



**BOSTON EDISON**

Pilgrim Nuclear Power Station  
Rocky Hill Road  
Plymouth, Massachusetts 02360

**George W. Davis**  
Senior Vice President - Nuclear

April 24, 1991  
BECo Ltr. 91- 059

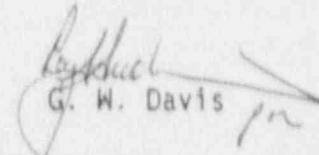
U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

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

Dear Sir:

The enclosed Licensee Event Report (LER) 91-005-00, "Loss of AC Power to 'B' Trains of Safety Systems Due to Diesel Generator 'B' Voltage Regulator Failure 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.

  
G. W. Davis

DWE/bal

Enclosure: LER 91-005-00

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

Sr. NRC Resident Inspector - Pilgrim Station

Standard BECo LER Distribution

## LICENSEE EVENT REPORT (LER)

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.

FACILITY NAME (1) Pilgrim Nuclear Power Station										DOCKET NUMBER (2) 0 5 0 0 0 2 0 3 1 OF 1 1				PAGE (3) 1		
TITLE (4) Loss of AC Power to 'B' Trains of Safety Systems Due to Diesel Generator 'B' Voltage Regulator Failure During Surveillance																
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 3	2 5	9 1	9 1	0 0 5	0 0	0 4	2 4	9 1	N/A				0 5 0 0 0			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)														
N		20.402(b)				20.405(a)				X		50.73(a)(2)(iv)		73.71(b)		
POWER LEVEL (10)		1 0 0				20.405(a)(1)(i)				X		50.73(a)(2)(v) (D)		73.71(c)		
		20.405(a)(1)(ii)				50.36(a)(1)						50.73(a)(2)(vi)		OTHER (Specify in Abstract below and in Text, NRC Form 365A)		
		20.405(a)(1)(iii)				50.36(a)(2)						50.73(a)(2)(vii)				
		20.405(a)(1)(iv)				50.73(a)(2)(i)						50.73(a)(2)(viii)(A)				
		20.405(a)(1)(v)				50.73(a)(2)(ii)						50.73(a)(2)(viii)(B)				
		20.405(a)(1)(vi)				50.73(a)(2)(iii)						50.73(a)(2)(ix)				
LICENSEE CONTACT FOR THIS LER (12)																
NAME Douglas W. Ellis - Senior Compliance Engineer										TELEPHONE NUMBER						
										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 NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC						
X	E/K	R G B	0 9 3	Y												
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete & EXPECTED SUBMISSION DATE)												NO		0 7 3 1 0 9 1		

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On March 25, 1991 at 0610 hours, the Emergency Diesel Generator (EDG) 'B' became inoperable, a loss of AC power to Train 'B' components of safety systems, and actuations of portions of the Primary Containment and Secondary Containment Isolation Control Systems occurred during a Technical Specification required surveillance test of the EDG 'B'. The cause for the event was a failure of the automatic voltage regulator of the EDG 'B' that was fully loaded on its safety bus at the time of the event. The voltage regulator was manufactured by the Basler Electric Company, model number SVR01A05B2B1B, serial number 9047500105.

The cause for the voltage regulator failure had not been identified when this report was submitted. The manufacturer's root cause analysis is currently expected to be completed by May 31, 1991. This report is expected to be updated by July 30, 1991. The affected safety system components were re-energized and returned to normal service by March 25, 1991 at 2100 hours. The EDG 'B' voltage regulator was replaced and the EDG 'B' was surveillance tested with satisfactory results. The surveillance was completed on March 28, 1991 at approximately 0915 hours.

This event occurred 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 1035 psig with the RV water temperature at 548 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73 subparts (a)(2)(iv) and (a)(2)(v)(D), and this event posed no threat to the public health and safety.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 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.

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

BACKGROUND

The Auxiliary Power Distribution System (APDS) consists of six 4160 VAC buses. The APDS is divided into emergency service (Buses A5 and A6) and normal service (Buses A1, A2, A3, A4). Buses A5 and A6 supply power to essential loads required during abnormal operational transients and accidents. Buses A1, A2, A3, A4 supply power to other station auxiliaries during planned operations. Power is distributed to the six 4160 VAC buses during normal operation from either the unit source (Unit Auxiliary Transformer) or the preferred offsite source (Startup Transformer). The preferred power source is used to supply the 4160 VAC buses during normal startup and shutdown. After the main generator has been synchronized to the 345 KV transmission system, the 4160 VAC buses are transferred from the preferred power source to the unit power source. The 4160 VAC emergency service Buses A5 and A6 can be supplied from the standby power source (EDG 'A' and 'B') or the secondary power source (Shutdown Transformer).

Power from the 4160 VAC buses is fed to 4160 VAC powered loads and, through load center transformers, to 480 VAC load center buses. Bus A5 feeds 4160 VAC power to the motors of the Control Rod Drive (CRD) System pump 'A', Residual Heat Removal (RHR) System Loop 'A' pumps (P-203A/C), Core Spray (CS) System Loop 'A' pump (P-215A), and via transformer X-21 feeds 480 VAC power to Bus B1. Similarly, Bus A6 feeds 4160 VAC power to the motors of the CRD pump 'B', RHR Loop 'B' pumps (P-203B/D), Core Spray Loop 'B' pump (P-215B), and via transformer X-22 feeds 480 VAC power to Bus B2. Bus B6 is a swing type bus that can be powered by either B1 or B2, and is normally aligned to Bus B1. Bus B6 was aligned to Bus B1 at the time of the event. Power from the 480 buses is fed to motors and to motor control centers (MCCs). Power from the MCCs is fed to other motors, motor operators, and power panels.

Located at the end of this report is a Figure that depicts a simplified single line diagram of a portion of the APDS including Buses A5 and A6. The diagram does not depict feeder breakers A801 (152-801) and A802 (152-802) that are located on the Blackout Diesel Generator and Shutdown Transformer side of breaker 152-600.

The EDG 'B' was being surveillance tested as required by Technical Specification 3.9.B.1 because the Shutdown Transformer (SDT) became inoperable on March 24, 1991 at 2300 hours. This was the result of the actuation of lockout relay 186-5 that occurred due to a solar induced disturbance on the offsite 23 KV transmission system. When the SDT became de-energized, the offsite 345 KV transmission system lines 342 and 355 were energized, the 345 KV switchyard air circuit breakers were closed, the Startup Transformer (SUT) was operable, the EDGs 'A' and 'B' were operable, and the 4160 VAC Auxiliary Power Distribution System (including emergency Buses A5 and A6) was energized via the Unit Auxiliary Transformer (UAT). The EDG 'B' was being tested per procedure 8.9.1 (Rev. 28), "Emergency Diesel Generator Surveillance", section 8.2. The event occurred while the EDG 'B' was fully loaded at approximately 2600 KW and synchronized to Bus A6 in parallel with the Unit Auxiliary Transformer, after being loaded for approximately 15 minutes.



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

EVENT DESCRIPTION

On March 25, 1991 at 0610 hours, an automatic actuation of lockout relay 186-A6 followed by a trip of the Emergency Diesel Generator (EDG) 'B' output breaker A609 (152-609) occurred during an unscheduled Technical Specification required surveillance test of the EDG 'B'. The EDG 'B' became inoperable, a loss of AC power to Bus A6 and related sources of AC power to Train 'B' components of safety systems occurred, a trip of the Recirculation System motor-generator (MG) set/pump 'B' occurred, and actuations of portions of the Primary Containment and Reactor Building Isolation Control Systems occurred. These occurrences were the result of the actuation of lockout relay 186-A6.

The loss of power to 4160 VAC Bus A6 resulted in a loss of power to the following:

- The 4160 VAC motors of CRD pump 'B', RHR pumps 'B' and 'D', Core Spray pump 'B'.
- 480 VAC load center Bus B2 and its related loads:
  - Turbine Building Closed Cooling Water (TBCCW) System Loop 'B' pump (P-110B)
  - 480 VAC MCC-B14 including:
    - 125 VDC Battery charger 'B'. The 125 VDC Battery 'B' was subsequently aligned to the backup battery charger (powered from Bus B6) at 0641 hours.
    - 250 VDC normal battery charger. The 250 VDC Battery was subsequently aligned to the backup battery charger (powered from Bus B6) at 0641 hours.
    - Standby Gas Treatment System (SGTS) Train 'B' heater (VGTF-201B) and exhaust fan (VEX-210B). This caused the SGTS Train 'B' to be inoperable.
    - Control Room High Efficiency Air Filtration System (CRHEAFS) Train 'B' air inlet filter heater (VCRF-101B). This caused the CRHEAFS Train 'B' to be inoperable.
    - High Pressure Coolant Injection (HPCI) turbine exhaust vacuum containment isolation valve MO-2301-34.
    - Reactor Building Closed Cooling Water (RBCCW) System Loop 'B' pumps (P-202D/E/F). This caused the Containment Cooling System Loop 'B' to be inoperable. The RBCCW Loops 'A' and 'B' were then cross-tied at 0611 hours.
    - RBCCW System Loop 'B' heat exchanger discharge valve (MO-3806)

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TEXT (If more space is required, use additional NRC Form 386A's) (17)

- Salt Service Water (SSW) System Loop 'B' pumps (P-208D/E). This also caused the Containment Cooling System Loop 'B' to be inoperable.
- Diesel Fuel Oil Transfer System 'B' pump (P-141B)
- Reactor Feedpump 'B' auxiliary oil pump (P-152B)
- Battery Room 'B' exhaust fan (VEX-103B)
- TBCCW System Loop 'B' heat exchanger discharge valve (MO-3805)
- 480 VAC MCC-B18 including:
  - EDG 'B' auxiliary panel (C-104A)
  - EDG 'B' compartment supply fan (VSF-208B) and exhaust fan (VEX-214B)
  - Drywell Train 'B' unit coolers (VAC-205A2/B2/C2/D2/E2/F2 and VAC-206A2/B2)
  - HPCI compartment unit coolers (VAC-201A/B). This caused the HPCI System to be administratively inoperable but was maintained in standby service.
  - RHR/Core Spray compartment 'B' unit coolers (VAC-204C/D)
  - CRD compartment Train 'B' unit cooler (VAC-203B)
  - Core Spray Loop 'B' valves (MO-1400-3B,-4B,-24B,-25B). This caused the Core Spray Loop 'B' to be inoperable.
  - RHR Loop 'B' Suppression Pool suction valves (MO-1001-7B/D), Drywell Spray valves (MO-1001-23B and -26B), Heat Exchanger bypass valve (MO-1001-16B), pumps minimum flow valve (MO-1001-18B). This caused the RHR Loop 'B' to be inoperable for the Suppression Pool Cooling and Drywell Spray modes.
  - RCIC turbine steam supply isolation valve (MO-1301-16)
  - RHR Loop 'B' Suppression Pool Cooling/Suppression Chamber Spray block valve (MO-1001-34B), Suppression Pool Cooling valve (MO-1001-36B), Suppression Chamber Spray valve (MO-1001-37B). This also caused the RHR Loop 'B' to be inoperable for the Suppression Pool Cooling and Drywell Spray modes.
  - RHR Loop 'B' Shutdown Cooling suction valves (MO-1001-43B/D). This caused the RHR Loop 'B' to be inoperable for the Shutdown Cooling mode.

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

- Standby Liquid Control (SBLC) System pump 'B' (P-207B)
- RBCCW valves:
  - MO-4010A/B (RHR Loop 'B' heat exchanger isolation)
  - MO-4009A/B (RBCCW Loops 'A'/'B' non-essential loads isolation)
  - MO-4002 (Drywell Trains 'A'/'B' and Recirculation System Loops 'A'/'B' coolers return line isolation)
  - MO-4083 (RBCCW Loop 'B' heat exchanger bypass)
- Power supply (Y7) for the following:
  - Suppression Pool water level and temperature monitoring (Panel C-165)
  - MCC-B18 air conditioning units (VRC-203A/B) and condenser units (VCC-203A/B)
  - MCC-B18 fan/damper control (Panel C-249)
- Recirculation System MG set 'B' auxiliary oil pumps (P-225A/B). This resulted in a lockout and trip of the recirculation MG set/pump 'B'. The speed of the MG set/pump 'A' was then gradually decreased manually to approximately 30 percent.
- Suppression Chamber Train 'B' circulating fan (VEX-207B)
- Reactor Water Cleanup (RWCU) System recirculation pump 'B' (P-204B)
- CRHEAFS Train 'B' supply fan (VSF-103B). This also caused the CRHEAFS Train 'B' to be inoperable.
- Safeguard 120 VAC Train 'B' (Control Power Supply-Panels Y4 and Y41)
- 480 VAC MCC-B28 including:
  - Main Stack Dilution Fan 'A' (VSF-206A)
  - Main Stack Dilution Air Heaters 'A' and 'B'
  - Main Stack Exhaust Fan (VEX-209)
  - Electric Unit Heaters (VEUH-201A/B/C)

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

The loss of safeguard 120 VAC Train 'B' power from Panel Y4 to 120 VAC powered relays located in Panel C-942 resulted in actuations of portions of the Primary Containment Isolation Control System (PCIS) and Reactor Building Isolation Control System (RBIS).

The PCIS actuation resulted in the following responses:

- The Train 'B' Primary Containment System (PCS) Group 2/Sampling System isolation valves that were open closed automatically.
- The inboard and outboard PCS Group 3/RHR System isolation valves, in the closed position, remained closed.
- The outboard PCS Group 6/RWCU System isolation valves MO-1201-5 and -80, in the open position, closed automatically.

The RBIS actuation resulted in the following responses:

- The Train 'D' Secondary Containment System (SCS)/Reactor Building supply and exhaust ventilation dampers, in the open position, closed automatically.
- The SCS/SGTS Train 'B' exhaust fan (VEX-201B) did not start because it was de-energized. The SCS/SGTS Train 'A' exhaust fan was started manually by a utility licensed operator to maintain a negative pressure within the Reactor Building.

Failure and Malfunction Report 91-97 was written to document the event. The NRC Operations Center was notified in accordance with 10 CFR 50.72 subparts (b)(2)(ii) and (b)(2)(iii) on March 25, 1991 at 0840 hours. Nine 24 hour Technical Specification Limiting Conditions for Operation (LCOs) and a 24 hour LCO for Facility Operating License condition 3.E were entered as a result of the event.

This event occurred 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 1035 psig with the RV water temperature at approximately 548 degrees Fahrenheit.

Verbal and written requests for a waiver of compliance of Facility Operating License condition 3.E (single recirculation loop operation) and the 24 hour Technical Specifications LCOs were made to the NRC to permit restoration of electrical power to Bus A6 and related loads. The written requests were documented in Boston Edison Company Letters 91-041 (March 25, 1991) and 91-051 (March 26, 1991). The NRC granted a one-time waiver of compliance that conditionally extended the 24 hour limit of license condition 3.E and the 24 hour Technical Specification LCOs. The waiver of compliance was documented in an NRC Letter dated March 27, 1991. The waiver for Facility Operating License condition 3.E and the 24 hour Technical Specifications LCOs was not invoked because the LCOs were terminated by 2300 hours on March 25, 1991 and the Recirculation System MG set/pump 'B' was returned to service on March 26, 1991 at 0043 hours.



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 386A's) (17)

CAUSE

The cause for the actuation of lockout relay 186-A6 was an overcurrent condition sensed by protective devices for phase 'B' of feeder breaker A605. The overcurrent condition was the result of a failure of the EDG 'B' automatic voltage regulator that occurred during the surveillance test (8.9.1) while EDG 'B' was loaded on Bus A6. The voltage regulator was manufactured by the Basler Electric Company, model number SVR01A05B2B1B, serial number 9047500105. The cause for the failure of the automatic voltage regulator had not been identified when this report was submitted. The manufacturer's root cause analysis is currently expected to be completed by May 31, 1991. Therefore, this report is expected to be updated by July 30, 1991.

The cause for the loss of power to Bus A6 and related loads was the actuation of lockout relay 186-A6. Actuation of lockout relay 186-A6 results in a trip signal to feeder breakers A501/A504/A605 to Bus A6. For this actuation of lockout relay 186-A6, the EDG 'B' output breaker A609 (152-609) to Bus A6 was in the closed position for surveillance testing at the time of the actuation and remained closed as designed.

The cause for the trip of EDG 'B' output breaker A609 was an overspeed condition of the diesel engine of EDG 'B'. The overspeed trip occurred at approximately 1090 RPM as designed and was the result of the actuation of lockout relay 186-A6. When the lockout relay actuated and tripped feeder breaker A605 to Bus A6, the EDG 'B' oversped due to the sudden load reduction and the automatic voltage regulator failure that affected the EDG 'B' engine governor control. The overspeed condition caused the EDG 'B' overspeed relay (OSR) to actuate the EDG 'B' shutdown relay (SDR) that resulted in the trip of breaker A609 (152-609) as designed.

CORRECTIVE ACTION

The CRHEAFS Train 'A' was surveillance tested in accordance with procedure 8.7.2.7 and was completed with satisfactory results on March 25, 1991 at 1215 hours.

The SBLC System pump 'A' was surveillance tested in accordance with procedure 8.4.1 and was completed with satisfactory results on March 25, 1991 at 1356 hours.

The following actions were taken prior to re-energizing Bus A6:

- The cause for the actuation of lockout relay 186-A6 was identified.
- Bus A6 was meggered in accordance with procedure 3.M.3-4, "Insulation Test", with satisfactory as-found results.
- Lockout relay 186-A6 was reset in accordance with Procedure 1.3.11 (Rev. 9), "Reset of Lock-Out Relays and Protective Relay Targets", on March 25, 1991 at approximately 1400 hours.
- Bus A6 was re-energized on March 25, 1991 at 1413 hours.



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TEXT (If more space is required, use additional NRC Form 365A's) (11)

- Feeder Breaker A608 (152-608) to transformer X-22 was opened and the primary and secondary sides (4160 VAC/480 VAC) of transformer X-22 were meggered in accordance with procedure 3.M.3-4 with satisfactory as-found results.
- Feeder breaker A608 (152-608) was closed and Buses B2, B14, B18, B28 and related loads were re-energized by approximately 1900 hours on March 25, 1990.

The following actions were taken after Buses A6 and B2 (and related loads) were re-energized:

- The safeguards 120 VAC Train 'B' power was restored at 1918 hours.
- The PCIS and RBIS were reset on March 25, 1991 at approximately 1930 hours and the affected systems were returned to normal service.
- The Recirculation System MG set/pump 'B' was restarted on March 26, 1990 at 0043 hours and the 24 hour LCO for license condition 3.E was terminated. The start resulted in a trip of the 125 VDC/120 VAC inverters of the RCIC System and HPCI System. LER 50-293/91-006 was written regarding the trip of the inverters. The inverters were reset at 0052 hours. The 125 VDC Battery 'B' and 250 VDC Battery were subsequently aligned to their normal battery chargers at approximately 1840 hours.

The 24 hour Technical Specifications LCOs were terminated by 2300 hours on March 25, 1991.

The SDT lockout relay (186-5) was reset in accordance with procedure 1.3.11 and the SDT was re-energized on March 27, 1991 at 2100 hours.

EDG 'A' was surveillance tested in accordance with procedure 8.9.1 and was completed with satisfactory results on March 25, 1991 at 0502 hours (just prior to the event), March 26, 1991 at 0703 hours, and March 27, 1991 at 0558 hours.

The following actions were taken prior to operability testing of the EDG 'B':

- The automatic voltage regulator was replaced.
- The generator windings were meggered with satisfactory as-found results.
- The EDG 'B' and automatic voltage regulator was post work tested in accordance with procedure TP 91-030 (Rev. 0), Post Maintenance Testing of 'B' Diesel Generator to AC. Essentially, TP 91-030 duplicates EDG 'B' surveillance testing that is performed per procedure 8.9.1 (Rev. 28) section 8.2. The test (TP 91-030) included additional administrative controls to preclude a loss of power to Bus A6 if a malfunction were to occur during the test. The test began on March 28, 1991 at 0413 hours and was completed with satisfactory results at 0539 hours. The review of test data was completed at approximately 0615 hours.

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

The EDG 'B' was tested in accordance with procedure 8.9.1 (Rev. 28) with satisfactory results. The test began on March 28, 1991 at approximately 0615 hours. The LCO for EDG 'B' was terminated on March 28, 1991 at approximately 0915 hours.

Temporary Modification 91-22 (Rev. 0) was prepared and approved on March 25, 1991. Essentially, the modification provided for energizing the circuit that controls the RHR/Shutdown Cooling suction line isolation valves while Panels Y4 and C-942 were de-energized. This action was taken as a contingency measure and its implementation was not necessary because 120 VAC power was restored to Panel C-942 (via Panel Y4) on March 25, 1991 at 1918 hours.

PREVENTIVE ACTION

Procedures 2.4.25 (currently Rev. 13), "Loss of Shutdown Cooling", 5.3.18 (currently Rev. 5), "Loss of 120 VAC Safeguard Bus Y3", and 5.3.19 (currently Rev. 5), "Loss of 120 VAC Safeguard Bus Y4", are being reviewed. The purpose for the review is the possible incorporation of actions that would have been taken if Temporary Modification 91-22 had been implemented.

Any significant additional actions to be taken as a result of the root cause analysis for the failed automatic voltage regulator will be identified in the update of this report.

SAFETY CONSEQUENCES

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

The Core Standby Cooling System (CSCS) consists of the HPCI System, Automatic Depressurization System (ADS), Core Spray System, and RHR System (LPCI mode). Although not a CSCS system, the RCIC System is capable of providing high pressure water to the Reactor Vessel for core cooling. In the event the HPCI System had received an initiation signal while Bus A6 and its related loads were de-energized, the system was capable of starting to provide high pressure water for core cooling. If the HPCI compartment temperatures had subsequently increased sufficiently to initiate an automatic trip of the HPCI turbine/pump, the RCIC System was operable and capable of providing high pressure water for core cooling. In the unlikely event the RCIC System became inoperable while the HPCI System was not available, an automatic (or manual) actuation of the ADS would reduce Reactor Vessel pressure for low pressure core cooling provided independently by the Core Spray System (Loop 'A') and RHR/LPCI mode (Loop 'A').

Bus A6 and related loads were de-energized on March 25, 1991 at 0610 hours. During the period Bus A6 and related loads were de-energized, the redundant Bus A5 and its related loads were energized and operable. Bus A6 and related loads were de-energized for a period of approximately 15 hours. Based on the Pilgrim Station probabilistic model, an assessment for continued plant operation versus a plant shutdown concluded the margin of safety for plant operation up to 48 hours in this mode would not be significantly less than that for a plant shutdown.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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 (F-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) because the PCIS and RBIS actuations, although a designed response to a loss of power to the relays of the affected circuitry, were not planned.

This report is also submitted in accordance with 10 CFR 50.73(a)(2)(v)(D) because the HPCI compartment unit coolers were de-energized and inoperable for their cooling function in the event of an actuation of the HPCI System.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station LERs submitted since January 1984. The review focused on LERs involving a failure of EDG 'A' or 'B', or their voltage regulators. The review revealed no previous failure of EDG 'A' or 'B', or their voltage regulators.

Review of Failure and Malfunction Reports for similarity revealed that voltage oscillations had occurred during previous EDG 'B' surveillance testing (Procedure 8.9.1). The root cause was a dirty motor operated potentiometer that was due to its enclosure cover not being installed for an unidentifiable period of time. The potentiometer is physically separate from the voltage regulator.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS

Breaker (152-605)  
Bus (A6)  
Regulator (Voltage Regulator)  
Relay, Locking Out (186-5, 186-A6)  
Transformer

CODES

BKR  
BU  
RG  
86  
XFMR

SYSTEMS

Component Cooling System (RBCCW/TBCCW)  
Control Complex Environmental Control System (CRHEAFS)  
Control Rod Drive (CRD) System  
Core Spray System  
Emergency Onsite Power Supply System (EDG)  
Engineered Safety Features Actuation System (PCIS/RBIS)  
Essential Service Water System (SSW)  
High Pressure Coolant Injection (HPCI) System  
Low Voltage Power System - Class 1E  
Medium Power System - Class 1E  
Reactor Core Isolation Cooling (RCIC) System  
Reactor Recirculation System  
Reactor Water Cleanup (RWCU) System  
Residual Heat Removal (RHR) System  
Standby Gas Treatment System (SGTS)  
Standby Liquid Control (SBLC) System

CC  
VI  
AA  
BM  
EK  
JE  
BI  
BJ  
ED  
EB  
BN  
AD  
CE  
BO  
BH  
BR



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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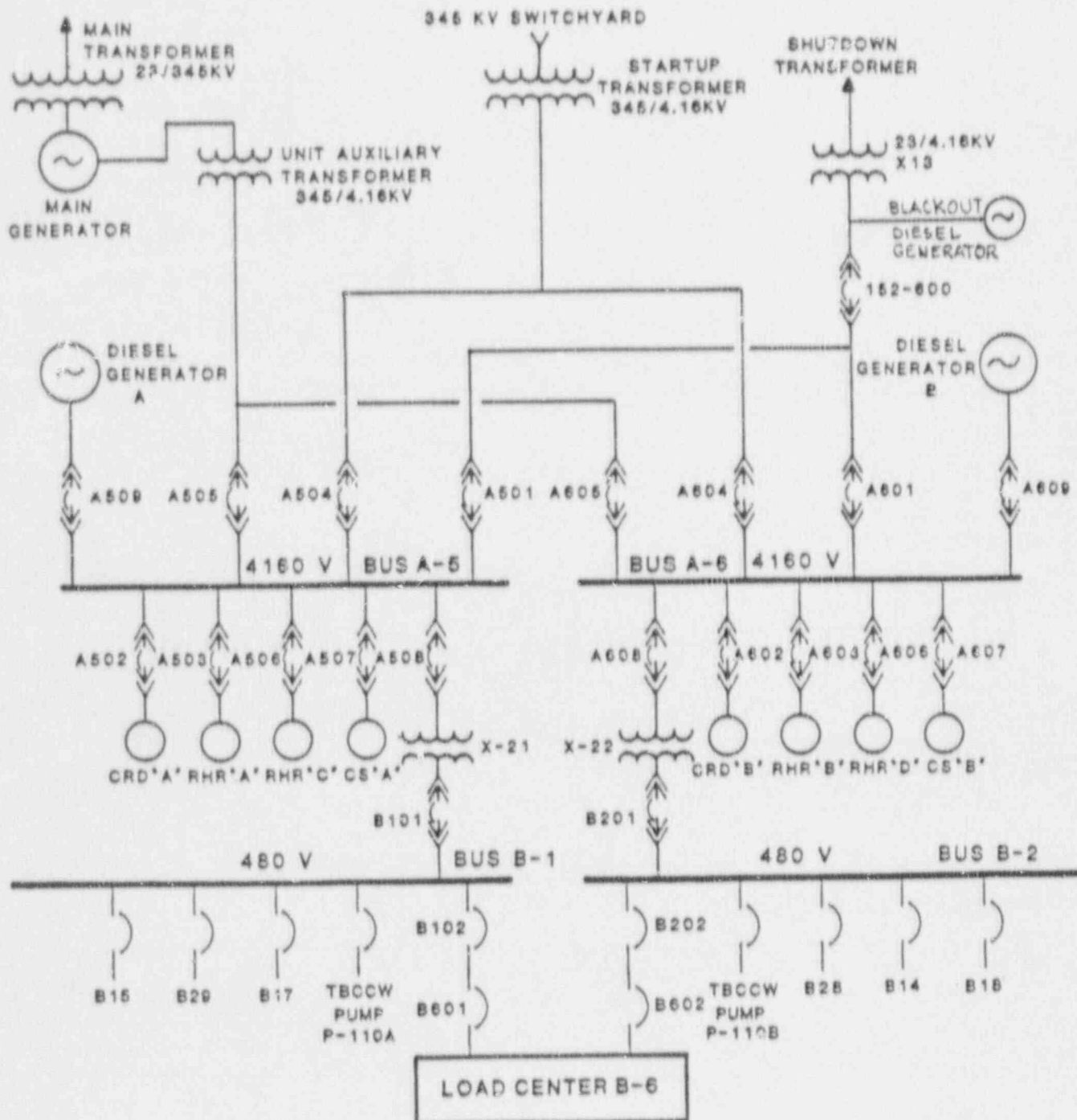
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