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February 22, 1999

Re: Indian Point Unit No. 2  
Docket No. 50-247  
LER 99-002-00

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

The attached Licensee Event Report 9-002-00 is hereby submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,



Attachment

cc: Mr. Hubert J. Miller  
Regional Administrator - Region I  
US Nuclear Regulatory Commission  
475 Allendale Road  
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**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1)

Indian Point No. 2

DOCKET NUMBER (2)

05000-247

PAGE (3)

1 OF 5

TITLE (4)

POTENTIAL CONTAINMENT PENETRATION LEAKAGE PATH VIA WELD CHANNEL SUPPLY/VENT SOLENOID VALVES.

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
01	22	1999	1999	-- 002	-- 00	02	22	1999		05000
									FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

  

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)			
POWER LEVEL (10)	099	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)			

**LICENSEE CONTACT FOR THIS LER (12)**

NAME

Ingvar Kjellberg, Senior Engineer

TELEPHONE NUMBER (Include Area Code)

(914) 734-5567

**COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

**SUPPLEMENTAL REPORT EXPECTED (14)**

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

At approximately 12:10 hours on January 22, 1999 with the unit at 99 percent power, it was determined that, if a single failure occurred during containment pressure relief operations, the containment isolation function could be outside of its design basis. This would occur because of a potential vent path via containment isolation valve PCV-1190 through the Weld Channel and Containment Penetration Pressurization System solenoid vent port out to the piping penetration area in the PAB. Thus, during containment pressure relief, a single failure of PCV-1190 to close on a containment isolation signal would result in opening a vent path to the piping penetration area in the PAB. This would be a monitored release path and filtered by the PAB exhaust system. This condition resulted, during containment pressure relief operations, in Indian Point 2 being outside the plant design basis for containment isolation.

The most likely cause of the identified design deficiency was improper evaluation of the single failure associated with the interlock between valve PCV-1190 and SOV-1280 in the original design.

Immediate corrective action was taken to administratively control (close) a manual valve located in series with the weld channel during pressure relief operation. The event had no actual affect on the health and safety of the public.

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

**PLANT AND SYSTEM IDENTIFICATION:** Westinghouse 4-Loop Pressurized Water Reactor

**IDENTIFICATION OF OCCURRENCE:** Indian Point 3 notified Indian Point 2 of the event

**EVENT DATE:** January 22, 1999

**REPORT DUE DATE:** February 22, 1999

**REFERENCES:** Condition Reporting System (CRS) No. 199900485

**PAST SIMILAR OCCURRENCE:** None

**DESCRIPTION OF OCCURRENCE:**

At approximately 12:10 hours on January 22, 1999 with the unit at 99 percent power, it was determined that if a single failure occurred during containment pressure relief operations, the containment isolation function would be outside its design basis. The potential for this occurrence exists with the present design because of an interlock between containment isolation valve PCV-1190 and the Weld Channel and Containment Penetration Pressurization System (WCCPPS) supply / vent solenoid valve SOV-1280. During containment pressure relief, a single failure of PCV-1190 to close on a containment isolation signal would result in opening a release path to the piping penetration area in the PAB. This would be a monitored release path filtered by the PAB exhaust system. This condition was initially discovered at the Indian Point 3 Station.

The existence of a condition outside the plant's design basis was recorded in a Condition Report System (CRS 199900485). A corrective action was initiated to administratively restrict containment pressure relief. A one-hour report was made to the NRC. Operations declared the Containment Pressure Relief System inoperable and a four-hour Containment Integrity Limiting Condition of Operation (LCO) was entered. Immediate corrective action taken involved changing procedures to allow Containment Pressure Relief Operations with a closed manual isolation valve downstream of the WCCPPS supply/ exhaust solenoid valve. This manual valve would block the potential release path to the PAB during pressure relief operations and require entry into a 7 Day LCO. After completion of the pressure relief the system would be restored to its normal configuration with the manual valve open. The weld channel pressure would be applied and the LCO would be exited.

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ANALYSIS OF OCCURRENCE:

The Containment Building Pressure Relief line is used to reduce normal pressure build-up in the Containment Building during plant operation. Containment pressure is relieved through a 10 inch ventilation duct which is open to containment atmosphere and is connected to a fan located in the PAB fan house. This duct channels containment air through charcoal and HEPA filters located in the fan house and through the pressure relief fan prior to release to the environment. Three (3) isolation valves in series are provided for the pressure relief line. PCV-1190 is located inside containment, while PCV-1191 and 1192 are located outside containment. The spaces between these isolation valves are pressurized from the WCCPPS via solenoid operated valves SOV-1279 and SOV-1280. During pressure relief these valves are vented to the pipe penetration area. The Containment Building Pressure Relief line isolation valves and the solenoid operated valves are interlocked to prevent the opening of either isolation valve until the pressurization lines to the spaces between the isolation valves have been isolated. In the event of loss of instrument air or reduction of air pressure, volume tanks are installed and tied into the instrument air supply to automatically close the valves. In addition to loss of instrument air, the pressure relief valves will also close automatically upon the loss of electrical power.

From the above design it is evident that single failure considerations were part of the initial design. However, the interlock with the weld channel was not properly evaluated. The WCCPPS maintains a line pressure of 52 psi between the isolation valves. Initiation of pressure relief results in changing positions of a 3-way solenoid valve to isolate WCCPPS supply and vent the line between the containment isolation valves PVC-1190 and PCV-1191 to the PAB. If a postulated accident event were to occur that resulted in a containment isolation signal, PCV-1190 must close before its limit switch would allow SOV-1280 to change from its vent position and supply WCCPPS gas between the containment isolation valves. Thus, during the pressure relief, a single failure of PCV-1190 to close on a containment isolation signal defeats the signal to SOV-1280. The vent path remains active and provides a leakage path from the containment out to the pipe penetration area of the PAB. Containment air leaking out to the pipe penetration area would be released through the PAB exhaust system. This release path is monitored by radiation monitors and filtered by the PAB HEPA and charcoal filters. The containment leakage would exceed its design base leakage flow if this unlikely event would occur. It has been established that the probability for the above described occurrence is small. A calculation has been performed to determine the additional radiation dose at the site boundary and low population zone assuming this single failure concurrent with a loss of coolant accident. The total thyroid dose continues to be within the limits of 10CFR100.

A condition review was performed for other containment isolation valves. The purpose of the review was to identify any other containment penetrations which might have similar configurations and which might provide a similar vent path outside containment. Two other containment penetrations, the Containment Building Purge supply and exhaust lines, were found to have similar configurations with regard to the WCCPPS interface and control logic. The purge system is different from that of the pressure relief system in that a failure of the purge system will vent to a building adjacent to the PAB.

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**ANALYSIS OF OCCURRENCE (cont'd.):**

It should be noted that the Purge System is not used for containment pressure relief during power operation. Although use of the containment purge is permitted by Technical Specifications, it is strictly controlled by plant procedures and normally not used with the reactor at power.

**CAUSE OF OCCURRENCE:**

The most likely cause of the identified design deficiency was improper evaluation of the single failure associated with the interlock between valve PCV-1190 and SOV-1280 in the original design. The original design of the Containment Building Pressure Relief system failed to recognize that the single failure of the inboard containment isolation valve to close during containment pressure relief would prevent the isolation of the vent path into the PAB. This system, which satisfies the need to depressurize the containment isolation valve inter-space, would introduce an unintended flow path of Containment atmosphere during a plant condition in which containment isolation is required.

**CORRECTIVE ACTIONS:**

A manual valve (PCV 1110-8) is located downstream of supply / vent 3-way solenoid valve SOV-1280 for WCCPPS. Immediate corrective action taken was to change operations procedure SOP 5.4.1 so as to provide that containment pressure r Penetration relief may only take place with this manual isolation valve closed. Prior to closing the manual valve the WCCPPS pressure will be vented. Closing the manual valve will block application of WCCPPS gas to the space between valves PCV-1190 and PCV-1191 if an accident were to occur at that time. The penetration would still be sealed by WCCPPS gas pressurizing the space between valves PCV-1191 and PCV-1192.

This action will prevent the potential of the release path from the containment to the pipe penetration area if PCV - 1190 fails due to a single failure occurring either during manual closure of the valve or during the unlikely occurrence of a containment ventilation isolation actuation.

If an accident occurred which automatically required the closure of PCV-1190 during the pressure relief operation, the manual valve would block the inter-space pressurization from occurring. It is considered acceptable to enter the Technical Specification LCO and temporarily defeat the WCCPPS during pressure relief operations because the WCCPPS is not used when performing 10 CFR50 Appendix J Type A Leak Rate Testing and therefore not credited in determining dose to the public following an accident. These short term actions are taken to prevent flow through the vent path described above.

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**CORRECTIVE ACTION (cont'd)**

A modification is planned to provide automatic isolation of the solenoid vent path after the WCCPPS supply / vent solenoid valve has completed depressurization of the space between containment isolation valves PVC-1190 and PVC-1191. This modification will isolate the vent path via a timer for normal operation and immediately on a containment isolation signal.