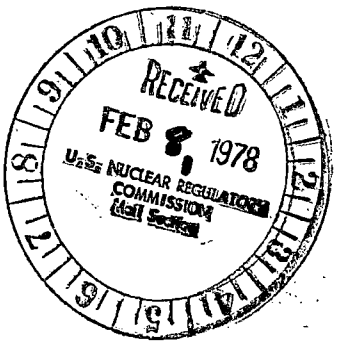
PSE&G

Public Service Electric and Gas Company 80 Park Place Newark, N.J. 07101 Phone 201/430-7000

January 30, 1978



Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

STEAM GENERATOR QUESTIONNAIRE
SALEM GENERATING STATION
UNIT NO. 1
DOCKET NO. 50-272

In response to your request of December 9, 1977, we submit the attached completed questionnaire. It should be noted that Salem Unit No. 1 is not scheduled to perform its first Inservice Inspection until January 1979, and therefore some of the information requested is not yet available.

Very truly yours,

F. P. Librizzi
General Manager -
Electric Production

A014 / S *
1/1

The Energy People

ENCLOSURE 1
STEAM GENERATOR OPERATING
HISTORY QUESTIONNAIRE

NOTE: All percentages should be reported to four significant figures.

I. BASIC PLANT INFORMATION

Plant: Salem No. 1

Startup Date: 11 December 1976 (initial criticallity)

Utility: Public Service Electric & Gas Company

Plant Location: Hancocks Bridge, New Jersey

Thermal Power Level: 3338 MWt

Nuclear Steam Supply System (NSSS) Supplier: Westinghouse

Number of Loops: Four

Steam Generator Supplier, Model No. and Type: West./Series 51

Number of Tubes Per Generator: 3388

Tube Size and Material: 0.875"OD,0.050"Wall - Inconel

II. STEAM GENERATOR OPERATING CONDITIONS

Normal Operation

Temperature: 547 - 576.35°F

Flow Rate: 67,000 GPM

Allowable Leakage Rate: 1 GPM all SG's, 500 GPD any one SG.

Primary Pressure: 2235 psig

Secondary Pressure: 805 psia (full power)

Accidents

Design Base LOCA Max. Delta-P: 1000 psia

Main Steam Line Break (MSLB) Max. Delta-P: Unknown

III. STEAM GENERATOR SUPPORT PLATE INFORMATION

Material:

Design Type: UNKNOWN AT THIS TIME

Design Code:

Dimensions: REQUEST HAS BEEN MADE TO WESTINGHOUSE FOR INFORMATION

Flow Rate:

Tube Hole Dimensions:

Flow Hole Dimensions:

IV. STEAM GENERATOR BLOWDOWN INFORMATION

Frequency of Blowdown: Continuous

Normal Blowdown Rate: 20,000 to 25,000 lbs/hr.

Blowdown Rate w/Condenser Leakage: 32,000 lbs/hr. (max.)

Chemical Analysis Results

Results	Parameter Control Limits
Cat. Cond. 1.3	Steady State $\leq$ 2.0 umhos/cm^2 @25 ^{o}C *Transient $\leq$ 7.0 " "
pH @25 ^{o}C 8.7	8.5 - 10.0
Free OH^- 0.10	** $\leq$ 1.0 ppm $CaCO_3$

*May be increased to 15.0 for the first 48 hours during startup for HOT SHUTDOWN

**May be increased if the sodium level is 0.460 ppm as sodium

V. WATER CHEMISTRY INFORMATION

Secondary Water

Type of Treatment and Effective Full Power (EFP) Months of Operation: AVT : 5.4

Typical Chemistry or Impurity Limits:			Limits
In line instrumentation	Na	1.0 ppb	(0.5)
	Cat. Cond.	0.2umhos	(0.5)
	Sp. Cond.	4.0umhos	(3-6)

Feedwater

Typical Chemistry or Impurity Limits:			
	pH	9.1	(8.8-9.2)
N_2H_4 .005 >	O_2	0.006	(< 0.005)
	Sp. Cond.	4.0umhos	(< 4.0)

Condenser Cooling Water

Typical Chemistry or Impurity Limits: Brackish Water (Na,Cl,Mg,Ca)

Demineralizers - Type: N.A.

Cooling Tower (open cycle, closed cycle or none): N.A.

VI. TURBINE STOP VALVE TESTING (applicable to Babcock & Wilcox (B&W) S.G. only)

Frequency of Testing

Actual:

Manufacturer Recommendation:

Not Applicable

Power Level At Which Testing Is Conducted

Actual:

Manufacturer Recommendation:

Testing Procedures (Stroke length, stroke rate, etc.)

Actual:

Manufacturer Recommendation:

VII. STEAM GENERATOR TUBE DEGRADATION HISTORY

(The following is to be repeated for each scheduled ISI)

Inservice Inspection (ISI) Date: January, 1979 is the first scheduled ISI Inspection

Number of EFP Days of Operation Since Last Inspection:

(The following is to be repeated for each steam generator)

Steam Generator Number:

Percentage of Tubes Inspected At This ISI:

Percentage of Tubes Inspected At This ISI That Had Been Inspected At The Previous Scheduled ISI:

Percentage of Tubes Plugged Prior to This ISI:

Percentage of Tubes Plugged At This ISI:

Percentage of Tubes Plugged That Did Not Exceed Degradation Limits:

Percentage of Tubes Plugged As A Result of Exceedance of Degradation Limits:

Sludge Layer Material Chemical Analysis Results:

Sludge Lancing (date):

Ave. Height of Sludge Before Lancing:

Ave. Height of Sludge After Lancing:

Replacement, Retubing or Other Remedial Action Considered: (Briefly Specify Details)

Support Plate Hourglassing:

Support Plate Islanding:

Tube Metalurgical Exam Results:

Fretting or Vibration in U-Bend Area (not applicable to B&W S.G.) AS OF (4)

Percentage of Tubes Plugged	Other Preventive Measures

Wastage/Cavitation Erosion AS OF (4)

Hot Leg: (Repeat this information for the cold leg on Combustion Engineering (C.E.) and Westinghouse (W) S.G.)

Area of Tube Bundle (1)	a	b	c	d	e
% of Tubes Affected by Wastage/Cavitation Erosion					
% of Tubes Plugged Due to Exceedance of Allowable Limit (2)					
% of Tubes Plugged That Did not Exceed Degradation Limit					
Location Above Tube Sheet (3)					
Max. Wastage/Cavitation Erosion Rate for Any Single Tube (Tube Circum. Ave) (Mills/Month)					
Max. Wastage/Cavitation Erosion in Any Single Unplugged Tube (Tube Circum. Ave) (Mills)					

Cracking AS OF (4)

Caustic Stress Corrosion Induced in C.E. and W S.G.

Flow Induced Vibration Caused in B&W S.G.

Cracking (Con't)

Hot Leg: (Repeat this information for the cold leg on C.E. and W S.G.)

Area of Tube Bundle (1)	a	b	c	d	e
% of Tubes Affected By Cracking					
% of Tubes Plugged Due to Cracking					
% of Tubes Plugged That Did Not Exceed Degradation Limit					
Location Above Tube Sheet (3)					
Rate of Leakage From Leaking Cracks (gpm)					

Denting (Not applicable to B&W S.G.) AS OF (4)

Hot Leg: (Repeat this information for the cold leg on C.E. and W S.G.)

Area of Tube Bundle (1)	a	b	c	d	e
% of Tubes Affected by Denting					
% of Tubes Plugged Due to Exceedance of Allowable Limit (2)					
% of Tubes Plugged That Did Not Exceed Degradation Limit					
Rate of Leakage From Leaking Dents (gpm)					
Max. Denting Rate for Any Single Tube (Tube Circum. Ave) (Mills/Month)					
Max. Denting in Any Single Unplugged Tube (Tube Circum. Ave) (Mills)					

Denting (Con't)

Support Plate Levels	Max. Denting in Any Single Tube in Bundle Area (Tube Ave) (Mills) (1)					% of Tubes Affected By Denting in Bundle Area				
	a	b	c	d	e	a	b	c	d	e
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

TABLE KEY

NOTE: All percentages refer to the percent of the tubes within a given area of the tube bundle.

(1)

Area of the Tube Bundle	No. of Tubes Within the Area
a. Periphery of Bundle (wi/20rows for B&W; wi/10 rows for C.E. and W)	
b. Patch Plate (wi/4 rows)	
c. Missing Tube Lane (B&W only) (wi/5 rows)	
c. Flow Slot Areas (C.E. and W only) wi/10 rows)	
d. Wedge Regions (C.E. and W only) (wi/8 rows)	
e. Interior of Bundle (remainder of tubes)	

(2)

Allowable Limit for Wastage/Cavitation Erosion:

Allowable Limit For Denting:

(3)

1. Specifies area between the tube sheet and the first support plate

2. Specifies in the following locations: (list the additional locations)

   Wastage/Cavitation Erosion:

   Cracking:

(4)

Specify the date of the inspection for which results have been tabulated.

VIII. SIGNIFICANT STEAM GENERATOR ABNORMAL OPERATIONAL EVENTS

DATE	SUMMARY Primary System has not been opened to date
	(Include event description; unscheduled ISI results, if performed; and subsequent remedial actions)

IX. CONDENSER INFORMATION

Condenser Material	Tube Leakage Date	Tube Leakage Rate (gpm)	Detectable Limit	Detection Method
90 - 10 Copper Nickel	Tubes are plugged subsequent to any detected leakage		2 umhos	Cation Conductivity Indication & Sodium Detectors

X. RADIATION EXPOSURE HISTORY WITH RESPECT TO STEAM GENERATORS

Date	Exam Dosage (Man-Rem)	Repair Dosage (Man-Rem)	Comments
	None to date		

XI. DEGRADATION HISTORY FOR EACH TYPE OF DEGRADATION EXPERIENCED FOR TEN REPRESENTATIVE, UNPLUGGED TUBES FOR WHICH THE RESULTS OF TWO OR MORE ISI'S ARE AVAILABLE

If the results for ten tubes are not available, specify this information for all those tubes for which results are available.

(repeat the following information for each tube and degradation type)

Steam Generator No:
Tube Identification:
Type of Degradation: (specify denting, wastage, cavitation erosion, caustic stress corrosion cracking, or flow induced vibration cracking)

(repeat the following information chronologically for each ISI for which results are available)

ISI Date:
Amount of Degradation: (specify amount and units)
EFP Months of Operation Since Last ISI for Which Results are Given:

No ISI's have been performed to date.