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SUBJECT: Provides data from Unit 2 steam generator tube rupture investigation.Note that info in preliminary form & should be marked as such.

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Arizona Public Service Company
PALO VERDE NUCLEAR GENERATING STATION
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

102-02541-TRB/JRP
June 18, 1993

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

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Unit 2
Docket No. STN 50-529
Preliminary Steam Generator Information
File: 93-056-026

The purpose of this letter is to provide you data from the PVNGS Unit 2 Steam Generator tube rupture investigation. Please note that this information is in preliminary form and has been marked as such.

Should you have any questions, please contact J. R. Provasoli at (602) 393-5730.

Sincerely,

Thomas R. Bradish, Manager
Nuclear Regulatory Affairs

TRB/JRP/ap

Enclosure

cc: B. H. Faulkenberry
C. M. Trammell
K. E. Perkins
J. A. Sloan

250034

A001
1/1

DATE: 6/11/93
S/G: 21

EDDY CURRENT SUMMARY
FOR ROOT CAUSE ANALYSIS TASK FORCE

AXIAL INDICATIONS

SAI, MAI INDICATIONS

NO. OF TUBES EVALUATED BOBBIN: COMPLETE
NO. OF TUBES EVALUATED MRPC: 4950

ROW #	COL TUBE #	DEPTH	LOC.	STRUC. TO IND. START	LENGTH	STRUCTURE TO BW DIST.	BW1 TO BEND TANGE	DEPOSIT ALIGNED WITH IND. (YES/NO)	Location
6	1	NQI	TSH	-.86"	.14"			NO	TSH
109	42	SAI**	08H	34.35"	.21"			PDP	MID
106	45	SAI**	BW1	-.71"	.38"			NO	BW1
131	46	NQI	BW1	19.00"	.41"			NO	MID
147	76	SAI**	09H	25.72"	.55"			PDP	MID
149	76	NQI	09H	25.13"	.41"			PDP	MID
140	89	NQI	09H	23.55"	.41"			PDP	MID
149	98	SAI**	BW1	+1.41"	.19"			NO	BW1
140	105	81%	BW1	-1.25"	.10"			NO	BW1
148	111	SAI**	09H	28.08"	.50"			PDP	MID
27	112	MAI	TSH	-.71"	.35"			NO	TSH
146	117	SAI**	09H	+.45"	.50"			NO	EGG
139	118	SAI**	09H	25.02"	.24"			PDP	MID
108	143	21%	08H	+.93"	.23"			NO	EGG
108	31	SVI**	01H	-2.2"				NO	
117	82	SVI**	08H	35.32"				PDP	
137	140	SVI**	02H	3.18"				PDP	

NOTE: *Measurements are to center line of support structures.*

PRELIMINARY

* % through wall calls made with bobbin probe
**MRPC indications where no initial bobbin calls

9306290187

DATE: 6/11/93
S/G: 22

EDDY CURRENT SUMMARY
FOR ROOT CAUSE ANALYSIS TASK FORCE

AXIAL INDICATIONS _____ SAI, MAI INDICATIONS

BOBBIN TOTAL: COMPLETE MRPC TOTAL: 4660

ROW #	COL TUBE #	DEPTH (*)	LOC.	STRUC. TO IND. START	LENGTH *	STRUCTURE TO BW DIST.	BW1 TO BEND TANGE	DEPOSIT ALIGNED WITH IND. (YES/NO)	TUBE PULL	LOCATION
22	13	52%	01H	-.26"				NO	PULL	01H
10	23	30%	01H	+.24"	.36"			NO		01H
29	24	DSI	01H	-.16"				NO	PULL	01H
97	38	SAI**	08H	+.99"	.23"			NO		EGG
112	39	NQI	08H	29.38"	.60"			PDP		MID
115	40	NQI	08H	40.85"	.38"			PDP		MID
117	40	SAI**	08H	41.00"	.21"	09H 5.23	4.81	NO	PULL	MID
115	42	NQI	08H	39.51"	.16"			PDP		MID
117	42	46%	08H	40.00"	.34"	09H 5.92	4.29	PDP		MID
123	44	32%	08H	+.55"	.55"	-	-	NO		EGG
118	45	19%	09H	-.31"	.77"			NO		EGG
123	46	12%	08H	-.32"	.18"			NO		EGG
128	47	82%	08H	+.66"	.55"			NO		EGG
129	48	18%	08H	+.76"	.64"			NO		EGG
128	49	39%	08H	+.76"	.31"			NO		EGG
123	50	37%	09H	+.75"	.18"			NO		EGG
129	50	8%	08H	+.72"	.19"			NO		EGG
141	74	SAI**	BW1	+.23"	.89"			NO		BW1
151	90	15%	05H	+.88"	.24"			NO		EGG
131	92	SAI	09H	16.37"	.36"			NO		MID
41	94	99%	TEH	+2.28"	.51"			NO		TSH
127	96	SAI	08H	41.33"	.24"			NO		MID
129	96	NQI	BW1	+3.10"	.20			NO		BW1
133	104	SAI**	BW1	+2.23"	.71"			NO		BW1
134	105	SAI**	BW1	+1.61"	1.00"			NO		BW1
134	111	NQI	09H	20.47	.63"			PDP		MID
149	114	SAI**	08H	+.34"	.13"			NO		EGG
144	115	NQI	09H	23.47"	.31"			PDP		MID
146	115	NQI	09H	22.95"	2.54"			PDP		MID
150	115	NQI	09H	23.79"	.25"			PDP		MID
137	116	NQI	BW1	-1.17"	2.32"			NO		BW1
134	117	SAI**	09H	14.20"	1.19"			PDP		MID
145	118	NQI	09H	28.91"	1.00"			PDP		MID

* % through wall calls made with bobbin probe
**MRPC indications where no initial bobbin calls

PRELIMINARY

ROW #	COL TUBE #	DEPTH (*)	LOC.	STRUC. TO IND. START	LENGTH	STRUCTURE TO BW DIST.	BW1 TO BEND TANGE	DEPOSIT ALIGNED WITH END, (YES/NO)	TUBE PULL	LOCATION
140	119	64%	09H	23.1"	.21"	09H 29.97	2.14	PDP		MID
142	119	NQI	09H	22.20"	.22"	09H 31.48	2.13	PDP		MID
142	123	SAI**	09H	+.90"	.45"			NO		EGG
137	124	28%	BW1	+.77"	.33"			NO		BW1
141	124	SAI**	09H	-.23"	.56"			NO		EGG
135	130	SAI**	08H	+.70"	.22"			NO		EGG
129	132	76%	09H	+.75"	.96"			NO		EGG
135	132	SAI**	08H	+.39"	.36"			NO		EGG
128	133	84%	09H	+.74"	.51"			NO		EGG
128	135	79%	09H	+.39"	.50"			NO		EGG
125	136	57%	09H	+.39"	.76"			NO		EGG
131	136	SAI**	09H	17.96"	.67"			PDP		MID
126	137	SAI**	BW1	-1.65"	.13"			NO		BW1
128	137	55%	08H	+.57"	.65"			NO		EGG
123	138	SAI**	BW1	-1.05"	.23"			NO		BW1
125	138	28%	08H	+.24"	.44"			NO		EGG
129	138	SAI**	BW1	+.77"	.19"			NO		BW1
128	139	SAI**	08H	+.81"	.22"			NO		EGG
127	140	39%	08H	+.27"	.41"			NO		EGG
122	141	SAI**	09H	+.53"	.30"			NO		EGG
128	141	37%	08H	+.71"	.27"			NO		EGG
121	142	71%	09H	+.20"	.28"			NO		EGG
74	143	23%	VS3	-.92"	.20"			NO		VS3
115	144	SAI**	08H	34.99"	.17"			PDP		MID
117	144	100%	08H	33.92"	~9.00"	09H 7.55	3.40	PDP	PULL	MID
118	145	23%	09H	-2.16"	.19"			NO		EGG
124	145	43%	BW1	+1.03"	.79"			NO		BW1
122	147	SAI**	BW1	+1.34"	.24"			NO		BW1
110	149	85%	08H	+.33"	.62"			NO		EGG
17	152	31%	01H	-.14"	.4"		1991	DATA		01H
107	152	NQI	BW1	+.09"	~.2"			NO		BW1
110	153	DSI	07H	+1.92"	.41"			NO		EGG
103	156	MAI**	08H	19.22"	.43"			PDP	PULL	MID
105	156	84%	08H	25.92"	.71"	08H 43.63	1.83	PDP	PULL	MID
107	156	NQI	08H	24.75"	.12"			PDP		MID
104	157	85%	08H	26.84"	2.31"	08H 41.99	2.93	PDP		MID
97	158	SAI**	BW1	-1.92"	.13"			NO		BW1
93	160	SAI**	08H	19.21"	.19"			PDP		MID

TOTAL 70

PRELIMINARY

* % through wall calls made with bobbin probe
**MRPC indications where no initial bobbin calls

8-DEPOSIT FORMATION MODEL

PURPOSE:

Scale, Fouling and deposits were reported in the upper region of the hot leg of the Steam Generator. The purpose of this section is to define a mechanism which explains the preferred location for deposit accumulation, and to identify these locations.

DEPOSIT MODELS:

The detected deposits are believed to accumulate on tubes surfaces in the upper region of the steam generator by a process associated to the two-phase flow regime in that region. This is in contrast to particulate or suspended matter which plates out at locations with low velocities such as elbows or sudden enlargements.

In a Steam Generator where two-phase conditions prevails in the secondary side, deposits will form at locations that experiences steam blanketing. This type of flow regime is usually avoided in the steam generator design and the heat transfer to secondary side is restricted to nucleate boiling regime (i.e bubbly two-phase flow).

The transition from nucleate boiling to film boiling (Steam blanketing) in vertical channels has been studied extensively in the literature (see Hestroni Handbook of multiphase system). It is believed that when a function of mass flux (ρV) and steam quality X, exceeds a certain threshold the transition to film boiling will occur.

In Figure 1 from a B&W correlation extracted from the Book Steam/its generation and use, it is seen that when $\rho V/(1-KX)$ exceeds a certain

value then the flow condition will promote burnout or scale formation, here K is a constant for a given heat flux.

OTHER FACTORS:

The mass flux and steam quality parameter ($\rho V/(1-KX)$) is applicable under normal conditions of steam generator operations. Other factors are also known to promote the transition from nucleate boiling to steam blanketing conditions.

A survey of literature (such as Hestroni Handbook of two-phase flow) will indicate that both **tube bowing** and existence of **transient conditions** would encourage the departure from nucleate boiling.

Both of these condition are suspected to exist in Unit 2 Steam Generator. Transients are evaluated under the flow oscillation heading and will not be addressed here. All the analysis in this section will be applicable to normal operating conditions.

THERMAL HYDRAULIC MODEL:

A model of the Palo Verde Steam Generator was input into ATHOS2 Computer Code. This EPRI code calculates the flow properties inside the steam generator. In particular, the mixture density, axial velocity and the steam quality at each node in the secondary side are calculated from mass, energy and momentum balances.

The deposit parameter $\rho V/(1-KX)$, can then be calculated from the ATHOS2 output, and plotted at each steam generator cross section. For Palo Verde the value for K was chosen to equal 1.

RESULTS AND CONCLUSIONS:

The deposit parameter was plotted for the Steam Generator hot leg between support 5H and the top of the tube bend. Superimposed on these contours are the actual indications that were reported. In these Figures the values of the deposit parameter is normalized with respect to the highest caculated value. A review of these results the following conclusions are reached:

1. The cold leg of the Steam Generator is free from deposits except perhaps at the lower elevations by sludge formation mechanisms.
2. Actual deposit patterns seem to follow the 0.7 normalized deposit parameter contour, which corresponds to an actual deposit parameter of 720,000lb/hr sqft.
3. The deposits are located between Eggcrates 07H and 09H and are restricted to the outer area away from the center line.

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 21 & 22

PRELIMINARY

DATE: 04/21/93
TIME: 13:32:40

STAYS

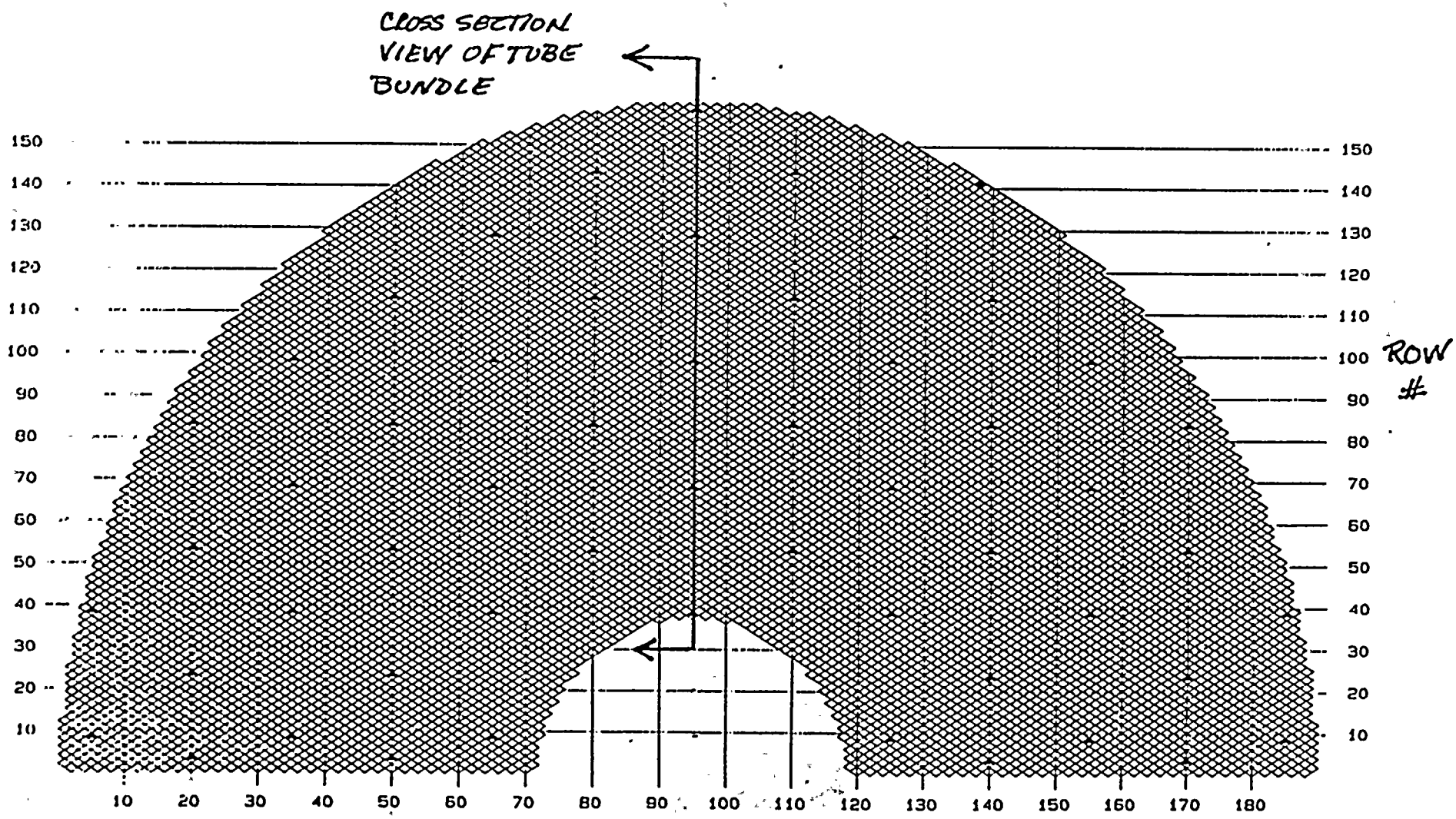


Figure A - Tube Bundle Cross Section

CONAM NUCLEAR, INC. BW

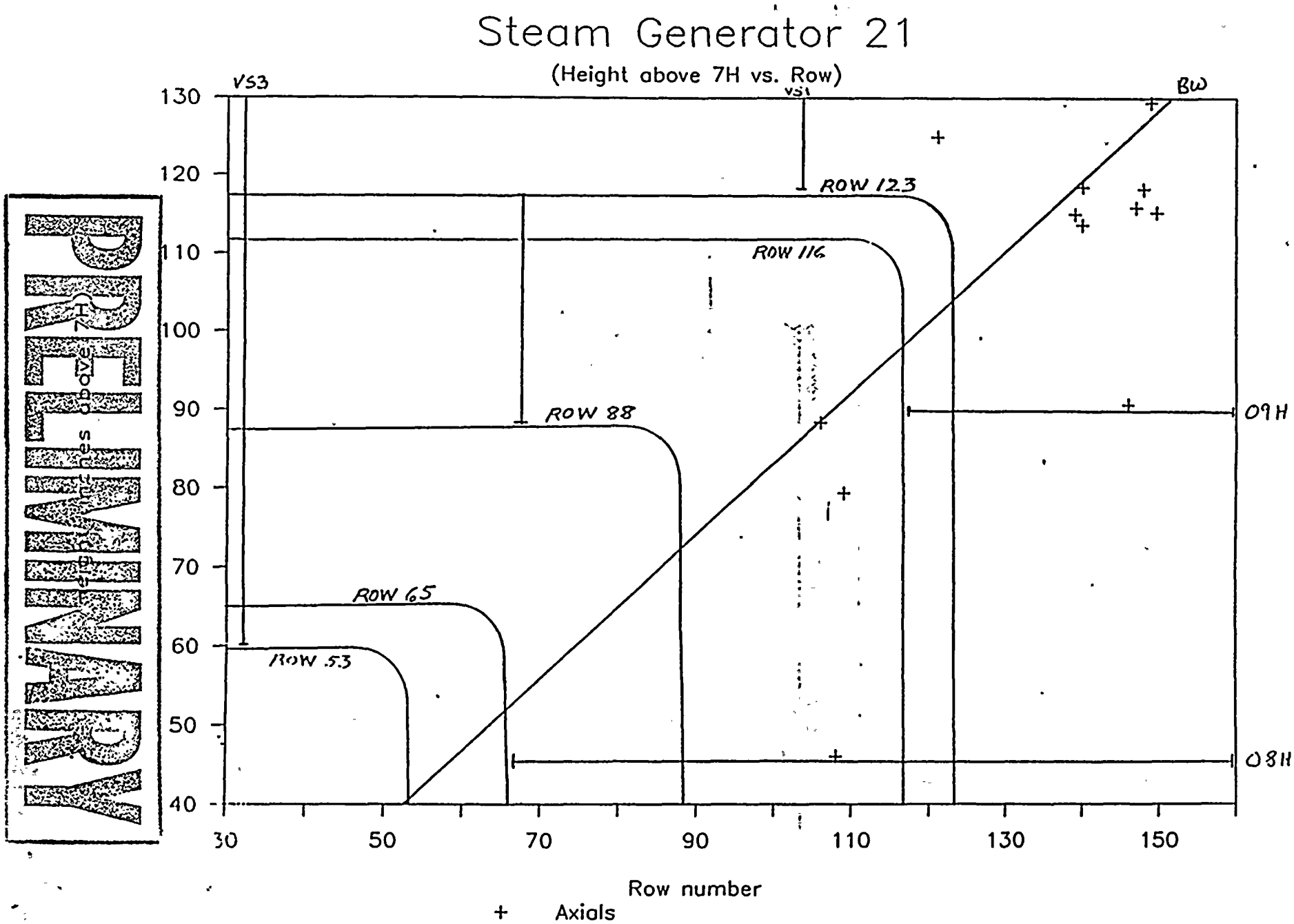


Figure B- TUBE DEFECTS PLOTTED ON TUBE BUNDLE CROSS SECTION ABOVE THE 07H SUPPORT.

1-14/43

Steam Generator 22

(Height above 7H vs. Row)

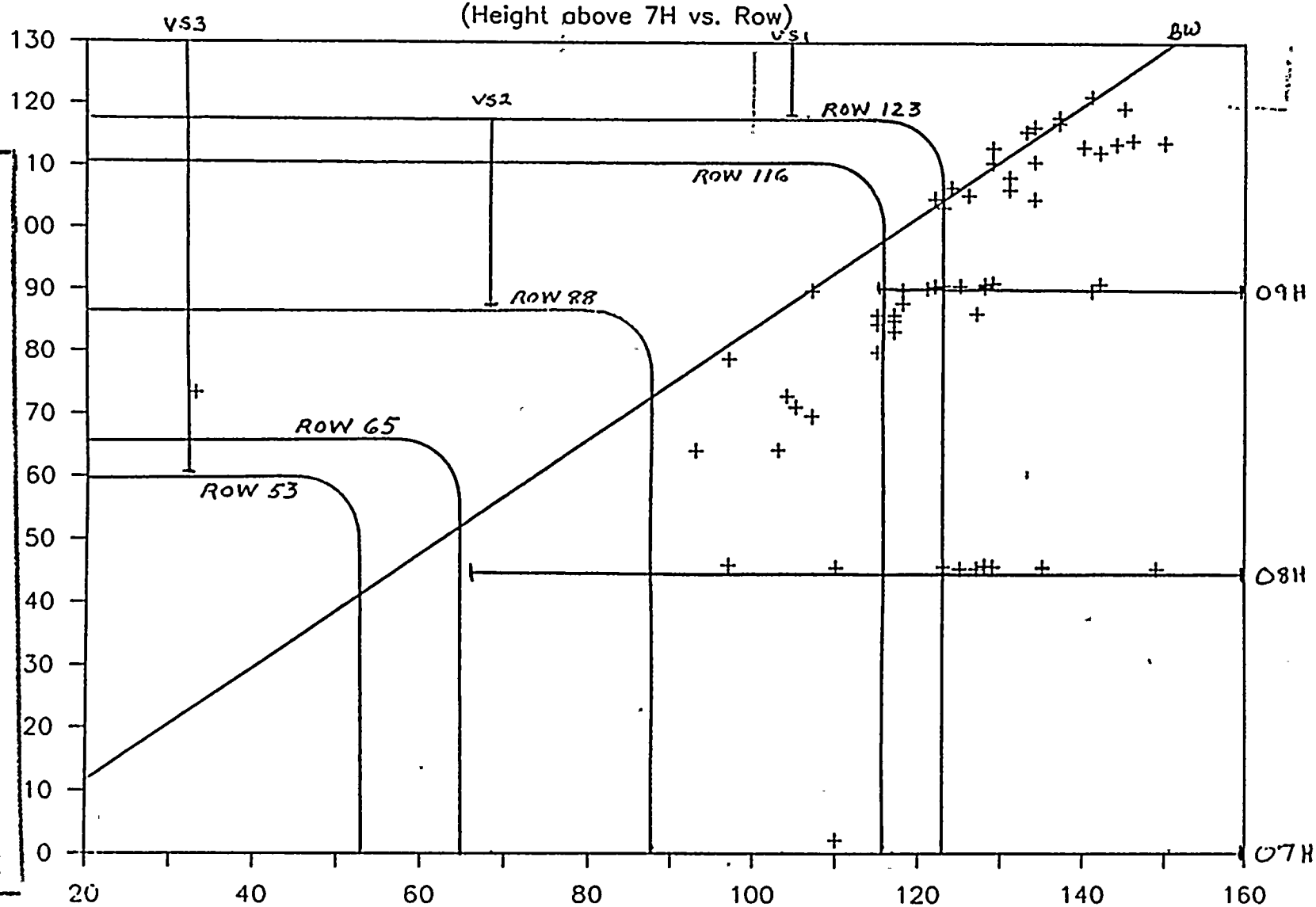
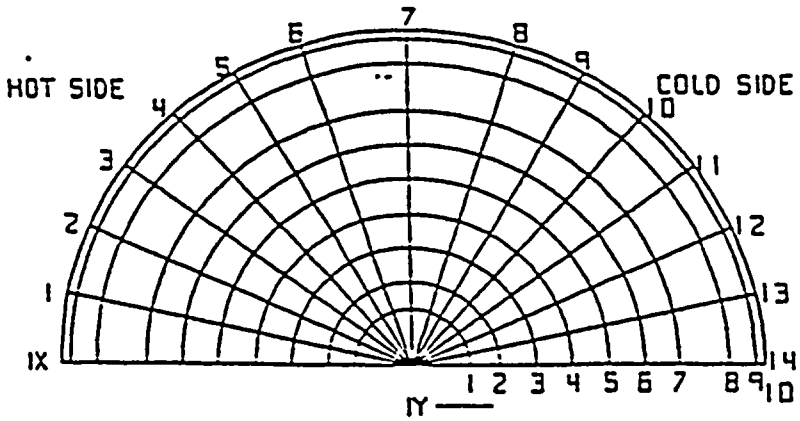


Figure C

TUBE DEFECTS PLOTTED ON TUBE BUNDLE CROSS SECTION ABOVE THE 07H SUPPORT



HORIZIONTAL NODALIZATION

PRELIMINARY

STEAM GENERATOR 21

MAP 1

DESCRIPTION:

* *TUBES EXAMINED WITH RPC FROM 08H THRU BW1 IN THE ARC*
* *THE MAP ALSO INDICATES ALL THE SAI'S LOCATED IN THE ARC VOLUME*

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 21

LOCATION: 08H- 2.0 TO BW1+ 2.0 (ARC)
CRITERIA: SAI, MAI

PRELIMINARY

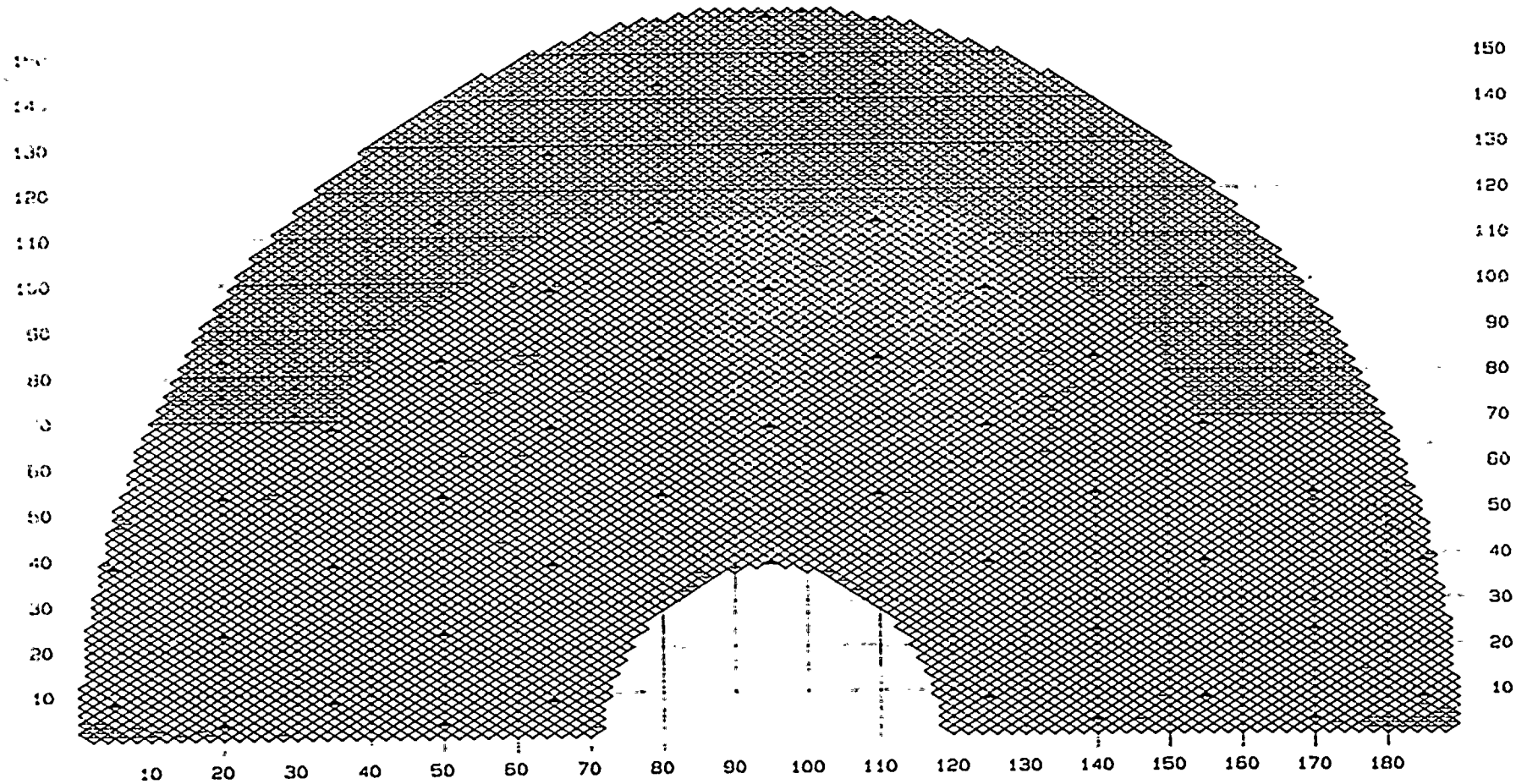
DATE: 06/10/93
TIME: 13:01:01

STAYS

PLUGGED 114 - MAI 0 ◆

EVAL EITHER LEG 3281 - EXAM EITHER LEG 0 ×

MAP 1



CONAM NUCLEAR, INC. BW

STEAM GENERATOR 21

MAP 2

DESCRIPTION:

* *TUBES EXAMINED WITH RPC OUTSIDE THE ARC*
* *THE MAP ALSO INDICATES ALL THE SAI'S LOCATED OUTSIDE THE ARC VOLUME*

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 21

LOCATION: ALL (Non ARC)
CRITERIA: SAI, MAI

PRELIMINARY

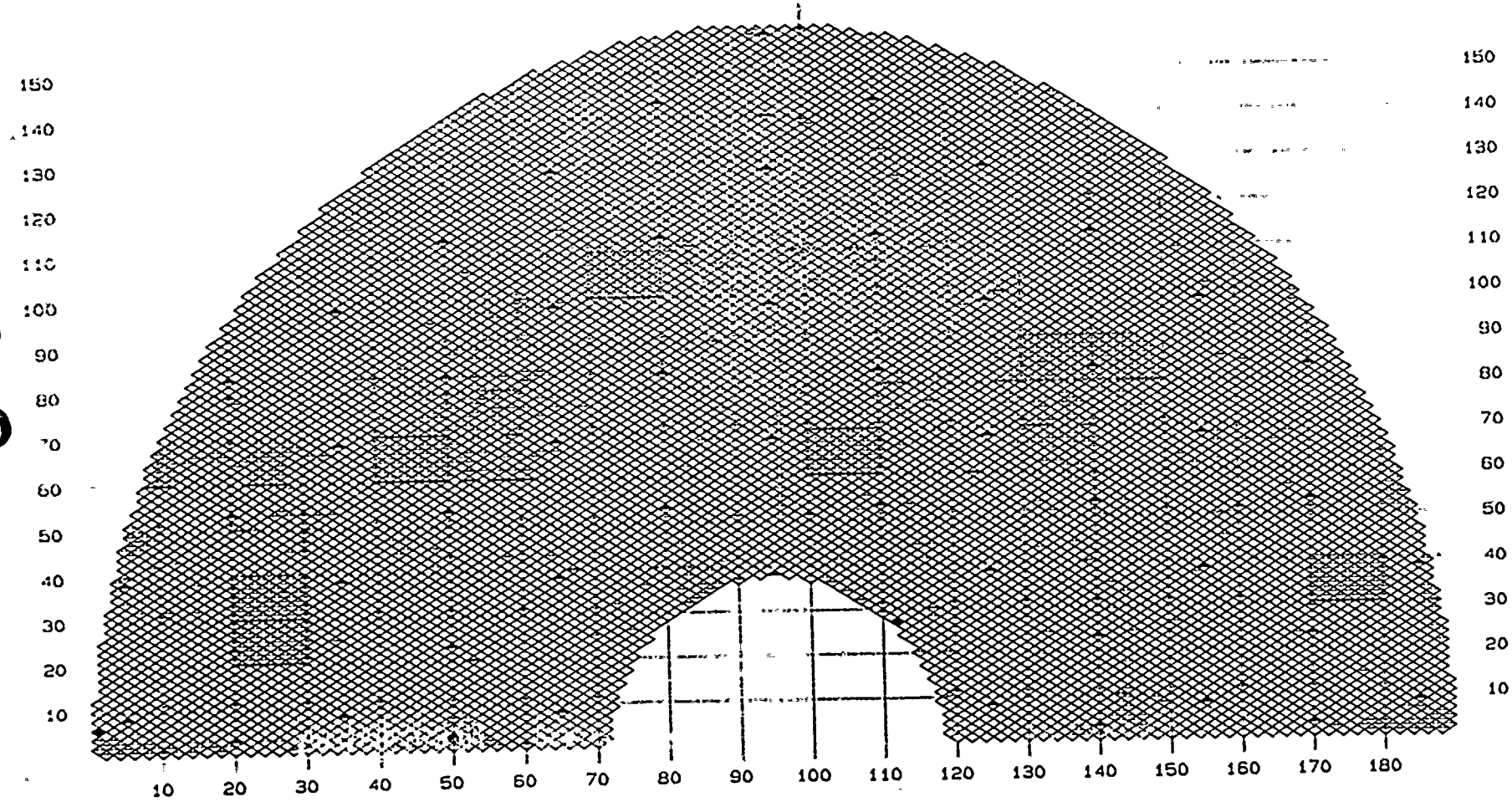
DATE: 06/10/93
TIME: 13: 20: 18

STAYS

PLUGGED 114 - MAI 2 ◆

EVAL EITHER LEG 1068 - EXAM EITHER LEG 0 X

MAP 2



CONAM NUCLEAR, INC. BW

STEAM GENERATOR 21

MAP 3

DESCRIPTION:

* *TUBES EXAMINED WITH RPC IN THE ARC, BUT BELOW 08H*

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

PRELIMINARY

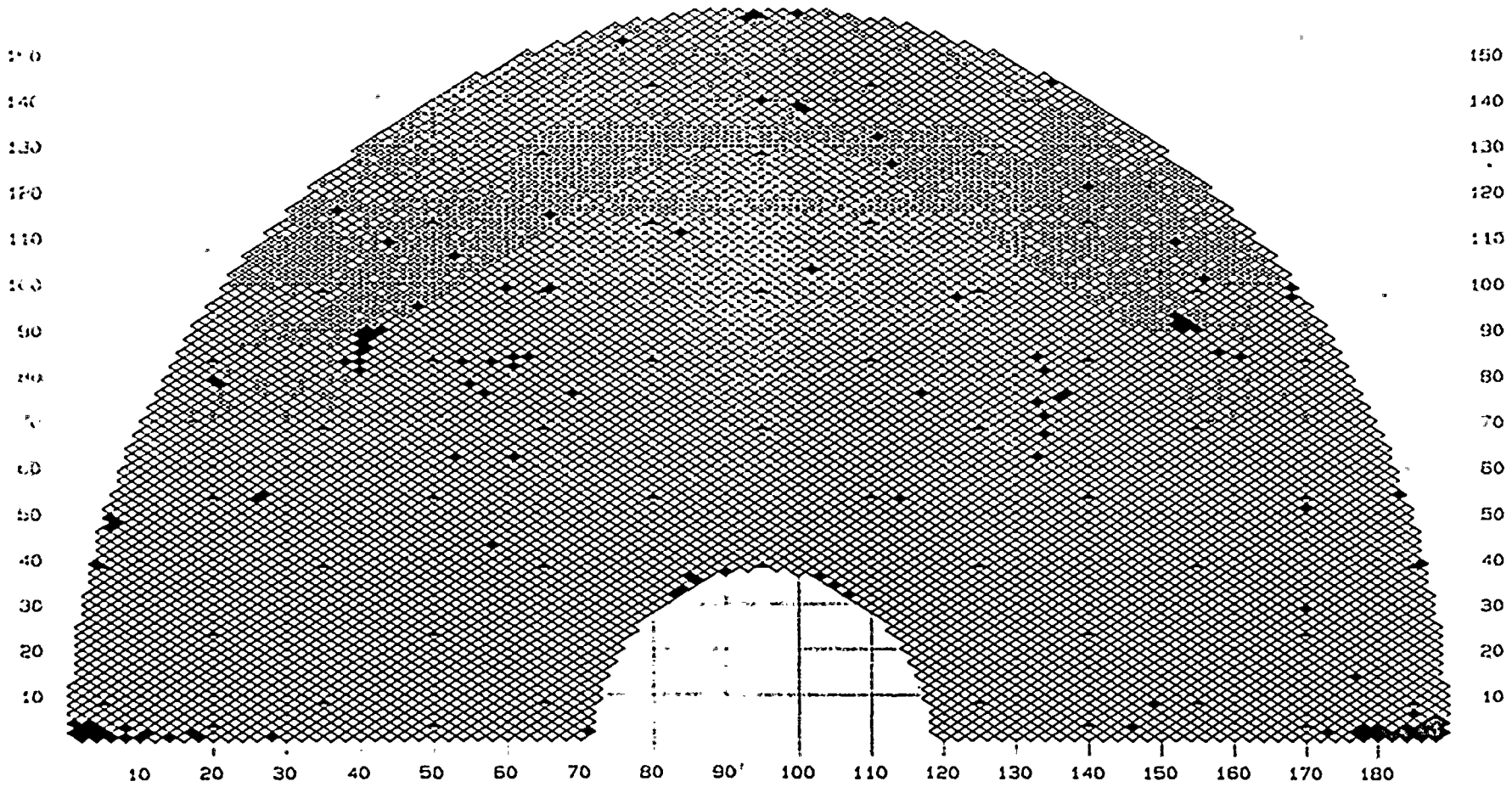
STEAM GENERATOR: 21

LOCATION: ALL (ARC)
CRITERIA: SUPPORTS FROM BW1 - 07H

DATE: 06/11/93
TIME: 08:04:30

STAYS

PLUGGED	114	◆	01H-01H	516	X			03H-03H	1	1	X	04H-04H	2	X	07H-07H	997	X
			06H-06H	131	X			LB1-07H		3	X	15H-15H	574	X			
			04H-04H	1	◆	08H-08H	10	X									



MAP 3

CONAM NUCLEAR INC. BW

STEAM GENERATOR 21

MAP 4

DESCRIPTION:

* *TUBES REMAINING TO BE RPC EXAMINED*
* *THE MAP ALSO INDICATES THE EXTENT OF EXAMINATION*

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

PRELIMINARY

STEAM GENERATOR: 21
PROC: 73TI-9RC01-Rev.7

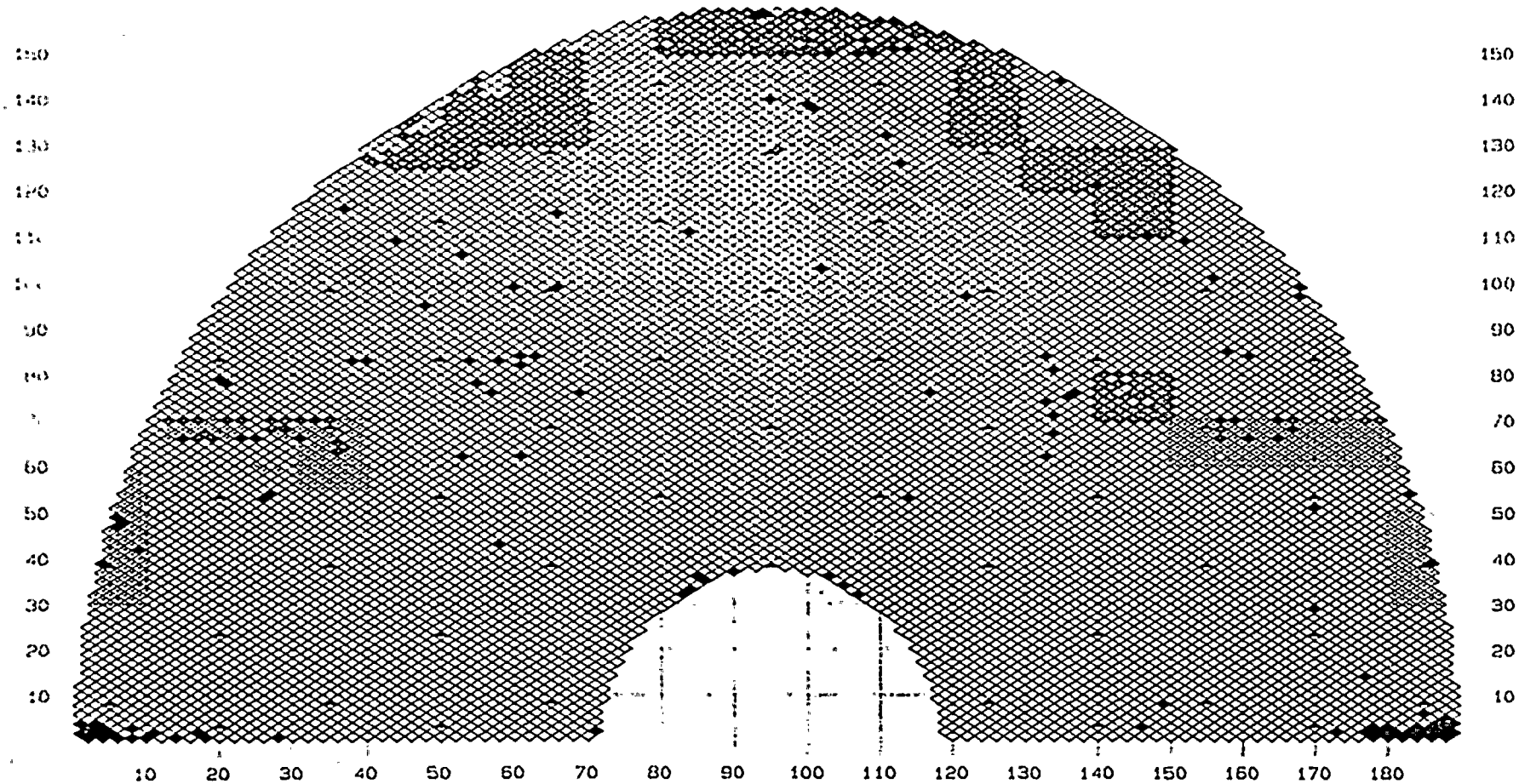
DATE: 06/11/93
TIME: 11:06:42

CRITERIA: TUBES TO BE EXAMINED IN GROUP(S) 27,28,29

STAYS

PLUGGED 114 ◆ BW1-VS3 689 ◆ 0B1-VS3 3 ◆ 0/M-VS3 374 ▲

MAP 4



CONAM NUCLEAR, INC. BW

STEAM GENERATOR 21

MAP 5

DESCRIPTION:

* *TUBES EXAMINED WITH RPC ABOVE THE BATWINGS*
* *THE MAP ALSO INDICATES THE SAI LOCATED ABOVE THE BATWING*

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 21

LOCATION: ALL
CRITERIA: PROBE = 580RP

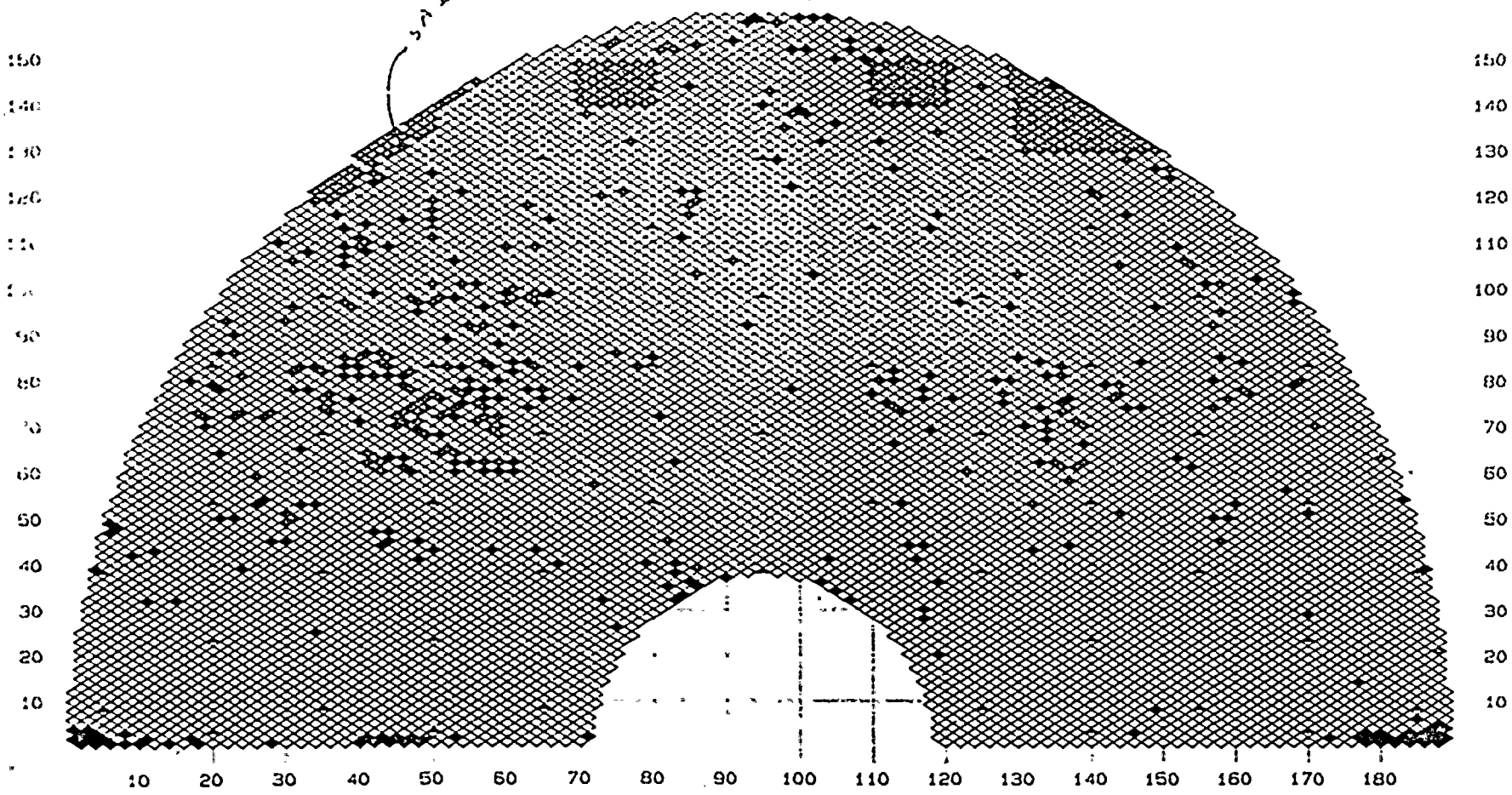
PLUGGED 114 ◆ 580RP 600 ◆

PRELIMINARY

DATE: 06/10/93
TIME: 18:33:42

STAYS ▲

MAP 5



CONAM NUCLEAR, INC. BW

STEAM GENERATOR 21

MAP 6

DESCRIPTION:

* *THIS IS THE ACTUAL DATA MANAGEMENT REPORT FOR SAI AND MAI INDICATIONS IN STEAM GENERATOR 21*

* *THIS REPORT CONTAINS ALL INDICATIONS IDENTIFIED ON THE SPECIFIED TUBES*

PRELIMINARY

CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 21
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/10/93
TIME: 12:26:57

ROW	LIN	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
6	1	1	H	02H-02H	02H-02H		00093	610RP					NDD	
			H	01H-01H	01H-01H		00093	610RP					NDD	
			H	TEH-TSH	TEH-TSH		00094	610RP	TSH- 0.97	1.16		48	PID	1
			H	TSH-TSH	TSH-TSH	RPI	00093	610RP	TSH- 0.86	1.39		32	MAI	1
			C	TEC-TEH	TEC-TEH		00042	610UL	TSH- 0.68	0.72		54	NQI	P 1
			C	TEC-TEH	TEC-TEH		00042	610UL	TSH+ 0.00				NTE	4
109	42	3	H	07H-07H	07H-07H		00195	610RP					NDD	
			C	BW1-08H	BW1-08H		00000	610RF					RFE	
			H	08H-BW1	08H-BW1		00195	610RP	08H+ 30.20to+ 42.58	0.23		0	PDP	11
			H	08H-BW1	08H-BW1	RPI	00195	610RP	08H+ 34.35to+ 41.31	0.46		0	SAI	1
			C	TEC-TEH	TEC-TEH		00029	610UL	08H+ 34.49TO+ 41.73	0.38		33	NBI	P 1
			H	08H-BW1	08H-BW1		00201	610RP	08H+ 34.93TO+ 42.38	0.70		18	PID	1
			H	08H-BW1	08H-BW1		00201	610RP	08H+ 34.93to+ 42.38	0.70		18	PID	1
106	45	5	C	TEC-TEH	TEC-TEH		00029	610UL	BW1- 0.82	0.34		57	NBI	P 1
			H	BW1-BW1	BW1-BW1	RPI	00295	610RP	BW1- 0.58	0.37		71	SAI	P 1
			H	BW1-BW1	BW1-BW1		00296	610RP	BW1- 0.57	0.99		38	PID	P 1
			C	TEC-TEH	TEC-TEH		00029	610UL	BW1+ 2.02	0.52		0	12	P 2
131	46	1,2	H	01H-01H	01H-01H		00100	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00100	610RP					NDD	
			C	TEC-TEH	TEC-TEH		00003	610UL	BW1+ 18.71	1.48		137	NQI	1
			H	BW1-VS1	BW1-BW1		00100	610RP	BW1+ 18.71				RFF	
			H	BW1-VS1	BW1-VS1		00203	580RP	BW1+ 18.71	1.04		35	PID	P 1
			H	BW1-VS1	BW1-VS1		00231	580RP	BW1+ 18.72	0.93		59	PID	P 1
			H	BW1-VS1	BW1-VS1	RPI	00127	580RP	BW1+ 19.02	3.27		19	SAI	P 1
147	76	3	C	BW1-09H	BW1-09H		00000	610RF					RFE	
			C	09H-08H	09H-08H		00000	610RF					RFE	
			H	BW1-VS3	BW1-VS3		00481	580RP					NDD	
			H	08H-BW1	08H-BW1		00179	610RP	08H+ 11.48to+ 32.71	0.55		0	PDP	11
			H	08H-BW1	08H-BW1		00179	610RP	09H+ 1.58to+ 14.65	0.06		0	PDP	11
			H	08H-BW1	08H-BW1		00179	610RP	09H+ 20.39to+ 31.37	1.25		0	PDP	11
			H	08H-BW1	08H-BW1		00201	610RP	09H+ 25.35	0.75		176	PID	P 1
			C	TEC-TEH	TEC-TEH		00009	610UL	09H+ 25.71	1.36		350	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00179	610RP	09H+ 25.72	0.20		0	SAI	1
149	76	1	H	01H-01H	01H-01H		00068	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00068	610RP					NDD	
			C	BW1-09H	BW1-09H		00000	610RF					RFE	
			H	BW1-VS3	BW1-VS3		00481	580RP					NDD	
			H	08H-BW1	08H-BW1		00068	610RP	09H+ 23.90to+ 31.86	0.83		83	PDP	11
			H	08H-BW1	08H-BW1		00083	610RP	09H+ 24.97	1.96		120	PID	P 1
			C	TEC-TEH	TEC-TEH		00009	610UL	09H+ 25.09	0.83		156	NQI	1
			H	08H-BW1	08H-BW1	RPI	00068	610RP	09H+ 25.13	1.27		72	SAI	P 1
140	89	1	H	01H-01H	01H-01H		00065	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00065	610RP					NDD	
			H	08H-BW1	09H-BW1		00105	610RP	09H+ 22.44TO+ 23.84	0.62		265	PDP	11
			H	08H-BW1	08H-BW1		00065	610RP	09H+ 22.98to+ 24.50	0.50		77	PDP	11

PRELIMINARY

CONAM NUCLEAR, INC.

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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 21
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/10/93
TIME: 12:26:57

ROW	LIN	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
140	89	1	H	08H-BW1	08H-BW1	RPI	00065	610RP	09H+ 23.55	2.02		89	SAI	4
			H	08H-BW1	09H-BW1		00105	610RP	09H+ 23.55	0.64		87	PID	P 1
			C	TEC-TEH	TEC-TEH		00011	610UL	09H+ 24.30	0.64		25	NQI	1
149	98	3	C	BW1-09H	BW1-09H		00000	610RF					RFE	
			H	08H-BW1	08H-BW1		00163	610RP	BW1- 1.83 14	0.50		0	WAR	P 1
			H	TEH-TEC	TEH-TEC		00011	610UL	BW1+ 0.76	3.10		5	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00163	610RP	BW1+ 1.17	0.38		29	SAI	P 1
			H	08H-BW1	08H-BW1		00166	610RP	BW1+ 1.15	0.94		35	PID	P 1
140	105	1	H	01H-01H	01H-01H		00063	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00063	610RP					NDD	
			C	BW1-BW1	BW1-BW1		00000	610RF					RFE	
			H	08H-BW1	08H-BW1		00063	610RP	BW1- 1.46	2.37		218	SAI	P 1
			H	08H-BW1	08H-BW1	PID	00084	610RP	BW1- 1.40	1.33		67	SAI	P 1
			H	TEH-TEC	TEH-TEC	RPI	00010	610UL	BW1- 1.37	1.31		71	81	P 1
			H	TEH-TEC	TEH-TEC		00086	610UL	BW1- 1.25	1.17		71	PID	P 1
148	111	3,5	H	08H-BW1	08H-LB1		00153	610RP	09H+ 23.79to+ 34.19	0.58		58	PDP	11
			H	BW1-VS1	BW1-VS1		00299	580RP	BW1- 2.71	0.61		0	PID	1
			H	TEH-TEC	TEH-TEC		00010	610UL	09H+ 27.67	0.56		37	NBI	1
			H	08H-LB1	08H-LB1	RPI	00153	610RP	09H+ 28.08	0.26		0	SAI	2
			H	TEH-TEC	TEH-TEC		00010	610UL	09H+ 33.78	0.55		61	NBI	1
			H	08H-LB1	08H-LB1	RPI	00153	610RP	09H+ 34.10	0.76		38	SAI	P 2
			H	TEH-TEC	TEH-TEC		00010	610UL	BW1+ 16.06	0.76		171	NQI	1
			H	BW1-VS1	BW1-VS1		00299	580RP	BW1+ 16.36to+ 18.65	3.13		347	PDP	11
27	112	1	H	TEH-TSH	TEH-TSH		00111	610RP	TEH+ 22.77	0.65		36	MAI	P 1
			H	TEH-TSH	TEH-TSH	PID	00117	610RP	TSH- 0.71	0.43		82	MAI	P 1
			C	TEC-TEH	TEC-TEH		00069	610UL	TSH- 0.52	1.95		151	7	P 1
			C	TEC-TEH	TEC-TEH		00069	610UL	TSH+ 0.00	1.95		10	NTE	P 1
146	117	3	H	BW1-VS3	BW1-VS3		00451	580RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00149	610RP	09H+ 0.45	0.72		43	SAI	P 1
			H	TEH-TEC	TEH-TEC		00009	610UL	09H+ 0.57	0.36		124	NBI	P 1
			H	08H-BW1	08H-BW1		00153	610RP	09H+ 0.64	0.42		48	PID	P 1
139	118	3	H	TEH-TEC	TEH-TEC		00013	610UL	09H+ 24.16	1.10		12	NBI	1
			H	08H-BW1	08H-BW1		00148	610RP	09H+ 24.31to+ 26.61	0.00		0	PDP	11
			H	08H-BW1	07H-BW1		00153	610RP	09H+ 24.75	0.73		22	PID	P 2
			H	08H-BW1	08H-BW1	RPI	00148	610RP	09H+ 25.02	0.42		36	SAI	P 2
108	143	5	H	07H-07H	07H-07H		00312	610RP					NDD	
			H	08H-BW1	08H-09H		00317	610RP					TNC	
			H	TEH-TEC	TEH-TEC		00025	610UL	06H+ 0.77	0.75		0	18	P 2
			H	TEH-TEC	TEH-TEC		00025	610UL	08H+ 0.66	0.94		0	21	P 2
			H	07H-07H	07H-08H		00318	610RP	08H+ 0.91	0.47		0	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00312	610RP	08H+ 0.93	0.57		232	SAI	P 1
			H	07H-07H	07H-08H		00330	610RP	08H+ 0.96	0.41		0	PID	P 1

PRELIMINARY

CONAM NUCLEAR, INC.

6

STEAM GENERATOR: 21
LOCATION: ALL
CRITERIA: SAI,MAI

NUMBER OF TUBES SELECTED FROM CURRENT OUTAGE: 14
NUMBER OF DATA RECORDS SELECTED FROM CURRENT OUTAGE: 87

NO TREND ANALYSIS REQUESTED

REPORT OPTIONS:
All results are included for tubes with at least one call meeting criteria

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STEAM GENERATOR 22

MAP 7

DESCRIPTION:

* *TUBES EXAMINED WITH RPC FROM 08H THRU BW1 IN THE ARC*

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

PRELIMINARY

STEAM GENERATOR: 22

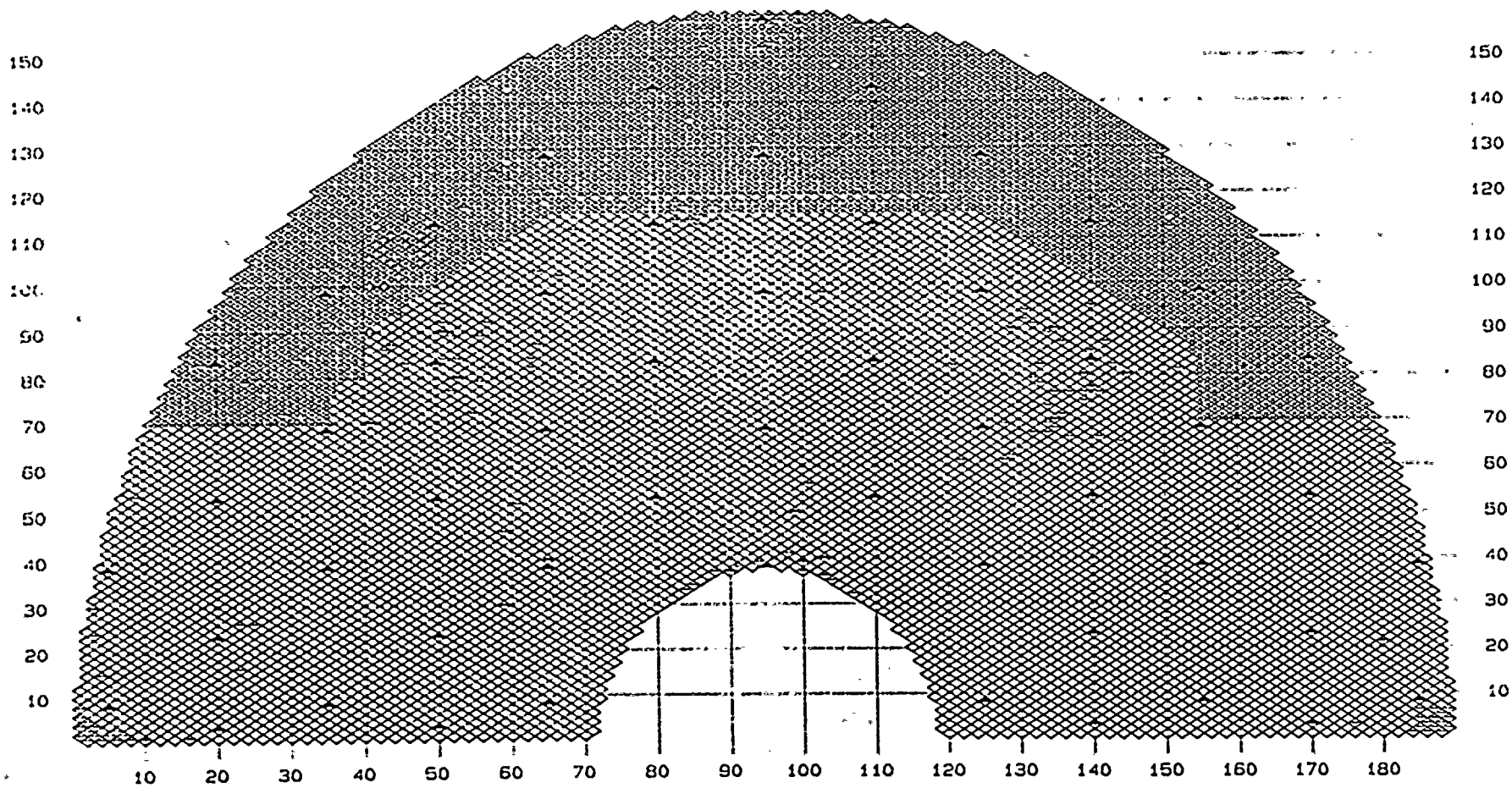
DATE: 06/10/93
TIME: 07: 45: 42

CRITERIA: TUBES TO BE EXAMINED FROM HOT LEG (ARC)

STAYS ▲

PLUGGED 195 – BW1-VS1 1 ▮ TEH-BW1 9 ▽ BW1-BW1 25 □ OBH-BW1 27 ×

OTHER 3020 ×



MAP 7

CONAM NUCLEAR, INC. BW

STEAM GENERATOR 22

MAP 8

DESCRIPTION:

* *THE MAP INDICATES ALL THE SAI'S LOCATED IN THE ARC*

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

PRELIMINARY

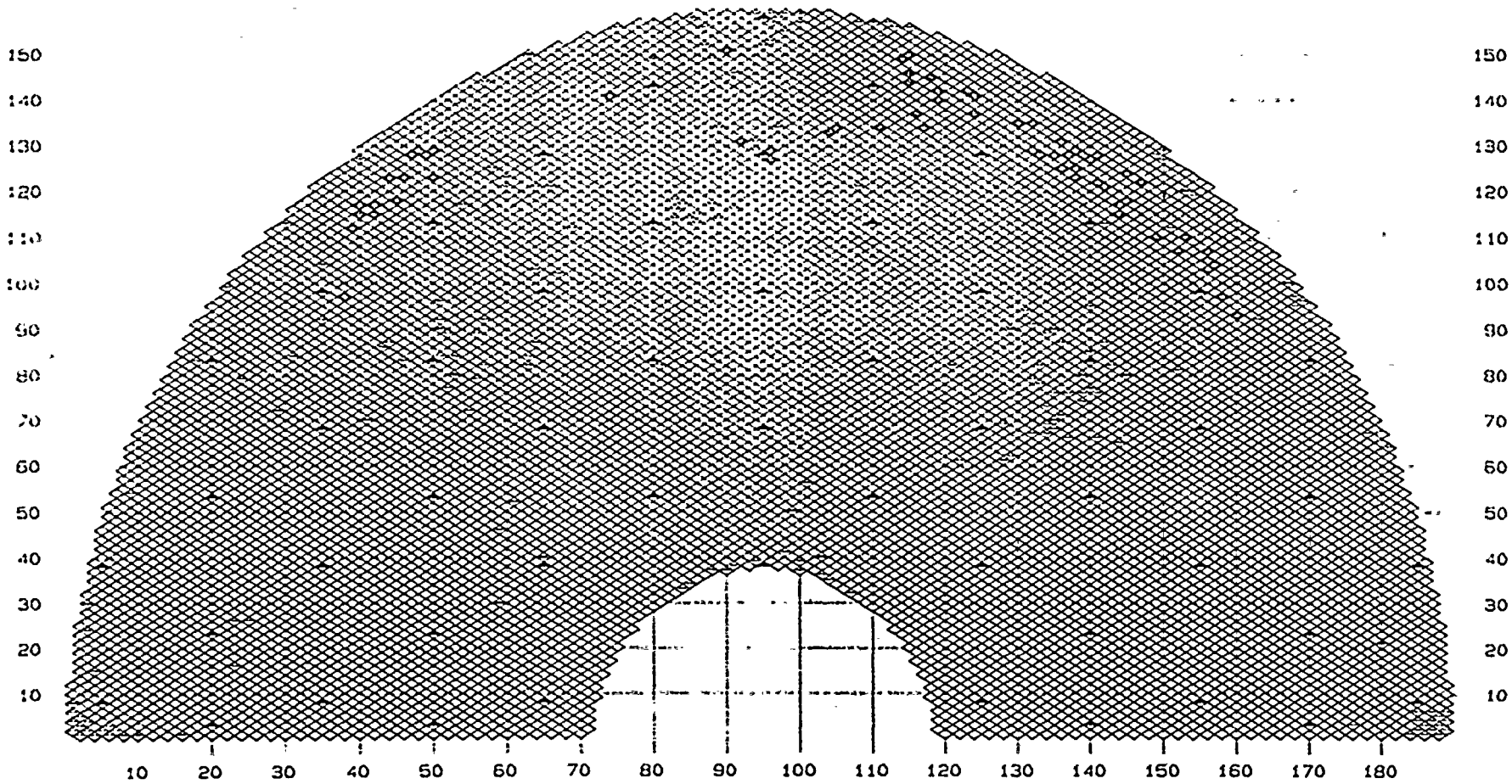
STEAM GENERATOR: 22

LOCATION: ALL (ARC)
CRITERIA: 35% TO 100%, SAI, MAI

DATE: 06/10/93
TIME: 07:57:15

STAYS

PLUGGED 195 – 0% TO 19% 0 ◆ 30% TO 39% 0 ◆ 40% TO 100% 65 ◆ OTHER 0 ×



MAP 8

CONAM NUCLEAR, INC. BW

STEAM GENERATOR 22

MAP 9

DESCRIPTION:

* *TUBES EXAMINED WITH RPC OUTSIDE THE ARC*
* *THE MAP ALSO INDICATES ALL THE SAI'S LOCATED OUTSIDE THE ARC*

PRELIMINARY

04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22

LOCATION: ALL
CRITERIA: SAI, MAI

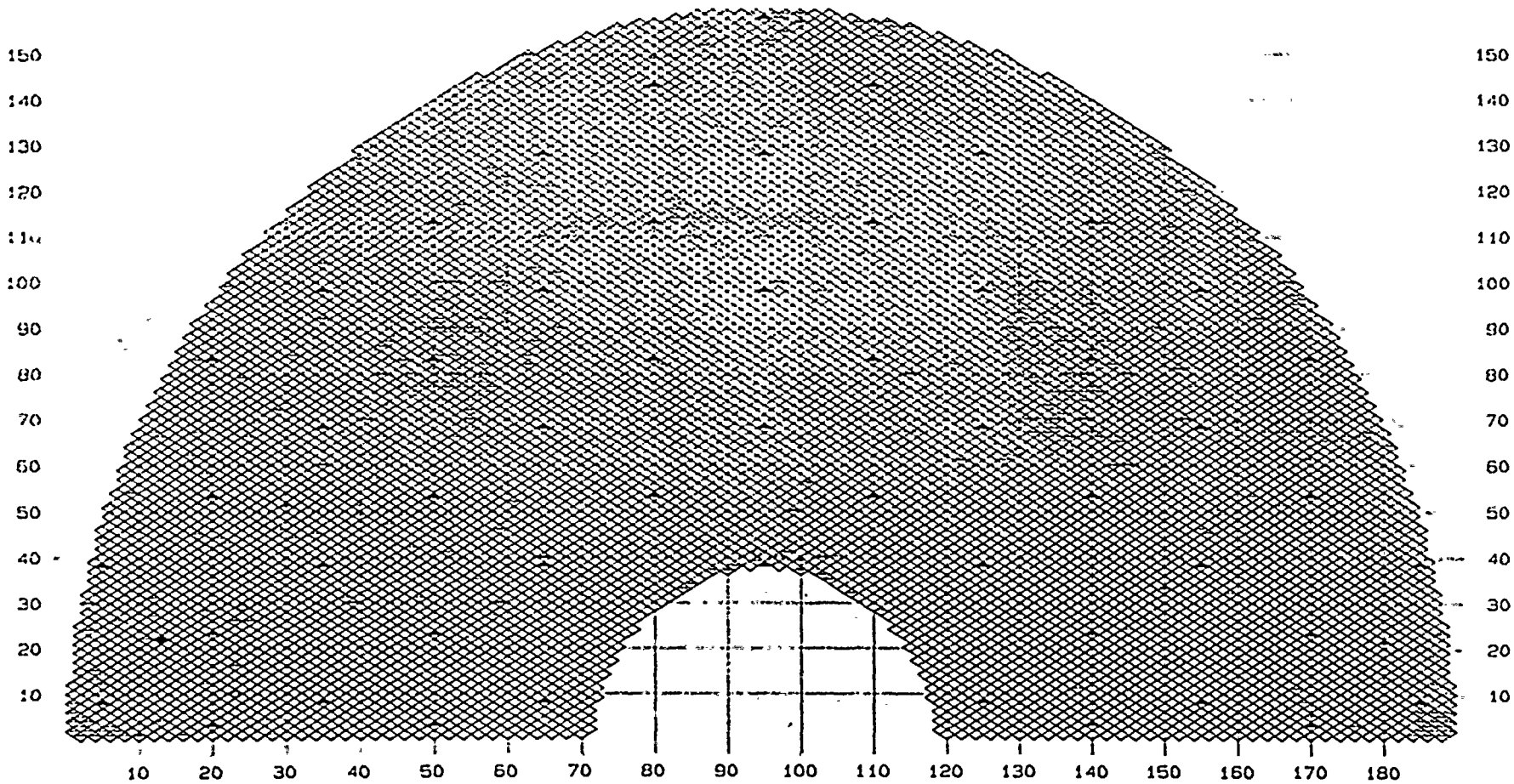
PRELIMINARY

DATE: 06/11/93
TIME: 10:56:02

STAYS

PLUGGED 195 - MAI 1

MAP 9



CONAM NUCLEAR, INC. BW

STEAM GENERATOR 22

MAP 10

DESCRIPTION:

* *THIS IS THE ACTUAL DATA MANAGEMENT REPORT FOR SAI AND MAI INDICATIONS IN STEAM GENERATOR 22*

* *THIS REPORT CONTAINS ALL INDICATIONS IDENTIFIED ON THE SPECIFIED TUBES*

PRELIMINARY

CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	CURRENT MIL	CURRENT DEG	CURRENT %	CURRENT CH
22	13	2	H	07H-BW1	07H-BW1		00074	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00074	610RP					NDD	
			H	-	-		99999	610UL					TPC	
			H	TEH-TSH	TEH-TSH		00099	610RC					NDD	
			H	TEH-BW1	TEH-BW1		00103	630UC	01H- 0.34	1.93		119	21	P 1
			H	TSH-01H	TSH-01H	RPI	00099	610RC	01H- 0.26	0.65		0	MAI	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	01H- 0.26	1.66		100	40	P 1
			H	01H-02H	01H-02H	RPI	00099	610RC	01H- 0.24	0.74		0	MAI	P 1
			H	TEH-TEC	TEH-TEC		00106	11412	01H- 0.21	1.88		105	32	P 1
			H	01H-01H	01H-01H	RPI	00074	610RP	01H- 0.19	2.08		34	MAI	1
			C	TEC-TEH	TEC-TEH		00082	610UL	01H- 0.18	1.52		108	PID	P 1
			H	TEH-TEC	TEH-TEC		00105	11812	01H- 0.16	1.63		103	39	P 1
			C	TEC-TEH	TEC-TEH	RPI	00002	610UL	01H- 0.15	1.33		98	52	P 1
			C	TEC-TEH	TEC-TEH		00082	610UL	02H+ 0.92	0.24		0	11	P 2
			H	01H-02H	01H-02H		00099	610RC	02H+ 1.02	0.56		0	WAR	P 1
			C	TEC-TEH	TEC-TEH		00082	610UL	02H+ 21.85TO+ 29.52	4.79		49	ADR	5
10	23	2	H	07H-BW1	07H-BW1		00075	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00075	610RP					NDD	
			H	TEH-TSH	TEH-TSH		00099	610RC					NDD	
			H	TEH-BW1	TEH-BW1		00103	630UC	01H+ 0.11	1.62		111	28	P 1
			H	TEH-TEC	TEH-TEC		00106	11412	01H+ 0.12	1.26		101	38	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	01H+ 0.14	1.25		90	51	P 1
			H	01H-02H	01H-02H		00099	610RC	01H+ 0.22	1.07		0	PID	P 1
			C	TEC-TEH	TEC-TEH		00004	610UL	01H+ 0.23	0.56		118	30	P 1
			H	TEH-TEC	TEH-TEC		00105	11812	01H+ 0.23	1.07		103	39	P 1
			H	01H-01H	01H-01H	RPI	00075	610RP	01H+ 0.24	2.71		32	SAI	P 1
			H	TSH-01H	TSH-01H		00099	610RC	01H+ 0.34	0.92		0	PID	P 1
29	24	2	H	07H-BW1	07H-BW1		00075	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00075	610RP					NDD	
			H	-	-		99999	610UL					TPC	
			H	TEH-TSH	TEH-TSH		00099	610RC					NDD	
			H	01H-01H	01H-01H	RPI	00075	610RP	01H- 0.16	1.66		34	SAI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	01H- 0.12	0.39		78	DSI	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	01H- 0.11	0.57		57	DSI	P 1
			H	TEH-TEC	TEH-TEC		00106	11412	01H- 0.06	0.50		71	DSI	P 1
			H	TEH-TEC	TEH-TEC		00105	11812	01H- 0.01	0.41		66	DSI	P 1
			C	TEC-TEH	TEC-TEH		00004	610UL	01H+ 0.00	0.38		75	DSI	P 1
			H	01H-02H	01H-02H	RPI	00099	610RC	01H+ 0.00	1.25		10	SAI	P 1
			H	TSH-01H	TSH-01H	RPI	00099	610RC	01H+ 0.00	1.30		9	SAI	P 1
97	38	3	H	07H-07H	07H-07H		00330	610RP					NDD	
			H	07H-07H	07H-08H		00352	610RP					TNC	
			C	TEC-TEH	TEC-TEH		00040	610UL	08H+ 0.97	0.24		164	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00330	610RP	08H+ 0.99	0.86		7	SAI	P 1
			H	08H-BW1	08H-BW1		00409	610RP	08H+ 0.99	1.21		18	PID	P 1
			H	07H-07H	07H-08H		00409	610RP	08H+ 1.04	0.25		0	PID	P 1

PRELIMINARY
CONAM NUCLEAR INC
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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
112	39	1	H	07H-07H	07H-07H		00244	610RP					NDD	
			H	08H-BW1	08H-BW1		00244	610RP	08H+ 24.69to+ 36.4				PDP	11
			H	08H-09H	08H-BW1		00342	610RP	08H+ 29.11to+ 32.3	0.92		63	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00244	610RP	08H+ 29.38to+ 30.1	1.24		0	SAI	1
			C	TEC-TEH	TEC-TEH		00040	610UL	08H+ 30.71	0.60		157	NQI	1
			C	TEC-TEH	TEC-TEH		00040	610UL	08H+ 31.11	1.34		12	NQI	1
115	40	1,2	H	07H-07H	07H-07H		00244	610RP					NDD	
			H	01H-01H	01H-01H		00342	610RP					NDD	
			H	TEH-BW1	TEH-BW1		00103	630UC	01H- 0.28	0.69		0	19	P 2
			H	08H-BW1	08H-BW1		00102	610MR	08H+ 34.27to+ 43.6	0.45		0	PDP	11
			H	08H-BW1	08H-BW1		00244	610RP	08H+ 37.74	0.51		0	PID	1
			H	08H-09H	08H-BW1		00342	610RP	08H+ 38.11	0.43		54	PID	1
			H	08H-BW1	08H-BW1	RPI	00102	610MR	08H+ 40.85	0.32		0	SAI	P 1
			C	TEC-TEH	TEC-TEH		00040	610UL	08H+ 40.91	0.60		152	NQI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 41.33	0.80		159	NQI	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 41.38	0.52		163	NQI	P 1
117	40	2	H	07H-08H	07H-08H		00099	610RC					NDD	
			H	06H-07H	06H-07H		00099	610RC					BDA	
			H	06H-07H	05H-06H		00099	610RC					NDD	
			H	06H-07H	04H-05H		00099	610RC					NDD	
			H	06H-07H	03H-04H		00099	610RC					BDA	
			H	06H-07H	02H-03H		00099	610RC					BDA	
			H	06H-07H	01H-02H		00099	610RC					NDD	
			H	06H-07H	TSH-01H		00099	610RC					NDD	
			H	06H-07H	TEH-TSH		00099	610RC					NDD	
			H	06H-07H	06H-07H		00100	610RC					NDD	
			H	02H-03H	02H-03H		00100	610RC					NDD	
			H	01H-02H	01H-02H		00100	610RC					NDD	
			H	-	-		99999	610UL					TPC	
			H	08H-BW1	08H-BW1	RPI	00031	610RP	08H+ 40.81	0.31		48	SAI	1
			H	08H-BW1	08H-BW1	RPI	00021	610RP	08H+ 41.00	0.58		47	SAI	1
			H	08H-09H	08H-09H		00099	610RC	08H+ 41.16	0.75		0	PID	P 1
			C	TEC-TEH	TEC-TEH		00025	610UL	08H+ 41.29	0.92		161	NBI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 41.39	1.77		164	NBI	1
			H	TEH-TEC	TEH-TEC		00106	11412	08H+ 41.40	1.84		166	NBI	1
			C	TEC-TEH	TEC-TEH		00000	610UL	08H+ 41.64	0.82		160	NBI	1
			H	TEH-TEC	TEH-TEC		00105	11812	08H+ 41.65	1.41		163	NBI	1
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 41.82	2.58		161	NBI	1
			H	09H-BW1	09H-BW1		00099	610RC	09H- 1.22 10	0.49		0	WAR	P 1
			H	08H-09H	08H-09H		00099	610RC	09H- 1.22 10	0.26		0	WAR	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	09H- 1.18	1.11		0	24	P 2
			H	TEH-BW1	TEH-BW1		00103	630UC	09H- 1.18	1.59		0	17	P 2
			C	TEC-TEH	TEC-TEH		00025	610UL	09H- 1.11	0.72		0	12	P 2
			H	TEH-TEC	TEH-TEC		00106	11412	09H- 1.10	1.66		0	32	P 2
			H	TEH-TEC	TEH-TEC		00105	11812	09H- 0.82	1.47		0	26	P 2

PRELIMINARY
CONAM NUCLEAR, INC
10

CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	VOLTS	CURRENT MIL	CURRENT DEG	CURRENT %	CURRENT CH
117	40	2	C	TEC-TEH	TEC-TEH		00025	610UL	09H+ 0.54	1.26		0	18	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	09H+ 0.65	1.83		0	32	P 2
			C	TEC-TEH	TEC-TEH		00000	610UL	09H+ 0.75	0.65		0	18	P 2
			H	09H-BW1	09H-BW1		00099	610RC	09H+ 0.84	1.59		0	WAR	P 1
			H	08H-09H	08H-09H		00099	610RC	09H+ 0.87	1.52		0	WAR	P 1
			H	TEH-TEC	TEH-TEC		00106	11412	09H+ 0.95	1.58		0	31	P 2
			H	08H-BW1	08H-BW1		00021	610RP	09H+ 0.96	0.36		93	WAR	1
			H	TEH-TEC	TEH-TEC		00105	11812	09H+ 0.98	2.04		0	32	P 2
			H	TEH-BW1	TEH-BW1		00103	630UC	09H+ 1.86	1.58		0	35	P 2
			C	TEC-TEH	TEC-TEH		00000	610UL	VS2+ 0.70	0.31		0	10	P 2
			H	TEH-TEC	TEH-TEC		00106	11412	VS2+ 0.76	0.59		0	17	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	VS2+ 0.77	0.59		0	15	P 2
			H	TEH-TEC	TEH-TEC		00105	11812	VS2+ 0.80	0.36		0	12	P 2
			C	TEC-TEH	TEC-TEH		00025	610UL	VS2+ 0.92	0.60		0	10	P 2
115	42	2,3	H	07H-07H	07H-07H		00336	610RP					NDD	
			H	08H-BW1	08H-BW1		00102	610MR	08H+ 31.59to+ 43.1	0.05		0	PDP	11
			H	08H-BW1	08H-BW1		00345	610RP	08H+ 39.41	0.25		0	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00102	610MR	08H+ 39.51	0.43		19	SAI	2
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 39.52	0.69		170	NQI	P 1
			C	TEC-TEH	TEC-TEH		00041	610UL	08H+ 39.57	0.42		167	NQI	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 40.25	0.59		160	NQI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	BW1+ 1.18	0.40		0	11	P 2
			H	TEH-BW1	TEH-BW1		00103	630UC	BW1+ 1.38	0.44			14	P 2
			H	08H-BW1	08H-BW1		00102	610MR	BW1+ 1.80	0.31		0	WAR	P 1
			C	TEC-TEH	TEC-TEH		00041	610UL	BW1+ 2.05	0.33		0	9	P 2
117	42	2	H	08H-09H	08H-09H		00100	610RC					BDA	
			H	08H-09H	07H-08H		00100	610RC					NDD	
			H	08H-09H	06H-07H		00100	610RC					NDD	
			H	08H-09H	05H-06H		00100	610RC					BDA	
			H	08H-09H	02H-03H		00100	610RC					NDD	
			H	08H-09H	01H-02H		00100	610RC					NDD	
			H	08H-09H	TSH-01H		00100	610RC					NDD	
			H	08H-09H	TEH-TSH		00100	610RC					NDD	
			H	08H-09H	03H-04H		00100	610RC					NDD	
			H	08H-09H	04H-05H		00100	610RC	04H+ 29.44to+ 29.7	0.07		0	PVN	1
			H	08H-BW1	08H-BW1		00113	610RP	08H+ 35.12to+ 44.1	0.14		0	PDP	11
			H	08H-BW1	08H-BW1		00021	610RP	08H+ 36.53TO+ 43.45	0.00		0	PDP	11
			C	TEC-TEH	TEC-TEH	RPI	00000	610UL	08H+ 39.12	1.21		130	46	1
			H	TEH-TEC	TEH-TEC	RPI	00106	11412	08H+ 39.16	1.81		114	55	1
			H	TEH-TEC	TEH-TEC	RPI	00105	11812	08H+ 39.18	1.66		120	47	1
			H	08H-BW1	08H-BW1	RPI	00021	610RP	08H+ 39.19	0.90		65	SAI	1
			C	TEC-TEH	TEC-TEH	RPI	00081	610UL	08H+ 39.19	1.26		119	49	1
			H	08H-BW1	08H-BW1	RPI	00113	610RP	08H+ 39.32	2.93		47	SAI	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 39.46	1.73		119	50	1
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 40.17	1.71		106	NQI	1

PRELIMINARY
CONAM NUCLEAR, INC.
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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
117	42	2	C	TEC-TEH	TEC-TEH		00081	610UL	08H+ 41.99	0.30		133	NQI	1
			H	08H-BW1	08H-BW1	RPI	00021	610RP	08H+ 42.02	0.38		74	SAI	1
			H	TEH-TEC	TEH-TEC		00105	11812	08H+ 42.06	0.40		48	NQI	1
			H	TEH-TEC	TEH-TEC		00106	11412	08H+ 42.10	0.41		43	NQI	1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 42.13	0.51		160	NQI	P 1
			C	TEC-TEH	TEC-TEH		00000	610UL	08H+ 42.16	0.39		162	NQI	P 4
			H	08H-BW1	08H-BW1	RPI	00113	610RP	08H+ 42.37	0.72		107	SAI	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 42.78	0.74		168	NQI	P 1
			H	08H-BW1	08H-BW1		00021	610RP	09H+ 0.45	0.76		139	WAR	1
			H	TEH-BW1	TEH-BW1		00103	630UC	09H+ 0.72	2.05		0	35	P 2
			H	TEH-TEC	TEH-TEC		00105	11812	09H+ 0.74	2.21		0	37	P 2
			C	TEC-TEH	TEC-TEH		00000	610UL	09H+ 0.75	1.02		0	22	P 2
			H	TEH-TEC	TEH-TEC		00106	11412	09H+ 0.83	2.67			39	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	09H+ 0.83	2.49		0	36	P 2
			H	08H-BW1	08H-BW1		00113	610RP	09H+ 0.84	0.97		112	WAR	P 1
			H	08H-BW1	08H-BW1		00113	610RP	09H+ 0.85	1.83		56	WAR	P 1
			C	TEC-TEH	TEC-TEH		00081	610UL	09H+ 0.89	1.26		0	23	P 2
			H	09H-BW1	09H-BW1		00100	610RC	09H+ 0.90	0.77		0	WAR	P 1
			H	09H-BW1	09H-BW1		00100	610RC	09H+ 0.91	1.76		0	WAR	P 1
123	44	2,3	H	07H-07H	07H-07H		00336	610RP					NDD	
			H	08H-BW1	08H-09H	RPI	00421	610RP	08H+ 0.55	3.27		53	SAI	P 1
			C	TEC-TEH	TEC-TEH	RPI	00039	610UL	08H+ 0.58	1.22		71	71	P 1
			H	08H-BW1	08H-09H		00448	610RP	08H+ 0.69	1.37		0	PID	P 1
			H	08H-BW1	08H-09H		00448	610RP	08H+ 31.83to+ 39.2	0.02		0	PDP	11
			H	08H-BW1	08H-09H		00448	610RP	08H+ 41.70to+ 44.4	0.12		0	PDP	11
			H	08H-BW1	09H-BW1		00348	610RP	09H- 0.53 14	0.37		0	WAR	P 1
			H	08H-BW1	08H-09H	RIC	00421	610RP	09H- 0.37 14	0.35		0	WAR	P 1
118	45	2,3	C	TEC-TEH	TEC-TEH		00000	610UL					NDD	
			H	01H-01H	01H-01H		00082	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00082	610RP					NDD	
			H	07H-07H	07H-07H		00337	610RP					NDD	
			H	TEH-TEC	TEH-TEC		00093	610UL	09H- 0.44	0.36		0	19	P 2
			H	08H-BW1	08H-BW1	RPI	00082	610RP	09H- 0.31	1.83		43	SAI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	09H- 0.24	0.40		0	11	P 2
			H	08H-BW1	08H-09H		00348	610RP	09H- 0.15	0.85		135	PID	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	09H- 0.06	0.50		0	18	P 2
			H	08H-BW1	08H-BW1		00348	610RP	BW1+ 1.69	0.26		0	WAR	P 1
123	46	2,3	H	07H-07H	07H-07H		00337	610RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00348	610RP	08H- 0.32	0.68		0	SAI	P 1
			H	08H-BW1	08H-BW1		00421	610RP	08H+ 0.12	0.79		118	PID	P 1
			C	TEC-TEH	TEC-TEH		00039	610UL	08H+ 0.15	1.37		29	DSI	P 1
			H	08H-BW1	08H-BW1	RPI	00348	610RP	09H+ 0.36	0.83		147	SAI	P 1
			H	08H-BW1	08H-BW1		00348	610RP	BW1+ 1.84 22	0.67		0	WAR	P 1
128	47	2,3	H	07H-07H	07H-07H		00337	610RP					NDD	
			C	TEC-TEH	TEC-TEH		00082	610UL	08H+ 0.60	9.70		0	PID	P 2

PRELIMINARY
CONAM NUCLEAR, INC.
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STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION			CURRENT VOLTS	MIL	DEG	%	CH
128	47	2,3	C	TEC-TEH	TEC-TEH	RPI	00039	610UL	08H+	0.66		7.21		58	82	P 1
			H	08H-BW1	08H-BW1		00426	610RP	08H+	0.68		9.02		45	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00351	610RP	08H+	0.90		13.19		38	SAI	P 1
			H	08H-BW1	08H-BW1		00426	610RP	09H+	0.96		0.36		0	WAR	P 1
			H	08H-BW1	08H-BW1		00351	610RP	09H+	0.97	17	0.49		0	WAR	P 1
129	48	3	H	VS1-VS3	VS1-VS5		00221	580RP							NDD	
			H	07H-07H	07H-07H		00341	610RP							NDD	
			H	08H-BW1	08H-BW1		00426	610RP	08H+	0.76		0.58		42	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00351	610RP	08H+	0.80		0.60		0	SAI	P 1
			C	TEC-TEH	TEC-TEH		00039	610UL	08H+	0.86		1.37		138	DSI	P 1
			C	TEC-TEH	TEC-TEH		00039	610UL	VS1+	0.28		0.45		0	11	P 2
			C	TEC-TEH	TEC-TEH		00039	610UL	VS3-	0.84		0.47		0	11	P 2
128	49	2,3	H	07H-07H	07H-07H		00341	610RP							NDD	
			H	08H-BW1	08H-BW1	RPI	00351	610RP	08H+	0.81		6.55		44	SAI	P 1
			C	TEC-TEH	TEC-TEH		00039	610UL	08H+	0.87		3.21		0	39	P 2
			H	08H-BW1	08H-BW1		00428	610RP	08H+	0.96		2.77		48	PID	P 1
123	50	2,3	H	01H-01H	01H-01H		00084	610RP							NDD	
			H	TSH-TSH	TSH-TSH		00084	610RP							NDD	
			H	07H-07H	07H-07H		00352	610RP							NDD	
			H	08H-LB1	08H-LB1		00084	610RP	08H+	0.20	23	1.64		22	WAR	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	09H+	0.57		1.83		0	37	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	09H+	0.68		1.83		0	32	P 2
			H	08H-LB1	08H-LB1	RPI	00084	610RP	09H+	0.75		2.02		59	SAI	P 1
			C	TEC-TEH	TEC-TEH		00033	610UL	09H+	0.77		1.46		0	27	P 2
129	50	2,3	H	08H-BW1	09H-BW1		00084	610RP							NDD	
			H	01H-01H	01H-01H		00084	610RP							NDD	
			H	TSH-TSH	TSH-TSH		00084	610RP							NDD	
			H	07H-07H	07H-07H	RIC	00352	610RP							NDD	
			C	TEC-TEH	TEC-TEH		00033	610UL	08H+	0.57		0.88		36	DSI	P 1
			H	08H-BW1	08H-09H		00428	610RP	08H+	0.65		0.51		58	PID	P 1
			H	08H-BW1	08H-09H	RPI	00351	610RP	08H+	0.72		0.77		0	SAI	P 1
			H	08H-BW1	08H-09H		00351	610RP	09H+	0.84	5	0.15		0	WAR	P 1
			H	08H-BW1	08H-09H		00428	610RP	09H+	0.84	9	0.22		0	WAR	P 1
			C	TEC-TEH	TEC-TEH		00033	610UL	09H+	10.02		2.06		170	NQI	1
141	74	1	H	07H-07H	07H-07H		00270	610RP							NDD	
			H	08H-BW1	08H-BW1	RPI	00270	610RP	BW1+	0.23to+	1.0	0.61		184	SAI	P 1
			C	TEC-TEH	TEC-TEH		00042	610UL	BW1+	0.49		1.65		178	NBI	P 1
			H	08H-BW1	08H-BW1		00393	610RP	BW1+	0.66		0.25		0	PID	P 2
151	90	1,2	H	08H-BW1	08H-BW1		00369	610RP							NDD	
			H	07H-07H	07H-07H		00369	610RP							NDD	
			H	05H-05H	05H-06H	RPI	00382	610RP							BDA	
			H	06H-06H	05H-06H	RPI	00448	610RP							TNC	
			H	06H-06H	06H-06H		00464	610RP							NDD	
			H	04H-04H	04H-04H		00464	610RP							NDD	
			H	03H-03H	03H-03H		00464	610RP							NDD	

PRELIMINARY
CONAM NUCLEAR, INC
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STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	CURRENT MIL	CURRENT DEG	CURRENT %	CURRENT CH
151	90	1,2	H	02H-02H	02H-02H		00464	610RP					NDD	
			H	01H-01H	01H-01H		00464	610RP					NDD	
			H	05H-05H	05H-05H	RPI	00344	610RP	05H+ 0.88	0.78		0	SAI	P 1
			H	06H-06H	05H-06H		00474	610RP	05H+ 0.88	0.29		142	PID	P 1
			C	TEC-TEH	TEC-TEH	RPI	00043	610UL	05H+ 0.99	0.59		69	73	P 1
131	92		C	TEC-TEH	TEC-TEH		00044	610UL					NDD	
			C	TEC-TEH	TEC-TEH		00047	610UL					BDA	
			C	TEC-TEH	TEC-TEH		00048	610UL					NDD	
			H	07H-07H	07H-07H		00465	610RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00465	610RP	09H+ 16.37	0.58		117	SAI	P 1
			H	08H-BW1	08H-BW1		00496	610RP	09H+ 16.72	0.46		95	PID	P 1
			H	08H-BW1	08H-BW1		00465	610RP	BW1- 1.98 9	0.26		0	WAR	P 1
41	94	2	C	TEC-TEH	TEC-TEH	RPI	00068	610UL	TEH+ 2.19	6.63		31	99	P 1
			H	TEH-TSH	TEH-TSH	RPI	00382	610RP	TEH+ 2.28	15.90		22	SAI	P 1
			C	TEC-TEH	TEC-TEH		00092	610UL	TEH+ 2.62	7.00		33	PID	P 1
127	96		C	TEC-TEH	TEC-TEH		00044	610UL					NDD	
			C	TEC-TEH	TEC-TEH		00046	610UL					NDD	
			H	07H-07H	07H-07H		00459	610RP					NDD	
			H	08H-BW1	08H-09H		00496	610RP	08H+ 14.41	0.66		99	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00459	610RP	08H+ 14.46	0.66		0	SAI	P 1
			H	08H-BW1	08H-BW1	RPI	00459	610RP	08H+ 33.73	0.81		0	SAI	P 1
			H	08H-BW1	08H-BW1	RPI	00459	610RP	08H+ 39.79	0.44		0	SAI	P 1
			H	08H-BW1	08H-BW1	RPI	00459	610RP	08H+ 41.33	0.93		0	SAI	P 1
129	96		C	TEC-TEH	TEC-TEH		00044	610UL					NDD	
			H	07H-07H	07H-07H		00460	610RP					NDD	
			C	TEC-TEH	TEC-TEH		00046	610UL	BW1+ 2.06	0.88		0	19	P 2
			H	BW1-BW1	BW1-BW1		00382	610RP	BW1+ 3.07	1.75		65	PID	P 1
			H	BW1-BW1	BW1-BW1	RPI	00343	610RP	BW1+ 3.10	1.66		0	SAI	1
			C	TEC-TEH	TEC-TEH		00046	610UL	BW1+ 3.13	0.93		38	NQI	1
133	104		H	07H-07H	07H-07H		00456	610RP					NDD	
			C	TEC-TEH	TEC-TEH		00052	610UL	BW1+ 2.22	0.64		114	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00456	610RP	BW1+ 2.23	0.97		59	SAI	1
			H	08H-BW1	08H-BW1		00472	610RP	BW1+ 2.28	1.72		125	PID	P 1
134	105	3	H	07H-07H	07H-07H		00324	610RP					TNC	
			H	07H-07H	07H-07H		00326	610RP					NDD	
			H	08H-BW1	08H-BW1		00324	610RP	BW1+ 1.60 13	0.46		0	WAR	P 1
			H	08H-BW1	08H-BW1	RPI	00324	610RP	BW1+ 1.61	0.64		0	SAI	P 1
			H	08H-BW1	08H-BW1		00326	610RP	BW1+ 1.63	0.95		97	PID	P 1
			C	TEC-TEH	TEC-TEH		00053	610UL	BW1+ 1.93	2.91		173	NBI	P 1
134	111	3	H	07H-07H	07H-07H		00319	610RP					BDA	
			H	07H-07H	07H-07H		00347	610RP					NDD	
			H	08H-BW1	08H-BW1		00319	610RP	09H+ 0.95 12	0.47		0	WAR	P 1
			H	08H-BW1	08H-BW1		00319	610RP	09H+ 14.15to+ 21.3	0.26		0	PDP	11
			H	08H-BW1	08H-BW1	RPI	00319	610RP	09H+ 20.47	1.27		96	SAI	P 1
			H	07H-07H	07H-BW1		00475	610RP	09H+ 20.47	1.26		50	PID	P 1

PRELIMINARY

CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
134	111	3	C	TEC-TEH	TEC-TEH		00053	610UL	09H+ 20.50	1.13		149	NQI	P 1
149	114	1	H	07H-07H	07H-07H		00213	610RP					NDD	
			H	07H-07H	07H-07H		00357	610RP					NDD	
			H	08H-LB1	08H-LB1	RPI	00213	610RP	08H+ 0.34	0.33		3	SAI	P 1
			H	LB1-BW1	08H-BW1	RIC	00357	610RP	08H+ 0.65	0.53		61	PID	P 1
			C	TEC-TEH	TEC-TEH		00055	610UL	08H+ 0.71	0.48		12	NBI	P 1
			H	08H-BW1	08H-LB1		00213	610RP	LB1+ 0.88 11	0.48		0	WAR	P 1
144	115	1,2	H	07H-07H	07H-07H		00227	610RP					NDD	
			H	09H-LB1	09H-BW1		00254	610RP	09H+ 23.47TO+ 30.70	1.19		36	PID	P 1
			H	09H-LB1	08H-BW1		00227	610RP	09H+ 24.55to+ 34.5	1.28		0	PDP	11
			H	09H-LB1	08H-BW1	RPI	00227	610RP	09H+ 26.08	0.91		110	SAI	P 1
			H	09H-LB1	08H-BW1		00227	610RP	BW1- 1.74 27	1.48		0	WAR	P 1
			H	09H-LB1	08H-BW1	RPI	00227	610RP	09H+ 27.94	0.81		127	SAI	P 1
			C	TEC-TEH	TEC-TEH		00055	610UL	09H+ 28.51	1.13		22	NQI	1
			H	09H-LB1	08H-BW1	RPI	00227	610RP	09H+ 32.57	0.87		146	SAI	P 1
146	115	1,2	H	07H-07H	07H-07H		00231	610RP					NDD	
			H	09H-BW1	BW1-BW1		00382	610RP					NDD	
			H	09H-LB1	08H-BW1		00231	610RP	09H+ 20.82to+ 31.2	0.86		0	PDP	11
			H	09H-LB1	08H-BW1	RPI	00231	610RP	09H+ 22.95to+ 30.3	1.25		46	SAI	P 1
			H	09H-LB1	09H-LB1		00338	610RP	09H+ 22.95to+ 30.3				PID	P 1
			C	TEC-TEH	TEC-TEH		00055	610UL	09H+ 29.25	0.71		23	NQI	1
150	115	1,2	H	08H-LB1	08H-BW1		00228	610RP					BDA	
			H	08H-LB1	07H-07H		00228	610RP					NDD	
			H	07H-07H	07H-07H		00230	610RP					NDD	
			C	TEC-TEH	TEC-TEH		00055	610UL	08H+ 0.78	1.59		0	26	P 2
			H	09H-LB1	08H-LB1	RPI	00230	610RP	08H+ 0.78	1.25		105	SAI	P 1
			H	09H-LB1	08H-LB1		00230	610RP	09H+ 19.51to+ 34.1	0.01		0	PDP	11
			H	LB1-BW1	09H-BW1		00382	610RP	09H+ 23.37to+ 30.1	2.37		70	PID	P 1
			H	09H-LB1	09H-LB1		00254	610RP	09H+ 23.79TO+ 30.90	1.25		0	PID	P 1
			H	09H-LB1	08H-LB1	RPI	00230	610RP	09H+ 24.46to+ 31.7	1.58		63	SAI	2
			C	TEC-TEH	TEC-TEH		00055	610UL	09H+ 24.88to+ 31.2	0.62		12	NQI	P 1
137	116	1	H	07H-07H	07H-07H		00239	610RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00239	610RP	BW1- 1.17to+ 1.3	0.61		128	MAI	P 1
			H	08H-BW1	08H-BW1		00357	610RP	BW1- 1.17to+ 1.3	0.38		48	PID	P 1
			C	TEC-TEH	TEC-TEH		00054	610UL	BW1+ 0.77	1.48		20	NQI	P 1
134	117	3	H	08H-BW1	08H-BW1	RPI	00317	610RP					BDA	
			H	08H-BW1	07H-07H		00317	610RP					NDD	
			H	07H-07H	07H-07H		00347	610RP					NDD	
			H	08H-BW1	08H-BW1		00347	610RP	09H+ 12.74to+ 19.9	0.65		0	PDP	11
			H	08H-BW1	08H-BW1	RPI	00347	610RP	09H+ 14.20to+ 15.3	1.29		52	SAI	P 1
			H	08H-BW1	08H-BW1		00475	610RP	09H+ 14.20to+ 15.3	1.51		160	PID	P 1
			C	TEC-TEH	TEC-TEH		00055	610UL	09H+ 14.64	3.53		4	NBI	P 1
145	118	1,2	H	07H-07H	07H-07H		00240	610RP					NDD	
			H	08H-BW1	08H-BW1		00240	610RP	09H+ 27.01to+ 31.2	0.43		0	PDP	11
			H	09H-BW1	08H-BW1		00335	610RP	09H+ 27.91to+ 30.0	0.00		0	PID	P 1

PRELIMINARY
CONAM NUCLEAR INC.

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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
145	118	1,2	H	08H-BW1	08H-BW1	RPI	00240	610RP	09H+ 28.91to+ 30.0	5.51		19	SAI	1
			C	TEC-TEH	TEC-TEH		00055	610UL	09H+ 29.10	1.65		170	NQI	1
140	119	2,3	H	01H-01H	01H-01H		00056	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00056	610RP					NDD	
			H	01H-01H	01H-01H		00056	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00056	610RP					NDD	
			H	07H-07H	07H-07H		00316	610RP					NDD	
			C	TEC-TEH	TEC-TEH		00055	610UL	09H+ 19.47	0.23		123	NQI	1
			H	08H-LB1	08H-LB1		00056	610RP	09H+ 19.55to+ 27.2	0.00		0	PDP	11
			H	TEH-TEC	TEH-TEC		00104	610NB	09H+ 20.12	0.21		162	NQI	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	09H+ 20.76	0.22		66	NQI	1
			C	TEC-TEH	TEC-TEH	RPI	00055	610UL	09H+ 23.00	0.71		114	58	1
			H	08H-LB1	08H-LB1	RPI	00056	610RP	09H+ 23.11	3.33		58	SAI	P 5
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	09H+ 23.45	0.83		102	64	1
			H	TEH-BW1	TEH-BW1		00103	630UC	09H+ 23.89	1.02		101	NQI	1
142	119	2,3	H	01H-01H	01H-01H		00056	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00056	610RP					NDD	
			H	07H-07H	07H-07H		00317	610RP	07H- 0.88 20	1.11		0	WAR	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	09H+ 19.66to+ 24.6	0.92		128	NQI	P 1
			H	08H-LB1	08H-BW1		00254	610RP	09H+ 20.00to+ 24.7	0.09		0	PID	P 1
			H	08H-LB1	08H-LB1		00056	610RP	09H+ 20.13to+ 27.7	0.00		0	PDP	11
			H	08H-LB1	08H-LB1	RPI	00056	610RP	09H+ 20.75TO+ 24.70	0.98		66	SAI	1
			H	TEH-BW1	TEH-BW1		00103	630UC	09H+ 20.95TO+ 24.26	0.82		132	NQI	1
			C	TEC-TEH	TEC-TEH		00055	610UL	09H+ 21.83to+ 25.1	0.79		158	NQI	1
142	123	1	H	07H-07H	07H-07H		00216	610RP					NDD	
			H	08H-LB1	08H-BW1		00354	610RP	09H+ 0.80	0.70		0	PID	P 1
			H	TEH-TEC	TEH-TEC		00017	610UL	09H+ 0.82	1.01		161	NBI	P 1
			H	08H-LB1	08H-BW1	RPI	00216	610RP	09H+ 0.90	1.69		65	SAI	P 1
137	124	1,2	H	01H-01H	01H-01H		00046	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00046	610RP					NDD	
			H	07H-07H	07H-07H		00217	610RP					NDD	
			H	09H-BW1	09H-BW1	RPI	00046	610RP	BW1+ 0.77	0.62		28	SAI	P 1
			H	TEH-TEC	TEH-TEC		00017	610UL	BW1+ 0.79	1.23		0	28	P 2
			H	08H-BW1	08H-BW1		00217	610RP	BW1+ 1.23	0.88		93	PID	P 1
141	124	1	H	07H-07H	07H-07H		00216	610RP					NDD	
			H	08H-BW1	08H-BW1		00217	610RP					BDA	
			H	08H-BW1	07H-07H		00217	610RP					BDA	
			H	TEH-TEC	TEH-TEC		00017	610UL	09H- 0.49	1.62		19	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00216	610RP	09H- 0.23	2.50		38	SAI	P 1
			H	08H-BW1	08H-BW1		00354	610RP	09H- 0.12	0.63		0	PID	P 1
			H	TEH-TEC	TEH-TEC		00017	610UL	09H+ 0.87	1.70		13	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00216	610RP	09H+ 0.88	1.09		144	SAI	P 1
135	130	1	H	07H-07H	07H-07H		00222	610RP					NDD	
			H	08H-BW1	BW1-BW1		00354	610RP	08H+ 0.32	0.80		48	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00222	610RP	08H+ 0.70	0.25		0	SAI	P 1

PRELIMINARY
CONAM NUCLEAR INC
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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION			CURRENT VOLTS	MIL	DEG	%	CH
135	130	1	H	TEH-TEC	TEH-TEC		00015	610UL	08H+	0.91		0.20		170	NBI	P 1
129	132	2,3	H	01H-01H	01H-01H		00053	610RP							NDD	
			H	TSH-TSH	TSH-TSH		00053	610RP							NDD	
			H	07H-07H	07H-07H		00298	610RP							NDD	
			H	06H-06H	06H-06H		00437	610RP							NDD	
			H	05H-05H	05H-05H		00437	610RP							NDD	
			H	04H-04H	04H-04H		00437	610RP							NDD	
			H	03H-03H	03H-03H		00437	610RP							NDD	
			H	02H-02H	02H-02H		00437	610RP							NDD	
			C	TEC-TEH	TEC-TEH		00080	610UL	09H+	0.27		3.29		0	PID	P 2
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	09H+	0.49		1.59		76	73	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	09H+	0.51		1.72		68	71	P 1
			H	TEH-TEC	TEH-TEC	RPI	00105	11812	09H+	0.52		1.79		68	72	P 1
			H	TEH-TEC	TEH-TEC	RPI	00106	11412	09H+	0.52		2.01		66	76	P 1
			H	TEH-TEC	TEH-TEC	RPI	00014	610UL	09H+	0.53		1.58		73	67	P 1
			H	08H-BW1	08H-BW1	RPI	00053	610RP	09H+	0.70		5.96		42	SAI	P 1
			H	TEH-TEC	TEH-TEC		00105	11812	BW1+	0.62		0.65		90	NQI	1
			H	TEH-BW1	TEH-BW1		00103	630UC	BW1+	0.81		0.24		107	NQI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	BW1+	0.83		0.27		62	NQI	P 1
			H	08H-BW1	08H-BW1	RPI	00053	610RP	BW1+	0.84		0.68		87	SAI	P 1
			H	TEH-TEC	TEH-TEC		00106	11412	BW1+	0.89		0.67		25	NQI	1
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1+	1.03		0.29		93	NQI	P 1
135	132	1	H	07H-07H	07H-07H		00226	610RP	07H+	0.81	20	0.76		0	WAR	P 1
			H	08H-BW1	08H-BW1	RPI	00226	610RP	08H+	0.39		0.85		224	SAI	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	08H+	0.47		0.30		90	NBI	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1+	1.78		3.25		1	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00226	610RP	BW1+	1.88		1.05		15	SAI	P 1
128	133	2,3	H	01H-01H	01H-01H		00053	610RP							NDD	
			H	TSH-TSH	TSH-TSH		00053	610RP							NDD	
			H	07H-07H	07H-07H		00295	610RP							NDD	
			H	06H-06H	06H-06H		00433	610RP							NDD	
			H	05H-05H	05H-05H		00433	610RP							NDD	
			H	04H-04H	04H-04H		00433	610RP							NDD	
			H	03H-03H	03H-03H		00433	610RP							NDD	
			H	02H-02H	02H-02H		00433	610RP							NDD	
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	09H+	0.72		4.65		46	94	P 1
			H	TEH-TEC	TEH-TEC	RPI	00106	11412	09H+	0.74		4.17		46	90	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	09H+	0.74		3.59		44	89	P 1
			C	TEC-TEH	TEC-TEH		00080	610UL	09H+	0.75		4.24		0	PID	P 2
			H	TEH-TSC	TEH-TEC	RPI	00014	610UL	09H+	0.76		3.67		52	84	P 1
			H	TEH-TEC	TEH-TEC	RPI	00105	11812	09H+	0.77		3.58		47	88	P 1
			H	08H-BW1	08H-BW1	RPI	00053	610RP	09H+	0.83		8.48		44	SAI	P 1
128	135	2	H	01H-01H	01H-01H		00054	610RP							NDD	
			H	TSH-TSH	TSH-TSH		00054	610RP							NDD	
			H	06H-06H	06H-06H		00430	610RP							NDD	

PRELIMINARY

CONAM NUCLEAR INC.

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STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
128	135	2	H	05H-05H	05H-05H		00430	610RP					NDD	
			H	04H-04H	04H-04H		00430	610RP					NDD	
			H	03H-03H	03H-03H		00430	610RP					NDD	
			H	02H-02H	02H-02H		00430	610RP					NDD	
			H	07H-08H	07H-08H		00430	610RP	08H+ 0.71	0.26		0	WAR	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	09H- 1.01	1.31		0	29	P 2
			H	08H-LB1	08H-LB1	RPI	00054	610RP	09H- 0.95	2.64		61	SAI	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	09H- 0.93	1.63		0	31	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	09H- 0.87	1.59		0	29	P 2
			H	09H-09H	09H-09H		00254	610RP	09H- 0.81	1.38		94	PID	P 1
			H	08H-LB1	08H-LB1	RPI	00054	610RP	09H+ 0.39	6.29		46	SAI	P 1
			C	TEC-TEH	TEC-TEH		00080	610UL	09H+ 0.39	5.56		0	PID	P 2
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	09H+ 0.43	5.20		60	85	P 1
			H	TEH-TEC	TEH-TEC	RPI	00014	610UL	09H+ 0.44	4.39		62	79	P 1
			H	09H-09H	09H-09H		00254	610RP	09H+ 0.46	5.39		0	PID	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	09H+ 0.48	4.49		57	80	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	BW1+ 5.71	1.61		105	NQI	1
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1+ 6.54	0.83		85	NQI	P 1
125	136	2,3	H	01H-01H	01H-01H		00056	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00056	610RP					NDD	
			H	06H-06H	06H-06H		00429	610RP					NDD	
			H	05H-05H	05H-05H		00429	610RP					NDD	
			H	04H-04H	04H-04H		00429	610RP					NDD	
			H	03H-03H	03H-03H		00429	610RP					NDD	
			H	02H-02H	02H-02H		00429	610RP					NDD	
			H	07H-07H	07H-07H		00293	610RP					NDD	
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	09H+ 0.31	2.89		86	64	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	09H+ 0.35	2.42		78	63	P 1
			H	TEH-TEC	TEH-TEC	RPI	00014	610UL	09H+ 0.43	2.41		84	57	P 1
			H	08H-LB1	08H-LB1	RPI	00056	610RP	09H+ 0.46	8.55		44	SAI	P 1
			C	TEC-TEH	TEC-TEH		00080	610UL	09H+ 1.76	3.59		0	PID	P 2
131	136	2,3	H	01H-01H	01H-01H		00056	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00056	610RP					NDD	
			H	07H-07H	07H-07H		00293	610RP					NDD	
			H	08H-LB1	08H-LB1		00056	610UL	09H- 0.89	1.06		0	WAR	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	09H- 0.63	0.75		0	26	P 2
			H	08H-LB1	08H-LB1		00056	610RP	09H+ 0.87 10	0.82		33	WAR	P 1
			H	08H-LB1	08H-LB1		00056	610RP	09H+ 14.55to+ 18.5	0.00		0	PDP	11
			H	TEH-TEC	TEH-TEC		00014	610UL	09H+ 17.95	3.27		179	NBI	1
			H	08H-LB1	08H-LB1	RPI	00056	610RP	09H+ 17.96	0.56		121	SAI	1
			H	08H-LB1	08H-BW1		00254	610RP	09H+ 17.96	1.46		0	PID	1
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1+ 1.46	0.84		0	20	P 2
126	137	1	H	07H-07H	07H-07H		00228	610RP					NDD	
			H	06H-06H	06H-06H		00429	610RP					NDD	
			H	05H-05H	05H-05H		00429	610RP					NDD	

PRELIMINARY
CONAM NUCLEAR INC.
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STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
126	137	1	H	04H-04H	04H-04H		00429	610RP					NDD	
			H	03H-03H	03H-03H		00429	610RP					NDD	
			H	02H-02H	02H-02H		00429	610RP					NDD	
			H	01H-01H	01H-01H		00429	610RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00228	610RP	BW1- 1.65	0.47		227	SAI	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1- 1.09	0.47		175	NBI	P 1
			H	08H-BW1	08H-BW1		00354	610RP	BW1- 1.04	0.32		0	PID	P 1
128	137	2	H	01H-01H	01H-01H		00056	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00056	610RP					NDD	
			H	09H-BW1	09H-BW1		00100	610RC					NDD	
			H	08H-09H	08H-09H		00100	610RC					BDA	
			H	08H-09H	06H-07H		00100	610RC					NDD	
			H	08H-09H	05H-06H		00100	610RC					NDD	
			H	08H-09H	04H-05H		00100	610RC					NDD	
			H	08H-09H	03H-04H		00100	610RC					NDD	
			H	02H-03H	02H-03H		00101	610RC					NDD	
			H	01H-02H	01H-02H		00101	610RC					NDD	
			H	TSH-01H	TSH-01H		00101	610RC					NDD	
			H	TEH-TSH	TEH-TSH		00101	610RC					NDD	
			H	09H-BW1	09H-BW1		00107	610RC					NDD	
			C	TEC-TEH	TEC-TEH		00080	610UL	08H+ 0.26	2.89		0	PID	P 2
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 0.29	2.50		55	81	P 1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	08H+ 0.35	2.86		54	89	P 1
			H	08H-09H	08H-09H	RPI	00107	610RC	08H+ 0.44	3.76		82	SAI	P 1
			H	08H-09H	07H-08H		00100	610RC	08H+ 0.48	4.28		50	PID	P 1
			H	TEH-TEC	TEH-TEC	RPI	00014	610UL	08H+ 0.49	1.76		86	55	P 1
			H	08H-BW1	08H-BW1	RPI	00056	610RP	08H+ 0.57	4.88		51	SAI	P 1
			H	08H-BW1	08H-09H		00112	610RP	08H+ 0.57	3.99		43	PID	P 1
123	138	1	H	07H-07H	07H-07H		00230	610RP					NDD	
			H	06H-06H	06H-06H		00429	610RP					NDD	
			H	05H-05H	05H-05H		00429	610RP					NDD	
			H	04H-04H	04H-04H		00429	610RP					NDD	
			H	03H-03H	03H-03H		00429	610RP					NDD	
			H	02H-02H	02H-02H		00429	610RP					NDD	
			H	01H-01H	01H-01H		00429	610RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00230	610RP	BW1- 1.05	0.95		78	SAI	P 2
			H	08H-BW1	08H-BW1		00354	610RP	BW1- 0.93	1.15		62	PID	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1- 0.81	0.50		107	NBI	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1+ 0.35	0.44		26	NBI	P 1
			H	08H-BW1	08H-BW1		00230	610RP	BW1+ 0.39to+ 1.5	1.57		46	SVI	P 1
125	138	2	H	01H-01H	01H-01H		00056	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00056	610RP					NDD	
			H	09H-BW1	09H-BW1		00101	610RC					NDD	
			H	06H-07H	06H-07H		00101	610RC					NDD	
			H	05H-06H	05H-06H		00101	610RC					NDD	

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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION		CURRENT VOLTS	MIL	DEG	%	CH
125	138	2	H	04H-05H	04H-05H		00101	610RC						NDD	
			H	03H-04H	03H-04H		00101	610RC						NDD	
			H	02H-03H	02H-03H		00101	610RC						NDD	
			H	01H-02H	01H-02H		00101	610RC						NDD	
			H	TSH-01H	TSH-01H		00101	610RC						NDD	
			H	TEH-TSH	TEH-TSH		00101	610RC						NDD	
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+	0.17	1.24		0	28	P 2
			H	08H-LB1	08H-LB1	RPI	00056	610RP	08H+	0.24	2.89		52	SAI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+	0.32	1.27		0	26	P 2
			H	08H-09H	08H-09H		00101	610RC	08H+	0.34	2.26		52	PID	P 1
			H	07H-08H	07H-08H		00101	610RC	08H+	0.34	2.11		47	PID	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	08H+	0.43	1.36		0	28	P 2
			H	TEH-TEC	TEH-TEC		00014	610UL	VS7+	0.00	27.37		172	DNT	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	VS7+	0.00	24.69		165	DNT	P 1
129	138	1	H	07H-07H	07H-07H		00230	610RP						NDD	
			H	06H-06H	06H-06H		00429	610RP						NDD	
			H	05H-05H	05H-05H		00429	610RP						NDD	
			H	04H-04H	04H-04H		00429	610RP						NDD	
			H	03H-03H	03H-03H		00429	610RP						NDD	
			H	02H-02H	02H-02H		00429	610RP						NDD	
			H	01H-01H	01H-01H		00429	610RP						NDD	
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1+	1.15	1.17		115	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00230	610RP	BW1+	1.73	0.39		18	SAI	P 1
128	139	1	H	07H-07H	07H-07H		00231	610RP						NDD	
			H	06H-06H	06H-06H		00425	610RP						NDD	
			H	05H-05H	05H-05H		00425	610RP						NDD	
			H	04H-04H	04H-04H		00425	610RP						NDD	
			H	03H-03H	03H-03H		00425	610RP						NDD	
			H	02H-02H	02H-02H		00425	610RP						NDD	
			H	01H-01H	01H-01H		00425	610RP						NDD	
			H	08H-BW1	08H-BW1		00354	610RP	08H+	0.52	0.54		0	PID	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	08H+	0.77	1.65		169	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00231	610RP	08H+	0.81	1.33		86	SAI	P 1
127	140	2	H	01H-01H	01H-01H		00057	610RP						NDD	
			H	TSH-TSH	TSH-TSH		00057	610RP						NDD	
			H	TEH-TEC	-		99999	610UL						TPC	
			H	09H-BW1	09H-BW1		00101	610RC						NDD	
			H	05H-06H	05H-06H		00101	610RC						NDD	
			H	04H-05H	04H-05H		00101	610RC						NDD	
			H	03H-04H	03H-04H		00101	610RC						NDD	
			H	02H-03H	02H-03H		00101	610RC						NDD	
			H	01H-02H	01H-02H		00101	610RC						NDD	
			H	TSH-01H	TSH-01H		00101	610RC						NDD	
			H	TEH-TSH	TEH-TSH		00101	610RC						NDD	
			H	TEH-TEC	TEH-TEC		00014	610UL	07H+	0.38	1.06		0	31	P 2

PRELIMINARY
CONAM NUCLEAR, INC.
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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION		CURRENT VOLTS	MIL	DEG	%	CH
127	140	2	H	TEH-TEC	TEH-TEC		00104	610NB	07H+	0.47	1.11		0	24	P 2
			H	07H-08H	07H-08H	RPI	00101	610RC	07H+	0.48	3.05		27	SAI	P 1
			H	06H-07H	06H-07H	RPI	00101	610RC	07H+	0.48	2.86		33	SAI	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	07H+	0.49	1.24		0	32	P 2
			H	07H-07H	07H-07H	RPI	00057	610RP	07H+	0.50	3.45		30	SAI	P 1
			H	07H-07H	07H-08H		00112	610RP	07H+	0.50	2.79		24	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00057	610RP	08H+	0.01	3.37		49	SAI	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	08H+	0.17	1.86		0	39	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+	0.18	1.84		0	32	P 2
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+	0.20	1.67		0	36	P 2
			H	08H-09H	08H-09H	RPI	00101	610RC	08H+	0.27	3.40		50	SAI	P 1
			H	07H-08H	07H-08H		00101	610RC	08H+	0.27	3.52		49	SAI	P 1
			H	08H-BW1	08H-09H		00112	610RP	08H+	0.27	2.97		217	PID	P 1
			H	07H-07H	07H-08H		00112	610RP	08H+	0.27	2.16		53	PID	P 1
122	141	1	H	07H-07H	07H-07H		00232	610RP						NDD	
			H	08H-BW1	08H-BW1		00354	610RP	09H+	0.44	0.35		0	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00232	610RP	09H+	0.53	0.32		0	SAI	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	09H+	0.55	0.75		161	NBI	P 1
128	141	2,3	H	01H-01H	01H-01H		00057	610RP						NDD	
			H	TSH-TSH	TSH-TSH		00057	610RP						NDD	
			H	07H-07H	07H-07H		00288	610RP						NDD	
			H	TEH-TEC	TEH-TEC		00014	610UL	08H+	0.17	1.57		0	37	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+	0.24	1.52		0	29	P 2
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+	0.32	0.87		0	26	P 2
			H	TEH-TEC	TEH-TEC		00014	610UL	08H+	0.52	0.73		0	26	P 2
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+	0.52	1.24		17	32	P 2
			H	08H-BW1	08H-BW1	RPI	00057	610RP	08H+	0.71	5.36		36	SAI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+	0.71	1.35		0	27	P 2
121	142	2,3	H	01H-01H	01H-01H		00059	610RP						NDD	
			H	TSH-TSH	TSH-TSH		00059	610RP						NDD	
			H	07H-07H	07H-07H		00286	610RP						NDD	
			H	TEH-TEC	TEH-TEC	RPI	00014	610UL	09H+	0.06	2.68		72	71	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	09H+	0.12	2.69		64	75	P 1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	09H+	0.14	2.89		58	87	P 1
			H	08H-BW1	08H-BW1	RPI	00059	610RP	09H+	0.20	4.67		43	SAI	P 1
			C	TEC-TEH	TEC-TEH		00080	610UL	09H+	0.30	2.52		73	PID	P 1
			H	08H-BW1	08H-BW1	RPI	00059	610RP	BW1-	0.79	1.51		52	SAI	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	BW1-	0.60	0.70		58	NBI	P 1
			H	TEH-TEC	TEH-TEC		00014	610UL	BW1-	0.46	1.38		20	NBI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	BW1-	0.38	1.88		172	NBI	P 1
74	143	2	H	08H-BW1	08H-BW1		00059	610RP						NDD	
			H	01H-01H	01H-01H		00059	610RP						NDD	
			H	TSH-TSH	TSH-TSH		00059	610RP						NDD	
			H	TEH-TEC	TEH-TEC		00033	610UL	VS3-	1.06	1.25		0	23	P 2
			C	VS5-VS3	VS5-VS3	RPI	00208	580RP	VS3-	0.92	0.89		0	SAI	P 1

PRELIMINARY
CONAM NUCLEAR, INC.
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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	VOLTS	CURRENT MIL	CURRENT DEG	CURRENT %	CURRENT CH
74	143	2	C	VS5-VS3	VS5-VS3	RPI	00208	580RP	VS3- 0.74	0.46		110	SAI	P 1
			C	VS5-VS3	VS5-VS3		00224	580RP	VS3- 0.23	0.87		0	PID	P 1
			C	VS5-VS3	VS5-VS3	RPI	00208	580RP	VS3- 0.22	0.67		97	SAI	P 1
			C	VS5-VS3	VS5-VS3		00208	580RP	VS5+ 0.73	1.13		104	WAR	P 1
			H	TEH-TEC	TEH-TEC		00033	610UL	VS5+ 0.76	1.05		0	21	P 2
115	144	2,3	H	01H-01H	01H-01H		00043	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00043	610RP					NDD	
			H	07H-07H	07H-07H		00286	610RP					NDD	
			H	08H-BW1	08H-BW1		00043	610RP	08H+ 29.30to+ 33.9	0.33		0	PDP	11
			H	08H-BW1	08H-BW1	RPI	00043	610RP	08H+ 34.99	0.25		46	SAI	2
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 35.79	1.13		174	NBI	P 1
			H	TEH-TEC	TEH-TEC		00003	610UL	08H+ 36.22	0.88		156	NBI	1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 36.47	0.80		155	NBI	P 1
117	144	2	H	07H-08H	07H-08H		00107	610RC					NDD	1
			H	06H-07H	06H-07H		00107	610RC					NDD	
			H	05H-06H	05H-06H		00107	610RC					NDD	
			H	04H-05H	04H-05H		00107	610RC					NDD	
			H	03H-04H	03H-04H		00107	610RC					NDD	
			H	02H-03H	02H-03H		00107	610RC					NDD	
			H	01H-02H	01H-02H		00107	610RC					NDD	
			H	TSH-01H	TSH-01H		00107	610RC					NDD	
			H	TEH-TSH	TEH-TSH		00107	610RC					NDD	
			H	-	-		99999	610UL					TPC	
			H	08H-BW1	08H-BW1		00018	610RP	08H+ 28.53to+ 43.4	0.08		0	PDP	11
			H	09H-BW1	08H-BW1	RPI	00107	610RC	08H+ 32.21TO+ 43.55	89.91		17	MAI	P 1
			H	TEH-09C	TEH-09C	RPI	00000	610UL	08H+ 33.17	1.49		106	58	1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 33.68	1.30		100	65	1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	08H+ 34.04	1.27		121	47	1
			H	TEH-09C	TEH-09C	RPI	00000	610UL	08H+ 34.07	7.02		37	93	1
			H	08H-BW1	08H-BW1	RPI	00018	610RP	08H+ 34.54to+ 43.7	44.85		14	SAI	1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	08H+ 35.80to+ 39.4	252.8		20	100	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 36.11	315.4		21	100	1
			H	TEH-09C	TEH-09C	RPI	00000	610UL	08H+ 36.32	321.1		17	100	1
			H	09C-TEC	TEH-TEC		00003	610UL	08H+ 37.39	313.0		17	PID	P 1
			H	TEH-09C	TEH-09C	RPI	00000	610UL	08H+ 39.00	1.12		72	81	1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 40.43	1.04		28	NQI	1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	08H+ 41.00	0.93		81	79	1
			H	08H-BW1	08H-BW1		00018	610RP	08H+ 43.09	11.37		9	DNT	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	09H- 1.10	3.38		78	63	P 1
			H	08H-BW1	08H-BW1	RPI	00018	610RP	08H+ 43.92	1.45		76	MAI	P 1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	09H- 0.82	3.75		73	76	P 1
			H	TEH-09C	TEH-09C	RPI	00000	610UL	09H- 0.79	3.24		84	62	P 1
			H	08H-09H	08H-BW1	RPI	00107	610RC	09H- 0.26	0.66		0	MAI	1
			H	09H-BW1	08H-BW1	RPI	00107	610RC	BW1- 1.66	1.31		149	SAI	P 1
			H	TEH-09C	TEH-09C	RPI	00000	610UL	BW1+ 0.37	3.83		40	96	P 1

PRELIMINARY

CONAM NUCLEAR, INC.

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STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
117	144	2	H	09H-BW1	08H-BW1	RPI	00107	610RC	BW1+ 0.49	4.37		77	MAI	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	BW1+ 0.59	3.83		35	94	P 1
			H	08H-BW1	08H-BW1	RPI	00018	610RP	BW1+ 0.62	1.79		88	SAI	P 1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	BW1+ 0.66	4.54		32	97	P 1
118	145	2,3	H	08H-BW1	08H-09H		00254	610RP					TNC	
			H	07H-07H	07H-07H		00286	610RP					NDD	
			H	TEH-TEC	TEH-TEC		00003	610UL	08H+ 17.49to+ 31.81	6.01		225	ADR	5
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 18.27to+ 30.4	2.10		23	ADR	5
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 20.35to+ 31.9	6.38		40	ADR	6
			H	08H-BW1	08H-BW1	RPI	00102	610MR	09H- 2.16	0.32		155	SAI	2
			H	08H-BW1	08H-BW1		00102	610MR	09H- 2.16	0.32		155	PID	2
			H	08H-BW1	08H-BW1	RPI	00018	610RP	09H- 2.13	0.51		139	SAI	P 1
			H	TEH-TEC	TEH-TEC		00003	610UL	09H- 1.95	0.38		0	9	P 2
			H	TEH-BW1	TEH-BW1	REV	00103	630UC	09H- 1.93	0.43		0	14	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	09H- 1.93	0.35		0	10	P 2
124	145	2,3	H	01H-01H	01H-01H		00060	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00060	610RP					NDD	
			H	07H-07H	07H-07H		00284	610RP					NDD	
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	BW1+ 0.62	3.39		0	45	P 2
			H	TEH-TEC	TEH-TEC	RPI	00013	610UL	BW1+ 1.03	3.30		0	43	P 2
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	BW1+ 1.08	2.42		50	85	P 1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	BW1+ 1.11	4.12		0	47	P 2
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	BW1+ 1.37	3.90		45	88	P 1
			H	TEH-TEC	TEH-TEC		00013	610UL	BW1+ 1.40	2.22		0	37	P 2
			H	08H-BW1	08H-BW1	RPI	00060	610RP	BW1+ 1.54	7.97		46	SAI	P 1
			C	TEC-TEH	TEC-TEH		00080	610UL	BW1+ 1.88	4.37		0	PID	P 2
122	147	1	H	07H-07H	07H-07H		00246	610RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00246	610RP	BW1+ 1.34	0.48		131	SAI	P 1
			H	08H-BW1	08H-BW1		00354	610RP	BW1+ 1.39	0.38		0	PID	P 1
			H	TEH-TEC	TEH-TEC		00013	610UL	BW1+ 1.62	2.62		7	NBI	P 1
110	149	2,3	H	01H-01H	01H-01H		00063	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00063	610RP					NDD	
			H	07H-07H	07H-07H		00282	610RP					NDD	
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	08H+ 0.23	2.93		50	92	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 0.23	2.93		50	PID	P 1
			H	TEH-TEC	TEH-TEC	RPI	00106	11412	08H+ 0.28	2.92		51	86	P 1
			H	TEH-TEC	TEH-TEC	RPI	00105	11812	08H+ 0.30	2.58		52	84	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 0.32	2.53		48	86	P 1
			H	TEH-TEC	TEH-TEC	RPI	00028	610UL	08H+ 0.33	2.41		52	85	P 1
			H	08H-BW1	08H-BW1	RPI	00063	610RP	08H+ 0.33	4.89		33	SAI	P 1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	08H+ 0.61	1.47		88	62	P 1
			H	TEH-TEC	TEH-TEC	RPI	00106	11412	08H+ 0.67	2.04		76	67	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 0.67	1.69		75	65	P 1
			H	TEH-TEC	TEH-TEC	RPI	00105	11812	08H+ 0.68	1.80		81	61	P 1
			H	TEH-TEC	TEH-TEC	RPI	00028	610UL	08H+ 0.69	1.68		78	64	P 1

PRELIMINARY
CONAM NUCLEAR, INC.
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CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION		VOLTS	CURRENT MIL	CURRENT DEG	CURRENT %	CURRENT CH
110	149	2,3	H	TEH-TEC	TEH-TEC		00106	11412	BW1+	0.21	0.83		152	NBI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	BW1+	0.23	0.88		142	NBI	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	BW1+	0.26	1.02		0	NBI	P 2
			H	TEH-TEC	TEH-TEC		00105	11812	BW1+	0.35	0.73		147	NBI	P 1
			H	TEH-TEC	TEH-TEC		00028	610UL	BW1+	0.41	0.66		143	NBI	P 1
			H	08H-BW1	08H-BW1	RPI	00063	610RP	BW1+	0.62	0.99		64	SAI	P 1
17	152	2	H	TEH-TEH	-		00000							TBP	
			H	07H-LB1	07H-LB1		00064	610RP						NDD	
			H	TSH-TSH	TSH-TSH		00064	610RP						NDD	
			H	TEH-TSC	TEH-02H		00035	610UL	01H-	0.14	0.53		123	DSI	P 1
			H	TEH-TSC	TEH-TSC		00098	610UL	01H-	0.14	0.55		133	31	P 5
			H	01H-01H	01H-01H	RPI	00064	610RP	01H-	0.09	1.67		71	SAI	P 1
107	152	2	H	01H-01H	01H-01H		00064	610RP						NDD	
			H	TSH-TSH	TSH-TSH		00064	610RP						NDD	
			H	08H-LB1	08H-LB1	RPI	00064	610RP	LB1+	0.08	0.92		22	SAI	P 1
			H	BW1-BW1	BW1-BW1		00254	610RP	BW1+	0.08	0.37		0	PID	P 1
			H	TEH-BW1	TEH-BW1		00103	630UC	BW1+	0.09	0.65		150	NQI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	BW1+	0.23	0.55		109	NQI	P 1
			H	TEH-TEC	TEH-TEC		00028	610UL	BW1+	0.41	0.40		85	NQI	P 1
110	153	2,3	H	08H-LB1	08H-LB1		00066	610RP						NDD	
			H	01H-01H	01H-01H		00066	610RP						NDD	
			H	TSH-TSH	TSH-TSH		00066	610RP						NDD	
			H	07H-07H	07H-08H		00353	610RP	07H+	0.57	0.96		0	PID	P 1
			H	TEH-TEC	TEH-TEC		00028	610UL	07H+	0.62	0.71		33	DSI	P 1
			H	07H-07H	07H-07H	RPI	00280	610RP	07H+	0.64	0.54		66	SAI	P 1
103	156	2	H	01H-01H	01H-01H		00067	610RP						NDD	
			H	TSH-TSH	TSH-TSH		00067	610RP						NDD	
			H	TEH-TEC	-		99999	610UL						TPC	
			H	01H-02H	01H-02H		00109	610RC						NDD	
			H	05H-06H	05H-06H		00109	610RC						NDD	
			H	04H-05H	04H-05H		00109	610RC						NDD	
			H	03H-04H	03H-04H		00109	610RC						NDD	
			H	02H-03H	02H-03H		00109	610RC						NDD	
			H	TEH-TSH	TEH-TSH	RPI	00109	610RC	TSH-	0.14	2.46		3	SCI	I
			H	TSH-01H	TSH-01H	RPI	00109	610RC	TSH-	0.14	2.46		3	SCI	I
			H	TEH-TEC	TEH-TEC		00104	610NB	06H+	0.66	0.98		0	22	P 2
			H	TEH-BW1	TEH-VS2		00103	630UC	06H+	0.75	0.53		0	16	P 2
			H	TEH-TEC	TEH-TEC		00029	610UL	06H+	0.83	0.66		0	16	P 2
			H	06H-07H	06H-07H		00109	610RC	06H+	0.86	0.45		32	WAR	P I
			H	TEH-TEC	TEH-TEC		00106	11412	06H+	0.89	0.77		0	21	P 2
			H	TEH-TEC	TEH-TEC		00105	11812	06H+	0.92	1.00		0	21	P 2
			H	06H-06H	06H-06H		00067	610RP	06H+	0.99	0.75		0	WAR	P I
			H	07H-08H	07H-08H		00109	610RC	07H+	1.00TO+ 36.00	0.71		26	DNT	I
			H	07H-08H	07H-08H		00109	610RC	07H+	1.00TO+ 36.00	1.09		86	PDP	II
			H	TEH-TEC	TEH-TEC		00105	11812	08H-	0.95	0.76		0	17	P 2

PRELIMINARY
CONAM NUCLEAR, INC.

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	MIL	DEG	%	CH
103	156	2	H	08H-BW1	08H-BW1		00109	610RC	08H- 0.95	0.70		165	WAR	P 1
			H	TEH-TEC	TEH-TEC		00106	11412	08H- 0.92	0.87		0	22	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	08H- 0.90	0.51		0	13	P 2
			H	TEH-TEC	TEH-TEC		00029	610UL	08H- 0.85	0.51		0	15	P 2
			H	08H-BW1	08H-BW1		00109	610RC	08H- 0.84	1.03		146	WAR	P 1
			H	TEH-BW1	TEH-VS2		00103	630UC	08H- 0.75	0.37		0	12	P 2
			H	TEH-TEC	TEH-TEC		00106	11412	08H+ 0.43	0.79		0	21	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 0.58	1.20		0	25	P 2
			H	TEH-TEC	TEH-TEC		00029	610UL	08H+ 0.59	0.86		0	21	P 2
			H	TEH-TEC	TEH-TEC		00105	11812	08H+ 0.72	0.70		0	16	P 2
			H	07H-08H	07H-08H		00109	610RC	08H+ 0.79	0.31		0	WAR	P 1
			H	08H-BW1	08H-BW1		00109	610RC	08H+ 0.80	1.01		134	WAR	P 1
			H	07H-08H	07H-08H		00109	610RC	08H+ 0.80	0.80		0	WAR	P 1
			H	TEH-BW1	TEH-VS2		00103	630UC	08H+ 0.81	1.05		0	29	P 2
			H	08H-BW1	08H-BW1		00109	610RC	08H+ 0.81	1.04		164	WAR	P 1
			H	08H-BW1	08H-BW1		00067	610RP	08H+ 0.85	1.48		0	WAR	P 1
			H	08H-BW1	08H-BW1		00109	610RC	08H+ 14.38TO+ 25.50	0.89		81	PDP	11
			H	08H-BW1	08H-BW1	RPI	00109	610RC	08H+ 15.00TO+ 18.51	1.80		163	MAI	1
			H	08H-BW1	08H-BW1	RPI	00067	610RP	08H+ 16.39TO+ 19.22	0.57		129	MAI	P 1
			H	08H-BW1	08H-BW1		00067	610RP	08H+ 16.56to+ 28.9	1.46		0	PDP	11
			H	TEH-BW1	TEH-VS2		00103	630UC	08H+ 18.80TO+ 22.26	1.58		170	NBI	P 1
			H	TEH-TEC	TEH-TEC		00105	812	08H+ 19.64	1.08		12	NBI	1
			H	TEH-TEC	TEH-TEC		00029	610UL	08H+ 20.36	0.22		151	NBI	1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 20.40	0.25		126	NBI	P 1
			H	TEH-TEC	TEH-TEC		00106	412	08H+ 20.59	1.45		16	NBI	1
			H	08H-BW1	08H-BW1		00067	610RP	BW1- 2.15	1.44		0	WAR	P 1
			H	08H-BW1	08H-BW1		00109	610RC	BW1- 1.80	1.18		156	WAR	P 1
			H	TEH-TEC	TEH-TEC		00029	610UL	BW1- 1.76	0.72		0	17	P 2
			H	TEH-TEC	TEH-TEC		00105	11812	BW1- 1.74	0.47		0	11	P 2
			H	TEH-TEC	TEH-TEC		00106	11412	BW1- 1.70	0.20		0	6	P 2
			H	TEH-BW1	TEH-VS2		00103	630UC	BW1- 1.55	0.67		0	22	P 2
			H	TEH-TEC	TEH-TEC		00104	610NB	BW1- 1.25	0.66		0	16	P 2
			H	08H-BW1	08H-BW1		00067	610RP	BW1+ 1.77	1.27		0	WAR	P 1
			H	08H-BW1	08H-BW1		00109	610RC	BW1+ 1.92	8.04		172	WAR	P 1
105	156	2	H	TEH-TEC	-		99999	610UL					TPC	
			H	06H-07H	06H-07H		00108	610RC					NDD	
			H	05H-06H	05H-06H		00108	610RC					NDD	
			H	04H-05H	04H-05H		00108	610RC					NDD	
			H	03H-04H	03H-04H		00108	610RC					NDD	
			H	02H-03H	02H-03H		00108	610RC					NDD	
			H	01H-02H	01H-02H		00108	610RC					NDD	
			H	TSH-01H	TSH-01H		00108	610RC					NDD	
			H	TEH-TSH	TEH-TSH		00108	610RC					NDD	
			H	TEH-BW1	TEH-VS2		00103	630UC		1.10		181	NDD	NBI
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 0.67	0.72		0	18	P 2

PRELIMINARY

CUMULATIVE REPORT
04/93, ARIZONA PUBLIC SERVICE, PALO VERDE, UNIT 2

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

DATE: 06/11/93
TIME: 11:36:32

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	VOLTS	CURRENT MIL	CURRENT DEG	CURRENT %	CURRENT CH
105	156	2	H	TEH-TEC	TEH-TEC		00029	610UL	08H+ 0.71	0.53		0	15	P 2
			H	TEH-BW1	TEH-VS2		00103	630UC	08H+ 0.72	0.34		0	11	P 2
			H	08H-09H	08H-LB1		00108	610RC	08H+ 0.76	2.50		138	WAR	P 1
			H	07H-08H	07H-08H		00108	610RC	08H+ 0.76	0.87		135	WAR	P 1
			H	08H-09H	08H-LB1		00108	610RC	08H+ 13.87TO+ 31.41	2.68		76	PDP	11
			H	08H-09H	08H-BW1		00031	610RP	08H+ 16.74to+ 37.3	0.06		0	PDP	11
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 19.19	0.90		169	NBI	P 1
			H	TEH-TEC	TEH-TEC		00029	610UL	08H+ 19.37	0.74		168	NBI	P 1
			H	TEH-BW1	TEH-VS2		00103	630UC	08H+ 19.46	1.16		172	NBI	P 1
			H	08H-09H	08H-LB1	PID	00108	610RC	08H+ 19.64TO+ 21.00	0.66		44	SAI	P 1
			H	08H-09H	08H-BW1		00031	610RP	08H+ 19.64TO+ 21.00	0.15		0	SAI	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 20.06	0.71		182	NBI	P 1
			H	TEH-TEC	TEH-TEC		00029	610UL	08H+ 20.19	0.13		0	NBI	P 1
			H	08H-09H	08H-LB1	RPI	00108	610RC	08H+ 21.54TO+ 25.62	13.94		42	MAI	P 1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 24.24	4.35		68	86	1
			H	TEH-TEC	TEH-TEC	RPI	00029	610UL	08H+ 24.28	4.14		67	84	1
			H	TEH-BW1	TEH-VS2	RPI	00103	630UC	08H+ 24.50	4.32		68	87	1
			C	09H-TEH	TEC-TEH		00097	610UL	08H+ 24.60	4.58		73	PID	1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 25.23	4.20		82	77	1
			H	TEH-TEC	TEH-TEC	RPI	00029	610UL	08H+ 25.28	3.67		83	74	1
			H	TEH-BW1	TEH-VS2	RPI	00103	630UC	08H+ 25.51	3.26		78	81	1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 25.58	4.79		73	83	1
			H	TEH-TEC	TEH-TEC	RPI	00029	610UL	08H+ 25.78	4.80		73	80	1
			H	TEH-BW1	TEH-VS2	RPI	00103	630UC	08H+ 25.85	4.64		59	91	1
			H	08H-09H	08H-BW1	RPI	00031	610RP	08H+ 26.26TO+ 30.65	3.49		46	MAI	1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 26.33	1.83		68	86	1
			H	TEH-TEC	TEH-TEC	RPI	00029	610UL	08H+ 26.49	1.80		66	85	1
			H	TEH-BW1	TEH-VS2	RPI	00103	630UC	08H+ 26.58	2.00		49	96	1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 27.61	0.74		111	57	1
			H	TEH-TEC	TEH-TEC	RPI	00029	610UL	08H+ 27.81	0.74		120	46	1
			H	TEH-TEC	TEH-TEC		00093	610UL	08H+ 27.81	4.91		71	PID	1
			H	TEH-BW1	TEH-VS2	RPI	00103	630UC	08H+ 27.88	0.78		117	51	1
107	156	2	H	01H-01H	01H-01H		00067	610RP					NDD	
			H	TSH-TSH	TSH-TSH		00067	610RP					NDD	
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 14.24	1.45		171	NQI	1
			H	TEH-BW1	TEH-VS3		00103	630UC	08H+ 14.42	1.43		161	NQI	P 1
			H	08H-LB1	08H-LB1		00067	610RP	08H+ 14.46	1.85		56	SVI	P 2
			H	08H-LB1	08H-LB1		00086	610RP	08H+ 14.46	1.25		27	PID	4
			H	TEH-TEC	TEH-TEC		00029	610UL	08H+ 14.47	0.44		145	NQI	P 5
			H	08H-LB1	08H-LB1		00086	610RP	08H+ 20.74to+ 33.8	0.60		259	PDP	11
			H	08H-LB1	08H-LB1		00067	610RP	08H+ 21.20to+ 34.4	0.79		0	PDP	11
			H	07H-07H	07H-LB1	RPI	00067	610RP	08H+ 24.75	1.37		26	SAI	1
			H	TEH-TEC	TEH-TEC		00029	610UL	08H+ 24.87	0.35		51	NQI	P 5
			H	TEH-TEC	TEH-TEC		00104	610NB	08H+ 27.35	2.21		168	NQI	P 1
			H	TEH-BW1	TEH-VS3		00103	630UC	08H+ 27.62	2.46		173	NQI	P 1

PRELIMINARY
CONAM NUCLEAR, INC.
10

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

ROW	COL	EXP	LEG	EXAM EXTENT PROGRAM	EXAM EXTENT ACTUAL	REM	CAL	PROBE	LOCATION	CURRENT VOLTS	CURRENT MIL	CURRENT DEG	CURRENT %	CURRENT CH
104	157	2	H	07H-08H	07H-08H		00109	610RC					NDD	
			H	06H-07H	06H-07H		00109	610RC					NDD	
			H	05H-06H	05H-06H		00109	610RC					NDD	
			H	04H-05H	04H-05H		00109	610RC					NDD	
			H	03H-04H	03H-04H		00109	610RC					NDD	
			H	02H-03H	02H-03H		00109	610RC					NDD	
			H	01H-02H	01H-02H		00109	610RC					NDD	
			H	TSH-01H	TSH-01H		00109	610RC					NDD	
			H	TEH-TSH	TEH-TSH		00109	610RC					NDD	
			H	08H-BW1	08H-BW1		00109	610RC	08H+ 17.59to+ 27.7	1.09		86	PDP	11
			H	08H-BW1	08H-BW1		00031	610RP	08H+ 17.72to+ 30.5	0.00		0	PDP	11
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 22.81	0.77		24	NQI	1
			C	09H-TEH	TEC-TEH		00097	610UL	08H+ 22.94	0.57		64	PID	1
			H	TEH-TEC	TEH-TEC	RPI	00029	610UL	08H+ 23.21	0.83		66	85	1
			C	09H-TEH	TEC-TEH		00096	610UL	08H+ 23.28	0.59		68	PID	1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 23.28	0.75		59	91	1
			H	TEH-BW1	TEH-BW1	RPI	00103	630UC	08H+ 24.46	1.39		88	74	1
			H	08H-BW1	08H-BW1	RPI	00031	610RP	08H+ 24.59to+ 28.0	0.98		228	SAI	4
			C	09H-TEH	TEC-TEH		00097	610UL	08H+ 24.65	1.56		90	PID	1
			H	08H-BW1	08H-BW1	RPI	00109	610RC	08H+ 24.78to+ 27.6	3.30		22	SAI	1
			H	TEH-TEC	TEH-TEC	RPI	00029	610UL	08H+ 24.87	1.70		84	73	1
			H	TEH-TEC	TEH-TEC		00093	610UL	08H+ 24.87	1.57		88	PID	1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 24.96	1.87		89	73	1
			C	09H-TEH	TEC-TEH		00096	610UL	08H+ 25.03	1.60		91	PID	1
			H	TEH-BW1	TEH-BW1		00103	630UC	08H+ 25.77	0.51		102	NQI	1
			H	TEH-TEC	TEH-TEC	RPI	00104	610NB	08H+ 26.20	0.70		112	56	1
			H	TEH-TEC	TEH-TEC	RPI	00029	610UL	08H+ 26.24	0.58		108	56	1
			H	TEH-BW1	TEH-BW1		00103	630UC	BW1- 2.24	0.51		0	18	P 2
			H	08H-BW1	08H-BW1		00109	610RC	BW1- 1.80	0.91		153	WAR	P 1
			H	TEH-TEC	TEH-TEC		00104	610NB	BW1- 1.50	0.35		0	10	P 2
			H	TEH-TEC	TEH-TEC		00029	610UL	BW1- 1.39	0.26		0	9	P 2
97	158	3	H	07H-07H	07H-07H		00275	610RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00275	610RP	BW1- 1.92	0.43		0	SAI	P 1
			H	08H-BW1	08H-BW1		00353	610RP	BW1- 1.90	1.49		160	PID	P 1
			H	TEH-TEC	TEH-TEC		00030	610UL	BW1- 1.79	0.64		3	NBI	P 1
93	160	3	H	07H-07H	07H-07H		00275	610RP					NDD	
			H	08H-BW1	08H-BW1	RPI	00353	610RP					TNC	
			H	08H-BW1	08H-BW1		00275	610RP	08H+ 17.92to+ 22.6	0.03		0	PDP	11
			H	08H-BW1	08H-BW1	RPI	00275	610RP	08H+ 19.21	0.23		0	SAI	P 1
			H	TEH-TEC	TEH-TEC		00013	610UL	08H+ 19.72	1.56		177	NBI	P 1
			H	08H-BW1	08H-BW1		00475	610RP	08H+ 19.72	0.50		28	PID	P 1

PRELIMINARY
CONAM NUCLEAR, INC.

10

STEAM GENERATOR: 22
LOCATION: ALL
CRITERIA: SAI,MAI

NUMBER OF TUBES SELECTED FROM CURRENT OUTAGE: 71
NUMBER OF DATA RECORDS SELECTED FROM CURRENT OUTAGE: 851

NO TREND ANALYSIS REQUESTED

REPORT OPTIONS:
All results are included for tubes with at least one call meeting criteria

PRELIMINARY

CONAM NUCLEAR, INC.

PULLED TUBE CRACK PROFILE AND ECT DETECTION COMPARISON

1.Table 1: Defect Burst Strength Summary

This is a preliminary compilation of measured crack depths/lengths; corresponding field bobbin, lab bobbin and field MRPC indications, measured burst pressure, and calculated burst pressures based on actual measured average crack depth and length. The calculated burst pressures were developed by correlation with burst test data and empirical formulas from the NRC sponsored Steam Generator Tube Integrity Program. A range of calculated burst pressures are provided corresponding to the range of possible actual tube material properties for a given row of tubes. Some rows of tubes are made up of tubes from different heat lots and are not traceable to a given tube in the row. For those tubes in which only one calculated burst pressure is provided, all the tubes in that row were from the same heat, thereby allowing the use of a single set of actual material properties. Empty spaces in the table represents data that has not been compiled yet.

2. ECT Detection

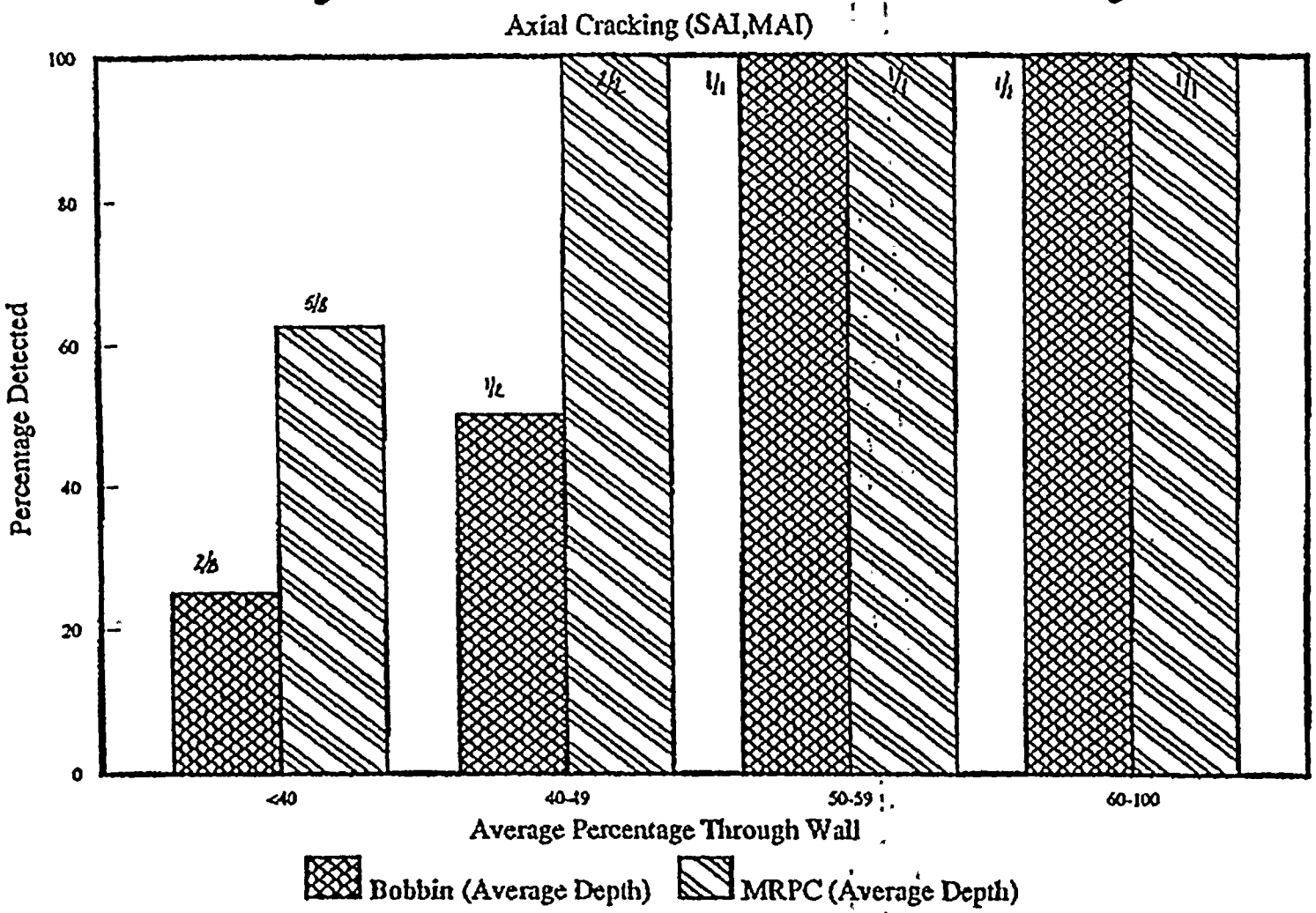
The attached Eddy Current Detectability bar graph is a preliminary illustration of the percent of cracks detected by both bobbin and MRPC for ranges of actual crack sizes from the population of cracks found on the pulled tubes. The information represents detectability comparisons of bobbin and MRPC for axial crack indications based on average through wall and maximum through wall depth. As shown, the eddy current detectability threshold for 100% detection, based on average crack depth, is 50% through wall for bobbin and 40% through wall for MRPC. These detectability thresholds are consistent with current industry guidelines. MRPC detectability based on maximum crack depth is 40% through wall. Bobbin 100% detectability threshold based on maximum crack depth is 60% through wall.

3.Crack Profile Maps

Crack profile sketches of various cracks examined in the Lab. These sketches were used to compile the preceding table and graph. The tube number and location of the crack is generally shown on each sketch.

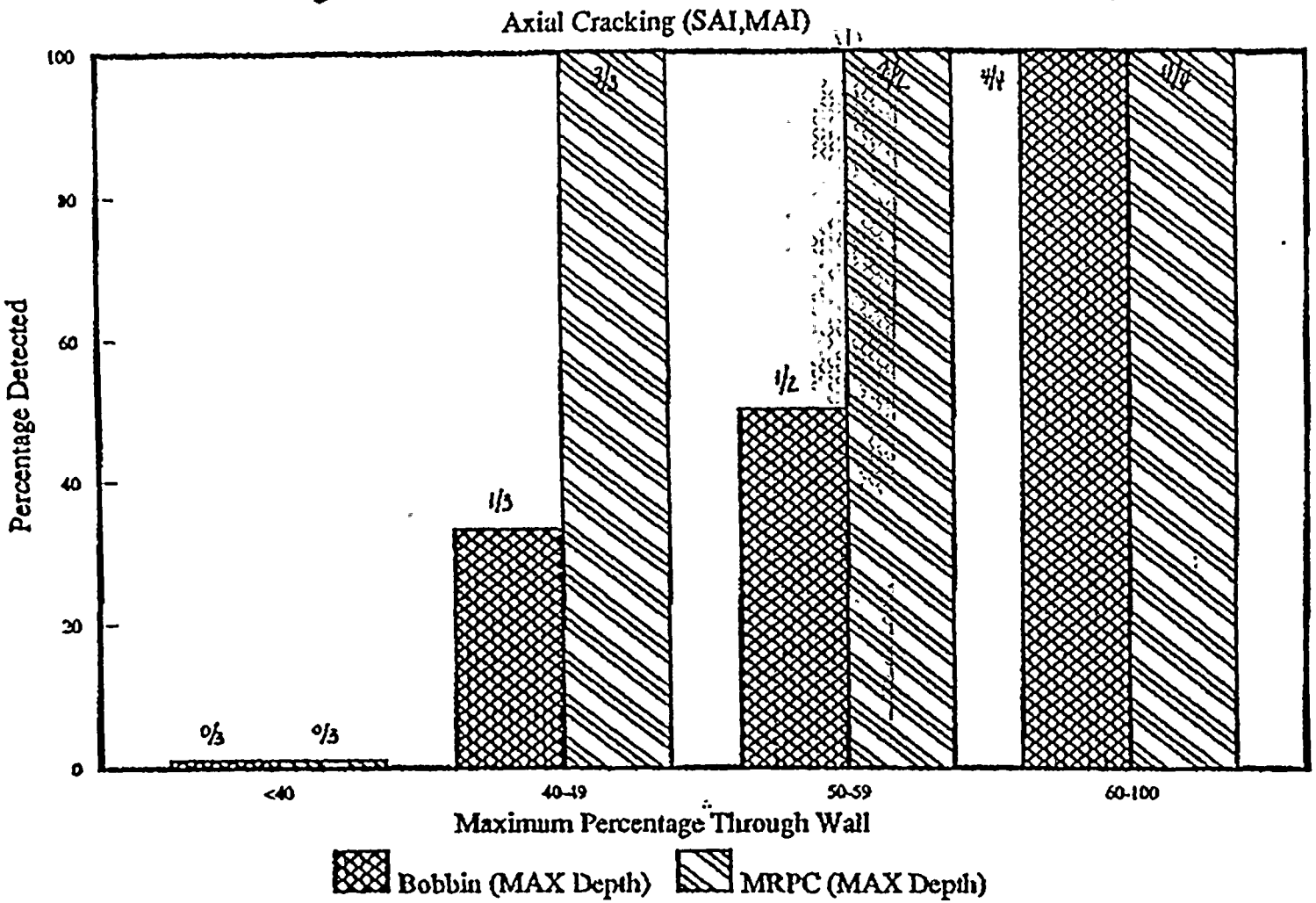
PRELIMINARY

Eddy Current Detectability



PRELIMINARY

Eddy Current Detectability



PRELIMINARY

PRELIMINARY

Table 1: DEFECT BURST STRENGTH SUMMARY

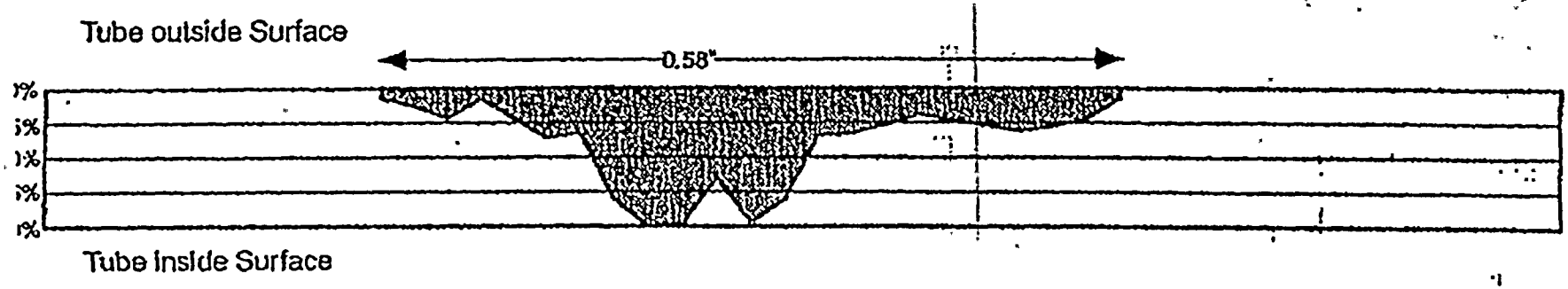
Tube No.	Defect Location/ Section	Actual Maximum Depth	Actual Average Depth	Field Bobbin	Lab Bobbin	MRPC	Actual Length (in)	Burst Pressure (psig)	Burst Pressure at Temp.	Calculated Burst (Ave)	Calculated Burst (Max)	Calculated Burst (ECT)
R127C140	07H/13	100	40	74		SAI	0.58	5330		7491		
R127C140	08H/15	89	58	61		SAI	1.0	6119		6346		
R105C156												
270°	Midspan/ 16	98	77	85		MAI	16.0	3200		2203-2702		
100°		40	25	NBI		SAI	5.0	N/A				
0°	"	38	35	NBI		NDD	2.5	N/A				
0°		32	32	NBI		NDD	0.5	N/A				
0°	"	38	31	NBI		NDD	2.0	N/A				
R103C156	Midspan// 17	57	45	NBI		MAI	0.325	6968		6983-7171		
31		42	27	NBI		MAI	2.5	N/A				
R117C40	Midspan/ 17	61	27	NQI		SAI	1	N/A				
R116C41												

Table 1: DEFECT BURST STRENGTH SUMMARY

Tube No.	Defect Location Section	Actual Maximum Depth	Actual Average Depth	Field Probe	Lab Probe	MRIQ	Actual Length (in)	Burst Pressure (psig)	Burst Pressure at Temp	Calculated Burst (Ave)	Calculated Burst (Max)	Calculated Burst (ECT)
R29C15	01H/2	56	41	42		SAU	3.25	8948		8011-8688		
R29C24	01H/2	40	21	DS		SAU	2.75	9662		10354-9605		

PRELIMINARY

Steam Generator 22
Tube R127 L140
Section 13 Burst Face Crack Depth Diagram



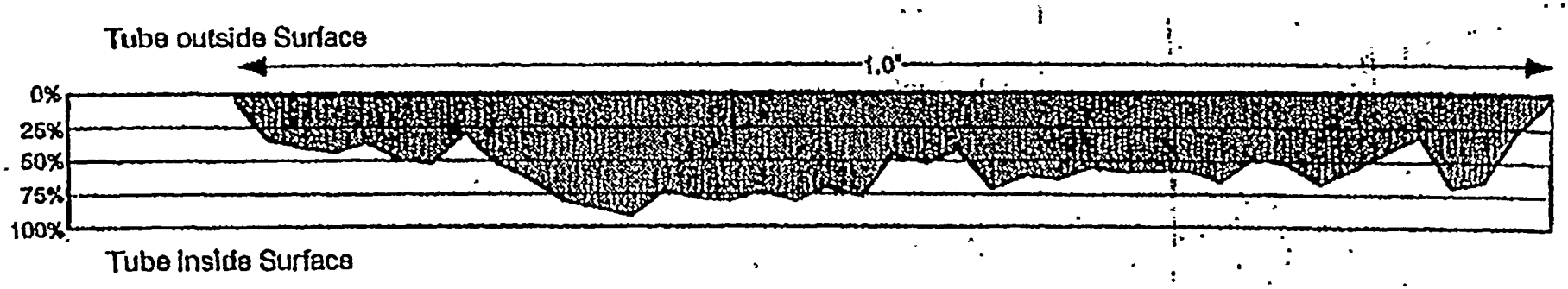
IGA/IGSCC

Ductile

Average Depth 39.9%
Max. Depth 100%

PRELIMINARY

Steam Generator 22
Tube R127 L140
Section 15 Burst Face Crack Depth Diagram



IGA/IGSCC

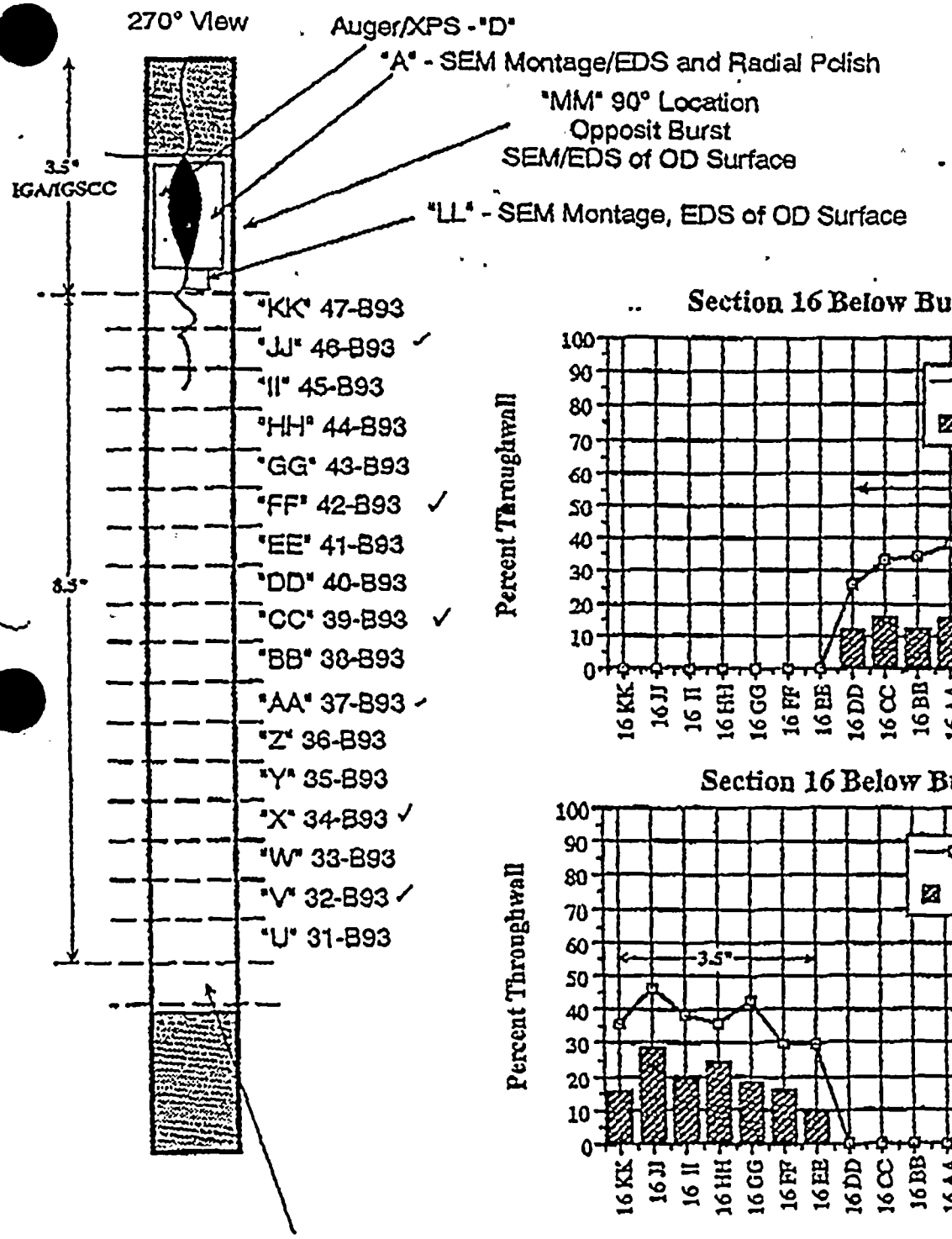
Ductile

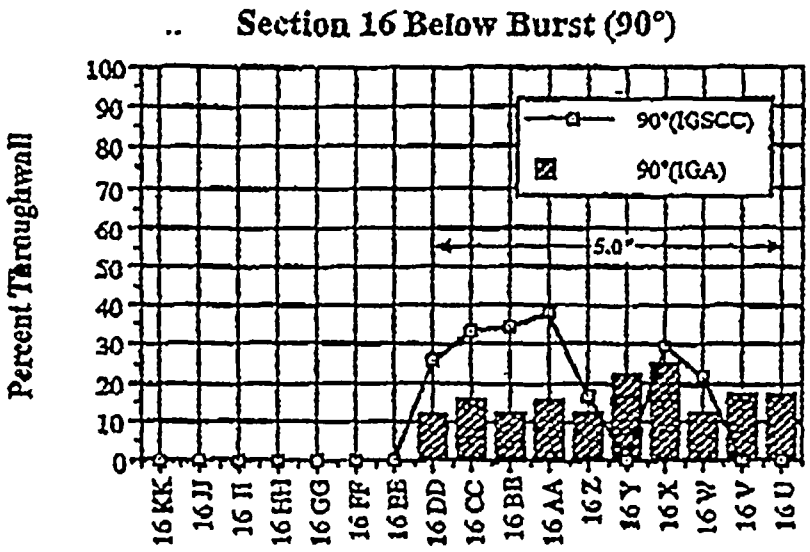
Average Depth 58%
Max. Depth 89.3%

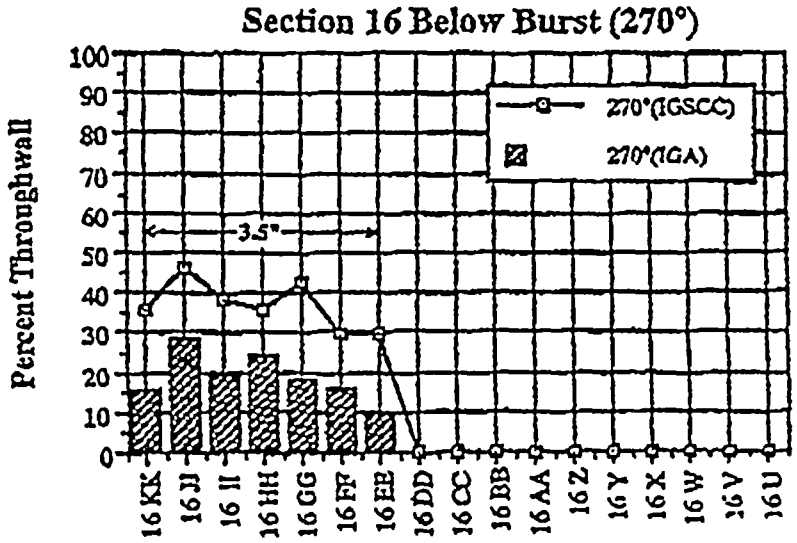
PRELIMINARY

Steam Generator 22
Tube R105 L156
Section 16 Burst Test Part

DRAFT







"B" SEM/EDS of Deposits on 90° OD Surface
and Transverse Met Mount

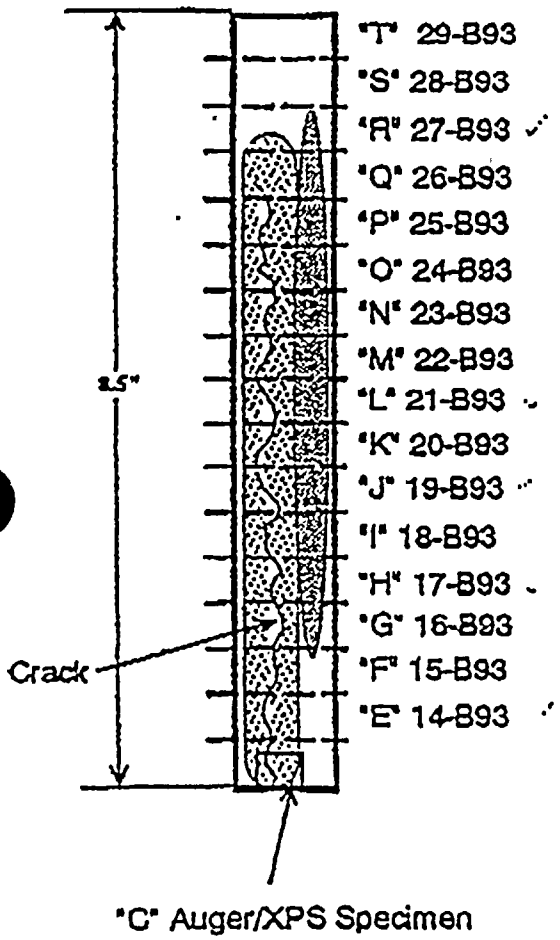
Descaled Surface for Burst Fittings

PRELIMINARY

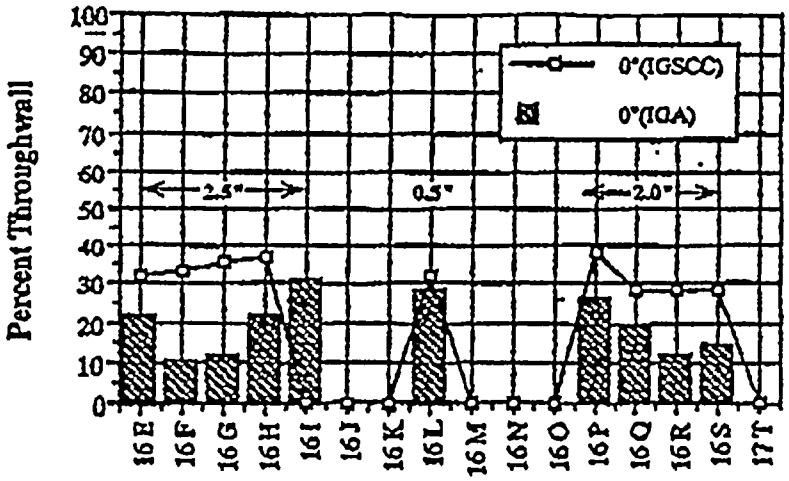
Steam Generator 22
Tube R105 L156
Section 16 Upper Part

DRAFT

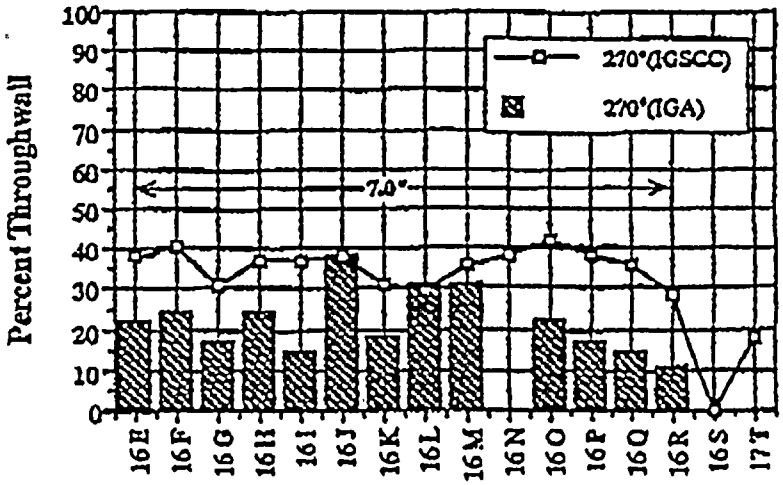
270° View



Section 16 Above Burst (0°)



Section 16 Above Burst (270°)

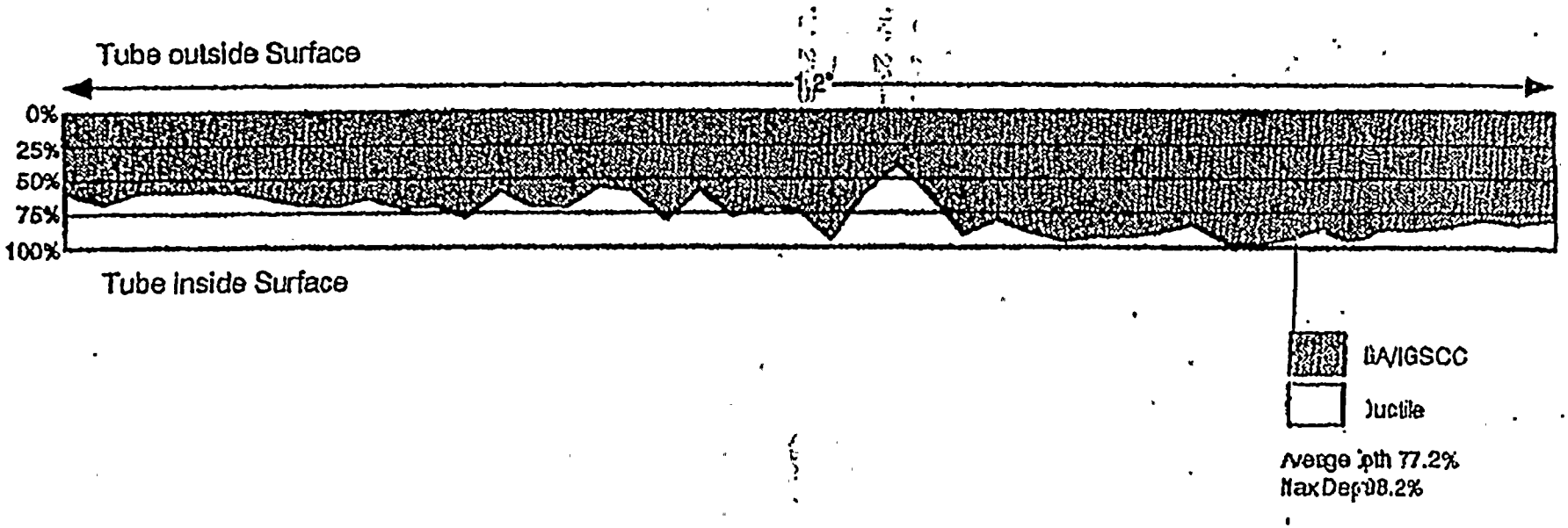


Area of Deposits

Area of IGA/MAI

PRELIMINARY

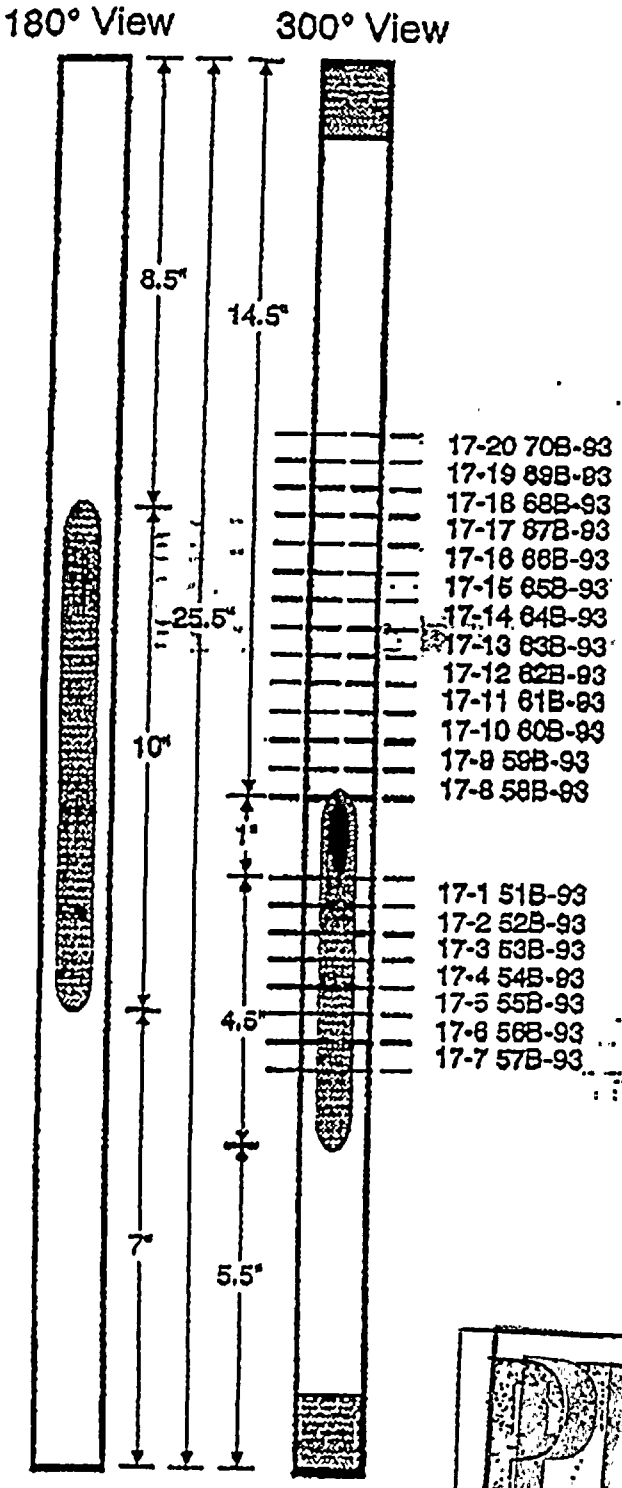
Steam Generator 22
Tube R105 L156
Section 16 Burst Face Crack Depth Diagram

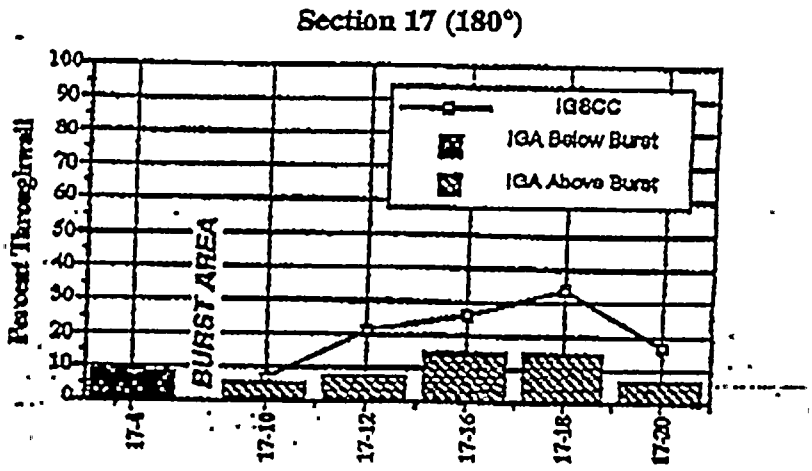


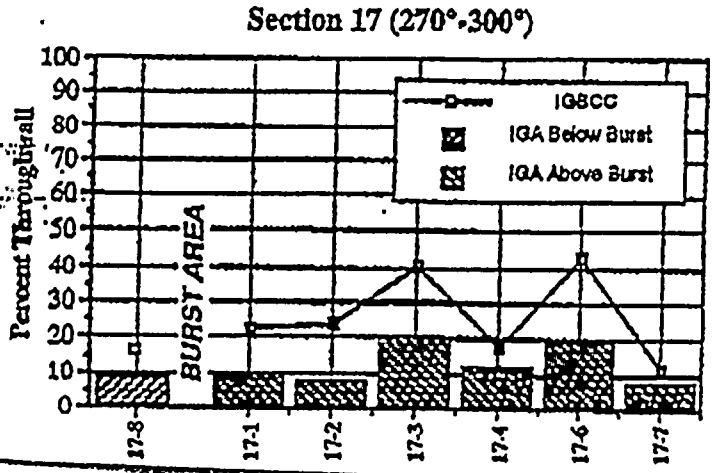
PRELIMINARY

DRAFT

Steam Generator 22
Tube R103 L156
Section 17



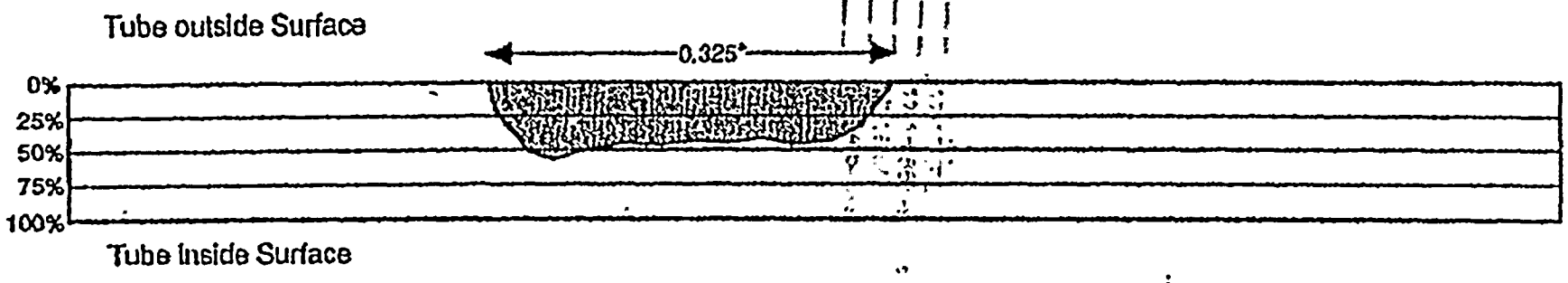




= Deposit

Burst Fitting

Steam Generator 22
Tube R103 L156
Section 17 Burst Face Crack Depth Diagram



IGA/IGSCC

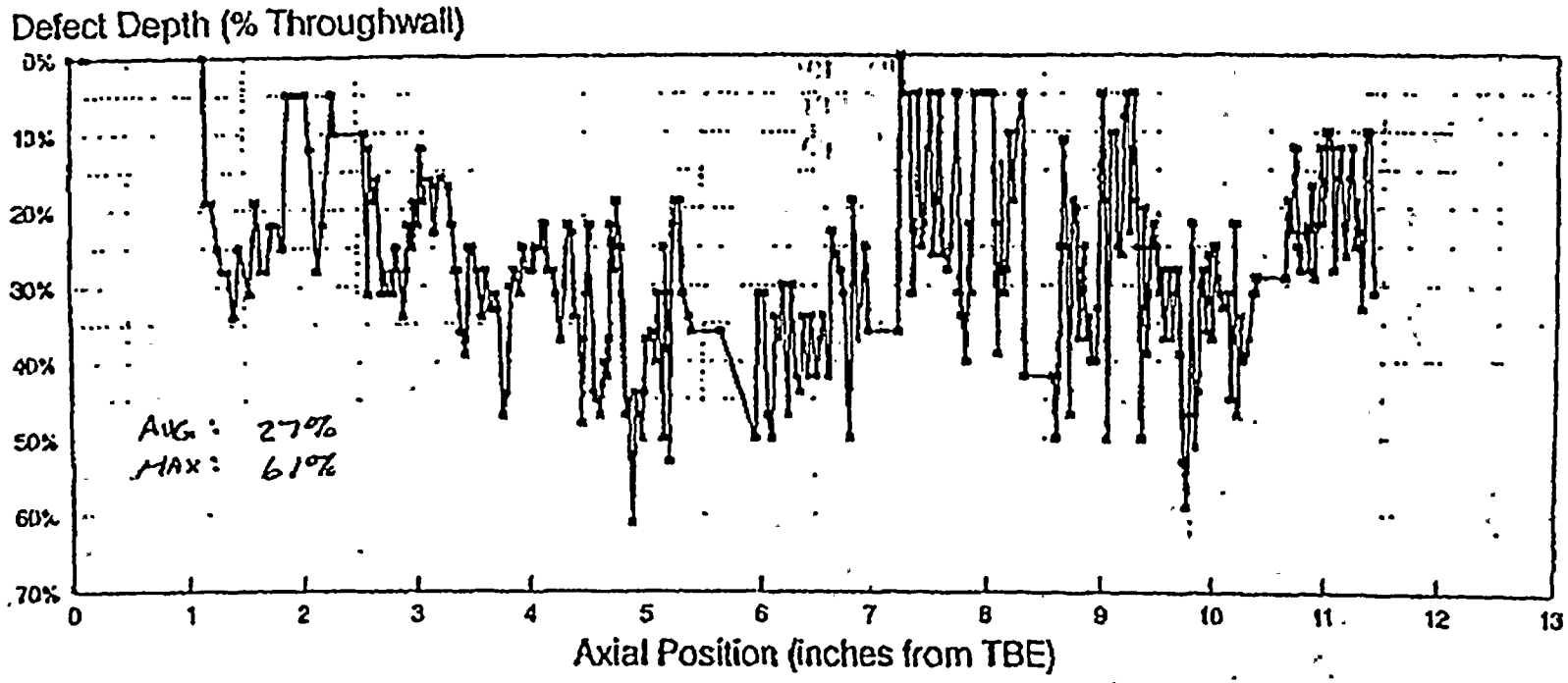
Ductile

Average Depth 44.8%
Max. Depth 57.1%

PRELIMINARY

DRAFT

CRACK PROFILE DATA FOR 117-40-17



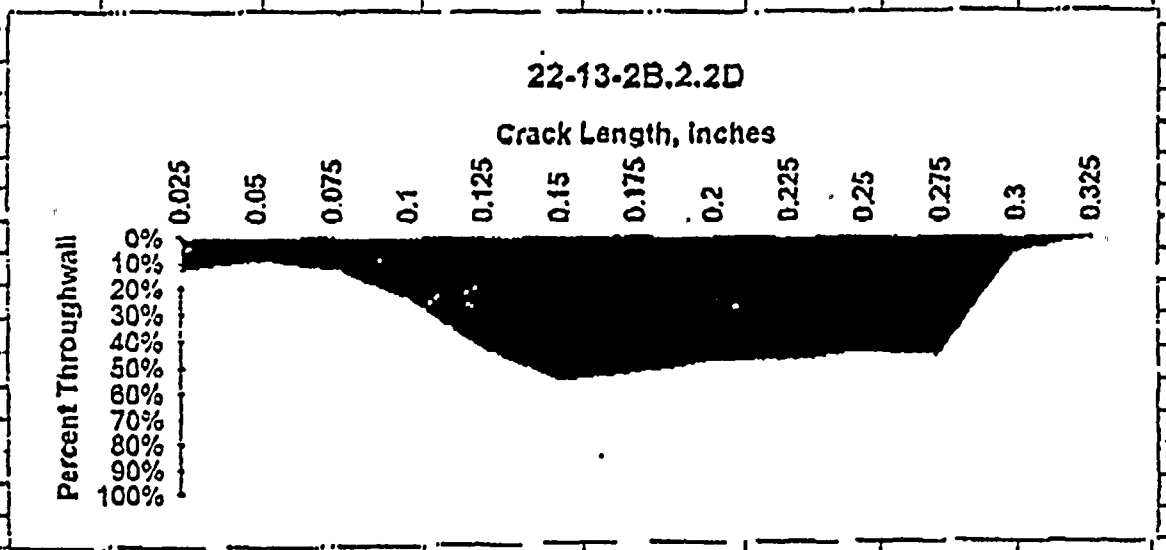
PRELIMINARY

Crack Depth Data 22-13-2B.2.2.d | j:\atm\paloverd\crack\13b22d.xls

6/8/93

axial	%throughwall (assuming 43 mills)		depth
0.025	12%	0.5	5
0.05	9%	0.375	4
0.075	12%	0.5	5
0.1	25%	1	11
0.125	44%	1.75	19
0.15	56%	2.25	24
0.175	53%	2.125	23
0.2	48%	1.9375	21
0.225	48%	1.9375	21
0.25	45%	1.8125	19
0.275	47%	1.875	20
0.3	6%	0.25	3
0.325	0%	0	0

AVG: 31%
MAX: 56%

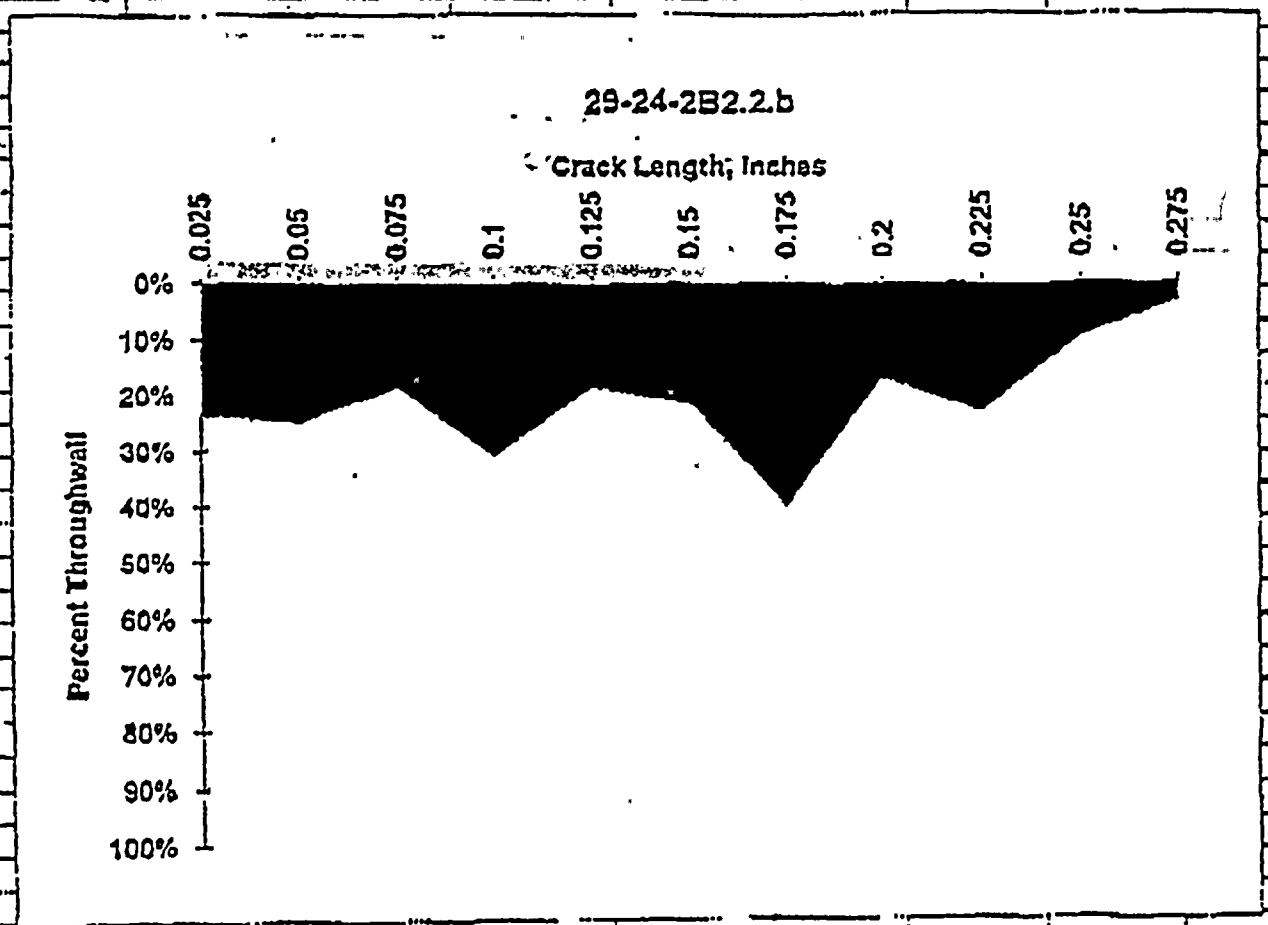


PRELIMINARY

Crack Depth Data 29-24-2B.2.2.b | j:\atm\palovrd\crack\2b22b.xls | 6/10/93

axial	%throughwall (assuming 43 mills)		depth , mil
0.025	23%	0.9375	10
0.05	25%	1	11
0.075	19%	0.75	8
0.1	31%	1.25	13
0.125	19%	0.75	8
0.15	22%	0.875	9
0.175	40%	1.625	17
0.2	17%	0.6875	7
0.225	23%	0.9375	10
0.25	9%	0.375	4
0.275	3%	0.125	1

AVG: 21%
MAX: 40%



PRELIMINARY