



10 CFR 50.73

**BOSTON EDISON**

Pilgrim Nuclear Power Station  
Rocky Hill Road  
Plymouth, Massachusetts 02360

March 29, 1993  
BECo Ltr. 93-040

**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) 93-003-00, "Settings of Reactor Water Cleanup High Flow Sensors Found Out of Tolerance During Surveillance", 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 93-003-00

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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 (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.

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TITLE (4) Settings of Reactor Water Cleanup High Flow Sensors Found Out of Tolerance During Surveillance

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	01	93	93	003	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)									
POWER LEVEL (10) 100	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)
	20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(iv)			73.71(c)
	20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)			OTHER
	20.405(a)(1)(iii)			X 50.73(a)(2)(i) (B)			50.73(a)(2)(vii)(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)(vii)(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
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## 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	TM	DPIS	RO80	Y					

## SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO X	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On March 1, 1993, both Reactor Water Cleanup (RWC) System high flow sensors were found to have trip settings greater than the Technical Specification limit during a routine calibration. This resulted in less than the minimum number of operable instrument channels per trip system specified by Technical Specification Table 3.2.A.

The cause was setpoint drift. The sensors were manufactured by I.T.T. Barton model number 288A. The sensors were recalibrated in accordance with procedure and the instrument setpoints are now repeatable. The existing switches are scheduled to be replaced with an upgraded model during RFO #10. The adequacy of the existing setpoint is being evaluated.

This condition was discovered during power operation while at 100 percent reactor power. The reactor mode selector switch was in the RUN position. The Reactor Vessel (RV) pressure was 1028 psig with the RV water temperature at 538 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B). The as-found trip settings posed no threat to the public health and safety.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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

EVENT DESCRIPTION

On March 1, 1993, both Reactor Water Cleanup (RWCU) System high flow sensors (DPIS-1243 and -1244) were found to have trip settings higher than the Technical Specification limit of less than or equal to 300 percent rated flow (calculated at 16.6 inches of water), discovered during the Functional and Calibration test portion of Procedure 8.M.2-1.2.1 (Rev. 24), "Reactor Water Cleanup High Flow." The trip setting of DPIS-1243 was found to be +18.98" and -17.68" water. DPIS-1243 was recalibrated to +15.38" and -14.38" water. Later in performance of the procedure, the trip setting of DPIS-1244 was found to be +16.24" and -16.63" water. DPIS-1244 was recalibrated to +15.50" and -15.40" water.

Problem Report 93.9057 was written to document the as-found trip settings of DPIS-1243 and DPIS-1244.

This condition was discovered during power operation while at 100 percent reactor power with the reactor mode selector switch in the RUN position. The Reactor Vessel (RV) pressure was 1028 psig with the RV water temperature at 538 degrees Fahrenheit.

CAUSE

The cause was setpoint drift. DPIS-1243 and DPIS-1244 are I.T.T. Barton model number 288A differential pressure indicating switches. These switches have developed a history of drift which was not completely eliminated by the mechanical alignment of the sensor's linkages, cams, and rollers performed on November 4 and 5, 1991, in accordance with the technical manual (V-0055).

A contributing factor to the out-of-tolerance trip settings was the scale of DPIS-1243 and DPIS-1244. The current range is -50 inches of water to +50 inches of water. The normal setpoint range of DPIS-1243 and -1244 is 14 to 16 inches of water. The difference between the high end of the setpoint calibration tolerance and the Technical Specification limit is 0.6 inches of water. This means an instrument need only drift 0.6 percent of full scale to exceed the Technical Specification limit.

CORRECTIVE ACTION

Corrective action taken included recalibrating DPIS-1243 and DPIS-1244 on March 1, 1993, in accordance with Procedure 8.M.2-1.2.1 (Rev. 24), "Reactor Water Cleanup High Flow", with satisfactory results. The trip settings were verified to be repeatable.

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

The adequacy of the existing setpoint in regards to past historical data and the latest industry requirements is being evaluated. The existing switches (DPIS-1243 and DPIS-1244) are scheduled to be replaced with an upgraded model during RFO #10.

SAFETY CONSEQUENCES

The as-found trip settings of DPIS-1243 and DPIS-1244 posed no threat to the public health and safety.

An automatic closure of RWCU system/Group 6 isolation valves is initiated by any one of the following trip signals: low reactor vessel water level; RWCU area high temperature; RWCU inlet high flow.

The RWCU high flow sensors are part of the Primary Containment Isolation Control System (PCIS). These sensors provide an automatic isolation signal to isolation valves in the Group 6 RWCU portion of the Primary Containment System (PCS). In the event the RWCU flow increases to greater than 300 percent of rated flow, DPIS-1243 is designed to isolate the inboard PCS/RWCU isolation valve MO-1201-02. Similarly, DPIS-1244 is designed to initiate isolation of the outboard PCS/RWCU isolation valves MO-1201-5 and MO-1201-80. Pressure is sensed off of the inner and outer portions of a pipe elbow in the RWCU suction line. The purpose of the sensors is to detect a RWCU pipe break inside and outside the containment. The pipe elbow flow device will detect excess flow or reverse flow if a pipe rupture occurs upstream of the elbow. The trip setting of less than or equal to 300 percent rated flow is such that an isolation will prevent reactor core from becoming uncovered and keep fission product release within limits. The Technical Specification limit of less than or equal to 300 percent flow has been calculated, considering instrument inaccuracies, to be equivalent to 16.6" water on DPIS-1243 and DPIS-1244. Without considering instrument inaccuracies 300 percent flow would be equivalent to 20.16". Neither of the out-of-calibration flow sensors exceeded 20.16 inches of water.

If a pipe break had occurred in the RWCU System piping with DPIS-1243 and DPIS-1244 in the as-found condition, the PCIS would still have received an isolation signal from the area high temperature switches that are also part of the Group 6 portion of the PCIS. These instruments would automatically close the same valves as the high flow sensors.

This report is submitted in accordance with 10 CFR 50.73 (a)(2)(i)(B) because the switches were found out of calibration when the Primary Containment System was required to be operable.

# **LICENSEE EVENT REPORT (LER)** **TEXT CONTINUATION**

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## 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)(i) that involved Barton Model 288A flow sensors. The review identified a similar condition reported in LER 50-293/91-022-00.

For LER 91-022-00, the RWCU System high flow sensors DPIS-1243 and DPIS-1244 were found to have trip points greater than the Technical specification limit during a calibration on October 24, 1991. The cause of high flow sensors out of calibration was setpoint drift. The drift occurred due to the belief of misalignment of the internal mechanical linkages in the sensors which was found during normal surveillance testing. The sensors were manufactured by I.T.T. Barton model number 288A. The linkages were realigned in accordance with manufacturer instructions.

## ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

### COMPONENTS

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

### CODES

PDIS

### SYSTEMS

Reactor Water Cleanup (RWCU) System  
Containment Isolation Control System (PCIS)  
Primary Containment System (PCS)

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