

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) Indian Point 3		DOCKET NUMBER (2) 05000286	PAGE (3) 1 OF 7
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TITLE (4) Automatic Actuation of Emergency Diesel Generators Following a Loss of Offsite Power Due to a Personnel Error that Inadvertently Grounded the Feed to the Station Auxiliary Transformer

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
06	16	97	97	-- 008 --	00	07	16	97	FACILITY NAME	DOCKET NUMBER 05000
									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) 00	20.402(b)			20.405(c)			<input checked="" type="checkbox"/> 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)			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 Marc Pearson, Operations Manager	TELEPHONE NUMBER (Include Area Code) (914) 736-8201
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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

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On June 16, 1997, at approximately 1020 hours, with the plant shutdown for a refueling outage, Indian Point 3 lost offsite power from 138KV feeder 33332 that was supplying plant loads from the Station Auxiliary Transformer (SAT). The loss of power initiated an automatic start of Emergency Diesel Generators (EDG) 32 and 33. EDG 31 was out of service for maintenance. EDG 32 and EDG 33 automatically started and closed on their safeguards 480 volt buses 6A and 5A. The assigned loads for bus 6A would not automatically sequence or allow remote manual loading due to a blown fuse in the undervoltage protection circuitry. Reactor core cooling was being provided by a Residual Heat Removal (RHR) pump until power was lost. Spent fuel pool cooling was restored at approximately 1055 hours after its power supply was reset. Offsite power was available from one of two 13.8Kv feeders. Power was restored to 6.9Kv bus 6 from the 13.8Kv feeder system at approximately 1058 hours. RHR pump 31 started to restore forced core cooling at approximately 1103 hours. Restoration of the 138 Kv system to buses 5A and 6A was completed at 1344 hours. Offsite power was lost for approximately 43 minutes. Loss of feeder 33332 was a result of efforts in the Buchanan substation to apply a ground for scheduled maintenance. A Consolidated Edison Company substation operator mistakenly applied the wrong ground switch, shorting the 138Kv feed that supplies power to the SAT. The cause of the power loss was personnel error due to a failure to follow an approved procedure and perform self checking. Corrective actions included counseling of yard operators on procedure adherence/self checking, assessing the adequacy of coordinating offsite switching activities, and implementing an action plan for correcting deficiencies discovered during event recovery. There was no effect on public health and safety.

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

Note: The Energy Industry Identification System Codes are identified within the brackets { }

DESCRIPTION OF EVENT

On June 16, 1997, at approximately 1020 hours, with the plant in a refueling condition and no core {AC} alterations in progress, Indian Point 3 lost offsite power from the Buchanan substation 138 Kv feeder (FDR) to the Station Auxiliary Transformer (SAT) (XFMR). Loss of offsite power was a result of efforts at the substation to apply a ground for scheduled maintenance activities. A Consolidated Edison Company yard operator mistakenly applied the wrong ground, shorting a 138Kv feed that supplies power to the SAT. The ground initiated protective relay actuation causing 138Kv breaker BT5-6, and the 6.9Kv breakers ST-5, ST-6 to open on fault. The resulting undervoltage condition on the 480 volt buses (BU) (ED) initiated a non-safety injection blackout logic sequence starting Emergency Diesel Generators (EDG) (EK) 32, and 33. At approximately 1047 hours, after fifteen minutes elapsed without recovery of additional offsite power supplies, the Shift Manager (SM) declared a Notification of an Unusual Event (NUE) based on Emergency Plan Emergency Action Level 6.1.1. The NRC was notified of the NUE at approximately 1100 hours (See ENS Report No. 32490).

At the time of the event, the reactor vessel head was removed and the Reactor Coolant System (RCS) average temperature was approximately 125 degrees F. Station power was being supplied by the Buchanan substation through 138 Kv feeder 33332 to the SAT through the 6.9 Kv buses to 480 volt safeguards buses 5A, 6A, and 2A/3A. EDG 31 was out of service and Instrument Bus 33 was on maintenance bypass. Reactor core cooling was being provided by the Residual Heat Removal (RHR) cooling system (RHR pump 32) and the spent fuel pool was being cooled by the spent fuel pool cooling system. Also, the reactor cavity was filled providing additional reactor core cooling. The reactor core had 119 fuel assemblies off-loaded to the spent fuel pool leaving 74 fuel assemblies in the core.

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At approximately 1020 hours, Control Room (CR) operators received indication of a voltage transient on the 138Kv system. CR indication showed that the assigned loads for 480 volt bus 6A failed to sequence onto the bus. Operators noted that bus 6A voltage indicated only 311 volts, but using backup voltage indication, operators found that the EDG voltage output indicated 480 voltage as expected. Operators took the following actions in response to the loss of offsite power:

- At approximately 1026 hours, operators attempted to power and start the 32 RHR pump but as per design the supply breaker would not close onto bus 6A due to a sensed undervoltage condition by the undervoltage protection circuitry.
- At approximately 1036 hours, operator investigation of bus 6A problems identified a blown Potential Transformer (PT) fuse in the undervoltage protection circuitry. Operations acquired the proper fuse from the warehouse.
- At approximately 1055 hours, spent fuel pool pump 32 was loaded onto bus 5A via Motor Control Center (MCC) 39 and started. Forced spent fuel pool cooling was interrupted for approximately 35 minutes and resulted in a temperature rise of approximately one (1) degree F.
- At approximately 1058 hours, operators energized 6.9Kv bus 6 from the available 13.8Kv feeder by closing breaker GT-36.
- At approximately 1100 hours, the NRC was notified of the NUE declared at 1047 hours and 6.9Kv bus 3 was energized from the 13.8Kv feeder. The need to report a NUE was questioned because one of the 13.8Kv feeders identified in the EAL was available.
- At approximately 1102 hours, 480 volt buses 2A/3A were energized.
- At approximately 1103 hours, forced core cooling was re-established when redundant RHR pump 31 was manually loaded onto Bus 3A and started. Forced core cooling was interrupted for approximately 43 minutes. Total RCS heatup was approximately 2.8 degrees F.
- At approximately 1146 hours, breaker BT5-6 was closed restoring 138Kv power to the SAT.

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- At approximately 1156 hours, replaced PT fuses for bus 6A.
- At approximately 1211 hours, the NUE was terminated.
- At approximately 1344 hours, completed restoration of normal 138Kv power feed to buses 5A and 6A through their associated 6.9Kv buses.

In response to the event, the plant functioned as expected except for the following:

- Operators did not receive normal voltage indication on bus 6A. Operators observed a reading of 311 volts AC for bus 6A but a reading of 480 volts AC on the normal analog voltage meter for EDG output.
- During event recovery two procedure steps were inappropriately performed by operators. The procedural weaknesses had no significant impact on the plant or event outcome.

Investigations were conducted for the loss of offsite power and bus 6A indicated undervoltage. The results of these investigations are discussed as follows:

Loss Offsite Power

The 138Kv feeder (33332) to the SAT opened as a result of grounding by a substation operator of 138 Kv feeder 95331 in the Buchanan substation. NYPA requested Consolidated Edison Company to apply a ground to the 138Kv system for scheduled maintenance. A Consolidated Edison Company substation operator was directed to close ground switch number 9 on breaker BT2-6 whose operation was controlled by a combination lock. The yard operator made unsuccessful attempts at opening the lock after verifying the combination. The District Operator (DO) verified the lock serial number and combination for the lock on ground switch number 9 in a recorded telephone conversation with the substation operator. The substation operator returned to what he thought was ground switch 9 and cut the lock in violation of established procedure. The substation operator actually returned to ground switch 11 and cut its lock and subsequently applied the wrong ground switch.

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CAUSE OF EVENT

The cause of the loss of power to the Station Auxiliary Transformer was personnel error. A Consolidated Edison Company substation operator failed to follow approved procedures and failed to perform adequate self checking to ensure the correct ground switch was being applied.

CORRECTIVE ACTIONS

The following corrective actions have been or will be performed to address the causes identified for this event and prevent recurrence:

- Consolidated Edison Company counseled their yard operators on procedure adherence and self checking.
- A task force was formed involving Consolidated Edison Company and the NYPA to assess the adequacy of the coordination of offsite high voltage switching activities.

An Engineering Action plan was developed to provide corrective actions for bus 6A deficiencies discussed in this report.

The appropriate PT fuses for the 480 volt buses will be provided in the in-plant fuse storage locker.

The Emergency Plan EAL 6.1.1 was revised to list each offsite feeder as a condition for satisfying entry into the EAL.

Procedures ONOP-RHR-1 and ONOP-RHR-2 will be revised to reference the use of procedure SOP-EL-5, "Operation of On-Site Power Sources." Procedure ONOP-EL-4 will be revised to enhance the format for resetting of 138Kv protection relays. Revision of these procedures is scheduled for September 1, 1997.

ANALYSIS OF EVENT

The event is reportable under 10 CFR 50.73 (a)(2)(iv). The licensee shall report any event or condition that resulted in a manual or automatic actuation of an Engineered Safety Feature (ESF). This event meets the reporting criteria because the loss of power to the SAT initiated a non-safety injection blackout logic signal resulting in an automatic actuation to start EDG 32, and EDG 33. Both EDGs closed on their assigned safety bus.

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A Notification of an Unusual Event (NUE) was declared and reported based on meeting the conditions listed in the Emergency Plan's Emergency Action Level (EAL) 6.1.1 (i.e., unavailability for greater than fifteen minutes of the Unit Auxiliary Transformer (UAT), Station Auxiliary Transformer (SAT), and 13.8Kv feeders 13W92 and 13W93). However, 13.8Kv feeder 13W93 was available but the report was provided because of the wording in the Emergency Plan. Normal offsite power from a 138Kv feeder was lost at 1020 hours on June 16, 1997, until operators energized bus 3 at 1100 hours, and bus 2A/3A at approximately 1102 hours from the available 13.8Kv feeder.

A review of Licensee Event Reports (LER) over the last two years that involved ESF actuations due to personnel error identified the following: LER 97-001, 96-007, 96-003.

SAFETY SIGNIFICANCE

This event had no affect on the health and safety of the public. The plant was in a refueling condition with 119 of 193 fuel assemblies off-loaded into the spent fuel pool. No core alterations were in progress. The decay heat load in the reactor core was reduced with a majority of the fuel assemblies removed thereby increasing the time available for response to the event. The reactor cavity was filled providing a decay heat removal capability. When the loss of offsite power occurred, two EDGs remained operable and two safeguards buses remained energized in accordance with Technical Specifications, but the auto sequence on one of the two buses was inoperable. Offsite power was still available via one of the 13.8Kv feeders with operator action and another alternate power source, the Appendix R Diesel was also available. If this event had occurred when there was a larger heat load therefore providing less time for operator action, operators could have restored forced RHR cooling by removing the DC feed for the RHR pump breaker and using a local closing feature at the breaker cubicle.

Consideration of this event under design basis conditions also does not result in an affect to the health and safety of the public. The plant was designed for a loss of offsite power (LOOP) or to mitigate the consequences of a loss of coolant accident (LOCA) considering a LOOP. During plant operation above cold shutdown, any two of three EDGs, as a backup to the normal standby AC power supply, are capable of sequentially starting and supplying the power requirements of one minimum required set of safeguards equipment. A single failure is considered in evaluating the ability to meet this design.

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The safety significance was considered for three design basis conditions: LOOP while shutdown, LOOP while operating, and LOOP and LOCA while operating.

- LOOP while shutdown - A loss of offsite power during plant shutdown is considered in the design. The Technical Specifications require that two EDGs be operable in cold shutdown and two were considered operable prior to the event. The plant retained adequate electrical power when two safeguards buses remained energized and one alternate offsite power feeder (13.8Kv) was available. Another alternate power source, the Appendix R Diesel was also available and could have been used.
- LOOP and LOCA plus LOOP while operating - If the PT fuses for bus 6A had not been replaced prior to startup, a loss of offsite power and/or a LOCA can be postulated and two operable EDG would have been required to meet design requirements. Because the Technical Specifications require three operable EDGs prior to exceeding cold shutdown and the plant can meet design with any two EDGs, the inability to load bus 6A would be bounded by single failure and there would have been adequate power available.