Southern California Edison Company

23 PARKER STREET

IRVINE, CALIFORNIA 92718

WALTER C. MARSH
MANAGER OF NUCLEAR REGULATORY AFFAIRS

TELEPHONE
(714) 454-4403

April 26, 1994

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

Subject: Docket No. 50-362
Special Report, Inservice Inspection of Steam Generator Tubes
San Onofre Nuclear Generating Station, Unit 3

References:

A. PWR Steam Generator Examination Guidelines, Revision 3, Electric Power Research Institute (EPRI) Report Number NP-6201, dated November 1992.

B. Letter from W. C. Marsh (SCE) to Document Control Desk (USNRC) dated November 8, 1993.

C. Letter from W. C. Marsh (SCE) to K. E. Perkins, Jr., (USNRC, Region V) dated December 3, 1993

Pursuant to Surveillance Requirement 4.4.4.5(b) of Appendix A, Technical Specifications to Facility Operating License NPF-15, this report is being submitted to the Commission following the completion of an inservice inspection of steam generator tubes at San Onofre Unit 3.

Eddy current inspection of the steam generator tubing was completed on November 18, 1993. A total of 13,594 tubes (74.9% of the tubes in service) in two steam generators were inspected full length and 59 tubes were removed from service by mechanical plugging. This inspection significantly exceeded the amount of tubing required to be inspected per Surveillance Requirements 4.4.4.0 through 4.4.4.2, including all prospective C-2 expansions [i.e., a 3% sample plus a 6% (2S) and a 12% (4S) expansion in each steam generator].

The planned inspection programs for both steam generators were consistent with industry recommendations in the "PWR Steam Generator Examination Guidelines" (Reference A). The planned programs were previously described in Reference B.

The inspection programs for both steam generators were expanded. The expansions included local bounding of tubes to be plugged, local bounding of all tubes indicating the presence of foreign material, and inspection of all tubes within 5 tubes of the periphery of the tube bundle due to the potential for presence of foreign material.

Detailed information regarding foreign material was reported in Reference C.

9405050320 940426
PDR ADOCK 05000362
Q PDR

A047

In Steam Generator E-088, 7020 tubes were inspected full length. Two tubes were found to be defective due to a 54% throughwall indication and a 51% throughwall indication, respectively, at vertical strap support locations. Two tubes were found to be defective due to a 100% throughwall indication and a 44% throughwall indication, respectively, just above the secondary face of the tubesheet on the outlet end of the tubes. The indications in these two tubes resulted from the presence of foreign material. Also, one tube was found to be defective due to a 74% throughwall indication at 11.75 inches above the secondary face of the tubesheet on the outlet end of the tube. This indication initiated on the outer tube wall. Inspection of this indication by the motorized rotating pancake coil (MRPC) probe revealed a volumetric indication (i.e., no specific axial or circumferential aspect). All five of the defective tubes described in this paragraph were plugged.

Also in Steam Generator E-088, the following number of tubes were preventively plugged for the indicated reason. Seventeen tubes were preventively plugged due to the presence of foreign material. Eight tubes were preventively plugged due to degradation at a batwing support. Six tubes were preventively plugged due to degradation at a vertical strap support. Two tubes were preventively plugged due to non-quantifiable indications at locations not associated with supports (i.e., in freespan tubing). These two non-quantifiable indications were volumetric (i.e., no specific axial or circumferential aspect). Two tubes were preventively plugged due to quantified indications (23% throughwall and 27% throughwall, respectively) at locations not associated with supports. These two quantified indications were volumetric. One tube was preventively plugged due to wear induced degradation at the lowest eggcrate support on the inlet end of the tube. One tube was preventively plugged due to tie-rod denting.

In Steam Generator E-089, 6574 tubes were inspected. The following number of tubes were preventively plugged for the indicated reason. Seven tubes were preventively plugged due to tie-rod denting. Four tubes were preventively plugged due to the presence of foreign material. Three tubes were preventively plugged due to degradation at a vertical strap support. One tube was preventively plugged due to a non-quantifiable/single volumetric indication at a location not associated with a support (i.e., in freespan tubing). One tube was preventively plugged due to a single volumetric indication at an eggcrate support on the outlet end of the tube. One tube was preventively plugged due to wear induced degradation at an eggcrate support on the outlet end of the tube.

As required by Surveillance Requirement 4.4.4.5(b), complete results of the recently completed inservice inspection of steam generator tubing are 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. Enclosure 2 provides a list of abbreviations used to describe the indications from MRPC probe testing in the remaining enclosures. Enclosures 3 and 5 provide a list of eddy current testing indications, including tube identification, indication depth for bobbin probe indications, indication description for MRPC probe indications, and the axial location of the indication in the tube. Enclosures 4 and 6 provide a list of tubes plugged after completion of the inservice inspection.

If you require any additional information, please so advise.

Sincerely,

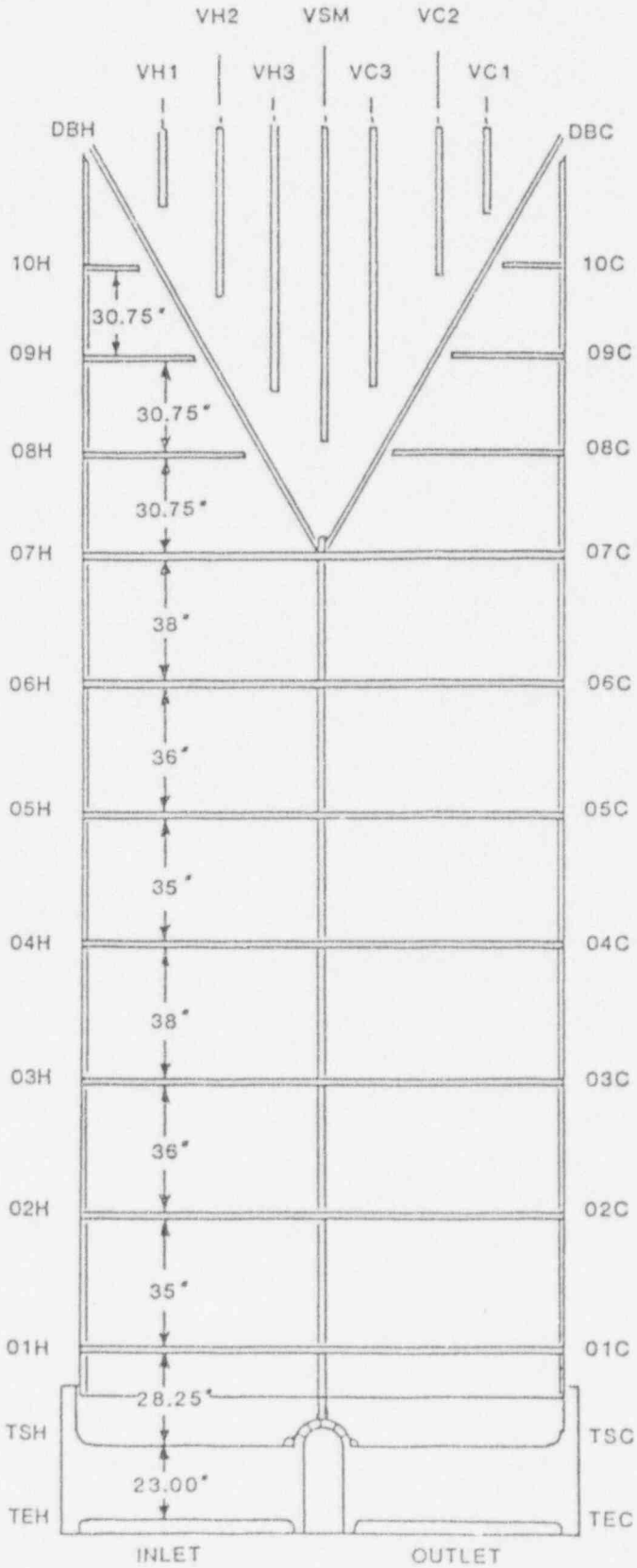
Walter C. Marsh

Enclosures (6)

cc: L. J. Callan, Regional Administrator, NRC Region IV
K. E. Perkins, Jr., Director Walnut Creek Field Office, NRC Region IV
M. B. Fields, NRC Project Manager, San Onofre Units 2 and 3
J. A. Sloan, Senior Resident Inspector, San Onofre Units 1, 2 & 3
Institute of Nuclear Power Operations (INPO)

Enclosure 1

## CE MODEL 3410 TUBE SUPPORT DRAWING



Enclosure 1

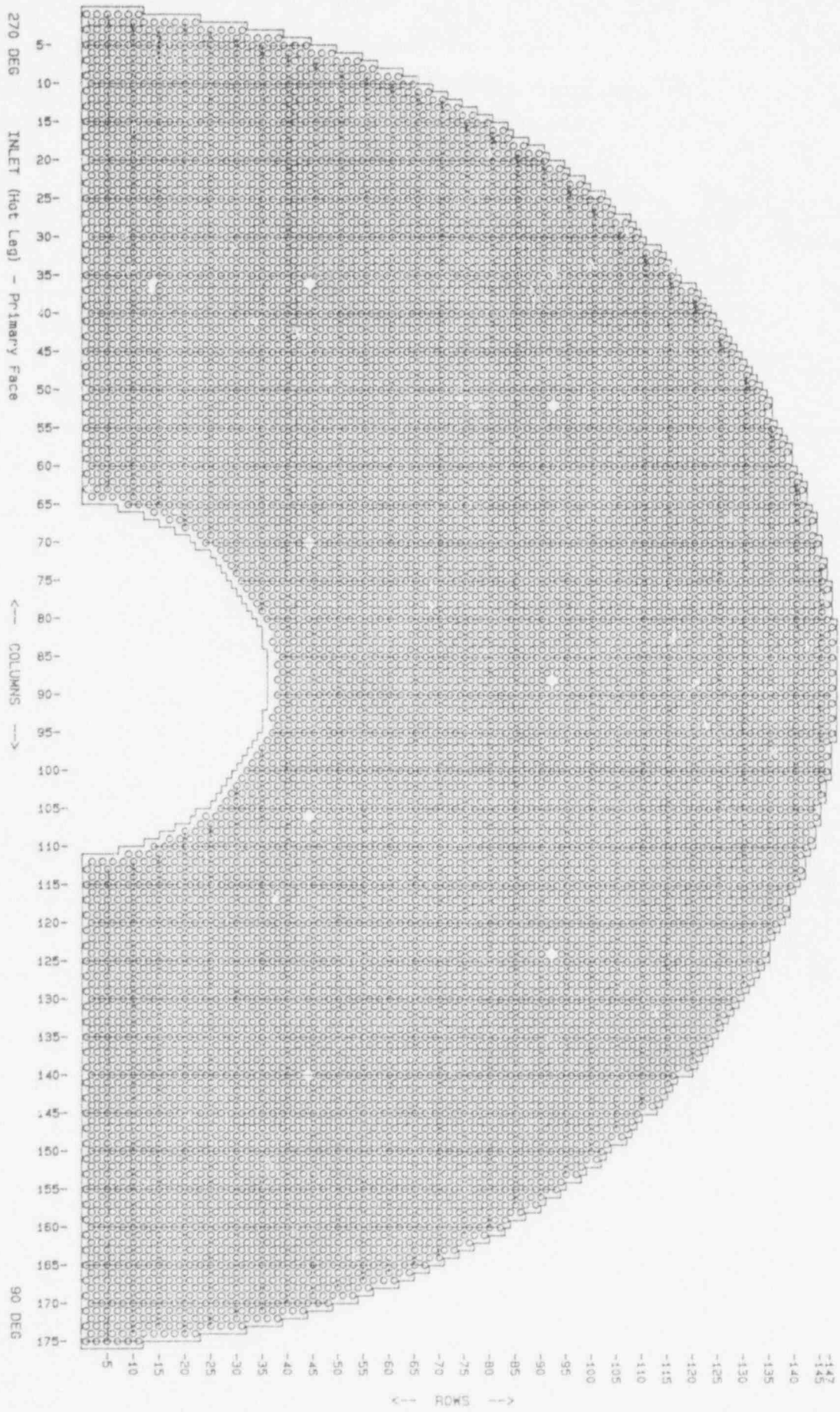
CLARIFICATION OF TUBING/SUPPORT INTERFACES

ABOVE THE 7TH FULL EGGCRATE SUPPORT

| ROW(S) | TUBING/SUPPORT INTERFACES |
|---|---|
| 120-147 | 08H,09H,10H,DBH,VH1,VH2,VH3,VSM,VC3,VC2,VC1,DBC,10C,09C,08C |
| 115-119 | 08H,09H DBH,VH1,VH2,VH3,VSM,VC3,VC2,VC1,DBC 09C,08C |
| 84-114 | 08H,09H DBH VH2,VH3,VSM,VC3,VC2 DBC 09C,08C |
| 83 | 08H DBH VH2,VH3,VSM,VC3,VC2 DBC 08C |
| 51-82 | 08H DBH VH3,VSM,VC3, DBC 08C |
| 49-50 | 08H DBH VSM DBC 08C |
| 19-48 | DBH VSM DBC |
| 1-18 | DBH DBC |

COMBUSTION ENGINEERING MODEL 3410 STEAM GENERATOR TUBESHEET MAP

TOTAL TUBES : 9350



Enclosure 2

LIST OF ABBREVIATIONS USED TO DESCRIBE THE INDICATIONS
FROM MRPC PROBE TESTING

| Abbreviation | Explanation of the Abbreviation |
|---|---|
| SCI | Single Circumferential Indication |
| MCI | Multiple Circumferential Indications |
| SAI | Single Axial Indication |
| MAI | Multiple Axial Indications |
| SVI | Single Volumetric Indication (i.e., no specific axial or circumferential aspect) |

Enclosure 3
CUMULATIVE REPORT
11/93, SOUTHERN CALIFORNIA EDISON, SAN ONOFRE, UNIT 3

STEAM GENERATOR : 88
OUTAGE DATA SET : CURRENT
SELECTION VARIABLES: Percent


DATE: 02/02/94
TIME: 09:12:48

| ROW | COL | HEAT# | LEG | EXAM EXTENT PROGRAM | EXAM EXTENT ACTUAL | EXP | CAL | PROBE | LOCATION | CURRENT VOLTS | CURRENT MIL | CURRENT DEG | CURRENT % | CURRENT CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 4 | | H | TSH-TSH | TSH-TSH | | 00091 | 600RC | TSH+ 0.00 | 4.56 | | 168 | SVI | 4 |
| 22 | 4 | | H | TSH-TSH | TSH-TSH | | 00024 | 600RC | TSH+ 0.01 | 7.10 | | 66 | SVI | P 1 |
| | | | H | TSH-TSH | TSH-TSH | | 00024 | 600RC | TSH+ 0.62 | 3.15 | | 78 | SVI | 4 |
| 43 | 5 | | C | TEC-TEH | TEC-TEH | | 00009 | 580UL | 04C- 0.09 | 0.52 | | 0 | <20 | P 2 |
| 106 | 28 | | C | TEC-TSH | TEC-TSH | | 00015 | 580UL | VC3- 0.82 | 8.27 | | 0 | 54 | P 2 |
| | | | C | TEC-TSH | TEC-TSH | | 00015 | 580UL | VC3+ 0.70 | 1.15 | | 0 | 27 | P 2 |
| 102 | 30 | | C | TEC-TEH | TEC-TEH | | 00016 | 580UL | 08C- 0.80 | 0.77 | | 0 | 21 | P 2 |
| 104 | 30 | | C | TEC-TEH | TEC-TEH | | 00016 | 580UL | VH2- 0.75 | 0.97 | | 0 | 25 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00016 | 580UL | VH2+ 0.78 | 1.09 | | 0 | 27 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00016 | 580UL | VC2+ 0.89 | 0.42 | | 0 | <20 | P 2 |
| 107 | 31 | | C | TEC-TEH | TEC-TEH | | 00016 | 580UL | VH2- 0.88 | 0.47 | | 0 | <20 | P 2 |
| 76 | 34 | | C | TEC-TEH | TEC-TEH | | 00020 | 580UL | VH3+ 0.66 | 0.56 | | 0 | <20 | P 2 |
| 114 | 34 | | C | TEC-TEH | TEC-TEH | | 00020 | 580UL | DBC+ 1.68 | 0.58 | | 0 | <20 | P 2 |
| 112 | 38 | | C | TEC-TEH | TEC-TEH | | 00021 | 580UL | VC2- 0.29 | 0.60 | | 0 | <20 | P 2 |
| 112 | 40 | | C | 07C-08C | 07C-08C | | 00072 | 600RC | 07C+ 20.43 | 2.19 | | 138 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00022 | 580UL | 07C+ 19.46 | 0.63 | | 140 | 27 | 1 |
| 27 | 45 | | C | TEC-TEH | TEC-TEH | | 00025 | 580UL | 02H+ 23.82 | 0.93 | | 153 | <20 | 1 |
| 86 | 46 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | 08H+ 2.53 | 0.90 | | 146 | 24 | 1 |
| 71 | 47 | | C | TEC-TEH | TEC-TEH | | 00025 | 580UL | VSM- 1.06 | 0.97 | | 0 | 25 | P 2 |
| 76 | 48 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM- 0.99 | 0.56 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM+ 0.99 | 0.87 | | 0 | 22 | P 2 |
| 94 | 48 | | C | TEC-TEH | TEC-TEH | | 00032 | 580UL | VH2+ 0.85 | 0.93 | | 0 | 26 | P 2 |
| 112 | 48 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM+ 0.84 | 2.98 | | 0 | 42 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VC3- 0.68 | 1.34 | | 0 | 30 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VC2- 0.74 | 0.82 | | 0 | 22 | P 2 |
| 113 | 49 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | DBH+ 1.31 | 0.41 | | 0 | <20 | P 2 |
| 131 | 51 | | C | TEC-TEH | TEC-TEH | 4 | 00031 | 580UL | DBC+ 1.43 | 0.63 | | 0 | 22 | P 2 |
| 134 | 52 | | C | TEC-TEH | TEC-TEH | | 00031 | 580UL | DBC+ 1.55 | 1.51 | | 0 | 36 | P 2 |
| 112 | 58 | | C | TEC-TEH | TEC-TEH | | 00032 | 80UL | VH2+ 1.21 | 0.68 | | 0 | 21 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00032 | 580UL | VH3+ 1.21 | 0.54 | | 0 | <20 | P 2 |
| 107 | 59 | | C | TEC-TEH | TEC-TEH | | 00032 | 580UL | VH2+ 0.88 | 0.91 | | 0 | 25 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00032 | 580UL | VH3- 0.78 | 1.17 | | 0 | 29 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00032 | 580UL | VC2+ 0.94 | 6.15 | | 0 | 51 | P 2 |
| 139 | 61 | | C | TEC-TEH | TEC-TEH | 4 | 00033 | 580UL | DBH- 1.36 | 2.39 | | 0 | 41 | P 2 |
| 140 | 62 | | C | TEC-TEH | TEC-TEH | 4 | 00033 | 580UL | 09H+ 0.63 | 0.50 | | 0 | <20 | P 2 |
| 81 | 65 | | C | TEC-TEH | TEC-TEH | | 00040 | 580UL | VSM+ 0.91 | 0.94 | | 0 | 23 | P 2 |
| 141 | 65 | | C | TEC-TEH | TEC-TEH | | 00033 | 580UL | DBC+ 1.68 | 0.40 | | 0 | <20 | P 2 |
| 118 | 66 | | C | TEC-TEH | TEC-TEH | | 00033 | 580UL | 06H+ 3.33 | 0.95 | | 154 | <20 | 1 |
| 142 | 66 | | C | TEC-TEH | TEC-TEH | | 00033 | 580UL | DBC+ 1.41 | 0.48 | | 0 | <20 | P 2 |
| 82 | 68 | | C | TEC-TEH | TEC-TEH | | 00035 | 580UL | VH3- 0.88 | 0.58 | | 0 | <20 | P 2 |
| 110 | 68 | | C | TEC-TEH | TEC-TEH | | 00035 | 580UL | VH2- 0.89 | 0.73 | | 0 | <20 | P 2 |
| 130 | 68 | | C | TEC-TEH | TEC-TEH | | 00035 | 580UL | VH1+ 0.92 | 0.96 | | 0 | 23 | P 2 |
| 142 | 68 | | C | TEC-TEH | TEC-TEH | | 00035 | 580UL | DBH+ 2.32 | 1.94 | | 0 | 35 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00035 | 580UL | DBC+ 1.59 | 1.04 | | 0 | 25 | P 2 |
| 43 | 69 | | C | TEC-TEH | TEC-TEH | | 00029 | 580UL | VSM- 0.96 | 0.69 | | 0 | <20 | P 2 |

CUMULATIVE REPORT
11/93, SOUTHERN CALIFORNIA EDISON, SAN ONOFRE, UNIT 3

STEAM GENERATOR : 88
OUTAGE DATA SET : CURRENT
SELECTION VARIABLES: Percent


DATE: 02/02/94
TIME: 09:12:48

| ROW | COL | HEAT# | LEG | EXAM EXTENT PROGRAM | EXAM EXTENT ACTUAL | EXP | CAL | PROBE | LOCATION | CURRENT VOLTS | CURRENT MIL | CURRENT DEG | CURRENT % | CURRENT CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | 69 | | C | TEC-TEH | TEC-TEH | | 00035 | 580UL | VC3+ 0.73 | 0.90 | | 0 | 22 | P 2 |
| 143 | 69 | | C | TEC-TEH | TEC-TEH | | 00035 | 580UL | DBC+ 1.43 | 2.24 | | 0 | 38 | P 2 |
| 104 | 70 | | C | TEC-TEH | TEC-TEH | | 00036 | 580UL | VC3- 0.98 | 0.64 | | 0 | <20 | P 2 |
| 77 | 71 | | C | TEC-TEH | TEC-TEH | | 00036 | 580UL | VH3+ 0.67 | 0.99 | | 0 | 25 | P 2 |
| 44 | 72 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM- 0.91 | 0.54 | | 0 | <20 | P 2 |
| 144 | 72 | | C | TEC-TEH | TEC-TEH | 4 | 00036 | 580UL | VH2- 1.06 | 0.46 | | 0 | <20 | P 2 |
| 37 | 73 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM+ 0.88 | 1.21 | | 0 | 28 | P 2 |
| 39 | 73 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM+ 0.91 | 0.77 | | 0 | 21 | P 2 |
| 81 | 73 | | C | TEC-TEH | TEC-TEH | | 00036 | 580UL | VSM- 0.86 | 0.52 | | 0 | <20 | P 2 |
| 38 | 74 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | DBH- 1.71 | 0.49 | | 0 | <20 | P 2 |
| 138 | 74 | | C | TEC-TEH | TEC-TEH | 4 | 00036 | 580UL | VH1- 1.04 | 0.82 | | 0 | 22 | P 2 |
| 39 | 75 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | DBH- 1.94 | 0.36 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM+ 0.96 | 0.51 | | 0 | <20 | P 2 |
| 41 | 75 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | DBH- 1.71 | 0.38 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM+ 1.01 | 0.45 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | DBC+ 1.55 | 1.19 | | 0 | 28 | P 2 |
| 75 | 75 | | C | TEC-TEH | TEC-TEH | | 00037 | 580UL | VSM- 1.03 | 0.49 | | 0 | 20 | P 2 |
| 42 | 76 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | DBH- 1.61 | 0.29 | | 0 | <20 | P 2 |
| 142 | 76 | | C | TEC-TEH | TEC-TEH | 4 | 00037 | 580UL | VH1- 0.84 | 0.97 | | 0 | 30 | P 2 |
| 146 | 76 | | C | TEC-TEH | TEC-TEH | 4 | 00037 | 580UL | DBH+ 1.23 | 0.48 | | 0 | 20 | P 2 |
| 50 | 78 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | DBC- 1.46 | 0.74 | | 0 | 20 | P 2 |
| 146 | 78 | | C | TEC-TEH | TEC-TEH | 4 | 00037 | 580UL | DBC+ 1.33 | 0.89 | | 0 | 29 | P 2 |
| 47 | 79 | | C | TEC-TEH | TEC-TEH | | 00030 | 580UL | VSM+ 0.86 | 0.72 | | 0 | <20 | P 2 |
| 145 | 79 | | C | TEC-TEH | TEC-TEH | 4 | 00037 | 580UL | DBC+ 1.48 | 1.02 | | 0 | 31 | P 2 |
| 104 | 80 | | C | TEC-TEH | TEC-TEH | | 00038 | 580UL | 07H+ 24.65 | 0.87 | | 142 | 27 | 1 |
| 60 | 82 | | C | TEC-TEH | TEC-TEH | | 00077 | 580UL | DBH- 2.16 | 0.42 | | 0 | <20 | P 2 |
| 146 | 82 | | H | 09H-10H | 09H-10H | | 00101 | 600RC | 09H+ 2.39 | 4.08 | | 12 | SVI | 4 |
| | | | H | 09H-10H | 09H-10H | | 00101 | 600RC | 09H+ 3.67 | 3.54 | | 7 | SVI | 4 |
| | | | H | 09H-10H | 09H-10H | | 00101 | 600RC | 09H+ 5.64 | 4.27 | | 7 | SVI | 4 |
| | | | H | 09H-10H | 09H-10H | | 00101 | 600RC | 09H+ 8.09 | 3.99 | | 7 | SVI | 4 |
| | | | H | 09H-10H | 09H-10H | | 00101 | 600RC | 09H+ 9.52 | 3.58 | | 3 | SVI | 4 |
| | | | H | 09H-10H | 09H-10H | | 00101 | 600RC | 09H+ 11.51 | 3.88 | | 10 | SVI | 4 |
| | | | H | 09H-10H | 09H-10H | | 00101 | 600RC | 09H+ 28.29 | 4.37 | | 9 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00001 | 580UL | DBC+ 1.55 | 0.88 | | 0 | 24 | P 2 |
| 114 | 84 | | C | TEC-TEH | TEC-TEH | | 00038 | 580UL | DBH+ 1.94 | 0.77 | | 0 | 20 | P 2 |
| 51 | 85 | | C | TEC-TEH | TEC-TEH | | 00082 | 580UL | DBC- 1.50 | 0.22 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00082 | 580UL | 03C+ 18.63 | 0.86 | | 161 | <20 | 1 |
| 143 | 85 | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 1.92 | 70.28 | | 43 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 1.88 | 116.0 | | 217 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 1.55 | 51.28 | | 46 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00001 | 580UL | TSC+ 1.42 | 23.32 | | 74 | 82 | 1 |
| 145 | 85 | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 0.09 | 7.32 | | 337 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 0.08 | 0.82 | | 133 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.08 | 1.42 | | 131 | SVI | 4 |
| 144 | 86 | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 2.78 | 20.68 | | 94 | SVI | 4 |

CUMULATIVE REPORT
11/93, SOUTHERN CALIFORNIA EDISON, SAN ONOFRE, UNIT 3

STEAM GENERATOR : 88
OUTAGE DATA SET : CURRENT
SELECTION VARIABLES: Percent


DATE: 02/02/94
TIME: 09:12:48

| ROW | COL | HEAT# | LEG | EXAM EXTENT PROGRAM | EXAM EXTENT ACTUAL | EXP | CAL | PROBE | LOCATION | CURRENT VOLTS | MIL | DEG | % | CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 144 | 86 | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 2.71 | 11.31 | | 104 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 2.30 | 7.06 | | 94 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00001 | 580UL | TSC+ 2.12 | 3.36 | | 129 | 41 | 1 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 1.33 | 4.93 | | 118 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 1.25 | 2.59 | | 144 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 1.24 | 2.05 | | 111 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00001 | 580UL | TSC+ 0.96 | 0.98 | | 158 | <20 | 1 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.16 | 3.91 | | 76 | SVI | P 1 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 0.12 | 19.26 | | 106 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 0.12 | 35.70 | | 121 | SVI | 4 |
| 146 | 86 | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 1.95 | 2.13 | | 123 | SVI | P 5 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 1.88 | 2.99 | | 24 | SVI | P 1 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 1.88 | 1.83 | | 92 | SVI | 4 |
| 47 | 87 | | C | TEC-TEH | TEC-TEH | | 00078 | 580UL | VSM- 0.61 | 0.37 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00078 | 580UL | DBC+ 1.95 | 0.58 | | 0 | <20 | P 2 |
| 49 | 87 | | C | TEC-TEH | TEC-TEH | | 00078 | 580UL | DBH- 1.73 | 0.40 | | 0 | <20 | P 2 |
| 145 | 87 | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 2.88 | 13.85 | | 88 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 2.60 | 6.98 | | 96 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 2.48 | 5.52 | | 93 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00001 | 580UL | TSC+ 2.12 | 2.72 | | 126 | 44 | 1 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 0.94 | 2.93 | | 111 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 0.88 | 3.73 | | 20 | SVI | P 1 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.80 | 1.12 | | 79 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00001 | 580UL | TSC+ 0.67 | 0.68 | | 156 | <20 | 1 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 0.28 | 14.42 | | 128 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 0.26 | 22.81 | | 129 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.25 | 4.31 | | 89 | SVI | P 1 |
| 147 | 87 | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.19 | 11.06 | | 77 | SVI | P 1 |
| 50 | 88 | | C | TEC-TEH | TEC-TEH | | 00078 | 580UL | DBC- 2.25 | 0.37 | | 0 | <20 | P 2 |
| 138 | 88 | | C | TEC-TEH | TEC-TEH | 4 | 00057 | 580UL | VH1- 1.19 | 0.54 | | 0 | <20 | P 2 |
| 144 | 88 | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 2.07 | 8.04 | | 79 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 1.87 | 6.51 | | 89 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 1.87 | 3.17 | | 82 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00001 | 580UL | TSC+ 1.51 | 2.00 | | 130 | 40 | 1 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.13 | 2.41 | | 121 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 0.12 | 4.76 | | 145 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 0.04 | 2.65 | | 116 | SVI | 4 |
| 146 | 88 | | C | TEC-TEH | TEC-TEH | | 00001 | 580UL | TSC+ 1.42 | 0.35 | | 158 | <20 | 1 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 0.47 | 2.52 | | 134 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 0.45 | 1.57 | | 30 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.45 | 1.61 | | 35 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 0.24 | 6.93 | | 154 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 0.23 | 3.12 | | 128 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.20 | 1.65 | | 111 | SVI | 4 |
| 77 | 89 | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | DBH+ 1.82 | 2.58 | | 0 | 40 | P 2 |

CUMULATIVE REPORT
11/93, SOUTHERN CALIFORNIA EDISON, SAN ONOFRE, UNIT 3

STEAM GENERATOR : 88
OUTAGE DATA SET : CURRENT
SELECTION VARIABLES: Percent


DATE: 02/02/94
TIME: 09:12:48

| ROW | COL | HEAT# | LEG | EXAM EXTENT PROGRAM | EXAM EXTENT ACTUAL | EXP | CAL | PROBE | LOCATION | CURRENT VOLTS | CURRENT MIL | CURRENT DEG | CURRENT % | CURRENT CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 145 | 89 | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 1.64 | 1.44 | | 97 | SVI | P 1 |
| | | | C | TSC-TSC | TSC-TSC | | 00003 | 600RC | TSC+ 1.59 | 1.84 | | 89 | SVI | 4 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 1.41 | 1.59 | | 97 | SVI | P 3 |
| | | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | TSC+ 1.24 | 1.62 | | 153 | <20 | 1 |
| | | | C | TEC-TEH | TEC-TEH | | 00002 | 580UL | TSC+ 1.21 | 1.75 | | 166 | <20 | 1 |
| | | | C | TSC-TSC | TSC-TSC | 8 | 00094 | 600MR | TSC+ 0.47 | 0.78 | | 132 | SVI | 3 |
| | | | C | TSC-TSC | TSC-TSC | 7 | 00092 | 600RP | TSC+ 0.31 | 1.16 | | 75 | SVI | P 3 |
| 147 | 89 | | C | TEC-TEH | TEC-TEH | | 00002 | 580UL | DBC- 1.38 | 0.96 | | 0 | 26 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | DBC- 1.22 | 1.10 | | 0 | 26 | P 2 |
| 138 | 90 | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | VH1- 0.67 | 1.28 | | 0 | 28 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | O1C+ 12.71 | 2.24 | | 142 | 22 | 1 |
| 146 | 92 | | C | TEC-TEH | TEC-TEH | 4 | 00057 | 580UL | 10C+ 0.86 | 0.23 | | 0 | <20 | P 2 |
| 51 | 93 | | C | TEC-TEH | TEC-TEH | | 00077 | 580UL | DBH- 1.67 | 0.45 | | 0 | <20 | P 2 |
| 75 | 93 | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | VSM+ 1.05 | 0.44 | | 0 | <20 | P 2 |
| 77 | 93 | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | VSM+ 0.95 | 0.94 | | 0 | 23 | P 2 |
| 79 | 93 | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | VH3+ 0.86 | 0.56 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | VSM+ 0.95 | 0.98 | | 0 | 24 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00057 | 580UL | VC3+ 0.81 | 0.81 | | 0 | 21 | P 2 |
| 136 | 94 | | C | TEC-TEH | TEC-TEH | 4 | 00058 | 580UL | VH1- 0.91 | 1.17 | | 0 | 25 | P 2 |
| 144 | 96 | | C | TEC-TEH | TEC-TEH | 4 | 00058 | 580UL | VH1+ 0.81 | 0.62 | | 0 | <20 | P 2 |
| 82 | 98 | | C | TEC-TEH | TEC-TEH | | 00058 | 580UL | VH3- 0.77 | 0.70 | | 0 | <20 | P 2 |
| 107 | 99 | | C | TEC-TEH | TEC-TEH | | 00059 | 580UL | VH2- 0.60 | 0.81 | | 0 | 21 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00059 | 580UL | VC3+ 0.72 | 1.49 | | 0 | 30 | P 2 |
| 43 | 101 | | C | TEC-TEH | TEC-TEH | | 00050 | 580UL | VSM- 0.76 | 0.51 | | 0 | <20 | P 2 |
| 79 | 101 | | C | TEC-TEH | TEC-TEH | | 00059 | 580UL | VH3- 0.82 | 0.81 | | 0 | 20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00059 | 580UL | VH3+ 0.79 | 1.00 | | 0 | 23 | P 2 |
| 135 | 103 | | C | TEC-TEH | TEC-TEH | 4 | 00059 | 580UL | VH1+ 0.86 | 0.49 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | 4 | 00059 | 580UL | VH2- 0.77 | 0.47 | | 0 | <20 | P 2 |
| 112 | 104 | | C | TEC-TEH | TEC-TEH | | 00060 | 580UL | VH2- 0.99 | 1.46 | | 0 | 31 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00060 | 580UL | VH2- 0.20 | 1.47 | | 0 | 32 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00060 | 580UL | VH2+ 1.02 | 1.50 | | 0 | 32 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00060 | 580UL | VSM+ 0.85 | 0.81 | | 0 | 22 | P 2 |
| 134 | 104 | | C | TEC-TEH | TEC-TEH | 4 | 00067 | 580UL | VH1- 0.90 | 0.67 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | 4 | 00060 | 580UL | VH1- 0.71 | 0.37 | | 0 | <20 | P 2 |
| 142 | 104 | | C | TEC-TEH | TEC-TEH | 4 | 00067 | 580UL | DBH+ 1.99 | 0.52 | | 0 | <20 | P 2 |
| 77 | 105 | | C | TEC-TEH | TEC-TEH | | 00067 | 580UL | VC3+ 26.58 | 0.99 | | 157 | <20 | 1 |
| 79 | 105 | | C | TEC-TEH | TEC-TEH | | 00061 | 580UL | VH3+ 0.57 | 1.73 | | 0 | 34 | P 2 |
| 105 | 105 | | C | TEC-TEH | TEC-TEH | | 00061 | 580UL | VH2- 0.73 | 0.51 | | 0 | <20 | P 2 |
| 38 | 106 | | C | TEC-TEH | TEC-TEH | | 00051 | 580UL | VSM+ 0.85 | 0.35 | | 0 | <20 | P 2 |
| 142 | 106 | | H | TSH-TSH | TSH-TSH | | 00061 | 600RC | TSH+ 0.21 | 4.31 | | 137 | SVI | 4 |
| 144 | 106 | | C | TEC-TEH | TEC-TEH | 4 | 00067 | 580UL | DBC+ 2.17 | 1.05 | | 0 | 24 | P 2 |
| 111 | 107 | | C | TEC-TEH | TEC-TEH | | 00076 | 580UL | VH2- 0.78 | 0.79 | | 0 | <20 | P 2 |
| 143 | 107 | | H | TSH-TSH | TSH-TSH | | 00062 | 600RC | TSH+ 0.22 | 3.10 | | 122 | SVI | 4 |
| 136 | 108 | | C | TEC-TEH | TEC-TEH | 4 | 00062 | 580UL | VH1- 0.91 | 0.27 | | 0 | <20 | P 2 |
| 75 | 109 | | C | TEC-TEH | TEC-TEH | | 00062 | 580UL | VSM- 0.97 | 0.72 | | 0 | 20 | P 2 |

CUMULATIVE REPORT
11/93, SOUTHERN CALIFORNIA EDISON, SAN ONOFRE, UNIT 3

STEAM GENERATOR : 88
OUTAGE DATA SET : CURRENT
SELECTION VARIABLES: Percent


DATE: 02/02/94
TIME: 09:12:48

| ROW | COL | HEAT# | LEG | EXAM EXTENT PROGRAM | EXAM EXTENT ACTUAL | EXP | CAL | PROBE | LOCATION | CURRENT VOLTS | CURRENT MIL | CURRENT DEG | CURRENT % | CURRENT CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | 109 | | C | TEC-TEH | TEC-TEH | | 00062 | 580UL | VSM+ 0.81 | 0.52 | | 0 | <20 | P 2 |
| 95 | 109 | | C | TEC-TEH | TEC-TEH | | 00062 | 580UL | VH2+ 0.76 | 0.69 | | 0 | <20 | P 2 |
| 109 | 109 | | C | TEC-TEH | TEC-TEH | | 00062 | 580UL | VH2- 0.80 | 0.39 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00062 | 580UL | VC2- 0.74 | 0.42 | | 0 | <20 | P 2 |
| 143 | 109 | | C | TEC-TEH | TEC-TEH | 4 | 00062 | 580UL | VH2- 0.89 | 0.63 | | 0 | <20 | P 2 |
| 116 | 110 | | C | TEC-TEH | TEC-TEH | | 00062 | 580UL | VC3+ 0.65 | 0.41 | | 0 | <20 | P 2 |
| 81 | 113 | | C | TEC-TEH | TEC-TEH | | 00067 | 580UL | VSM- 1.06 | 1.14 | | 0 | 26 | P 2 |
| 113 | 119 | | C | TEC-TEH | TEC-TEH | | 00064 | 580UL | VH2+ 0.79 | 0.96 | | 0 | 21 | P 2 |
| 136 | 120 | | C | TEC-TEH | TEC-TEH | | 00064 | 580UL | DBH+ 2.23 | 0.62 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00064 | 580UL | VH3- 0.87 | 1.76 | | 0 | 31 | P 2 |
| 133 | 121 | | C | TEC-01C | TEC-01C | | 00072 | 600RC | TSC+ 12.58 | 11.55 | | 30 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | 4 | 00064 | 580UL | TSC+ 11.75 | 2.51 | | 87 | 74 | 1 |
| 75 | 123 | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | DBH+ 22.19 | 0.82 | | 161 | <20 | 1 |
| 78 | 124 | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VH3+ 1.23 | 0.43 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VC3+ 0.87 | 0.44 | | 0 | <20 | P 2 |
| 81 | 125 | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VH3+ 0.90 | 0.85 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VC3+ 0.96 | 0.65 | | 0 | <20 | P 2 |
| 80 | 126 | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VH3+ 0.63 | 1.30 | | 0 | 26 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VC3+ 0.69 | 0.60 | | 0 | <20 | P 2 |
| 76 | 128 | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VC3- 0.90 | 1.38 | | 0 | 27 | P 2 |
| 82 | 128 | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VH3- 0.87 | 0.80 | | 0 | <20 | P 2 |
| 3 | 129 | | C | TEC-07H | TEC-07H | | 00068 | 560SF | 03C+ 21.80 | 1.11 | | 148 | 22 | 1 |
| 41 | 129 | | C | TEC-TEH | TEC-TEH | | 00055 | 580UL | DBH+ 1.36 | 0.57 | | 0 | <20 | P 2 |
| 83 | 129 | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | VH2+ 0.62 | 0.73 | | 0 | <20 | P 2 |
| 127 | 129 | | C | TEC-01C | TEC-01C | | 00072 | 600RC | TSC+ 7.96 | 1.59 | | 97 | SVI | 4 |
| | | | C | TEC-TEH | TEC-TEH | | 00065 | 580UL | TSC+ 7.33 | 2.10 | | 148 | 23 | 1 |
| 108 | 130 | | C | TEC-TEH | TEC-TEH | | 00066 | 580UL | VH3- 0.89 | 0.86 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00066 | 580UL | VC3- 0.72 | 0.76 | | 0 | <20 | P 2 |
| 112 | 132 | | C | TEC-TEH | TEC-TEH | | 00066 | 580UL | VC3+ 0.58 | 0.55 | | 0 | <20 | P 2 |
| 106 | 134 | | C | TEC-TEH | TEC-TEH | | 00066 | 580UL | VH2- 0.99 | 0.46 | | 0 | <20 | P 2 |
| 72 | 140 | | C | TEC-TEH | TEC-TEH | | 00045 | 580UL | 06H+ 15.56 | 0.66 | | 155 | <20 | 1 |
| 80 | 140 | | C | TEC-TEH | TEC-TSH | | 00045 | 580UL | VC3- 1.09 | 0.47 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00066 | 580UL | VC3- 1.06 | 0.58 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TSH | | 00045 | 580UL | VC3+ 0.59 | 0.36 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00066 | 580UL | VC3+ 0.70 | 0.49 | | 0 | <20 | P 2 |
| 63 | 143 | | C | 02C-03C | 02C-03C | | 00072 | 600RC | 02C+ 23.51 | 3.20 | | 124 | SVI | 4 |
| 106 | 144 | | C | TEC-TEH | TEC-TEH | | 00046 | 580UL | VH2- 1.01 | 0.90 | | 0 | 26 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00046 | 580UL | VH3+ 0.84 | 0.58 | | 0 | <20 | P 2 |
| 94 | 146 | | C | TEC-TEH | TEC-TEH | 4 | 00047 | 580UL | VH3- 0.84 | 0.45 | | 0 | <20 | P 2 |
| 72 | 148 | | C | TEC-TEH | TEC-TEH | | 00047 | 580UL | VC3+ 0.93 | 0.30 | | 0 | <20 | P 2 |
| 89 | 151 | | C | TEC-TEH | TEC-TEH | 4 | 00047 | 580UL | VC3- 0.79 | 0.55 | | 0 | <20 | P 2 |
| 77 | 157 | | C | TEC-TEH | TEC-TEH | 4 | 00048 | 580UL | 08C- 1.29 | 0.35 | | 0 | <20 | P 2 |
| 74 | 160 | | C | TEC-TEH | TEC-TEH | | 00044 | 580UL | 08C- 0.37 | 0.87 | | 0 | 25 | P 2 |
| 79 | 161 | | C | TEC-TEH | TEC-TEH | 4 | 00044 | 580UL | DBH+ 1.85 | 0.29 | | 0 | <20 | P 2 |
| 10 | 166 | | C | TEC-TEH | TEC-TEH | 4 | 00049 | 580UL | 01H+ 0.23 | 2.90 | | 0 | 43 | P 2 |

CUMULATIVE REPORT
11/93, SOUTHERN CALIFORNIA EDISON, SAN ONOFRE, UNIT 3

STEAM GENERATOR : 88
OUTAGE DATA SET : CURRENT
SELECTION VARIABLES: Percent


DATE: 02/02/94
TIME: 09:12:48

| ROW | COL | HEAT# | LEG | EXAM EXTENT PROGRAM | EXAM EXTENT ACTUAL | EXP | CAL | PROBE | LOCATION | CURRENT VOLTS | CURRENT MIL | CURRENT DEG | CURRENT % | CURRENT CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 169 | | C | TEC-TEH | TEC-TEH | | 00083 | 580UL | DBH+ 2.36 | 4.45 | | 9 | 23 | 1 |
| | | | C | TEC-TEH | TEC-TEH | | 00081 | 580UL | DBH+ 2.89 | 3.57 | | 10 | 25 | 1 |

NUMBER OF TUBES SELECTED FROM CURRENT OUTAGE: 133
NUMBER OF DATA RECORDS SELECTED FROM CURRENT OUTAGE: 227

NO TREND ANALYSIS REQUESTED

DATA SELECTION CRITERIA:
Percent: MAI,MCI,SAI,SCI,SVI, 0 to 100%

REPORT OPTIONS:
Only examination results matching criteria are included

MAP OPTIONS:
Plot Variable = Indication Codes
Plot data from current examination only

Enclosure 4

LIST OF TUBES PLUGGED

San Onofre Unit 3 Steam Generator E-088

| Row | Column | Reason |
|---|---|---|
| 22 | 2 | Preventive Maintenance (Association with Foreign Material) |
| 21 | 3 | Preventive Maintenance (Association with Foreign Material) |
| 23 | 3 | Preventive Maintenance (Association with Foreign Material) |
| 20 | 4 | Preventive Maintenance (Association with Foreign Material) |
| 22 | 4 | Preventive Maintenance (Association with Foreign Material) |
| 21 | 5 | Preventive Maintenance (Association with Foreign Material) |
| 106 | 28 | 54% Indication at VC3 - 0.82 |
| 43 | 37 | Preventive Maintenance |
| 112 | 40 | Preventive Maintenance |
| 112 | 48 | Preventive Maintenance |
| 134 | 52 | Preventive Maintenance |
| 107 | 59 | 51% Indication at VC2 + 0.94 |
| 139 | 61 | Preventive Maintenance |
| 142 | 68 | Preventive Maintenance |
| 143 | 69 | Preventive Maintenance |
| 41 | 75 | Preventive Maintenance |
| 142 | 76 | Preventive Maintenance |
| 50 | 78 | Preventive Maintenance |

Enclosure 4

LIST OF TUBES PLUGGED

San Onofre Unit 3 Steam Generator E-088

| Row | Column | Reason |
|---|---|---|
| 145 | 79 | Preventive Maintenance |
| 146 | 82 | Preventive Maintenance |
| 143 | 85 | 82% Indication at TSC + 1.42 (This indication was actually 100% based on visual observation of leakage, and had association with foreign material.) |
| 145 | 85 | Preventive Maintenance (Association with Foreign Material) |
| 144 | 86 | Preventive Maintenance (Association with Foreign Material) |
| 146 | 86 | Preventive Maintenance (Association with Foreign Material) |
| 145 | 87 | 44% Indication at TSC + 2.12 (Association with Foreign Material) |
| 147 | 87 | Preventive Maintenance (Association with Foreign Material) |
| 144 | 88 | Preventive Maintenance (Association with Foreign Material) |
| 146 | 88 | Preventive Maintenance (Association with Foreign Material) |
| 77 | 89 | Preventive Maintenance |
| 145 | 89 | Preventive Maintenance (Association with Foreign Material) |
| 107 | 99 | Preventive Maintenance |
| 112 | 104 | Preventive Maintenance |
| 79 | 105 | Preventive Maintenance |

Enclosure 4

LIST OF TUBES PLUGGED

San Onofre Unit 3 Steam Generator E-088

| Row | Column | Reason |
|---|---|---|
| 141 | 105 | Preventive Maintenance (Association with Foreign Material) |
| 142 | 106 | Preventive Maintenance (Association with Foreign Material) |
| 144 | 106 | Preventive Maintenance (Association with Foreign Material) |
| 143 | 107 | Preventive Maintenance (Association with Foreign Material) |
| 136 | 120 | Preventive Maintenance |
| 133 | 121 | 74% Indication at TSC + 11.75 |
| 127 | 129 | Preventive Maintenance |
| 63 | 143 | Preventive Maintenance |
| 10 | 166 | Preventive Maintenance |

Enclosure 5

CUMULATIVE REPORT

11/93, SOUTHERN CALIFORNIA EDISON, SAN ONOFRE, UNIT 3

STEAM GENERATOR : 89
OUTAGE DATA SET : CURRENT
SELECTION VARIABLES: Percent


DATE: 02/02/94
TIME: 09:47:46

| ROW | COL | HEAT# | LEG | EXAM EXTENT PROGRAM | EXAM EXTENT ACTUAL | EXP | CAL | PROBE | LOCATION | CURRENT VOLTS | MIL | DEG | % | CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 4 | | C | TEC-TEH | TEC-TEH | | 00006 | 580UL | 03C+ 34.28 | 0.91 | | 146 | 25 | 1 |
| 42 | 6 | | C | TEC-TEH | TEC-TEH | 4 | 00006 | 580UL | VSM+ 0.91 | 0.60 | | 0 | <20 | P 2 |
| 61 | 9 | | C | TEC-TEH | TEC-TEH | | 00007 | 580UL | VSM+ 1.46 | 0.51 | | 154 | <20 | 1 |
| 50 | 10 | | C | TEC-TEH | TEC-TEH | | 00007 | 580UL | VSM- 0.64 | 0.73 | | 0 | 24 | P 2 |
| 51 | 11 | | C | TEC-TEH | TEC-TEH | 4 | 00007 | 580UL | 03C- 1.14 | 0.26 | | 0 | <20 | P 2 |
| **115** | **37** | | **H** | **TSH-TSH** | **TSH-TSH** | | **00040** | **600RC** | **TSH+ 0.14** | **6.73** | | **235** | **SVI** | **P 1** |
| 101 | 43 | | C | TEC-TEH | TEC-TEH | | 00018 | 580UL | VSM+ 0.99 | 0.22 | | 0 | <20 | P 2 |
| 113 | 53 | | C | TEC-TEH | TEC-TEH | | 00026 | 580UL | 06C+ 25.12 | 0.56 | | 160 | <20 | 1 |
| 77 | 59 | | C | TEC-TEH | TEC-TEH | | 00027 | 580UL | VSM- 0.80 | 0.68 | | 0 | 20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00027 | 580UL | VC3+ 0.74 | 0.53 | | 0 | <20 | P 2 |
| 141 | 63 | | C | TEC-TEH | TEC-TEH | | 00027 | 580UL | DBH+ 2.22 | 0.40 | | 0 | <20 | P 2 |
| 50 | 64 | | C | TEC-08H | TEC-TEH | | 00022 | 580UL | VSM- 0.15 | 0.89 | | 0 | 26 | P 2 |
| 129 | 65 | | C | TEC-TEH | TEC-TEH | | 00028 | 580UL | VH2- 1.50 | 0.41 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00028 | 580UL | VC3+ 8.07 | 1.61 | | 157 | <20 | 1 |
| 100 | 78 | | C | TEC-TEH | TEC-TEH | | 00031 | 580UL | 08H- 0.54 | 0.76 | | 0 | 25 | P 2 |
| 108 | 80 | | C | TEC-TEH | TEC-TEH | | 00031 | 580UL | 07H+ 23.34 | 0.75 | | 149 | 22 | 1 |
| 56 | 86 | | C | TEC-TEH | TEC-TEH | | 00072 | 580UL | DBH- 2.17 | 0.23 | | 0 | <20 | P 2 |
| 138 | 86 | | C | TEC-TEH | TEC-TEH | 4 | 00032 | 580UL | VH1- 0.92 | 0.30 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | 4 | 00032 | 580UL | VH2- 1.08 | 0.32 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | 4 | 00032 | 580UL | VH2+ 0.70 | 0.28 | | 0 | <20 | P 2 |
| 132 | 94 | | C | TEC-TEH | TEC-TEH | | 00035 | 580UL | VH2- 0.89 | 0.57 | | 0 | 27 | P 2 |
| 50 | 98 | | C | TEC-TEH | TEC-TEH | | 00050 | 580UL | DBH- 1.71 | 0.49 | | 0 | <20 | P 2 |
| 142 | 98 | | C | TEC-TEH | TEC-TEH | 4 | 00036 | 580UL | 08C+ 0.96 | 0.80 | | 0 | 32 | P 2 |
| 38 | 102 | | C | TEC-TEH | TEC-TEH | | 00049 | 580UL | DBC- 1.22 | 0.34 | | 0 | <20 | P 2 |
| 136 | 102 | | C | TEC-TEH | TEC-TEH | 4 | 00038 | 580UL | 08C+ 25.95 | 0.92 | | 159 | <20 | 1 |
| 55 | 103 | | C | TEC-TEH | TEC-TEH | | 00048 | 580UL | VC3+ 1.21 | 0.45 | | 0 | <20 | P 2 |
| 34 | 104 | | C | TEC-TEH | TSC-TEH | | 00048 | 580UL | DBC+ 1.71 | 0.33 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00059 | 580UL | DBC+ 1.74 | 0.34 | | 0 | <20 | P 2 |
| 46 | 104 | | C | TEC-TEH | TEC-TEH | | 00048 | 580UL | VSM- 1.02 | 0.26 | | 0 | <20 | P 2 |
| 74 | 104 | | C | TEC-TEH | TEC-TEH | | 00038 | 580UL | DBC- 0.51 | 0.41 | | 0 | <20 | P 2 |
| 35 | 105 | | C | TEC-TEH | TEC-TEH | | 00048 | 580UL | VSM+ 13.10 | 0.86 | | 159 | <20 | 1 |
| 37 | 105 | | C | TEC-TEH | TEC-TEH | | 00048 | 580UL | VSM+ 0.71 | 0.49 | | 0 | <20 | P 2 |
| 41 | 105 | | C | TEC-TEH | TEC-TEH | | 00048 | 580UL | TSH+ 0.80 | 0.52 | | 146 | 25 | 1 |
| **136** | **106** | | **C** | **TSC-01C** | **TSC-01C** | | **00074** | **600RC** | **TSC+ 23.89** | **3.55** | | **25** | **SVI** | **4** |
| 136 | 114 | | C | TEC-TEH | TEC-TEH | 4 | 00040 | 580UL | VC1+ 2.14 | 0.92 | | 148 | <20 | 1 |
| | | | C | TEC-TEH | TEC-TEH | 4 | 00040 | 580UL | DBC+ 1.46 | 0.54 | | 0 | <20 | P 2 |
| 140 | 114 | | C | TEC-TEH | TEC-TEH | 4 | 00040 | 580UL | DBH+ 2.11 | 0.91 | | 0 | 25 | P 2 |
| 83 | 115 | | C | TEC-TEH | TEC-TEH | | 00040 | 580UL | VSM+ 1.34 | 0.57 | | 0 | 23 | P 2 |
| 133 | 117 | | C | TEC-TEH | TEC-TEH | 4 | 00040 | 580UL | 03C+ 10.81 | 0.50 | | 154 | <20 | 1 |
| 138 | 118 | | C | TEC-TEH | TEC-TEH | 4 | 00040 | 580UL | VH1- 1.14 | 1.25 | | 0 | 35 | P 2 |
| 50 | 128 | | C | TEC-TEH | TEC-TEH | | 00045 | 580UL | 03C+ 0.78 | 0.60 | | 0 | <20 | P 2 |
| 77 | 131 | | C | TEC-TEH | TEC-TEH | | 00043 | 580UL | VH3- 0.66 | 0.43 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00043 | 580UL | VC3+ 0.72 | 1.07 | | 0 | 30 | P 2 |
| 46 | 138 | | C | TEC-TEH | TEC-TEH | | 00051 | 580UL | 04C- 0.30 | 0.26 | | 0 | <20 | P 2 |
| 106 | 138 | | C | TEC-TEH | TEC-TEH | | 00051 | 580UL | VH2- 0.90 | 0.44 | | 0 | <20 | P 2 |

CUMULATIVE REPORT
11/93, SOUTHERN CALIFORNIA EDISON, SAN ONOFRE, UNIT 3

STEAM GENERATOR : 89
OUTAGE DATA SET : CURRENT
SELECTION VARIABLES: Percent


DATE: 02/02/94
TIME: 09:47:46

| ROW | COL | HEAT# | LEG | EXAM EXTENT PROGRAM | EXAM EXTENT ACTUAL | EXP | CAL | PROBE | LOCATION | CURRENT VOLTS | CURRENT MIL | CURRENT DEG | CURRENT % | CURRENT CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 119 | 139 | | C | TEC-TEH | TEC-TEH | | 00051 | 580UL | 10C- 1.21 | 0.53 | | 0 | <20 | P 2 |
| 47 | 145 | | C | TEC-TEH | TEC-TEH | | 00054 | 580UL | VSM+ 1.03 | 0.41 | | 0 | <20 | P 2 |
| 67 | 145 | | C | TEC-TEH | TEC-TEH | | 00054 | 580UL | VC3+ 1.46 | 0.60 | | 0 | 23 | P 2 |
| 76 | 146 | | C | TEC-TEH | TEC-TEH | | 00054 | 580UL | VH3+ 0.86 | 0.43 | | 0 | <20 | P 2 |
| 104 | 146 | | C | TEC-TEH | TEC-TEH | | 00054 | 580UL | VH2- 0.60 | 1.11 | | 0 | 31 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00054 | 580UL | VH3- 0.87 | 0.57 | | 0 | 21 | P 2 |
| 73 | 147 | | C | TEC-TEH | TEC-TEH | | 00054 | 580UL | VH3- 0.86 | 0.40 | | 0 | 21 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00054 | 580UL | VSM- 0.86 | 0.38 | | 0 | <20 | P 2 |
| 79 | 153 | | C | TEC-TEH | TEC-TEH | | 00055 | 580UL | VH3- 0.99 | 0.44 | | 0 | <20 | P 2 |
| | | | C | TEC-TEH | TEC-TEH | | 00055 | 580UL | VC3+ 0.69 | 0.76 | | 0 | 22 | P 2 |
| 81 | 153 | | C | TEC-TEH | TEC-TEH | | 00055 | 580UL | VC3- 1.07 | 0.23 | | 0 | <20 | P 2 |
| **86** | **154** | | **C** | **07C-07C** | **07C-08C** | | **00064** | **600RC** | **07C+ 0.31** | **4.95** | | **85** | **SVI** | **4** |
| 77 | 155 | | C | TEC-TEH | TEC-TEH | | 00056 | 580UL | VH3+ 0.88 | 0.40 | | 0 | <20 | P 2 |

NUMBER OF TUBES SELECTED FROM CURRENT OUTAGE: 48
NUMBER OF DATA RECORDS SELECTED FROM CURRENT OUTAGE: 58

NO TREND ANALYSIS REQUESTED

DATA SELECTION CRITERIA:
Percent: MAI,MCI,SAI,SCI,SVI, 0 to 100%

REPORT OPTIONS:
Only examination results matching criteria are included

MAP OPTIONS:
Plot Variable = Percent ThruWall
Plot data from current examination only

Enclosure 6

LIST OF TUBES PLUGGED

San Onofre Unit 3 Steam Generator E-089

| Row | Column | Reason |
|---|---|---|
| 115 | 37 | Preventive Maintenance (Association with Foreign Material) |
| 117 | 37 | Preventive Maintenance (Association with Foreign Material) |
| 116 | 38 | Preventive Maintenance (Association with Foreign Material) |
| 117 | 39 | Preventive Maintenance (Association with Foreign Material) |
| 43 | 69 | Preventive Maintenance |
| 45 | 69 | Preventive Maintenance |
| 46 | 70 | Preventive Maintenance |
| 43 | 71 | Preventive Maintenance |
| 142 | 98 | Preventive Maintenance |
| 42 | 106 | Preventive Maintenance |
| 136 | 106 | Preventive Maintenance |
| 138 | 118 | Preventive Maintenance |
| 91 | 123 | Preventive Maintenance |
| 90 | 124 | Preventive Maintenance |
| 77 | 131 | Preventive Maintenance |
| 104 | 146 | Preventive Maintenance |
| 86 | 154 | Preventive Maintenance |