

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 5

TITLE (4) Automatic Actuation of an Emergency Diesel Generator Following a Loss of Normal Power Feed to a Safeguards Bus

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
6	18	97	97	-- 009 --	00	07	18	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
John Donnelly, Supervisor Electrical System Engineering

TELEPHONE NUMBER (Include Area Code)
(914) 736-8310

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)

YES (If yes, complete EXPECTED SUBMISSION DATE).

NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

On June 18, 1997, at approximately 0156 hours, with the plant in a refueling condition and no core alterations in progress, Indian Point 3 lost the normal feed to 480 volt bus 6A when its feed breaker opened. Offsite power was being supplied to 480 volt safeguard bus 6A through feed breaker 52-6A from 6.9 Kv bus 6. The undervoltage condition on bus 6A initiated an automatic start of Emergency Diesel Generator (EDG) 32. EDG 32 automatically started and re-energized bus 6A. Component Cooling Water (CCW) pump 33 and Service Water (SW) pump 36 were shed from their assigned bus 6A on undervoltage, sequenced back onto the bus and re-started by a Non-SI Blackout logic signal. The 32 CCW pump powered from a redundant 480 volt bus automatically started on low pressure. Residual Heat Removal cooling and spent fuel pool cooling remained operating during this event. Restoration of the normal power feed to bus 6A was completed at approximately 0243 hours. The specific cause could not be determined but the most likely cause was personnel error. The job supervisor was counseled, procedures controlling work were reviewed and will be enhanced with appropriate information to limit trip hazards. 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 18, 1997, at approximately 0156 hours, with the plant in a refueling condition, Indian Point 3 lost the normal power feed to 480 volt safeguards bus {BU} {ED} 6A when its feed breaker opened. The resulting undervoltage condition on 480 volt bus 6A initiated a Non-Safety Injection Blackout Logic {JE} sequence starting Emergency Diesel Generator (EDG) 32 {EK}.

At the time of the event, the reactor vessel head {AB} was removed, the Reactor Coolant System (RCS) {AB} average temperature was approximately 93 degrees F, and no core {AC} alterations were in progress. Station power was being supplied by offsite power. Offsite power energized 6.9 Kv bus 6 {EB} and 480 volt safeguards bus 6A through 480 volt feed breaker 52/6A {BKR}. The 31 EDG was out of service for maintenance and EDGs 32 and 33 were in standby. Residual Heat Removal (RHR) {BO} pump 31 was in service and the reactor cavity was filled to approximately 93 feet providing reactor core cooling. Spent Fuel Pool (SFP) forced cooling was being provided by the SFP cooling system {DA}. The 33 Component Cooling Water (CCW) {CC} pump (powered from bus 6A) was in service. The reactor core had 119 fuel assemblies off-loaded to the spent fuel pool leaving 74 fuel assemblies in the core.

At approximately 0156 hours, control room operators received indication of a loss of power to 480 volt bus 6A and start of EDG 32. Operations staff observed that the flags for both undervoltage (UV) relays (27-1, and 27-2) {27} for 480 volt bus 6A were visible. Plant equipment operated as expected. Spent fuel pool and RHR cooling were not affected since they were powered by normal offsite power from redundant 480 volt buses which was not affected during this event. Loads being powered by bus 6A were shed as designed until the bus was re-energized by EDG 32 and the loads automatically and manually sequenced back onto the bus. The 33 CCW pump and 36 Service Water (SW) {BI} pump were shed and re-started on a Non-SI Blackout Logic signal. The 32 CCW pump, powered from a redundant 480 volt bus, automatically started on low pressure. Restoration of the normal power feed to bus 6A was completed at 0243 hours. At approximately 0403 hours, operations provided a four-hour non-emergency notification (Log No. 32504) to the NRC reporting an ESF actuation.

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An investigation and troubleshooting were performed to determine the cause of the event. Prior to the event, the door for the cabinet of 480 volt switchgear 32 {SWGR} containing bus 6A was open for electrical contractors to implement a 480 volt ammeter modification. Two electrical contractors were in the area of bus 6A at the time of the event but neither electrician recalls being near the bus or touching any equipment. Prior to the event the contractor workers had marked new transducer locations inside the switchgear cubicle and draped protective material (Herculite sheet) in the back of the cubicle for bus 6A to prevent metal shavings from entering relay housings during implementation of the modification. The Herculite was touching the relays. Also, contract carpenters were erecting scaffolding above switchgear 32. Other workers were also in the area but they were not involved with tasks associated with 480 volt switchgear 32. Prior to the event workers had completed performance of non-intrusive checks and job briefings and the job supervisor had gone to the Field Support Supervisor (FSS) to obtain permission to drill holes for the transducers. At the time of the event a contractor was standing next to an open cubicle door holding it open.

Subsequent to the event, Engineering performed examinations and assessments and determined the undervoltage circuits responded correctly and initiated EDG 32 start and loading in accordance with design. The bus 6A supply breaker had preventive maintenance performed that verified the breaker was functioning correctly. Engineering examination and assessment of the switchgear cabinet door undervoltage (UV) relays (type CV-7) indicated that bumping of these relays is not a credible cause of the bus 6A trip. Further Engineering examination of the switchgear cabinet identified rear wall relays with external relay plungers that could be accidentally depressed. These relays are the UV auxiliary relays fed by the UV relays (type CV-7) and would cause the initiation of a bus 6A trip if the relay's external plunger was depressed.

CAUSE OF EVENT

The specific cause of the event could not be determined. Troubleshooting and testing did not identify any circuit or equipment deficiencies. Interviews with personnel working in the area were indeterminate as to the cause. Based on the available evidence, Engineering concluded the most probable cause was personnel error. The external plunger of an UV auxiliary relay could have been inadvertently depressed by personnel during work activities in the area of the 480V switchgear.

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Actuation of one of the 480V bus 6A undervoltage (UV) relays (e.g., 27-6A/X2) would be caused by such depressing, thereby resulting in relay contact closure in series with the shunt trip coil of circuit breaker 52/6A, the circuit breaker through which electrical power was being supplied to 480V bus 6A prior to the event. Opening of circuit breaker 52/6A would then occur.

CORRECTIVE ACTIONS

The following corrective actions were performed to address the possible cause identified for this event:

- The job supervisor associated with work that could have impacted bus 6A was counseled. The contractor workers have since left and can not be counseled.
- The procedures/standards for controlling work activities were reviewed to verify that requirements are provided to limit inadvertent impact on safety equipment. The existing procedures were determined to contain information on trip hazards but could be enhanced. Appropriate procedures will be revised to enhance their requirements for trip hazards. Procedure revisions are scheduled to be completed by September 29, 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 the normal feed to bus 6A initiated a non-safety injection blackout logic signal resulting in an automatic actuation to start EDG 32 and close on its assigned safety bus.

A review of Licensee Event Reports (LER) over the last two years that involved ESF actuations due to personnel error identified the following: LER 97-008, 96-007, 96-003.

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SAFETY SIGNIFICANCE

This event had no effect on the health and safety of the public. The emergency onsite AC power system had two operable EDGs in accordance with Technical Specifications and plant design. When the normal feed to one of four 480 volt safeguards buses was interrupted the assigned EDG automatically started and energized the bus. Assigned loads were automatically loaded onto the bus according to design. Forced core cooling and spent fuel pool cooling were not affected and continued to operate.

The plant was in a refueling condition with 119 of 193 fuel assemblies off-loaded into the spent fuel pool. With a majority of the core off-loaded the decay heat load in the reactor core was reduced thereby increasing the time available for response to the event. In addition, the reactor cavity was filled thereby providing additional decay heat removal capability.

For design basis conditions, this event is bounded by plant design. The Technical Specifications require three operable EDGs prior to exceeding cold shutdown and the plant can meet design with any two of three EDGs. The loss of the offsite feed to bus 6A would be bounded by single failure and there would have been adequate power available until offsite power was restored. 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 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.