



Commonwealth Edison

Quad Cities Nuclear Power Station
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RLB-91-249

October 10, 1991

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) 91-018, 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). 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

Gary Spill
R. L. Bak
Station Manager

RLB/MJB/plm

Enclosure

cc: R. Stols
T. Taylor
INPO Records Center
NRC Region III

STMGR 207

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LICENSEE EVENT REPORT (LE...

Form Rev 2.0

Facility Name (1) Quad Cities Unit One
 Title (4) RCIC Made Inoperable To Repair 125 VDC Ground In EG-M Control Box

Docket Number (2) 0 | 5 | 0 | 0 | 0 | 2 | 5 | 4
 Page (3) 1 | of | 0 | 5

Event Date (5) 0 | 9 | 1 | 4 | 9 | 1 | 9 | 1
 LER Number (6) 0 | 1 | 8
 Report Date (7) 0 | 0 | 1 | 0 | 1 | 1 | 9 | 1
 Other Facilities Involved (8)
 Facility Names
 Docket Number(s) 0 | 5 | 0 | 0 | 0 | 1 | 1
 0 | 5 | 0 | 0 | 0 | 1 | 1

OPERATING MODE (9) 4
 POWER LEVEL (10) 0 | 9 | 8
 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) 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, Tech Staff Engineer, Ext. 2942
 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	MANUFACTURER	REPORTABLE TO NRPDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	
X	B	J	S	T	C	W	12	19	10	Y	

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:

At 0135 hours on September 14, 1991 Unit One was operating in The RUN mode at 98 percent rated core thermal power. At this time, a 125 VDC ground had been isolated and RCIC was declared inoperable in order to repair the ground. Also, RCIC System Outage Report was initiated. The magnitude of the ground exceeded its limit set in QOP 6900-7, thus entering the battery system into a 14-day Administrative LCO at 2100 hours on September 13, 1991.

IM located the ground in the RCIC EG-M control box. The EG-M was replaced and at 1915 hours on September 14, 1991, the SE declared RCIC operable and terminated the outage report.

At 0139 hours on September 14, 1991 the NRC was notified of the event via the Emergency Notification System (ENS) to comply with the requirements of 10CFR50.72(b)(2)(iii)(D).

The cause of the ground was because of a failed EG-M control box.

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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: RCIC Made Inoperable To Repair 125 VDC Ground In EG-M Control Box.

A. CONDITIONS PRIOR TO EVENT:

Unit: One Event Date: September 14, 1991 Event Time: 0135
Reactor Mode: 4 Mode Name: RUN Power Level: 98%

This report was initiated by Deviation Report D-4-1-91-113.

RUN Mode (4) - Run - 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:

At 0135 hours on September 14, 1991 Unit One was in the RUN mode at 98 percent rated core thermal power. At this time, Reactor Core Isolation Cooling (RCIC) [BN] system was made inoperable in order to repair a reoccurring 125 Volt DC (VDC) ground in the RCIC controller.

The first 125 VDC ground alarm was received in the control room at 0043 hours, September 13, 1991. An Equipment Operator (EO) was dispatched to the battery charger room to check the magnitude of the ground on the ground detection recorder. The recorder displayed a -115/+0 VDC ground. This calculated to approximately 49 kohms (-) and infinite (+) resistances.

Per QOP 6900-7, 125 Volt DC Ground Detection Unit One procedure, if the magnitude of the ground is between 125 kohms and 25 kohms, an immediate search to locate the ground shall be initiated and Shift Engineer (SE) notified. If the ground is 25 kohms or less, then the battery system enters a 14-day Administrative Limiting Condition of Operation (LCO) or a Justification for Continued Operation (JCO) must be performed.

The EO was able to isolate the ground by opening circuit breaker #20 [72] in the Turbine Building 125 VDC Main Bus 1A-2 distribution panel. This circuit feeds the power for Unit One RCIC logic in the 901-48 panel located in the auxiliary electric room. When the EO switched the circuit breaker off, the ground returned to -45/+45 VDC which calculates to approximately 294 kohms resistance. The EO returned the circuit breaker to its original position.

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On September 13, 1991 at 1028 hours, Technical Staff and Operating personnel further identified the ground by temporarily removing the 13A-F7 and F8 fuses [FU] in the 901-48 panel. These fuses isolate the RCIC turbine [TRB] control box.

At 1820 hours on September 13, 1991, QCOS 1300-1, Unit One Periodic RCIC Pump Operability Test was performed and completed satisfactorily to verify the system's operability.

Another 125 VDC ground alarm was received in the control room following completion of the operability test. This time the ground recorder displayed a ground voltage of +5/-125 VDC. This calculated to approximately 10 kohms (-) and 240 kohms (+) resistance. Because the magnitude of the ground was less than 25 kohms, the battery system entered a 14-day Administrative LCO per QOP 6900-7 at 2100 hours.

The Shift Engineer (SE) and Assistant Superintendent of Operations (ASO) were notified of the situation. It was decided to isolate the ground and make RCIC inoperable in order to repair the ground.

At 0135 hours on September 14, 1991, Unit One RCIC was declared inoperable and RCIC System Outage Report, QCOS 1300-2 was initiated.

At 0139 hours the NRC was notified of the event via the Emergency Notification System (ENS) in order to comply with the requirements of 10CFR50.72(b)(2)(11)(D).

Instrument Maintenance (IM) personnel isolated the ground in the EG-M controller [STC] located in the RCIC turbine control box. The EG-M controller was replaced under Nuclear Work Request (NWR) #Q95142 and subsequently, a 125 VDC ground check was performed and verified the ground was gone.

At 1815 hours on September 14, 1991, QCOS 1300-1 was performed and completed successfully.

At 1900 hours the ground detection recorder displayed a +45/-60 volt ground. This calculated to a resistance of approximately 194 kohms (+) and 145 kohms (-). At this time the SE terminated the ground check procedure, QOP 6900-7.

At 1915 hours, Unit One RCIC was declared operable and the outage report was terminated.

C. APPARENT CAUSE OF EVENT:

This event is being reported according to 10CFR50.73(a)(2)(v)(D), which requires the licensee report any event that alone could have prevented the fulfillment of the safety functions of structures or systems that are needed to mitigate the consequences of an accident.

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The cause of the ground was due to the failure of the EG-M control box. If a problem does develop in the control box, the vendor recommends one of the simplest remedies is to replace the control box itself.

D. SAFETY ANALYSIS OF EVENT:

The safety of the plant and personnel was not affected during this event. The ground did not affect the ability of the system to perform its intended safety function.

The EG-M control box is designed to provide the signal to the electric-hydraulic transducer [TD] of the EG actuator [HCU]. The actuator indirectly controls position of the governor valve, thus regulating the amount of steam into the RCIC turbine. The RCIC automatic control system was verified operable by successfully testing the system response per QCOS 1300-1.

If the RCIC EG-M controller had failed prior to declaring the system operable, the backup High Pressure Coolant Injection (HPCI) [BJ] system was operable throughout this event. When RCIC was declared inoperable, Technical Specification 3.5.E requires that continued reactor operation is permissible for 14 days provided that HPCI system is operable.

E. CORRECTIVE ACTIONS:

The immediate corrective actions were to initiate an immediate search to locate and isolate the ground. Once the ground was located and identified to the RCIC turbine controller, the RCIC periodic operability surveillance was performed to verify successful operation of the system.

Once the magnitude of the ground was less than 25 kohms, the battery system was entered into a 14-day administrative LCO. In order to repair the problem, it was decided to isolate the ground by making RCIC inoperable and initiate the outage report.

IM replaced the EG-M control box. Afterwards, RCIC was successfully tested and the outage report was terminated.

The old EG-M control box will be sent back to the manufacturer for repair. The ground in the EG-M control box is considered an isolated failure. The EG-M control box is designed to provide a long service life.

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Presently, IM's RCIC governor and controller calibration procedure, QCIP 1300-3 - RCIC Woodward Governor EG-M Control Box and Ramp Generator/Signal Converter Calibration procedure includes a resistance check of each EG-M control box prior to installation.

F. PREVIOUS EVENTS:

There have been no previous events involving a failure of the EG-M control box at Quad Cities station. A search of the Nuclear Plant Reliability Data System (NPRDS) found five similar events of RCIC EG-M turbine governor failures. Only one of these five failures is attributed to a component failure within the EG-M control box itself. Based on this information, this event appears to be isolated and no further corrective action is necessary.

G. COMPONENT FAILURE DATA:

The EG-M control box was manufactured by Woodward Governor Company.