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Vice President

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August 9, 1993

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 93-08-00

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

The attached Licensee Event Report LER 93-08-00 is hereby voluntarily submitted to provide information to the NRC.

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
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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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.

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

TITLE (4)

Fan Cooler Unit Damper Test

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 2	0 5	9 3	9 3	— 0 0 8	— 0 0	0 8	0 9	9 3		0 5 0 0 0
										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 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)	X 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)	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)	Voluntarily

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (AREA CODE)
James Maylath, Engineer	9 1 4 5 2 6 - 5 3 5 6

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

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)

During the performance of the Safety Injection System Test in the course of the 1993 Refueling Outage, the normal outlet damper for Fan Cooler Unit 21 did not go to its incident position when Safety Injection Train B was tested. An investigation revealed that the two solenoid valves associated with the damper were connected to Train A. The design drawings provided for one solenoid to be connected to Train A and the other to Train B so that either train could actuate the damper. This wiring error was corrected during the refueling outage.

An investigation was conducted to determine when the wiring error occurred. The damper had been properly actuated during previous testing, however it could not be determined whether the wiring error occurred before or after previous successful tests. For the first time, this test was performed with instrument air maintained available. It was concluded that the damper could have operated successfully during previous tests because the safety injection signal stripped the power supply to the solenoid causing it to de-energize with the damper going to its 'fail-safe' position. Re-energization of the solenoid after resetting the power supply may not have been detected during the previous tests because the damper remained in its 'fail-safe' position due to lack of sufficient instrument air pressure after containment isolation of the instrument air line. Thus, the normal loss of instrument air during previous performances of the test served to mask the failure that has now been discovered.

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Fan Cooler Unit Damper Test

EVENT DATE:

One of the Fan Cooler Unit 21 dampers failed the Safety Injection Test on February 5, 1993. The event investigation, which determined that the Safety Injection Test could not assure that the Fan Cooler Unit damper was actuated by safety injection relay contacts in the solenoid valve circuits, was completed on July 9, 1993.

REPORT DATE:

August 9, 1993

REFERENCES:

Significant Occurrence Report (SOR) 93-98 and follow-up review.

PAST SIMILAR OCCURRENCE:

None

DESCRIPTION OF OCCURRENCE:

On February 5, 1993, with the unit in cold shutdown for refueling, Safety Injection Test PT-R13 was performed. During the performance of this test the normal outlet damper of Fan Cooler Unit 21 did not go to its incident (closed) position when Safety Injection Train B was actuated. This outlet damper has two associated solenoid valves which provide instrument air to keep the damper open when energized. On de-energization of either solenoid, the instrument air supply is blocked, and the air vented from the damper, allowing it to close. This design is fail-safe since either a loss of power to the solenoids or a loss of instrument air results in the normal outlet damper closing to its incident or safe position. The design also provides for a safety injection relay contact to open the solenoid circuits, with one solenoid being opened by a Train A relay and the other by a Train B relay. Either train is designed to open one solenoid, which results in the outlet damper closing. During the test described here, the Train B safety injection signal did not cause the damper to close. An investigation found that this was because both solenoids were wired to Train A relays. This wiring error was corrected during the 1993 refueling outage.

DESCRIPTION OF OCCURRENCE: (continued)

An investigation of modifications and work orders was conducted to determine when the wiring error could have occurred. In 1984 a modification which replaced all limit switches and solenoids associated with the Fan Cooler Units was done. This modification was satisfactorily tested upon completion by providing for separately de-energizing each solenoid through temporary switches which were installed at terminal boxes adjacent to the solenoids. As each switch was opened the associated damper did go to its incident position. These switches were apparently downstream of the wiring error, and each solenoid was de-energized when its associated switch was opened. In 1985, the terminal blocks were replaced in the terminal box (WK4) where the wiring error was found. There was no test procedure in the work package, and the scope of work provided only for inspection of the terminal blocks after installation. A search of work orders completed after the 1985 terminal block replacement did not conclusively show that additional work had been performed in terminal box WK4.

A review made of completed PT-R13 tests going back to 1981 showed that the Fan Cooler Unit 21 outlet damper properly operated for the Train A and B portions of each test. As a result, the investigation could not determine when the wiring error took place. As described further below, the Fan Cooler Unit 21 damper could have tested satisfactorily notwithstanding the wiring error because upon Train A or B safety injection actuation, the power supply to the solenoids is stripped, causing them to de-energize, and the instrument air supply to containment is isolated. This would have allowed the outlet damper to close on the Train B actuation without the Train B relay being in the circuit. Therefore, previous PT-R13 Safety Injection tests did not necessarily assure that the Safety injection relay opened the solenoid circuit to actuate the damper, inasmuch as during prior testing all dampers had properly actuated on safety injection actuation.

ANALYSIS OF OCCURRENCE:

This report is being made voluntarily at the discretion of management. The Containment Air Filtration System design provides for the normal damper outlet valve to close in order to provide for flow through the charcoal filters. Although the dampers will actuate on safety injection from a stripping of the power source and isolation of containment instrument air, the intent of this portion of PT-R13 is to assure that the safety injection relay interlocks will de-energize the solenoids and ensure that the dampers will not change position upon resetting of the power supply if sufficient instrument air pressure is maintained or re-established in containment.

ANALYSIS OF OCCURRENCE: (continued)

There were no adverse safety implications as a result of this event. During the time the solenoid was miswired, the Fan Cooler Unit 21 outlet damper would still have actuated from the Train A relay interlock, as well as upon Train B actuation due to the stripping of the solenoid power source and isolation of the containment instrument air supply. If the damper had changed position after resetting of the power source, Control Room indication would have informed the operator. The open damper would allow air flow to bypass the charcoal filter for that one Fan Cooler Unit (21). If Fan Cooler Unit 21 was assumed to be inoperable due to this condition, any subsequent single failure would result in either no more than two fan coolers and one containment spray pump unavailable, or three fan coolers unavailable with both containment spray pumps available. Thus, the capability to provide sufficient containment heat removal and iodine entrapment would be maintained. This event did not cause any personnel injury or damage to equipment.

CAUSE OF OCCURRENCE:

The normal outlet damper of Fan Cooler Unit 21 was not found in the incident position after Safety Injection Train B was actuated because both of the associated solenoid valves were connected to a Train A safety injection relay. When either the Train A or B Safety Injection is actuated, the position of the damper cannot be determined until the power source which was stripped by the safety injection signal is reset. This power source also supplies the Train A solenoids. The Train B solenoids have a separate power source, which is also stripped by the same safety injection signal. When these power sources are reset, damper indication is restored and the solenoids are designed to be de-energized by the open safety injection relay contact in each train. During the February 5, 1993 test, the Train B solenoid was re-energized when the power source was reset because it was wired to a Train A safety injection relay, which is not actuated by Train B. The damper had remained closed during previous tests because the safety injection signal (for either Train A or B) stripped the power source and isolated containment instrument air. When the power source was reset during the previous tests, the damper remained closed because after the isolation there was not sufficient instrument air pressure to open the damper upon re-energization of the associated solenoid. During the February 5, 1993 tests, the instrument air supply to containment was maintained by a jumper (installed the previous day to preclude undesirable valve actuations while leak testing on the instrument air containment isolation valve). Upon

CAUSE OF OCCURRENCE: (continued)

re-energization of the power source to the solenoid, the Fan Cooler Unit 21 damper opened because both associated solenoids were connected to a train A relay interlock and were re-energized. All other dampers associated with the fan cooler units were in their proper position throughout the test and actuated as expected. From these test results with the containment instrument air supply maintained, it can be concluded that there were no other wiring errors and that the dampers were indeed actuated by the safety injection relay interlock.

CORRECTIVE ACTION:

The wiring error on the Train B Fan Cooler Unit 21 normal outlet damper solenoid was corrected and successfully tested (from the point of the relay interlock) on April 9, 1993 (during the refueling outage).

The Safety Injection Test, PT-R13 will be revised so that a deficiency in the Safety Injection relay interlock (such as the wiring error described above or a failure of a relay or associated equipment) would be detected. The entire test will be reviewed to determine the need for further revision to ensure functionality of all safety Injection System circuits and components.