

Public Service
Electric and Gas
Company

Steven E. Miltenberger

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Vice President and Chief Nuclear Officer

FEB 25 1994

NLR-N94035

**United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555**

Gentlemen:

**TECHNICAL SPECIFICATION 6.9.1.5 ANNUAL REPORTS
SALEM AND HOPE CREEK GENERATING STATIONS
DOCKET NOS. 50-272, 50-311, AND 50-354**

Public Service Electric and Gas Company (PSE&G) hereby submits the enclosed Annual Reports for Salem and Hope Creek Generating Stations, in accordance with Technical Specification 6.9.1.5.a and 6.9.1.5.b of Appendix A to Facility Operating License Nos. DPR-70, DPR-75, and NPF-57.

Pursuant to Technical Specification 6.9.1.5.a, Enclosures 1, 2 and 3 are being submitted for Salem Unit 1, Salem Unit 2, and Hope Creek Unit 1, respectively. The data contained in these enclosures is preliminary in nature. Due to modifications in the Personnel Radiological Exposure Monitoring System (PREMS) software to implement the new 10 CFR 20 requirements, PSE&G has experienced software problems that have delayed the uploading of the fourth quarter TLD data and validation of this data. The enclosures contain tabulations on an annual basis of the number of station, utility and other personnel receiving exposures greater than 100 mrem/year and their associated man rem exposures according to work and job function for each unit. These tabulations are intended to supplement the requirements of 10 CFR 20, Section 20.407. A final Regulatory Guide 1.16 Report for Salem Unit 1, Salem Unit 2, and Hope Creek for the 1993 calendar year will be transmitted to the NRC by March 31, 1994.

Pursuant to Technical Specification 6.9.1.5.b of Appendix A to Facility Operating License DPR-70 and DPR-75, Enclosure 4 is submitted for Salem Unit 1 and Unit 2. Enclosure 4 documents the results of the Steam Generator Tube inservice inspections performed during the 11th Refueling Outage for Unit 1 and the 7th Refueling Outage for Unit 2.

The Annual Report for Challenges to Main Steam Safety/Relief Valves for the Hope Creek Generating Station, required by Technical Specification 6.9.1.5.b of Appendix A to Facility Operating License No. NPF-57, is being transmitted separately.

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FEB 25 1994

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NLR-N94035

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Should you have any questions or comments regarding this
submittal, please contact us.

Sincerely,



Enclosures (4)

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**ENCLOSURE 1
PRELIMINARY REPORT**

**PUBLIC SERVICE ELECTRIC
AND GAS COMPANY
HANCOCK'S BRIDGE, NJ 08038**

**PAGE: 1 OF 2
DATE: 02/18/94
REGULATORY GUIDE 1.16
REPORT PERIOD
FROM: 01/01/93
TO: 12/31/93**

**SALEM UNIT 1
STANDARD FORMAT FOR REPORTING
NUMBER OF PERSONNEL AND
PERSON-REM BY WORK AND JOB FUNCTION**

**NUMBER OF PERSONNEL
(> 100 MREM) TOTAL PERSON-MREM**

WORK AND JOB FUNCTION (PERSONNEL GROUPING)	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS
Reactor Operations and Surveillance						
Maintenance	2	0	2	1164	393	2422
Operating	0	0	0	112	69	10
Health Physics	0	0	0	324	29	85
Chemistry	0	0	0	6	0	0
Supervisory	0	0	0	45	0	28
Engineering	0	0	0	135	79	12
I&C	0	0	0	63	0	341
Security	0	0	0	0	0	0
Routine Maintenance						
Maintenance	1	0	26	3585	927	9765
Operating	0	0	0	1703	171	43
Health Physics	11	0	5	3201	193	2112
Chemistry	0	0	0	66	1	0
Supervisory	0	0	0	31	7	42
Engineering	1	0	0	430	422	45
I&C	0	0	0	36	26	105
Security	0	0	0	12	1	145
Inservice Inspection						
Maintenance	3	8	78	1092	1716	49509
Operating	0	2	0	44	576	0
Health Physics	5	0	21	1567	4	9295
Chemistry	0	0	0	0	62	0
Supervisory	0	0	6	85	0	4201
Engineering	0	2	2	0	633	845
I&C	0	0	0	0	0	2
Security	0	0	0	0	0	0
Special Maintenance						
Maintenance	3	0	6	875	81	1015
Operating	0	0	0	122	9	10
Health Physics	0	0	0	47	0	60
Chemistry	0	0	0	0	0	0
Supervisory	0	0	0	0	0	0
Engineering	0	0	0	0	7	0
I&C	0	0	0	0	9	0
Security	0	0	0	0	0	46

**ENCLOSURE 1 (CONT'D)
PRELIMINARY REPORT**

**PUBLIC SERVICE ELECTRIC
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PERSON-REM BY WORK AND JOB FUNCTION**

**NUMBER OF PERSONNEL
(> 100 MREM) TOTAL PERSON-MREM**

WORK AND JOB FUNCTION (PERSONNEL GROUPING)	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS
Waste Processing						
Maintenance	0	0	0	32	20	4
Operating	0	0	0	6	8	0
Health Physics	0	0	0	1	0	0
Chemistry	0	0	0	0	0	0
Supervisory	0	0	0	0	0	0
Engineering	0	0	0	3	0	0
I&C	0	0	0	0	0	0
Security	0	0	0	0	0	0
Refueling						
Maintenance	46	10	282	15923	5668	116315
Operating	13	1	2	4647	875	662
Health Physics	29	0	41	9436	127	15244
Chemistry	0	0	0	109	10	0
Supervisory	1	0	5	704	6	2232
Engineering	0	2	3	412	1034	1104
I&C	0	0	11	221	17	3055
Security	0	0	0	4	1	59
Total						
Maintenance	55	18	394	22671	8805	179030
Operating	13	3	2	6634	1708	725
Health Physics	45	0	67	14576	353	26796
Chemistry	0	0	0	181	73	0
Supervisory	1	0	11	865	13	6503
Engineering	1	4	5	980	2175	2006
I&C	0	0	11	320	52	3503
Security	0	0	0	16	2	250
Grand Total:	115	25	490	46243	13181	218813

**Preliminary Personnel Exposure and Monitoring Report
for Exposure Year: 1993**

NRC Docket Number: 50-272

Licensee: Public Service Electric and Gas Company

Date: 02/18/94

Total Exposure for Salem Unit 1 by TLD during 1993 was 277,567 person-rem.

**ENCLOSURE 2
PRELIMINARY REPORT**

**PUBLIC SERVICE ELECTRIC
AND GAS COMPANY
HANCOCK'S BRIDGE, NJ 08038**

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**SALEM UNIT 2
STANDARD FORMAT FOR REPORTING
NUMBER OF PERSONNEL AND
PERSON-REM BY WORK AND JOB FUNCTION**

**NUMBER OF PERSONNEL
(> 100 MREM)**

TOTAL PERSON-MREM

WORK AND JOB FUNCTION (PERSONNEL GROUPING)	NUMBER OF PERSONNEL (> 100 MREM)			TOTAL PERSON-MREM		
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS
Reactor Operations and Surveillance						
Maintenance	1	0	3	958	42	3502
Operating	0	0	0	75	14	169
Health Physics	0	0	0	209	5	56
Chemistry	0	0	0	6	1	0
Supervisory	0	0	0	53	0	3
Engineering	0	0	0	97	20	3
I&C	0	0	0	29	0	51
Security	0	0	0	0	0	0
Routine Maintenance						
Maintenance	3	0	25	2509	610	9607
Operating	0	0	0	1377	89	59
Health Physics	5	0	4	2237	163	2044
Chemistry	0	0	0	94	0	0
Supervisory	0	0	0	29	0	24
Engineering	1	0	0	277	220	15
I&C	1	0	3	176	6	739
Security	0	0	0	12	1	38
Inservice Inspection						
Maintenance	0	2	0	0	713	93
Operating	0	0	0	0	19	0
Health Physics	0	0	0	0	0	0
Chemistry	0	0	0	0	0	0
Supervisory	0	0	0	0	0	0
Engineering	0	0	0	0	46	0
I&C	0	0	0	0	0	0
Security	0	0	0	0	0	0
Special Maintenance						
Maintenance	0	0	0	2	4	176
Operating	0	0	0	1	0	17
Health Physics	0	0	0	4	0	42
Chemistry	0	0	0	0	0	0
Supervisory	0	0	0	0	0	0
Engineering	0	0	0	0	0	0
I&C	0	0	0	0	0	0
Security	0	0	0	0	0	46

**ENCLOSURE 2 (CONT'D)
PRELIMINARY REPORT**

**PUBLIC SERVICE ELECTRIC
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**SALEM UNIT 2
STANDARD FORMAT FOR REPORTING
NUMBER OF PERSONNEL AND
PERSON-REM BY WORK AND JOB FUNCTION**

**NUMBER OF PERSONNEL
(> 100 MREM)**

TOTAL PERSON-MREM

WORK AND JOB FUNCTION (PERSONNEL GROUPING)	NUMBER OF PERSONNEL (> 100 MREM)			TOTAL PERSON-MREM		
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS
Waste Processing						
Maintenance	0	0	0	0	0	2
Operating	0	0	0	0	0	7
Health Physics	0	0	0	0	0	32
Chemistry	0	0	0	4	0	0
Supervisory	0	0	0	0	0	0
Engineering	0	0	0	0	0	0
I&C	0	0	0	0	0	0
Security	0	0	0	0	0	0
Refueling						
Maintenance	17	4	162	5995	2373	59036
Operating	2	1	4	2327	540	971
Health Physics	19	0	30	4573	18	6358
Chemistry	0	0	0	18	12	0
Supervisory	1	0	3	325	3	1235
Engineering	1	1	2	305	940	750
I&C	0	0	5	81	23	1432
Security	0	0	0	2	4	94
Total						
Maintenance	21	6	190	9464	3742	72414
Operating	2	1	4	3780	662	1216
Health Physics	24	0	34	7023	186	8500
Chemistry	0	0	0	122	13	0
Supervisory	1	0	3	407	3	1262
Engineering	2	1	2	679	1226	768
I&C	1	0	8	286	29	2222
Security	0	0	0	14	5	178
Grand Total:	51	8	241	21775	5866	86560

**Preliminary Personnel Exposure and Monitoring Report
for Exposure Year: 1993**

NRC Docket Number: 50-311

Licensee: Public Service Electric and Gas Company

Date: 02/18/94

Total Exposure for Salem Unit 2 by TLD during 1993 was 114.132 person-rem.

**ENCLOSURE 3
PRELIMINARY REPORT**

**PUBLIC SERVICE ELECTRIC
AND GAS COMPANY
HANCOCK'S BRIDGE, NJ 08038**

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**HOPE CREEK
STANDARD FORMAT FOR REPORTING
NUMBER OF PERSONNEL AND
PERSON-REM BY WORK AND JOB FUNCTION**

**NUMBER OF PERSONNEL
(> 100 MREM)**

TOTAL PERSON-MREM

WORK AND JOB FUNCTION (PERSONNEL GROUPING)	NUMBER OF PERSONNEL (> 100 MREM)			TOTAL PERSON-MREM		
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS
Reactor Operations and Surveillance						
Maintenance	8	0	2	1979	291	1002
Operating	45	0	0	13259	89	24
Health Physics	1	0	0	1206	20	39
Chemistry	7	0	0	1762	3	2
Supervisory	0	0	0	63	2	1
Engineering	0	2	0	80	638	16
I&C	5	0	0	1015	5	0
Security	0	0	0	0	0	77
Routine Maintenance						
Maintenance	3	0	0	2299	265	114
Operating	2	0	0	778	172	7
Health Physics	3	0	0	2110	41	8
Chemistry	0	0	0	1	0	0
Supervisory	0	0	0	0	4	1
Engineering	0	0	0	34	10	2
I&C	2	0	0	1709	4	0
Security	0	0	0	0	0	0
Inservice Inspection						
Maintenance	0	0	0	137	102	330
Operating	0	0	0	18	32	1
Health Physics	0	0	0	96	6	0
Chemistry	0	0	0	0	37	0
Supervisory	0	0	0	4	0	0
Engineering	0	0	0	0	59	0
I&C	0	0	0	1	1	0
Security	0	0	0	0	0	0
Special Maintenance						
Maintenance	53	3	13	20227	1700	5205
Operating	31	0	4	9491	65	695
Health Physics	23	1	0	5974	132	186
Chemistry	0	0	0	198	0	0
Supervisory	0	0	0	212	0	1
Engineering	1	2	1	238	686	293
I&C	27	0	0	8857	0	1
Security	0	0	0	0	0	0

**ENCLOSURE 3 (CONT'D)
PRELIMINARY REPORT**

**PUBLIC SERVICE ELECTRIC
AND GAS COMPANY
HANCOCK'S BRIDGE, NJ 08038**

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**HOPE CREEK
STANDARD FORMAT FOR REPORTING
NUMBER OF PERSONNEL AND
PERSON-REM BY WORK AND JOB FUNCTION**

**NUMBER OF PERSONNEL
(> 100 MREM)**

TOTAL PERSON-MREM

WORK AND JOB FUNCTION (PERSONNEL GROUPING)	NUMBER OF PERSONNEL (> 100 MREM)			TOTAL PERSON-MREM		
	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS & OTHERS
Waste Processing						
Maintenance	0	0	0	152	201	3
Operating	3	0	0	998	86	0
Health Physics	10	0	0	4469	9	0
Chemistry	0	0	0	26	0	0
Supervisory	0	0	0	130	0	0
Engineering	0	0	0	0	390	5
I&C	0	0	0	52	0	0
Security	0	0	0	0	0	0
Refueling						
Maintenance	8	0	0	2580	49	177
Operating	0	0	0	597	4	19
Health Physics	0	0	0	171	0	0
Chemistry	0	0	0	0	0	0
Supervisory	0	0	0	14	0	0
Engineering	0	0	0	8	168	0
I&C	0	0	0	14	0	0
Security	0	0	0	0	0	0
Total						
Maintenance	72	3	15	27374	2608	6831
Operating	81	0	4	25141	448	749
Health Physics	37	1	0	14026	208	233
Chemistry	7	0	0	1987	40	2
Supervisory	0	0	0	423	6	3
Engineering	104	4	1	360	1951	316
I&C	34	0	0	11648	10	1
Security	0	0	0	0	0	77
Grand Total:	232	8	20	80959	5271	8212

Preliminary Personnel Exposure and Monitoring Report
for Exposure Year: 1993

NRC Docket Number: 50-354

Licensee: Public Service Electric and Gas Company

Date: 02/18/94

Total Exposure for Hope Creek by TLD during 1993 was 96.093 person-rem.

1993 STEAM GENERATOR REPORT

OVERVIEW

- Unit 1 - The original scope of Salem 1R11 outage was comprised of 20% bobbin and 20% top of hot leg tubesheet RPC in all four steam generators. In addition, a twelve hour window was allotted for RPC testing of dented hot leg tube support plate intersections.
- Unit 2 - The original scope of the Salem 2R7 outage was comprised of 50% bobbin and 50% top of hot leg tubesheet RPC in steam generators 22 and 24. In addition, a twelve hour window was allotted for supplemental RPC testing of dented hot leg tube support plate intersections.

INSPECTIONS PERFORMED:

◆ TOP OF TUBESHEET RPC INSPECTION

The tube expansions in the steam generators at Salem Unit 1 and Salem Unit 2 were made using the WEXTEX process (explosive expansions). History of WEXTEX units has shown some cracking in the expansion transition. Cracking of the WEXTEX region can be axial, circumferential or oblique in orientation as detected by RPC. The extent of circumferential cracking and the extent to which an axial indication extends into the transition zone are critical measurements.

- Unit 1 - Due to indications found, the initial scope was expanded by a total of 612 tubes in steam generator 11. One circumferential and seven axial indications were detected in this steam generator. None of these indications exceeded the structural integrity limits. Three of these indications were OD initiated. These indications are believed to have been caused by ODSCC rather than residual stress from the WEXTEX expansion process.

There were no expansions of Top of Tubesheet RPC inspections in 12 steam generator. 708 tubes were inspected which represents 20.9% of the generator.

Steam Generator 13's initial scope was expanded to 100% due to an indication found in R14C39. This tube had a 0.448" axial indication. The entire length of this indication was contained within the WEXTEX transition, Therefore, the structural integrity limit of 0.41" was exceeded, prompting the 100% expansion in this generator, This tube also contained two circumferential indications at the top of the tubesheet. Evaluation by Westinghouse determined that this tube required stabilization. One additional tube in this steam generator was evaluated for stabilization and determined that no stabilization was required.

Steam generator 14 had no expansions of the Top of Tubesheet RPC inspection. A total of 708 tubes were inspected which represents 20.9% of the generator.

- Unit 2 - Due to indications found, the RPC scope in both 22 and 24 were expanded to 100% of the top of tubesheet on the hot leg. None of the indications exceeded the structural integrity limits.

One SCI was noted in 22 S/G at R46C49. Westinghouse's lead analyst believed this indication could be related to loose part impingement and is possibly the early stages of wear. FOSAR was performed for the tube. No evidence of wear was noticeable. SCI, given no further information, is a conservative assessment of the tube condition. The measured circumferential extent of indication was approximately 92 degrees. The remainder of the indications were of axial or oblique (R20C41 in 24) orientation. Some wear indications were observed just above the top of the tubesheet in both steam generators. These were re-evaluated by RPC using an AVB standard to construct an amplitude based curve. Two indication measured $< 20\%$ through wall (TW), two $> 40\%$ TW, and the remainder between 30% TW and 39% TW. Given the uncertainty of the measurements, PSE&G decided to preventively plug all indications which were $> 30\%$ TW by this method.

◆ BOBBIN INSPECTION

There were five different types of degradation detected during the bobbin inspection. Four of these mechanisms were previously identified to some degree. They are:

1 - AVB WEAR

All eight steam generators have had some wear at the antivibration bars.

- Unit 1 - steam generator 11 had two tubes plugged because of this wear.
- Unit 2 - steam generator 22 had three tubes plugged and steam generator 24 had two tubes plugged because of this wear.

2 - COLD LEG THINNING

All eight steam generators have had thinning at peripheral tube cold leg support plate intersections.

- Unit 1 - steam generator 14 had one tube plugged because of this mechanism
- Unit 2 - there were no tubes plugged during 2R7 due to this wear however there was a total of nine tubes with indications of this type.

3 - OD INDICATIONS AT NON-DENTED SUPPORT PLATES

These indications are usually distorted on bobbin and require further clarification by RPC testing. Typically, there is a deposit present, which adds to the distortion. This deposit is usually responsible for the corrosion occurring at these intersections.

- Unit 1 - Generators 11 and 12 plugged one tube each for this mechanism. Generator 13 had four tubes plugged for this mechanism.
- Unit 2 - There were no tubes plugged due to this type of wear however there was a total of six tubes with indications of this type.

4 - OD INDICATIONS AT THE TOP OF TUBESHEET

These indications are similar to the support plate indications mentioned above, in that the signals are usually distorted by the presence of a deposit. Again, this deposit is most likely responsible for the corrosion occurring.

- Unit 1 - As mentioned in the RPC section, three of these signals were deemed pluggable by that inspection. In addition, several signals in both generators 11 and 13 were called INR (Indications not Recordable), during the RPC inspection. INR was used since these signals did not fit any of the allowable RPC indications (SAI, MAI, SCI, MCI, SOI, and MOI). These INR signals were also bobbin tested. In most cases these signals were found to be less than 20% through wall dimension, however, two tubes in steam generator 11 were plugged for this mechanism as well as two tubes in steam generator 13.
- Unit 2 - Two tubes in 24 steam generator were plugged due to this mechanism

One new degradation mechanism was identified during the Unit 1 eleventh refueling outage. This was ***ID INITIATED INDICATIONS AT DENTED SUPPORT PLATE INTERSECTIONS***. These indications can be detected by bobbin when they extend greater than 0.2" beyond the edge of the support plate. These indications can be attributed to residual stress from the dent. The shape rather than the size of the dent appears to be more of a factor in causing these indications. The sizes of the dents associated with these indications is relatively small when compared to the population of dents present in Unit 1 steam generators. The first indication of this type was found in steam generator 12 R33C43 at 1H (1st support plate hot leg side). RPC of this indication that it was 1.59" long, extending from 0.91" above the support plate to 0.68" below. This indication prompted 100% bobbin testing in steam generator 12 from 7H to TEH (tube end hot). This expansion revealed two more indications R8C4 at 1H and R28C85 at 2H. RPC of R8C4 showed and MAI (multiple axial indications). One of the axials was 1.102" in length starting at 0.74" above the support plate. The other axial was 1.050" in length starting at 0.66" above the support plate. RPC of R28C85 showed and SAI 0.432" ling starting at 0.68" above the support plate.

These indications in steam generator 12 prompted 100% bobbin testing in the other three steam generators from 7H to TEH. No more indications of this type were found in generators 11 and 14. However, two indications were flagged in generator 13 for RPC testing. RPC of R30C42 at 3H revealed and SAI 1.032" long starting at 0.26" above the support plate and ending at 1.292" below the support plate. RPC of R3C59 at 1H revealed an MAI. One of the axials was 1.742" long starting at 0.87" above the support plate. The other axial was 0.591" long starting at 0.74" above the support plate.

This type of degradation was not observed in the Unit 2 inspections.

RPC OF DENTED SUPPORT PLATE INTERSECTIONS

Twelve hours were allocated for sample testing of dented support plate intersections in each steam generator. The dents were selected based on measured amplitude from bobbin data. The aim of this testing is to detect the presence of circumferential indications. Circumferentially oriented indications can not be seen by bobbin probes.

- Unit 1 - The number of intersections inspected ranged from 122 to 170. No indications were detected in this inspection.
- Unit 2 - The number of intersections inspected were 84 in 22 steam generator and 85 in 24 steam generator. The RPC program revealed no detectable degradation of any of the intersections examined.

THE FOLLOWING TUBES IN 11 THROUGH 14 STEAM GENERATORS WERE PLUGGED DURING 1R11 AS A RESULT OF EDDY CURRENT INDICATIONS:

11 S/G

<u>ROW</u>	<u>COLUMN</u>	<u>REASON</u>
2	53	SAI @ TSH > 40%
7	75	SAI @ TSH > 40%
17	52	SAI @ TSH > 40%
17	59	SAI @ TSH > 40%
18	58	53% @ TSH
18	60	51% @ TSH
19	59	MAI @ TSH > 40%
20	55	SCI @ TSH > 40%
20	61	SAI @ TSH > 40%
31	52	SAI @ 1H > 40%
39	52	37% @ AV3
40	56	40% @ AV3

A total of 12 tubes were plugged in 11 steam generator

12 S/G

<u>ROW</u>	<u>COLUMN</u>	<u>REASON</u>
8	4	MAI @ 1H > 40%
5	42	SAI @ 2H > 40%
33	43	SAI @ 1H > 40%
28	85	SAI @ 2H > 40%

A total of 4 tubes were plugged in 12 steam generator

13 S/G

<u>ROW</u>	<u>COLUMN</u>	<u>REASON</u>
3	59	MAI @ 1H > 40%
6	6	SAI @ 5H > 40%
12	48	50% @ TSH
13	49	46% @ TSH
13	50	SCI @ TSH > 40%
14	39	MCI & SAI @ TSH > 40% (NOTE 1)
30	42	SAI @ 3H > 40%
31	15	DI @ 4H (NOTE 2) assumed > 40%
38	59	44% @ 1C
38	63	51% @ 5C

A total of 10 tubes were plugged in 13 steam generator

NOTE 1 - this tube also required tube stabilization

NOTE 2 - This tube had a restriction @ 4H and was preventitively plugged

14 S/G

<u>ROW</u>	<u>COLUMN</u>	<u>REASON</u>
44	35	39% @ 1C
17	83	SAI @ TSH > 40%

A total of 2 tubes were plugged in 14 steam generator

Definitions:

SAI - single axial indication

MAI - multiple axial indication

SCI - single circumferential indication

MCI - multiple circumferential indication

TSH - Tubesheet hot leg side

#H - indication located at this support plate on the hot leg side

#C - indication located at this support plate on the cold leg side

DI - Distorted indication

CURRENT TUBE PLUGGING STATUS - UNIT 1

	S/G 11	S/G 12	S/G 13	S/G 14
Tubes previously plugged	104	121	112	143
New tubes plugged this outage	12	4	10	2
Total tubes plugged	116	125	122	145

THE FOLLOWING TUBES IN 22 AND 24 STEAM GENERATORS WERE PLUGGED DURING 2R7 AS A RESULT OF EDDY CURRENT INDICATIONS:

22 S/G

<u>ROW</u>	<u>COLUMN</u>	<u>REASON</u>
7	4	SAI @ TSH > 40%
16	5	SAI @ TSH > 40%
17	9	SAI @ TSH > 40%
23	11	SAI @ TSH > 40%
28	21	SAI @ TSH > 40%
43	33	SAI @ TSH > 40%
46	49	SCI @ TSH > 40%
33	52	SAI @ TSH > 40%
27	55	SAI @ TSH > 40%
28	58	MAI @ TSH > 40%
28	59	SAI @ TSH > 40%
8	65	SAI @ TSH > 40%
3	75	SAI @ TSH > 40%
27	33	42% @ AV3
27	35	47% @ AV3
34	51	36% @ AV3

A total of 16 tubes plugged in 22 steam generator

<u>ROW</u>	<u>COLUMN</u>	<u>REASON</u>
21	27	SAI @ TSH > 40%
20	32	SAI @ TSH > 40%
34	35	SAI @ TSH > 40%
43	37	PLP @ TSH > 40%
20	38	SAI @ TSH > 40%
22	38	SAI @ TSH > 40%
20	41	SOI @ TSH > 40%
20	42	SAI @ TSH > 40%
20	43	MAI @ TSH > 40%
14	56	SAI @ TSH > 40%
6	57	SAI @ TSH > 40%
6	76	SAI @ TSH > 40%
26	78	SAI @ TSH > 40%
28	79	SAI @ TSH > 40%
25	80	SAI @ TSH > 40%
4	93	PLP @ TSH > 40%
5	93	PLP @ TSH > 40%
6	93	PLP @ TSH > 38%
7	93	PLP @ TSH > 32%
8	93	PLP @ TSH > 31%
28	58	39% @ AV2
33	64	36% @ AV3

A total of 22 tubes plugged in 24 steam generator

DEFINITIONS

SAI - SINGLE AXIAL INDICATION PLP - POSSIBLE LOOSE PART INDICATION
 SOI - SINGLE OBLIQUE INDICATION MAI - MULTIPLE AXIAL INDICATION
 SCI - SINGLE CIRCUMFERENTIAL INDICATION

CURRENT TUBE PLUGGING STATUS - UNIT 2

	S/G 21	S/G 22	S/G 23	S/G 24
Tubes previously plugged	112	105	112	111
New tubes plugged this outage	0	16	0	22
Total tubes plugged	112	121	112	133

**THE FOLLOWING IS A SUMMARY OF THE LOCATION
AND PERCENT OF WALL THICKNESS PENETRATION
FOR EACH INDICATION OF AN IMPERFECTION**

Unit 1
Most Severe Indication Per Tube

Indication	11 S/G	12 S/G	13 S/G	14 S/G
UDS				
DIN	1		1	
DI			1	
NQI				
1-19%	10	14	4	21
* 20-29%	10	29	7	14
* 30-39%	3	9	3	6
* 40-49%	1		2	
* 50-59%	2		2	
* 60-69%				
* 70-79%				
* 80-89%				
* 90-99%				
* 100%				
* SAI	6	3	2	1
* MAI	1	1	1	
* SCI	1		1	
* MCI			1	
TOTAL	35	56	25	42

* Reportable Indication per NRC Regulatory Guide 1.83 July, 1975 Rev. 1
"InService Inspection of Pressurized Water Reactor Steam Generator Tubes"

Definitions:

UDS - Undefinable Signal
DI - Distorted Indication
SAI - Single Axial Indication
SCI - Single Circumferential Indication

DIN - DI not confirmed
NQI - Non Quantifiable Indication
MAI - Multiple Axial Indication
MCI - Multiple Circumferential Indication

Unit 2
Most Severe Indication Per Tube

Indication	22 S/G	24 S/G
INR		1
MBM	24	13
DI	19	11
NQI		1
1-19%	12	12
* 20-29%	12	24
* 30-39%	3	6
* 40-49%	2	
* 50-59%		
* 60-69%		
* 70-79%		
* 80-89%		
* 90-99%		
* 100%		
* SQI		1
* SAI	11	18
* MAI	1	1
* SCI	1	
* MCI		

TOTAL 85 88

* Reportable Indication per NRC Regulatory Guide 1.83 July, 1975 Rev. 1
"InService Inspection of Pressurized Water Reactor Steam Generator Tubes"

Definitions:

MBM - Manufacturing Buff Mark	SOI - Single Oblique Indication
DI - Distorted Indication	NQI - Non Quantifiable Indication
SAI - Single Axial Indication	MAI - Multiple Axial Indication
SCI - Single Circumferential Indication	MCI - Multiple Circumferential Indication