BOSTON EDISON
Pilgrim Nuclear Power Station
Rocky Hill Road
Plymouth, Massachusetts 02360

10 CFR 50.73

Roy A. Anderson
Senior Vice President – Nuclear

July 16 1992
BECo Ltr. 92-077

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

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

The enclosed supplemental Licensee Event Report (LER) 91-014-01, "Setpoint of Dresser Safety Valve and Target Rock Relief Valves Out of Tolerance", 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.

R. A. Anderson

RAG/bal

Enclosure: LER 91-014-01

cc: Mr. Thomas T. Martin
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Rd.
King of Prussia, PA 19406

Mr. R. B. Eaton
Division of Reactor Projects I/II
Office of NRR - USNRC
One White Flint North - Mail Stop 14D1
11555 Rockville Pike
Rockville, MD 20852

Sr. NRC Resident Inspector - Pilgrim Station

Standard BECo LER Distribution

IE22
1/1

NRC FORM 366 (6-89) | U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92
ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Pilgrim Nuclear Power Station	0 5 0 0 0 2 9 3	1 OF 0 6

TITLE (4) Setpoint of Dresser Safety Valve and Target Rock Relief Valves Out of Tolerance

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)
									N/A	0 5 0 0 0
0 6	2 7	9 1	9 1	— 0 1 4	— 0 1	0 7	1 6	9 2	N/A	0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	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)(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, NRC Form 366A)
		20.405(a)(1)(iii)	X 50.73(a)(2)(i) B	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
Robert A. Gay - Compliance Engineer	AREA CODE 5 0 1 8 — 7 4 7 - 1 8 0 4 7

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	S B	R V	T 0 2 0	Y							
X	S B	R V	D 2 4 3	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)

On June 27, 1991 it was determined that the initial as-found popping pressures of one Dresser main steam safety valve and the pilot valves for two Target Rock two-stage main steam relief valves were not within Technical Specification 3.6.D.1 limits including tolerance. The valves had been sent to Wyle Laboratories during the midcycle outage in March 1990. Test results were received from Wyle Laboratories on July 5, 1990; however, the appropriate corrective action documents were not written until June 1991. The set pressure for the pilot valves is 1115 psig plus or minus 11 psi. The initial popping pressures of the pilot valves S/N 1049 and 1054 were 1144 and 1129 psig, respectively. The set pressure for the safety valve is 1240 psig plus or minus 13 psi. The popping pressure of the safety valve S/N BK6262 was 1271 psig.

During refueling outage RFO #8, additional valves were sent to Wyle Laboratories for testing and found to be outside allowable tolerances. The primary cause of the out-of-tolerance popping pressures was determined to be setpoint drift. Corrective action taken included refurbishing, retesting and certifying the valves to be within specification. The relief valves were manufactured by Target Rock Corp. (model no. 7567F) and the safety valve was manufactured by Dresser Industries (model no. 3777 QA-RT-21).

The conditions were discovered during a refueling outage with the reactor mode selector switch in the REFUEL position. The Reactor Vessel water temperature was 84 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) and the initial popping pressures posed no threat to the public health and safety.

REASON FOR SUPPLEMENT

This supplement meets the previous commitment to analyze test results of additional main steam safety and relief valves that were sent to Wyle Laboratories during RFO #8. The testing for these valves was still on-going when the initial report was submitted. This report also provides additional information contained in the cause and corrective action sections.

EVENT DESCRIPTION

On June 27, 1991 it was determined that the initial as-found popping pressures of one Dresser main steam safety valve and the pilot valves for two Target Rock two-stage main steam relief valves were not within Technical Specification limits including tolerance. The valves had been sent to Wyle Laboratories for periodic testing in accordance with Technical Specification 4.6.D. during the midcycle outage in March 1990. Test results were received from Wyle Laboratories on July 5, 1990; however, the appropriate corrective action documents were not written until June 1991. Failure and Malfunction Reports 91-271, 91-272 and 91-273 document the test results from Wyle.

The set pressure for the pilot valves is 1115 psig with a tolerance of plus or minus 11 psi or an acceptable range of 1104 to 1126 psig. The set pressure for the safety valve is 1240 psig with a tolerance of plus or minus 13 psi or an acceptable range of 1227 to 1253 psig. During initial testing, the popping pressures for pilot valves S/N 1049 and 1054 were 1144 and 1129 psig, respectively. The popping pressure for the safety valve S/N BK6262 was 1271 psig.

The relief valves were manufactured by the Target Rock Corporation (model no. 7567F) and are a two stage design. The safety valve was manufactured by Dresser Industries (model no. 3777 QA-RT-21) and is a spring loaded, self-actuating valve.

During refueling outage RFO #8, additional pilot valves and safety valves were sent to Wyle Laboratories for periodic testing in accordance with Technical Specification 4.6.D. The additional pilot valves tested included S/N 1025, 1040, 1046 and 1048. The additional safety valves tested included S/N BK6302 and BK6309. The testing satisfies ASME XI requirements as well as periodic testing in accordance with Technical Specification 4.6.D. Failure and Malfunction Reports 91-299, 91-300, 91-514 and 92-58 were written to document the test results from Wyle. The valve serial numbers and as-found test results are as follows:

VALVE SERIAL NO'S	AS-FOUND POPPING PRESSURE (psig)	TECH. SPEC. LIMIT (psig)
S/N 1025	1128	1095-1115 (± 11)
S/N 1040	1124*	1095-1115 (± 11)
S/N 1046	1132	1095-1115 (± 11)
S/N 1048	1128	1095-1115 (± 11)
S/N BK6302	1243*	1240(± 13)
S/N BK6309	1259	1240(± 13)

* Valve has as-found popping pressures within Tech. Spec. Limit

The conditions were discovered during refuel outage RFO #8 with the reactor mode selector switch in the REFUEL position. The Reactor Vessel (RV) head was not installed. The RV/Refuel Cavity was flooded with the water temperature at 84 degrees Fahrenheit.

CAUSE

The cause of the out-of-tolerance popping pressure for the mid-cycle pilot valves S/N 1049, 1054 and safety valve S/N BK6262 was determined to be setpoint drift. An additional safety valve S/N BK 6309 was tested for RFO #8 and was determined to be out-of-tolerance as a result of setpoint drift.

After initial testing was performed at Wyle Laboratories, field representatives from Dresser Industries and Target Rock Corporation performed inspections of valves S/N 1049, 1054, BK 6262 and BK 6309, and no abnormal conditions were noted. It was confirmed that these as-received setpoint failures, often referred to as setpoint drift, are common in the industry. It is also recognized that the subject valves can exhibit setpoint drift greater than ± 1% with no associated mechanical problems. However, setpoint failures of greater than ± 3% may be indicative of internal valve problems. The valves tested at Wyle Laboratories were all within the ±3% tolerance and no indications of internal valve problems were noted.

The cause of the out-of-tolerance popping pressure for pilot valves S/N 1025, 1040, 1046 and 1048 may have been related to setpoint drift. However, problems documented during the as-received inspection and inspections conducted by Target Rock Field Service representatives revealed valves S/N 1046 and 1048 had sustained minor damage to the bellows seal assembly. Valves S/N 1025 and 1040 were received by Wyle disassembled at the bonnet to pilot body interface with (2) missing hex-head bolts. The cause of the damage to the bellows seal assembly and the missing hex-head bolts can be attributed to the improper handling and disassembly of the pilot cartridge when the valves were removed from the Drywell. It was not clearly understood by Maintenance personnel which bolts were to be removed when the valves were being disassembled. The improper removal or detorquing of the two (2) hex-head bolts on the valves allows the bonnet/spring subassembly to separate from the pilot cartridge subassembly resulting in possible damage to the bellows seal assembly and could invalidate the as-found setpoint tests performed by Wyle Laboratories.

The cause of not documenting the test results at the time they were received from Wyle Laboratories was utility non-licensed personnel error. While reviewing the test data, a maintenance manager did not recognize that the as-found popping pressures were not within Technical Specification limits including tolerance. In addition, the test results were not forwarded to the ASME XI test engineer. Procedure 3.M.4-6, "Removal, Installation, Test, Disassembly, Inspection and Reassembly of Main Steam Relief Valves" and 3.M.4-7, "Main Steam Safety Valves" require the Maintenance Department to transmit test results to the ASME XI test engineer, when they are received from Wyle Laboratories. A significant lag can exist between the time the valves are sent out for testing and when the test results are actually received. Consequently, the appropriate corrective action documents were not written.

CORRECTIVE ACTION

Following initial testing, the pilot valves S/N 1049, 1054 and safety valve S/N BK6262 were disassembled, inspected, reworked and reassembled by the applicable valve manufacturer. Subsequent certification testing of these valves by Wyle personnel was completed with satisfactory results. Prior to restarting from RFO #8, all valves installed in the Pressure Relief System (PRS) were refurbished, retested and certified to be within specification. The other pilot valves tested during RFO #8 S/N 1025, 1040, 1046, 1048 and safety valves S/N BK6302, BK6309 were also disassembled, inspected, reworked and reassembled by the applicable valve manufacturer. Subsequent certification testing of these valves by Wyle personnel was completed with satisfactory results.

Regarding the personnel error of not documenting the test results in a timely manner, plant management has discussed the issue with the responsible individual. The focus of the discussion was the need for considering Technical Specification values when reviewing test results. In addition a review of Procedures 3.M.4-6 "Removal, Installation, Test, Disassembly, Inspection and Reassembly of Main Steam Relief Valves" and 3.M.4-7 "Main Steam Safety Valves" was conducted and it was determined that the process by which Wyle Laboratory test results are documented is adequate. However, the Master Surveillance Tracking Program (MSTP) will be utilized to track each individual pilot valve assembly to facilitate proper notification and proper closeout of vendor valve testing documentation. These actions should further ensure that appropriate corrective action documents are written in a timely manner if review of the test data reveals the as-found popping pressures of the pilot valves and safety valves are not within Technical Specification limits including tolerance.

To address the improper disassembly of the Target Rock pilot valves, PNPS Procedure No. 3.M.4-6 "Removal, Installation, Test, Disassembly, Inspection and Reassembly of Main Steam Relief Valves" was revised to add a caution against removal of the two (2) hex-head bolts when detorquing pilot valve flange nuts to prevent separation of bonnet/spring subassembly from the pilot cartridge subassembly. The Training Department will include instructions in maintenance continuing training regarding the proper handling of pilot valves and emphasize the importance of maintaining valve integrity and setpoint. This will ensure proper valve operation and prevent pilot valve damage due to improper handling in the future.

SAFETY CONSEQUENCES

The initial popping pressures of the safety and pilot valves posed no threat to the health and safety of the public.

The relief and safety valves are part of the Pressure Relief System (PRS) that is designed to prevent overpressurization of the nuclear system. The Pressure Relief System (PRS) includes two safety valves and four relief valves. The valves, installed in the Main Steam System piping, are all located within the Drywell. The safety valves are self-actuating and provide overpressure protection. The safety valves discharge directly into the Drywell. The relief valves augment the safety valves and are sized to prevent unnecessary actuation of the safety valves. The relief valves are self-actuating and can also be actuated automatically as a result of a depressurization permissive signal, or manually from Control Room Panel C-903. The relief valves discharge into the Suppression Pool.

An assessment of the safety consequences found the initial popping pressures of the safety and pilot valves tested during the midcycle outage and RFO#8 sufficient to prevent overpressurization of the nuclear system during the limiting overpressurization event which is MSIV closure with indirect (flux) scram.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) because the initial popping pressure of the valves was not within the Technical Specification 3.6.D nominal setpoint setting including tolerance.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports submitted since January 1984. The review revealed two similar events in LER 84-005-01 and 87-003-01.

LER 84-005-01 describes testing of the pilot valves on the Target Rock two-stage safety relief valves during a refueling outage on April 4, 1984. Two of the pilot valves S/N 1049 and 1054 did not lift within specification during initial as-found testing. The cause was determined to be an oxide/corrosion buildup between the seat and disc of the pilot valve. Corrective action included changing the disc material from Stellite 6B to Stellite 21.

LER 87-003-01 reported the test results of the pilot valves on the Target Rock two-stage safety relief valves during a refueling outage on February 11, 1987. Two of the valves S/N 1049 and 1054 did not lift within specification during initial as-found testing. The initial popping pressures were significantly improved when compared to the initial testing conducted in 1984. The cause was determined to be minor setpoint drift. The valves were disassembled, inspected, reworked and reassembled by Target Rock Corporation personnel. The pilot valves satisfactorily passed subsequent certification testing.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report:

SYSTEMS	
Main Steam System	SB
Plant Protection System	JC

COMPONENTS	
Valve, Relief	RV