10 CFR 50.73

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

Roy A. Anderson
Senior Vice President – Nuclear

April 10, 1992
BECo Ltr. 92-41

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 supplemental Licensee Event Report (LER) 90-005-01, "General Electric Type AK-2A-50 Circuit Breaker Did Not Open During Planned Bus Transfer While Shut Down", 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

DWE/bal

Enclosure: LER 90-005-01

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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 9

TITLE (4): General Electric Type AK-2A-50 Circuit Breaker Did Not Open During Planned Bus Transfer While Shut Down

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 0	9 0	9 0	— 0 0 5	— 0 1	0 4	1 0	9 2	N/A	0 5 0 0 0

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N	0 0 0	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)	X 50.73(a)(2)(vii) (D)	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
	AREA CODE
Douglas W. Ellis - Senior Compliance Engineer	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	
X	E B	5 2	G 0 8 0	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 March 20, 1990 at 1750 hours, a 480 VAC load center circuit breaker that is part of a safety-related transfer scheme did not open automatically as designed during a planned Bus B6 transfer. Breaker 52-202, type AK-2A-50 modified with a Micro-Versa trip unit, was manufactured by the General Electric Company. The failure of 52-202 to open resulted in the failure of its trip coil. In response, Bus B2 was intentionally de-energized and re-energized at 1825 hours after breaker 52-202 was tripped and removed from its cubicle. Breaker 52-202 was tripped using its local trip button after the breaker's latch prop was manually realigned. Because Bus B2 was de-energized, portions of the Primary and Secondary Containment Isolation Systems isolated, and shutdown cooling and Salt Service Water cooling were interrupted for approximately 37 minutes. Breaker 52-202 failed to open because its latch prop, which is part of the breaker's trip mechanism, was misaligned due to the absence of a retainer ring. The cause of the missing retainer ring could not be determined with certainty. Corrective actions taken included offsite inspection, overhaul, and testing of breaker 52-202 by the manufacturer, and onsite inspection, overhaul, and testing of similar breakers by manufacturer and utility personnel. This event occurred while in cold shutdown with the reactor mode selector switch in the SHUTDOWN position. The reactor power level was zero percent. The Reactor Vessel (RV) was vented with the RV water temperature at 98 degrees Fahrenheit. The plant remained in a cold shutdown condition during the event. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) and (a)(2)(vii)(D). This event posed no threat to the public health and safety.

REASON FOR SUPPLEMENT

This report is submitted to meet our commitment to supplement the initial report.

BACKGROUND

Bus B6 is a 480 VAC swing type bus that can be powered by Bus B1 or B2. Bus B1 is the normal power source for Bus B6 with breakers 52-102 and 52-601 in the CLOSED position and with breakers 52-202 and 52-602 in the OPEN position. Circuit breakers 52-102/52-202 and 52-601/52-602 are interlocked to preclude Bus B6 from being simultaneously powered by Bus B1 and Bus B2. The interlocks of breakers 52-102/52-202 are independent of the interlocks of breakers 52-601/52-602.

The Bus B6 automatic transfer scheme is as follows:

- If Bus B1 were powering Bus B6 and Bus B1 were to experience a loss of voltage for approximately one second and sufficient Bus B2 voltage is available, breaker 52-102 opens and 52-202 closes, and 52-601 opens and 52-602 closes. Bus B6 would then be energized from Bus B2.

- If Bus B2 were powering Bus B6 and B2 were to experience a loss of voltage for approximately one second and sufficient Bus B1 voltage is available, breaker 52-202 opens and 52-102 closes, and 52-602 opens and 52-601 closes. Bus B6 would then be energized from Bus B1.

- If Bus B1 and Bus B2 were both to experience a loss of voltage for approximately one second, the two breakers in the CLOSED position would open and all four transfer breakers would then be in the OPEN position. Depending upon which Bus (B1 or B2) subsequently becomes energized, the related breakers close and Bus B6 would then be energized.

The source of control power for the four Bus B6 transfer circuit breakers is via 125 VDC Bus D6 that is supplied from 125 VDC Bus D16 or Bus D17 through an automatic transfer switch (83-1). This configuration makes the control power for the circuit breakers highly reliable and independent of the 480 VAC buses.

SYSTEMS CONFIGURATIONS PRIOR TO THE EVENT

Just prior to the event, the following systems configurations existed:

- The reactor mode selector switch was in the SHUTDOWN position. The control rods were fully inserted. The Reactor Vessel (RV) pressure was zero psig with the RV water temperature at approximately 98 degrees Fahrenheit. The RV head vent valves were open. There was no movement of a fuel cask or irradiated fuel. For these conditions, the integrity of primary and secondary containment was not required and operability of affected systems was not required.

- The safety-related 4160 VAC Buses including A5 and A6 and 480 VAC Buses including B1, B2, B6 and related electrical system were energized. Bus B6 was being powered from Bus B2.

- The Salt Service Water (SSW) System loop 'A' pumps P-208A/B were not in service because the Reactor Building Closed Cooling Water (RBCCW) System loop 'A' heat exchanger had been removed from service for maintenance. SSW pump P-208A was tagged but available for service. SSW pump P-208B was tagged and not available for service because of planned maintenance. SSW Loop 'A'/'B' swing pump P-208C was in standby and available for service. The SSW Loop 'B' pump P-208D was in standby and available for service. SSW Loop 'B' pump P-208E was in service providing cooling water to the RBCCW loop 'B' heat exchanger.

EVENT DESCRIPTION

On March 20, 1990 at 1750 hours, a 480 VAC load center circuit breaker that is part of a safety-related transfer scheme failed to open automatically as designed during a planned transfer conducted while shutdown in a mid-cycle outage. The circuit breaker (52-202), type AK-2A-50 modified with a Micro-Versa trip unit, was manufactured by the General Electric Company, serial number 224A1126-312-AE-2.

The transfer was being conducted in accordance with step 4 of procedure 3.M.3-35 (Rev. 10) Attachment 24, "Automatic Transfer From B2 to B1 Supplying B6 - by Pulling B2 PT Fuses". For this step, the secondary fuses of the potential transformers for Bus B2 were removed from their installed locations. The removal causes the control circuitry to sense a loss of voltage on Bus B2. The removal of the fuses should have resulted in the automatic opening of breakers 52-202 and 52-602 and the automatic closing of breakers 52-102 and 52-601. Breaker 52-202 did not open and consequently its related transfer breaker (52-102) remained in the open position as designed. Meanwhile, breaker 52-602, in-series with breaker 52-202 from Bus B2 to Bus B6, opened automatically and its related transfer breaker (52-601) closed automatically as designed. This configuration resulted in safety-related Bus B6 becoming de-energized because one in-series feeder breaker in each of the two feeder lines (from Bus B1 to B6 and from Bus B2 to B6) were in the open position.

The loss of power to 480 VAC Bus B6 resulted in a loss of power to the following:

- 480 VAC MCC-B10 including:
  - 120 VAC power to the SGTS deluge Panels C-686 and C-696
  - 120 VAC Instrument Power Supply Panel Y1
- 480 VAC MCC-B20 including:
  - RHR System Valves:
    - Inboard injection valves MO-1001-29A/B (normally closed). This would cause the RHR loops 'A' and 'B' to be inoperable for the Low Pressure Coolant Injection (LPCI) mode.

- Outboard injection valves MO-1001-28A/B (normally open).

- MO-1001-50 (normally closed shutdown cooling suction line).

- Recirculation System Loops 'A' and 'B' pump suction and discharge valves. This would also cause the RHR/LPCI function to be inoperable.

The failure of breaker 52-202 to open resulted in the failure of the breaker's trip coil and a minor but visible amount of smoke from the trip coil. Because of the concern for a fire in Bus B2 and in order to safely open breaker 52-202, the utility licensed shift Nuclear Watch Engineer (NWE) ordered the opening of 4160 VAC switchgear breaker 152-608. Bus B2 de-energized as a result of opening breaker 152-608 at 1805 hours. After further investigation, the breaker's latch prop assembly was observed to be in a skewed position, not in its proper alignment. The latch prop was subsequently realigned by Electrical Maintenance personnel to allow the latch prop to function and breaker 52-202 opened when its manual trip button was depressed. Because breaker 52-202 was then in the OPEN position, breaker 52-102 closed automatically. The closing of breaker 52-102, together with breaker 52-601 already in the CLOSED position, re-energized Bus B6 at 1818 hours. Breaker 52-202 was removed from its cubicle and Bus B2 was re-energized when breaker 152-608 was closed at 1825 hours. A jumper was installed in the 52-102/52-202 control circuitry because circuit breaker 52-202 had been removed from its cubicle. The installation of the jumper was recorded in the lifted lead and jumper log. The jumper simulated a contact in breaker 52-202 that provides a permissive for breaker 52-102 to automatically reclose per design.

When Bus B2 became de-energized the following expected designed responses occurred:

- The appropriate portions of the Primary Containment Isolation Control System (PCIS) and Reactor Building Isolation Control System (RBIS) actuated as designed.

- The PCIS actuation resulted in the automatic closing of the outboard Primary Containment System (PCS) Group 3/RHR System shutdown cooling (SDC) suction line isolation valve MO-1001-47 and an interruption in the SDC mode of operation. The RHR System Loop 'B' pump P-203B, in service for the SDC mode, did not trip automatically as designed when valve MO-1001-47 was closing. The pump was manually tripped prior to valve MO-1001-47 fully closing. Subsequent investigation revealed that a wire, which is part of the related circuitry of the pump motor circuit breaker, was not relanded during a previous maintenance activity in October 1988 (MR 88-46-434). After discovery, the wire was relanded. A corrective action program document (NCAR 90-03) was written regarding the lifted lead.

- The RBIS Channel 'B' actuation resulted in the automatic closing of the Secondary Containment System (SCS)/Reactor Building ventilation supply and exhaust dampers. The SCS/Standby Gas Treatment System (SGTS) Train 'B' fan did not start because the Train 'A' and 'B' fans were tagged out of service due to painting in the Reactor Building.

- The RBCCW Loop 'B' pumps P-202D/E stopped and the system's Loop 'A' pump P-202A started automatically. The other two Loop 'A' pumps were started via manual control switch to maximize RBCCW flow.

The loss of power to 480 VAC Bus B2 resulted in a loss of power to various Train 'B' components of systems that were not required to be operable at that time. The affected systems included the Standby Gas Treatment System, Control Room High Efficiency Air Filtration System, Reactor Building Closed Cooling Water System, Salt Service Water System, High Pressure Coolant Injection System, Core Spray System and Residual Heat Removal System.

Failure and Malfunction Reports 90-64, 90-65 and 90-66 were written to document several aspects of the event. The NRC Operations Center was notified on March 20, 1990 at 1932 hours.

CAUSE

The cause of the failure of circuit breaker 52-202 to open as designed was the misalignment of the breaker's latch prop that was due to the absence of a retainer ring and shim. The retainer ring and shim is an integral part of the latch prop mechanism and is necessary to maintain the alignment of the latch prop. The absence of the retainer ring allowed the latch prop to become misaligned and prevented the breaker from opening. The reason the retainer ring and shim were missing is believed to be the root cause. Three possible reasons existed for these missing components: the components were not installed during a previous breaker overhaul; the components were installed improperly; or the retaining ring failed in service. A search in the breaker cubicle did not reveal the missing retainer ring or shim.

The loss of SSW cooling to the RBCCW Loop 'B' heat exchanger was the result of Bus B6 becoming de-energized (due to breaker 52-202 not opening for the transfer) and the intentional de-energizing of Bus B2. The motor of SSW pump P-208C is powered from Bus B6 via MCC-B20, and the motors of pumps P-208D/E are powered by Bus B2 via MCC-B14. The motors of SSW pumps P-208A/B are powered from Bus B1 via MCC-B15.

The RBCCW Loop 'B' pumps stopped because the motors are powered from Bus B2 via MCC-B14. The system's Loop 'A' pump P-202A started automatically because of low discharge header pressure. The Loop 'A' pumps are powered from Bus B1 via MCC-B15.

The actuation of the PCIS and RBIS occurred because the 120 VAC coils of the normally energized logic relays became de-energized. The coils of these relays, located in Panel C-902, are powered from Bus B2 via MCC-B18.

The inboard RHR/SDC suction piping isolation valve MO-1001-50 remained in the open position because its operator motor is powered from Bus B6 via MCC-B20. The outboard isolation valve MO-1001-47 closed automatically because its operator motor is powered by 250 VDC via MCC-D9.

CORRECTIVE ACTION

Circuit breaker 52-202 was sent to the manufacturer for inspection, testing, repair and overhaul. The latch prop was aligned and fastened, and the trip coil was replaced. The breaker was re-installed and the jumper for breakers 52-102/52-202 was removed on April 11, 1990. The other B & B6 transfer breakers (52-102, 52-601, 52-602) were overhauled and tested onsite by manufacturer personnel.

The other 480 VAC load center circuit breakers, 16 safety-related and 36 nonsafety-related, were inspected and tested onsite by manufacturer and utility personnel. The inspections and tests consisted of a work plan, in process control sheets (IPCS) and a procedure for the particular type of circuit breaker. The procedures were BECo reviewed and approved versions of the applicable General Electric procedures. The work plan and IPCS for each of the circuit breakers supplemented the applicable procedure regarding the specific component location and type of fastener (e.g., retainer ring, washer, nut).

The inspections, overhauls, and testing of the 480 VAC load center circuit breakers were completed on April 12, 1990. The results were summarized in a corrective action program document (PCAQ 90-186). The inspections, overhaul, and testing of the circuit breakers did not reveal a missing retainer ring on the prop mechanism of the other circuit breakers.

PREVENTIVE ACTION TO PRECLUDE RECURRENCE:

The actions taken include:

- Procedure 3.M.3-2 (currently Rev. 10), "Temporary 480V Load Center Breaker Trip Calibration", was revised. The revision was made as part of the revision to Procedure 3.M.3-6.

- Procedure 3.M.3-6 (currently Rev. 10), "480V Load Center Breaker Preventive Maintenance", was revised. The revision included the use of plastic to encase a breaker during transport and an inspection of the cubicle for any loose parts.

- Procedure 3.M.3-6.1 (currently Rev. 1), "Recirc MG Set Field Breaker Preventive Maintenance", was issued. The procedure includes the use of plastic to encase a breaker during transport and an inspection of the cubicle for loose parts.

- Procedure 3.M.3-6.4 (currently Rev. 0), "480V Load Center Preventive Maintenance", was issued. The procedure includes an inspection of the bus and ground connections that are accessible for loose hardware and an inspection of wiring and cable connections.

The actions planned include:

- Procedure 3.M.3-5 (currently Rev. 11), "Inspection/Overhaul of 4.16 KV Breakers, Breaker Cubicles and Potential Transformer Compartments", is being reviewed for improvement.

- Procedure 3.M.3-6 will be revised to include a visual inspection of a breaker for loose parts prior to installation. Procedure 3.M.3-6.1 will be reviewed for similar improvement.

SAFETY CONSEQUENCES

The de-energizing of 480 VAC Bus B6 posed no threat to the public health and safety.

The Core Standby Cooling Systems (CSCS) consist of the High Pressure Coolant Injection (HPCI) System, Automatic Depressurization System (ADS), Core Spray System, and the RHR System/LPCI mode. The HPCI System provides high pressure core cooling. The Core Spray System (Trains 'A' and 'B') and the RHR/LPCI mode are each capable of independently providing low pressure core cooling if necessary. In the event low pressure core cooling was necessary and Bus B6 was or were to become de-engergized, the operability of the RHR/LPCI valves, powered by 480 VAC power from Bus B6, would be affected. However, the Core Spray System would be available to provide core cooling by each of the system's two 100 percent capacity Loops ('A' and 'B'). The Core Spray pumps 'A' and 'B' are powered by safety-related 4160 VAC Bus A5 and A6, respectively. The Core Spray Loop 'A' suction and injection valves are powered from 480 VAC Bus 1 via MCC-B17. The Core Spray Loop 'B' valves are powered from Bus B2 via MCC-B18. The Core Spray channel 'A' circuitry is powered from 125 VDC Control Bus 'A' via Distribution Panel 'A' (Bus D6). The Core Spray channel 'B' circuitry is powered from Control Bus 'B' via Distribution Panel 'B' (Bus D5). This design ensures a failure of one 125 VDC power supply would not affect the other power supply and, therefore, the failure would not cause the failure of both Core Spray Loops. Because no loads associated with Core Spray are connected to Bus B6 or to the 125 VDC Distribution Panel 'C' (Bus D6), a loss of power on Bus B6 or Bus D6 would not cause a failure of either Core Spray Loop.

Safety-related Bus B2 was intentionally de-energized because of the concern of a fire (smoke from 52-202 trip coil) in Bus B2 that is located in the 'B' Switchgear Room. This room is equipped with photoelectric and ionization type smoke detectors and fire suppression devices.

Overload protection is provided on both of the series connected Bus B6 tie breakers 52-102 and 52-601 (52-202 and 52-602). Thus, a fault on Bus B1 would not cause the loss of Bus B2 or B6, or a fault on Bus B2 would not cause the loss of Bus B1 or B6. A loss of Bus B6 would not cause the loss of Bus B1 or B2.

The RHR/SDC mode of operation has a power generation design basis only. The SDC mode of operation functions to reduce the RV water temperature for refueling or servicing activities. Bus B2 was de-energized when the RV water temperature was 98 degrees Fahrenheit and resulted in an interruption in the SDC mode operation for approximately 37 minutes. During that period, the RV water temperature increased approximately five (5) degrees Fahrenheit.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) because portions of the PCIS and RBIS were actuated. These actuations, although an expected design response to the intentional de-energizing of Bus B2, were not a preplanned part of the activity (procedure 3.M.3-35) being performed.

This report is also submitted in accordance with 10 CFR 50.73(a)(2)(vii)(D) because the normally closed RHR/LPCI Loops 'A' and 'B' injection valves (MO-1001-29A/B), powered from Bus B6 via MCC-B20, would not have opened and because the normally open Recirculation System Loops 'A' and 'B' suction and discharge valves, powered from Bus B6 via MCC-B20, would not have closed for the RHR/LPCI function. For this event, the operability of the RHR/LPCI mode was not required.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports (LERs). The review focused on LERs that involved an instance of Bus B6 becoming similarly de-energized. The review identified related events reported in LERs 50-293/87-005-00 and 91-019-00.

For LER 87-005-00, Bus B6 became de-energized while in cold shutdown on March 31, 1987 at 0845 hours due to a loss of preferred offsite power (345 KV) during a storm. At the time of the event, Bus B6 was energized from Bus B1 and breaker 52-202 was not installed in its cubicle because it was being overhauled. The EDG 'A' was in standby service and EDG 'B' had been removed from service for planned maintenance. The 345 KV preferred offsite power sources, transmission lines 342 and 355, were energized. The mechanical disconnects for the 345 KV switchyard air circuit breaker ACB-102 were in the OPEN position because ACB-102 had been removed from service for maintenance. The switchyard air circuit breakers ACB-103, and ACB-104, and ACB-105 were closed and in service. The loss of preferred offsite power resulted in the automatic opening of ACBs 103 and 104 and a loss of voltage to the 4160 VAC Buses, including A5 and A6, and the 480 VAC Buses including B1, B2, and B6. The EDG 'A' started automatically and re-energized Bus A5 and related electrical system as designed approximately 10 seconds later. Meanwhile, the Bus B6 transfer control circuitry, sensing a loss of voltage on Bus B1 for greater than one second, caused breakers 52-102 and 52-601 to open automatically. Breaker 52-601 reclosed automatically as a result of Bus B1 becoming re-energized. Concurrently, Bus A6 (and Bus B2) remained de-energized because EDG 'B' was not available for service. Bus B6 remained de-energized and breaker 52-102 did not reclose automatically because a jumper had not been installed in the control circuit when breaker 52-202 was removed from its cubicle for maintenance (overhaul). After a jumper was installed, breaker 52-102 automatically closed and, with breaker 52-601 in the CLOSED position, Bus B6 was re-energized at 1027 hours. The cause of the loss of preferred offsite power was a transmission line 342 fault that was due to the storm. The cause of breaker 52-102 not reclosing was that a detailed review of the control circuitry was not performed while preplanning the removal of breaker 52-202 for maintenance.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Pilgrim Nuclear Power Station	0 5 0 0 0 2 9 3	9 0 —	0 0 5 —	0 1	0 9 OF 0 9

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

For LER 91-019-00, Bus B6 became de-energized while in cold shutdown on May 25, 1991 at 0215 hours because breaker 52-602 did not close automatically as designed during a planned bus transfer. Circuit breaker 52-602 was manufactured by the General Electric Company, type AK-2A-50 modified with a Micro-Versa trip unit, serial number 9224A1126-310-AE-2. The transfer was being conducted in accordance with step 4 of procedure 3.M.3-35 (Rev. 12) Attachment 23, "Automatic Dead Bus Transfer From B1 to B2 Supplying B6-By Pulling B1 PT Fuses". For the step, the secondary fuses of the potential transformers for Bus B1 were removed from their installed locations. The removal causes the control circuitry to sense a loss of voltage on safety-related Bus B1. The removal of the fuses should have resulted in the automatic opening of breakers 52-102 and 52-601, and the automatic closing of breakers 52-202 and 52-602. Breaker 52-601 opened automatically but breaker 52-602 did not close. Meanwhile, breaker 52-102 opened automatically and its related transfer breaker 52-202 closed automatically as designed. This configuration resulted in Bus B6 becoming de-energized because breakers 52-102 and 52-601 from Bus B1 to Bus B6 were open, and breaker 52-602 from Bus B2 to Bus B6 was open. The cause of breaker 52-602 not closing was interference between the breaker trip latch roller assembly and clevis pin. The interference was similar to that documented in Service Advice Letter (SAL) 306.0, issued on May 1, 1991. A 10 CFR Part 21 report regarding the breaker was submitted to the NRC on July 26, 1991. Corrective action taken included breaker repair by General Electric personnel. The repair included machining the trip latch roller assembly and clevis pin to establish the clearance described in SAL 306.0.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS	CODES
Bus	BU
Circuit Breaker (52-202), AC	52
Pump	P
Valve, Isolation	JSV

SYSTEMS

Closed/Component Cooling Water System (RBCCW)	CC
Containment Isolation Control System (PCIS/RBIS)	JM
Engineered Safety Features Actuation System (PCIS, RBIS)	JE
Essential Service Water System (SSW)	BI
Medium Voltage Power System - Class 1E	EB
Reactor Building	NG
Residual Heat Removal System	BO
Ultimate Heat Sink System (SSW)	BS