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RLB-92-233

October 27, 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) 92-023, 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)(B). 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 plant being in a condition that was outside the design basis of the plant.

This report is also being 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

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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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Quad Cities Unit Two
 Title (4) ECCS Pump Room Floor Drain Check Valves Inoperable

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ECCS Pump Room Floor Drain Check Valves Inoperable

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)
1 0 0 1 9 2	9 2	0 2 3	0 0	1 0 3 0 9 2					Quad Cities Unit One	0 5 0 0 0 2 5 4

OPERATING MODE (9) 4
 POWER LEVEL (10) 1 | 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)	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)	X 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 Pat Yost, Tech Staff, Ext. 2113
 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) Month | Day | Year
 [Yes (If yes, complete EXPECTED SUBMISSION DATE)] X | NO

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

ABSTRACT:

On September 30, 1992 at 2052 hours, Unit 2 was in the RUN mode at 100 percent of rated core thermal power. At this time the Reactor Core Isolation Cooling (RCIC) and 2B Core Spray (CS) systems were declared inoperable due to a failed drain line valve in the Reactor Building floor drain sump. Subsequent tests on the other Unit 2 and Unit 1 drain line valves resulted in the 2A CS, 2A Residual Heat Removal (RHR), 2B RHR and 1A CS/RCIC being declared inoperable as well. Plugs were installed in the respective floor drains and the affected Emergency Core Cooling Systems (ECCS) were subsequently declared operable.

The root cause was debris entering the Emergency Core Cooling System (ECCS) Room drain line valves becoming lodged in the valve seats preventing full closure.

The corrective actions include installing strainers on the floor drain and on the discharge flange associated with the ECCS room valve.

This report is being submitted in accordance with 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(v)(D).

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TEXT Energy Industry Identification System (EIS) 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: ECCS Pump Room Floor Drain Check Valves Inoperable.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two Event Date: October 1, 1992 Event Time: 0230
Reactor Mode: 4 Mode Name: RUN Power Level: 100%

This report was initiated by Deviation Report D-4-2-92-119 and 4-1-92-105.

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 September 30, 1992 at 2052 hours, Unit 2 was in the RUN mode at 100 percent of rated core thermal power. At this time, the Reactor Core Isolation Cooling (RCIC) [BN] and 2B Core Spray (CS) [BM] systems were administratively declared inoperable. Operations personnel discovered water in the 2B CS/RCIC room that had backflowed into the room through the Reactor Building basement "B" sump. The sump overflowed due to a non-functioning sump pump. A plug was immediately installed in the respective floor drain and RCIC and 2B CS were subsequently declared operable. A work request was issued to investigate and repair the drain line valve and operations initiated a twice per shift inspection of the floor drain plug. The Shift Engineer (SE) and Station Duty Officer discussed the finding and it was determined a red phone call was required due to the flood path created from the Reactor Building basement to the 2B CS room. It was also decided that QCOS 2040-1, Quarterly Testing of Reactor Building Sump Check Valves would be performed on the remaining Unit 2 and Unit 1 valves.

At 2155 hours, an Emergency Notification System (ENS) phone call was completed as required by 10CFR50.72(b)(2)(iii)(D).

On October 1, 1992 at 0230 hours the 2A CS and 2A Residual Heat Removal (RHR) [BO] systems were administratively declared inoperable. This was due to the failure of both the 2A CS and 2A RHR drain line valves during performance of QCOS 2040-1. Plugs were immediately installed in the respective floor drains and the 2A CS and 2A RHR systems were declared operable. Work requests were issued to repair the drain line valves and Operations initiated a twice per shift inspection of the floor drain plugs.

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At 0518 hours, RCIC and 1A CS systems were administratively declared inoperable. This was due to the failure of the 1A CS Room drain line valve during performance of QCOS 2040-1. A plug was immediately installed in the respective floor drain and RCIC and 1A CS were declared operable. A work request was issued to investigate and repair the drain line valve and operations initiated a twice per shift inspection of the floor drain plug.

On October 2, 1992 at 1045 hours, the 2B RHR [BO] system was administratively declared inoperable and a 7 day Limiting Condition of Operation (LCO) was entered into per Technical Specification (TS) 3.5.A.5. This was due to the observance of water flowing past the drain valve during follow up testing by Mechanical Maintenance (MM) and Operations. The Operations Department was immediately dispatched to plug the respective floor drain.

At 1203 hours, the floor drain was plugged, 2B RHR was declared operable and TS 3.5.A.5 was subsequently exited. Operations initiated a twice per shift inspection of the floor drain plug.

On October 2, 1992 at 1556 hours, an ENS phone call (Event Number 24363) was completed as required by 10CFR50.72(b)(2)(iii)(D) and 10CFR50.72(b)(1)(ii)(B) for Unit 1 and Unit 2 respectively. The phone call corresponds with event #24363 on the ENS call sheet. This notification was due to subsequent review of the test results concluding that the number of failures warranted additional reporting.

On October 7, 1992 at 1115 hours, Operations reported that the Unit 2 "A" drain line valves, following maintenance, had passed QCOS 2040-1.

At 2145 hours, Operations removed plugs installed in the 2A RHR and 2A CS room floor drains.

On October 8, 1992 at 1445 hours, operations reported that the Unit 2 "B" drain line valves, following maintenance, had passed QCOS 2040-1. Operations removed the plugs installed in the 2B CS/RCIC and 2B RHR room floor drains. The twice per shift inspections of the corner room drains were terminated on Unit 2.

C. APPARENT CAUSE OF EVENT:

This report is being submitted in accordance with 10CFR50.73(a)(2)(ii)(B). 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 plant being in a condition that was outside the design basis of the plant.

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

The primary cause of this event was debris entering the Unit 2 Emergency Core Cooling System (ECCS) Room drain line valves. The debris, which consisted of a rubber glove, mop strings, ear plugs and miscellaneous wood and plastic, entered the valves through the floor drains and through the sump pit during high sump levels. The debris became lodged in the valve seats preventing full closure.

The failed Unit 1 drain line valve has not been disassembled to date, making an accurate determination of the failure cause difficult. However, due to the similar design and cleanliness conditions of both units' drains and valves, it is highly likely the root cause will be failure to prevent debris from entering the valve.

The effect of drain line valve failures is to render the respective ECCS room equipment inoperable due to the potential for high water levels in the ECCS rooms following a breach of the Torus.

D. SAFETY ANALYSIS OF EVENT:

The consequences of the failed drain line valves were minimal. The safety of the plant and personnel was not affected during this event.

The affected ECCS system were administratively declared inoperable dating back to the previous acceptable completion of QCOS 2040-1, this occurring on July 17, 1992 for both units. During this time the affected ECCS systems, though administratively inoperable, remained capable of performing their intended function.

The potential for significant flooding that would have affected the ECCS systems between July 17 and October 2 was extremely small. In addition, flooding conditions have been analyzed at Quad Cities Station. The station has developed emergency operating procedures, providing guidance to operators, for various types of catastrophic failures that result in flooding.

Upon discovery of the failed drain line valves, floor drain plugs were immediately installed, restoring the affected ECCS systems to operable status. The plugs were inspected twice per shift to ensure operability.

Safety evaluation #90-467 has been previously written and approved to allow installation of the drain plugs as an interim measure. The evaluation concluded that the installation of the plugs insured flood protection consistent with that described in the FSAR.

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E. CORRECTIVE ACTIONS:

The immediate corrective action was to plug the failed drain lines and to surveil the ECCS rooms twice per shift. Additional immediate corrective action was to initiate Work Requests Q03172, Q03173, Q03176 and Q03197 to investigate and correct the problems associated with the valves.

Further corrective actions will be to insure strainers are installed on the floor drain and on the discharge flange associated with each ECCS Room. Work requests will be written (NTS # 2652009105901).

The station will evaluate placing a protective cover around the mechanical linkage near the valve stem to prevent debris from becoming lodged, preventing full stroking of the valve stem (NTS # 2652009211901).

F. PREVIOUS EVENTS:

The previous documented events concerning failure of the ECCS drain line isolation valves are:

1. License Event Report (LER) 254/90-015, Reactor Building corner room floor drain check valves stuck open.
2. License Event Report (LER) 254/90-023, Reactor Core Isolation Cooling and 1A Core Spray Pumps declared inoperable due to drain line check valve failure.
3. License Event Report (LER) 265/91-009, Failure of the Core Spray Room drain line check valves due to foreign material becoming lodged in check valves.

Events 1 and 2 occurred prior to the installation of Minor Design Change MC4-1(2)-90-152 which replaced the check valves with the present float actuated globe valve.

G. COMPONENT FAILURE DATA:

The installed valve is a 4" EZ stainless steel globe valve, full ported, quick opening plug, 150 pound pressure rating, manufactured by Fisher Control Valves.