Boston Edison
Pilgrim Nuclear Power Station
Rocky Hill Road
Plymouth, Massachusetts 02360-5599

10 CFR 50.73

November 4, 1998
BECo Ltr. 2.98.142

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) 98-023-00, "Incorrect Wiring Modifications Affected RBCCW Train "B" Alternate Shutdown Panel," is submitted in accordance with 10 CFR Part 50.73.

No commitments are made in this letter.

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

J. F. Alexander
Nuclear Assessment
Group Manager

IE22

100063

JRH/dmg
ler/9802300
Enclosure: LER 98-023-00

Boston Edison Company

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NRC Form 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

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LICENSEE EVENT REPORT (LER)

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

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TITLE (4)
Incorrect Wiring Modifications Affected RBCCW Train "B" Alternate Shutdown Panel

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 N/A	DOCKET NUMBER 05000
10	05	98	1998	023	00	11	04	98	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)							
			20.2201 (b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)		50.73(a)(2)(viii)
POWER LEVEL (10)	99		22.2203(a)(1)		20.2203(a)(3)(i)	X	50.73(a)(2)(ii)(B)		50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Kristin R. DiCroce - Senior Regulatory Affairs Engineer	(508) 830-7667

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE(15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

ABSTRACT

On October 5, 1998, during a plant tour, an operator noticed that the "E" reactor building closed cooling water (RBCCW) pump green light on the "B" alternate shutdown panel was not illuminated. Troubleshooting discovered a blown fuse and incorrect wiring in the associated motor control center.

The cause was identified as an error made during preparation of an electrical connection drawing to implement a plant design change to resolve a degraded voltage concern.

Corrective actions taken include replacement of the blown fuse, identification and correction of wiring errors, revision of affected drawings and assessment of past operability. The assessment concluded that in addition to the Technical Specifications being violated, a condition outside the design basis of the plant had also occurred.

This condition was identified while at 99 percent reactor power with the reactor mode selector switch in the RUN position. The reactor vessel pressure was approximately 1032 psig with the reactor water temperature at the saturation temperature for the reactor pressure. This condition posed no threat to public health and safety.

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

BACKGROUND

The fire protection program implemented at Pilgrim Nuclear Power Station (PNPS) to meet the requirements of 10 CFR 50 Appendix R, considered the effects of postulated fires, identified systems necessary to achieve and maintain safe shutdown, and ensured that these systems were protected. Various fire zones were established and power and control cables were evaluated to make certain that at least one safe shutdown path existed. Cable protection was installed as necessary to maintain a shutdown pathway.

Some areas, such as the cable spreading room (CSR), contained power and control cables which affected both "A" and "B" trains. Fire protection enclosures were constructed to provide separation in the areas where both trains of cable were routed. In the event of a fire in the CSR, an alternate shutdown system, independent of cabling and equipment in the CSR (but not independent of the cables within the enclosure), is provided to effect safe shutdown of PNPS. This is accomplished by installed isolation switches for safety-related equipment that provide the capability for the plant operators to reach a safe shutdown condition. These switches will isolate their associated equipment from the CSR cables, thus transferring control from the Control Room to the local emergency shutdown stations outside the CSR. These isolation switches are located in alternate shutdown panels and are located as close as practical to the equipment or switchgear they serve.

Alternate shutdown panel C-150 is used to control the reactor building closed cooling water (RBCCW) loop "B" pumps ("D" and "E") during shutdown from outside the Control Room for postulated fires in the Control Room, CSR and reactor building east elevation 23 feet. In 1992, a plant design change (PDC 92-39) was implemented to resolve a degraded voltage concern. Additional changes were made to several motor control centers (MCCs), including B1431 (RBCCW pump "D" motor supply) and B1433 (RBCCW pump "E" motor supply) associated with panel C-150. These changes installed interposing relays to minimize the voltage drops within the circuit control cables during motor starter operation. This change was intended to improve the reliability of starting equipment under degraded voltage conditions from the alternate shutdown panels. While postwork testing demonstrated that RBCCW pumps "D" and "E" could be started from the local panel, it did not verify that the wiring changes made for PDC 92-39 invalidated the previous design.

EVENT DESCRIPTION

On October 5, 1998, during a plant tour, an operator noticed that the "E" RBCCW pump green light on the loop "B" alternate shutdown panel (C-150) was not illuminated. The operator replaced the bulb, but it did not energize. The Control Room then satisfactorily started the "E" RBCCW pump to verify operability.

A maintenance request (MR 19802375) was written to troubleshoot panel C-150 and the associated MCCs to determine why the green light did not illuminate after the bulb replacement. During troubleshooting on October 6, 1998, a fuse was found to be blown in MCC B1433. Based on this finding, alternate shutdown panel (C-150) for "D" and "E" RBCCW pumps was declared inoperable and an active limiting condition for operation (LCO) A98-512 was entered. Problem report PR 98.9515 was written to document this condition.

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Follow-up troubleshooting found that during modifications made in 1992 (PDC 92-39), associated with resolving a degraded voltage concern, wiring changes installing interposing relays were made incorrectly in MCCs B1431 and B1433. The schematic drawing E-176, sheet 2, was drawn correctly, however, the wiring connection drawing, E8-1-10, sheet 2, had been drawn incorrectly for MCCs B1431 and B1433. The field changes were made according to the incorrect wiring connection drawing. An investigation of other MCCs, modified under PDC 92-39, found the drawings were correct and the MCCs were wired correctly. The wiring was corrected in MCCs B1431 and B1433 which restored operability to C-150 and the LCO (A98-512) was exited on October 7, 1998.

Alternate shutdown panel C-150 was determined to have been inoperable from the time of the 1992 modification to the associated MCCs. This inoperable condition violated Technical Specification 3.12.a which states, "With any of the alternate shutdown panels inoperable, a. Immediately verify that fire detection with automatic fire suppression for the Cable Spreading Room is Operable. If fire detection with automatic fire suppression cannot be determined operable, within one (1) hour from the time the system is determined to be inoperable, establish a continuous Fire Watch with backup fire suppression." This action was not taken due to the unrecognized condition. When the panel was declared inoperable on October 6, 1998, the automatic fire suppression system was verified operable.

An engineering evaluation (EE 98-087) was initiated to assess the historical operability for alternate shutdown panel C-150. During this evaluation it was discovered that there was a period of time after the wiring modification in 1992 when there was no clear shutdown path for the reactor building east Fire Zone (1.9). If a fire occurred in reactor building east, the "A" alternate shutdown train would not be available and with the postulated failure of the fuse in "B" train, neither train would be available. The engineering review discovered that because of the incorrect wiring, the alternate fuse would not be switched into the alternate shutdown circuit during switching from remote (Control Room) to local control.

A second degraded condition existed due to a defective Appendix R enclosure in the CSR affecting train "A". A discussion of the enclosure in the CSR was reported in LER 98-012-00. The lack of an alternate shutdown path for these conditions placed the plant outside of the design basis for Appendix R, because both alternate shutdown trains would be postulated to be inoperable.

This condition was identified while at 99 percent reactor power with the reactor mode selector switch in the RUN position. The reactor vessel pressure was approximately 1032 psig with the reactor water temperature at the saturation temperature for the reactor pressure.

CAUSE

The cause was an engineering personnel error made during preparation of an electrical connection drawing to implement a plant design change associated with replacement of control power transformers and interposing relays to resolve degraded voltage concerns.

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CORRECTIVE ACTION

The following corrective actions were taken:

- An extent review was performed which did not identify any other incorrectly wired MCCs.
- An Engineering evaluation (EE 98-087) was initiated to address past operability. The review has discovered that MCCs B1431 and B1433 and therefore, C-150 had been inoperable from the time of modification in 1992.
- Drawing revisions were made and the MCCs were wired correctly.

The following corrective actions are planned and are being tracked by PR 98.9515 in the corrective action program:

- The engineering evaluation (EE 98-087) will be completed for past operability.
- A history of this issue will be provided and will include the extent review.

When this report was prepared, engineering personnel were in the process of completing the engineering evaluation and the history of the issue. A supplemental report will be submitted if significant new information is identified.

SAFETY CONSEQUENCES

This condition posed no threat to the public health and safety.

Should a postulated fire have occurred in the Control Room or CSR, existing significance review, NSEG 98-097, has concluded that the inoperable Appendix R enclosure in the CSR would not have prevented the cables from accomplishing their design functions. While a fire in Fire Zone 1.9 could have resulted in the loss of the “A” train systems, requiring the use of the “B” train to shut down the plant, the “B” train could have been recovered through fuse replacement. Additional fuses were available in each affected MCC. This fuse replacement would have restored the local circuit and the RBCCW pumps could have been controlled from panel C-150. Based on the unlikely event of a fire in the CSR and the ability to promptly restore operability through fuse replacement for a fire in Zone 1.9, the significance for this condition is low.

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications. This report is also submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B) to describe a condition that was discovered to be outside the design basis for Appendix R. This condition was identified after the MCC wiring had been corrected.

SIMILARITY TO PREVIOUS EVENTS

A review of Pilgrim Station LERs submitted since 1994 was conducted based on the plant violating Technical Specifications or being outside its design basis. The review of LERs focused on those submitted for Appendix R requirements. The review identified the following:

LER 98-012-00	“Incomplete Installation Of Fire Barrier In The Cable Spreading Room”
LER 98-013-00	“Inconclusive Fire Barrier Enclosure Test Data”

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ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS Codes for this report are as follows:

COMPONENTS	CODES
Fuse (Alternate Shutdown Panel)	FU

SYSTEMS	CODES
Low-Voltage Power System- Class 1E	ED