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SUBJECT: Forwards Special Rept 93-02,providing results of SG tube eddy current insps conducted in Sept 1992 during Unit 1 fifth refueling outage.

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Gregory M. Rueger
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September 28, 1993

PG&E Letter No. DCL-93-229

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

Re: Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Special Report 93-02, Results of Steam Generator Tube Eddy Current Inspections During Unit 1 Fifth Refueling Outage

Gentlemen:

In accordance with Diablo Canyon Technical Specifications 6.9.2 and 4.4.5.5b, this Special Report provides the results of steam generator tube eddy current inspections conducted in September 1992 during the Unit 1 fifth refueling outage.

Table 1 provides the number and extent of tubes inspected in each steam generator. Table 2 identifies the steam generator tubes that were plugged, as previously reported in PG&E letter DCL-92-227, dated October 19, 1992. Table 3 provides the location and percent through-wall of each indication.

Sincerely,

Gregory M. Rueger

cc: Bobby H. Faulkenberry
Ann P. Hodgdon
Mary H. Miller
Sheri R. Peterson
CPUC
Diablo Distribution

Enclosure

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ENCLOSURE

SPECIAL REPORT 93-02

Results of Steam Generator Tube Eddy Current Inspections
During Unit 1 Fifth Refueling Outage

Table 1

Steam Generator Tubes Inspected During 1R5

Group	Probe Type (Size)	Test Extent	S/G 1-1	S/G 1-2	S/G 1-3	S/G 1-4
1	UB-RPC (680)	7H to 7C	187	185	188	188
2	3C-RPC (720)	TSH to TSH	759	755	753	753
3	Bobbin (720 & 700)	TEH to TEC	1,514	1,094	946	1,180
4	Bobbin (720)	7C to TEC	187	186	188	189
5a	Bobbin (720)	ITH to TEH	16	-	-	-
5b	Bobbin (720)	ITH to TEC	16	-	-	-
6	DP (700)	7H to TEH	-	-	-	26
Extra	3C-RPC (720)	Various	5	5	-	-

Definitions for Tables 1, 2, and 3:

Types of Probes
UB-RPC -- U-Bending Rotating Pancake Coil
3C-RPC -- Three-Coil Rotating Pancake Coil
Bobbin -- Differential Bobbin Coil
DP -- Dent Profilometry Coil

Size of Probes
720ZR -- RPC Probe 0.720" dia.
680ZR -- RPC Probe 0.680" dia.
720ZU -- Bobbin Probe 0.720" dia.
700ZS -- Bobbin Probe 0.700" dia.

Indications
% -- Percent Through-Wall of Indication
SCI -- Single Circumferential Indication
SAI -- Single Axial Indication
MAI -- Multiple Axial Indication
MBM -- Manufacturer Burnish Mark
<20 -- Less than 20% through-wall

Test Extent
ITH -- Implant top of hot leg
See Figure 1 for other location codes.

Table 2

Steam Generator Tubes Plugged During 1R5

S/G	Row	Col	%	Location	Remark
1-1	1	1	SCI	7H + 7.23	Near apex intrados
	1	2	SCI	7H + 6.82	Near apex intrados
	1	58	SAI	7H + 10.22	Near cold leg tangent
	39	43	43	7H + 65.28	Antivibration bar (AVB) wear
	39	49	40	7H + 101.20	AVB wear
	39	50	41	7H + 101.00	AVB wear
1-2	1	18	SCI	7H + 5.64	Between hot leg tangent and apex
	1	24	SCI	7H + 5.82	Between hot leg tangent and apex
	1	43	SAI	7H + 4.22	Near hot leg tangent
	1	52	SAI	7H + 8.46	Between apex and cold leg tangent
	1	68	SAI	7H + 9.95	Near cold leg tangent
	1	71	MAI	7H + 10.26	Near cold leg tangent
	1	72	MAI	7H + 10.39	Near cold leg tangent
	1	74	SAI	7H + 10.18	Near cold leg tangent
	1	90	SAI	7H + 9.95	Near cold leg tangent
	1	91	MAI	7H + 10.25	Near cold leg tangent
	1	92	MAI	7H + 10.08	Near cold leg tangent
	1	93	MAI	7H + 9.95	Near cold leg tangent
	34	46	38	7H + 59.37	AVB wear--administrative decision to plug
	38	48	69	7H + 65.86	AVB wear
	39	52	62	7H + 68.27	AVB wear
1-3	1	66	SAI	7H + 2.16	Below hot leg tangent
	2	87	SAI	7H + 3.88	Near hot leg tangent
			SAI	7H + 13.69	Near cold leg tangent
	35	59	48	7H + 60.37	AVB wear
	37	38	44	7H + 63.99	AVB wear
1-4	36	36	39	7H + 118.90	AVB wear--administrative decision to plug
	36	54	44	7H + 35.01	AVB wear
	39	44	42	7H + 129.20	AVB wear
	42	60	42	7H + 105.80	AVB wear

Table 3

Location and Percent Through-wall of Each Indication

Steam Generator 1-1

Row	Col	Probe	Location (inches)	%
1	1	680ZR	7H + 7.23	SCI
		720ZU	TSC+ 17.77	35
1	2	680ZR	7H + 6.82	SCI
1	4	720ZU	1C + 0.00	28
		720ZU	TSC+ 17.75	34
1	5	720ZU	TSC+ 17.24	37
35	17	720ZU	1C - 0.20	<20
40	30	720ZU	7H +155.89	MBM
10	31	720ZU	TSC+ 17.04	<20
44	37	720ZU	2C - 0.30	33
44	38	700ZS	2C + 0.00	24
2	40	720ZU	5C + 19.23	24
32	43	720ZU	4C + 10.84	<20
39	43	720ZU	7H + 34.88	26
		720ZU	7H + 65.28	43
		720ZU	7H + 66.24	25
		720ZU	7H +100.61	33
		720ZU	7H +101.27	40
		720ZU	7H +129.98	22
33	46	720ZU	4H + 7.51	<20
38	46	720ZU	7H + 12.88	MBM
34	48	720ZU	4H + 45.18	MBM
39	49	720ZU	7H +101.15	40
38	50	720ZU	7H + 64.64	31
		720ZU	7H + 99.24	27
39	50	720ZU	7H + 65.49	<20
		720ZU	7H +101.06	41
36	51	720ZU	2C + 30.52	MBM
32	52	720ZU	1C + 28.58	<20
39	54	720ZU	7H +101.40	<20
45	57	720ZU	4H + 12.81	26
1	58	680ZR	7H + 10.22	SAI
38	60	720ZU	5C + 4.28	MBM
38	60	720ZR	4C + 16.99	MBM
26	62	720ZU	6C + 23.31	24
5	65	720ZU	1H + 0.13	24
21	69	720ZU	6C + 23.74	<20
36	73	720ZU	2C - 0.18	<20
31	75	720ZU	2H + 17.21	<20
32	79	720ZU	1C + 0.00	22
31	82	720ZU	2C - 0.24	26
7	92	720ZU	1C - 0.11	28

Table 3

Location and Percent Through-wall of Each Indication

Steam Generator 1-2

Row	Col	Probe	Location (inches)	%
3	1	700ZS	1C - 0.12	21
6	3	720ZU	1C + 0.00	28
1	18	680ZR	7H + 5.64	SCI
9	21	720ZR	5C + 4.32	MBM
1	24	680ZR	7H + 5.82	SCI
10	25	720ZR	6C + 13.31	MBM
31	31	720ZU	7H + 3.61	<20
43	33	720ZU	1C - 0.24	34
15	40	720ZU	4C + 23.23	<20
		720ZU	TSC+ 27.78	<20
1	43	680ZR	7H + 4.22	SAI
34	46	720ZU	7H + 32.97	<20
		720ZU	7H + 59.37	38
		720ZU	7H + 86.95	22
		720ZU	7H +113.03	31
38	47	720ZU	7H + 66.03	26
		720ZU	7H + 98.22	21
		720ZU	7H +128.01	22
32	48	720ZU	7H + 57.94	<20
		720ZU	7H + 83.22	29
		720ZU	7H +106.53	<20
38	48	720ZU	7H + 65.86	69
		720ZU	7H + 97.75	54
		720ZU	7H +127.28	34
38	49	720ZU	7H +128.51	22
14	51	720ZU	TSH+ 9.16	24
34	51	720ZU	7H + 87.02	20
1	52	680ZR	7H + 8.46	SAI
38	52	720ZU	7H + 65.20	20
39	52	720ZU	7H + 35.66	46
		720ZU	7H + 68.27	62
		720ZU	7H +100.83	51
		720ZU	7H +133.02	44
32	53	720ZU	3C + 22.35	24
41	55	720ZU	7H + 70.44	30
		720ZU	7H +105.61	35
37	58	720ZU	7H + 34.27	<20
		720ZU	7H + 64.88	24
39	61	720ZU	7H +100.14	<20
		720ZU	7H +131.14	26
5	64	720ZU	6C + 27.12	<20
36	64	720ZU	7H + 34.41	28
38	64	720ZU	7H +126.95	<20
19	67	720ZU	7H + 33.93	<20
		720ZU	7H + 48.20	<20
1	68	680ZR	7H + 9.95	SAI

Table 3

Location and Percent Through-wall of Each Indication

Steam Generator 1-2 (cont'd)

Row	Col	Probe	Location (inches)	%
25	68	720ZU	6C + 45.01	<20
26	68	720ZU	7H + 66.29	<20
		720ZU	7H + 83.64	21
11	69	720ZU	TSH+ 40.18	<20
39	69	720ZU	7H +130.19	<20
1	71	680ZR	7H + 10.26	MAI
39	71	720ZU	7H + 67.17	<20
		720ZU	7H + 99.13	<20
1	72	680ZR	7H + 10.39	MAI
1	74	680ZR	7H + 10.18	SAI
34	74	720ZU	7H +107.76	MBM
2	77	720ZU	5C + 2.79	<20
24	85	720ZU	1C + 48.63	<20
1	90	680ZR	7H + 9.95	SAI
1	91	680ZR	7H + 10.25	MAI
1	92	680ZR	7H + 10.08	MAI
1	93	680ZR	7H + 9.95	MAI

Table 3

Location and Percent Through-wall of Each Indication

Steam Generator 1-3

Row	Col	Probe	Location (inches)	%
12	34	720ZU	7H + 29.42	<20
40	34	720ZU	7H + 67.32	<20
		720ZU	7H +102.44	<20
37	38	720ZU	7H + 34.90	33
		720ZU	7H + 63.99	44
		720ZU	7H + 95.44	25
		720ZU	7H +122.51	<20
36	51	720ZU	7H + 32.81	<20
		720ZU	7H + 62.07	29
		720ZU	7H + 92.55	24
		720ZU	7H +118.17	<20
36	56	720ZU	7H + 62.11	<20
		720ZU	7H + 93.33	<20
32	57	720ZU	7H + 55.67	33
		720ZU	7H + 82.68	31
35	58	720ZU	7H + 33.68	<20
		720ZU	7H + 60.56	27
		720ZU	7H + 90.38	32
		720ZU	7H +117.79	23
37	58	720ZU	7H + 95.51	<20
41	58	720ZU	7H + 69.23	<20
		720ZU	7H +104.28	27
		720ZU	7H +136.48	<20
35	59	720ZU	7H + 34.30	25
		720ZU	7H + 60.37	48
		720ZU	7H + 90.60	27
36	61	720ZU	7H + 61.59	22
		720ZU	7H + 93.04	<20
1	66	680ZR	7H + 2.16	SAI
39	66	720ZU	7H +130.45	<20
37	68	720ZU	7H + 64.56	<20
37	69	720ZU	7H + 95.45	23
2	87	680ZR	7H + 13.69	SAI
14	90	720ZU	TSH+ 0.98	30

Table 3

Location and Percent Through-wall of Each Indication

Steam Generator 1-4

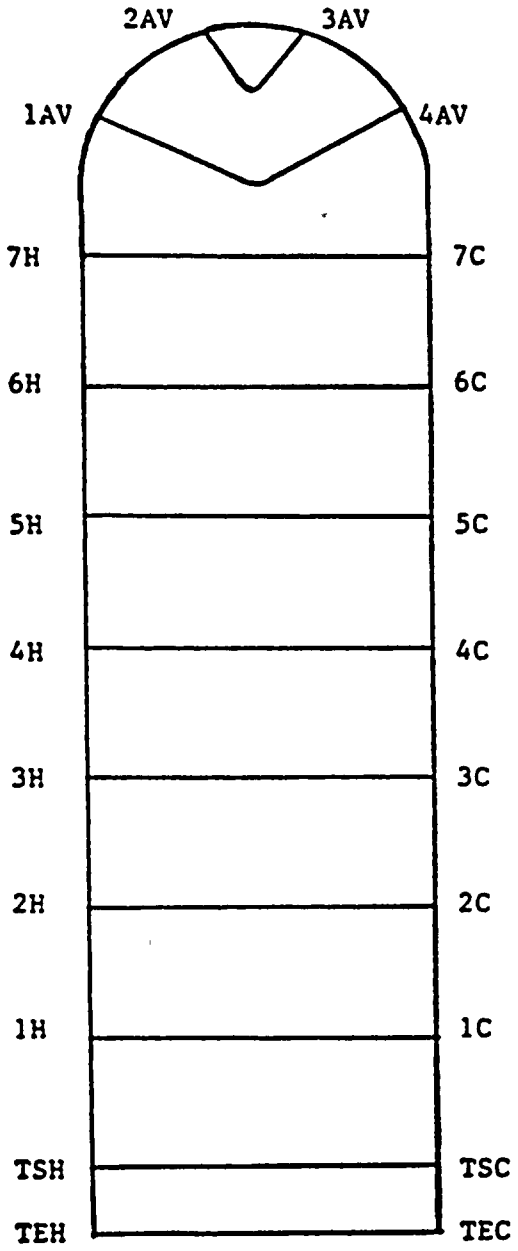
Row	Col	Probe	Location (inches)	%
25	9	720ZU	7H + 64.40	<20
33	22	720ZU	7H + 57.59	<20
37	22	720ZU	2C - 0.12	<20
34	25	720ZU	7H + 60.52	<20
37	28	720ZU	7H + 37.38	<20
38	28	720ZU	7H + 37.73	<20
32	29	720ZU	7H + 56.16	30
		720ZU	7H + 82.12	22
		720ZU	7H +105.22	<20
36	30	720ZU	7H + 36.40	<20
41	30	720ZU	7H +105.13	<20
		720ZU	7H +135.92	<20
32	31	720ZU	7H + 56.08	34
		720ZU	7H + 82.66	33
		720ZU	7H +106.43	22
35	31	720ZU	7H + 61.16	<20
29	34	720ZU	7H + 32.24	<20
		720ZU	7H + 95.31	<20
31	34	720ZU	7H + 53.67	<20
		720ZU	7H + 79.87	<20
		720ZU	7H +101.53	<20
32	36	720ZU	7H + 57.09	<20
33	36	720ZU	7H + 57.75	<20
36	36	720ZU	7H + 36.57	26
		720ZU	7H + 61.97	22
		720ZU	7H + 91.82	30
		720ZU	7H +118.88	39
40	40	720ZU	7H + 39.53	<20
		720ZU	7H + 69.54	<20
		720ZU	7H +103.59	27
39	44	720ZU	7H + 39.87	27
		720ZU	7H + 67.46	<20
		720ZU	7H + 68.24	21
		720ZU	7H +100.77	30
		720ZU	7H +129.23	42
36	46	720ZU	7H +117.26	<20
41	50	720ZU	7H +138.40	<20
36	52	720ZU	7H + 63.12	25
		720ZU	7H + 91.39	26
36	53	720ZU	7H + 36.58	<20
		720ZU	7H + 62.33	26
		720ZU	7H +124.66	<20
36	54	720ZU	7H + 35.01	44
		720ZU	7H + 61.60	<20
		720ZU	7H + 91.06	28
		720ZU	7H +123.38	<20

Table 3

Location and Percent Through-wall of Each Indication

Steam Generator 1-4 (Cont'd)

Row	Col	Probe	Location (inches)	%
43	56	720ZU	7H +109.74	<20
		720ZU	7H +145.36	<20
43	57	720ZU	7H +143.98	22
35	58	720ZU	7H + 59.24	<20
36	58	720ZU	7H + 33.84	32
		720ZU	7H + 61.94	30
		720ZU	7H + 92.65	27
		720ZU	7H +123.23	<20
39	58	720ZU	7H + 99.84	<20
35	60	720ZU	7H + 73.33	33
36	60	720ZU	7H + 60.60	<20
		720ZU	7H + 91.37	35
42	60	720ZU	7H +105.78	42
		720ZU	7H +140.41	38
42	61	720ZU	7H + 69.91	<20
41	62	720ZU	7H + 70.52	22
		720ZU	7H +105.09	31
		720ZU	7H +138.88	23
40	63	720ZU	7H + 67.21	<20
14	64	720ZU	TSH+ 3.75	36
40	64	720ZU	7H + 67.08	<20
		720ZU	7H +102.60	<20
31	65	720ZU	7H + 34.01	<20
		720ZU	7H + 53.02	29
		720ZU	7H + 79.10	34
		720ZU	7H +107.58	<20
35	66	720ZU	7H + 89.32	<20



TEH --- tube end hot leg

TSH --- top of tubesheet hot leg

1H --- 1st tube support plate hot leg

2H --- 2nd tube support plate hot leg

3H --- 3rd tube support plate hot leg

4H --- 4th tube support plate hot leg

5H --- 5th tube support plate hot leg

6H --- 6th tube support plate hot leg

7H --- 7th tube support plate hot leg

1AV --- 1st antivibration bar

2AV --- 2nd antivibration bar

3AV --- 3rd antivibration bar

4AV --- 4th antivibration bar

7C --- 7th tube support plate cold leg

6C --- 6th tube support plate cold leg

5C --- 5th tube support plate cold leg

4C --- 4th tube support plate cold leg

3C --- 3rd tube support plate cold leg

2C --- 2nd tube support plate cold leg

1C --- 1st tube support plate cold leg

TSC --- top of tubesheet cold leg

TEC --- tube end cold leg

Figure 1 Location codes for Westinghouse Model 51 steam generator tubes