

**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-6 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) <b>SALEM GENERATING STATION UNIT 1</b>		DOCKET NUMBER (2) <b>05000272</b>	PAGE (3) <b>1 of 4</b>
---	--	--------------------------------------	---------------------------

TITLE (4)  
**FAILURE TO PLUG STEAM GENERATOR TUBES DUE TO MISSED EDDY CURRENT INDICATIONS**

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
01	06	94	95	-- 023	-- 00	10	24	95	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)								
POWER LEVEL (10)	000	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)	20.2203(a)(1)	20.2203(a)(3)(i)	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)		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	Specify in Abstract below or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>Mr. Robert Dulee, Steam Generator Project Manager</b>	TELEPHONE NUMBER (Include Area Code) <b>609-339-5350</b>
--	---

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
X	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO	3	29	96

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

During a review of prior outage test data to support estimations of Steam Generator (S/G) tube indication growth rates, eight tubes were identified to have exceeded the Salem Technical Specification plugging criteria of 40% of tube wall as specified in the acceptance criteria of the surveillance requirements of Section 4.4.5.4. Contrary to the Limiting Condition for Operations, Section 3.4.5, the unit was operated in modes 1 through 4 with steam generators that did not meet the operability requirements described in Section 4.4.5.4.

The safety significance and root cause are unknown at this time. An investigation is underway and should be completed to permit a supplementary report by March 29, 1996.

This is reportable per 10CFR50.73(a)(2)(i)(B), a condition prohibited by the plant's Technical Specifications.

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SALEM GENERATING STATION UNIT 1	05000272	95	-- 023	-- 00	2 of 4

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

**PLANT AND SYSTEM IDENTIFICATION**

Westinghouse - Pressurized Water Reactor

Reactor Coolant System/Steam Generator {AB/SG}\*

\* Energy Industry Identification System (EIIS) codes and component function identifier codes appear in the text as {SS/CCC}.

**IDENTIFICATION OF OCCURRENCE**

Missed Eddy Current Testing (ECT) indications during the 1993 Salem Unit #1 Refueling Outage (1R11) steam generator tube evaluations.

Event Date: January 6, 1994.

Discovery Date: September 26, 1995.

Report Date: October 25, 1995.

**CONDITIONS PRIOR TO OCCURRENCE**

Defueled - Reactor Power 0%

**DESCRIPTION OF OCCURRENCE**

To determine the growth rate of indications during the operating period between past outage 1R11 and current outage 1R12, a review of 1993 bobbin ECT data was performed. During this review, on September 26, 1995, bobbin probe indications with depths which exceed the Technical Specification plugging criteria of 40% of tube wall specified in section 4.4.5.4 were identified at Tube Support Plate (TSP) intersections for eight tubes (seven tubes with one indication each and the remaining tube with two indications) which were not plugged.

In 1993 the primary and secondary analysts did not correctly identify, as pluggable, three indications which are now evaluated as having depths of 68%, 85%, and 96% through wall. Two indications now evaluated as 42% and 79% depth were evaluated in 1993 by both the primary and secondary analysts as distorted indications which should be examined by Rotating Pancake Coil (RPC); the resolution analyst concluded that neither indication was pluggable or required follow-up inspection by RPC. For the four other indications, differences between the primary and secondary analyst were evaluated by the resolution analyst as not pluggable.

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SALEM GENERATING STATION UNIT 1	05000272	95	-- 023	-- 00	3 of 4

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

**APPARENT CAUSE OF OCCURRENCE**

The cause of the missed bobbin coil probe indications is not known at this time.

**PRIOR SIMILAR OCCURRENCES**

There is no prior similar occurrence at Salem of the identification of an ECT indication which should have been called at a previous inspection. A review of events previously reported to the NRC by other plants indicates that missed bobbin coil probe pluggable indications have been experienced at Sequoyah Unit 1, ANO Unit 2, North Anna Unit 1, Ginna, Yankee Rowe, and Maine Yankee.

**SAFETY SIGNIFICANCE**

A structural integrity assessment is being performed by Westinghouse to demonstrate that the requirements of Reg. Guide 1.121 are met by the tubes with their as-found flaw configuration. Ultrasonic testing is being performed to verify the crack configuration, and in-situ pressure testing will be performed to support the structural integrity assessment. If the structural integrity assessment demonstrates that the requirements of Reg. Guide 1.121 have been met, this event will have no safety significance.

**CORRECTIVE ACTIONS**

Salem Unit #1

1. A structural integrity assessment is being performed to confirm that affected tubes in their as-found condition meet the requirements of Reg. Guide 1.121.
2. A number of corrective actions are being taken to assure that all tubes with ECT depth indications greater than 40% are plugged and to minimize any future missed call of a pluggable ECT indication. These corrective actions include:
  - a. An independent assessment of the training and qualification of analysts involved in the 1993 and 1995 analyses of Salem Unit 1 ECT data has been performed. This assessment indicates that there are no apparent procedural or regulatory violations. However, specific areas where the program for training and qualification of analysts could be improved were noted. Each of these areas has been discussed with the contractor.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
SALEM GENERATING STATION UNIT 1	05000272	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 of 4
		95	-- 023	-- 00	

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

CORRECTIVE ACTIONS (cont'd)

- b. Data analyst guidelines specific to Salem Units 1 and 2 are being developed. Prior to performing any S/G ECT inspections in either Unit #1 or Unit #2, all analysts will be trained and tested to demonstrate proficiency in the use of the guidelines.
- c. A full length bobbin coil ECT inspection expansion of all unplugged tubes in all steam generators from the current 20% sample size will be performed to assure that all bobbin coil probe indications are analyzed during the current outage. The 1993 bobbin coil probe data will be reviewed for any additional pluggable indications identified in the current outage to assess the apparent growth rate of indications. This expanded inspection scope may identify additional bobbin coil probe indications which should have been analyzed as pluggable in 1993. This task will be completed by March 29, 1996.
- d. All bobbin coil inspection data already taken will be reanalyzed. A PSE&G Level III examiner will provide oversight of this reanalysis effort. This task will be completed by March 29, 1996.
- e. Steam generator tubes requiring plugging will be plugged based upon the results of tasks 2c and 2d prior to restart of Unit #1.

Salem Unit #2

- 3. The corrective action described in item 2b above for site specific training and testing will be implemented prior to performing ECT on Salem Unit #2.
- 4. Salem Unit #2's steam generators will have completed 100% tube inspections prior to Unit #2 restart. If a defective tube was missed in a prior outage, the planned inspection program should detect the defective tube and a supplement to this LER will be issued.