



10 CFR 50.73

BOSTON EDISON

Pilgrim Nuclear Power Station
Rocky Hill Road
Plymouth, Massachusetts 02360

March 29, 1993
BECo Ltr. 93-039

E. T. Boulette, PhD
Senior Vice President — Nuclear

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Docket No. 50-293
License No. DPR-35

The enclosed Licensee Event Report (LER) 93-002-00, "Reactor Core Isolation Cooling System Declared Inoperable During Surveillance Testing Due to Valve Position Indication and Overload Alarm", is submitted in accordance with 10 CFR Part 50.73.

Please do not hesitate to contact me if there are any questions regarding this report.

E. T. Boulette

DWE/bal

Enclosure: LER 93-002-00

cc: Mr. Thomas T. Martin
Regional Administrator, Region I
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Standard BECo LER Distribution

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Pilgrim Nuclear Power Station

DOCKET NUMBER (2)
05000 293PAGE (3)
1 OF 5

TITLE (4) Reactor Core Isolation Cooling System Declared Inoperable During Surveillance Testing Due to Valve Position Indication and Overload Alarm

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
02	25	93	93	002	00	03	29	93	N/A	05000
									N/A	05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(h)	
POWER LEVEL (10)	100	20.405(a)(1)(ii)		50.36(c)(1)		x 50.73(a)(2)(v) (D)		73.71(c)	
		20.405(a)(1)(iii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER	
		20.405(a)(1)(iv)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)	
		20.405(a)(1)(v)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)			
		20.405(a)(1)(vi)		50.73(a)(2)(iii)		50.73(a)(2)(ix)			

LICENSEE CONTACT FOR THIS LER (12)

NAME Douglas W. Ellis - Senior Compliance Engineer

TELEPHONE NUMBER (Include Area Code)
(508) 747-8160

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS
B	BN	20	C631	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES

(If yes, complete EXPECTED SUBMISSION DATE)

X

NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On February 25, 1993, at 1040 hours, the Reactor Core Isolation Cooling (RCIC) System was declared inoperable because the RCIC turbine steam supply valve MO-1301-61 did not open fully and a valve overload alarm occurred during a routine surveillance test of the RCIC System. A seven day Technical Specification 3.5.D.2 Limiting Condition for Operation was entered. The direct cause was galling of the valve's stem and bonnet chamber. The galling resulted in binding during the opening of the valve and failure of the valve operator motor. The most probable cause of the galling was minimal clearance between the valve stem and bonnet chamber in combination with thermal expansion. The valve is a three inch clampseal (11G4PJ-105), rising rotating stem, y-pattern type globe valve manufactured by Conval, Incorporated. Corrective action taken included machining the galled portions of the valve stem and bonnet chamber. The valve operator motor was replaced. The RCIC System was subsequently surveillance tested with satisfactory results and declared operable at 1735 hours on February 28, 1993. The High Pressure Coolant Injection System was verified operable during the period the RCIC System was inoperable. This event occurred while at 100 percent reactor power with the Reactor Mode Selector Switch in the RUN position. The Reactor Vessel (RV) pressure was 1026 psig with the RV water temperature at approximately 537 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73(a)(2)(v)(D) and this event posed no threat to the public health and safety.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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Pilgrim Nuclear Power Station	05000 293	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
		93	002	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

EVENT DESCRIPTION

On February 25, 1993, at 1040 hours, the Reactor Core Isolation Cooling (RCIC) System was declared inoperable. The system was declared inoperable because the RCIC turbine steam supply valve MO-1301-61 did not open fully and a motor overload alarm occurred during a routine monthly surveillance test conducted in accordance with Procedure 8.5.5.1 (Rev. 35), Attachment 2, "RCIC Pump Tech Spec and IST Quarterly Test". At step [14], the RCIC turbine was started by opening valve MO-1301-61 via its control switch in the Control Room. The valve opening time was being measured during the turbine start sequence. The acceptable opening time for the valve is 19 seconds or less. Approximately two to three seconds after initiating the valve's control switch, Control Room panel alarms occurred including C-904L, "RCIC Valves Overload". Meanwhile, the turbine started and all parameters except for the valve opening time were normal.

After initial investigation, the RCIC System was subsequently isolated by closing the Primary Containment System (PCS) Group 5/RCIC turbine steam supply isolation valves, MO-1301-16 and MO-1301-17, and opening the breakers that provide electrical power to the valve's operator. This action was taken for further investigative and corrective action activities. A seven day Technical Specification 3.5.D.2 Limiting Condition for Operation was entered because the RCIC System was inoperable.

Problem Report 93.9052 was written to document the event. The NRC Operations Center was notified in accordance with 10 CFR 50.72 at 1115 hours on February 25, 1993.

The event occurred while at 100 percent reactor power with the Reactor Mode Selector Switch in the RUN position. The Reactor Vessel (RV) pressure was 1026 psig with the RV water temperature at approximately 537 degrees Fahrenheit.

CAUSE

The direct cause was galling of the valve's bonnet chamber and unthreaded portion of the valve stem. The galling resulted in binding during the opening stroke of the valve and consequent failure of valve operator motor windings. The most probable cause of the galling was minimal clearance between the stem and bonnet chamber in combination with thermal expansion even though both parts were believed to be within manufactured tolerances.

Valve MO-1301-61 is a three inch, rising rotating stem, y-pattern type globe valve manufactured by Conval, Incorporated (clampseal class 900, forged carbon steel, 11G4PJ-105). The motor operator is a model SMB-00 manufactured by the Limitorque Corporation. The valve was installed during the 1992 mid-cycle outage.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTION

The valve motor operator was removed and overhauled in accordance with procedures 3.M.3-24.1 (Rev. 10), "Limitorque Valve Operator Removal and Installation", and 8.Q.3-8 (Rev. 13), "Limitorque Type SB/SMB Valve Operator Maintenance". The only damage detected was the valve operator motor windings. The motor was replaced.

The affected portions of the valve stem and bonnet chamber were machined to dimensions provided by the valve manufacturer. The valve was reassembled and diagnostically tested in accordance with procedure 3.M.3-24.12 (Rev. 0), "VOTES 100 Operating Procedure", with satisfactory results. The valve was stroked tested in accordance with procedure 8.5.5.4 (Rev. 21), "RCIC Motor Operated Valve Operability Test Monthly/Quarterly", with satisfactory results.

The RCIC System was subsequently surveillance tested in accordance with procedure 8.5.5.1 with satisfactory results on February 28, 1993. The RCIC System was declared operable and returned to normal standby service at 1735 hours on February 28, 1993.

PREVENTIVE ACTION

The valve stem and bonnet chamber will be replaced. When this report was prepared, the valve manufacturer was designing a new valve bonnet chamber/backseat. The parts will be purchased following design and manufacture. The replacement is currently expected by the end of the next mid-cycle outage.

SAFETY CONSEQUENCES

The event posed no threat to the public health and safety.

During the period the RCIC System was inoperable, the HPCI System was verified operable in accordance with Technical Specification 3.5.D.2.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(v)(D) because the RCIC System was inoperable.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports (LERs) submitted since 1984. The review focused on LERs submitted in accordance with 10 CFR 50.73(a)(2)(v) involving a similar event. The review identified LERs 89-013-00 and 92-003-00.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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For LER 89-013-00, the HPCI System became inoperable during a surveillance test at 1815 hours on March 24, 1989. The system became inoperable because the HPCI turbine steam supply valve MO-2301-3 would not open. The cause of the failure of the valve to open was two loose screws used to adjust the valve's torque switch setting. The loose screws affected the torque setting and consequently caused damage to some of the valve operator internals and the failure of the valve operator motor windings. The valve operator (Limitorque size SMB-1) was repaired and the motor was replaced. The torque switch was set and the screws were torqued to 18 inch-pounds. MOVATS valve testing was performed with acceptable results. Additional corrective actions taken or planned included inspection of other safety-related motor operated valves, installing torque switch limiter plates and revision of applicable valve maintenance procedures. The motor (250 VDC, serial number WM70557) was manufactured by Peerless Electric/H.K. Porter Company Inc. The valve, a 10 inch gate type valve, was manufactured by the Velan Valve Corporation. The HPCI System was returned to operable status at 1535 hours on March 28, 1989.

For LER 92-003-00, the RCIC System was made inoperable on March 25, 1992, at 0059 hours, because of the unsatisfactory position indication for the PCS Group 5/RCIC turbine steam supply isolation valve MO-1301-16 that is located within the Drywell. A plant shutdown was completed to repair the valve. The RCIC System had been removed from service for minor maintenance on March 23, 1992. While preparing to return the system to service, the valve position indicated closed but was actually open. The valve could not be closed. After the shutdown, the motor operator (Limitorque model SMB-000-10) of valve MO-1301-16 was found to be detached from its yoke. The cause was insufficient torquing of the actuator-to-yoke fasteners due to errors in the valve installation procedure 3.M.3-24.1 (Rev. 7) and valve drawing M137A-1. The motor operator-to-valve yoke attaching capscrews had been insufficiently torqued during maintenance. A table in the procedure used to torque the capscrews incorrectly referenced mild steel for the capscREW material and the valve drawing incorrectly referenced the capscREW size. Corrective action taken included revising the drawing and procedure. The MO-1301-16 actuator was installed using the valve manufacturer's requirements. All other safety-related valve motor operator fasteners were either torque checked for proper fastener preload or visually inspected to verify the fasteners were in place.

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ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS

Valve, Electrically Operated (MO-1301-61)

CODES

20

SYSTEMS

Reactor Core Isolation Cooling (RCIC) System

BN