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April 6, 1993

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 93-05-00

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

The attached Licensee Event Report LER 93-005-00 is hereby
submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,



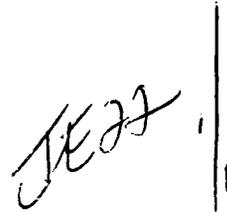
Attachment

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

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH 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.

FACILITY NAME (1) Indian Point Unit No. 2		DOCKET NUMBER (2) 0 5 0 0 0 2 4 7 1	PAGE (3) 1 OF 5
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TITLE (4)
Cable Spreading Room and Electrical Tunnel Ventilation Single Failure Determination

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)
03	05	93	93	005	00	04	05	93		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 1 0 1 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)							

LICENSEE CONTACT FOR THIS LER (12)

NAME Pedro Franceschi	TELEPHONE NUMBER AREA CODE 9 1 4 5 2 6 - 5 6 7 0
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUF. TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUF. TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

As a result of the design of 480 Volt (V) Switchgear Room ventilation which was previously reported in LER No. 91-20, engineering reviews of interfacing system effects on other ventilation systems were initiated.

In a follow-up engineering evaluation of a previously discovered and temporarily corrected interaction between the Cable Spreading Room (CSR) Halon fire protection system and the electrical tunnel exhaust fans ventilation system, an additional condition was found which potentially affected CSR / electrical tunnel ventilation system fan operability under certain conditions. Specifically, the tunnel exhaust fans, which are required to be operable whenever the reactor is critical pursuant to the Indian Point Unit 2 Technical Specification 3.3.I are interlocked with the tunnel fire protection deluge system. It was determined that a fault in a single deluge pre-action relay could lead to an undetected failure of both fans, which in turn could result in exceeding the maximum manufacturers' recommended temperature for operability of safety-related equipment in the CSR and electrical tunnel.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Determination that a single failure could defeat the ventilation system for the safety related Cable Spreading Room and Electrical Tunnel.

EVENT DATE:

March 5, 1993

REPORT DUE DATE:

April 5, 1993

REFERENCES:

Significant Occurrence Report (SOR) 93-109

PAST SIMILAR OCCURRENCE:

Licensee Event Report (LER) No. 91-020

DESCRIPTION OF OCCURRENCE:

In the course of an independent review of a modification to the CSR Halon fire protection system interfacing circuit with the tunnel exhaust fans control circuit, the reviewer determined that there existed a potential single failure in the fan control circuits that could cause an undetected failure of both tunnel exhaust fans. Specifically, the tunnel deluge system pre-action relay, which opens the deluge valve to the high pressure fire protection sprinkler system, was configured so as to trip both fans when the fans were in automatic mode. A fault in this single relay could cause an undetected failure of the control circuit in both fans.

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

ANALYSIS OF OCCURRENCE:

As a result of certain ventilation system design issues pertaining to the 480 Volt Switchgear Room which were previously identified and reported in LER 91-20, engineering reviews of interfacing system effects on other ventilation systems were initiated. Subsequently, an apparent potential issue associated with the Cable Spreading Room (CSR) Halon fire protection system was identified. The CSR and the electrical tunnel are automatically ventilated by two redundant electrical tunnel exhaust fans in conjunction with two inlet dampers in the CSR south wall. It was determined that failure of the Halon actuation relay could result in the loss of both exhaust fans since the relay was common to both fan circuits. This led to the temporary removal of the relay from both fan circuits and development of administrative controls. These controls provided that in the event of a fire in the CSR, the operator is to call the Central Control Room and have the fans tripped prior to actuating the manual Halon system. A modification was then requested for the current ongoing outage to permanently improve the configuration of the system.

At the time of the discovery of the Halon fire protection system interaction with the tunnel exhaust fans, a failure of the tunnel deluge system pre-action relay in the fan circuit was not considered to be a concern since a failure would not result in an unacceptable condition. Although the relay was common to both fan circuits, it was located in the automatic section of the circuit which can be bypassed by manual start of the fans. It was judged at the time by the HVAC engineer that the heatup rates in the CSR and the tunnel were sufficiently low to allow discovery of any increasing temperature in the areas by the roving operator, thus permitting recovery of the fans by manual start prior to the exceedance of any limiting temperature recommended by the manufacturers of the equipment. A detailed analysis of the heat loads and heatup rates was initiated to evaluate the areas with and without offsite power available under normal, transient and accident conditions.

During the current refueling outage, a design intended to improve the Halon fire protection system configuration while maintaining the redundancy, separation and seismic qualification of the tunnel exhaust fan ventilation system has been finalized. The design consists of installing a qualified manual key lock trip switch in the control circuitry of each fan at the Halon system station which would allow the fire brigade operator to manually trip each fan and provide a permissive signal to the Halon trip relay to trip each inlet damper (on the CSR South wall) locally prior to manually actuating the Halon system.

In the course of modification preparation it was determined that even though malfunction of the tunnel deluge pre-action relay was recoverable, a fault of the common relay to the two fan control circuits could result in an undetectable failure of both fans.

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

CAUSE OF OCCURRENCE:

The fire protection design of the plant adheres to the philosophy of tripping ventilation, thereby slowing propagation and lowering the intensity of a fire in a given room.

The original CSR and tunnel ventilation design took credit for stack-induced ventilation, which was available between the open primary auxiliary building end of the tunnel and the open inlet dampers. Ventilation fans were provided and designed to be seismically capable and to have redundancy and separation. Originally, a tunnel fire within a confined space was considered the more credible of accidents. Fire protection modifications were instituted in the 1970s, which included the closing of the open tunnel end at the PAB and the introduction of an inert gas type suppression system in the CSR which required the tripping of the fans and the inlet dampers to contain the gas. The entire fire protection system was not required either to be seismically capable or to have redundancy and separation. Due to the separate origins of the event-based designs, system interaction was not addressed.

CORRECTIVE ACTION:

The Halon relay interaction was promptly removed and administrative compensatory actions were immediately instituted. During the current outage, the fan circuitry was modified by the installation of seismically-qualified manual key lock switches which allow the fire brigade operator prior to manually initiating the Halon system, to manually trip the fans and provide a permissive for the Halon actuation relay to trip the inlet dampers. The switches are separated so that a single failure will result in only one fan and one inlet damper being tripped. Each switch position is independently annunciated in the Central Control Room to prevent an undetected mispositioned switch.

The deluge system interaction was found while the plant was in the cold shutdown condition with cool outside weather conditions. The fans were not required to be operating due to cool outside temperatures and low room heat load. Therefore, no immediate action was required.

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

CORRECTIVE ACTION: (continued)

During the current refueling outage a modification was completed to disconnect the relay from the control circuits of the fans. A change was made to the Alarm Response Procedure "SOF, Window 5-3" for the alarm associated with the Deluge Pre-Action relay to require the operator to trip the fans on the alarm and dispatch a fire brigade operator to the room to restore ventilation if no fire is in progress. This restoration of ventilation can be accomplished within the one hour required to exceed the areas maximum allowed temperature for a 95 degree Fahrenheit day. Thus, the safety-related function of the tunnel exhaust fans will be maintained while providing for adequate fire protection for the affected areas. The disconnection of the relay and changing the Alarm Response Procedure will be accomplished prior to returning the unit to service from the current refueling outage.