LICENSEE EVENT REPORT (LER)

Facility Name (1)	Docket Number (2)	Page (3)
QUAD-CITIES NUCLEAR POWER STATION, UNIT ONE	0 5 0 0 0 2 5 4	1 of 0 3

Title (4) RCIC INOPERABLE DUE TO CHECK VALVE 1-1301-50 STUCK CLOSED BECAUSE OF WORN PARTS

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)
										0 5 0 0 0
1 2	2 3	8 7	8 7	0 3 2	0 0	0 1	1 3	8 7		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)					
4	___ 20.402(b)	___ 20.405(c)	___ 50.73(a)(2)(iv)	___ 73.71(b)		
POWER LEVEL (10) 0 1 2	___ 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 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	TELEPHONE NUMBER
	AREA CODE
K. J. Hill, Technical Staff Engineer Ext. 2150	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 NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	B N	V	R 3 4 0	YES							

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)

On December 23, 1987 Quad Cities Unit One was operating in the RUN mode at approximately 12 percent thermal power. At 1653 hours, while performing Reactor Core Isolation Cooling (RCIC) Manual Initiation Test per Temporary Procedure 5156, it was discovered that the RCIC pump would not inject water into the reactor vessel. NRC notification per 10CFR50.72 was completed at 1840 hours.

An investigation of this event revealed that the RCIC pump discharge check valve failed to open. Maintenance personnel were able to jar the valve loose and then RCIC injected into the vessel as required. The check valve was disassembled and the cause for this event was due to worn hinge pins and valve bushing which allowed the valve disk to become wedged into the disc seat.

The valve was repaired, re-assembled, and tested. RCIC was declared operable on December 28, 1987. This is the first occurrence of this type. This report is provided per 10CFR50.73(a)(2)(v)(B).

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PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 MWt rated core thermal power. Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

EVENT IDENTIFICATION: RCIC Pump Discharge Check Valve 1-1301-50 stuck closed during testing due to worn valve parts.

A. CONDITIONS PRIOR TO EVENT:

Unit: One Event Date: December 23, 1987 Event Time: 1653
Reactor Mode: 4 Mode Name: Run Power Level: 12%

This report was initiated by Deviation Report D-4-1-87-119

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 December 22, 1987, Unit One start-up commenced after the Cycle 9 Refueling Outage. Due to work on the Reactor Core Isolation Cooling (RCIC) [BN] turbine controls during the outage, the RCIC turbine was uncoupled for overspeed testing. At 1415 hours on December 23, 1987, RCIC overspeed testing was completed and at 1600 hours on December 23, 1987, the RCIC turbine was re-coupled and returned to service for further startup testing. As part of startup testing, the Unit One Nuclear Station Operator (NSO) was performing temporary procedure (TP) 5156, RCIC Manual Initiation Test. This test requires the NSO to manually initiate the RCIC system from control room panel [PL] 901-4 and verify that the system will start and inject water into the vessel [RPV] within 30 seconds. This test is intended to demonstrate RCIC operability upon receipt of an auto-initiation signal [JE]. The NSO depressed the manual initiation pushbutton [HS] and held it for over 15 seconds as required by T.P. 5156. All valve [20] actuations were observed to occur correctly, including the pump [P] low flow valve [V], MO-1-1301-62, which normally opens for approximately 10 to 15 seconds until pump flow is achieved at which time the valve closes. However, pump flow remained zero and the pump minimum flow valve did not close. Pump discharge pressure was 1500 psig which was much greater than reactor vessel pressure. The NSO opened the RCIC test return valve [TV], MO-1-1301-53, and pump flow increased to the flow controller [FC] setting, 400 gallons per minute (gpm). At 1653 hours on December 23, 1987 after failing T.P. 5156, the RCIC system was determined to be inoperable due to the failure of the system to inject. NRC notification via the Emergency Notification System (ENS) was completed at 1840 hours on December 23, 1987 to comply with the requirements of 10CFR50.72. T.P. 5156 was repeated with personnel from Mechanical Maintenance (MM) and Operating in attendance at the RCIC pump discharge check valve, AO-1-1301-50. Upon initiation, it was observed that the check valve failed to open. MM personnel were able to jar the valve loose and RCIC pump flow to the vessel increased to the required flow of 400 gpm. The test was repeated several times and the check valve was verified to open each time. However, it was decided to disassemble and repair the valve to prevent recurrence of the problem.

Repairs to the valve AO-1-1301-50 were completed under Quad Cities Station Nuclear Work Request Q62912. The RCIC system was again tested per T.P. 5156, AO-1-1301-50 was verified to open, and the RCIC pump achieved full flow. At 1030 hours on December 28, 1987, the Unit One RCIC system was declared operable.

C. APPARENT CAUSE OF EVENT:

This event is being reported according to 10CFR50.73(a)(2)(v)(B), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat.

The cause of this event has been attributed to component failure. The RCIC pump discharge check valve failed to open upon system initiation to allow RCIC injection into the vessel. An inspection of the valve internals by MM personnel determined that the valve hinge pins and bushing had become worn enough to allow the valve disk to become wedged into the disc seat.

D. SAFETY ANALYSIS OF EVENT:

The safety of the plant and public was not affected during this event. The RCIC system is a safety system used to pump makeup water to the reactor vessel in the event of reactor isolation accompanied by loss of flow from the reactor feedwater system [SJ]. The RCIC system supplies sufficient makeup water to replace the water lost by steam generation as a product of core fission decay heat. The RCIC system will automatically initiate upon receipt of a reactor vessel low-low water level (-59 inches) [JE]. During this event, the reactor feedwater system was available at all times to supply water to the reactor. In addition, the Safe Shutdown system [KA], which serves as a backup to the RCIC system, was available to supply water to the reactor during the RCIC inoperability.

E. CORRECTIVE ACTIONS:

The following valve parts were replaced under Work Request Q62912: hinge pins, gaskets, valve packing, and lantern ring. The valve bushings were machined and all internal parts were cleaned prior to re-assembly. T.P. 5156 will be made a permanent procedure and will be performed once per cycle. This procedure implementation will be tracked with Nuclear Tracking System Number 2542008711901. This is the first occurrence of this type on either unit.

The Unit Two RCIC check valve AO-2-1301-50 will be inspected during the next Unit Two refuel outage under Nuclear Work Request Q63714. Repairs will be made as required, based on the inspection results. This will be tracked with Nuclear Tracking System number 2542008711902.

F. PREVIOUS EVENTS:

There are no previous reported events of the RCIC system failing to inject due to a stuck check valve.

G. COMPONENT FAILURE DATA:

The RCIC pump discharge check valve is manufactured by Rockwell Manufacturing Company of Raleigh, North Carolina. It is a tilting disk check valve, size 4". A search of the Nuclear Plant Reliability Data System (NPRDS) found no previous record of failures of this valve.

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

RLB-88-014

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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 please find Licensee Event Report (LER) 87-032, 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)(B), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems needed to remove residual heat.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

R. L. Bax
Station Manager

RLB/MSK/clr

Enclosure

cc: I. Johnson
R. Higgins
INPO Records Center
NRC Region III

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