

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) Incomplete Testing of Safety-Related Logic Circuits Fails to Fully Demonstrate Technical Specification Requirements; A Condition Prohibited by Technical Specifications

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	27	97	97	-- 011 --	01	09	24	97		05000
									FACILITY NAME	DOCKET NUMBER
										05000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

OPERATING MODE (9)	N	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	000	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)	<input checked="" type="checkbox"/> 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 Kevin Kingsley, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) 914-734-6034
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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)

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 June 27, 1997 with the plant shutdown for a refueling outage, the Independent Safety Engineering Group determined that no surveillance test verifies that the feeder breaker for Motor Control Center 210 (MCC 210) is automatically stripped from the emergency safeguards bus by a safety injection /undervoltage signal as required by Technical Specification 4.6.A.3. This deficiency was identified as part of the Authority's drawing-to-procedure comparison review performed in accordance with Generic Letter 96-01. The MCC 210 feeder breaker was removed from service until testing on August 17, 1997 demonstrated proper operation of the affected contact in the load shedding circuit.

As part of this same review, during July 1997, the Authority identified six additional surveillance test deficiencies involving Technical Specification testing requirements. Four of these deficiencies are related to EDG load shedding / load sequencing logic, one involves start up of the Auxiliary Boiler Feed Pump, and one is for an ESF actuation signal to a containment isolation valve. The surveillance test procedures were revised and logic circuit testing was completed during August 1997, prior to start up from the refueling outage. There was no affect on public health and safety because testing with the revised procedures demonstrated that the logic circuits were working as designed. Additional corrective actions are planned to provide training to personnel responsible for the preparation and revision of surveillance procedures that test safety-related logic circuits.

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

DESCRIPTION OF EVENT

In accordance with Generic Letter 96-01 ("Testing of Safety-Related Logic Circuits," dated January 10, 1996) the Authority conducted a drawing-to-procedure comparison review to ensure that surveillance procedures for specified logic circuits adequately fulfill Technical Specification testing requirements. The review was conducted during summer 1997 in conjunction with Refueling Outage 9 (RO9) which started on May 15, 1997. Logic circuits and test procedures for the reactor protection system (RPS) {JC}, engineered safety feature system (ESF) {JE}, and emergency diesel generator (EDG) {EK} load shedding / load sequencing logic were included in the review.

On June 27, 1997 as a result of this review effort, the Independent Safety Engineering Group determined that Breaker 52/MCC 210 {BKR} is not verified by surveillance test to be automatically stripped from the emergency safeguards bus 2A by a safety injection / undervoltage signal. Although the ESF logic relay which performs this function is tested, the individual contact on this relay which opens Breaker 52/MCC 210 in the event that it is closed, is not tested. Other individual contacts on this relay which perform similar functions are tested.

Breaker 52/MCC 210 is a normally deenergized breaker which provides an alternate source of power for a Consolidated Edison Company (ConEd) non-essential motor control center. The normally deenergized condition is established in the plant checkoff list COL-EL-1, "6900 and 480 Volt AC Distribution", which identifies 52/MCC 210 as racked in with control power fuses removed. Breaker 52/MCC 210 may be energized upon request from ConEd personnel with the approval of the Indian Point 3 Shift Manager.

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Testing of the electrical contact which opens 52/MCC 210 has previously been accomplished by the Safety Injection - Blackout Test surveillance procedure, 3PT-R003D which is conducted at a refueling outage frequency. The last time this contact was verified was during the safety injection - blackout test conducted in December 1983. During performance of the next test in September 1985 a Temporary Procedure Change Notice was issued to remove the testing of this feature from the procedure because there was no breaker installed in the breaker cubicle. The TPCN was made permanent in a subsequent revision of the procedure, although adequate administrative controls were not in place to prevent a breaker from being installed and used. Records indicate that a breaker has been installed in this cubicle since at least 1989.

As part of this same review, during July 1997, the Authority identified six additional surveillance test deficiencies involving Technical Specification testing requirements, as described below.

Four of the six items are related to EDG load shedding / load sequencing logic. Technical Specification 4.6.A.3 requires testing at least once every 24 months to verify bus load shedding and subsequent restoration of vital equipment in response to a simulated loss of all normal AC station service power supplies in conjunction with a simulated Safety Injection signal.

1. A contact in each of the two containment spray pump starting logic circuits was not directly verified to change state when the associated safety injection relay was cycled. The design function of this contact is to open during a safety injection signal so that the pump start signal is controlled by a time delay relay.
2. Time delay relays in the auto-start circuit for the motor-driven Auxiliary Boiler Feed Pumps (ABFP) {BA} 31 and 33 provide for sequencing these motors onto the EDG power source following an auto-start signal. The timing circuit starts when there is voltage on the 480 VAC safety buses. For one of the auto-start logic paths (associated with a circuit configuration that could be present during a safety injection condition) relay testing did not verify that the time delay relays start their timing function only after the bus voltage is restored to the required value.

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3. Several 480 VAC bus loads have a lock out feature which, subsequent to resetting the safety injection signal, prevent them from being actuated by a process signal (such as pump auto-start on low header pressure) until operator action is taken to reset the affected component. Testing was not performed to verify operation of this lockout feature for the Main Turbine Auxiliary Oil Pump, Pressurizer Backup Heaters, and the Component Cooling Water Pumps.
4. Contacts in a safety injection relay function to disconnect the hydrogen recombiners from their respective power supplies during Safety Injection actuation. Surveillance tests did not verify that the contacts opened.

The fifth item involves start up of the ABFPs. Technical Specification 4.8.3.b requires testing to verify the automatic starting function of each ABFP.

5. A low flow trip circuit stops ABFPs 31 and 33 if flow above a preset limit is not reached within a certain amount of time following an auto-start signal. A contact in the undervoltage relay for the motor power supply resets the low-flow timer circuit when voltage is restored after a station blackout condition. This feature assures that restart of the ABFPs after voltage is restored is not incorrectly blocked by the low flow trip circuit. The undervoltage relays were tested, but these contacts were not verified to change state when the relay was energized.

The sixth item is for an ESF actuation signal to a containment isolation valve. Technical Specification 4.1.B; Table 4.1-3, item 5 requires testing of the Containment Isolation System automatic actuation.

6. The RCP seal water return line containment isolation valve (CH-MOV-222) is closed on a containment isolation Phase B signal. Because this is a single isolation valve for this flowpath, independent closure signals are transmitted for both Phase B trains. During the previous surveillance test, both Phase B trains were actuated simultaneously so that there was no verification that each train functioned independently to close the valve.

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CAUSE OF EVENT

The failure to verify that the feeder breaker for MCC 210 is stripped from the bus by a safety injection or bus undervoltage signal was caused by a deficiency in a surveillance test procedure which occurred when a Temporary Procedure Change Notice, issued in 1985, was inappropriately incorporated into a permanent procedure revision. In 1995, the Authority instituted new processes and controls for the development of and revisions to procedures. Under the current program, this procedure change would require review by two Technical Reviewers plus additional Cross-Disciplinary Reviewers as determined by the Technical Reviewers. Also, a Nuclear Safety and Environmental Impact Screen, prepared to evaluate the change would require review/approval by a Qualified Safety Reviewer. Had these controls been in place in 1985, it is likely that the permanent procedure change involving MCC 210 would not have been made.

Other surveillance test deficiencies identified as part of the Generic Letter 96-01 project were reviewed in aggregate to assess causes and corrective actions. All of the deficiencies listed in the Description of Event section involve procedures which are performed at a refueling frequency. Similar deficiencies were not identified in procedures which are used for monthly testing of logic circuits. Therefore, one possible cause is that there have been fewer opportunities for the refueling frequency procedures to be improved through use and experience. The comprehensive review conducted in response to Generic Letter 96-01 has resulted in overall improvement of these less frequently used procedures. Also, most of the deficiencies listed in the Description of Event section involve situations in which portions of the circuit are tested but the procedure does not fully verify all aspects of circuit performance. For example in items 1, 4, and 5 the actuation of a control relay is verified, but the open / close function of an individual contact on that relay is not verified. Similarly in item 6, operation of one signal path to a component is fully verified, but a redundant parallel path is not verified. For items 2 and 3, a specific design feature of the circuit was not tested. These observations indicate the procedure deficiencies could have been caused by a difference in test philosophy or were only a result of inattention to detail during original procedure development and subsequent revisions.

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CORRECTIVE ACTIONS

Immediate corrective action was taken to open Breaker 52/MCC 210 and apply a caution tag to preclude its use until the required procedure revision and testing was completed to demonstrate that the breaker will open in response to a safety injection / undervoltage signal. Similarly with the other deficiencies described in this LER, the affected surveillance procedure was revised and testing was completed prior to plant start up following R09. Testing with the revised procedures demonstrated that the portions of the circuits that previously were not tested were working as designed.

The Authority has completed the requested actions of Generic Letter 96-01 by performing a drawing-to-procedure comparison review for specified safety-related logic circuits. Surveillance test procedures were revised to correct the deficiencies that were identified in certain procedures that are used at a refueling frequency. Testing with the revised procedures was completed during R09.

Additional corrective actions are planned to assure that future surveillance test procedures adequately fulfill Technical Specification testing requirements. The Authority will conduct training for personnel who are responsible for developing or revising procedures that test safety-related logic circuits. The training will include lessons learned from the Generic Letter 96-01 review project and will describe the testing philosophy to be applied when writing or revising procedures that verify safety-related logic circuit functions. Training will be conducted approximately six months prior to the start of Refueling Outage 10 (R010).

In addition, the Authority will conduct a followup review of the refueling frequency test procedures prior to use during the next refueling outage to assure that other revisions that may be made do not adversely affect the improvements made by the Generic Letter 96-01 review. This followup review will be initiated approximately four months prior to the start of the R010.

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ANALYSIS OF EVENT

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) for operation or condition prohibited by the Technical Specification. The prohibited condition involves the failure to perform surveillance tests which demonstrate some aspect of a Technical Specification requirement.

A review of LERs submitted during the past two years identified one other LER involving surveillance test deficiencies. LER 95-013 described a condition where testing of six fire protection system HVAC ductwork smoke detectors were not included in a surveillance procedure.

SAFETY SIGNIFICANCE

This event did not have an affect on the health and safety of the public. Procedures were revised to correct the identified test deficiencies. The revised procedures were used to perform the safety-related logic circuit testing while the plant was shutdown for Refueling Outage 9. Testing with the revised procedures demonstrated that logic features described in this LER were working as designed.