



10 CFR 50.73

BOSTON EDISON

Pilgrim Nuclear Power Station
Rocky Hill Road
Plymouth, Massachusetts 02360

April 9, 1993
BECO Ltr. 93-048

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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) 93-005-00, "Automatic Closing of the Reactor Water Cleanup System Isolation Valves", 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

RAG/bal

Enclosure: LER 93-005-00

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Standard BECo LER Distribution

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NRC FORM 366 (5-92)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95					
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)										
FACILITY NAME (1) <div style="text-align: center;">Pilgrim Nuclear Power Station</div>					DOCKET NUMBER (2) <div style="text-align: center;">05000 293</div>			PAGE (3) <div style="text-align: center;">1 OF 5</div>		
TITLE (4) <div style="text-align: center;">Automatic Closing of the Reactor Water Cleanup System Isolation Valves</div>										
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
03	14	93	93	005	00	04	09	93	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		0	20.402(b)		20.405(c)		X 50.73(a)(2)(iv)		73.71(b)	
			20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)	
			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER	
			20.405(a)(1)(iii)		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)(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 Robert A. Gay - Senior Compliance Engineer								TELEPHONE NUMBER (Include Area Code) 508-747-8047		
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	
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) <p>On March 14, 1993, at 1051 hours, an automatic actuation occurred in the Reactor Water Cleanup (RWC) System portion of the Primary Containment Isolation Control System (PCIS). The actuation resulted in the automatic closing of the Primary Containment System (PCS) Group 6/RWC System isolation valves and a temporary interruption in RWC System operation.</p> <p>The cause for the event was a sensed RWC System momentary high flow condition that occurred when a RWC System suction valve was throttled. The high flow was sensed by the RWC System flow sensor's that generated a trip signal to the PCIS/RWC System logic circuitry. The PCIS logic circuitry was reset and the RWC System was returned to service. The RWC procedure will be reviewed to identify any additional changes to preclude recurrence. Changing MO-1201-85 from a gate valve to a globe valve is being evaluated.</p> <p>This event occurred while cooling down with the reactor mode selector switch in the STARTUP position. All control rods were fully inserted. The Reactor Vessel (RV) pressure was 140 psig and the RV water temperature was approximately 340 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv). The event posed no threat to the public health and safety.</p>										

REQUIRED NUMBER OF DIGITS/CHARACTERS
FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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 (MNRB 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)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Pilgrim Nuclear Power Station		05000 293		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
				93	005	00	

TEXT (If more space is required, use additional copies of NRC Form 365A) (17)

EVENT DESCRIPTION

On March 14, 1993, at 1051 hours, an automatic actuation of the Reactor Water Cleanup (RWCU) System portion of the Primary Containment Isolation Control System (PCIS) occurred. The actuation resulted in the closing of the RWCU System Group 6/Primary Containment System (PCS) isolation valves (MO-1201-2, -5 and -80) and a temporary interruption in RWCU System operation.

The PCIS logic circuitry was reset and the RWCU System was returned to service on March 14, 1993, at 1100 hours.

Problem Report 93.9088 was written to document the event. The NRC Operations Center was notified in accordance with 10 CFR 50.72 on March 14, 1993, at 1238 hours.

This event occurred while cooling down with the reactor mode selector switch in the STARTUP position. All control rods were fully inserted. The Reactor Vessel (RV) pressure was 140 psig and the RV water temperature was approximately 340 degrees Fahrenheit.

CAUSE

The cause for the event was a sensed RWCU System momentary high flow condition. At the time of the event, the reactor had been shutdown for approximately 18 hours and both RWCU System recirculation pumps were not operating. The high flow occurred when RWCU System suction valve (MO-1201-85), located upstream of the inboard and outboard RWCU System flow sensors (DPIS-1243 and DPIS-1244), was being throttled to the open position. MO-1201-85 is a gate valve and is not ideally suited for use as a throttle valve. However, this is the only method available to maximize bottom head flow. The valve was being throttled to increase flow through the RV lower head drain line. The flow was being increased as part of preparation for shutdown cooling. The resultant RWCU System flow was sufficient to cause DPIS-1243 and -1244 to trip and thereby result in the event.

There were no component or system failures that caused or resulted from this event in that the appropriate valves closed automatically as designed.

CORRECTIVE ACTION

Corrective action taken included resetting the Group 6 portion of the PCIS in accordance with Procedure 2.2.125.1 (Rev. 1), "Reset of Primary and Secondary Containment Isolations (Group I, II, III, IV, V, VI and VII)", with satisfactory results. The RWCU System was returned to service on March 14, 1993, at 1100 hours.

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Procedure 2.2.83, "Reactor Cleanup System", already contains a caution statement to jog MO-1201-85 slowly, and this was done, to prevent a reactor water cleanup system high flow isolation. The procedure will be evaluated for improvement to preclude recurrence.

Changing MO-1201-85 from a gate valve to a globe valve, which may reduce the likelihood of isolations occurring when throttling this valve, is being evaluated.

SAFETY CONSEQUENCES

The temporary interruption in RWCU System operation posed no threat to the public health and safety.

The automatic closing of PCS Group 6/RWCU System isolation valves results from any one of the following accident mitigating trip signals: low Reactor Vessel water level; RWCU System area high temperature; RWCU System inlet high flow (DPIS-1243 and DPIS-1244).

The objectives of the system are to maintain high reactor water purity, remove corrosion products from the Reactor Vessel water, and provide a method for decreasing Reactor Vessel water inventory (level) during heatup. The system purifies the water from the RV lower head drain line and a portion of reactor recirculation flow from the suction line of the Recirculation System Loop 'A' pump, sending the water through the RWCU System filter demineralizer units for mechanical filtration and ion-exchange processes and returning the entire processed flow to the Reactor Vessel or a portion of the flow to the Main Condenser or Radwaste System.

Had the interruption in operation of the RWCU system occurred during refueling, the clarity of water in the Reactor Vessel and refuel cavity would degrade progressively over time. The degradation could possibly result in delaying the movement of fuel depending upon the length of time operation was interrupted.

A temporary interruption in operation of the RWCU System affects the ability to reject water inventory and could cause an increase in the Reactor Vessel water level due to the expansion of reactor water during heatup. The increased water level could possibly result in a delay for startup.

Had the interruption in operation of the RWCU System occurred during power operation, the reactor water chemistry would degrade progressively over time. Depending upon the length of time, the degradation could possibly result in unsatisfactory Reactor Vessel water chemistry values and thereby lead to a plant shutdown.

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

Control Room operator actions for response to RWCU system alarms or malfunctions are addressed in written procedures. The procedures include "Alarm Response Procedure", ARP-904C (Center), ARP-904R (Right) and 2.4.27, "Reactor Water Cleanup System Malfunctions".

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) because the closing of the RWCU System isolation valves, although a designed response to a sensed high flow condition, was not planned.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports (LERs) submitted since January 1984. The review focused on LERs submitted in accordance with 10 CFR 50.73(a)(2)(iv) involving the adjustment of MO-1201-85. The review identified similar events reported in LERs 50-293/89-009-00 and 91-026-00.

For LER 89-009-00, an automatic actuation of the two outboard PCS/RWCU System isolation valves (MO-1201-5 and -80) occurred during a startup on February 16, 1989. The cause was attributed to a RWCU System flow fluctuation. The fluctuation occurred when MO-1201-85 was throttled to the closed position. At the time of the event, reactor pressure was 740 psig and the Recirculation System pumps (Loops 'A' and 'B') were in service. Corrective action taken included adding the three second time delay to the high flow sensors.

For LER 91-026-00, automatic closing of the inboard and outboard RWCU isolation valves MO-1201-2, -5 and -80 occurred while shut down on October 30, 1991, at 2334 hours and on October 31, 1991, at 0248 hours. The October 30, 1991, event occurred when the RV pressure was 250 psig and the RWCU System was being returned to service after a system shut down of approximately three hours and occurred when MO-1201-2 was opened. The cause was a momentary high flow condition. An investigative team concluded a high point in the RWCU System piping, located between the inboard valve MO-1201-2 and outboard valve MO-1201-5, was a location where voids could form. The team also determined that only a small movement of water during the three second time delay was necessary to cause a high flow isolation signal. The October 31, 1991, event occurred when the position of valve MO-1201-85, located upstream of MO-1201-2, was being repositioned. The October 31, 1991, event occurred when the RV pressure was 165 psig and the RHR System was in service for suppression pool cooling. The cause of the October 31, 1991, event was a momentary high flow condition due to jogging open valve MO-1201-85 too rapidly. Corrective action taken included revising procedure 2.2.83 (to Rev. 33) to include a caution to slowly jog valve MO-1201-85.

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

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS

Switch, Indicating, Differential, Pressure
(DPIS-1243 and -1244)

Valve, Isolation (MO-1201-2, -5 and -80)

CODES

PDIS

ISV

SYSTEMS

Containment Isolation Control System (PCIS)

Engineered Safety Features Actuation System (PCIS)

Primary Containment System (PCS)

Reactor Water Cleanup (RWCU) System

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