

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) INDIAN POINT UNIT 2										DOCKET NUMBER (2) 0 5 0 0 0 2 1 7				PAGE (3) 1 OF 4							
TITLE (4) MAIN BOILER FEEDWATER PUMP TRIP/REACTOR TRIP																					
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)									
01	13	86	86	001	00	02	10	86				0 5 0 0 0									
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																			
POWER LEVEL (10)		20.402(b)				20.406(e)				X				60.73(a)(2)(iv)				73.71(b)			
0194		20.406(a)(1)(i)				60.36(a)(1)								60.73(a)(2)(v)				73.71(c)			
		20.406(a)(1)(ii)				60.36(a)(2)								60.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)			
		20.406(a)(1)(iii)				60.73(a)(2)(i)								60.73(a)(2)(viii)(A)							
		20.406(a)(1)(iv)				60.73(a)(2)(ii)								60.73(a)(2)(viii)(B)							
		20.406(a)(1)(v)				60.73(a)(2)(iii)								60.73(a)(2)(ix)							
LICENSEE CONTACT FOR THIS LER (12)																					
NAME CHARLES V. HAYES										TELEPHONE NUMBER AREA CODE 914 5261-1517 10											
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																					
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS											
B	SIJ	IPISX	A1100	Y																	
B	SIJ	IXIC	I1075	Y																	
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR					
YES (If yes, complete EXPECTED SUBMISSION DATE)												X NO									

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

The Unit 2 reactor tripped automatically upon a low-low steam generator water level signal from steam generator No. 24. The level loss was caused by low feedwater flow following a trip of No. 21 Main Boiler Feed Pump (MBFP) due to a broken internal high pressure oil hose to the governor and controls. The hose was among those scheduled for replacement during the current refueling outage. No. 22 MBFP did not increase in speed when the low flow condition started due to clogged orifices in its control oil system. Replacement of all internal high pressure oil hoses will be completed during the current refueling outage and scheduled installation of new speed control systems is in progress.

The Reactor Protection System functioned normally and the public health and safety were not affected.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1) INDIAN POINT UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 2 4 7 8 6 - 0 0 1 - 0 0 0 2 OF 0 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 365A's) (17)

Plant and System Identification:

Westinghouse 4-loop pressurized water reactor; 900 MWe.

Identification of Occurrence:

Actuation of Reactor Protection System (Reactor Trip) due to a low-low steam generator water level signal.

Event Date:

January 13, 1986

Report Due Date:

February 12, 1986

Reference:

This report was initiated by Significant Occurrence Report (SOR) 86-013.

Past Similar Occurrences:

LER's 85-005 and 85-006

Description of Occurrence:

On January 13, 1986 Unit 2 was operating at 94% reactor power at a load of 800 MWe. The main generator was being controlled by load limit No. 1 with the governor out of service. At 8:25 p.m., No. 21 Main Boiler Feedpump (MBFP) tripped initiating a feedwater flow reduction to the steam generators and a steam generator level decrease. Following the No. 21 MBFP trip and the reduction of feedwater flow, No. 22 MBFP did not

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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automatically increase in speed. Operators attempted to manually increase the speed of No. 22 MBFP but reported that its speed did not vary from 4200 RPM (approximately the speed prior to the trip of No. 21 MBFP). The low flow bypass valves to No. 24 steam generator were opened and No. 21 condensate pump was started. These actions did not provide sufficient feedwater to recover level in No. 24 steam generator.

In an effort to conserve water inventory in No. 24 steam generator, the operators manually reduced load/power to approximately 650 MWe using load limit No. 1 to reduce the steaming rate. Average steam generator level was at 27% when the reduced power was sensed by the nuclear instrumentation. The magnitude of the load decrease caused a reactor power reduction which was large enough to initiate the dropped rod runback feature of the Nuclear Instrumentation System (NIS). In accordance with design, this automatically ran the unit back to 70% power, causing a rapid steam generator water level shrink. The runback was manually overridden and power manually increased to 81% in an attempt to reverse the rapid water level shrink. A low-low steam generator water level signal caused a reactor trip at 8:27 p.m..

After the trip occurred, non-safety-related No. 2 6.9 KV bus did not automatically transfer to bus No. 5. This momentarily left 480 volt bus No. 2A without power thereby activating No. 22 Emergency Diesel Generator, as designed, to supply bus No. 2A. No. 24 Reactor Coolant Pump tripped when bus No. 2 did not transfer. The 6.9 KV breaker for bus No. 2 was racked out and inspected, but no abnormalities were found. When racked in following inspection, the breaker operated properly.

The Reactor Protection System functioned normally. Following the trip, the unit was maintained stable at hot shutdown and the public health and safety were not affected.

Analysis of Occurrence:

During the refueling outage which started on January 14, 1986, No. 21 MBFP was disassembled to determine the cause of the trip. A hole approximately one (1) square inch in area was found in the 2 inch internal high pressure oil line to the governor and controls. The reduction in oil pressure caused the trip of No. 21 MBFP turbine. The hose failure is attributed to local weakening of the hose at the failed area in a relatively tight 90° bend, combined with a gradual materials degradation over its recommended service life. The oil hoses were scheduled for replacement during the current refueling outage.

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Clogged orifices were found in the control oil system of No. 22 MBFP. This condition would prevent the system from responding to a speed demand signal resulting in the failure of No. 22 MBFP to automatically or manually increase in speed following the trip of No. 21 MBFP. No abnormalities in other components that could have affected No. 22 MBFP speed control, except the consequences of a failed hose in No. 21 MBFP, have been found to date.

A field investigation found no abnormalities in equipment that could have contributed to 6.9 KV bus No. 2 not automatically transferring to bus No. 5. That investigation by itself is not considered conclusive regarding performance of 6.9 KV breakers. Further study independent of this event is under consideration.

Cause of Occurrence:

The cause of the Unit trip was the trip of No. 21 MBFP due to failure of the high pressure oil supply hose in No. 21 MBFP compounded by an unresponsive speed control system in No. 22 MBFP. The reactor automatically tripped on a low-low steam generator water level signal. The broken hose was an AEROQUIP No. 2651.

Corrective Action:

During the current refueling outage, the high pressure oil hoses in the No. 21 and No. 22 MBFP will be replaced with a combination of pipe and higher rated teflon lined, steel-jacketed oil hoses.

In addition, new Lovejoy speed control systems are being installed in both main boiler feed pumps to improve reliability and performance.

John D. O'Toole
Vice President

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, NY 10003
Telephone (212) 460-2533

February 10, 1986

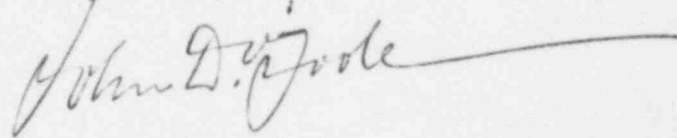
Re: Indian Point Unit No. 2
Docket No. 50-247
LER-86-01-00

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

Dear Sirs:

The attached Licensee Event Report LER-86-001-00 is hereby submitted in accordance with the requirements of 10 CFR Part 50.73.

Very truly yours,



attach.

cc: Dr. Thomas E. Murley,
Regional Administrator - Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pa. 19406

Senior Resident Inspector
U. S. Nuclear Regulatory Commission
P. O. Box 38
Buchanan, New York 10511

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11