

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH, (T-8 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)
SALEM GENERATING STATION UNIT 1

DOCKET NUMBER (2)
05000272

PAGE (3)
1 OF 3

TITLE (4)
Service Water Strainer Design Deficiency Potentially Outside Design Basis

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 NAME	DOCKET NUMBER
11	19	96	96	034	00	12	19	96	Salem Unit 2	05000311
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)	000	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)				
		20.2203(a)(1)	20.2203(a)(3)(i)	X 50.73(a)(2)(ii)	50.73(a)(2)(x)				
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71				
		20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER				
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A				
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)					

LICENSEE CONTACT FOR THIS LER (12)

NAME Dennis V. Hassler, LER Coordinator	TELEPHONE NUMBER (Include Area Code) 609-339-1989
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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

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 15 single-spaced typewritten lines) (16)

A review determined that the Service Water System media size and potential clogging effects may have resulted in more frequent backwash than assumed in the design calculations. The design calculations assumed that during an accident that an average of only one strainer would operate continuously in the backwash mode. The extent of the backwash mode during previous operating cycles depended on the SW pumps in various stages of wear and operating with the system having a number of heat exchangers in service. This results in a lower flow rate through the strainers. Backwash frequency was previously observed during lower system/strainer flow conditions with lower strainer differential pressures. However, engineering judgment indicates that during past operation, conditions may have existed that made it likely that more than one strainer would have been in the backwash mode at accident flowrates.

The cause of this occurrence is the failure to predict that the 1/32 inch strainer media would eventually become subject to long term clogging and no preventative maintenance task was assigned to periodically inspect and replace the media prior for clogging problems. Corrective actions are to replace the strainer media with a larger size opening and establishing a preventative maintenance task.

This event is reportable in accordance with 10 CFR 73(a)(2)(ii); any condition outside the design basis of the plant.

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SALEM GENERATING STATION UNIT 1	05000272	96	034	00	2 OF 3

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor

Service Water System {BI/-}*

* Energy Industry Identification System (EIIS) codes and component function identifier codes appear as (SS/CCC)

CONDITIONS PRIOR TO OCCURRENCE

At the time of identification, Salem Units 1 and 2 were shutdown and defueled.

DESCRIPTION OF OCCURRENCE

The Service Water (SW) strainers were replaced in 1987 and 1988 and had a media size of 1/32 inch. The strainers are set up to automatically backwash on high differential pressure and design calculations that support the Service Water System design calculations assumed that an average of only one strainer would operate continuously in the backwash mode. The SW strainers were recently observed to be operating frequently in the backwash mode. The extent of the backwash mode during previous operating cycles depended on the SW pumps in various stages of wear and operating with the system having a number of heat exchangers in service. This results in a lower flow rate through the strainers. Backwash frequency was previously observed during lower system/strainer flow conditions with lower strainer differential pressures. The new pumps lead to higher strainer flow rates, which resulted in more frequent backwash than previously assumed. Similar conditions could have existed in the past and therefore engineering judgment indicates that during past operation, conditions may have existed that made it likely that more than one strainer could have been in the backwash mode at accident flowrates. Frequent strainer backwashing would divert more than expected amounts of water from the heat exchangers located downstream of the strainers.

The 1/32 media size was originally based on vendor recommendations. The effects of long term operation of the strainer and reduction in the media size due to clogging were not recognized. Consequently, a reduction in the media open area due to clogging resulted in an increase in the differential pressure across the strainer causing more frequent backwash than expected.

CAUSE OF OCCURRENCE

The cause of this occurrence is the failure of the vendor and PSE&G engineering to predict the 1/32 inch strainer media would eventually become subject to long term clogging. At the time of the design, backwashing was considered sufficient to remove entrained particulate material from the strainer media holes.

Additionally, no effective preventative maintenance task was established to periodically inspect and replace the media to preclude clogging problems.

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		96	- 034	- 00		

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

PRIOR SIMILAR OCCURRENCES

In the past two years nine LERs addressed design as the cause. These LERs are 272/95-014-00, 272/95-025-00, 272/95-029-00, 272/96-001-00, 272/96-010-00, 272/96-012-00, 272/96-018-00, 272/96-019-00 and 272/96-020-00. Corrective actions for these LERs were specific to the particular issue.

SAFETY CONSEQUENCES AND IMPLICATIONS

The implications of more than one strainer in backwash would be a small increase in expected pump flow and a reduction in flow margin to high resistance heat exchanger flow paths. The diversion of flow from system heat exchangers is not expected to be significant, however, an increase in pump flow would have reduced pump NPSH margin, which had been previously recognized to be a concern (LER 272/95-025). The new Service Water pumps have a substantially reduced NPSH requirement.

Though the possibility existed for an average of more than one strainer to be in a backwash mode, no specific occurrences in the past of this operational condition were identified. Therefore, there were no safety consequences associated with this occurrence because there is no evidence that the condition occurred in the past. The health and safety of the public were not affected.

CORRECTIVE ACTIONS

1. The SW strainer media will be replaced with a media of 1/16 inch size holes, which is expected to reduce the tendency for clogging as well as the backwash frequency. This will be completed for Salem Units 1 and 2 prior to entering Mode 4.
2. A Preventative Maintenance requirement will be established by March 3, 1997 to inspect and replace as necessary the SW strainer media.