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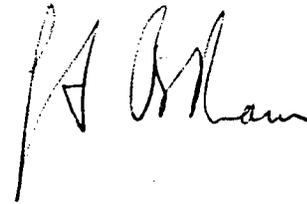
April 23, 1993

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 93-006-00

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

The attached Licensee Event Report LER 93-006-00 is hereby
submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,



Attachment

cc: Mr. Thomas T. Martin
Regional Administrator - Region I
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. Francis J. Williams, Jr., Project Manager
Project Directorate I-1
Division of Reactor Projects I/II
US Nuclear Regulatory Commission
Mail Stop 14B-2
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Senior Resident Inspector
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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) <u>Indian Point Unit No. 2</u>	DOCKET NUMBER (2) <u>0 5 0 0 0 2 4 7 1</u>	PAGE (3) <u>1 OF 0 4</u>
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TITLE (4)
Emergency Diesel Generator Auto Start

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)
<u>0 3</u>	<u>2 4</u>	<u>9 3</u>	<u>9 3</u>	<u>0 0 6</u>	<u>0 0</u>	<u>0 4</u>	<u>2 3</u>	<u>9 3</u>		<u>0 5 0 0 0</u>

OPERATING MODE (9) <u>N</u>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)				
POWER LEVEL (10) <u>0 1 0 1 0</u>	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.38(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)	
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.38(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)		
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)		
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)		
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME <u>James Maylath, Senior Engineer</u>	TELEPHONE NUMBER AREA CODE: <u>9 1 1 4</u> NUMBER: <u>5 1 2 6 1 5 3 1 5 1 6</u>
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC. TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC. TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15) MONTH: <u> </u> DAY: <u> </u> YEAR: <u> </u>
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (18)

On March 24, 1993, during a refueling outage with the reactor at cold shutdown, two emergency diesel generators automatically started. While removing a 480V bus from service for maintenance, the blackout undervoltage relays associated with the bus initiated an undervoltage signal which resulted in the start of the two diesels. The third diesel did not automatically start because it was tagged out for maintenance. All offsite power remained available during the event. A personnel error resulted in an incomplete disablement of all the undervoltage relays associated with the 480V bus prior to a planned evolution. When the 480V bus was subsequently de-energized, an undervoltage signal resulted in the start of the two diesels.

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-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.

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		YEAR 9 3	SEQUENTIAL NUMBER 0 0 6	REVISION NUMBER 0 0	0 2	OF 0 4

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

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Emergency Diesel Generator Auto-Start

EVENT DATE:

March 24, 1993

REPORT DUE DATE:

April 23, 1993

REFERENCES:

Significant Occurrence Report (SOR) 93-140

PAST SIMILAR OCCURRENCE:

- February 28, 1991; LER 91-005-00
- March 28, 1991; LER 91-007-00
- June 22, 1991; LER 91-010-00
- February 8, 1993; LER 93-002-00
- March 4, 1993; LER 93-004-00

DESCRIPTION OF OCCURRENCE:

On March 24, 1993, at 1140 hours, with the unit in cold shutdown for refueling, two Emergency Diesel Generators (EDGs) automatically started. The EDG startup initiated when 480V Bus 5A was taken out of service for maintenance with the blackout undervoltage relays improperly remaining in service. These relays initiated the undervoltage signal which started EDGs 22 and 23. EDG 21 had been tagged out of service for previously planned maintenance and, therefore, did not start. Because the outage on 480V Bus 5A was planned, no unexpected loss of power to equipment occurred, and residual heat removal and spent fuel pool cooling were maintained. There were no electrical faults or equipment failures and all offsite power remained available during the course of this event.

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Indian Point Unit No. 2	0 5 0 0 0 2 4 7 9 3	-	0 0 6	-	0 0	0 3 OF 0 4

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

ANALYSIS OF OCCURRENCE:

This report is being made because actuation of an Engineered Safety Feature (ESF) System occurred. Any manual or automatic actuation of an ESF is reportable under 10 CFR 50.73(a)(2)(iv). There were no adverse safety implications as a result of this event. All ESFs performed as expected. This event did not affect residual heat removal and spent fuel pool cooling and did not cause any personnel injury or damage to equipment.

CAUSE OF OCCURRENCE:

When 480V Bus 5A was removed from service, the blackout undervoltage relays should have been disabled to prevent EDGs 22 and 23 from automatically starting. Station procedures provided for a jumper to be installed to prevent the EDGs from automatically starting. Instrument and Control (I&C) personnel were instructed to install the jumper to prevent initiation of the undervoltage signal.

The plant is designed with four 480V buses. Two buses (2A and 3A) are normally supplied by the unit during plant operation, while the other two (5A and 6A) are normally supplied by offsite power. Buses 2A and 3A each have two undervoltage relays which are used to detect de-energization of the bus (set at approximately 40% of rated voltage), two undervoltage relays which are used to detect degraded voltage conditions (set at approximately 85% of rated voltage) and one undervoltage relay which provides an alarm (set at approximately 90% of rated voltage), for a total of five undervoltage relays on each bus. When bus de-energization is detected by the associated two relays, the bus loads are stripped, and an EDG start signal is initiated. Buses 5A and 6A each have the five undervoltage relays similar to Buses 2A and 3A, plus an additional three undervoltage relays on each bus which are used to detect de-energization of the bus (potentially a loss of offsite power since buses 5A and 6A are normally supplied from offsite power) and are referred to as the blackout undervoltage relays (also set at approximately 40% rated voltage). Therefore, buses 5A and 6A each have a total of eight undervoltage relays. For buses 5A and 6A, only the blackout undervoltage relays initiate an EDG start, and the other two undervoltage relays which are used to detect bus de-energization are only used to strip bus loads and as permissives (voltage available on bus signal) for sequencing loads back on the buses.

During installation of the jumper to remove bus 5A from service, only two undervoltage relays were disabled (instead of five).

Since I&C Personnel knew that all loads were already stripped from the bus in preparation for de-energization, they incorrectly believed that the blackout relays would have no effect when the bus was de-energized. When the bus was de-energized with the blackout relays enabled the EDG's started as designed.

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		9 3	— 0 0 6	— 0 0	0 4	OF	0 4

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

CORRECTIVE ACTION:

EDGs 22 and 23 were loaded and operated for 30 minutes as required by procedure, before being secured. I&C personnel then proceeded to disable all of the proper relays associated with the removal of Bus 5A from service. When this was done EDGs 22 and 23 were returned to automatic mode.

The I&C Manager reviewed this event with the personnel responsible for implementing the jumper to emphasize the importance of thorough drawing research in preparing jumpers.

The following day the Operations procedures for taking a 480V bus out of service were enhanced to detail the specific relays associated with the bus which must be disabled by the jumper. Appropriate training on the procedure changes will be provided by September 30, 1993.