

**LICENSEE EVENT REPORT**

CONTROL BLOCK: 

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0	1	N	J	S	G	S	2	2	0	0	-	0	0	0	0	0	-	0	0	3	4	1	1	1	1	4			5		
7	8	LICENS2E CODE						14	15	LICENSE NUMBER										25	26	LICENSE TYPE					30	31	57 CAT 56		58

CON'T

7 8 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

REPORT SOURCE L 6 0 5 0 0 0 3 1 1 7 0 6 2 3 8 3 8 0 7 1 3 8 3 9

DOCKET NUMBER EVENT DATE REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 On June 23, 1983, during routine shutdown operation, the Control Room Operator observed

0 3 two different instances in which a spurious Safeguards Equipment Control (SEC) System

0 4 actuation caused various loads on the No. 2A Vital Bus to be de-energized. In the second

0 5 case the bus infeed breaker opened with no automatic transfer, rendering the bus inoperable.

0 6 In both instances, due to the loss of the operating Residual Heat Removal (RHR) pump, flow in

0 7 the operating RHR loop was lost. The appropriate action statements were entered in each

0 8 case. The events constituted operation in a degraded mode per Technical Specification

6.9.1.9b.		SYSTEM CODE		CAUSE CODE		CAUSE SUBCODE		COMPONENT CODE				COMP SUBCODE		VALVE SUBCODE							
0	9	C	F	11	B	12	A	13	I	N	S	T	R	U	14	Y	15	Z	16		
7	8	9	10		11	12	13	14	15	16	17	18	19	20							
(17) LER RO REPORT NUMBER		EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE				REPORT TYPE		REVISION NO.									
8		3		0		3				1		0		3		L		0			
21		22		23		24				25				26				27			
ACTION TAKEN		FUTURE ACTION		EFFECT ON PLANT		SHUTDOWN METHOD		HOURS				ATTACHMENT SUBMITTED		NPRD-4 FORM SUB.		PRIME COMP. SUPPLIER		COMPONENT MANUFACTURER			
X	18	X	19	Z	20	Z	21	0	0	0	0	22	Y	23	Y	24	A	25	A		
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 The spurious SEC actuations are apparently related to internal circuitry noise; further

1 1 investigation of the problem is underway. RHR flow and power to the vital bus was re-

1 2 stored as appropriate, and the action statements were terminated. Appropriate corrective

1 3 action will be taken upon completion of the investigation.

1	4
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7 8 9 FACILITY STATUS 1 5 G 28 10 11 12 13 % POWER 0 0 0 29 OTHER STATUS NA 30 44 45 46 METHOD OF DISCOVERY A 31 DISCOVERY DESCRIPTION 32 Operator Observation

ACTIVITY CONTENT  
RELEASED OF RELEASE AMOUNT OF ACTIVITY (35)

1 6 2 33 2 34 NA

7 8 9 10 11

LOCATION OF RELEASE (36)

NA

45

PERSONNEL EXPOSURES									
NUMBER		TYPE		DESCRIPTION					
1	7	0	0	0	37	2	38	NA	39

PERSONNEL INJURIES		DESCRIPTION	
NUMBER			
1	H	0	0
2		0	0
3		0	0
4		0	0
5		0	0
6		0	0
7		0	0
8		0	0
9		0	0
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98		0	0
99		0	0
100		0	0

1 9 2 5 LOSS OF OR DAMAGE TO FACILITY (43)  
TYPE DESCRIPTION  
2 6 7 8 9 0  
Z (42) NA

10  
PUBLCITY  
ISSUED DESCRIPTION (45)  
2 0 [N] (44) NA  
8308010414 830713  
PDR ADOCK 0500031  
S PDR  
NRC USE ONLY

NAME OF PREPARER

R. Frahm

PHONE:

(609) 339-4309



Public Service Electric and Gas Company P.O. Box E Hancocks Bridge, New Jersey 08038

Salem Generating Station

July 21, 1983

Dr. Thomas E. Murley  
Regional Administrator  
USNRC  
Region 1  
631 Park Avenue  
King of Prussia, Pennsylvania 19406

Dear Dr. Murley:

LICENSE NO. DPR-75  
DOCKET NO. 50-311  
REPORTABLE OCCURRENCE 83-031/03L

Pursuant to the requirements of Salem Generating Station Unit No. 2, Technical Specifications, Section 6.9.1.9.b, we are submitting Licensee Event Report for Reportable Occurrence 83-031/03L. This report is required within thirty (30) days of the occurrence.

Sincerely yours,

J. M. Zupko, Jr.  
General Manager -  
Salem Operations

RF:kl's 742

CC: Distribution

Report Number: 83-031/03L  
Report Date: 07-13-83  
Occurrence Date: 06-23-83  
Facility: Salem Generating Station Unit 2  
Public Service Electric & Gas Company  
Hancock's Bridge, New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

Reactor Coolant System - Residual Heat Removal Loops -  
Loss of Operating Loop.

This report was initiated by Incident Reports 83-114 and 83-115.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 5 - Rx Power 0 % - Unit Load 0 MWe.

DESCRIPTION OF OCCURRENCE:

At 0555 hours, June 23, 1983, during routine shutdown operation, the Control Room Operator observed the de-energization of several No. 2A Vital Bus motor loads. A survey of the control console revealed that the the following loads were involved: No. 21 Residual Heat Removal (RHR) Pump, No. 21 Fuel Handling Building Exhaust Fan, and No. 21 Containment Fan Coil Unit. No other running equipment on No. 2A Vital Bus was de-energized; the bus infeed breaker remained closed. A No. 2A SEC Trouble light and "TEST 20" indication were received; a Phase C Time Overcurrent Relay flag was locked in on the breaker for No. 21 RHR Pump.

The de-energization of No. 21 RHR Pump resulted in no RHR loop being in operation, and Technical Specification Action Statement 3.4.1.4b was entered. Since the occurrence was apparently due to a spurious SEC actuation and not a fault in the RHR pump, the pump was immediately started and a RHR loop returned to operation. No reduction in Reactor Coolant System (RCS) boron concentration occurred with all RHR loops out of service.

Later that day, at 1745 hours, a similar event occurred. The No. 2A Vital Bus Infeed Breaker tripped open without an automatic transfer, however, and the bus and its loads were de-energized. The vital bus and its associated A.C. bus train were declared inoperable and Technical Specification Action Statement 3.8.2.2 was entered. Due to the loss of No. 21 RHR Pump, Action Statement 3.4.1.4b was entered for a second time. No reduction in RCS boron concentration occurred while both RHR loops were out of service; containment integrity was being maintained at the time of the event. Since the problem was evidently due to a spurious SEC actuation, at 1752 hours the vital bus infeed breaker was reclosed, the bus was re-energized, and all necessary loads restored to operation.

APPARENT CAUSE OF OCCURRENCE:

Investigation revealed that these occurrence were evidently due to spurious operation of the SEC System. Similar events had recently been observed (see LERs 83-014/03L and 83-025/03L) and were also associated with spurious Safeguards Equipment Control (SEC) System actuations. Previous SEC problems related to control circuitry noise (see LER 82-132/03L) had been addressed by installation of noise suppression devices per Design Change Request 2EC1387; due to the different symptoms, however, the recent problems are of a somewhat different nature.

A contract was written for further investigation of the problems. Initial modifications had been implemented in accordance with Design Change Request 2ET-1651 and addressed the discovery of a floating logic line and potential internal circuitry noise problems. Operational testing of the channel with the modifications was in progress at the time of the occurrences; after the events a high response recorder was connected to the channel to monitor signals at different circuit locations.

ANALYSIS OF OCCURRENCE:

Operability of the RHR loops is required to provide heat removal capability for removing decay heat. A single loop provides sufficient capability; single failure considerations require that two loops be operable. A single RHR pump also provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during RCS boron concentration reductions.

The operability of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that the facility can be maintained in the shutdown or refueling condition for extended periods of time and that sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

As noted, in the first case RHR flow was immediately restored. In the second instance, containment integrity was in effect and the bus was re-energized. No reductions in boron concentration occurred until an RHR pump was restored to operation. The events therefore involved no undue risk to the health or safety of the public. The occurrences constituted operation in a degraded mode permitted by a limiting condition for operation and are reportable in accordance with Technical Specification 6.9.1.9b.

Action Statement 3.4.1.4b requires:

With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the RCS and immediately initiate corrective action to return the required RHR loop to operation.



ANALYSIS OF OCCURRENCE: (cont'd)

Action Statement 3.8.2.2 requires:

With less than the required complement of A.C. buses and inverters operable and energized, establish containment integrity within 8 hours.

CORRECTIVE ACTION:

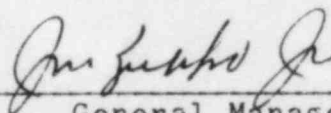
As mentioned, in the first case, the Control Room Operator restarted necessary safety related equipment, including an RHR pump. With an RHR loop in operation, Action Statement 3.4.1.4b was terminated at 0600 hours, June 23, 1983. In the second case, power was restored to the No. 2A Vital Bus at 1752 hours, June 23, 1983. The bus was declared operable and Action Statement 3.8.2.2 was terminated. After inspection of the supply breaker to No. 21 RHR Pump, at 2338 hours, June 23, 1983, the pump was restarted and RHR flow restored. With a loop in operation, Action Statement 3.4.1.4b was terminated.

As noted, further investigation into the cause of the occurrence is being performed; steps have been taken to insure immediate response of the consulting firm on contract for investigation of the problems. Based on the results of the investigation, appropriate measures in addition to those of Design Change Request 2ET-1651 will be implemented. A commitment to submit a Supplemental Report upon resolution of the problems was made in LER 83-014/03L.

FAILURE DATA:

Automation Industries, Inc.  
Safequards Equipment Control System

Prepared By R. Frahm



General Manager -  
Salem Operations

SORC Meeting No. 83-094