)(D).

Technical Staff (TS), Maintenance Staff, and General Electric (GE) personnel investigated the stop valve. The upper stem had minimal movement when manual force was applied downward on the coupling. An Operator started the auxiliary oil pump and pushed the HPCI reset and trip pushbuttons to cycle the stop valve. The stop valve opened to near the full open position, however, did not close when the operator pushed the trip pushbutton. Further, there was no full open or full close light indication received in the control room. This was repeated without success.

Further investigation determined that the collar which picks up the limit switches for full open and full close light indication on the stop valve had moved downward. Also, the relay dump valve in the actuator part of the stop valve could be heard closing, signifying it was operating properly. It was decided to loosen the coupling connecting the upper stem to the actuator of the stop valve for further investigation. Mechanical Maintenance (MM) prepared Work Package Q97908.

MM loosened the coupling on the stop valve. They then tried to work the stem loose, but could not. At this point, it was determined to remove the cover to the valve and disassemble the stop valve for possible binding of the upper stem.

At 1300 hours, on February 8, 1992, the Unit One HPCI stop valve was disassembled and internals inspected. The poppet guide was found to have severe galling on the inside diameter. A large weld repair area was found around approximately 1/2 of the outer base circumference of the poppet guide. The rest of the internals were removed, inspected and found to be within vendor recommended tolerances.

MM then performed dimensional checks on the Unit one poppet guide. The poppet guide was found to be out of its perpendicularity enough to exceed recommended tolerance clearances. The poppet guide inside diameter dimensions were determined not to be concentric. Also, linear indications were found on the stellite seat of the stop valve body ring.

Discussions ensued, and it was decided that due to time constraints, the Unit Two poppet guide and cover would be removed and placed on the Unit One stop valve. Unit Two was currently in a refueling outage, and HPCI was not required. MM performed this work under Work Request Q97992.

On February 9, 1992, dimensional checks were made on the Unit Two poppet guide. Slight galling was found on the inside diameter of the guide. The poppet guide was also off its perpendicularity.

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It was decided to bore out the poppet guide in order to correct the poppet guide perpendicularity offset. The vendor was contacted to determine the acceptable guidelines for the work on the poppet guide for Unit Two. During the work, the allowable inside diameter dimension on the poppet guide was slightly exceeded in two of three different diameter readings taken at the top of the poppet guide away from the cover. Also, the average diameter reading at the top of the guide slightly exceeded the vendor recommendations. Boiling Water Reactor Site Engineering (BWRSE) personnel were contacted to evaluate the final inside diameter dimensions and clearance tolerances. The dimensions were evaluated and accepted.

MM reassembled the stop valve under Work Request Q97908. At 1101 hours on February 16, 1992, the stop valve was stroked four times successfully prior to running QCOS 2300-1, Periodic HPCI Pump Operability Test.

At 0510 hours on February 19, 1992, QCOS 2300-1 was completed successfully. The SE declared HPCI operable and terminated Outage Report, QCOS 2300-2.

C. APPARENT CAUSE OF EVENT:

This event is being reported to comply with 10CFR50.73(a)(2)(v)(D): the licensee shall report any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

The cause of the Unit One HPCI stop valve failing to open was due to inadequate work instructions during a previous overhaul of the valve in February, 1991. During this work, a crack was discovered in the weld joining the poppet guide to the valve cover during disassembly and inspection of the valve. The weld was repaired in the field.

The weld repair resulted in the guide being drawn towards the weld. No dimensional verifications or alignment checks were requested or stated in the work instructions prior to or after the welding work was finished.

The weld procedure used was American Society of Mechanical Engineers (ASME) Section IX procedure for P1 to P6 weld. The valve cover is A-515 grade 70 and the poppet guide cylinder is A-511 type 410. This was the correct type of weld procedure to use in order to restore the fillet weld.

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D. SAFETY ANALYSIS OF EVENT:

The safety of the plant and personnel was not affected in this event. Per Technical Specification 3.5.C.2, if the HPCI subsystem is inoperable, reactor operation is allowed for fourteen days provided all active components of the Automatic Pressure Relief (APR) [SB] subsystems, the Core Spray (CS) [BM] subsystems, Low Pressure Coolant Injection (LPCI) mode of Residual Heat Removal (RHR) [BN] system are operable. These system were operable throughout the event.

Unit One HPCI was last tested January 21, 1992, and fully met Technical Specification 4.5.C.3. pump flow rate requirements. Technical Specifications require HPCI to deliver a minimum of 5000 gallons per minute (gpm) against a corresponding reactor pressure greater than 1150 pounds per square inch gage (psig).

E. CORRECTIVE ACTIONS

The immediate corrective actions for the HPCI system consisted of declaring HPCI inoperable and initiating the system outage report.

Because Unit Two was in a refuel outage, the Unit Two HPCI stop valve cover and poppet guide was removed and installed in the Unit One HPCI stop valve. Prior to installing the cover in Unit One, MM bored out the Unit Two poppet guide to the required dimensions with the assistance from a GE turbine representative and Technical Staff personnel to ensure correct alignment with the poppet and puppet guide.

Also, MM verified tolerance measurements during the repair to ensure correct alignment within the stop valve.

The Unit One stop valve cover and poppet guide will be repaired or replaced and installed in Unit Two prior to starting up the Unit Two reactor.

During the next disassembly of Unit One and Unit Two HPCI stop valves, the tolerances of the poppet guide and poppet will be checked (NTS #2542009201001).

This event will be reviewed with Quality Control personnel, Mechanical Maintenance Work Analysts and Engineering Construction personnel to look for proper tolerances during reassembly of critical components (NTS #2542009201002, NTS #2542009201003, NTS #2542009201004).

Also, a sample of Unit Two work packages performed by contractors involving detailed reassembly will be reviewed for the presence of proper tolerance criteria prior to startup from the present Unit Two refuel outage (NTS #2542009201005).