



Palo Verde Nuclear
Generating Station

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Technical Specification 5.6.8

102-05790-TNW/DFH
January 02, 2008

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

**Subject: Palo Verde Nuclear Generating Station (PVNGS) Unit 1
Docket No. STN 50-528,
License No. NPF-41,
Steam Generator Tube Inspection Report**

Attached please find PVNGS' Steam Generator Tube Inspection Report prepared and submitted pursuant to Technical Specifications (TS) Reporting Requirement 5.6.8. This report discusses steam generator tube plugging in Unit 1 during its 13th refueling outage.

By copy of this letter and the enclosure, this report is being provided to the NRC Region IV Administrator and the PVNGS Resident Inspector.

No commitments are being made to the NRC by this letter.

If you have any questions, please contact Ray E. Buzard at (623) 393-5317.

Sincerely,

TNW/REB/DFH/gat

Attachment

cc: (with attachment)
E. E. Collins Jr. NRC Region IV Regional Administrator
M. T. Markley NRC NRR Project Manager
G. G. Warnick NRC Senior Resident Inspector for Palo Verde

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**Unit 1 – 13th Refueling Outage
Steam Generator Tube Inspection Report**



Palo Verde Nuclear Generating Station

UNIT 1

U1R13

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Date: 12-20-2007

Date: 12-19-07

Report Date: _____

Commercial Service Date: 1-28-86

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UNIT 1

STEAM GENERATOR EDDY CURRENT

U1 R13 Refueling Outage

1.0 Summary

This report is intended to satisfy the requirements of PVNGS Technical Specifications 5.6.8 for the submittal of a Steam Generator Tube Inspection Report. The steam generator (SG) eddy current examination for the 13th refueling outage in Unit 1 (U1R13) was conducted during June 2007. Mode 4 entry of Unit 1 Cycle 14 was entered on July 11, 2007. The initial examination plan for both steam generators is listed in Table 1. This table summarizes the examinations performed for each of the various categories, examination types, extents, and the number of tubes or tube locations completed. This was the first examination performed in Unit 1 following steam generator replacement in U1R12. This examination is considered a 100% full length tubing inspection (see Table 1) with the Row 1-4 u-bends inspected via rotating coil in lieu of bobbin due to access limitations of the selected bobbin probe sizes.

The examinations resulted in a total of 0 tubes being plugged in SG 11, and 0 tubes being plugged in SG 12. A description of the previous plugging history for these replacement steam generators is contained in Appendix E.

2.0 Original Examination Plan

The original examination plan was developed based on the "PVNGS Steam Generator Degradation Assessment" developed per PVNGS Procedure 81DP-9RC01 as required by NEI 97-06. In addition, possible damage mechanisms were reviewed along with the specific requirements set forth in Procedure 73TI-9RC01 and the PVNGS Technical Specifications. The plan is summarized in Table 1 of this report.

3.0 Condition Monitoring Assessment

Per the Steam Generator Program, as defined in PVNGS Procedure 81DP-9RC01, a condition monitoring evaluation was conducted by PVNGS Engineering. As indicated above, no defects exceeding the Technical Specification repair limits or the PVNGS Administrative Plugging criteria were identified. The results of the eddy current examinations are provided in Section 4.0. An engineering evaluation of the as-found condition of inservice tubes did not reveal any degradation exceeding the threshold values for structural and leakage integrity. As such, all steam generator performance criteria were satisfied for Unit 1 Cycle 13. No tube pulls or insitu pressure testing were required based on the results of the examinations.

Tubesheet and Flow Distribution Plate Foreign Object Search and Retrieval (FOSAR) were conducted using a power cart mounted with a remotely operated camera and retrieval tooling. The applicable requirements of the Revision 2 of the EPRI *Steam Generator Integrity Assessment*

Guidelines Section 10.5, *Secondary Side Visual Inspections*, were applied for the FOSAR inspections. Two (2) pieces of weld wire were identified at the hot leg tubesheet and successfully removed from Steam Generator 12. One (1) of the wires had been observed during eddy current examinations. Plus Point (rotating coil) inspections were subsequently conducted to further verify that no additional piece(s) were present at these locations. The plus point inspections revealed no additional objects. The exams also confirmed no evidence of tube degradation.

As noted in Table 2 there were three (3) possible loose part (PLP) locations identified in Steam Generator 11. The locations are in areas not accessible by visual exams. Engineering assessment indicated that these locations are in areas of the steam generator where axial flow is dominant and would be less likely to initiate wear. PVNGS has historically taken the position if a loose part is detected by ECT or FOSAR, without the presence of wear, it is reasonable to conclude that the required conditions to promote wear do not exist. The affected and surrounding tubes were inspected with a supplemental and bounding rotating coil examination to confirm that no tube degradation exists. No additional action was required for these locations and the locations will be tracked for future inspection.

Finally, PVNGS Procedure 81DP-9RC01 requires, per the EPRI *PWR Steam Generator Examination Guidelines*, that a visual inspection of the previously installed steam generator plugs be performed to assess plug integrity. Additionally, the Examination Guidelines Section 6.10.1 states – “Verify the location and presence of existing in-service plugs.” The conduct of the plug location and integrity verification was performed in U1R13 per procedure 81CP-9RC40. A review of the inspection results indicated that all plugs were accounted for and no evidence of potential plug leakage was identified.

4.0 Examination Results

A summary of the bobbin and rotating coil (RC) examination results is located in Table 2 of this report. In addition, Appendix A contains a reference drawing of steam generator support locations. The summary data sheets of Appendix B and C list all tubes in each steam generator with indications expressed as a percent wall thickness reduction, or as an analysis code. Appendix D contains summary data sheets for tubes classified as possible loose parts.

5.0 Examination Techniques and Equipment

The eddy current examinations were performed by Westinghouse Electric Company using Zetec MIZ-70 digital data acquisition instrumentation or the Core Star OMNI 200 instrumentation. Westinghouse Anser acquisition software was utilized with both systems. The following frequencies were used for the tube examinations:

Bobbin Coil *	RC
500 KHz	300 KHz
300 KHz	200 KHz
100 KHz	100 KHz
35 KHz	35 KHz

* NOTE: For bobbin coil examinations these frequencies were utilized in both differential and absolute modes.

All tubing was examined with Zetec or Core Star manufactured bobbin coil probes and Zetec RC style probes. Probe diameters were 0.540" to 0.610". Plus Point RC probes were used for the characterization of non-quantifiable or distorted bobbin indications. Data acquisition in both steam generators was facilitated by using Westinghouse Pegasys fixtures configured with a dual guide tube in each of the hot and cold legs.

Fiber optic cable was used from containment to the data acquisition room located at the PVNGS North Annex. Primary and secondary analysis was all performed on site. The Primary and Secondary Resolution Analysts, Independent Review Analysts, and data management were also located at PVNGS in the North Annex. Westinghouse provided the data acquisition and primary data analysis. Anatec International, Inc. provided the secondary data analysis.

Each individual from Westinghouse and Anatec International, Inc. who performed data analysis was required to complete and pass a PVNGS site specific Eddy Current Data Analysis Course as well as an associated performance and written examination. All individuals performing data analysis were also required to have Qualified Data Analyst (QDA) certification.

6.0 Repair Techniques and Equipment

No repairs were performed as a result of these examinations.

TABLE 1
EXAMINATION SUMMARY

SCOPE DESCRIPTION		SG 11	SG 12
Exam Description	Extents	Scope	Scope
FULL LENGTH BOBBIN	TEC-TEH	12245	12245
COLD STRAIGHT SECTION BOBBIN *	TEC-08C	276	278
HOT STRAIGHT SECTION BOBBIN *	TEH-08H	276	278
ROW 1 THRU 4 SHORT RADIUS U-BENDS *	08C-08H	276	278
HOT STRAIGHT RC	VARIOUS	28	14
HOT U & SQUARE BEND RC	VARIOUS	1	0
COLD STRAIGHT RC	VARIOUS	21	9
COLD U & SQUARE BEND RC	VARIOUS	2	1

Notes:

- * RC examinations were performed on Row 1 thru 4 short radius U-Bends in lieu of bobbin examination.

TABLE 2	
INDICATION SUMMARY	

DAMAGE MECHANISM	STEAM GENERATOR 11	STEAM GENERATOR 12
WEAR 0% - 20% 20% - 39% ≥ 40% PLUGGED	2 0 0 (0)	2 0 0 (0)
Possible Loose Parts (RC) PLI PLP PLUGGED	0 3 (0)	0 0 (0)
Volumetric Indications SVI/MVI PLUGGED	0 (0)	0 (0)
PREVENTATIVE	(0)	(0)
PLUGGED U2R13	(0)	(0)
TOTAL PLUGGED / %	(59 / 0.5%)	(57 / 0.5%)

NOTES

1. Numbers in (X) are tubes numbers plugged in each category
2. The above represent the numbers of tubes; not indications

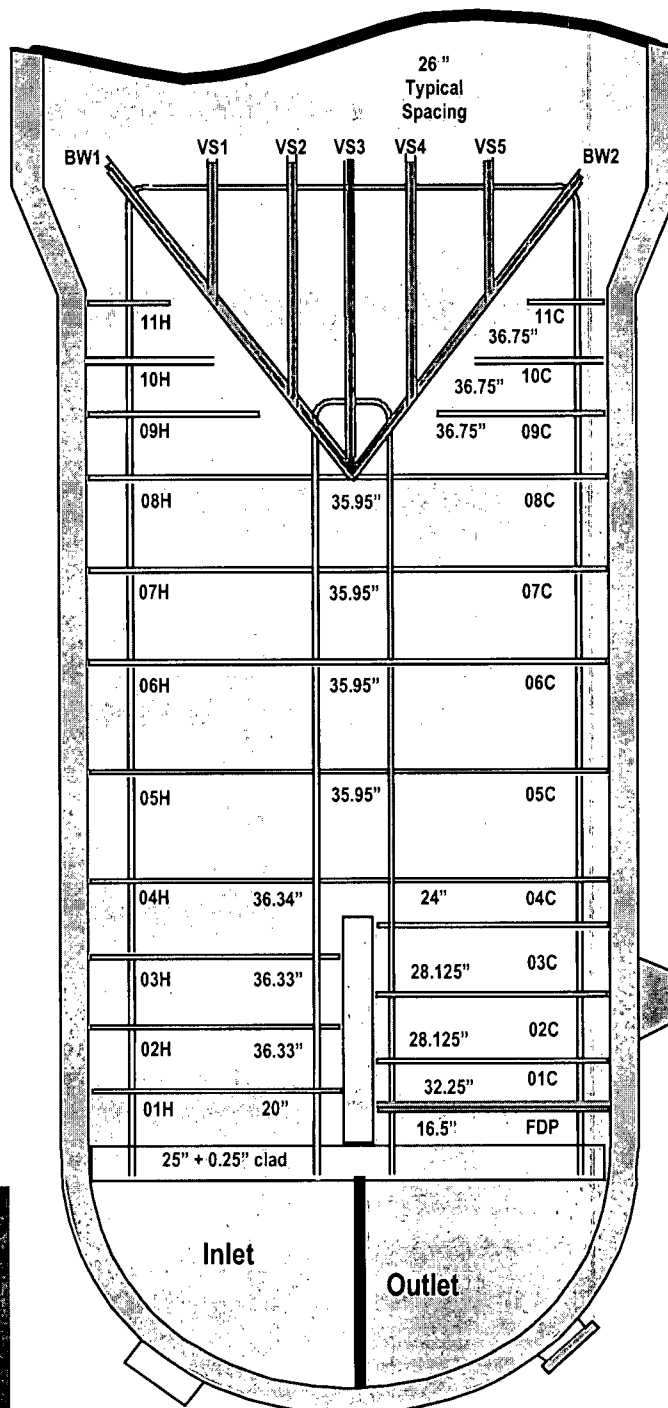
- NOTES**
1. Numbers in (X) are tubes numbers plugged in each category
 2. The above represent the numbers of tubes; not indications

APPENDIX A

**TUBE SUPPORT DIAGRAM,
LEGEND, and ANALYSIS CODES**

PVNGS Steam Generator

REPLACEMENTS



Center of 08H to 08C

Row 1 - 17.415

Row 2 - 19.736

Row 3 - 22.056

Row 4 - 24.377

Row 5 - 26.698

Row 6 - 29.019

LEGEND

ROW:	Indicates the row number of a given tube.
COL:	Indicates the column number of a given tube.
VOLTS:	Indicates the peak-to-peak voltage of a given indication response.
DEG:	The measured phase angle of a given indication response.
IND:	Indicates the analysis code or PCT for percent
PCT:	The percent through the tube wall of a given indication
CHN:	Indicates the channel used to measure and evaluate the referenced indication
LOCN:	Gives indication location at INCH1 to INCH2 relative to known landmarks such as supports, vertical straps, and batwings. Typical location codes are as follows:
	#1 Vertical StrapVS1
	#1 Batwing.....BW1
	#1 Support Plate in Hot Leg01H
	#7 Support Plate in Cold Leg.....07C
	Top Tube Sheet Cold LegTSC
	Tube End Hot Leg.....TEH
	Tube End Cold Leg.....TEC
CRLEN:	Indicates the flaw length
BEGT and ENDT:	Indicates the beginning and end of the test; together they document the examination extent
PDIA:	Documents the probe diameter
PTYPE:	The last two characters indicates the probe type used for examination
	WR-bobbin coil mid-frequency (Westinghouse Replaceable)
	SF-bobbin coil spring flex
	HP or HZ-RC +point solid body
	FP or FZ-RC +point, .115 flexible
	MB-RC mag bias +point
	PH-RC +point HF and MF flexible for UBends
CAL:	Indicates calibration number
L:	Indicates the leg the examination was conducted from
COM:	This comment field is utilized to document the UTIL1 and UTIL2 sizing measurements and APS Level III comments

Analysis CODES:

Absolute Drift	ADI
Apex Anomaly	APA
After Pressure Test.....	APT
Bad Data.....	BDA
Bulge	BLG
Deposit	DEP
Dent from History	DNH
Dent.....	DNT
Distorted Support Signal With Indication.....	DSI
DSI from History	DSH
Distorted Top of Tubesheet With Indication	DTI
Geometric Indication.....	GEO
ID Chatter.....	IDC
Indication Not Found	INF
Indication Not Reportable.....	INR
Location Not Correct	LNC
Multiple Volumetric Indication.....	MVI
No Detectable Defect	NDD
No Discontinuity Found.....	NDF
Non-Quantifiable Indication	NQI
No Tube Sheet Expansion.....	NTE
Obstructed	OBS
Previous Bobbin Call	PBC
Positive Identification	PID
Positive Identification Verified	PIV
Possible Loose Part with Indication.....	PLI
Possible Loose Part	PLP
Previous RC Call.....	PRC
Possible Support Anomaly.....	PSA
Possible Support Indication	PSI
Retest With 3 coil Probe	R3C
Retest Identification Check	RID
Retest with Magnetic Bias RC Probe	RMB
Single Volumetric Indication	SVI
Sludge	SLG
To Be Plugged.....	TBP

Util2 CODES:

Batwing Wrapper Bar Wear.....	BWW
Change	CH
Data Quality Acceptable	DQA
History Review	HR
Inside Diameter	ID
NEW	NEW
No Change	NC
No Loose Part Present.....	NLP
Manufacturing Induced Groove	MIG
Manufacturing Abnormality.....	LAP
Outside Diameter	OD
Pit like indication	PIT
Stake.....	SK
Senior Level III Review	SR
Tube to Tube Wear	TTW
Volumetric Inside Diameter.....	VID

APPENDIX B

STEAM GENERATOR 11

SUMMARY DATA SHEETS

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	CRLEN	BEGT	ENDT	PDIA	PTYPE	CAL	L	COM
132	85	.43	0	PCT	7	P3	11C	-.27			11C	11C	.560	ZPSHZ	87	C	
48	103	.52	0	PCT	13	P2	09C	-1.74			TEC	TEH	.610	ZBAZC	15	H	
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	CRLEN	BEGT	ENDT	PDIA	PTYPE	CAL	L	COM

APPENDIX C

STEAM GENERATOR 12

SUMMARY DATA SHEETS

ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	CRLEN	BEGT	ENDT	PDIA	PTYPE	CAL	L	COM
51	22	.26	0	PCT	10	P2	VS3	1.13			TEH	TEC	.610	ZBAZC	52	C	
48	107	.47	0	PCT	13	P2	09C	-1.63			TEC	TEH	.610	ZBAZC	10	H	
ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	CRLEN	BEGT	ENDT	PDIA	PTYPE	CAL	L	COM

APPENDIX D

PLI & PLP

DATA SHEETS

Palo Verde 1 U1R13

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INSPDATE	ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	CRLEN	BEGT	ENDT	PDIA	PTYPE	CAL	L	COM
2005/10/01	6	71	.08	76	PLP		8	03H	30.01			TEC	TEH	.610	ZBA1C	71	H SR	
	6	71			NDF				29.93			03H	04H	.560	ZPSHZ	83	H	
	6	71			NDD		2	03H				TEC	TEH	.610	RBAL2	116	H	
	6	71			NDD							TSH	TSH	.600	ZPSHZ	204	H	
2005/10/01	6	73	.07	77	PLP		8	03H	29.91			TEC	TEH	.610	ZBA1C	71	H SR	
	6	73			NDF				29.91			03H	04H	.560	ZPSHZ	83	H	
	6	73			NDD		2	03H				TEC	TEH	.610	RBAL2	116	H	
	6	73			NDD							TSH	TSH	.600	ZPSHZ	204	H	
2005/10/01	8	73	.07	75	PLP		8	03H	29.94			TEC	TEH	.610	ZBA1C	71	H SR	
	8	73			NDF				29.94			03H	04H	.560	ZPSHZ	83	H	
	8	73			NDD		2	03H				TEC	TEH	.610	RBAL2	117	H	
	8	73			NDD							TSH	TSH	.600	ZPSHZ	205	H	
2005/10/01	10	73	.07	83	PLP		8	03H	30.02			TEC	TEH	.610	ZBA1C	71	H SR	
	10	73			NDF				30.02			03H	04H	.560	ZPSHZ	83	H	
	10	73			DNT		P1	VS3	.62			TEC	TEH	.610	RBAL2	116	H	
	10	73			NDD							TSH	TSH	.600	ZPSHZ	204	H	
2005/10/01	10	73	1.60	171	NDD		2	VS3	.62			VS3	VS3	.580	ZPUFZ	238	H	
	10	73			NDF													
	10	73																
	10	73																
2005/10/01	12	73	.07	75	PLP		8	03H	30.13			TEC	TEH	.610	ZBA1C	71	H SR	
	12	73			NDF				30.13			03H	04H	.560	ZPSHZ	83	H	
	12	73			DNT		P1	VS3	.68			TEC	TEH	.610	RBAL2	117	H	
	12	73			NDD							TSH	TSH	.600	ZPSHZ	205	H	
2005/10/01	12	73	1.25	176	NDD		2	VS3	.68			VS3	VS3	.580	ZPUFZ	238	H	
	12	73			NDF													
	12	73																
	12	73																
2005/10/01	14	73	.05	78	PLP		8	03H	29.98			TEC	TEH	.610	ZBA1C	71	H SR	
	14	73			NDF				29.98			03H	04H	.560	ZPSHZ	83	H	
	14	73			DNT		P1	VS3	.79			TEC	TEH	.610	RBAL2	116	H	
	14	73			NDD							TSH	TSH	.600	ZPSHZ	204	H	
2005/10/01	14	73	1.02	173	NDD		2	VS3	.79			VS3	VS3	.580	ZPUFZ	238	H	
	14	73			NDF													
	14	73																
	14	73																
2005/10/01	164	75	2.06	127	INR		8	09C	34.45			TEC	TEH	.610	ZBAZC	26	H	
	164	75			PLP		5	10C	-2.33			10C	10C	.560	ZPSHZ	87	C SR	
	164	75			DNT		P1	05H	34.33			TEH	TEC	.610	RBAL1	10	C	
	164	75			PLP		8	09C	34.45			TEH	TEC	.610	RBAL1	10	C SR	
2005/10/01	164	75	.49	118	PLP		8	09C	34.45			10C	10C	.600	ZPSHZ	19	C SR	
	164	75			PLP		6	10C	-2.33			TEC	TEH	.610	RBAL2	133	H QCT	
	164	75			RBD							TSH	TSH	.600	ZPSHZ	213	H	
	164	75			NDD							06H	06H	.600	ZPSHZ	245	H	
2005/10/01	164	75	1.50	115	NDF		2	06H	-1.62									
	164	75																
	164	75																
	164	75																
2005/10/01	165	76	.04	83	PLP		6	09C	33.77			TEC	TEH	.610	ZBAZC	27	H SR	
	165	76			PLP		5	10C	-2.28			10C	10C	.560	ZPSHZ	87	C SR	
	165	76			PLP		6	10C	-2.28			10C	10C	.600	ZPSHZ	19	C SR	
	165	76			PLP		8	09C	34.22			TEC	TEH	.610	RBAL2	136	H SR	
2005/10/01	165	76	.62	115	NDD							TSH	TSH	.600	ZPAHZ	215	H	
	165	76			NDD													
	165	76																
	165	76																
2005/10/01	1	144	.08	119	NDD							08C	TEC	.610	ZBA1C	59	C	
	1	144			PLP		6	02H	23.34			08H	TEH	.610	ZBA1C	74	H SR	
	1	144			NDD							08C	08H	.540	ZPUPH	82	C	
	1	144			NDF		8	02H	23.34			02H	03H	.560	ZPSHZ	85	H	
2005/10/01	1	144	.08	119	NDD							08C	TEC	.610	RBAL1	2	C	
	1	144			NDD							08H	08C	.540	ZPUPH	7	C	
	1	144			NDD							08H	TEH	.610	RBAL2	85	H	
	1	144			NDD							TSH	TSH	.600	ZPSHZ	163	H	
2005/10/01	3	192	.14	91	NDD							08C	TEC	.610	ZBA1C	60	C	
	3	192			PLP		8	03H	33.30			08H	TEH	.610	ZBA1C	74	H SR	
	3	192			NDD							08C	08H	.540	ZPUPH	81	C	
	3	192			PLP		8	03H	33.42			03H	04H	.560	ZPSHZ	83	H SR	
2005/10/01	3	192	.98	75	NDD							08C	TEC	.610	RBAL1	2	C	
	3	192			NDD							08H	08C	.540	ZPUPH	7	C	
	3	192			NDD							08H	TEH	.610	RBAL2	86	H	
	3	192			NDD							TSH	TSH	.600	ZPAHZ	164	H	
2005/10/01	30	201	.11	94	PLP		8	04C	10.93			TEH	TEC	.610	ZBA1C	65	C SR	
	30	201			NDF		2	04C	10.93			04C	05C	.560	ZPSHZ	87	C	
	30	201			NDD							TEC	TEH	.610	RBAL2	12	H	
	30	201			NDD							TSH	TSH	.600	ZPAHZ	178	H	

Palo Verde 1 U1R13

PVNGS1 20070601

06/11/2007 11:17:14

INSPDATE	ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	CRLEN	BEGT	ENDT	PDIA	PTYPE	CAL	L	COM
	1	24			NDD							08H	TEH	.610	ZBAZC	74	H	
	1	24	.53	84	PLP		8	TSC	7.55			08C	TEC	.610	ZBA1C	74	C	SR
	1	24	.60	109	PLP		8	TSC	12.61			08C	TEC	.610	ZBA1C	74	C	SR
	1	24			NDF		8	TSC	7.55			TSC	FDP	.560	ZPSHZ	85	C	
	1	24			NDF		8	TSC	12.61			TSC	FDP	.560	ZPSHZ	85	C	
	1	24			NDD							08C	08H	.540	ZPUPH	87	C	
2005/10/01	1	24			NDD							08C	TEC	.610	RBAL2	3	C	
2005/10/01	1	24			NDD							08H	08C	.540	ZPUPH	5	C	
2005/10/01	1	24			NDD							TSH	TSH	.600	ZPSHZ	54	H	
2005/10/01	1	24			NDD							08H	TEH	.610	RBAL2	194	H	
	9	202	.47	114	PLP		8	TSH	17.97			TEH	TEC	.610	ZBA1C	72	C	SR
	9	202			NDF		8	01H	-2.03			01H	01H	.560	ZPSHZ	80	H	
	9	202			NDF		8	01H	-2.03			01H	01H	.560	ZPSHZ	86	H	DQA
2005/10/01	9	202			NDD							TSH	TSH	.600	ZPAHZ	92	H	
2005/10/01	9	202			NDD							TEC	TEH	.610	RBAL2	190	H	
	8	203	.79	118	PLP		8	TSH	17.17			TEH	TEC	.610	ZBA1C	72	C	SR
	8	203	1.53	87	PLP		8	01H	-2.10			01H	01H	.560	ZPSHZ	80	H	SR
	8	203			NDF		P4	01H	-2.83			01H	01H	.560	ZPSHZ	86	H	
2005/10/01	8	203			NDD							TSH	TSH	.600	ZPSHZ	91	H	
2005/10/01	8	203			NDD							TEC	TEH	.610	RBAL2	190	H	
	10	203	.69	122	PLP		8	TSH	15.95			TEH	TEC	.610	ZBA1C	72	C	SR
	10	203	1.13	84	PLP		8	TSH	15.95			TSH	01H	.560	ZPSHZ	80	H	SR
	10	203																DQA
	10	203			NDF		P4	TSH	15.95			TSH	01H	.560	ZPSHZ	86	H	DQA
2005/10/01	10	203			NDD							TSH	TSH	.600	ZPAHZ	92	H	
2005/10/01	10	203			NDD							TEC	TEH	.610	RBAL2	190	H	
INSPDATE	ROW	COL	VOLTS	DEG	IND	PER	CHN	LOCN	INCH1	INCH2	CRLEN	BEGT	ENDT	PDIA	PTYPE	CAL	L	COM

APPENDIX E

PLUG HISTORY

PLUG HISTORY

	STEAM GENERATOR 11		STEAM GENERATOR 12	
OUTAGE/YEAR	NUMBER OF PLUGS	% BOBBIN EXAMINED	NUMBER OF PLUGS	% BOBBIN EXAMINED
FACTORY 2005	3	NA	2	NA
BASELINE 10-05	56	100	55	100
U1R13	0	100	0	100
TOTAL	59		57	

APPENDIX F

FORM NIS-1

[illegible]

APS**NIS - 1 BACK****OWNERS' DATA REPORT FOR INSERVICE INSPECTIONS****7. EXAM DATES****June 2007****8. INSPECTION INTERVAL****7-19-98 to 7-18-08****9. ABSTRACT OF EXAMINATIONS. INCLUDE A LIST OF EXAMINATIONS AND A STATEMENT CONCERNING STATUS OF WORK REQUIRED FOR CURRENT INTERVAL.**

Table 1 in the report summary section documents the number and type of each examination performed.

No degraded or defective tubes were observed during these examinations. A summary of the tubes with indications of degradation is listed in Appendix B and C of this report for SG 11 and 12 respectively. The tubes identified on the following pages were plugged as a result of this examination.

The number of tubes plugged are as follows: SG 11 = 0 tubes

SG 12 = 0 tubes

WE CERTIFY THAT THE STATEMENTS MADE IN THIS REPORT ARE CORRECT AND THE EXAMINATIONS AND CORRECTIVE MEASURES TAKEN CONFORM TO THE RULES OF THE ASME CODE, SECTION XI.

DATE 12-19-07 SIGNED: ARIZONA PUBLIC SERVICE COMPANY BY Hansen, Douglas B
(Z41530)

Digitally signed by Hansen, Douglas B
(Z41530)
DN: cn=Hansen, Douglas B(Z41530),
email=Douglas.Hansen@aps.com
Reason: I am the author of this
document
Date: 2007.12.19 06:49:15 -0700

CERTIFICATE OF INSERVICE INSPECTION

I, THE UNDERSIGNED, HOLDING A VALID COMMISSION ISSUED BY THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS AND THE STATE OF PROVINCE OF ARIZONA EMPLOYED BY HSB CT OF HARTFORD, CONNECTICUT HAVE INSPECTED THE COMPONENTS DESCRIBED IN THIS OWNERS REPORT DURING THE PERIOD June 2007 TO 12-20-07, AND STATE THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE OWNER HAS PERFORMED EXAMINATIONS AND TAKEN CORRECTIVE MEASURES DESCRIBED IN THIS OWNERS REPORT IN ACCORDANCE WITH THE REQUIREMENTS OF THE ASME CODE, SECTION XI. BY SIGNING THIS CERTIFICATE NEITHER THE INSPECTOR NOR HIS EMPLOYER MAKES ANY WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE EXAMINATIONS AND CORRECTIVE MEASURES DESCRIBED IN THIS OWNERS REPORT. FURTHERMORE, NEITHER THE INSPECTOR NOR HIS EMPLOYER SHALL BE LIABLE IN ANY MANNER FOR ANY PERSONAL INJURY OR PROPERTY DAMAGE OR A LOSS OF ANY KIND ARISING FROM OR CONNECTED WITH THIS INSPECTION.

INSPECTOR *DS Johnson*

COMMISSIONS NS 9685 A.N.I.C AZ 264
NATL BOARD, STATE, PROVINCE

DATE 12-20-07