



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

Salem Generating Station

July 7, 1989

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

Dear Sir:

SALEM GENERATING STATION
LICENSE NO. DPR-75
DOCKET NO. 50-311
UNIT NO. 2
LICENSEE EVENT REPORT 89-013-00

This Licensee Event Report is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR 50.73(a)(2)(iv). This report is being submitted within thirty (30) days of discovery.

Sincerely yours,

L K Miller / pm

L. K. Miller
General Manager -
Salem Operations

MJP:pc

Distribution

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The Energy People

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Salem Generating Station - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 1 1	PAGE (3) 1 OF 0 4
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TITLE (4)
Manual Reactor Trip - Loss of 5 Circ Water Sys Circ. Pumps Due To External Causes

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		
06	10	89	89	013	00	07	07	89			
									DOCKET NUMBER(S) 0 5 0 0 0		

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0	20.402(b)	20.406(c)	<input checked="" type="checkbox"/>	50.73(e)(2)(iv)	73.71(b)					
	20.406(a)(1)(i)	50.36(e)(1)		50.73(e)(2)(v)	73.71(e)					
	20.406(a)(1)(ii)	50.36(e)(2)		50.73(e)(2)(vii)	OTHER (Specify in Abstract Below and in Text, NRC Form 366A)					
	20.406(a)(1)(iii)	50.73(e)(2)(i)		50.73(e)(2)(viii)(A)						
	20.406(a)(1)(iv)	50.73(e)(2)(ii)		50.73(e)(2)(viii)(B)						
20.406(a)(1)(v)	50.73(e)(2)(iii)		50.73(e)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)			
NAME M. J. Pollack - LER Coordinator	TELEPHONE NUMBER 6 0 9 3 3 9 - 4 0 2 2		

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
C	N	N	P						
			D 2 4 5	N					

SUPPLEMENTAL REPORT EXPECTED (14)	EXPECTED SUBMISSION DATE (15)	MONTH DAY YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	

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

On 6/10/89, a reactor trip was manually initiated from 15% reactor power. Five of the six circulating pumps had become inoperable. Prior to tripping the plant, a Control Room alarm due to high differential pressure across several Circulating Water System (CWS) screens annunciated. A power runback was initiated. During the runback 4 of the circulating pumps tripped on high screen differential pressure. When power was reduced to less than P-9 (50%), the Turbine was manually tripped. The steam dumps were subsequently armed and opened. When the fifth circulating pump became inoperable, Condenser back pressure increased to the point where the permissive to use the steam dumps was exceeded. Subsequently, the steam dump valves closed and several main steam safety valves lifted. Direction was then given to manually trip the reactor. The root cause of this event has been attributed to external causes and inadequate corrective action from a similar prior event. Large accumulations of grass and debris on the screens caused the high diff. pressure. On 8/17/83, a similar event occurred. The corrective action from the prior event did not require any long term actions. A review of the preventive maintenance (PM) history for cleaning the trash racks was conducted. It was found that no specific PM requirement existed. The racks were last cleaned three years ago. Therefore, a PM task to require special cleaning of the trash racks every refueling outage has been established. The trash racks were cleaned of the grasses and debris and the Unit was returned to power on 6/14/89.

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PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as {xx}

IDENTIFICATION OF OCCURRENCE:

Manual Reactor Trip From 15% Power; Loss of 5 of 6 Circulating Water System Circulator Pumps Due To Internal Causes and Inadequate Corrective Action From A Similar Prior Event

Event Date: 6/10/89

Report Date: 7/07/89

This report was initiated by Incident Report No. 89-348.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 100% - Unit Load 1140 MWe

DESCRIPTION OF OCCURRENCE:

On June 10, 1989 at 2319 hours, a reactor trip was manually initiated from 15% reactor power. Five of the six circulating pumps had become inoperable.

Prior to tripping the plant, the "Screenwash Trouble" overhead annunciator in the Control Room alarmed. Investigation revealed high differential pressure across several Circulating Water System (CWS) {NN} screens. A power runback was initiated. During the runback four of the circulating pumps tripped on high differential pressure across their associated screens. When power was reduced to less than P-9 (50%), the Turbine was manually tripped. Subsequently, the steam dumps were armed and opened. When the fifth circulating pump became inoperable, Condenser back pressure increased to the point where the permissive to use the steam dumps was exceeded. Subsequently, the steam dump valves closed and several main steam safety valves lifted. Direction was then given to manually trip the reactor. The plant was stabilized in Mode 3 (Hot Standby).

The Nuclear Regulatory Commission was notified of the actuation of the Reactor Protection System in accordance with Code of Federal Regulations 10CFR 50.72(B)(2)(ii)

APPARENT CAUSE OF OCCURRENCE:

The root cause of this event has been attributed to external causes and inadequate corrective action from a similar prior event.

The CWS screen high differential pressure was the result of large accumulations of grass and debris on the screens. The day before this

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APPARENT CAUSE OF OCCURRENCE: (cont'd)

event, extreme weather conditions were prevalent. This included very heavy rainfall and winds. This weather caused significantly greater amounts of grass and debris to be present in the river.

The trash racks are cleaned by a heavy duty, traversing type trash rake. The rake is not able to clear the racks when the trash racks become matted with excessive amounts of grass and debris. Due to this clogging of the trash racks (lower third), higher than normal surface water velocity caused increased accumulation of grass and debris on the screens.

On August 11, 1983, a similar event occurred (reference LER 272/83-033/014). The corrective action associated with the prior event did not require any long term actions. The actions completed involved the immediate cleaning of the trash racks and the return to power of the Unit.

ANALYSIS OF OCCURRENCE:

The CWS is the plant cooling system designed to dissipate waste heat to the Delaware River. The system takes suction from the river through a fixed trash rack and vertical traveling screens with fish troughs. The water is pumped, via vertical circulating pumps into the Unit's three shell divided circulation single pass surface condensers.

During low tide, a waterfall effect can be observed of incoming water rising over the trash racks if they are matted with grass and debris. This waterfall effect was observed by the system engineer on May 25, 1989. On May 25, the System Engineer submitted a Recurring Task requiring special cleaning of the trash racks each refueling outage using divers and hydrolazing techniques, as applicable.

During this event the MS10 valves (atmospheric reliefs) did not open automatically when the steam dump system became non-functional. This resulted in the lifting of the first safety valve in each main steamline. The MS10 valves were opened manually during this event. All other systems functioned as designed during this event.

All safety valves which lifted did so at their design setpoint.

This event did not affect the health or safety of the public. However, due to the manual actuation of the Reactor Protection System, this event is reportable in accordance with Code of Federal Regulations 10CFR 50.73(a)(2)(iv).

CORRECTIVE ACTION:

A review of the preventive maintenance history for cleaning the trash racks was conducted. As indicated in the Analysis of Occurrence section, it was found that no specific preventive maintenance

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CORRECTIVE ACTION: (cont'd)

requirement exists; however, they were last cleaned three years ago. Therefore, a preventive maintenance activity has been established to clean the trash racks every refueling outage (18 months).

The trash racks were cleaned of the grasses and debris using divers and hydrolazing. Subsequently, the Unit was returned to power on June 14, 1989.

Engineering is investigating the MS10 valve inadequate response during this event.

L K Milley/pw

General Manager -
Salem Operations

MJP:pc

SORC Mtg. 89-071