10 CFR 50.73

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

George W. Davis
Senior Vice President -- Nuclear

July 5, 1991
BECo Ltr. 91-087

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

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

Dear Sir:

The enclosed Licensee Event Report (LER) 91-012-00, "Automatic Start of Diesel Generator During Surveillance Testing Due to Non-Licensed Personnel Error", 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.

G. W. Davis

DWE/bal

Enclosure: LER 91-012-00

cc: Mr. Thomas T. Martin
Regional Administrator, Region I
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Standard BECo LER Distribution

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

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-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

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) Automatic Start of Diesel Generator During Surveillance Testing Due to Non-Licensed Personnel Error

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	0 7	9 1	9 1	— 0 1 2	— 0 0	0 7	0 5	9 1	N/A	0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 0	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)	50.73(a)(2)(i)	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
Douglas W. Ellis - Senior Compliance Engineer	AREA CODE 5 0 8 7 4 7 - 8 1 6 0

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	

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 7, 1991 at 1745 hours, an inadvertent automatic start of the Emergency Diesel Generator (EDG) 'A' occurred during a scheduled surveillance test while shutdown for a refueling outage. The EDG did not provide power to its related bus because the EDG feeder breaker to the bus was racked down at that part of the test. The start of the EDG was not the result of a degraded voltage or undervoltage condition.

The cause for the event was utility non-licensed electrical maintenance engineer error. A lead, lifted as part of the test, was relanded prior to racking up a feeder breaker to the bus. This inadvertent action was contrary to the sequence of steps identified in the approved surveillance test procedure. The surveillance was completed without further incident. The engineer was counseled regarding the performance of procedure steps in the order identified. Additional corrective action being considered includes a change to the surveillance procedure for the EDG 'A' and 'B'. The focus of the change is to position the EDG 'A' (or 'B') emergency switch to preclude a start during the restoration portion of the surveillance procedure and to reposition the switch at the end of the surveillance.

The event occurred during a refueling outage with the reactor mode selection switch in the REFUEL position. The Reactor Vessel (RV) was completely defueled and no fuel movement was in progress. The RV/Refuel Cavity was flooded with the water temperature at 82 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv). This event posed no threat to the public health and safety.

EVENT DESCRIPTION

On June 7, 1991 at 1745 hours, an inadvertent automatic start of the Emergency Diesel Generator (EDG) 'A' occurred during a scheduled surveillance test while shutdown for a refueling outage. EDG 'A' did not provide power to Bus A5 because its output breaker was racked down at that part of the surveillance test. The start of EDG 'A' was not the result of a degraded voltage or undervoltage condition of the source of power to Bus A5.

The test was being performed in accordance with Procedure 8.M.2-2.10.8.5 (Rev. 14) Attachment 1, "Diesel Generator A Initiation During Plant Shutdown by Loss of Offsite Power Logic Check". The event occurred at step [28](d). Step [28](d) was performed without performing step [28](c).

Failure and Malfunction Report 91-234 was written to document the event. The NRC Operations Center was notified in accordance with 10 CFR 50.72 on June 7, 1991 at 1852 hours.

This event occurred during a refueling outage with the reactor mode selector switch in the REFUEL position. The Reactor Vessel (RV) was completely defueled and no fuel movement was in progress. The RV/Refuel Cavity was flooded with the water temperature at approximately 82 degrees Fahrenheit.

CAUSE

The root cause for the event was utility non-licensed electrical maintenance engineer error. The engineer performed step [28](d) without performing step [28](c).

The surveillance is conducted to functionally demonstrate the EDG 'A' will start as a result of a signal from the Startup Transformer to Bus A5 degraded voltage/undervoltage circuitry. At the beginning of the surveillance the electrical loads normally powered from Bus A5 are disconnected from the bus by opening the applicable breakers. The surveillance includes the installation of jumpers, the disconnection of wires, and the selective positioning of the feeder breakers to Bus A5 including the Startup Transformer feeder breaker 152-504 and the Unit Auxiliary Transformer feeder breaker 152-505. After the EDG 'A' automatically started as expected at step [15], the EDG 'A' was stopped using its keylocked RUN/STOP switch at step [22].

Located at the end of this report are figures depicting simplified drawings of the circuitry for Bus A5 relay 127-504X and the EDG 'A' relay EMSR that are discussed in the following paragraph.

The event occurred at step [28](d) because step [28](c) was not performed. At step [28](d), a wire that was disconnected at step [16] was reconnected. The wire is part of the circuitry that energizes the Bus A5 auxiliary relay 127-504X if breaker 152-504 is not racked up and breaker 152-505 is open. When the wire was reconnected, breaker 152-504 was not racked up because it was placed in the TEST position at step [12](e) and is to be racked up at step [28](c). In addition, breaker 152-504 was in the OPEN position because it is tripped at step [28](a). Moreover, when the wire was reconnected, breaker 152-505 was in the OPEN position from step [6]. This configuration caused relay 127-504X to become energized and resulted in the actuation of the EDG 'A' emergency start relay (EMSR) and the start of EDG 'A'.

CORRECTIVE ACTION

A critique of the event was conducted and attended by applicable personnel including the electrical maintenance engineers who were performing the surveillance test. The critique revealed the engineer inadvertently performed step [28](d) without performing step [28](c).

The electrical maintenance engineers who were performing the surveillance test were counseled regarding the performance of procedure steps in the order identified in a procedure. The other electrical maintenance engineers were briefed regarding this event prior to performing other surveillance testing.

The critique also identified a possible improvement in the surveillance test. Essentially, the improvement involves a change to the procedure regarding the position of the EDG 'A' emergency RUN/STOP switch after the diesel generator is stopped at step [22]. Currently, the switch is positioned to the RUN position after the diesel generator is stopped. While in the RUN position, the diesel generator automatically starts if a start signal occurs. While in the STOP position, the diesel generator will not start if a start signal occurs. Therefore, the surveillance test procedures 8.M.2-2.10.8.5 (EDG 'A') and 8.M.2-2.10.8.6 (EDG 'B') will be reviewed to consider having the switch left in the STOP position after the diesel is stopped at step [22] and have the switch positioned to the RUN position after restoring the breakers to the ready condition at step [31].

SAFETY CONSEQUENCES

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

The EDG 'A' functions to supply 4160 VAC to Bus A5 if the Bus becomes de-energized. The automatic start of EDG 'A' was the designed response to the configuration of the Bus A5 breakers and logic circuitry that existed for the surveillance and that resulted because step [28](c) was not performed prior to step [28](d). The EDG 'A' feeder breaker to Bus A5 was intentionally in the racked down position for the test. The Startup Transformer was providing sufficient voltage to Bus A5. The electrical loads normally powered from Bus A5 were intentionally removed from Bus A5 for the test. Therefore, the automatic start of EDG 'A' was an unnecessary challenge to the starting function of the diesel engine.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) because the start of EDG 'A', although a designed response, was not an expected part of the test (i.e., step 7.8.1(d)) being performed.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports (LERs) submitted since January 1984. The review focused on LERs involving a start of EDG 'A' or 'B' due to personnel error. The review identified similar events reported in LERs 50-293/84-011-00, 84-012-00, 84-017-00, 88-013-00, 88-020-00, and 89-027-00.

For LER 84-011-00, an automatic start of EDG 'A' occurred during a refueling outage. The event occurred during a maintenance activity that involved the replacement of a logic relay. The cause for the event was non-licensed contractor personnel error.

For LER 84-012-00, an automatic start of EDG 'B' occurred during a refueling outage. The event occurred during a surveillance test of logic circuitry. The cause for the event was utility non-licensed technician (I&C) error.

For LER 84-017-00, an automatic start of EDGs 'A' and 'B' occurred during a refueling outage. The event was the result of a temporary loss of preferred offsite power. Offsite power was interrupted during the completion of a test of the 345 KV switchyard breakers. The cause for the event was utility non-licensed operator error.

For LER 88-013-00, a manual start of EDG 'B' occurred while shutdown during an extended outage. The diesel generator started but did not load to Bus A6 because Bus A6 was energized. The event occurred during a calibration activity when a technician (I&C) mistakenly pushed the manual start switch instead of an annunciator reset switch on the EDG 'B' local control panel. The cause for the event was utility non-licensed technician error. Corrective actions taken included an I&C workshop discussion of the event.

For LER 88-020-00, an automatic start of EDG 'B' occurred while shutdown during an extended outage. The event occurred when Bus A6 was intentionally de-energized for a maintenance (modification) activity. The cause for the event was utility licensed operator error. A Nuclear Operating Supervisor failed to recognize that the EDG 'B' emergency RUN/STOP switch was not included in the tagout sheet for the work to be performed. Corrective action taken included a change in the tagout sheet review process.

For LER 89-027-00, an automatic start of the EDG 'A' and an actuation of a portion of the Residual Heat Removal System/Low Pressure Coolant Injection Loop selection logic circuitry occurred while shutdown on September 5, 1989 at 1805 hours. The cause for the event was utility non-licensed technician (I&C) error. The technician jumpered the contacts of the incorrect logic relay during a surveillance test (TP 88-78 Rev. 3). The procedure was revised to include a verification for those procedural steps that involve the installation of a jumper or insulating boot.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) because the start of EDG 'A', although a designed response, was not an expected part of the test (i.e., step [28](d)) being performed.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports (LERs) submitted since January 1984. The review focused on LERs involving a start of EDG 'A' or 'B' due to personnel error. The review identified similar events reported in LERs 50-293/84-011-00, 84-012-00, 84-017-00, 88-013-00, 88-020-00, and 89-027-00.

For LER 84-011-00, an automatic start of EDG 'A' occurred during a refueling outage. The event occurred during a maintenance activity that involved the replacement of a logic relay. The cause for the event was non-licensed contractor personnel error.

For LER 84-012-00, an automatic start of EDG 'B' occurred during a refueling outage. The event occurred during a surveillance test of logic circuitry. The cause for the event was utility non-licensed technician (I&C) error.

For LER 84-017-00, an automatic start of EDGs 'A' and 'B' occurred during a refueling outage. The event was the result of a temporary loss of preferred offsite power. Offsite power was interrupted during the completion of a test of the 345 KV switchyard breakers. The cause for the event was utility non-licensed operator error.

For LER 88-013-00, a manual start of EDG 'B' occurred while shutdown during an extended outage. The diesel generator started but did not load to Bus A6 because Bus A6 was energized. The event occurred during a calibration activity when a technician (I&C) mistakenly pushed the manual start switch instead of an annunciator reset switch on the EDG 'B' local control panel. The cause for the event was utility non-licensed technician error. Corrective actions taken included an I&C workshop discussion of the event.

For LER 88-020-00, an automatic start of EDG 'B' occurred while shutdown during an extended outage. The event occurred when Bus A6 was intentionally de-energized for a maintenance (modification) activity. The cause for the event was utility licensed operator error. A Nuclear Operating Supervisor failed to recognize that the EDG 'B' emergency RUN/STOP switch was not included in the tagout sheet for the work to be performed. Corrective action taken included a change in the tagout sheet review process.

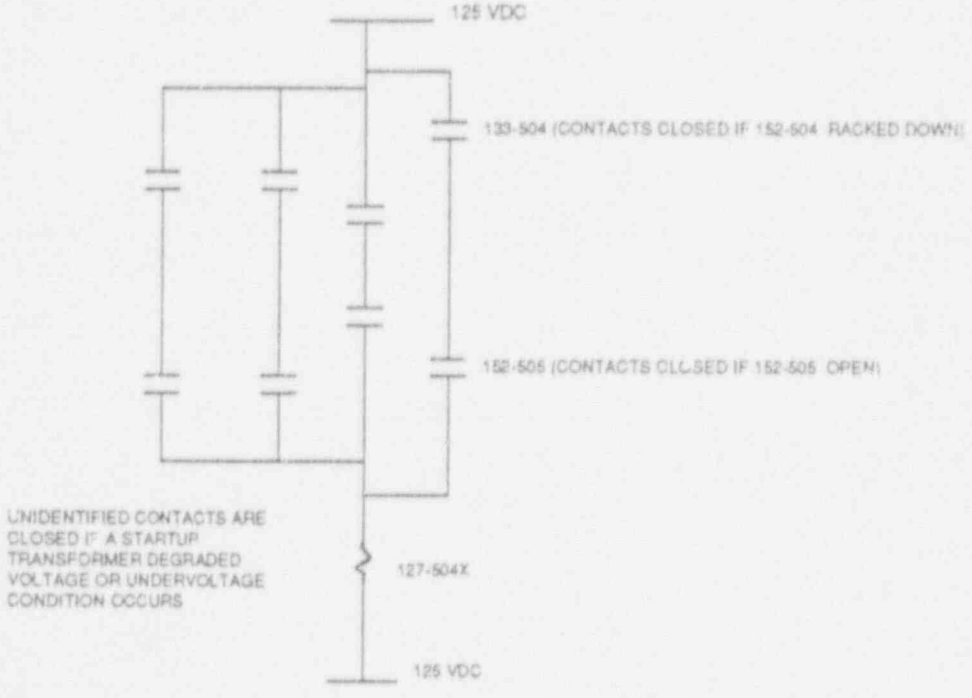
For LER 89-027-00, an automatic start of the EDG 'A' and an actuation of a portion of the Residual Heat Removal System/Low Pressure Coolant Injection Loop selection logic circuitry occurred while shutdown on September 5, 1989 at 1805 hours. The cause for the event was utility non-licensed technician (I&C) error. The technician jumpered the contacts of the incorrect logic relay during a surveillance test (TP 88-78 Rev. 3). The procedure was revised to include a verification for those procedural steps that involve the installation of a jumper or insulating boot.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

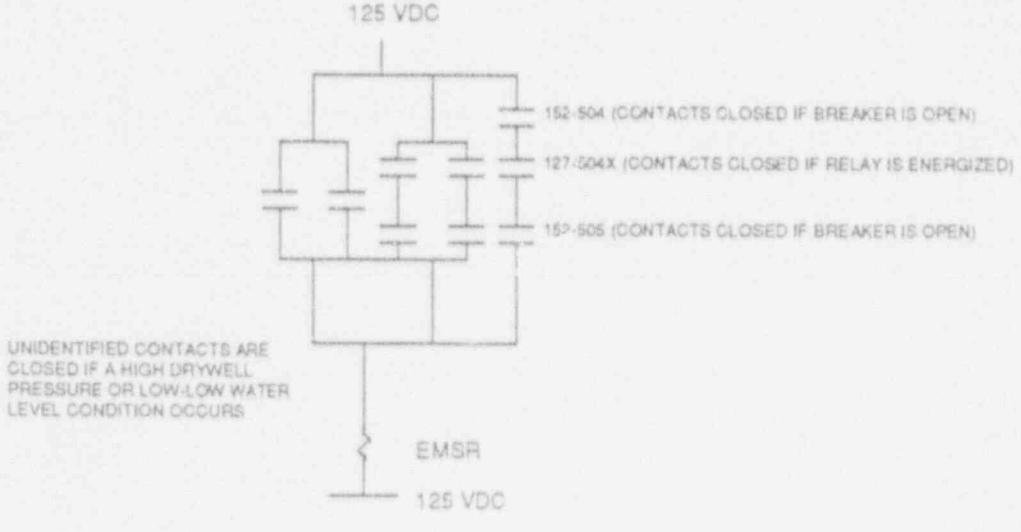
The EIIS codes for this report are as follows:

COMPONENTS	CODES
Breaker	BKR
Generator, Diesel (EDG 'A')	DG
Relay (127-504X/EMSR)	RLY
Switch, Position	33

SYSTEMS	
Energy Onsite Power Supply System	EK
Engineered Safety Feature Actuation System	JE
Medium Voltage Power System	EA



SIMPLIFIED DRAWING OF BUS A5 RELAY 127-504X CIRCUIT



SIMPLIFIED DRAWING OF EDG 'A' STARTING CIRCUIT