



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION • P.O. BOX 628 • WADING RIVER, NEW YORK 11792

TEL. (516) 929-6300

PM 91-069

April 22, 1991

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

In accordance with Technical Specification 6.9.2, enclosed is Shoreham Nuclear Power Station's Licensee Event Report 91-001.

Sincerely yours,

L. J. Calone
Plant Manager

RP/amo

Enclosure

cc: Thomas T. Martin, Regional Administrator
Institute of Nuclear Power Operations, Records Center
American Nuclear Insurers

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 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)

Shoreham Nuclear Power Station Unit 1

DOCKET NUMBER (2)

0 5 0 0 0 3 2 2 1 OF 0 5

PAGE (3)

TITLE (4)

Unplanned Actuation of Engineered Safety Feature Systems

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	24	91	91	001	00	04	22	91			05000	
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5 (Check one or more of the following) (11)									
POWER LEVEL (10)			20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)
0100			20.405(a)(1)(iii)			50.36(a)(1)			50.73(a)(2)(v)			73.71(a)
			20.405(a)(1)(iv)			50.36(a)(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)(ii)			50.73(a)(2)(viii)(A)			
			20.405(a)(1)(iv)			50.73(a)(2)(i)			50.73(a)(2)(viii)(B)			
			20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(ix)			

LICENSEE CONTACT FOR THIS LER (12)

NAME

Robert A. Pauly, Operational Compliance Engineer

TELEPHONE NUMBER

AREA CODE

5116 9129-18300

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
X	BIH	IRILY A11012	N						

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 March 24, 1991 at 1221, the Reactor Building Normal Ventilation System (RBNVS) outboard exhaust valve (1T46*AOV-037B) closed for no apparent reason. With RBNVS operating in a recirculation mode, this isolation of the exhaust flow path caused the Reactor Building pressure to rise above -.30" (water gauge) which in turn caused the unplanned initiation of Engineered Safety Feature systems Reactor Building Standby Ventilation System "A" and Control Room Air Conditioning "A". These two systems were restored to their normal lineups at 1225. Plant management personnel were informed of this event and the NRC was notified at 1426 per 10CFR50.72(b)(2)(ii). A definite cause for the outboard exhaust valve closing could not be determined. The exhaust valve itself, its control circuit and the components that vent air off the valve to assist it in closing were all inspected or tested but nothing abnormal was found.

* Reactor Defueled

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 365A's.) (17)

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as [xx].

IDENTIFICATION OF THE EVENT

Unplanned automatic actuations of ESF Systems (Control Room Air Conditioning [VI] "A" and Reactor Building Standby Ventilation System [BH] "A") due to low Reactor Building Differential Pressure.

Event Date: 03/24/91

Report Date: 04/22/91

CONDITIONS PRIOR TO THE EVENT

Reactor Defueled - All fuel assemblies stored in the Spent Fuel Pool.

Mode Switch - Refuel

RPV Drained

DESCRIPTION OF THE EVENT

On March 24, 1991, at approximately 1221, Reactor Building Normal Ventilation Exhaust Valve (1T46*AOV-037B) closed for no apparent reason. Since the Reactor Building is maintained at a negative pressure, the loss of exhaust flow caused the Reactor Building pressure to rise above $-.30$ " W.G. This caused pressure differential switches to trip and annunciators to alarm in the Control Room. The Control Room Operators responded by dispatching an Equipment Operator to the Reactor Building and by checking the control panel. They noticed that 1T46*AOV-037B was closed and reopened it. However, before the Reactor Building pressure could be restored to below $-.30$ " W.G., a 30 second time delay elapsed on the A side logic and this caused the Reactor Building Standby Ventilation System (RBSVS) A and Control Room Air Conditioning (CRAC) A subsystems to actuate. This was an unplanned actuation of Engineered Safety Feature systems and is reportable per 10CFR50.72(b)(2)(ii) and 50.73(a)(2)(iv). The two affected systems were reset at 1225. Plant Management personnel were informed of the event and the NRC was notified at 1426.

At the time of this event, the Reactor Building Normal Ventilation System (RBNVS) was being operated in a recirculation mode. In this mode, both RBNVS supply valves are closed and the air inside the

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
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Shoreham Nuclear Power Station Unit 1	0500032291	-	001	-	00	d 3 OF 05

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

Reactor Building is just recirculated. The outboard exhaust valve (1T46*AOV-037B) is fully open but the inboard exhaust valve (1T46*AOV-037A) is only cracked open far enough to allow sufficient exhaust flow to maintain the Reactor Building at a negative pressure.

CAUSE OF THE EVENT

The RBSVS and CRAC A subsystems initiated on Low Reactor Building Differential Pressure. The low differential pressure resulted from isolation of the exhaust flow path plus normal air in-leakage. To determine why this valve closed the following actions were taken:

1. At the exhaust valve control circuit, Technicians checked wiring terminations for tightness, checked for continuity and verified proper resistance to ground.
2. At the exhaust valve, Technicians checked the associated solenoid operated pilot valve's (SOV) junction box terminations for tightness. They also verified that the plunger in the SOV was free to move.
3. Other components that vent air off the cylinder to assist the exhaust valve in closing were also inspected but nothing abnormal was found.
4. The exhaust valve was stroked repeatedly and verified to have operated normally.
5. The pressure differential transmitters and pressure differential switches were inspected. Time Delay relay 63X-1T46B30, which initiates the RBSVS and CRAC "B" subsystems on Low Reactor Building D/P after a 30 second time delay was found to be inoperable. This is likely the reason the "B" subsystems were not actuated. However, nothing was found that would have caused the exhaust valve to close.
6. A recorder was used to monitor the voltage supplied to the outboard exhaust valve's SOV. This recorder was in place for one week but no voltage fluctuations were observed.

In spite of the above actions, no definite cause could be found for the outboard exhaust valve closing.

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

Two potential causes have been suggested. The first concerns the fact that the outboard exhaust valve did not close when an operator tried to manually close it on February 5, 1991. This exhaust valve's control switch has three positions: Close, Auto and Open. If, after the unsuccessful attempt to close the valve, the switch was only allowed to return to the Auto position without momentarily being placed in Open, then a close signal would have remained sealed in. If this was the case, then the valve would have had to have remained in the open position from February 5th to March 24th with a close signal applied. This scenario was found to be creditable since a review of maintenance records showed that on at least seven occasions during the last five years one of the four supply or exhaust valves have failed to close when either a manual close signal or an isolation signal was applied. Also, since RBNVS has been operating in the recirculation mode, monthly stroking of these valves has been discontinued.

A second potential cause could have been a momentary voltage dip on the 120 V AC bus supplying power to the outboard exhaust valve's control circuit. This voltage dip may have deenergized and then sealed out the interlocking relay in the valve control circuit. This would have caused the outboard exhaust valve to close. Because of differences in relay drop-out voltages and because many valves are deenergized, it is conceivable that this particular control circuit was the only one affected by a voltage dip.

ANALYSIS OF THE EVENT

There was no safety significance to this event. The plant is shutdown and has been defueled since August 1989.

Since RBSVS has not been required to be operable in the plant's current operational condition, the Reactor Building Normal Ventilation System has been operated in a recirculation mode in order to reduce Reactor Building humidity to help protect equipment from corrosion and also to reduce building heating costs.

CORRECTIVE ACTIONS

1. Time delay relay 63X-1T46B30 was replaced with a spare.
2. The voltage supplied to the outboard exhaust valve's SOV was monitored on a recorder for one week. Additionally, the outboard exhaust valve was cycled daily during this time but nothing abnormal was found.
3. The RBNVS outboard exhaust valve will be stroked on a routine basis.

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TEXT (If more space is required, use additional NRC Form 386A's) (17)

4. Operator training will be revised to remind operators that a closing signal is sealed in on the type of switch used for 1T46*AV-037B, whenever the switch is moved from the Close to the Auto position.

ADDITIONAL INFORMATION

- a. Manufacturer and model number of failed component(s)

Agastat Relay Co.
Model E70240K002

- b. LER numbers of previous similar events

LER 90-002