Stephen B. Bram
Vice President

Consolidated Edison Company of New York, Inc.
Indian Point Station
Broadway & Bleakley Avenue
Buchanan, NY 10511
Telephone (914) 737-8116

September 17, 1993

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 93-10-00

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

The attached Licensee Event Report LER 93-10-00 is hereby submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,

Thomas Schmeisser

Attachment

cc: Mr. Thomas T. Martin
Regional Administrator - Region I
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. Francis J. Williams, Jr., Project Manager
Project Directorate I-1
Division of Reactor Projects I/II
US Nuclear Regulatory Commission
Mail Stop 14B-2
Washington, DC 20555

Senior Resident Inspector
US Nuclear Regulatory Commission
PO Box 38
Buchanan, NY 10511

280027

IE22
1/1

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Indian Point Unit No. 2	0 5 0 0 0 2 4 7	1 OF 0 4

TITLE (4)

Unavailable Nitrogen Backup Flow for the Auxiliary Feedwater System

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 5 0 0 0
0 8	1 8	9 3	9 3	— 0 1 0	— 0 0	0 9	1 7	9 3		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)	1 0 0	20.402(b)	20.405(c)	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 (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	X 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	TELEPHONE NUMBER
	AREA CODE
Pedro Franceschi, Senior Engineer	9 1 4 5 2 6 - 5 6 7 0

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	
B	B A	P C V	C 1 6 4								

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)

On August 18, 1993, it was determined by an engineering analysis that regulating valves PCV-1276 and PRV-5954, which are installed in the nitrogen backup to the Instrument Air System for the Main Steam Power Operated Relief Valves and the Auxiliary Feedwater System (AFWS), were not fully capable of performing their function in the manner set forth in the Final Safety Analysis Report (FSAR).

Specifically, the nitrogen backup regulator is described in the FSAR as capable of automatically supplying nitrogen in the event of loss of instrument air. The nitrogen regulating valves were designed and installed with an unrequired equalizing line between the upper spring chamber vent and the downstream air line. This equalizing line was found to compromise the ability of the nitrogen regulating valves to automatically modulate (or regulate) the nitrogen pressure and flow. The nitrogen regulating valves would therefore only pass nitrogen to the extent that it leaked past the valve seat or the valve was preset to a given opening. The nitrogen regulating valves could still have been operated manually. The valves are manufactured by CASHCO, model HP 1-32-45-S36 0.5 in.

Immediate corrective action was not required since a jumper (including separate regulating valves) had been installed on August 12, 1993 to bypass these regulating valves and maintain the nitrogen backup in service while investigation and repair of unrelated system leakage was in progress. This jumper maintains the backup function as described in the FSAR.

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Unavailable Nitrogen Backup Flow to Instrument Air for the Auxiliary Feedwater System.

EVENT DATE:

August 18, 1993

REPORT DUE DATE:

September 17, 1993

REFERENCES:

Significant Occurrence Report (SOR) 93-421

PAST SIMILAR OCCURRENCE:

None

DESCRIPTION OF OCCURRENCE:

During inspection and repair maintenance work for the nitrogen backup regulators for the Auxiliary Feedwater System (AFWS), it was discovered that nitrogen flow was unavailable in the system as installed. On August 18, 1993, an engineering evaluation of the design and installation determined that a superfluous equalizing line between the regulator spring chamber vent and the downstream piping prevented the regulator from opening and modulating the nitrogen flow. The nitrogen backup provides the working fluid for AFWS air operated valves and Main Steam (MS) Power Operated Relief Valves (PORVs) under circumstances where Instrument Air is unavailable because: (1) the Unit 2 compressors are stripped from their diesel backed buses by a Safety Injection signal or loss of offsite power coincident with a unit trip, and (2) there is a concurrent loss of Unit 1 compressors. Failure to provide nitrogen after an Instrument Air loss result in the AFWS air operated valves failing in the full open position and the MS PORV failing in the full closed position. The regulator modification was completed during the 1989 refueling outage.

ANALYSIS OF OCCURRENCE:

Loss of instrument air to the nuclear part of the system is an infrequent event at Unit 2 due to the diversity of compressors and their power supplies. Two compressors are powered by the Unit 1 offsite power. Three compressors are powered by the Unit 2 offsite power on diesel backed buses of which the two instrument air compressors are loaded on the diesels. If offsite power was lost to both units with a Unit 2 trip or a Safety Injection Actuation the diesel backed instrument air compressors would be loaded in approximately five (5) to ten (10) minutes after the event. An evaluation was performed to determine the effect of loss of air with no nitrogen backup on the AFWS and the PORVs for approximately 5 to 10 minutes for transients, accidents, and seismic events in which AFW is required. The events reviewed were Loss Of Feedwater Accident, Small Break Loss Of Coolant Accident, Steam Generator Tube Rupture, Anticipated Transient Without SCRAM, Steam Break Accident, and Seismic Safe Shutdown. In addition, due to increased runout load of the motors, diesel generator loading was reviewed.

For the events reviewed no loss of function would be expected. The diesel generator loading review indicated acceptable loading subsequent to the 1991 Emergency Diesel Generator (EDG) power uprating. Prior to that, the AFW pump runout during a steam line break would result in one diesel's load slightly exceeding its rating (but within its demonstrated capability.)

CAUSE OF OCCURRENCE:

The cause of the failure of the nitrogen backup regulator was an incorrect licensee design application of the regulator that was not caught by testing. A detailed construction drawing showed an external sensing line which was not required by the design and inadvertently defeated the regulator's function. The vent on the upper spring chamber, which was supposed to be open to atmosphere for this application, was connected to the downstream piping of the regulator. Since the regulator is internally self regulating, the vent line equalizes both sides of the diaphragm chamber, thus effectively defeating the demand for nitrogen flow. The exact reasons why the lines were included in this design application are unknown. It appears that a breakdown of communications (between the engineer and the designer) and work practices (the drawing review and approval process did not capture the incorrect addition of the tubing to the regulator) may have occurred. Post-installation testing did not catch the error because the test which was included in the work package adjusted the regulator under no flow conditions. It was found that slight adjustment of the regulator did create a small opening of the valve which did pressurize the tubing to the expected test acceptance pressure. However, no appreciable flow was maintained.

CAUSE OF OCCURRENCE: (continued)

This modification was an example of work and testing being performed in several stages (or in pieces). Reviews and coordination of work are significantly increased in complexity by this practice. Since this modification was originally issued, enhancements to the level of detail, verification and formalized interface communication within our modification implementation process have been incorporated that would reduce the potential for this type of error to go undetected through the course of design and testing.

CORRECTIVE ACTION:

The nitrogen backup regulator design was corrected by removing the tubing from the spring chamber vent and properly testing for flow condition prior to returning the regulators to service.

Further investigation will include (1) a review of all CASHCO regulators, (2) review of all regulators that provide a backup function and therefore are not functionally monitored continuously and (3), a review of a selected sample of similar modifications in the same time frame as the AFWS Nitrogen Backup Regulator modification for design, installation and testing. A sample of modifications will be reviewed for proper post installation testing. The results of these reviews will be used to determine further corrective actions, if necessary.