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 AUTH. NAME AUTHOR AFFILIATION
 MORGAN, H. E. Southern California Edison Co.
 RECIP. NAME RECIPIENT AFFILIATION
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SUBJECT: Special rept re inservice insp of steam generator tubes.
 Tubes in steam generators E-038 & E-039 below plugging limit
 preventively plugged. Results of inservice insp encl.

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Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

P. O. BOX 128

SAN CLEMENTE, CALIFORNIA 92672

H. E. MORGAN
STATION MANAGER

TELEPHONE
(714) 368-6241

April 27, 1987

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

Subject: Docket No. 50-361
Special Report - Inservice Inspection of Steam Generator Tubes
San Onofre Nuclear Generating Station, Unit 2

Reference: Letter from Mr. M. O. Medford (SCE) to Mr. G. W. Knighton
(USNRC)-dated April 5, 1985

Pursuant to Surveillance Requirement 4.4.4.5(b) of Appendix A, Technical Specifications to Facility Operating License NPF-10, this report is being submitted to the Commission following the completion of inservice inspection of steam generator tubes at San Onofre Unit 2.

Eddy current inspection of the steam generator tubing, which included an inservice inspection of Steam Generator E-088 and a supplementary inspection of Steam Generator E-089, was completed on May 1, 1986. An inservice inspection of the full length of 584 tubes (6.35% of the tubes in service) in Steam Generator E-088 did not identify any defective tubes. Also, the supplementary inspection of Steam Generator E-089 tubes to monitor the progress of the tubing wear addressed in the reference did not identify any defective tubes.

A total of 5 tubes in Steam Generator E-088 and 12 tubes in Steam Generator E-089 with indications below the plugging limit, that were due to the wear mechanism previously described in the reference, were preventively plugged.

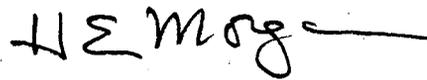
As required by Surveillance Requirement 4.4.4.5(b), complete results of the recently completed inservice inspection of Steam Generator E-088 tubes are provided in the enclosures. Results of the supplementary inspection of Steam Generator E-089 tubes are also provided in the enclosures. Enclosure 1 provides the steam generator internal location reference guide. The eddy current indication locations listed in the remaining enclosures are based upon this guide. Enclosures 2 and 4 provide a list of eddy current testing indications, including: tube identification, indication depth, and the axial location of the indication in the tube. Enclosures 3 and 5 provide a list of tubes plugged after completion of the inservice and supplementary inspections.

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If you require any additional information, please so advise.

Sincerely,



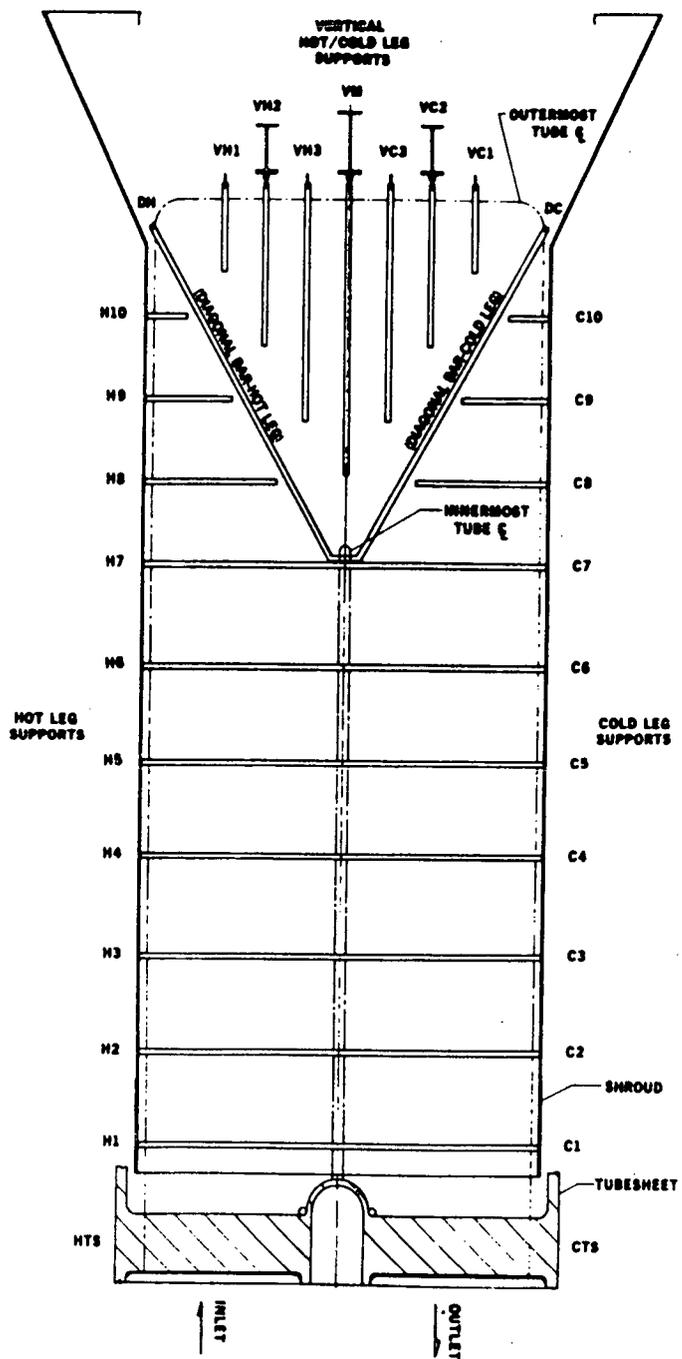
- Enclosures:
- 1 Combustion Engineering Model 3410 Steam Generator E-088 and E-089 Support Designation Guide and Illustrative Diagram
 - 2 List of Eddy Current Indications, Steam Generator E-088
 - 3 List of Tubes Plugged, Steam Generator E-088
 - 4 List of Eddy Current Indications, Steam Generator E-089
 - 5 List of Tubes Plugged, Steam Generator E-089

cc: J. B. Martin (Regional Administrator, USNRC Region V)
F. R. Huey (USNRC Senior Resident Inspector, Units 1, 2 and 3)
H. Rood (Project Manager, SONGS 2/3, USNRC, NRR)

Institute of Nuclear Power Operations (INPO)

Enclosure 1

COMBUSTION ENGINEERING MODEL 3410 STEAM GENERATOR ILLUSTRATIVE DIAGRAM



.Enclosure 1 (Continued)

CLARIFICATION OF TUBING/SUPPORT INTERFACES

ABOVE THE 7TH FULL EGGCRATE SUPPORT

<u>ROWS</u>	<u>TUBING/SUPPORT INTERFACES</u>					
120-147	H8, H9, H10	DH, VH1, VH2, VH3, VM, VC3, VC2, VC1, DC, C10, C9, C8				
115-119	H8, H9	DH, VH1, VH2, VH3, VM, VC3, VC2, VC1, DC	C9, C8			
84-114	H8, H9	DH	VH2, VH3, VM, VC3, VC2	DC	C9, C8	
83	H8	DH	VH2, VH3, VM, VC3, VC2	DC	C8	
51-82	H8	DH	VH3, VM, VC3	DC	C8	
49-50	H8	DH	VM	DC	C8	
19-48		DH	VM	DC		
1-18		DH		DC		

Enclosure 2

LIST OF EDDY CURRENT INDICATIONS

San Onofre Unit 2 Steam Generator E-088

<u>Row</u>	<u>Column</u>	<u>Indication</u> (% through-wall)	<u>Location</u>
129	121	43	H1 + 14.1
88	54	41	C3 + 15.2
41	105	40	C4 + 7.1
68	46	40	H1 - 2.4
51	91	39	H5 + 17.7
50	84	37	DC
47	83	36	DC
87	95	33	C6 + 7.1
97	49	33	C5 + 31.8
84	28	30	C6 + 15.0
139	75	30	C3 + 16.9
82	136	29	H6 + 16.6
88	54	29	C3 + 15.4
104	96	29	VC2 + 6.0
66	28	28	H3 + 24.3
73	125	28	C7 + 23.3
141	109	28	VC1 + 12.4
52	50	25	H5 + 6.5
53	45	25	H2 + 12.6
99	31	25	C1 + 25.8
39	77	23	DC
87	95	23	C7 + 11.8

Enclosure 2 (Continued)

LIST OF EDDY CURRENT INDICATIONS

San Onofre Unit 2 Steam Generator E-088

<u>Row</u>	<u>Column</u>	<u>Indication</u> (% through-wall)	<u>Location</u>
93	85	22	C7 + 7.2
143	71	22	C3 + 15.3
41	77	Distorted Signal (> 20%)	DH
44	90	Distorted Signal (> 20%)	DC
88	112	20	DC
33	15	<20	C4 + 21.9
49	91	<20	DC
68	46	<20	C6 + 2.2
80	110	<20	H4 + 26.7
87	95	<20	C6 + 15.4
124	128	<20	VC3 + 3.0
133	117	<20	C3 + 27.6
139	75	<20	C2 + 10.1
142	76	<20	VC3 + 4.3
42	122	<20	H2 + 14.1
86	158	<20	H6 + 18.7

Enclosure 3

LIST OF TUBES PLUGGED

San Onofre Unit 2 Steam Generator E-088

<u>Row</u>	<u>Column</u>	<u>Reason</u>
50	84	Preventive Maintenance
47	83	Preventive Maintenance
39	77	Preventive Maintenance
41	77	Preventive Maintenance
44	90	Preventive Maintenance

Enclosure 4

LIST OF EDDY CURRENT INDICATIONS

San Onofre Unit 2 Steam Generator E-089

<u>Row</u>	<u>Column</u>	<u>Indication (% through-wall)</u>	<u>Location</u>
44	82	37	DC
49	93	35	DH
47	93	32	DH
36	76	29	DC
44	86	28	DC
44	84	27	DC
44	94	26	DH
40	76	25	DC
44	72	25	VM + 8.6
49	83	23	DC
51	87	23	VH3 + 1.2
46	84	27	DC
46	90	24	DH
31	105	Distorted Signal (>20%)	DH
32	70	<20	C1 + 17.1
36	72	<20	DC
37	99	<20	DC
39	99	<20	DC
42	76	<20	DC
43	75	<20	DC
45	81	<20	DC
46	86	<20	DC
46	92	<20	C2 + 8.8

Enclosure 4 (Continued)

LIST OF EDDY CURRENT INDICATIONS

San Onofre Unit 2 Steam Generator E-089

<u>Row</u>	<u>Column</u>	<u>Indication</u> (% through-wall)	<u>Location</u>
48	84	<20	DH
48	90	<20	DH
49	87	<20	DC
50	90	<20	DH
51	83	<20	C2 + 9.9
51	85	<20	DC
44	74	<20	H8 + 4.2

Enclosure 5

LIST OF TUBES PLUGGED

San Onofre Unit 2 Steam Generator E-089

<u>Row</u>	<u>Column</u>	<u>Reason</u>
44	82	Preventive Maintenance
49	93	Preventive Maintenance
47	93	Preventive Maintenance
36	76	Preventive Maintenance
44	86	Preventive Maintenance
44	84	Preventive Maintenance
44	94	Preventive Maintenance
40	76	Preventive Maintenance
49	83	Preventive Maintenance
46	84	Preventive Maintenance
46	90	Preventive Maintenance
31	105	Preventive Maintenance