BOSTON EDISON
Pilgrim Nuclear Power Station
Rocky Hill Road
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10 CFR 50.73

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Senior Vice President – Nuclear

January 30, 1995
BECo Ltr. 95-008

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) 95-001-00, "Reactor Building-to-Torus Train 'B' Vacuum Relief System Actuation While Operating", 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

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JPC/nas

Enclosure: LER 95-001-00

cc: Mr. Thomas T. Martin
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
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U.S. NUCLEAR REGULATORY COMMISSION

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LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
PILGRIM NUCLEAR POWER STATION	05000 - 293	1 of 5

TITLE (4)

Reactor Building-to-Torus Train 'B' Vacuum Relief System Actuation While Operating

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 NAME	DOCKET NUMBER
									N/A	05000
01	01	95	95	001	00	01	30	95	FACILITY NAME: N/A	DOCKET NUMBER: 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)	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	TELEPHONE NUMBER (Include Area Code)
Jefffrey P. Calfa, Senior Compliance Engineer	(508) 830-8108

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
B	BF	FUB	B130	N						

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 15 single-spaced typewritten lines) (16)

On January 1, 1995, at approximately 2330 hours, the control room indicators for the Reactor Building-to-Torus Train 'B'' Vacuum Relief System were found to not be illuminated during performance of a daily surveillance. Investigation found that the air operated valve in the 'B' Vacuum Relief System had opened. Moreover, there was no indication that the in-series check valve had opened. Therefore, no vacuum relief function occurred.

The cause of the opening of the air operated vacuum relief valve was a loose fuse in the control circuitry for the solenoid valve that controls air to the air operated valve. The fuse clip tension became loose, creating a loss of circuit continuity across the fuse. Immediate corrective actions involved replacement of the fuse and tightening of the fuse clip tension. Inspection of other panels in the Control Room and Cable Spreading Room identified no loose or oxidized fuses in those panels. Additional corrective action will include a more detailed inspection of other fuse clips and corrective maintenance of other fuse clips for any application found loose within the same panel as the fuse for the vacuum relief valve. A procedure revision will be made to require inspection of fuses and their holders whenever fuses are removed during performance of a temporary procedure.

The event occurred with the plant operating at 100 percent power with the reactor mode selector switch in the RUN position. The Reactor Vessel pressure was 1037 psig with reactor vessel water temperature at saturation temperature for the reactor pressure. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv). This event posed no threat to public health and safety.

BACKGROUND

The safety objective of the Primary Containment System (PCS) is to provide the capability, in conjunction with other safeguard features to limit the release of fission products in the event of a design basis accident so that offsite doses would not exceed the guidelines set forth in 10 CFR 100. The PCS design employs a low leakage pressure suppression containment system which houses the Reactor Vessel, the Reactor Recirculation System loops and other connections of the Reactor Primary System.

The Venting and Vacuum Relief System is part of the PCS design. The purpose is to equalize the pressure between the Drywell and Suppression Chamber and the Reactor Building so that the structural integrity of the containment is maintained. The vacuum relief system from the Reactor Building to the Suppression Chamber (i.e., Torus) consists of two 100 percent vacuum relief trains with two valves in series. Operation of either train will maintain the pressure differential to less than 2.0 psig (i.e., the external design pressure). Train 'B' consists of air operated valve AO-5040B and in-series passive check valve X-212B. The controls and air supply for AO-5040A/B are similar but separate from each other. The actuator of each air-operated valve, normally maintained in the closed position by pressurized air, is spring loaded to open for vacuum relief. The actuator spring opens the valve if air pressure supplied to the actuator decreases to a pressure within the range 30 to 35 psig. Pressure switch PISD-5040B senses the differential pressure between the Torus atmosphere and the atmosphere within the Reactor Building. The pressure switch or the manual control switch in the Control Room on Panel C-7 functions to de-energize solenoid operated valve SV-5040B, thereby venting the air pressure from the AO-5040B actuator and results in the opening AO-5040B. The power for operation of SV-5040B and indication for AO-5040B and X-212B is supplied from 125 VDC Bus D5 through two 5 amp fuses and the in-series pressure switch and manual control switch.

The manual control switch for AO-5040B was replaced via Plant Design Change (PDC) 92-57, "Panel C7 - Redesign" on September 30, 1994. Post work testing was accomplished by performance of Temporary Procedure (TP) 94-002, "Pre-Operational Test of Control Switches SV-5040A/CS and SV-5040B/CS at Panel C7 (PDC92-57)" on October 3, 1994.

EVENT DESCRIPTION

On January 1, 1995, at approximately 2330 hours, a utility licensed operator observed there was no indication for AO-5040B and X-212B at Panel C-7 in the Control Room. The licensed operator was performing surveillance procedure 2.1.15, "Daily Surveillance Log, Tech Specs & Regulatory Agencies".

Control Room personnel issued Maintenance Request (MR) 19500004. Instrument and Control (I&C) personnel investigated and found one of the 5 amp fuses which supplies power to SV-5040B to be loose in its fuse clip. The fuse was removed and tension was increased on the fuse clip. I&C personnel replaced the fuse, verified the indication for AO-5040B and X-212B operated and verified that AO-5040B closed. X-212B remained closed throughout as a slightly positive relative pressure existed inside the torus atmosphere and not the negative relative pressure required to open the in-series, passive check valve X-212B.

Operations personnel wrote Problem Report (PR) 95.9002 to document the discovery. The NRC Operations Center was notified in accordance with 10 CFR 50.72 at 0310 hours on January 2, 1995.

The event occurred while operating at 100 percent power with the reactor mode selector switch in the RUN position. The reactor pressure was 1037 psig with reactor vessel water temperature at saturation temperature for the reactor pressure.

CAUSE

The cause of the actuation of AO-5040B was a loose fuse in the control circuit which caused solenoid SV-5040B to de-energize. The valve opened during the shift prior to the surveillance as the surveillance is performed once per shift. The fuse clip which normally holds the fuse in place had apparently loosened upon fuse removal during the performance of TP94-002 on October 3, 1994. The fuse was found to be coated with a layer of oxidation product and fuse removal apparently resulted in a slightly reduced tension in the fuse clip. Eventually the contact of the fuse in the clip decreased enough to cause a loss of power to solenoid valve SV-5040B. Engineers inspected Panel C-7 and found additional fuses also coated with a layer of oxidation. There was no indication that these fuses were loose. Inspection of other panels in the Control Room and in the Cable Spreading Room did not identify any other fuses coated with a corrosion product layer. The condition appears to be limited to Panel C-7 due to the cartridge fuses used in the Panel. The cartridge fuses in C-7 are not frequently used in the plant and are apparently more susceptible to oxidation.

A contributing cause of the actuation was that TP94-002 had no requirement to inspect fuses and fuse clips upon removal and re-installation to verify good condition and proper fuse clip tension. Nuclear Organization personnel have previously recognized that fuses and their holders should be inspected upon fuse removal and re-installation. The administrative procedure governing the writing surveillance procedures is Procedure 1.3.4-1.8, "Surveillance Procedures Formatting Guide". The procedure requires that each time a fuse is removed in a surveillance procedure, the fuse and holder are inspected. Procedure 1.4.5, "PNPS Tagging Procedure" requires an inspection of fuses and their holders when a fuse is removed under a tagout. TP94-002 was written in accordance with the procedure for writing temporary procedures 1.3.4-1.9, "Temporary and Special Test Procedures Formatting Guide". Procedure 1.3.4-1.9 does not contain any specific instructions for including an inspection of fuses and their holders upon removal when such an activity is to be part of a temporary procedure.

CORRECTIVE ACTION

The fuse tension was increased on the fuse clip for the loose fuse in the control circuit for SV-5040B and a new fuse was installed under MR19500004. Inspection of Panel C-7 identified other fuses which were coated with a oxidation product. While this oxidation does not impact operability, the fuses should be replaced. Inspection of other panels within the control room and the cable spreading room identified no other loose fuses or fuses having an oxidation product layer.

Maintenance Request (MR) 19500325 has been written to perform a more comprehensive inspection of all fuses and fuse holders within Panel C-7, to replace any fuses having a layer of oxidation product and to repair any other problems encountered with fuse holders or clips.

Procedure 1.3.4-1.9, "Temporary and Special Test Procedures Formatting Guide", will be revised to require similar fuse inspections as already required in surveillance procedures and during system tagouts involving fuse removal. Additionally, changes will be made to Procedure 1.3.4-1.9 to make it more closely follow the guidelines of Procedure 1.3.4-1.8. TP94-002 was written to post work test PDC92-57 and as such will be retired.

SAFETY CONSEQUENCES

This event posed no threat to public health and safety.

As a negative relative pressure did not exist in the Torus, check valve X-212B, in-series with AO-5040B, remained closed and maintained the PCS barrier during the period AO-5040B was open. Check Valve X-212B local leak rate testing results have historically shown nearly zero leakage.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) because of the automatic opening of AO-5040B that is part of the Train 'B' Reactor Building-to-Torus atmosphere relief system.

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 Reactor Building to Torus vacuum breakers or the Torus to Drywell vacuum breakers. The review identified LER 93-006-00.

For LER 93-006-00, with the plant shutdown on March 15, 1993, both AO-5040B and X-212B opened as a result of a negative differential pressure between the Torus atmosphere and the Reactor Building atmosphere. Torus pressure had lowered as a result of lowering Torus water level following response to a scram, and meanwhile, the Reactor Building atmospheric pressure was affected by the passing of a severe coastal storm. Corrective action taken included the addition of nitrogen to the torus atmosphere.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS	CODES
Control, Differential, Pressure (PISD-5040B)	PDC
Indicator, Differential, Pressure (PISD-5040B)	PDI
Relief Valve (AO-5040B, X-212B)	RV
Fuse	FU
Fuse Block (Fuse Clip)	FUB

SYSTEMS	
Containment Vacuum Relief System	BF
Containment Environmental Monitoring System	IK
Reactor Building	NG