

Indian Point 3
Nuclear Power Plant
P.O. Box 215
Buchanan, New York 10511
914 736-8001



**New York Power
Authority**

Joseph E. Russell
Resident Manager

October 27, 1992
IP3-NRC-92-080

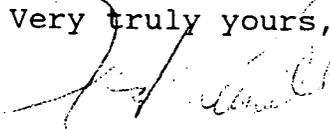
Docket No. 50-286
License No. DPR-64

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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Licensee Event Report LER 92-015-00 is hereby submitted in accordance with the requirements of 10CFR50.73. This event is of the type defined in the requirements per 10CFR50.73(a)(2)(iv).

Very truly yours,


Joseph E. Russell
Resident Manager
Indian Point Three Nuclear Power Plant

jer/ed/rj
Attachment

cc: Mr. Thomas T. Martin
Regional Administrator
Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Indian Point Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 2 8 6 1	PAGE (3) 1 OF 0 5
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(4) Reactor Trip Caused By Independent Instrumentation/Control Failures

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)
0 9	1 5	9 2	9 2	0 1	5 0 0	1 0	2 7	9 2			0 5 0 0 0

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
POWER LEVEL (10) 0 6 3	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(e)(2)(iv)	73.71(b)					
	20.405(a)(1)(i)	50.38(c)(1)	<input type="checkbox"/>	50.73(e)(2)(v)	73.71(c)					
	20.405(a)(1)(ii)	50.38(c)(2)	<input type="checkbox"/>	50.73(e)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 356A)					
	20.405(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(e)(2)(viii)(A)						
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(e)(2)(viii)(B)						
20.405(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(e)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)

NAME Martin Albright, I&C Manager	TELEPHONE NUMBER 9 1 4 7 3 6 8 (7 0 1)
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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
X	J C	L C	F 1 1 8 0	Y					
	J B	L C	F 1 8 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH 0 5	DAY 3 1	YEAR 9 3
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On September 15, 1992, the reactor automatically tripped from 63% power on "Steam Generator #34 mismatch," an anticipatory low steam generator level reactor trip. The trip was caused by two independent instrumentation/control failures on the same steam generator. The root causes were that implementation of corrective action from a prior event had not been completed and the conservative placement of a protection channel in the fail-safe mode as directed by plant procedures. Corrective actions will be to determine the root cause of a bistable failure and to modify the schedule for the preventive refurbishment program to address the steam generator level control system as a higher priority. The plant was returned to service on October 12, 1992.

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TEXT (space is required, use additional NRC Form 308A's) (17)

INVESTIGATION OF THE EVENT

On September 15, 1992, the plant was operating at 63% power. The unit was operating at a reduced power level because #32 Main Boiler Feed Pump had been taken out of service on September 8, 1992, due to high vibrations. At 0230 hours on September 15, 1992, the control room annunciator "Steam Generator #34 low level channel trip" alarmed. Operators performed Alarm Response Procedure ARP-5, Rev. 12 to address the alarm. The operators correctly determined that the source of the alarm was Steam Generator #34 low level bistable LC-447D (Foxboro Model No. 63U) (F180) (JC) (LC). ARP-5, Rev. 12 instructs the operators to perform ONOP-RPC-1, Rev. 10, "Instrument Failures," in the event of a channel failure.

The actions of ONOP-RPC-1 consisted of tripping the following bistables associated with #34 Steam Generator level channel II:

1. Low-low level
2. High level
3. Low level mismatch

At 0325 hours the reactor automatically tripped on "Steam Generator #34 mismatch." Low-low steam generator water levels following the trip initiated an auto-start of the three auxiliary feedwater pumps. All systems functioned properly following the trip.

The NRC Operations Center was notified via the Emergency Notification System at 0425 hours. The NRC resident inspector was notified at 0428 hours.

The steam generator mismatch trip is an anticipatory low steam generator level reactor trip. The trip logic consists of a single low level bistable paired with a differential bistable that compares steam generator feed flow and steam flow. The logic initiates when steam generator level is less than 8% and steam flow exceeds feed flow by 1.3E6 pounds per hour. Two trains of this logic exist for each steam generator; actuation of either logic train initiates a reactor trip.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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At approximately 0730 hours I&C and Technical Services engineers, using plant computer data, determined that at 0325 hours the output of the level control system for #34 Steam Generator failed low, signaling the #34 Steam Generator feedwater regulating valve closed. Because the low level mismatch bistable had been tripped earlier, when feed flow decreased below steam flow by 1.3E6 pounds per hour, the "Steam Generator #34 mismatch" trip logic was completed, initiating a reactor trip.

Subsequent investigation by I&C Department personnel determined that bistable LC-447D had failed due to an internal fault, an electrolytic capacitor had shorted. LC-447D was repaired, retested, and returned to service.

I&C Department personnel, using continuous, on-line computer monitoring, also determined that level controller LC-447M (Foxboro Model No. 62HB-5B) (F180) (JB) (LC) that inputs into the three element controller (FC-447) for #34 Steam Generator's feed regulating valve was spiking low and was the cause of the valve closure. Both controllers were replaced. Steam Generator #34's level control system subsequently retested satisfactorily.

The two failures were independent, occurred fifty-five minutes apart, and each was caused by an individual component failure. No common mode mechanism could be found. The two failed controllers are powered from separate instrument buses and each is in a different instrument channel:

	<u>LC-447D</u>	<u>LC-447M</u>
<u>Instrument bus</u>	31	33
<u>Instrument channel</u>	2	3

A #34 Steam Generator feed regulating valve perturbation event occurred on March 2, 1991. Repair and re-testing was accomplished. A follow-up action item of performing the steam generator level control system periodic preventive refurbishment had not yet been completed.

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An event had occurred on August 30, 1992, in which #34 Steam Generator's feed regulating valve momentarily closed and reopened. I&C Department personnel had investigated by monitoring the controller output on the plant computer. The instrument air supply to the valve had been checked. Nothing conclusive was found.

CAUSES OF THE EVENT

The cause of the event was a failure of a steam generator water level controller combined with the procedurally directed action of tripping all the bistables in the channel with the failed bistable. The untimely response to previous transients was a contributing factor. Details of the causes are discussed below:

1. The cause of the #34 Steam Generator low level bistable failure was an internal fault, an electrolytic capacitor had shorted. The bistable had been refurbished in 1990. The root cause of the failure is unknown at this time.
2. The cause of the #34 Steam Generator level controller failure was the random internal failure of a relay contact. The root cause of the failure is unknown at this time.
3. A contributing cause to the event was the IP3 policy of conservatively positioning all channel bistables in a fail-safe mode for a failure of a single bistable in the affected channel. The policy will continue to be practiced.
4. A contributing cause was the lower priority scheduling of controller refurbishment. Controller refurbishment was scheduled for the cycle 9/10 outage in the first quarter of 1994.

CORRECTIVE ACTIONS

To prevent recurrence of this event the following corrective actions will be taken:

1. The failed electrolytic capacitor from LC-447D will be sent to a failure analysis laboratory to determine the root cause of the failure by April 30, 1993.

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- An accelerated steam generator water level controller refurbishment schedule using vendor support will be implemented.

ANALYSIS OF THE EVENT

This event is reportable under 10CFR50.73(a)(2)(iv), any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS). The Reactor Protection System actuated during this event.

SAFETY SIGNIFICANCE

The loss of feedwater to one steam generator is an event analyzed in the Final Safety Analysis Report. The plant's design provides an auxiliary feedwater system to remove decay heat on a loss of main feedwater. No impact to the public health and safety resulted from this event.

No similar LERs have been reported to date.

SECURING FROM THE EVENT

Following the event, the plant management decided to maintain the plant at shutdown to work on control room work requests since an outage was already planned for September 18, 1992, to address vibration problems in the main electrical generator and #32 Main Boiler Feed Pump. The cold shutdown condition was reached at 0630 hours on September 16, 1992.

On October 11, 1992, plant operators brought the reactor critical at 2255 hours. They synchronized the generator to the bus on October 12, 1992, at 1022 hours and began a load ascension.