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VPNPD-94-106  
NRC-94-073

October 6, 1994

Document Control Desk  
U.S. NUCLEAR REGULATORY COMMISSION  
Mail Station P1-137  
Washington, DC 20555

Gentlemen:

DOCKETS 50-266 AND 50-301  
LICENSEE EVENT REPORT 94-009-00  
INADVERTENT EMERGENCY DIESEL START AND  
LOSS OF A STATION BATTERY CHARGER  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Enclosed is Licensee Event Report 94-009-00 for Point Beach Nuclear Plant, Units 1 and 2. This report is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specifications" and 10 CFR 50.73(a)(2)(iv), "Any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the reactor protection system (RPS)." This report describes a situation that caused a blown fuse in the metering and relaying circuit for the 2A-06 4160 Volt emergency bus.

Please contact us if there are any questions.

Sincerely,

Bob Link  
Vice President  
Nuclear Power

CAC/jg

120018

Enclosure

cc: NRC Regional Administrator, Region III  
NRC Resident Inspector

JE22

## LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH  
THIS INFORMATION COLLECTION REQUEST: 50.0 HRS.  
FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO  
THE INFORMATION AND RECORDS MANAGEMENT BRANCH  
(MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION,  
WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK  
REDUCTION PROJECT (3150-0104), OFFICE OF  
MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) POINT BEACH NUCLEAR PLANT, UNIT 1	DOCKET NUMBER (2) 05000266	PAGE (3) 1 OF 6
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TITLE (4) INADVERTENT EMERGENCY DIESEL START AND LOSS OF A STATION BATTERY CHARGER
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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
09	09	94	94	-- 009 --	00	10	06	94	PBNP UNIT 2	05000301
									FACILITY NAME	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)					X	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 CURTIS A. CASTELL, SENIOR ENGINEER-LICENSING	TELEPHONE NUMBER (Include Area Code) 414-221-2019
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## 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
A	EF	FU	X999	N					

## SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On September 9, 1994 at about 1114 hours, with both units at full power, a fuse in the Unit 2, B train, 4160V emergency bus 2A-06 metering and relaying circuit blew during modifications to Control Board C-02 for the installation of additional emergency diesel generators. The blown fuse caused a 2A-06 undervoltage signal to be generated. The undervoltage signal caused the normal power supply breaker for 2A-06 to open and deenergize the bus. Emergency Diesel Generator G-02 immediately started and reenergized the 2A-06 bus. One of the four station battery chargers (D-08) tripped off, as expected, during the momentary loss of power to the Unit 2, B train. D-08 was restored at 1129 hours. The DC buses for PBNP are shared by both units; therefore, this event affected both units. The normal configuration of the other equipment that was affected was re-established. The blown fuse was replaced at about 1400 hours and the normal configuration of the electrical distribution system was re-established at 1429 hours. The blown fuse was the result of an inadequate procedure because the procedure did not contain the proper equipment isolation for the work being performed.

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 INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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POINT BEACH NUCLEAR PLANT	05000266	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 6
		94	-- 009 --	00	

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

## EVENT DESCRIPTION

On September 9, 1994, at about 1114 hours, with both units at full power, a fuse in the Unit 2, B train, 4160V emergency bus 2A-06 metering and relaying circuit blew during modifications to Control Board C-02 for the installation of additional emergency diesel generators. The blown fuse resulted in a 2A-06 undervoltage signal because the undervoltage protection relays are in that circuit. The undervoltage signal caused the normal power supply breaker for 2A-06 to open and deenergize the bus. Emergency Diesel Generator G-02 immediately started and reenergized the 2A-06 bus.

Other equipment affected by momentary loss of voltage on the 2A-06 bus included:

- Battery Charger D-08 tripped.
- 2A-06 synchronization circuitry was lost due to the blown fuse and as a consequence of isolation of the circuitry for performance of the modification.
- Letdown isolation occurred due to the loss of power to Letdown Isolation Valve RC-00427.
- Non-safety related Motor Control Center B-21 Feeder Breaker 2B52-28C tripped due to the undervoltage.
- The B train service water pumps were sequenced on due to the undervoltage and restoration of voltage by the emergency diesel generator.

Normal configuration of this equipment was re-established. The blown fuse was replaced at about 1400 hours and the normal configuration of the electrical distribution system was re-established at 1429 hours.

Technical Specification 15.3.7.A.1.h states, "Four battery chargers are operable with one charger carrying the DC loads on each main DC distribution bus: D01, D02, D03, and D04." The battery charger D-08 is the normal battery charger for D02. Technical Specification 15.3.7.A.1.h does not provide a limiting condition of operation (LCO) action statement for operation with less than 4 battery chargers. Therefore, Technical Specification 15.3.0, 3-hour limiting condition for operation was entered as required for this situation. Battery Charger D-08 was restored at 1129 hours and the Technical Specification 15.3.0, 3-hour limiting condition for operation, was exited. The DC buses for PBNP are shared by both units; therefore, this LCO was applicable to both units.

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

This event resulted from work performed in the control room in Control Board C-02, in accordance with an installation work plan procedure, IWP 91-116\*V1, "New EDG Project Pre-U2R20 Control Board Work." As part of this procedure, the 2A52-72, 2A-05/2A-06 bus tie breaker, control switch, and the associated synchronization switch, SS/2A52-72, were being removed.

The synchronization switch was removed and the associated wires were cut. The maintenance electricians noticed that one of the cut wires was connected to another synchronization switch that was not part of the isolation boundary. The electricians notified the control operator that several synchronization switches may be disabled. The responsible engineer determined that synchronization switches for the following breakers were disabled:

- A52-26 2A-01 Supply Breaker
- A52-44 2A-01 to 2A-03 Bus Tie Breaker
- A52-45 2A-03 Supply Breaker
- A52-66 Emergency Diesel (G-02) Output Breaker to 1A-06
- A52-67 Emergency Diesel (G-02) Output Breaker to 2A-06
- A52-76 2A03 to 2A-05 Supply Breaker

The responsible engineer initiated a procedure change to install a wire that would restore operability to the synchronization switches that had been unintentionally disabled. After the wire was installed, the synchronization switches were checked again. It was determined that the synchronization switch for the A52-67 breaker was still disabled.

Another procedure change was initiated by the responsible engineer to install two additional wires. During the preparation of the second wire which was not expected to be live, the wire inadvertently contacted a metal part of the control board, which caused a short circuit to ground in the 2A-06 metering and relaying circuitry. The short circuit caused a blown fuse in the metering and relaying circuitry, which subsequently caused the loss of voltage relays to actuate.

**CAUSES**

A root cause of this event was an inadequate procedure. The procedure was inadequate because the installation work plan did not include proper isolation of the circuits being worked on or appropriate precautions for working on equipment that was not isolated. In addition, the isolations that were performed disabled more equipment than expected.



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

The cause of the inadequate procedure is considered to be inadequate preparation and technical review of the procedure.

**CORRECTIVE ACTIONS**

The immediate corrective actions included replacement of the blown fuse and restoration of the electrical distribution system to normal. Additionally, the procedure was reviewed and the appropriate isolations for the modification were established.

A root cause evaluation of this event is being performed to determine if any longer-term programmatic corrective actions are necessary.

**COMPONENT AND SYSTEM DESCRIPTION**

The 2A-06 emergency bus provides power for Train B safety-related and some non-safety-related equipment. The undervoltage protection and metering circuitry for the 2A-06 bus is used to monitor voltage on the 2A-06 bus and provide initiation of the undervoltage protection which includes automatic disconnection of the bus from off-site power and restoration of power by the emergency diesel generator. The undervoltage protection and metering circuitry is powered from potential transformers (PT) on the 2A-06 bus. The secondaries of these PT circuits are protected by 6 amp fuses, which is one of fuses that blew.

Various loads automatically trip on undervoltage. The Unit 2, B train loads that tripped during this event were: Station Battery Charger D-08 and Motor Control Center B-21. Some safety-related equipment is automatically started by sequencing circuitry following restoration of power to the bus. Service Water Pumps P-032C, P-032D, and P-032E all started automatically by the sequencing circuitry. The loss of voltage to the Letdown Isolation Valve 2RC-00427 caused reactor coolant letdown isolation.

The IEEE Standard 803A-1983 component identifiers for this report are:

Bus	BU
Voltmeter	EI
Undervoltage Relay	27
Fuse	FU

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

**REPORTABILITY**

This Licensee Event Report is provided pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specifications" and 10 CFR 50.73(a)(2)(iv), "Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)." A 4-hour notification to the NRC was made at 1230 hours in accordance with 10 CFR 50.72(b)(2)(ii), "Any event or condition that results in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."

**SAFETY ASSESSMENT**

The undervoltage signal that was generated by the blown fuse caused the actuation of the undervoltage protection for 2A-06. The automatic disconnection from the normal power source, the restoration of power to the bus by Emergency Diesel Generator G-02, and sequencing of the service water pumps functioned properly.

The equipment that was affected by the momentary interruption of power to the Unit 2 emergency bus "B" train was restored in a short time with no adverse safety effects.

The D-06 station battery is normally continuously charged by the D-08 station battery charger. The loss of the D-08 battery charger caused the D-06 station battery to begin discharging. The station batteries are sized to carry the maximum expected DC loads for one hour. The battery charger for D-06 was restored in 15 minutes. Tables 8.2-1 and 8.2-2 of the PBNP FSAR show that the battery charger is restored after the injection phase of the Loss of Coolant Accident which is approximately one half-hour. Therefore, the DC battery system remained operable during this event.

**SIMILAR OCCURRENCES:**

The following Licensee Event Reports describe the inadvertent actuation of an Engineered Safety Feature:

Unit 1 or common

LER 91-006	Inadvertent Start of Emergency Diesel Generator
LER 92-003	Inadvertent Start of Emergency Diesel Generator Due to Personnel Error

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

LER 93-007      Inadvertent Emergency Diesel Start and Loss of a Station  
Battery Charger  
Unit 2

LER 84-005      Inadvertent Start of Emergency Diesel Generator  
LER 84-006      Inadvertent Start of Emergency Diesel Generator  
LER 84-007      Inadvertent Start of Emergency Diesel Generator  
IER 92-007      Inadvertent ESF Actuation as a Result of Improper  
Surveillance Testing