

Indian Point 3
Nuclear Power Plant
P.O. Box 215
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**New York Power
Authority**

L. M. Hill
Site Executive Officer

November 14, 1995
IPN-95-113

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

SUBJECT: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
License No. DPR-64
Licensee Event Report # 95-022-00
"Plant Operating Outside Procedures and In Violation of Technical
Specifications Due to Personnel Error"

Dear Sir:

The attached Licensee Event Report (LER) 95-022-00 is hereby submitted as required by 10CFR50.73. This event is of the type defined in 10 CFR 50.73(a)(2)(ii)(C) and 10 CFR 50.73(a)(2)(i)(B). Also attached are the commitments made by the Power Authority in this LER.

Very truly yours,

L. M. Hill
Site Executive Officer
Indian Point 3 Nuclear Power Plant

Attachment
cc: See next page

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PDR ADOCK 05000286
S PDR

IE22

cc: Mr. Thomas T. Martin
Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

U.S. Nuclear Regulatory Commission
Resident Inspectors' Office
Indian Point 3 Nuclear Power Plant

INPO Records Center
700 Galleria Parkway
Atlanta, Georgia 30339-5957

Attachment 1
List of Commitments

Number	Commitment	Due
IPN-95-113-01	The integrated plant operating procedures will be revised to include human performance enhancements (e.g., action steps specifically stated, auditable identification and completion of step performance, define performance/status attributes).	Prior to use in startup sequence of events
IPN-95-113-02	Administrative Procedure 21 will be revised to ensure appropriate definition of the roles and responsibilities of the Control Room Supervisor, including command and control and the facilitation of shift teamwork and communication.	Prior to Startup
IPN-95-113-03	An assessment of a post turnover briefing to help improve communications at all levels of the operations crew is being performed.	January 31, 1996
IPN-95-113-04	An assessment of the need for a pre-mode change switch alignment check-off-list to be used just prior to mode changes is being performed.	March 2, 1996
IPN-95-113-05	A training performance review process for licensed operators will be developed to ensure that significant performance deficiencies during simulator training that are related to nuclear safety or regulatory compliance are evaluated and corrective actions developed.	February 11, 1996
IPN-95-113-06	Plant Operating Procedure 1.1 will be revised to ensure that deviations identified within individual check-off lists are evaluated and conclusions documented prior to the declaration of system operability.	Prior to Startup
IPN-95-113-07	The instructions governing the conduct of board walkdowns are being evaluated to determine where additional instructions are necessary to assure greater consistency in scope and formality.	Prior to Startup

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IPN-95-113

Attachment 1

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Number	Commitment	Due
IPN-95-113-08	A briefing with each operating crew and the operations staff will be conducted to discuss the significance of this event and the lessons learned.	Prior to Startup
IPN-95-113-09	The containment response to a large pipe break when the plant is at 350 degrees F is being calculated to determine the effects of this low probability event.	December 13, 1995

NRC FORM 366 (5-92)				U.S. NUCLEAR REGULATORY COMMISSION				APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95				
LICENSEE EVENT REPORT (LER)												
(See reverse for required number of digits/characters for each block)												
FACILITY NAME (1) <div style="text-align: center;">Indian Point 3</div>								DOCKET NUMBER (2) 05000286		PAGE (3) 1 OF 10		
TITLE (4) Plant Operating Outside Procedures and In Violation of Technical Specifications Due to Personnel Error												
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		
10	15	95	95	-- 022 --	00	11	14	95	FACILITY NAME	05000		
OPERATING MODE (9)			N			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			FACILITY NAME			
POWER LEVEL (10)			000			20.402(b)			20.405(c)			
			20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(iv)			
			20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(v)			
			20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(vii)			
			20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(A)			
			20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(viii)(B)			
			OTHER			(Specify in Abstract below and in Text, NRC Form 366A)						
NAME C. Elwood, Operations Technical Specialist								TELEPHONE NUMBER (Include Area Code) (914) 736-8349				
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	BE	P	I075	N								
A	BP	P	I075	N								
SUPPLEMENTAL REPORT EXPECTED (14)								EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).								NO				
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)												
<p>On October 15, 1995, at approximately 1523 hours, with the plant in a hot shutdown condition, a Quality Assurance engineer noted that the switches for the containment spray and recirculation pumps were in trip pullout when the Technical Specifications and plant procedures required the pumps to be operable. Operations filed a 1 hour report to notify the NRC that the plant was in a condition not covered by emergency and operating procedures. The plant exceeded 200 degrees F for about 4 hours and 8 minutes in this condition. Immediate corrective action was taken to place the switches in the automatic position and, subsequently, check other equipment for acceptability. The cause was personnel error due to poor work practice and the contributing causes were personnel error due to poor work practice, management methods and error detection. Corrective actions that were completed include a reorganization of operations, reinforcement of management expectations, disciplinary action, a temporary procedure change, and providing commitment references in procedures. Actions to be completed include procedural reviews and revisions, an assessment of post shift briefings, an assessment of pre-mode change switch alignment and other checkoffs, a Control Room Supervisor qualification procedure, a training review process, board walkdown instructions, and briefing of crews on the significance of the event. There was no significant effect on the public health and safety due to this event.</p>												

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

On October 15, 1995, at approximately 1523 hours, with the plant in a hot shutdown condition, (0 power, Rector Coolant System (RCS) temperature 230 degrees F and RCS pressure 400 psig), a Quality Assurance engineer noted that the switches for the containment spray and recirculation pumps were in trip pullout. The plant exceeded 200 degrees F at 1125 hours with the switches for the containment spray (BE) and recirculation pumps in the trip pullout position, although the pumps were required to be operable by Technical Specifications 3.3.B.1.b and 3.3.A.1.d and Plant Operating Procedure (POP) 1.1. Immediate corrective actions were taken by placing the switches in the Auto position at approximately 1533 hours and by subsequently walking the panels down to assure no other problems existed. At 1720 hours, Operations filed a 1 hour report to notify the NRC that the plant was in a condition not covered by emergency and operating procedures.

The Operations Department and the Operational Review Group coordinated a root cause evaluation of the event. Critical events in the time line and relevant information discovered about those events in the evaluation are as follows:

- October 14, 1995 (2000 to 2300 hours)

The Control Room Supervisor (CRS) signed the steps in Attachment 3 to POP 1.1 indicating that the containment spray and recirculation pumps were operable sometime between 2000 hours and the end of shift at 2300 hours. At the time the CRS signed, the control switches for the pumps were in the trip pullout position. There was a clarifying note in Attachment 3 which stated that the control switches in the automatic position were part of the definition of operability.

The CRS signed based upon an assumption that POP 1.1 would restore the switches to their proper position in the same manner that POP 3.3 did during the cooldown. The CRS did not verify the assumption through a procedure review, or utilize available resources by communicating with the Reactor Operators (ROs) or Shift Manager (SM) at the time or during the shift turnover. The CRS later accepted responsibility for that action and indicated that he knew that the pumps would not automatically function with the switches in the trip pullout position.

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- October 15, 1995 (about 0630 hours)

The SM signed off the majority (all but the last several pages) of the Attachment 3 checklist. These pages included the portions identifying the containment spray and recirculation pumps as operable.

The SM later described the basis for the signature as a review and verification that all steps were completed (initialed) and any requirement for a band of tolerance, e.g., "between 50-60 psig," was met. His signature was also based upon knowledge and research, but the assessment was limited in scope. The SM's review, as it was conducted, would not have identified the error unless the SM knew specific details about the Attachment 3 items or probed the CRS with questions about the attachment.

- October 15, 1995 (0800 to 1100)

A second SM completed the last several pages of POP 1.1, Attachment 3, during the early part of the shift. At about 0820 hours, the SM requested and received permission from the Site Executive Officer (SEO) to exit cold shutdown. The SM directed the heatup to begin at about 0945 hours. During this time the Control Room ROs did not recognize the misalignment of the switches.

The ROs later indicated that their focus was on their duties and that they had confidence in the LCO tracking log and the POP to properly align the plant. The ROs thought that switch repositioning would occur in the POP. Nevertheless, the RO did not question the position of the switches as the plant mode was changing to the point of exceeding cold shutdown (CSD), even though the ROs are responsible for board configuration and Technical Specification compliance at all times (with particular attention directed toward plant status during transition periods).

- October 15, 1995 (1523 to 1533 hours)

A Quality Assurance engineer noticed the trip pullout position of the switches and informed the CRS (this was the same CRS who had been on watch during the period 2000 to 2300 hours on October 14, 1995). Although the CRS still assumed that POP 1.1 would place the switches in the proper position, the CRS researched the procedure

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and discovered the assumption was a mistake. The RO recognized the mistake immediately when informed. Immediate corrective action was taken by placing the switches for the containment spray and recirculation pumps in the automatic position at about 1533 hours.

The investigation also revealed similar events. The switches for the containment spray and recirculation pumps were left in the trip pullout position while performing a simulator training exercise in 1994 with a different crew. The corrective action at the time was retraining. A similar event also occurred in 1986 and was reported in LER 86-009. The corrective actions to address the 1986 event revised POP 1.1 to separate the checkoffs for the pre-200 degrees F and the pre-350 degrees F plant conditions and to add a step to POP 1.1 to place the switches in automatic. Operations diminished the effectiveness of this corrective action when preparing a revision to the procedure in 1993 by requiring the sign off to verify that the pumps were operable rather than the switches were in automatic. The revision was part of a procedural upgrade effort.

Independent oversight had a chance to prevent the event but did not. On October 13, 1995, a Quality Assurance pre-200 degree F checklist was completed that identified the switch positions for the containment spray and recirculation pumps as unsatisfactory for exceeding 200 degrees F. On October 15, 1995, the Quality Assurance checklist was signed off as satisfactory at about 0230 hours. The investigation revealed that the Quality Assurance engineer had misinterpreted the checklist and therefore did not identify the unsatisfactory switch positions.

CAUSE OF THE EVENT

The primary cause of the event was personnel error by the Control Room Supervisor due to poor work practice, a lack of awareness of plant conditions. The CRS knew the pump switches to be in Trip Pullout and rationalized signoff without verification. The CRS failed to understand the impact this action would have on the entire situation. The causal factors were: the CRS demonstrated inappropriate confidence in subsequent procedural steps to establish proper control switch placement to support the mode change from Cold Shutdown conditions; the CRS demonstrated an unwillingness to ask for assistance and share responsibilities; and, the CRS demonstrated a lack of awareness of plant conditions.

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There were a number of contributing causes identified for the event. These include the following:

- The failure of the ROs to identify and take action on the abnormal switch position was personnel error due to poor work practice/error detection. The ROs considered the CRS and SM reviews and sign-offs within POP 1.1 adequate to assure correct system alignments to support exiting Cold Shutdown. The causal factors were inadequate (passive) control board awareness and Control Room personnel failed to communicate and work effectively as a team.
- The failure of the Shift Manager to verify the pumps were operable when signing POP 1.1, Attachment 3, was personnel error due to poor work practice/error detection. The SMS are not performing the same verification for signoffs as management expects. The causal factors were: inadequate review and oversight of a plant mode transition, ineffective usage of control room and shift resources to facilitate plant status verifications, and mixed communications on management expectations.
- The failure to maintain adequate procedural barriers in POP 1.1 was personnel error due to management methods. Although the basis files were not developed for revisions accomplished during the 1987 time frame, the 1987 revision reflected the corrective actions committed to in LER-86-009. The causal factors were a lack of procedural guidance concerning the determination of change equivalency and absence of procedural guidance to ensure the development and retention of supporting documentation.

CORRECTIVE ACTIONS

The following corrective actions have been completed for this event or similar events:

- The event was corrected immediately after discovery by placing the switches for the containment spray system and recirculation pumps in the Auto position.

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- After the event was discovered, Operations performed a board walkdown and reperformed Attachment 3 of Plant Operating Procedure 1.1.
- Event briefings have been completed and extensive interactions with senior and executive management have been completed to reinforce management expectations concerning procedure adherence, control board awareness, and the conduct of license responsibilities.
- Disciplinary action was taken that effected 6 licensed operators. The actions included suspending the Shift Manager and the Control Room Supervisor from licensed duties.
- A temporary procedure change was made to Plant Operating Procedure 1.1 to include placing the containment spray and recirculation pump switches in automatic and an assessment that verified no other similar assumptions related to establishing system operability conditions had been made.
- The plant administrative procedure for writing procedures and the associated writers guide had previously been revised, due to other events, to require that commitments be retained in the procedure unless justified.
- The plant organization has been revised and the new Operations Department Manager (the permanent manager had been scheduled to assume responsibility on December 5, 1995) now reports directly to the Site Executive Officer in order to improve communication of expectations and standards.

The following actions are being performed to provide corrective action and prevent recurrence of this type of event:

- The integrated plant operating procedures will be revised to include human performance enhancements (e.g., action steps specifically stated, auditable identification and completion of step performance, define performance/status attributes). Operations is scheduled to complete this prior to using them in the startup sequence of events.

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- Administrative Procedure 21 will be revised to ensure appropriate definition of the roles and responsibilities of the Control Room Supervisor, including command and control and the facilitation of shift teamwork and communication. Operations is scheduled to complete this prior to startup.
- An assessment of a post turnover briefing to help improve communications at all levels of the operations crew is being performed. Operations is scheduled to complete this by January 31, 1996.
- An assessment of the need for a pre-mode change switch alignment check-off-list to be used just prior to mode changes is being performed. Operations is scheduled to complete this by March 2, 1996.
- A training performance review process for licensed operators will be developed to ensure that significant performance deficiencies during simulator training that are related to nuclear safety or regulatory compliance are evaluated and corrective actions developed. Training is scheduled to complete this by February 11, 1996.
- Plant Operating Procedure 1.1 will be revised to ensure that deviations identified within individual check-off lists are evaluated and conclusions documented prior to the declaration of system operability. Operations is scheduled to complete this prior to startup.
- The instructions governing the conduct of board walkdowns are being evaluated to determine where additional instructions are necessary to assure greater consistency in scope and formality. Operations is scheduled to complete this prior to startup.

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- A briefing with each operating crew and the operations staff will be conducted to discuss the significance of this event and the lessons learned. Operations is scheduled to complete this prior to startup.
- The containment response to a large pipe break when the plant is at 350 degrees F is being calculated to determine the effects of this low probability event. Reactor Engineering is scheduled to complete this assessment by December 13, 1995.

ANALYSIS OF THE EVENT

This event is reportable under 10 CFR 50.73(a)(2)(ii)(C). The plant operating procedures and emergency procedures do not cover exceeding cold shutdown with the switches in trip pull-out for the containment spray and recirculation pumps. This LER represents the followup 30 day report required after the 1 hour notification made on October 15, 1995. This event is reportable under 10 CFR 50.73(a)(2)(i)(B). Plant Technical Specifications 3.3.B.1.b and 3.3.A.1.d require two containment spray pumps and one recirculation pump to be operable, respectively, before exceeding a reactor coolant system T_{avg} of 200 degrees F. The plant exceeded 200 degrees F at 1125 hours and the switches were placed in automatic at 1533 hours. The switches for these pumps are required to be in automatic for the pumps to be considered operable. Plant accident analyses assume that the containment spray pumps operate automatically following an initiating signal. The switchover to recirculation requires manual initiation of the recirculation pumps, but the past practice has been to require the switch to be in the automatic position in order to call the recirculation pumps operable.

Another event where cold shutdown was exceeded with the switches in trip pull-out for the containment spray and recirculation pumps was reported in LER 86-009.

SAFETY SIGNIFICANCE

There was no significant effect on public health and safety associated with this event.

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The actual event had no effect on the public health and safety because the containment spray and recirculation pumps were not required to perform any safety function during the period that they were inoperable (approximately 4 hours and 10 minutes). The potential for entering alternate plant conditions with the pump inoperable had no significant effect on public health and safety for the reasons discussed below.

In order to determine the potential effect on the public health and safety associated with other possible modes of operation, the possibility of continuing to full power operation with the switches in trip pullout was assessed. Operations determined that the plant would not have exceeded 350 degrees F without detecting the erroneous position of the trip pullout switches and correcting them. Control Room annunciator "SAFEGUARDS EQUIPMENT LOCKED OPEN" is normally actuated until the plant is ready to exceed 350 degrees F. At that time, the safety injection pumps switches are placed in automatic which should remove the last signal to the annunciator. It is normal for the operators to check the annunciator after positioning the safety injection pump switches and a continued alarm would have been investigated. The potential effect on the public health and safety at 350 degrees F is as follows:

- There was no effect on the public health and safety associated with the recirculation pump switches in the trip pullout position since these pumps are manually started when entering the recirculation mode.
- There was no effect on the public health and safety associated with the containment spray pump switches in the trip pullout position due to the low probability of a large pipe break (either a LOCA or a main steam line break). The time period to raise the RCS temperature from 200 degrees F to 350 degrees F was scheduled to be less than 40 hours. The frequency of a main steam line break at IP3 is 2E-3 per year and the frequency of a large break LOCA at IP3 is 4.77E-4 per year (these frequencies are based on full power operation since the frequencies at 350 degrees F have not been quantified). Based on the period that the pumps could have been out of service (40 hours represents 4.56E-3 of the year), the probability of a large break LOCA was 2.21E-6 and the probability of a main steam line break was 9.12E-6. These probabilities are

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sufficiently low that postulation of a large pipe break was not considered a reasonable and credible alternative condition. Nevertheless, the Power Authority is calculating the containment response to a large pipe break when the plant is at 350 degrees F to determine the effects of this low probability event. It is expected that the containment pressure will remain within design limits due to the availability of the fan cooler units (five fan cooler units were required to be operable by Technical Specification prior to exceeding 200 degrees F), limited residual heat in the core, and limited pressure (the RCS is below 1600 psig when the RCS temperature is below 350 degrees F).

The extent of condition was evaluated by assessing POP 1.1 which verified that no other similar assumptions related to establishing system operability conditions had been made.