

Indian Point 3  
Nuclear Power Plant  
P.O. Box 215  
Eschanan, New York 10511  
914 736.6001



**New York Power  
Authority**

John H. Garrity  
Resident Manager

October 15, 1993  
IPN-93-124

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Station PI-137  
Washington, D.C. 20555

Subject: Indian Point 3 Nuclear Power Plant  
Docket No. 50-286  
Licensee Event Report 93-035-00, "Weld  
Channel and Containment Penetration  
Pressurization System Outside Design Basis  
Due to Human Error"

Dear Sir:

The attached Licensee Event Report (LER) 93-035-00 is hereby submitted in accordance with the requirements of 10CFR50.73. This event is of the type defined in the requirements pursuant to 10 CFR 50.73(a)(2)(ii)(B). Also attached are the commitments made by the Authority in this LER.

Very truly yours,

A handwritten signature in black ink that reads "JHGarrity".

John H. Garrity  
Resident Manager  
Indian Point Three Nuclear Power Plant

JHG/JC/vjm

cc: See next page

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Mr. Thomas T. Martin  
Regional Administrator  
Region 1  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King Of Prussia, Pennsylvania 19406-1415

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

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

Attachment  
List of Commitments

Number	Commitment	Due
IPN-93-124-01	The WCCPPS will be modified to reroute the source of air pressure to each PCV dome so that it connects to the high pressure piping downstream of the WCCPPS air receivers. This plant modification is required prior to exceeding the cold shutdown condition.	11/20/93
IPN-93-124-02	A review will be conducted by Technical Services Department engineering personnel of devices that have automatic backup sources and are installed in engineered safeguard systems to ensure a similar flaw does not exist elsewhere in the plant.	11/20/93

**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 (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.

<b>FACILITY NAME (1)</b> Indian Point Unit 3	<b>DOCKET NUMBER (2)</b> 05000286	<b>PAGE (3)</b> 1 OF 5
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**TITLE (4)** Weld Channel and Containment Penetration Pressurization System Outside Design Basis Due to Human 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
09	16	93	93	-- 035 --	00	10	15	93	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

<b>OPERATING MODE (9)</b> N	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>									
<b>POWER LEVEL (10)</b> 000	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						
	20.405(a)(1)(iii)	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)	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)								

<b>Name</b> Michael Cochrane, Plant Engineer II	<b>TELEPHONE NUMBER (Include Area Code)</b> (914) 736-8344
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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

<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>				<b>EXPECTED SUBMISSION DATE (15)</b>		<b>MONTH</b>	<b>DAY</b>	<b>YEAR</b>
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO						

**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

On September 16, 1993, with the reactor in cold shutdown, Technical Services identified an existing design flaw that could allow an automatic Safety Injection actuation signal combined with a loss of offsite power to result in the loss of the Weld Channel and Containment Penetration Pressurization System. The signal would cause the system's pressure control valves to fail in a closed position which cuts off the air supply. The design flaw is outside the design basis of the plant and has existed since initial plant startup. The cause is human error during system design and design review by the Architect Engineer. Corrective action prior to startup will be a system modification to correct this flaw. Design reviews will be performed to ensure this flaw does not exist in other plant engineered safety systems.

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DESCRIPTION OF EVENT

On September 16, 1993, with the reactor in cold shutdown, personnel from Consolidated Edison Company of New York, Inc. (Con Ed), Indian Point Unit 2 (IP2), notified the Authority of an existing design flaw that could allow an automatic Safety Injection (SI) actuation signal (JE) to result in loss of the Instrument Air (IA) (LD) supply, including backup supplies (i.e., Nitrogen (N<sub>2</sub>) (LK) supply, Station Air (SA) (LF) supply, and the SA interconnection to IP2) to the Weld Channel and Containment Penetration Pressurization System (WCCPPS) (BD).

On September 16, 1993, at approximately 1030 hours, a review of the system design drawings and subsequent field verification by the Technical Services Department confirmed the applicability of the design flaw to Indian Point 3. Significant Occurrence Report 93-530 was issued at 1650 hours by Technical Services. Technical Services determined that the design flaw has existed since initial startup and is outside the design basis of the plant. The Final Safety Analysis Report (FSAR), section 6.6.1, identifies the intended safety function as "continuously pressurizing the positive pressure zones incorporated into the containment penetrations and channels over the welds in the steel liner in the event of a Loss-of-Coolant Accident. Although no credit is taken for system operation in calculating offsite doses, it is designed as an engineered safety feature and does provide assurance that the containment leak rate in the event of an accident is lower than that assumed in the accident analysis." The WCCPPS was not declared inoperable when the design flaw was discovered because it is not required when in cold shutdown.

The IA system supplies compressed air at approximately 100 psig through a check valve to the WCCPPS header which supplies the four WCCPPS zones. Each zone has an air receiver (RCV) upstream of a pressure control valve (PCV) (PS-PCV-1193, 1195, 1197 and 1199 for the four channels) that is sized to maintain the air supply for at least four hours in the event the IA and SA are lost. The PCVs are designed as air-to-open valves, meaning that air pressure must be supplied to the dome of the PCV in order for the valve to open and maintain the downstream air pressure at about 46 psig. The air supply to the PCVs is supplied via piping (1" line #1155) connected to the IA system upstream of the interconnection between the IA system and the WCCPPS. The PCVs rely upon the pressure in the IA system to remain open since there are check valves (FCV) (IA-13 and either IA-31-1, 2, 3 or 4) between the WCCPPS air receivers and the connections to IA. A simplified sketch of the piping is on the last page.

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An automatic SI System actuation signal with a loss of offsite power would cause a loss of IA because the safety related electrical busses are stripped and the IA and SA compressors (CMP) are not reloaded. Following a loss of the compressors, the IA system would retain sufficient pressure to operate the PCVs for about 1/2 hour. When the air pressure is insufficient to hold open the PCVs, they fail closed and all air flow to the WCCPPS stops. Manual action to regulate WCCPPS air pressure using the PCV bypass lines is feasible (each zone has a pressure relief valve set at 49 psig to prevent overpressurization) but is not considered in the system's design basis.

The backup supplies would not prevent this event. The primary source of backup is the N<sub>2</sub> supply which has sufficient capacity for 24 hours. When the pressure downstream of any PCV drops to 43 psig, the zone's pressure controller (PC) actuates a N<sub>2</sub> supply valve to deliver N<sub>2</sub> to a connection just upstream of the PCVs. This gas supply will not operate the PCVs because of intervening check valves (IA-13 and either IA-31-1, 2, 3 or 4). The secondary source of backup air is the plant's SA system which is cross-connected to the IA system. SA would also be lost when an automatic SI actuation signal occurs because the compressors are stripped from the safety related busses and not reloaded. The last backup is a permanent cross connection to the Con Ed IP2 SA system. Operation of this backup requires manual action not considered in the system's design basis.

CAUSE OF THE EVENT

The cause of the event was personnel error during the engineering design and design review of the WCCPPS by the Architect Engineer. The factors contributing to the personnel error could not be identified because there is insufficient information.

CORRECTIVE ACTIONS

To prevent recurrence of this event the following corrective actions were identified:

1. The WCCPPS will be modified to reroute the source of air pressure to each PCV dome so that it connects to the high pressure piping downstream of the WCCPPS air receivers. This plant modification

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is required prior to exceeding the cold shutdown condition. It is scheduled for completion November 20, 1993.

2. A review will be conducted by Technical Services Department engineering personnel of devices that have automatic backup sources and are installed in engineered safeguard systems to ensure a similar flaw does not exist elsewhere in the plant. This task is scheduled to be completed by November 20, 1993.

ANALYSIS OF THE EVENT

This event is reportable under 10 CFR 50.73.(a)(2)(ii)(B). The Licensee shall report any event or condition that resulted in the plant being in a condition that was outside the design basis of the plant. This event is a design flaw that would cause the WCCPPS to become inoperable following an accident resulting in a SI actuation signal with a loss of offsite power. This design flaw has existed since initial plant startup on April 6, 1976.

SAFETY SIGNIFICANCE

There is no impact to the public health and safety resulting from this event. No credit was taken for the operation of the WCCPPS in the calculation of offsite doses when the plant design basis accidents were analyzed. This is documented in FSAR section 6.6.1. The WCCPPS is required to be depressurized and vented when containment leak testing is performed so that containment integrity is demonstrated without the WCCPPS.

The extent of this design flaw is limited to the WCCPPS. The Technical Services Department reviewed systems where A. W. Cash Co. PCVs are used and identified no similar circumstances. The Technical Services Department will perform engineering evaluation of engineered safeguards system devices that have automatic backup sources to verify the extent of condition. A similar event is being reported under LER 93-036-00 which involved inadequate original engineering design or installation.

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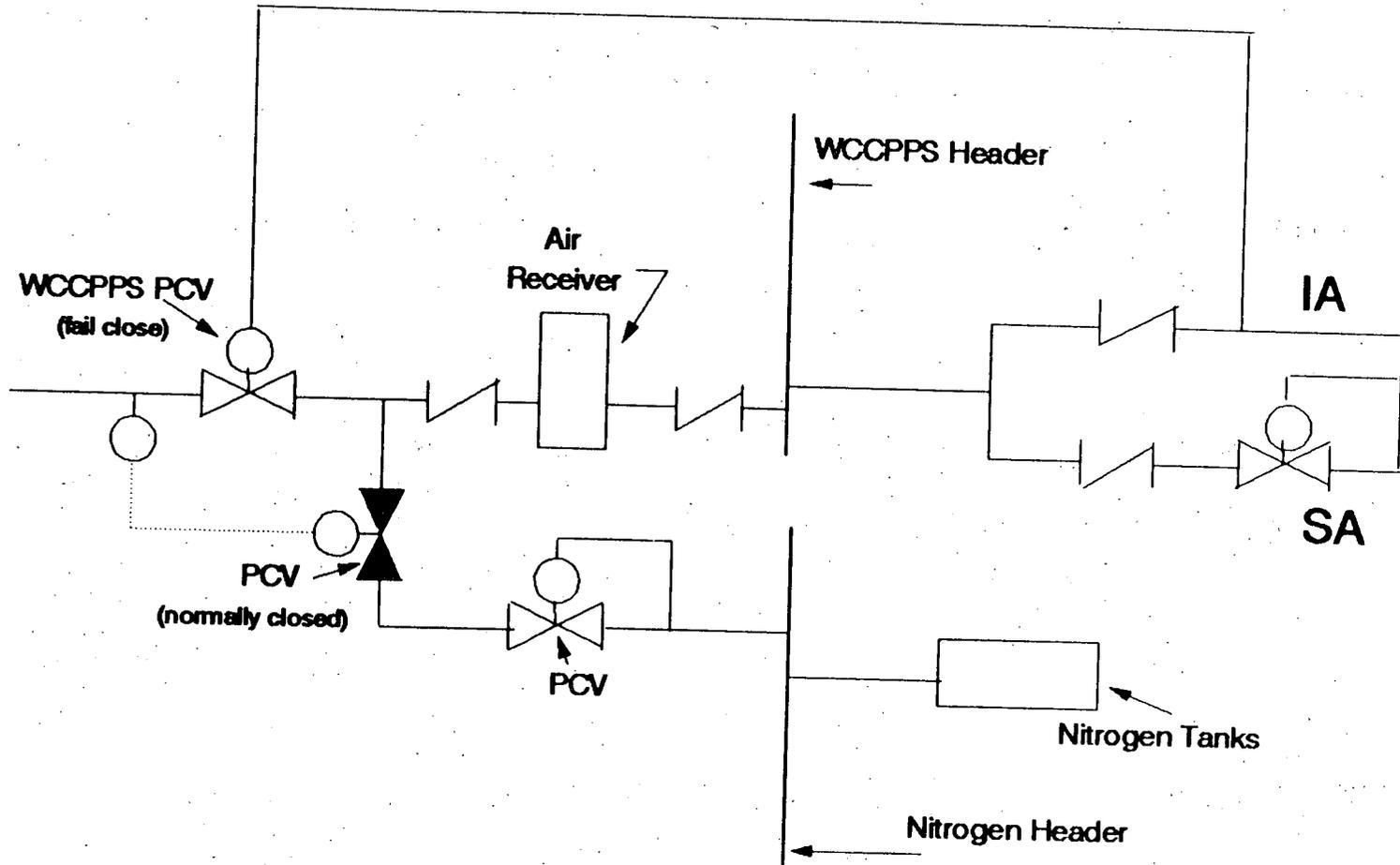
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Simplified Sketch of IAS To Show Current Air/Gas Supply To A Typical WCCPPS Zone