

STEAM GENERATOR
PROGRESS REPORT
REVISION 9

EPRI
August 1993

Prepared by

*Energy Management Services, Inc.
Little Rock, Arkansas*

Steam Generator Strategic Management Project

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PROGRESS REPORT
REVISION 9

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August, 1993

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ABSTRACT

The status of steam generator problems is presented through December 1992. Older problems such as wastage and denting are reasonably under control. Newer problems include SCC/IGA in tubesheet crevices, at the tube support plates, and under tubescale in the freespan region. Additional damage mechanisms include primary side cracking in high stress regions, pitting and tube fretting. Lost generation due to steam generator outages is presented along with steam generator problems reported at operating plants, the number of steam generator tubes plugged and sleeved, the number of forced outages caused by tube leaks, and the plants which have replaced steam generators.

ACKNOWLEDGEMENTS

Grateful appreciation is extended to the many utility organizations, vendors and individuals who supplied data used in this report.

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Section 1 INTRODUCTION

This report is intended to provide EPRI members with the status of operating PWR steam generators. Considerable progress has been made since the formation of the EPRI Steam Generator Owners Group (SGOG I) in early 1977. At that time the industry was beginning to recover from wide scale steam generator tube wastage but was plagued by even wider scale tube denting. In addition to denting, stress corrosion cracking and apparent fatigue cracking were reported at a number of operating units. By the end of the SGOG I effort in December 1982, the causes and remedies for denting were much better understood and the occurrences of denting had dramatically decreased.

As these older problems were brought under control, newer problems were emerging. These problems included tube cracking and intergranular attack in the open tube sheet crevices, primary side tube cracking at high stress locations, pitting between the tube sheet and first support plate, and tube fretting in preheater sections and at antivibration bar locations. SGOG II followed SGOG I and focused on these newer problem areas.

Together utility members in SGOG I and SGOG II pledged more than 65 million dollars to help understand and resolve steam generator problems. The SGOG II project formally ended December 30, 1986. The work started by SGOG I and SGOG II has been continued in the EPRI base program. A five year Steam Generator Reliability Project (SGRP) began January 1, 1987 and was extended through December 1992. EPRI steam generator activities are now managed by the Steam Generator Strategic Management Project. Steam generator performance goals will be set and monitored to ensure that the Steam Generator Strategic Management Project addresses the most significant problems facing nuclear utilities. Although significant progress has been made in resolving steam generator problems, considerable work still remains. Steam generator forced outages and tube degradation are still occurring. This report is an updated status of the progress that has been made through December 31, 1992. It is intended that this report be updated annually through the duration of the Steam Generator Strategic Management Project.

A report such as this is only as good as the data from which it is generated. Data for 1992 was collected directly from U.S. and foreign utilities. Individual data sheets for each plant were sent to the Technical Advisory Group members for confirmation. It is hoped that this process will provide the most accurate data possible. If you have any corrections or suggestions, please send them to the author at the address listed on the front cover. This report contains the best available data at the time of printing and includes information from the EPRI Steam Generator Data Base, the Atomic Energy of Canada Limited, the Nuclear Regulatory Commission and individual utilities. Data trending is used to illustrate the progress that has been made and the problems that still exist. Appendix A provides a history of tube plugging and sleeving at each plant.

Section 2 CURRENT STATUS

The Atomic Energy of Canada Limited (AECL) has been keeping track of the causes of tube plugging since 1971 (References 1 and 2). Much of the early information presented in this section is from data collected by AECL. The data for 1992 was collected directly from the U.S. and foreign utilities whose plants are listed.

Figure 1 shows the percentage of reactors in the surveys which plugged tubes from 1976 through 1992. During the last 10 years the average percentage of reactors plugging steam generator tubes has been 45%. Figure 1 shows that this trend has not changed significantly. In 1992, 50% of the operating units were required to plug steam generator tubes.

Figure 2 shows the tubes plugged per year as a percentage of the total number of steam generator tubes in service. The number of tubes in service has risen from less than 200,000 in 1971 to more than 3.0 million in 1992. The percentage of tubes plugged per year over the last ten years has averaged .23 percent. This trend has decreased from an average of .39% for 1971 through 1979, to .23% for 1983 through 1992. Steam generator degradation is still widely occurring, however, and utilities are required to take expensive remedial action. Although the ten year average of .23 percent may not appear significant, over a 30 or 40 year steam generator life this amounts to plugging 6.9% to 9.2% of the available tubes. Even though this average value might be acceptable, not all steam generators are degrading equally. Extensive plugging efforts over the last few years have occurred at the following units:

- o 661 tubes in 1985 at Ohi 1 due to SCC/IGA
- o 330 tubes in 1985 at San Onofre 2 due to potential AVB fretting and other causes
- o 353 tubes in 1987 at Connecticut Yankee due to pitting and to ID SCC at the roll transition region
- o 559 tubes in 1987 at North Anna due to secondary side IGA and primary side SCC

- o 401 tubes in 1988 at Millstone 2 due to pitting and secondary side IGA
- o 336 tubes in 1988 at Salem 2 due to primary side SCC
- o 556 tubes in 1988 at V. C. Summer due to primary side SCC
- o 518 tubes in 1988 at Ringhals 2 due to secondary side IGA and other causes
- o 649 tubes in 1989 at Millstone 2 due to pitting and secondary side IGA
- o 386 tubes in 1989 at Palisades due to secondary side IGA and other causes
- o 363 tubes in 1989 at Salem 1 due to primary side cracking at the U bends
- o 327 tubes in 1989 at Ohi 1 due to secondary side IGA and primary side cracking in the roll transition region
- o 548 tubes in 1990 at Farley 2 due to primary side SCC and secondary side IGA
- o 617 tubes preventively plugged in 1990 at Palisades due to AVB fretting concerns
- o 624 tubes in 1990 at ASCO 1 due to primary side SCC and secondary side IGA
- o 468 tubes in 1991 at St. Lucie 1 due to secondary side SCC/IGA
- o 1580 tubes in 1991 at Trojan due to secondary side SCC/IGA
- o 600 tubes in 1991 at North Anna 1 due to secondary side IGA and primary side SCC
- o 760 tubes in 1991 at Beaver Valley 1 due to secondary side SCC/IGA

- o 331 tubes in 1991 at Bugey 5 due to primary side SCC
- o 400 tubes in 1991 at Angra 1 due to secondary side SCC/IGA
- o 306 tubes in 1992 at ANO-1 due to secondary side SCC/IGA
- o 354 tubes in 1992 at D.C. Cook 1 due to secondary side SCC/IGA
- o 527 tubes in 1992 at North Anna 2 due to secondary side SCC/IGA
- o 612 tubes in 1992 at Oconee 1 due to secondary side erosion/corrosion
- o 353 tubes in 1992 at ASCO 1 due to secondary side SCC/IGA

Degradation rates at these units are higher than the average rate. Tube degradation has already caused the steam generators to be replaced at thirteen nuclear units.

Figure 3 shows the total number of tubes plugged per year. In 1985 over 6000 tubes were plugged. This was due in part to the 1880 tubes plugged in French steam generators due to actual or anticipated SCC in the U-bend region and 1081 tubes plugged in U. S. steam generators due to actual or anticipated AVB wear. In 1986 a total of 3669 tubes were plugged. This reduction was due in part to less preventive plugging and an increase in the number of tubes sleeved. In 1987 a total of 4822 tubes were plugged. This increase from 1986 was due in part to fewer tubes being sleeved and an increase in primary side SCC and secondary side IGA at a number of U. S. plants. In 1988 a total of 6309 tubes were plugged. This increase from 1987 was due in part to a larger number of tubes plugged in the U.S. and Spain due to primary side stress corrosion cracking and a larger number of tubes plugged in Sweden and Japan due to secondary side IGA. In 1989 a total of 6106 tubes were plugged. Compared to 1988, the number of tubes plugged due to I.D. SCC decreased slightly while the number of tubes plugged due to O.D. SCC/IGA increased slightly. In addition, almost seven hundred tubes

were plugged in the French 1300 MW units due to denting caused by debris located on top of the tubesheet. In 1990, 7412 tubes were plugged. Compared to 1989, the number of plants plugging tubes increased, and the number of tubes plugged due to primary side SCC and fretting increased. In 1991, 9550 tubes were plugged. A small part of this increase was due to adding the PWR units from Germany and Korea to the report. Looking at the same units for each year, approximately 30% more tubes were plugged in 1991 compared to 1990. The largest increases in plugged tubes were due to secondary side SCC/IGA, especially at support plate intersections. In 1992 a total of 7860 tubes were plugged. This is approximately 20% fewer than were plugged in 1991. The reduction in tube plugging was almost equally divided between U.S. and non-U.S. plants.

Figure 4 shows the causes of steam generator plugging on a world wide basis from 1973 to 1992. When the SGOG I was formed in early 1977, denting was responsible for almost 90% of the tube plugging. By the end of SGOG I in 1982, this figure was less than 2%. During the existence of SGOG II, SCC/IGA in the tubesheet, primary side SCC, pitting, and fretting surfaced as the primary causes of plugging. Although significant progress has been made with wastage and denting, the data in this section shows that the percentage of reactors plugging tubes and the percentage of tubes being plugged each year has remained relatively constant. In 1992 I.D. stress corrosion cracking (20.8%), O.D. stress corrosion cracking and intergranular attack (37.6%), and fretting (7.4%) accounted for over 65% of all the tubes plugged. Figures 4-1 and 4-2 show the causes of steam generator tube plugging separated into U.S. and non-U.S. plants. Pitting and fretting have been slightly more of a problem for U.S. plants while primary side stress corrosion cracking, SCC(ID), has been more of a problem for non-U.S. plants. The diversity of these damage mechanisms means that no one solution is likely to resolve all problems. The task of maintaining steam generator integrity continues to remain formidable and challenging. The Steam Generator Strategic Management Project will utilize the results of earlier programs to focus on the resolution of current damage mechanisms.

FIGURE 1

World Wide Percentage of Plants Plugging Steam Generator Tubes

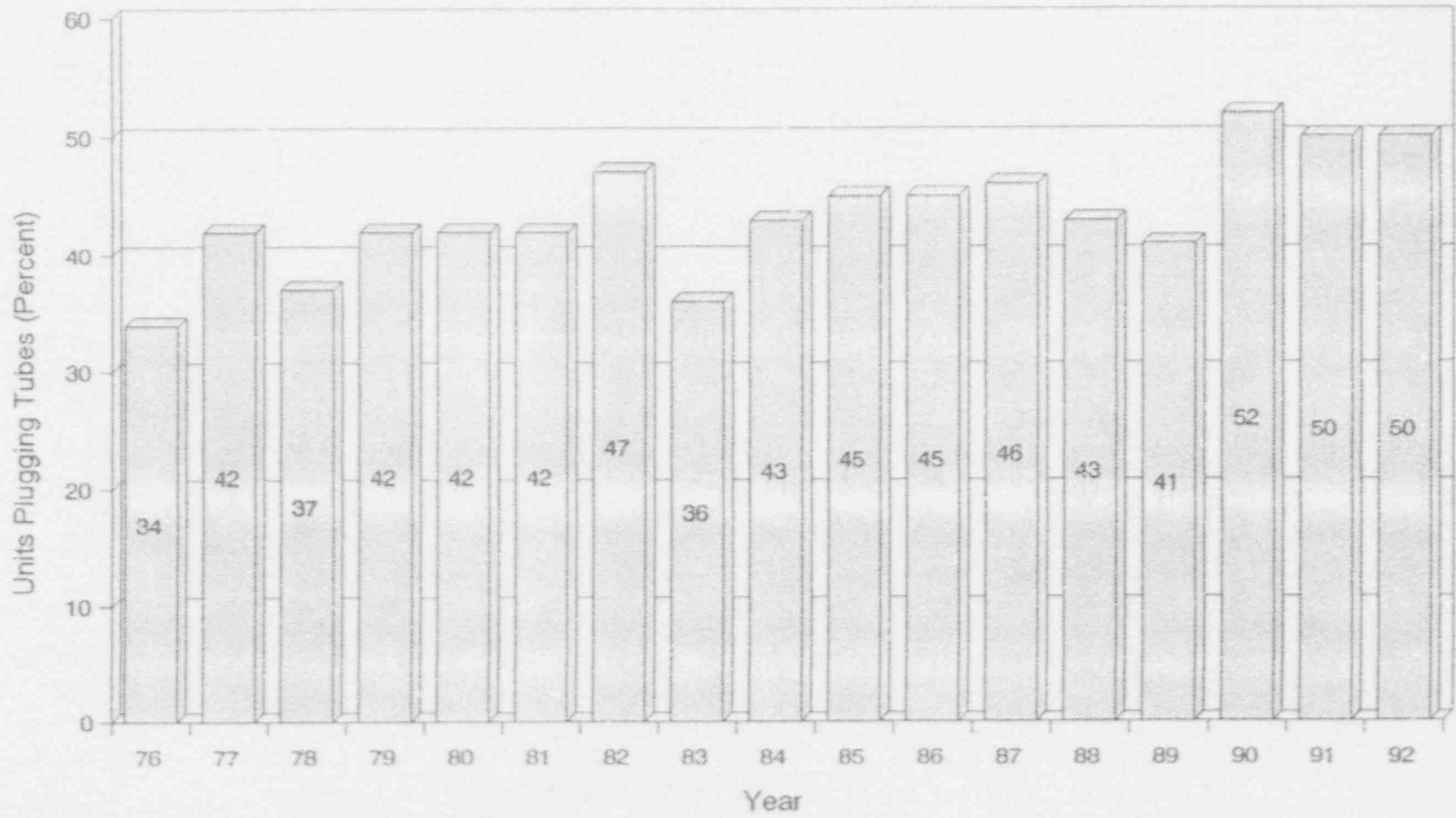


FIGURE 2

World Wide Percentage of Steam Generator Tubes Plugged

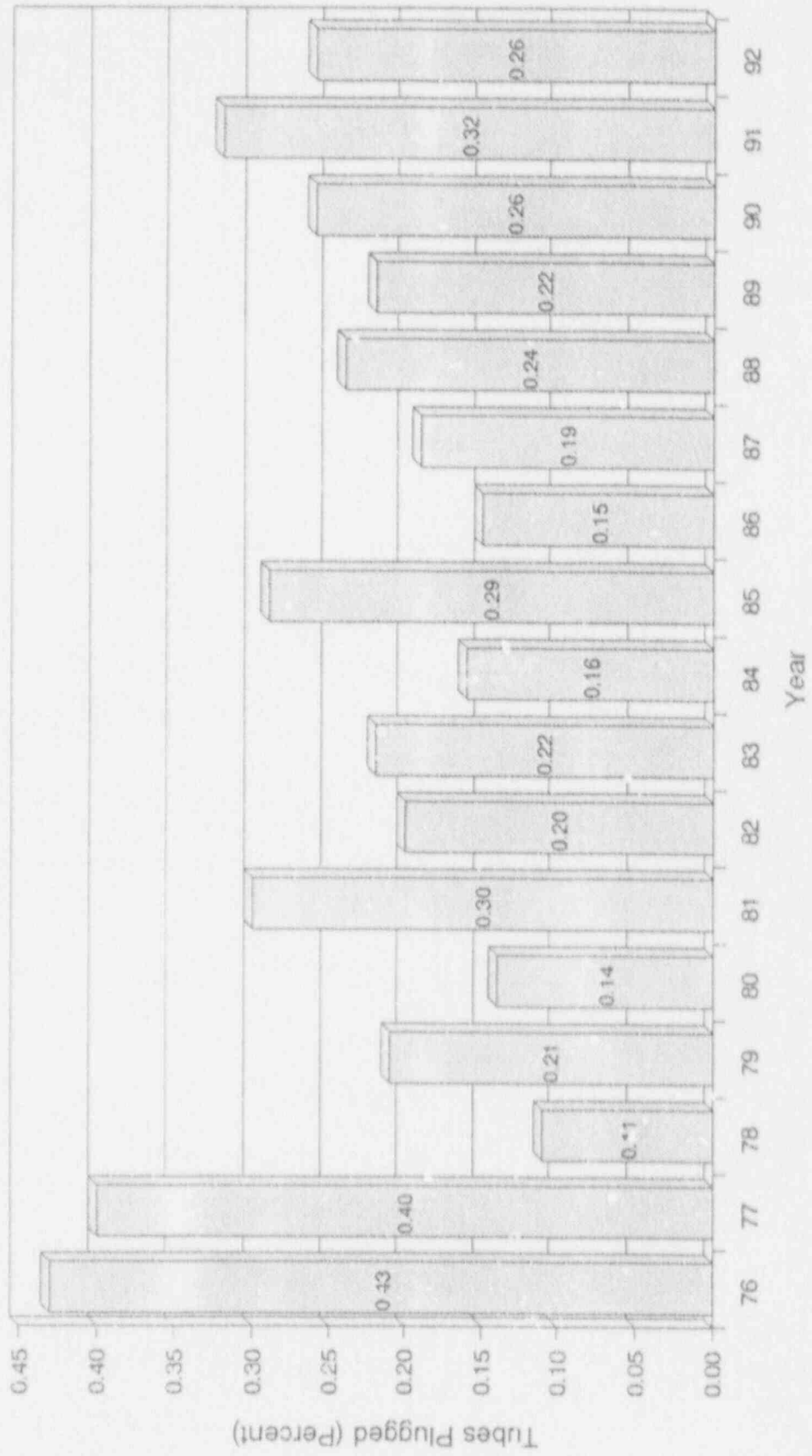


FIGURE 3

World Wide Number of Steam Generator Tubes Plugged

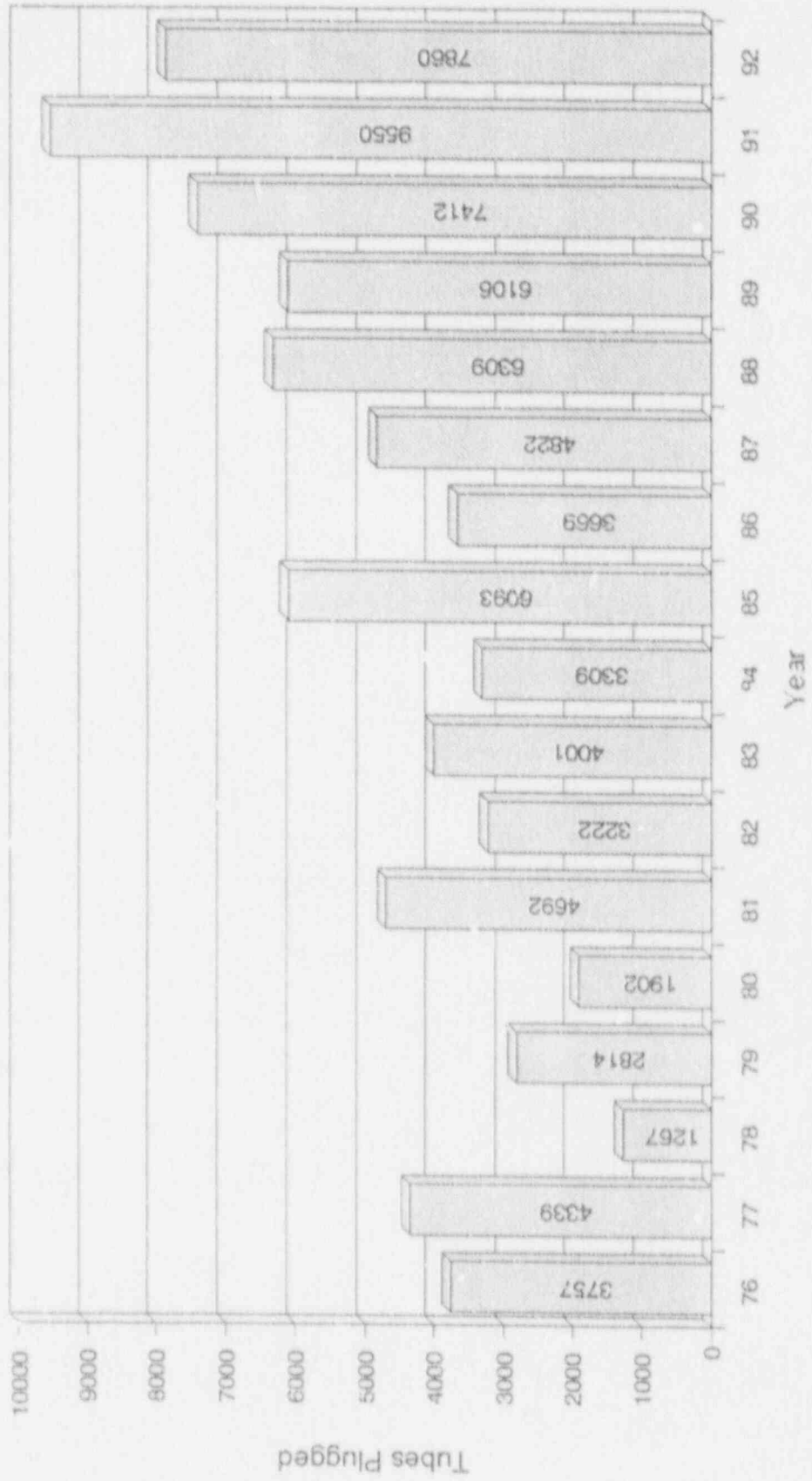


Figure 4

World Wide Causes of Steam Generator Plugging

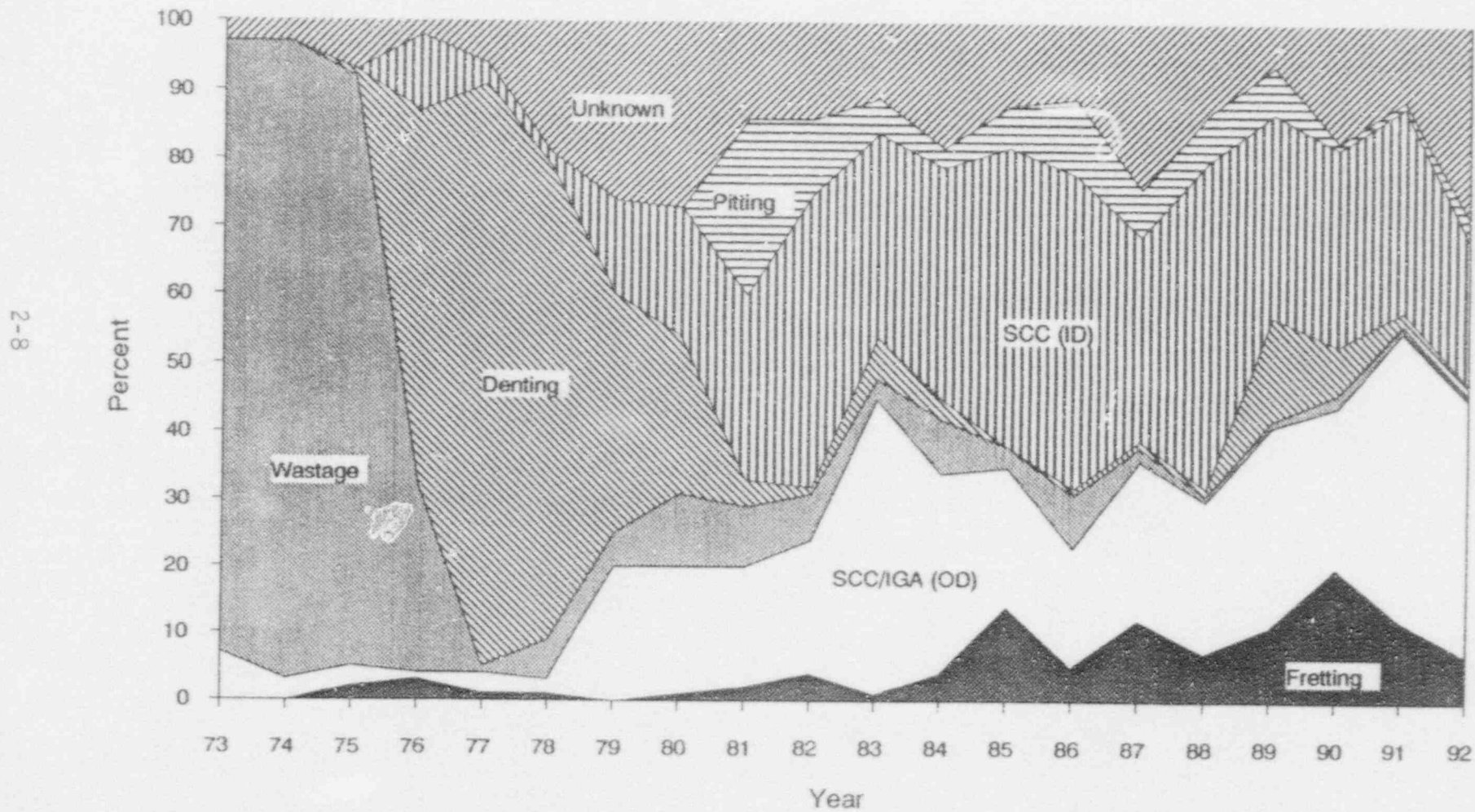
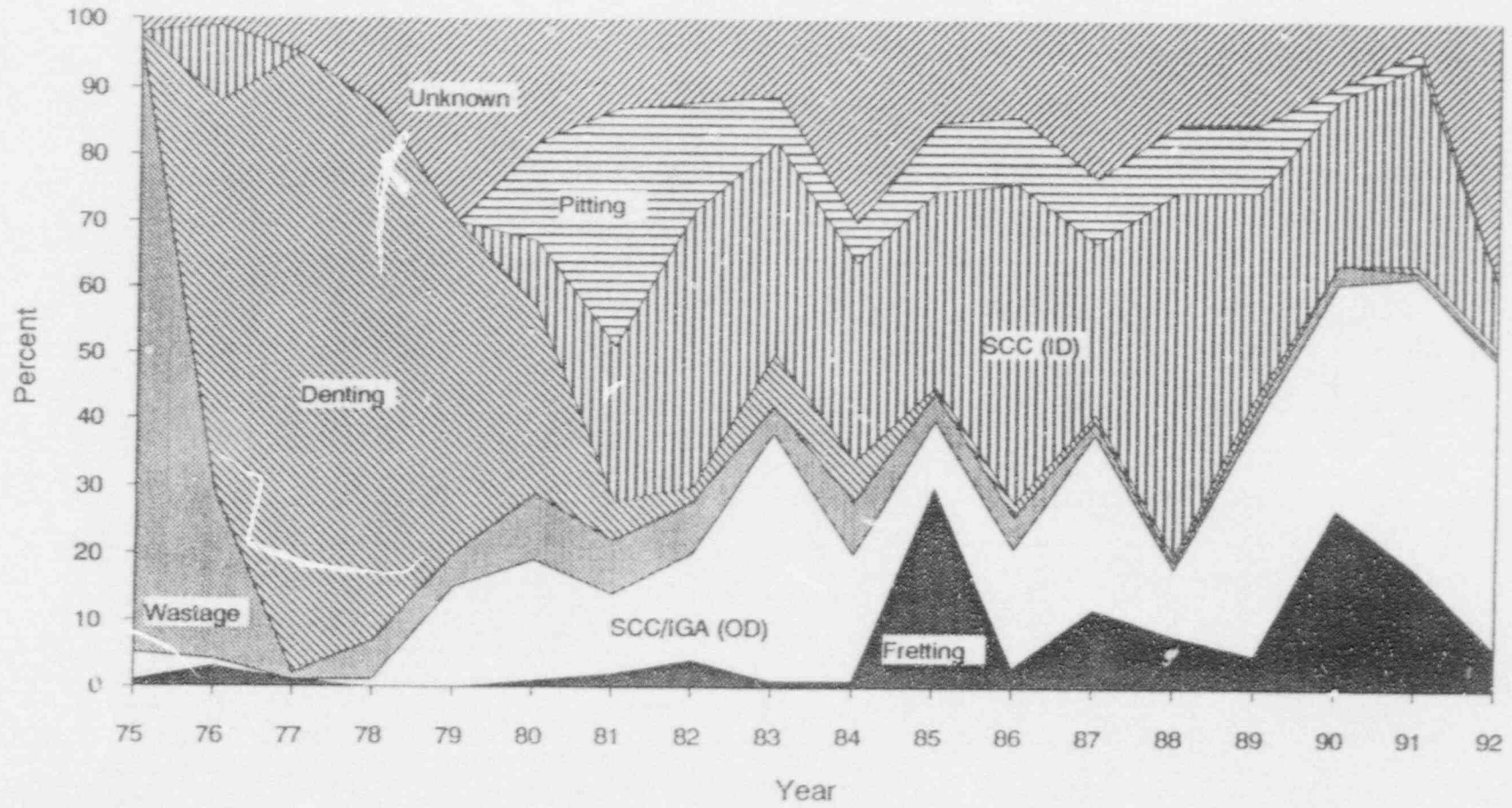


Figure 4-1

United States Causes of Steam Generator Plugging

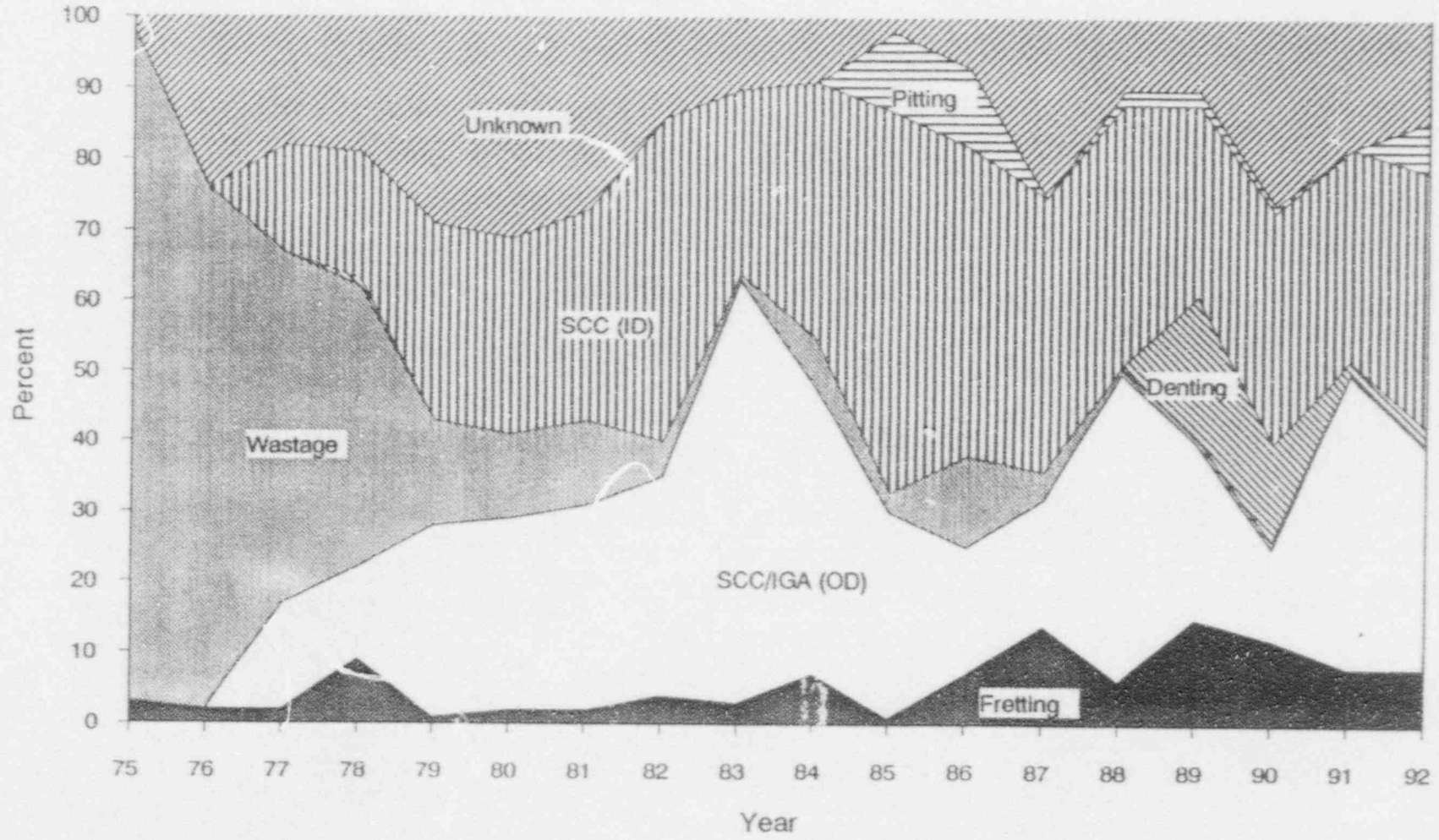


6-9

Figure 4-2

Non-U.S. Causes of Steam Generator Plugging

2-10



Section 3 LOST GENERATION

One of the real incentives for improving steam generator integrity is the increased electrical generation due to improved capacity factors. In fact, over the last ten years, steam generator problems in the United States rank second behind refueling outages as the most significant contributor to lost generation.

During the last ten years, the capacity factor loss for U.S. PWR's due to steam generator problems has averaged 3.0%. In 1992 the capacity factor loss was 3.3% (see Figure 5). From 1980 to 1984 the average U.S. PWR capacity factor was 57.2%. During this time steam generator problems resulted in a reduction in the average U.S. PWR capacity factor of 5.7 percent. Of this amount, Figure 6 shows that 1.5 % was due to steam generator replacement and 4.2 % due to steam generator tube problems. Figure 7 shows the improvement in U.S. PWR capacity factors (73.9%) in 1992. Figure 7 also shows the reduction in lost generation (.6%) due to steam generator replacement and in lost generation (2.7%) due to steam generator tube problems.

Using the 1980 - 1984 average values for tube plugging, sleeving, radiation exposure, and lost generation due to steam generator outages and replacement, the EPRI Steam Generator Project Office initially established steam generator performance goals for the period 1986 through 1990 and then extended these goals through 1991. Revised performance goals are now being established. Table 1 shows that steam generator performance in 1992 relative to lost generation was ahead of previous target goals and resulted in a conservatively estimated savings of \$83 million. The number of tubes plugged and sleeved in 1992 exceeded (was worse than) previous target goals. As a result of this, the estimated radiation exposure also exceeded the target goal. The expenditures for these three items result in an estimated expenditure of an additional \$15 million. Combining the tube plugging and sleeving results with the improvements in electrical generation results in a savings of approximately \$68 million when compared with the average annual expenditures in the 1980 to 1984 time frame. These savings are conservatively estimated and indicate that utilities are making progress in managing steam generator degradation. However, a

number of utilities are planning steam generator replacements and this needs to be factored into new target goals.

FIGURE 5

U. S. Capacity Loss Due to Steam Generator Problems
(Including Steam Generator Replacement)

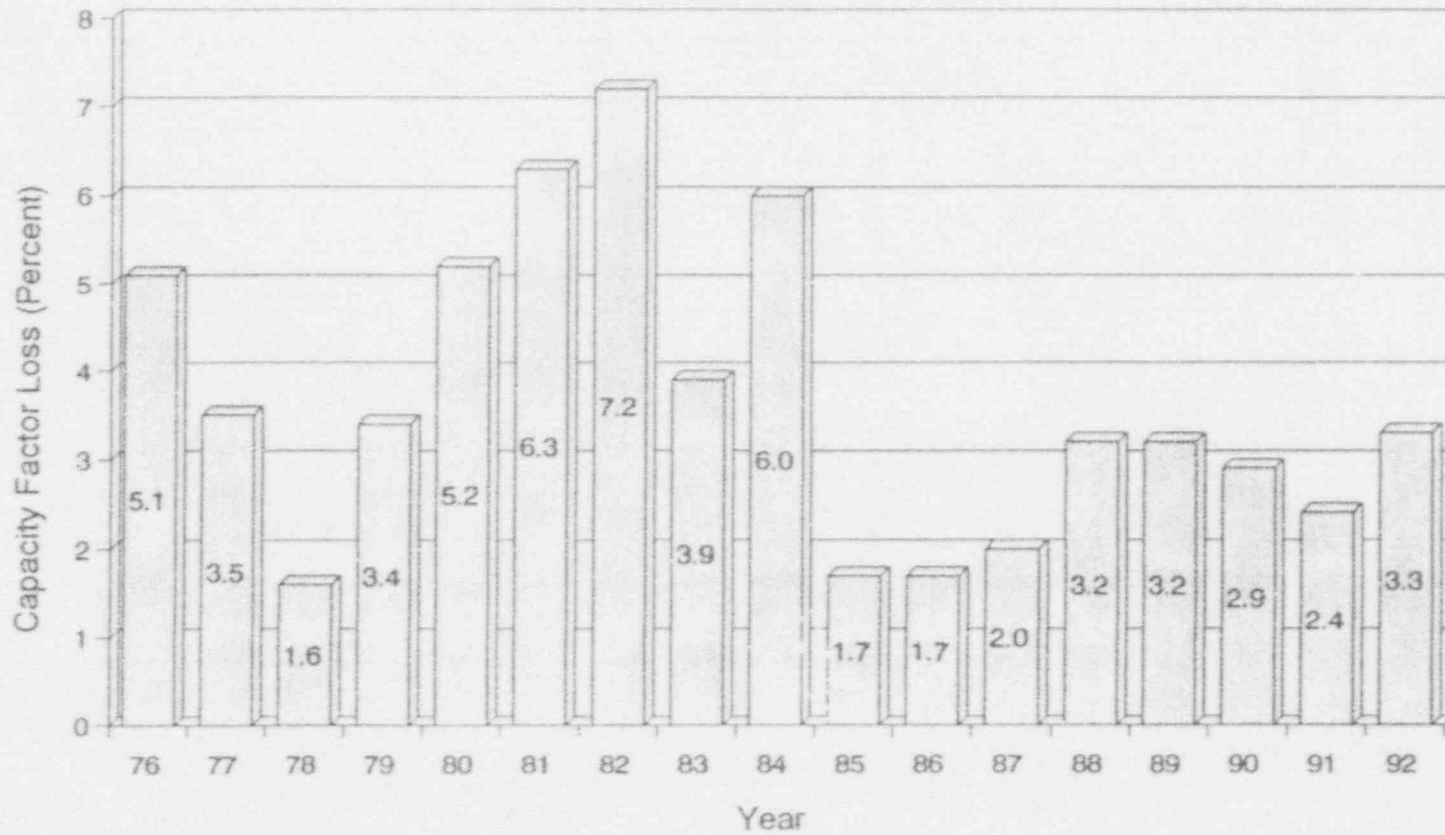
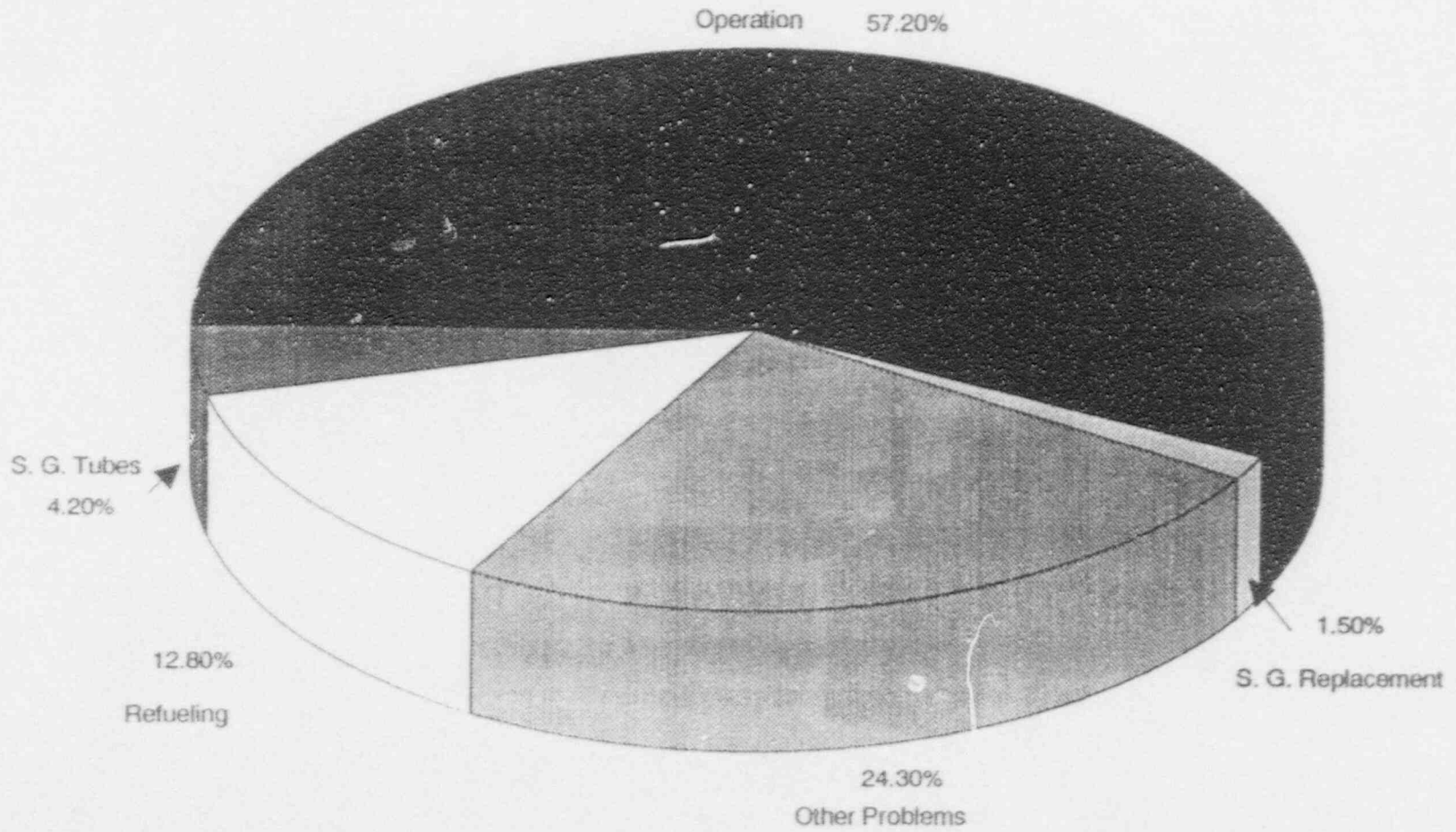


FIGURE 6

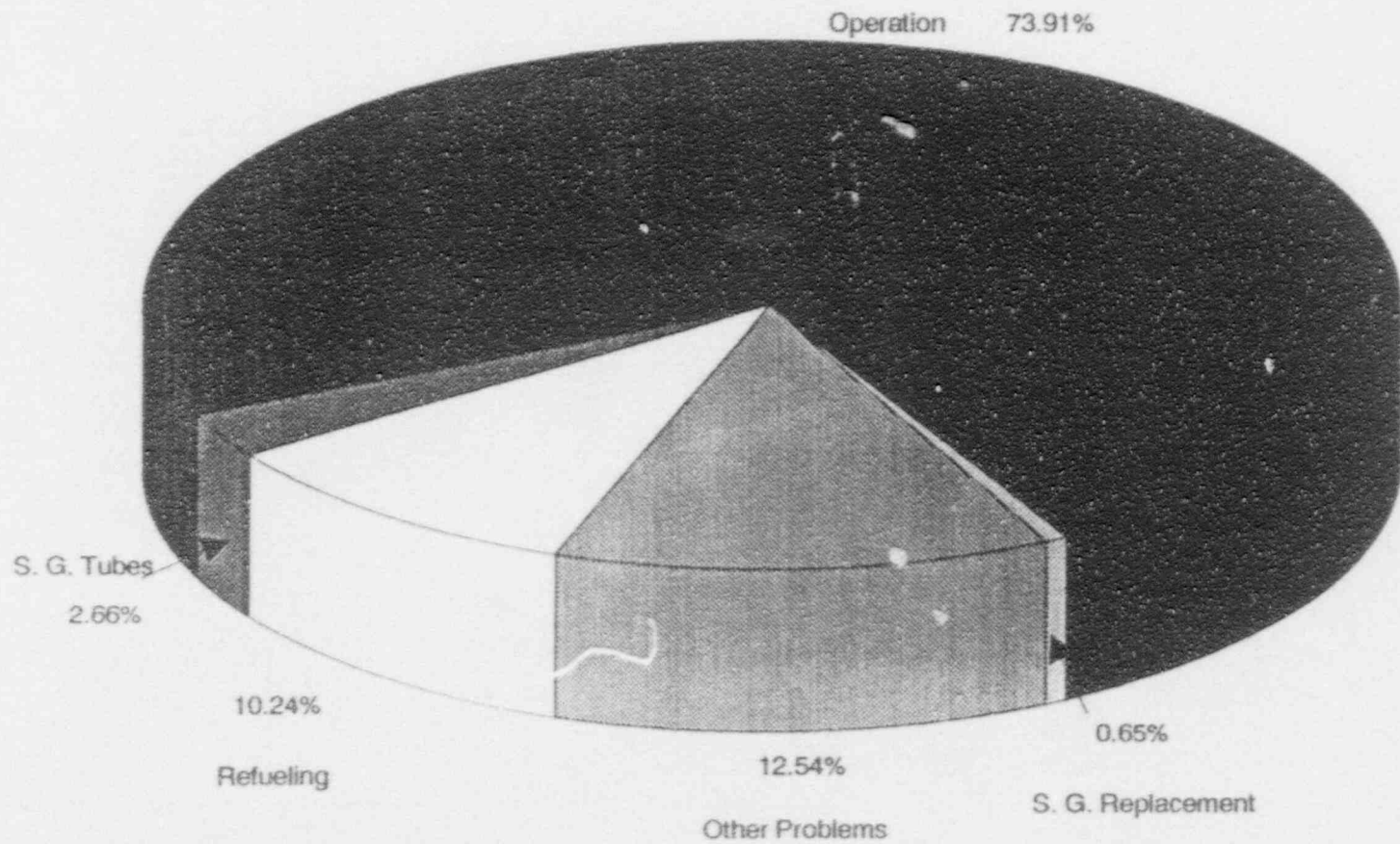
U. S. PWR Capacity Factor Components (1980-1984)



3-4

FIGURE 7

U. S. PWR Capacity Factor Components (1992)



3-5

TABLE 1 STEAM GENERATOR PROGRAM GOALS

| | U. S. YEARLY AVERAGES | | | | | | SAVINGS | |
|------------------------------|-----------------------|----------------------|---------------------|----------------------|----------------|----------------------|-------------------------|-------------------------|
| | ACTUAL 1980-1984 | | TARGET 1986-1991 | | ACTUAL 1992 | | TARGET 1986-1991 | ACTUAL 1992 |
| | NO. | COST (MILLION \$) | NO. | COST (MILLION \$) | NO. | COST (MILLION \$) | SAVINGS (MILLION \$) | SAVINGS (MILLION \$) |
| LOST CAPACITY | | | | | | | | |
| S/G REPLACEMENT | 1.5% | \$51 | .5% | \$17 | .6% | \$20 | \$34 | \$31 |
| FORCED & EXTENDED OUTAGES | 4.2% | \$145 | 2.5% | \$86 | 2.7% | \$93 | \$59 | \$52 |
| REPAIR & MAINTENANCE | | | | | | | | |
| TUBE PLUGGING | 2242 | \$5 | 2000 | \$4 | 4407 | \$9 | \$1 | (\$4) |
| TUBE SLEEVING | 3181 | \$32 | 3000 | \$30 | 4160 | \$42 | \$2 | (\$10) |
| RAD. EXPOSURE | 4670 mr | \$5 | 4000 mr | \$4 | 6000* mr | \$6 | \$1 | (\$1) |

3-6

*Estimated

Section 4 FORCED OUTAGES

Another indication of the ability of utilities to successfully manage steam generator issues is the number of forced outages caused by steam generator tube leaks. Forced outages not only cause a loss of production, but are expensive because repair teams have to be mobilized on short notice. In 1992 there were four forced outages in the U.S. due to steam generator tube leaks (Table 2). This compares with an average of 10 forced outages per year from 1976 to 1992 (Figure 8). By dividing the number of forced outages per year by the number of operating PWR's, a tube leak forced outage rate can be determined. In 1992 the forced outage rate was .06 which means there was one tube leak outage for every seventeen generating PWR's. The average tube leak forced outage rate per year in the U.S. from 1976 to 1992 was .23 or one tube leak outage per year for every four operating PWR's (Figure 9). Although Figure 9 shows an improving trend, the long range goal of utilities is to have no forced outages due to steam generator tube leaks. The verdict is still out on whether or not this goal is achievable.

TABLE 2 U. S. TUBE LEAK FORCED OUTAGES (1992)

| Plant | Date | Leak Rate | Outage Duration | Probable Cause |
|------------------|-------|-----------|-----------------|--------------------------------------|
| Mc Guire 1 | 1/92 | 250 gpd | 34 days | Freespan crack |
| ANO 2 | 3/92 | 360 gpd | 54 days | SCC(TS) |
| Prairie Island 1 | 3/92 | 144 gpd | 12 days | Axial crack (roll transition region) |
| Trojan | 11/92 | 200 gpd | indefinite | Circumferential fault at sleeve weld |

FIGURE 8

U. S. Steam Generator Tube Leak Forced Outages

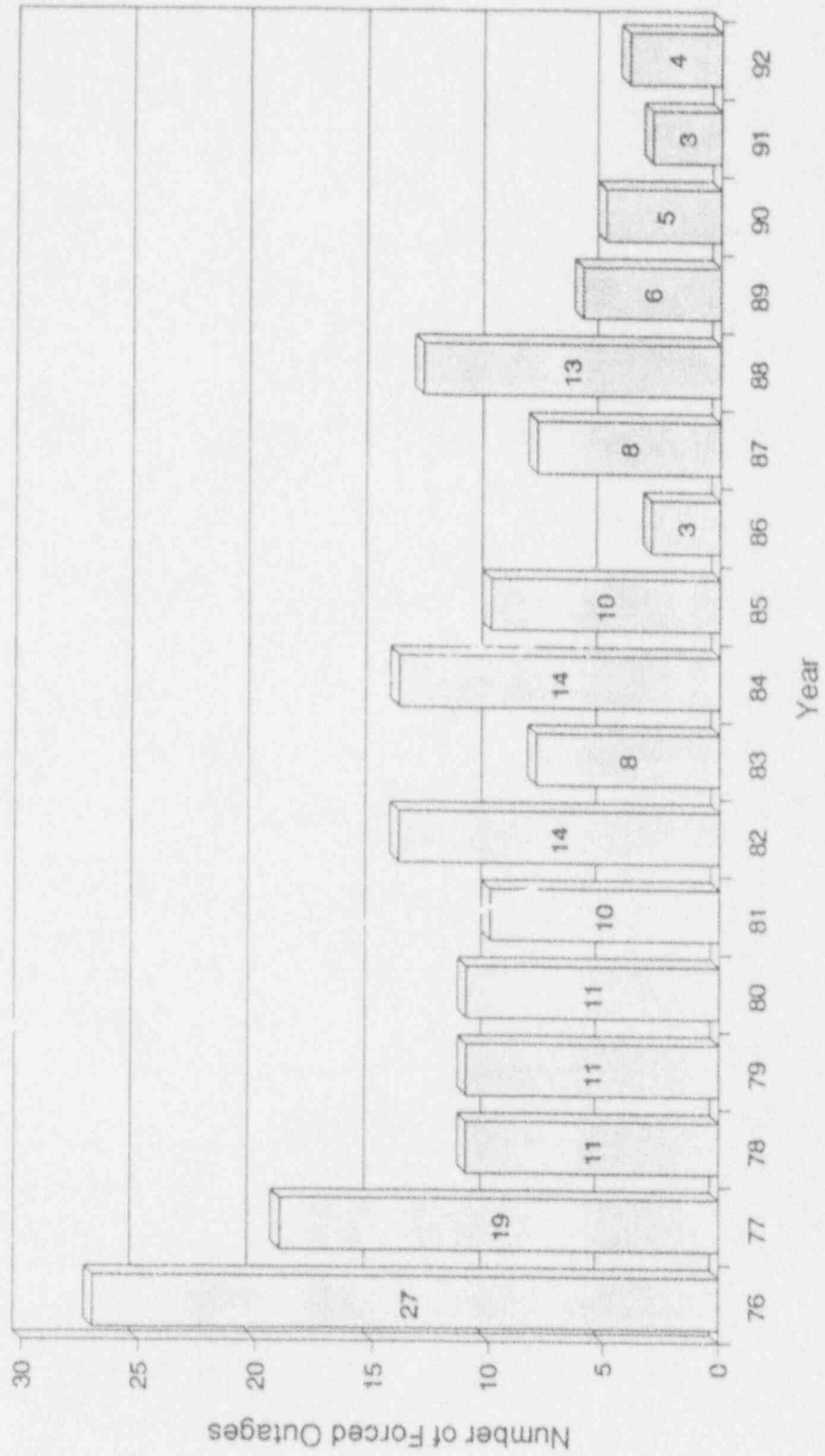
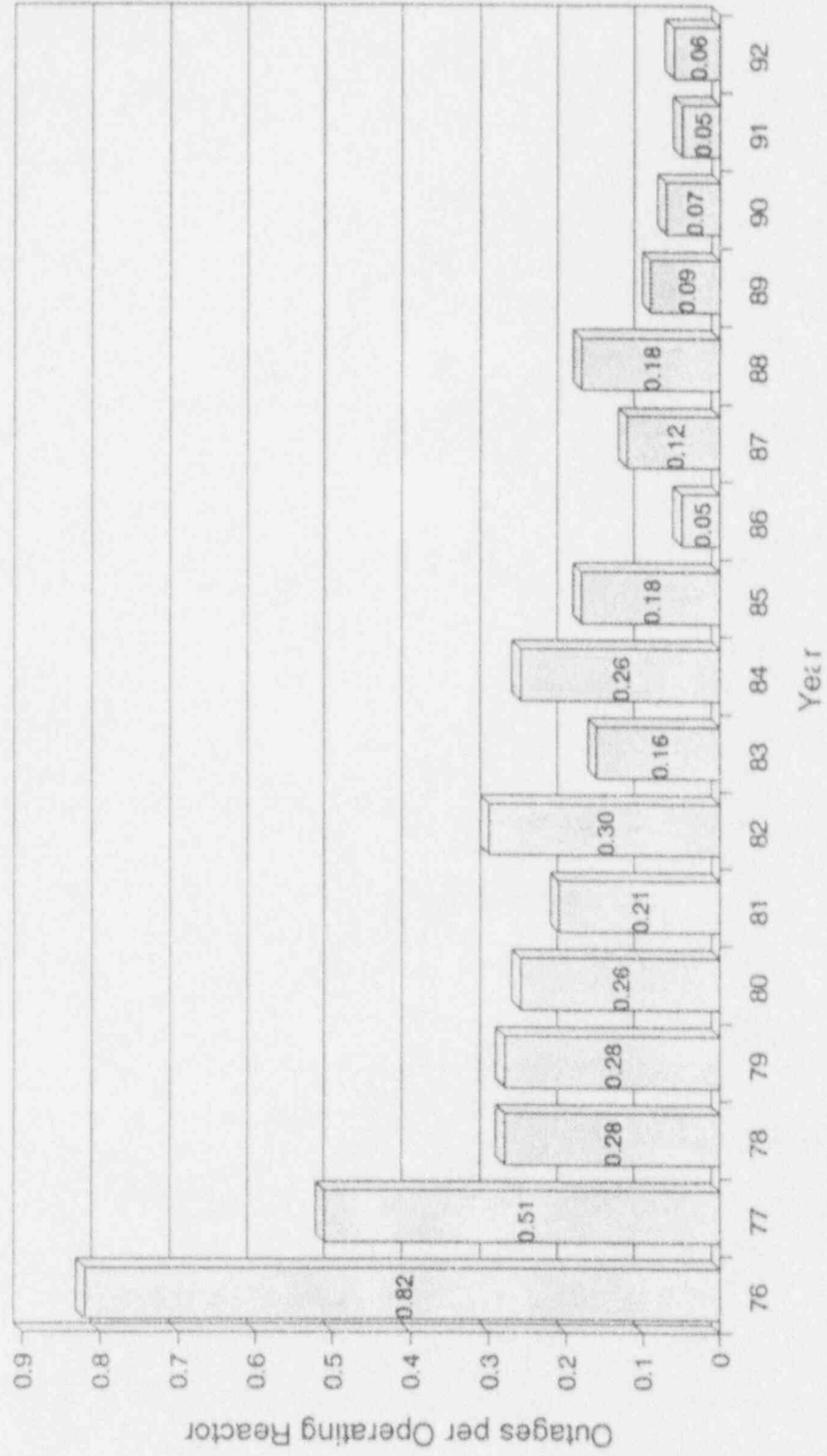


FIGURE 9.1

U. S. Steam Generator Tube Leak Forced Outage Rate



Section 5 PLANTS REPORTING PROBLEMS

EPRI has been tracking reported plant problems since early 1977. Table 3 shows the status of reported problems as of December 1992. Table 4 compares the 1992 results with those from 1977 and 1982. The largest increases in reported problems are I.D. initiated cracking, O.D. initiated SCC/IGA, and tube fretting. Over fifty percent of the operating units covered in this report indicate some occurrence of tube fretting and wear. The Steam Generator Strategic Management Project is focused on addressing these problems. Although the type of information provided in Tables 3 and 4 is useful for general trending of reported problems, the criteria for reporting is not always consistent and the data is difficult to verify. A more definitive method at looking at problem areas is to review the number of tubes plugged at each unit and the reported damage mechanism causing the tube to be removed from service. Appendix A provides this information on a yearly basis for each plant. A summary of the number of tubes plugged and sleeved at U.S. plants is provided in Table 5.

Table 3 Status of Units Reporting Problems (Dec. 1992)

| Plant | Date Com'l | NSSS | REPORTED PROBLEMS | | | | | | | | | | | | | | | | |
|-----------------|------------|------|-------------------|-------------------|-------------------|---------|----------|----------|----------|----------|----------|-----------------|---------|--------------|--------------------|--|--|--|--|
| | | | Wastage | Denting Sup Plate | Denting Tubesheet | Pitting | SCC (OD) | SCC (ID) | IGA (OD) | IGA (ID) | Fretting | High Cy Fatigue | Erosion | Water-hammer | Moisture Carryover | | | | |
| Almaraz 1 | Dec-81 | W | | | | | | | | | | | | | | | | | |
| Almaraz 2 | Sep-83 | W | | | | | | | | | | | | | | | | | |
| Angra 1 | Dec-84 | W | | | | | | | | | | | | | | | | | |
| ANC 1 | Dec-74 | B | | | | | | | | | | | | | | | | | |
| ANO 2 | Nov-80 | B | | | | | | | | | | | | | | | | | |
| Asco 1 | Dec-84 | W | | | | | | | | | | | | | | | | | |
| Asco 2 | Mar-86 | W | | | | | | | | | | | | | | | | | |
| Atucha 1 | Mar-74 | KWU | | | | | | | | | | | | | | | | | |
| Beaver Valley 1 | Oct-76 | W | | | | | | | | | | | | | | | | | |
| Beaver Valley 2 | Nov-87 | W | | | | | | | | | | | | | | | | | |
| Belleville 2 | Jan-89 | F | | | | | | | | | | | | | | | | | |
| Belleville 1 | Jun-88 | F | | | | | | | | | | | | | | | | | |
| Biblis A | Aug-74 | KWU | | | | | | | | | | | | | | | | | |
| Biblis B | Apr-76 | KWU | | | | | | | | | | | | | | | | | |
| Blayais 1 | Dec-81 | F | | | | | | | | | | | | | | | | | |
| Blayais 2 | Feb-83 | F | | | | | | | | | | | | | | | | | |
| Blayais 3 | Nov-83 | F | | | | | | | | | | | | | | | | | |
| Blayais 4 | Oct-83 | F | | | | | | | | | | | | | | | | | |
| Borssele | Jul-73 | KWU | | | | | | | | | | | | | | | | | |
| Braidwood 1 | Jul-88 | W | | | | | | | | | | | | | | | | | |
| Braidwood 2 | Oct-88 | W | | | | | | | | | | | | | | | | | |
| Brokdorf | Oct-86 | KWU | | | | | | | | | | | | | | | | | |
| Bugey 2 | Feb-79 | F | | | | | | | | | | | | | | | | | |
| Bugey 3 | Feb-79 | F | | | | | | | | | | | | | | | | | |
| Bugey 4 | Jul-79 | F | | | | | | | | | | | | | | | | | |
| Bugey 5 | Jan-80 | F | | | | | | | | | | | | | | | | | |
| Byron 1 | Sep-85 | W | | | | | | | | | | | | | | | | | |
| Byron 2 | Aug-87 | W | | | | | | | | | | | | | | | | | |

Table 3 Status of Units Reporting Problems (Dec. 1992) cont.

| Plant | Date Com'l | NSSS | REPORTED PROBLEMS | | | | | | | | | | | | |
|-----------------|------------|------|-------------------|-------------------|-------------------|---------|----------|----------|----------|----------|----------|-----------------|---------|--------------|--------------------|
| | | | Wastage | Denting Sup Plate | Denting Tubesheet | Pitting | SCC (OD) | SCC (ID) | IGA (OD) | IGA (ID) | Fretting | High Cy Fatigue | Erosion | Water-hammer | Moisture Carryover |
| Davis Besse 1 | Jul-78 | B | | | | 0 | | | 0 | | | | | | |
| Diablo Canyon 1 | May-85 | W | | 0 | | | | 0 | | | | 0 | | | |
| Diablo Canyon 2 | Mar-86 | W | | 0 | | | | 0 | | | | 0 | | | |
| Doel 1 | Feb-75 | W | | 0 | 0 | | 0 | 0 | 0 | | | 0 | | | |
| Doel 2 | Nov-75 | W | | 0 | 0 | | 0 | 0 | 0 | | | 0 | | | |
| Doel 3 | Oct-82 | FC | | 0 | | | 0 | 0 | 0 | | | 0 | | | |
| Doel 4 | Jul-86 | ACW | 0 | | | 0 | 0 | 0 | | | | 0 | | | |
| Emsland | Apr-88 | KWU | | | | | | | | | | | | | |
| Farley 1 | Dec-77 | W | | | | | 0 | 0 | 0 | | | 0 | | | |
| Farley 2 | Jul-81 | W | | | | | 0 | 0 | 0 | | | 0 | | | |
| Fessenheim 1 | Jan-78 | F | | | | | 0 | 0 | 0 | | | 0 | | | |
| Fessenheim 2 | Apr-78 | F | | | | | 0 | 0 | 0 | 0 | | 0 | | | 0 |
| Flamanville 1 | Dec-76 | F | | | | | | | | | | | | | |
| Flamanville 2 | Mar-87 | F | | | 0 | | | | | | | 0 | | | |
| Ft. Calhoun | Sep-73 | C | | 0 | | | 0 | | | | | | | | |
| Genkai 2 | Mar-81 | M | | | | | | | | | | | | | |
| Genkai 1 | Oct-75 | M | | | | | | | 0 | | | | | | |
| Ginna | Jul-70 | W | 0 | | | | 0 | 0 | 0 | | | 0 | 0 | | |
| Coesfeld | Feb-79 | KWU | 0 | | | | | | | | | 0 | | | |
| Girihnde | Aug-74 | KWU | | | | | | | | | | 0 | | | |
| Golich 1 | Jun-80 | F | | | | | | | | | | | | | |
| Greifenheinfeld | Dec-81 | KWU | | | | | | | | | | | | | |
| Gravelines 1 | Nov-80 | F | | | 0 | | 0 | 0 | | | | 0 | | | |
| Gravelines 2 | Dec-80 | F | | | 0 | | 0 | 0 | | | | 0 | | | |
| Gravelines 3 | Jun-81 | F | | | 0 | | | 0 | | | | 0 | | | |
| Gravelines 4 | Oct-81 | F | | | 0 | | | 0 | | | | 0 | | | |
| Gravelines 5 | Jan-85 | F | | | 0 | | | | | | | 0 | | | |
| Gravelines 6 | Nov-85 | F | | | | | | | | | | 0 | | | |

Table 3 Status of Units Reporting Problems (Dec. 1992) cont.

| Plant | Date Com't | NSSS | REPORTED PROBLEMS | | | | | | | | | | | | |
|----------------------|------------|------|-------------------|--------------------|--------------------|---------|----------|----------|----------|----------|----------|-----------------|---------|--------------|--------------------|
| | | | Wastage | Dentling Sup Plate | Dentling Tubesheet | Pitting | SCC (OD) | SCC (ID) | IGA (OD) | IGA (ID) | Fretting | High Cy Fatigue | Erosion | Water-hammer | Molsture Carryover |
| Ikata 1 | Sep-77 | M | | | | | | 0 | | | | 0 | | | |
| Ikata 2 | Mar-82 | M | | | | | | | | | | 0 | | | |
| Indian Point 2 | Aug-74 | W | | 0 | | 0 | | | | | | | | 0 | |
| Indian Point 3 (Org) | Aug-76 | W | 0 | 0 | 0 | 0 | | | | | | | | 0 | |
| Indian Point 3 (Rpl) | Jun-89 | W | | | | | | | | | | | | | |
| Isar 2 | Jan-88 | KWU | | | | | | | | | | | | | |
| Jose Cabrera | Aug-69 | W | 0 | | | | | 0 | 0 | 0 | | 0 | | | |
| Kewaunee | Jun-74 | W | | 0 | 0 | | 0 | 0 | 0 | | | | | | |
| Kori 1 | Jun-77 | W | | | | 0 | | | 0 | | | | | | |
| Kori 3 | Sep-85 | W | | | | | | | | | | 0 | | | |
| Kori 4 | Apr-86 | W | | | | | | | | | | 0 | | | |
| Lovilsa 1 | May-77 | AEE | | | | | | | | | | | | | |
| Lovilsa 2 | Jan-81 | AEE | | | | | | | | | | | | | |
| Maine Yankee | Dec-72 | C | 0 | 0 | | 0 | | 0 | 0 | 0 | | 0 | | | |
| McGuire 1 | Aug-80 | W | | | | | 0 | 0 | 0 | | | 0 | | | |
| McGuire 2 | Mar-84 | W | | | | | | | | | | 0 | | | |
| Mihama 1 | Nov-70 | W | 0 | | | 0 | | | | | | 0 | 0 | | |
| Mihama 2 | Jul-72 | M | 0 | | | | 0 | 0 | 0 | | | 0 | | | |
| Mihama 3 | Dec-76 | M | | | | | | | | | | 0 | | | |
| Millstone 2 | Dec-75 | C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Millstone 3 | Apr-86 | W | | | | | | | | | | 0 | | | |
| Neckarwestheim 1 | Jun-76 | KWU | 0 | | | | | | | | | 0 | | | |
| Neckarwestheim 2 | Jan-89 | KWU | | | | | | | 0 | | | | | | |
| Nogent/Seine 1 | Feb-88 | F | | | 0 | | | | 0 | | | | | | |
| Nogent/Seine 2 | May-89 | F | | | 0 | | | | | | | 0 | | | |
| North Anna 1 | Jun-78 | W | | 0 | | | 0 | 0 | 0 | | | 0 | | | |
| North Anna 2 | Dec-80 | W | 0 | 0 | | | 0 | 0 | 0 | | | 0 | | | |
| Obrigheim (Org) | Oct-68 | KWU | | | | | 0 | 0 | 0 | | | | | | |

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Table 3 Status of Units Reporting Problems (Dec. 1992) cont.

| Plant | Date Com'l | NSSS | REPORTED PROBLEMS | | | | | | | | | | | | |
|---------------------|------------|------|-------------------|-------------------|-------------------|---------|----------|----------|----------|----------|----------|-----------------|---------|--------------|--------------------|
| | | | Wastage | Denting Sup Plate | Denting Tubesheet | Pitting | SCC (OD) | SCC (ID) | IGA (OD) | IGA (ID) | Fretting | High Cy Fatigue | Erosion | Water-hammer | Moisture Carryover |
| Obringhelm (Rpl) | Aug-83 | KWU | | | | | | | | | | | | | |
| Oconee 1 | Jul-73 | B | | | | | | | | | | 0 | 0 | | |
| Oconee 2 | Sep-74 | B | | | | | | | | | | 0 | 0 | | |
| Oconee 3 | Dec-74 | B | | | | | | | | | | 0 | 0 | | |
| Ohl 1 | Mar-79 | W | | | | | | 0 | 0 | | | | | | |
| Ohl 2 | Dec-79 | M | | | | | | 0 | | | 0 | | | | |
| Ohl 3 | Dec-91 | M | | | | | | | | | | | | | |
| Palisades (Org) | Dec-71 | C | 0 | 0 | | | 0 | | 0 | | | | | 0 | |
| Palisades (Rpl) | Mar-91 | C | | | | | | | | | | | | | |
| Palo Verde 1 | Jan-86 | C | | | | | | | | | 0 | | | | |
| Palo Verde 2 | Sep-86 | C | | | | | | | | | 0 | | | | |
| Palo Verde 3 | Jan-88 | C | | | | | | | | | | | | | |
| Paluel 1 | Dec-85 | F | | | 0 | | | 0 | | | 0 | | | | |
| Paluel 2 | Dec-85 | F | | | 0 | | | 0 | | | 0 | | | | |
| Paluel 3 | Feb-86 | F | | | 0 | | | | | | 0 | | | | |
| Paluel 4 | Jun-86 | F | | | 0 | | | 0 | | | 0 | | | | |
| Penly 1 | Dec-90 | F | | | | | | | | | | | | | |
| Penly 2 | Feb-92 | F | | | | | | | | | | | | | |
| Philippsburg 2 | Dec-84 | KWU | | | | | | | | | | | | | |
| Point Beach 1 (Org) | Dec-70 | W | 0 | 0 | | | 0 | | 0 | | 0 | | | | |
| Point Beach 1 (Rpl) | Apr-84 | W | | | | | | | | | | | | | |
| Point Beach 2 | Oct-72 | W | 0 | 0 | | | 0 | | 0 | | | | | | |
| Prairie Island 1 | Dec-73 | W | 0 | | | | 0 | 0 | 0 | | 0 | | | | |
| Prairie Island 2 | Dec-74 | W | 0 | | | | | 0 | | | 0 | | | | |
| Rancho Seco | Apr-75 | B | | | | | 0 | | 0 | | | 0 | | 0 | |
| Ringhals 2 (Org) | May-75 | W | | 0 | | | 0 | 0 | 0 | | 0 | | | 0 | |
| Ringhals 2 (Rpl) | Aug-89 | W | | | | | | | | | | | | | |
| Ringhals 3 | Apr-81 | W | | | | | 0 | 0 | 0 | | 0 | | | 0 | |

Table 3 Status of Units Reporting Problems (Dec. 1992) cont.

| Plant | Date Com'l | NSSS | REPORTED PROBLEMS | | | | | | | | | | | | | | |
|-----------------------|------------|------|-------------------|-------------------|-------------------|---------|----------|----------|----------|----------|----------|-----------------|---------|--------------|--------------------|---|---|
| | | | Wastage | Denting Sup Plate | Denting Tubesheet | Pitting | SCC (OD) | SCC (ID) | IGA (OD) | IGA (ID) | Fretting | High Cy Fatigue | Erosion | Water-hammer | Moisture Carryover | | |
| Ringhals 4 | Oct-83 | W | | | | | | 0 | 0 | 0 | | | | 0 | | | |
| Robinson 2 (Org) | Mar-71 | W | 0 | 0 | | | | 0 | | 0 | | | | | | | |
| Robinson 2 (Rpl) | Oct-84 | W | | | | | | | | | | | | | | | |
| Saint-Alban 1 | Aug-85 | F | | | 0 | | | | | | | | | | | | |
| Saint-Alban 2 | Jul-86 | F | | | 0 | | | | | 0 | | | | 0 | | | |
| Salem 1 | Jun-77 | W | 0 | 0 | | | | | | 0 | | | | 0 | | | |
| Salem 2 | Oct-81 | W | | | | 0 | | | | 0 | | | | 0 | | | |
| San Onofre 1 | Jan-68 | W | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | | | 0 | | 0 | 0 |
| San Onofre 2 | Aug-83 | C | | | 0 | | | | | | | | | 0 | | | |
| San Onofre 3 | Apr-84 | C | | | 0 | | | | | | | | | 0 | | | |
| Seabrook | Jul-90 | W | | | | | | | | | | | | | | | |
| Sendai 1 | Jul-84 | M | | | | | | | | | | | | 0 | | | |
| Sendai 2 | Nov-85 | M | | | | | | | | | | | | 0 | | | |
| Sequoyah 1 | Jul-81 | W | 0 | 0 | | | 0 | 0 | | | | | | 0 | | | |
| Sequoyah 2 | Jun-82 | W | 0 | 0 | | | 0 | 0 | | | | | | 0 | | | |
| Shearon Harris | May-87 | W | | 0 | 0 | | | | | | | | | 0 | | | |
| South Texas Proj. 1 | Aug-88 | W | | | | | | | | | | | | 0 | | | |
| South Texas Proj. 2 | Jun-89 | W | | | | | | | | | | | | 0 | | | |
| St. Lucie 1 | Dec-76 | C | | 0 | 0 | | 0 | | | 0 | | | | 0 | | 0 | |
| St. Lucie 2 | Aug-83 | C | | | | | | | | 0 | | | | 0 | | | |
| St.-Laur.-des-Eaux B1 | Aug-83 | F | | | | | 0 | 0 | 0 | | | | | 0 | | | |
| St.-Laur.-des-Eaux B2 | Aug-83 | F | | | | | | 0 | | | | | | 0 | | | |
| Stade | Jan-72 | KWU | 0 | | | | | | | | | | | | | | |
| Summer 1 | Jan-84 | W | | | | | 0 | 0 | | | | | | | | | |
| Surry 1 (Org) | Dec-72 | W | 0 | 0 | 0 | | | | | | | | | | | 0 | |
| Surry 1 (Rpl) | Jul-81 | W | | | | | | | | | | | | | | | |
| Surry 2 (Org) | May-73 | W | 0 | 0 | 0 | | | | | 0 | | | | | | | |
| Surry 2 (Rpl) | Sep-80 | W | | | | | | | | | | | | | | | |

Table 3 Status of Units Reporting Problems (Dec. 1992) cont.

| Plant | Date Com'l | NSSS | REPORTED PROBLEMS | | | | | | | | | | | | | | |
|----------------------|------------|------|-------------------|-------------------|-------------------|---------|----------|----------|----------|----------|----------|-----------------|---------|--------------|--------------------|--|---|
| | | | Wastage | Denting Sup Plate | Denting Tubesheet | Pitting | SCC (OD) | SCC (ID) | IGA (OD) | IGA (ID) | Fretting | High Cy Fatigue | Erosion | Water-hammer | Moisture Carryover | | |
| Takahama 1 | Nov-74 | W | 0 | | | | | 0 | 0 | | | | | | | | |
| Takahama 2 | Nov-75 | M | | | | | | 0 | 0 | | | | | | | | |
| Takahama 3 | Jan-85 | M | | | | | | | | | | | | | | | |
| Takahama 4 | Jun-85 | M | | | | | | | | | | | | | | | |
| Three Mile Island | Sep-74 | B | | | | | | 0 | 0 | | | | | 0 | | | |
| Tihange 1 | Sep-75 | W | 0 | 0 | 0 | 0 | | 0 | 0 | | | | | | | | |
| Tihange 2 | Feb-83 | FC | | 0 | | | | 0 | 0 | | | | | | | | |
| Tihange 3 | Nov-85 | FC | | | | | | 0 | 0 | | | | | | | | |
| Tomari 1 | Jun-89 | M | | | | | | | | | | | | | | | |
| Tomari 2 | Apr-91 | M | | | | | | | | | | | | | | | |
| Tricastin 1 | Dec-80 | F | | | 0 | 0 | | 0 | 0 | | | | | | | | |
| Tricastin 2 | Dec-80 | F | | | 0 | 0 | | 0 | 0 | | | | | | | | |
| Tricastin 3 | May-81 | F | | | 0 | 0 | | 0 | 0 | | | | | | | | |
| Tricastin 4 | Nov-81 | F | | | 0 | 0 | | 0 | 0 | | | | | | | | |
| Trillo 1 | Aug-88 | K | | | | | | | | | | | | | | | |
| Trojan | May-76 | W | | | | 0 | | 0 | 0 | | | | | | | | |
| Tsuruga 2 | Mar-87 | M | | | | | | | | | | | | | | | |
| Turkey Point 3 (Org) | Dec-72 | W | 0 | 0 | 0 | | | 0 | 0 | | | | | | | | |
| Turkey Point 3 (Rpl) | Apr-82 | W | | | | | | | | | | | | | | | 0 |
| Turkey Point 4 (Org) | Sep-73 | W | 0 | 0 | 0 | | | 0 | 0 | | | | | | | | |
| Turkey Point 4 (Rpl) | May-83 | W | | | | | | | | | | | | | | | |
| Unterwesser | Oct-78 | KWU | | | 0 | 0 | | | | | | | | | | | |
| Vandellos 2 | Dec-87 | W | | | | | | | | | | | | | | | |
| Vogtle 1 | May-87 | W | | | | | | | | | | | | | | | |
| Vogtle 2 | May-89 | W | | | | | | | | | | | | | | | |
| Waterford 3 | Sep-85 | C | | | | | | | | | | | | | | | |
| Wolf Creek | Sep-85 | W | | | | | | | | | | | | | | | |
| Yangkwong 1 | Aug-86 | W | | | | | | | | | | | | | | | |

Table 3 Status of Units Reporting Problems (Dec. 1992) cont.

| | | REPORTED PROBLEMS | | | | | | | | | | | | | |
|-------------|--------|-------------------|---------|----------------------|----------------------|---------|-------------|-------------|-------------|-------------|----------|--------------------|---------|------------------|-----------------------|
| Plant | Date | NSSS | Wastage | Denting Sup Plate | Denting Tubesheet | Pitting | SCC (OD) | SCC (ID) | IGA (OD) | IGA (ID) | Fretting | High Cy Fatigue | Erosion | Water- hammer | Moisture Carryover |
| Yangkwong 2 | Jun-87 | W | | | | | | | | | | | | | |
| Yankee Rowe | Jul-61 | W | 0 | | | | 0 | | 0 | | 0 | | | | |
| Zion 1 | Jan-73 | W | 0 | | | | 0 | 0 | 0 | | 0 | | | | |
| Zion 2 | Sep-74 | W | 0 | | | | 0 | 0 | 0 | | 0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

TABLE 4 UNITS REPORTING STEAM GENERATOR PROBLEMS

| DATE | 3/77 | 8/82 | 12/92 |
|--|------|------|--------|
| NO. UNITS: | 52 | 99 | 205 |
| REPORTED PROBLEMS: | | | |
| Denting | | | |
| -Tube Support Corrosion | 15 | 30 | 34 |
| -Tube Sheet Corrosion | 6 | 12 | 50 |
| Tubing Corrosion | | | |
| -Wastage | 19 | 28 | 39 |
| -Pitting | 0 | 3 | 14 |
| -ID Cracking | 1 | 22 | 90 |
| -OD SCC/IGA | 6 | 22 | 74 |
| Mechanical Damage | | | |
| -Fretting | 9 | 15 | 117 |
| -Fatigue Cracking | 3 | 4 | 10 |
| -Impingement | 0 | 2 | 9 |
| No Problems | 26 | 32 | 33 |
| No problems after 5 years ops (no. of units / no. > 5 yrs. ops) . | 1/14 | 4/57 | 13/168 |

| | | | |
|--|----------------|----------|-----------------|
| Units reporting no problems after five years of operation | Trino | Kewaunee | Brokdorf |
| | | Mihama 3 | Chinon B3 |
| | Neckarwestheim | | Cruas 3 |
| | Davis Besse | | Cruas 4 |
| | | | Genkai 2 |
| | | | Grehnde |
| | | | Loviisa 1 |
| | | | Loviisa 2 |
| | | | Obrigheim Rep. |
| | | | Philippsburg 2 |
| | | | Robinson 2 Rep. |
| | | | Surry 2 Rep. |
| | | | Unterwesser |

Table 5

Status of U.S. Steam Generators (Dec. 1992)

| | COMM. OPS. | NO. OF LOOPS | SG MODEL | NO. OF TUBES PER S.G. | TUBE MATERIAL | NO. OF TUBES PLUGGED | NO. OF SLEEVES |
|-----------------------------|---------------|-----------------|-------------|-----------------------------|------------------|----------------------------|-------------------|
| BABCOCK & WILCOX | | | | | | | |
| Arkansas Nuclear One 1 | Dec-74 | 2 | OTSG | 15531 | Inc-600S | 642 | 902 |
| Crystal River 3 | Mar-77 | 2 | OTSG | 15531 | Inc-600S | 162 | 0 |
| Davis Besse | Jul-78 | 2 | OTSG | 15547 | Inc-600S | 74 | 0 |
| Oconee 1 | Jul-73 | 2 | OTSG | 15531 | Inc-600S | 1266 | 475 |
| Oconee 2 | Sep-74 | 2 | OTSG | 15531 | Inc-600S | 180 | 0 |
| Oconee 3 | Dec-74 | 2 | OTSG | 15531 | Inc-600S | 376 | 247 |
| Rancho Seco | Apr-75 | 2 | OTSG | 15547 | Inc-600TT | 221 | 508 |
| Three Mile Island 1 | Sep-74 | 2 | OTSG | 15531 | Inc-600S | 1640 | 250 |
| COMBUSTION ENG. | | | | | | | |
| Arkansas Nuclear One 2 | Mar-80 | 2 | 2815 | 8411 | Inc-600MA | 367 | 444 |
| Calvert Cliffs 1 | May-75 | 2 | 67 | 8519 | Inc-600MA | 195 | 0 |
| Calvert Cliffs 2 | Apr-77 | 2 | 67 | 8519 | Inc-600MA | 113 | 0 |
| Fort Calhoun | Sep-73 | 2 | 71 | 5005 | Inc-600MA | 109 | 0 |
| Maine Yankee | Dec-72 | 3 | 67 | 5703 | Inc-600MA | 210 | 0 |
| Millstone 2 (Repl.) | Dec-75 | 2 | BWC | - | Inc-690TT | 0 | 0 |
| Palisades (Repl.) | Dec-71 | 2 | N/A | 8219 | Inc-600MA | 617 | 0 |
| Palo Verde 1 | Jan-86 | 2 | 80 | 11012 | Inc-600MA | 140 | 0 |
| Palo Verde 2 | Sep-86 | 2 | 80 | 11012 | Inc-600MA | 310 | 0 |
| Palo Verde 3 | Jan-88 | 2 | 80 | 11012 | Inc-600MA | 199 | 0 |
| San Onofre 2 | Aug-83 | 2 | 3410 | 9350 | Inc-600MA | 64 | 0 |
| San Onofre 3 | Apr-84 | 2 | 3410 | 9350 | Inc-600MA | 554 | 0 |
| St. Lucie 1 | Dec-76 | 2 | 67 | 8519 | Inc-600MA | 1688 | 0 |
| St. Lucie 2 | Aug-83 | 2 | 3410 | 8411 | Inc-600MA | 458 | 0 |
| Waterford 3 | Sep-85 | 2 | 3410 | 8485 | Inc-600MA | 518 | 0 |

Table 5

Status of U.S. Steam Generators (cont.)

| | COMM. OPS. | NO. OF LOOPS | SG MODEL | NO. OF TUBES PER S.G. | TUBE MATERIAL | NO. OF TUBES PLUGGED | NO. OF SLEEVES |
|------------------------|---------------|-----------------|-------------|-----------------------------|------------------|----------------------------|-------------------|
| WESTINGHOUSE | | | | | | | |
| Beaver Valley 1 | Oct-76 | 3 | 51 | 3388 | Inc-600MA | 1054 | 0 |
| Beaver Valley 2 | Nov-87 | 3 | 51M | 3376 | Inc-600MA | 33 | 0 |
| Braidwood 1 | Jul-88 | 4 | D4 | 4578 | Inc-600MA | 216 | 0 |
| Braidwood 2 | Oct-88 | 4 | D5 | 4530 | Inc-600TT | 2 | 0 |
| Byron 1 | Sep-85 | 4 | D4 | 4578 | Inc-600MA | 239 | 0 |
| Byron 2 | Aug-87 | 4 | D5 | 4530 | Inc-600TT | 72 | 0 |
| Callaway | Dec-84 | 4 | F | 5626 | Inc-600MA | 104 | 0 |
| Catawba 1 | Jun-85 | 4 | D3 | 4674 | Inc-600MA | 740 | 183 |
| Catawba 2 | Aug-86 | 4 | D5 | 4530 | Inc-600TT | 60 | 0 |
| Comanche Peak 1 | Aug-90 | 4 | D4 | 4578 | Inc-600MA | 0 | 0 |
| Connecticut Yankee | Jan-68 | 4 | 27 | 3794 | Inc-600MA | 1189 | 0 |
| Cook 1 | Aug-75 | 4 | 51 | 3388 | Inc-600MA | 952 | 1840 |
| Cook 2 (Repl.) | Jul-78 | 4 | 54F | 3592 | Inc-690TT | 0 | 0 |
| Diablo Canyon 1 | May-85 | 4 | 51 | 3388 | Inc-600MA | 40 | 0 |
| Diablo Canyon 2 | Mar-86 | 4 | 51 | 3388 | Inc-600MA | 15 | 0 |
| Farley 1 | Dec-77 | 3 | 51 | 3388 | Inc-600MA | 358 | 136 |
| Farley 2 | Jul-81 | 3 | 51 | 3388 | Inc-600MA | 817 | 29 |
| Ginna | Jul-70 | 2 | 44 | 3260 | Inc-600MA | 504 | 1687 |
| Indian Point 2 | Aug-74 | 4 | 44 | 3262 | Inc-600MA | 1072 | 0 |
| Indian Point 3 (Repl.) | Aug-76 | 4 | 44F | 3214 | Inc-690TT | 0 | 0 |
| Kewaunee | Jun-74 | 2 | 51 | 3388 | Inc-600MA | 496 | 4344 |
| McGuire 1 | Dec-81 | 4 | D2 | 4674 | Inc-600MA | 1492 | 855 |
| McGuire 2 | Mar-84 | 4 | D3 | 4674 | Inc-600MA | 1099 | 615 |
| Millstone 3 | Apr-86 | 4 | F | 5626 | Inc-600TT | 21 | 0 |
| North Anna 1 | Jun-78 | 3 | 51 | 3388 | Inc-600MA | 2065 | 0 |

Table 5

Status of U.S. Steam Generators (cont.)

| | COMM. OPS. | NO. OF LOOPS | SG MODEL | NO. OF TUBES PER S.G. | TUBE MATERIAL | NO. OF TUBES PLUGGED | NO. OF SLEEVES |
|------------------------|---------------|-----------------|-------------|-----------------------------|------------------|----------------------------|-------------------|
| WESTINGHOUSE | | | | | | | |
| North Anna 2 | Dec-80 | 3 | 51 | 3388 | Inc-600MA | 712 | 0 |
| Point Beach 1 (Repl.) | Dec-70 | 2 | 44F | 3260 | Inc-600TT | 5 | 0 |
| Point Beach 2 | Oct-72 | 2 | 44 | 3260 | Inc-600MA | 589 | 3597 |
| Prairie Island 1 | Dec-73 | 2 | 51 | 3388 | Inc-600MA | 194 | 319 |
| Prairie Island 2 | Dec-74 | 2 | 51 | 3388 | Inc-600MA | 237 | 0 |
| Robinson 2 (Repl.) | Mar-71 | 3 | 44F | 3214 | Inc-600TT | 3 | 0 |
| Salem 1 | Jun-77 | 4 | 51 | 3388 | Inc-600MA | 480 | 0 |
| Salem 2 | Jul-81 | 4 | 51 | 3388 | Inc-600MA | 440 | 0 |
| San Onofre 1 | Jan-68 | 3 | 27 | 3794 | Inc-600MA | 1456 | 6929 |
| Seabrook | Jul-90 | 4 | F | 5626 | Inc-600TT | 10 | 0 |
| Sequoyah 1 | Jul-81 | 4 | 51 | 3388 | Inc-600MA | 144 | 0 |
| Sequoyah 2 | Jun-82 | 4 | 51 | 3388 | Inc-600MA | 434 | 0 |
| Shearon Harris | May-87 | 3 | D4 | 4578 | Inc-600MA | 32 | 0 |
| South Texas 1 | Aug-88 | 4 | E | 4850 | Inc-600MA | 15 | 0 |
| South Texas 2 | Jun-89 | 4 | E | 4850 | Inc-600MA | 15 | 0 |
| Summer | Jan-84 | 3 | D3 | 4674 | Inc-600MA | 1573 | 735 |
| Surry 1 (Repl.) | Dec-72 | 3 | 51F | 3342 | Inc-600TT | 14 | 0 |
| Surry 2 (Repl.) | May-73 | 3 | 51F | 3342 | Inc-600TT | 3 | 0 |
| Trojan | May-76 | 4 | 51 | 3388 | Inc-600MA | 2442 | 1063 |
| Turkey Point 3 (Repl.) | Dec-72 | 3 | 44F | 3214 | Inc-600TT | 62 | 0 |
| Turkey Point 4 (Repl.) | Sep-73 | 3 | 44F | 3214 | Inc-600TT | 33 | 0 |
| Vogtle 1 | May-87 | 4 | F | 5626 | Inc-600TT | 11 | 0 |
| Vogtle 2 | May-89 | 4 | F | 5626 | Inc-600TT | 15 | 0 |
| Wolf Creek | Sep-85 | 4 | F | 5626 | Inc-600TT | 39 | 0 |
| Yankee Rowe | Jul-61 | 4 | 13 | 1620 | 304 SS | 334 | 0 |

Table 5

Status of U.S. Steam Generators (cont.)

| | COMM. OPS. | NO. OF LOOPS | SG MODEL | NO. OF TUBES PER S.G. | TUBE MATERIAL | NO. OF TUBES PLUGGED | NO. OF SLEEVES |
|--------------|---------------|-----------------|-------------|-----------------------------|------------------|----------------------------|-------------------|
| WESTINGHOUSE | | | | | | | |
| Zion 1 | Dec-73 | 4 | 51 | 3388 | Inc-600MA | 907 | 745 |
| Zion 2 | Sep-74 | 4 | 51 | 3388 | Inc-600MA | 525 | 252 |

Section 6 TUBE FRETTING AND WEAR

The Steam Generator Strategic Management Project has also been studying steam generator vibration induced tube wear. This wear is caused by relative movement between the tube and support structure and is enhanced by clearances provided for ease of manufacturing. Depending on the tube dynamics, tube leaks due to fretting and wear can be produced within a relatively short period of time. Fifty-seven percent of the nuclear units covered in this survey report some type of fretting and wear problem. In 1992, 579 steam generator tubes were plugged due to fretting and wear.

In order to better understand the magnitude and severity of this problem, additional information on the number of indications, general location and wear rate (mils/year) was requested from TAG members. Table 6 summarizes the information received. As expected, the majority of fretting and wear indications reported are in the preheater areas and at the AVE intersections. The reported wear rates ranged from .3 to 3.4 mils per year with a maximum wear rate reported by the Japanese of 12.1 mils per year. It is realized that Table 6 represents only a limited amount of industry data and it is hoped that additional information on the number of indications and wear rates can be obtained and reported in future publications.

TABLE 6 TUBE FRETTING AND WEAR

| PLANT | GENERAL AREA | NO. OF INDICATIONS(1) | NO. OF TUBES PLUGGED(1) | WEAR RATE (mils/year) |
|--------------------|----------------------------|-----------------------|-------------------------|-----------------------|
| Almaraz 1 | Preheater (<1992) | 180 | 25 | 0.6 |
| | Preheater (1992) | 228 | 16 | 1.1 |
| | AVB (<1992) | 278 | 12 | 1.5 |
| | AVB (1992) | 378 | 0 | 1.1 |
| Almaraz 2 | Preheater (<1992) | 139 | 17 | 1.3 |
| | Preheater (1992) | 144 | 24 | 1.7 |
| | AVB (<1992) | 192 | 4 | 1.6 |
| | AVB (1992) | 205 | 2 | 0.5 |
| ANO-2 | Batwing | 332 | 60 | - |
| ASCO 1 | Preheater (<1992) | 79 | 4 | 2.8 |
| | Preheater (1992) | 105 | 6 | 2.2 |
| | AVB (<1992) | 221 | 13 | 2 |
| | AVB (1992) | 254 | 5 | 1.9 |
| ASCO 2 | AVB (<1992) | 52 | 2 | - |
| | AVB (1992) | 67 | 0 | 0.6 |
| Beaver Valley 1 | AVB | 10 | 10 | - |
| | Cold Leg | 88 | 0 | <3.0 |
| Beaver Valley 2 | AVB | 13 | 0 | - |
| Connecticut Yankee | AVB | 191 | 14 | - |
| Diablo Canyon 1 | AVB | 54 | 0 | - |
| Diablo Canyon 2 | AVB | 28 | 0 | - |
| Jose Cabrera | AVB (<1992) | 135 | 19 | 0.3 |
| | AVB (1992) | 147 | 2 | 0.5 |
| Millstone 3 | AVB | 61 | 10 | - |
| St. Lucie 2 | Diagonal & Vertical Straps | 478 | 347 | - |
| Sequoyah 1 | AVB | 37 | 2 | 2.8 |

TABLE 6 TUBE FRETTING AND WEAR (cont.)

| PLANT | GENERAL AREA | NO. OF INDICATIONS(1) | NO. OF TUBES PLUGGED(1) | WEAR RATE (mils/year) |
|----------------|--------------|-----------------------|-------------------------|-----------------------|
| Sequoyah 2 | AVB | 125 | 14 | 2.8 |
| Turkey Point 3 | AVB | 95 | 10 | <2.0 |
| Turkey Point 4 | AVB | 2 | 0 | <2.0 |
| Vandellos 2 | AVB (<1992) | 733 | 172 | 2.5 |
| | AVB (1992) | 1529 | 30 | 3.4 |

Section 7 STEAM GENERATOR TUBE SLEEVING

Steam generator tube sleeving has been used as an effective alternative to plugging. Sleeving consists of installing a smaller diameter tube (sleeve) into a damaged tube. The sleeve ends are expanded and sealed to provide both a seal and redundant load carrying path. Although sleeving is generally more expensive than plugging, it has the advantage of leaving the tube in service and providing additional tube strength. Most sleeves to date have been installed in the tube sheet region. A few sleeves have been installed at other locations in the steam generator and have been used to improve structural support and provide vibration damping. Table 7 is a listing of the number of tubes sleeved at each plant. To date over 48,000 tubes have been sleeved. Table 8 (Reference 6) gives additional information on sleeving times and radiation exposure for selected sleeving campaigns. As more automated techniques have been developed, the installation time and exposure per sleeve have been dramatically reduced. Sleeving will undoubtedly play an increasing role in maintaining steam generator tube integrity. A number of utilities are using sleeving as a preventative measure to reduce the number of forced outages caused by steam generator tube leaks.

TABLE 7 SLEEVING EXPERIENCE

| PLANT | YEAR | TUBES SLEEVED | REPORTED CAUSE |
|-------------|-------|---------------|-------------------------|
| ALMARAZ 1 | 89 | 3 | SCC(ID) |
| | 90 | 100 | SCC(ID) |
| ANO 1 | 84 | 10 | SCC/IGA |
| | 86 | 40 | SCC/IGA |
| | 88 | 174 | SCC/IGA |
| | 90 | 106 | SCC/IGA |
| | 92 | 572 | SCC/IGA |
| ANO 2 | 92 | 444 | SCC/IGA |
| ASCO 1 | 91 | 115 | SCC/IGA |
| BEZNAU 1 | 81 | 3 | SCC(OD) |
| | 82 | 24 | SCC(OD) |
| | 83 | 37 | SCC/IGA |
| | 84 | 35 | SCC/IGA |
| | 86 | 174 | SCC/IGA |
| BEZNAU 2 | 83 | 17 | SCC/IGA |
| | 84 | 17 | SCC/IGA |
| | 86 | 86 | SCC/IGA |
| BUGEY 5 | 89 | 76 | SCC(ID) |
| CATAWBA 1 | 91 | 75 | SCC(ID), SCC/IGA |
| | 92 | 108 | SCC(ID), SCC/IGA |
| D.C. COOK 1 | 92 | 1840 | SCC/IGA |
| DOEL 2 | 82-83 | 187 | SCC(ID) |
| | 85 | 10 | SCC(ID) |
| | 86 | 81 | SCC(ID) |
| DOEL 3 | 88 | 55 | SCC(ID) |
| FARLEY 1 | 92 | 136 | SCC(ID), SCC(OD-TSP) |

TABLE 7 (cont') SLEEVING EXPERIENCE

| PLANT | YEAR | TUBES SLEEVED | REPORTED CAUSE |
|----------------|------|---------------|--------------------------|
| FARLEY 2 | 92 | 29 | SCC(ID), SCC (OD-TSP) |
| FESSENHEIM 1 | 84 | 10 | SCC(ID) |
| GENKAI 1 | 85 | 147 | SCC/IGA |
| | 86 | 342 | SCC/IGA |
| | 87 | 384 | SCC/IGA |
| | 89 | 870 | SCC/IGA |
| | 90 | 805 | SCC/IGA |
| | 91 | 447 | SCC/IGA |
| GINNA | 80 | 5 | SCC/IGA |
| | 81 | 16 | SCC/IGA |
| | 83 | 77 | SCC/IGA |
| | 84 | 8 | SCC/IGA |
| | 85 | 69 | SCC/IGA |
| | 86 | 39 | SCC/IGA |
| | 87 | 101 | SCC/IGA |
| | 89 | 502 | SCC/IGA |
| | 90 | 241 | SCC/IGA |
| | 91 | 207 | SCC/IGA |
| | 92 | 425 | SCC/IGA |
| IKATA 1 | 84 | 14 | SCC(ID) |
| INDIAN POINT 3 | 82 | 2971 | PITTING |
| | 85 | 635 | PITTING |
| KEWAUNEE | 88 | 1940 | SCC/IGA |
| | 89 | 1698 | SCC/IGA |
| | 91 | 690 | SCC/IGA |
| | 92 | 16 | SCC/IGA |
| KORI 1 | 88 | 558 | PITTING |
| | 89 | 178 | PITTING |
| | 90 | 415 | PITTING/SCC(ID) |
| | 92 | 330 | PITTING/SCC(ID) |

TABLE 7 (cont') SLEEVING EXPERIENCE

| PLANT | YEAR | TUBES SLEEVED | REPORTED CAUSE |
|---------------|------|---------------|---------------------|
| MC GUIRE 1 | 90 | 397 | SCC(ID) |
| | 91 | 458 | SCC(ID) |
| MC GUIRE 2 | 90 | 478 | SCC(ID) |
| | 92 | 137 | SCC(ID) |
| MIHAMA 2 | 82 | 3 | SCC(OD) |
| | 83 | 14 | SCC(OD) |
| | 84 | 25 | SCC(OD) |
| MILLSTONE 2 | 83 | 2022 | PITTING |
| | 85 | 2917 | PITTING, WASTAGE |
| | 86 | 225 | PITTING, WASTAGE |
| OCONEE 1 | 78 | 6 | FATIGUE |
| | 87 | 469 | FATIGUE |
| OCONEE 3 | 88 | 247 | FATIGUE |
| OHI 1 | 84 | 81 | SCC(ID) |
| | 85 | 443 | SCC(ID) |
| | 86 | 650 | SCC(ID) |
| | 87 | 743 | SCC(ID), SCC/IGA |
| | 88 | 162 | SCC(ID) |
| | 89 | 1122 | SCC(ID) |
| | 90 | 863 | SCC(ID) |
| | 91 | 877 | SCC(ID) |
| OHI 2 | 84 | 8 | SCC(ID) |
| PALISADES | 76 | 10 | WASTAGE |
| | 78 | 23 | WASTAGE |
| POINT BEACH 1 | 81 | 13 | SCC/IGA |

TABLE 7 (cont') SLEEVING EXPERIENCE

| PLANT | YEAR | TUBES SLEEVED | REPORTED CAUSE |
|----------------|------|---------------|---------------------|
| POINT BEACH 2 | 83 | 3001 | SCC/IGA, WASTAGE |
| | 87 | 87 | SCC/IGA, WASTAGE |
| | 88 | 509 | SCC/IGA, WASTAGE |
| PRAIRIE ISLD 1 | 87 | 26 | SCC/IGA |
| | 88 | 73 | SCC/IGA |
| | 90 | 62 | SCC/IGA |
| | 92 | 158 | SCC/IGA |
| RANCHO SEC() | 86 | 508 | FATIGUE |
| RINGHALS 2 | 84 | 35 | SCC/IGA |
| | 85 | 50 | SCC/IGA |
| | 86 | 596 | SCC/IGA |
| | 87 | 554 | SCC/IGA |
| RINGHALS 3 | 91 | 57 | SCC/IGA |
| SAN ONOFRE 1 | 81 | 6929 | WASTAGE, SCC/IGA |
| SUMMER | 90 | 125 | SCC(ID) |
| | 91 | 610 | SCC(ID) |
| TAKAHAMA 1 | 80 | 2 | SCC(OD) |
| | 81 | 4 | SCC(OD) |
| | 82 | 32 | SCC(ID), SCC(OD) |
| | 84 | 59 | SCC(OD) |
| | 88 | 6 | SCC/IGA |

TABLE 7 (cont') SLEEVING EXPERIENCE

| <u>PLANT</u> | <u>YEAR</u> | <u>TUBES SLEEVED</u> | <u>REPORTED CAUSE</u> |
|--------------|-------------|----------------------|-----------------------|
| TAKAHAMA 2 | 84 | 231 | SCC/IGA |
| | 86 | 330 | SCC/IGA |
| | 87 | 466 | SCC/IGA |
| | 88 | 1007 | SCC/IGA |
| | 90 | 1139 | SCC/IGA |
| | 91 | 675 | SCC/IGA |
| | 92 | 644 | SCC/IGA |
| TMI | 91 | 250 | FATIGUE |
| TRICASTIN 2 | 85 | 14 | SCC/IGA |
| TROJAN | 90 | 2 | SCC/IGA(TSP) |
| | 91 | 1061 | SCC/IGA(TSP) |
| ZION-1 | 86 | 128 | SCC/IGA |
| | 88 | 47 | SCC/IGA |
| | 89 | 445 | SCC/IGA |
| | 92 | 125 | SCC/IGA |
| ZION-2 | 90 | 82 | SCC/IGA |
| | 92 | 170 | SCC/IGA |

TABLE 8 MAJOR SLEEVING OPERATIONS

| | San Onofre 1 | Point Beach 2 | Indian Point 3 | Millstone 2 | Doel 2 | Doel 3 |
|---------------------------------|--------------|---------------|----------------|-------------|---------------|--------------|
| Sleeving Dates | 9/80 - 6/81 | 4/83 - 6/83 | 10/82 - 1/83 | 7/83 - 9/83 | 9/82 - 9/83 | 1988 |
| Number of Sleeves Installed | 6929 | 3000 | 2971 | 2022 | 185 | 55 |
| Damage Type | IGA | IGA | Pitting | Pitting | IGSCC | PWSCC |
| Location | Top of TS | TS Crevice | Sludge Pile | Sludge Pile | TS Roll Trans | Top of TS |
| Sleeving Contractor | W | W | W | W | B&W | W |
| Sleeve Length (in) | 27-30-36 | 36 | 36-40-44 | 40 | 1.5 | 36 |
| Sleeve Base Material | Alloy 600-TT | Alloy 600-TT | Alloy 600-TT | Alloy 690 | Alloy 600-TT | Alloy 600-TT |
| OD Clad Material | None | None | None | Alloy 625 | None | None |
| Expansion Material | Hydraulic | Hydraulic | Hydraulic | Hydraulic | Explosive | Laser |
| Total Installation Time (weeks) | 30 | 10 | 14 | 8 | - | - |
| Installation per Sleeve (hrs) | 0.94 | 0.53 | 0.74 | 0.6 | - | - |
| Exposure Total (man-rem) | 3496 | 660 | 860 | 385 | - | - |
| Exposure per Sleeve | 0.5 | 0.22 | 0.29 | 0.19 | - | - |

TABLE 8 MAJOR SLEEVING OPERATIONS (cont.)

| | R.E. Ginna | | | Palisades | | Ringhals 2 | | Ringhals 3 |
|---------------------------------|---------------------|------|------|-------------------|------|--------------|--------------|-------------|
| Sleeving Dates | 11/80 | 5/81 | 5/83 | 3/76 | 3/78 | 5/84 | 5/84 | 6/91 |
| Number of Sleeves Installed | 5 | 16 | 78 | 14 | 23 | 18 | 17 | 68 |
| Damage Type | IGA/IGSCC | | | Wastage | | IAG/IGSCC | IAG/IGSCC | PWSCC/ODSCC |
| Location | Tubesheet Crevice | | | TSP Intersections | | TS Crevice | TS Crevice | TS/RTZ |
| Sleeving Contractor | B&W and RGE | | | CE | | CE | W | CE |
| Sleeve Length (in) | 20-36 | | | 12 (nominal) | | 30 | 30 | TSP/TS |
| Sleeve Base Material | Alloy 600-TT | | | Alloy 600 | | Alloy 600-TT | Alloy 600-TT | 690TT |
| OD Clad Material | Nickel | | | None | | None | None | - |
| Expansion Material | Hydraulic Explosive | | | Hydraulic | | Elastomeric | Hydraulic | Weld |
| Total Installation Time (weeks) | - | - | - | 8 | - | - | - | - |
| Installation per Sleeve (hrs) | 8 | 2 | 0.33 | - | - | - | 3.5 | .9 - 1.5 |
| Exposure Total (man-rem) | - | - | - | 15 | - | 4 | 3.4 | 3.4 |
| Exposure per Sleeve | Ave. 0.4 - 0.5 | | | - | - | 0.22 | 0.17 | 0.13 |

TABLE 8 MAJOR SLEEVING OPERATIONS (cont.)

| | Point Beach 1 | Kewaunee | | | |
|---------------------------------|---------------|--------------|--------------|--------------|--------------|
| | | | | | |
| Sleeving Dates | 8/81 | 3/88 | 3/89 | 3/91 | 3/92 |
| Number of Sleeves Installed | 13 | 1940 | 1698 | 690 | 16 |
| Damage Type | IGA | IGA/IGSCC | IGA/IGSCC | IGA/IGSCC | IGA/IGSCC |
| Location | TS Crevice | TS Crevice | TS Crevice | TS Crevice | TS Crevice |
| Sleeving Contractor | W | W | W | W | ABB/CE |
| Sleeve Length (in) | 36 | 30-36 | 30-36 | 27-30-36 | 27 |
| Sleeve Base Material | Alloy 600-TT | Alloy 600-TT | Alloy 600-TT | Alloy 600-TT | Alloy 690-TT |
| OD Clad Materail | None | None | None | None | None |
| Expansion Material | Hydraulic | HEJ | HEJ | HEJ | Welded |
| Total Installation Time (weeks) | 2 | 2.4 | 2.2 | - | - |
| Installation per Sleeve (hrs) | - | 0.21 | 0.21 | - | - |
| Exposure Total (man-rem) | - | 66.8 | 41.2 | - | - |
| Exposure per Sleeve | - | 0.034 | 0.024 | - | - |

Section 8 STEAM GENERATOR REPLACEMENT

Steam generators were replaced at Millstone 2 during 1992 (Table 9). Replacement steam generators have been ordered for over 30 plants. The activity (and lost generation) associated with steam generator replacement will increase substantially during the next few years. To date eight United States, one German, one French and one Swedish utility have replaced a total of 37 steam generators at 13 nuclear units. (Reference 5). Several techniques have been utilized to replace steam generators. These techniques include the pipe cut and channel head cut methods. In the pipe cut method, the steam generators are removed from the reactor coolant system by cutting the hot and cold leg primary piping adjacent to the primary channel head of the steam generator. Replacement steam generators or replacement portions are installed by reconnection to the primary piping to complete the repair operation. In initial replacements the upper steam dome was cut from the lower portion of the steam generator and refurbished inside the containment building. Because of sufficient containment hatch size at Obrigheim, Cook 2, Indian Point 3, and Ringhals 2, the entire steam generator assemblies were removed and replaced.

In the channel cut technique the steam generator is separated by cutting the channel head just below the tubesheet. This leaves the lower primary piping in place and simplifies the fit up operation. The upper portion of the steam generator can be replaced in its entirety or the upper steam dome can be cut and refurbished in the containment building. Operation before steam generator replacement has ranged from 7 to 19 years. However, effective full years of operation (EFPY) has ranged from 3.6 to 11.2 EFPY. The steam generators replaced at Indian Point 3 had 6.4 EFPY which was about the same as the Turkey Point 3 generators which were replaced in 1982. The impact to a utility of having to replace steam generators is substantial. Table 9 shows that replacement durations have ranged from 70 days up to 260 days. Total doses received by personnel performing the changeout have ranged from 220 to 2141 man rems. Replacement costs have ranged from 37 to 190 million dollars excluding replacement power costs. An encouraging trend is that while the costs for replacement have continued to increase, both the replacement duration and man rem exposure have been decreasing. The replacements at Ringhals 2, Dampierre 1, Palisades,

and Millstone 2 required on the average only 44% of the time and 20% of the exposure as the first replacement at Surry 2.

Replacement steam generators have been ordered for over 30 plants. Table 10 shows the steam generator replacement orders that have been announced to date. These orders indicate that steam generator replacement activity will continue to increase over the next few years.

TABLE 9 REPLACEMENT STEAM GENERATORS

| UNIT | NO. SG. | REPL. METHOD | REPL. S.G. | TUBE MATERIAL | COMM. OPER. | COMP. DATE | OPER. (YEARS) | EFPY OPER. | REPL. DURATION (DAYS) | EXPOSURE (MAN-REM) | REPL. COSTS (1) (MILLIONS) |
|----------------|---------|---------------------------|------------|---------------|-------------|------------|---------------|------------|-----------------------|--------------------|----------------------------|
| Surry 2 | 3 | Pipe Cut (Lower Shell) | W | I-600TT | May-74 | Sep-80 | 7 | 3.6 | 260 | 2141 | \$94 |
| Surry 1 | 3 | Pipe Cut (Lower Shell) | W | I-600TT | Dec-72 | Jul-81 | 8 | 4.4 | 200 | 1759 | \$94 |
| Turkey Point 3 | 3 | Channel Head cut | W | I-600TT | Dec-72 | Apr-82 | 10 | 6.2 | 217 | 2152 | \$90 |
| Turkey Point 4 | 3 | Channel Head Cut | W | I-600TT | Sep-73 | May-83 | 9 | 5.3 | 150 | 1305 | \$90 |
| Obrighelm | 2 | Pipe Cut (Entire SG) | KWU | I-800 | Mar-69 | Sep-83 | 14 | 11.2 | 72 (2) | 690 | \$37 (3) |
| Point Beach 1 | 2 | Pipe cut | W | I-600TT | Dec-70 | Mar-84 | 13 | 9.2 | 118 (2) | 575 | \$77 |
| H B Robinson | 3 | Channel Head cut | W | I-600TT | Mar-71 | Oct-84 | 13 | 8.5 | 130 | 1207 | \$85 |
| D C Cook 2 | 4 | Pipe Cut (Entire SG) | W | I-690TT | Jun-78 | Mar-89 | 11 | 6.6 | 175 | 561 | \$112 |
| Indian Pt. 3 | 4 | Pipe Cut (Entire SG) | W | I-690TT | Aug-76 | Jun-89 | 13 | 6.4 | 140 | 541 | \$120 |
| Ringhals 2 | 3 | Pipe Cut (Entire SG) | KWU | I-690TT | May-76 | Aug-89 | 14 | 8.1 | 72 (2) | 290 | \$130 |
| Dampierre 1 | 3 | Pipe Cut (Entire SG) | FRA | I-690TT | Sep-80 | Jun-90 | 10 | 6.7 | 70 | 220 | \$104 |
| Palisades | 2 | Pipe Cut (Entire SG) | CE | I-600MA | Dec-71 | Mar-91 | 19 | 8.3 | 121 | 487 | \$100 |
| Millstone 2 | 2 | Pipe Cut (Partial SG) | BWC | I-690TT | Dec-75 | Jan-93 | 17 | 10.9 | 192 | 697 | \$190 |

(1) Excluding replacement power costs (2) Shutdown until start of hydro (3) Partial warranty provision

TABLE 10 PLANNED STEAM GENERATOR REPLACEMENTS (Orders Placed)

| Plant | Number of Steam Generator Units | Net Capacity (MWe) | Replacement Supplier | Tube Material | Projected Year of Replacement |
|---------------|---------------------------------|--------------------|----------------------|---------------|-------------------------------|
| Doel 3 | 3 | 900 | S-F | I-800 | 1993 |
| Doel 4 | 3 | 1010 | S-F | I-690TT | 1996 |
| Tihange 1 | 3 | 870 | MHI | I-690TT | 1995 |
| Beznau 1 | 2 | 350 | Fra | I-690TT | 1993 |
| Almaraz 1&2 | 6 | 900 | S-F | I-800 | 1996/97 |
| Asco 1&2 | 6 | 887 | S-F | I-800 | 1995/96 |
| Bugey 5 | 3 | 900 | Fra | I-690TT | 1993 |
| Gravelines 1 | 3 | 910 | Fra | I-690TT | 1994/95 |
| Genkai 1 | 2 | 529 | Fra | I-690TT | 1994 |
| Mihama 1 | 2 | 320 | MHI | I-690TT | 1996 |
| Mihama 2 | 2 | 470 | MHI | I-690TT | 1995 |
| Mihama 3 | 3 | 780 | MHI | I-690TT | 1996 |
| Ohi 1 | 4 | 1120 | MHI | I-690TT | 1994/95 |
| Ohi 2 | 4 | 1120 | MHI | I-690TT | 1998/99 |
| Takahama 1 | 3 | 780 | MHI | I-690TT | 1996 |
| Takahama 2 | 3 | 780 | MHI | I-690TT | 1994 |
| Ringhals 3 | 3 | 915 | S-F | I-690TT | 1995 |
| Catawba 1 | 4 | 1129 | BWC | I-690TT | 1996/97 |
| Farley 2 | 3 | 872 | W | I-690TT | 2005 |
| Farley 1 | 3 | 873 | W | I-690TT | After 2005 |
| Ginna | 2 | 470 | BWC | I-690TT | 1996 |
| McGuire 1 | 4 | 1129 | BWC | I-690TT | 1996/97 |
| McGuire 2 | 4 | 1129 | BWC | I-690TT | 1996/97 |
| North Anna 2 | 3 | 907 | W | I-690TT | Not specified |
| Point Beach 2 | 2 | 485 | W | I-690TT | 1996/7 |
| St. Lucie 1 | 2 | 839 | BWC | I-690TT | 1996 |
| Summer | 3 | 895 | W | I-690TT | 1994 |
| Zion 1 | 4 | 1040 | BWC | I-690TT | 1996 |
| Zion 2 | 4 | 1040 | BWC | I-690TT | 2001 |

W=Westinghouse

Fra=Framatome

S-F=Siemens/Framatome

MHI=Mitsubishi Heavy Industries

BWC=B&W Canada

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APPENDIX A

HISTORICAL TUBE PLUGGING DATA

Appendix A Abbreviations

| <u>Abbreviation</u> | <u>Includes</u> |
|---------------------|---|
| Wastage | Wastage and thinning |
| Denting S P | Denting at support plate intersections |
| Denting T S | Denting at and above the tubesheet |
| Pitting | Pitting |
| OD S/IGA SP | Secondary side stress corrosion and/or intergranular attack (support plate) |
| OD S/IGA TS | Secondary side stress corrosion and/or intergranular attack (tubesheet) |
| ID SCC TS | Primary side stress corrosion cracking (tubesheet locations) |
| ID SCC UB | Primary side stress corrosion cracking (U-bend locations) |
| FRET (PREH) | Tube fretting and wear (preheater locations) |
| FRET (AVB) | Tube fretting and wear (AVB locations) |
| FRET (LP) | Tube fretting and wear caused by a loose part or foreign object |
| HC FATIGUE | High cycle fatigue |
| ERR/COR | Erosion and/or corrosion |
| OTHER | Unknown cause or a cause other than above |
| TOT PLUGGED | Total number of tubes plugged |
| TOT SLEEVED | Total number of tubes sleeved |
| T.L. OUTAGE | Number of forced outages caused by steam generator tube leaks |

UTILITY : CSES

TOTAL TUBES : 14,022

PLANT : ALMARAZ 1

TUBE MATERIAL : I-600 MA

PLUGGED: 887

SG MODEL : W-D3

EPY : 8.3

H. L. TEMP (F) : 616

C.L. TEMP (F) : 553

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|------|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | 371 | 47 | 2 | | 18 | 438 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | 74 | 32 | | 223 | 6 | 3 | | 27 | 365 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | 4 | 2 | | 14 | | | | | | 5 | | 16 | 41 |
| FRCT (AVB) | | | | | | | | | | | | | | 3 | 3 | 6 | | 15 | 27 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 2 | | | | | 1 | | | 5 | 2 | 5 | | 1 | 16 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 2 | 0 | 14 | 75 | 32 | 0 | 602 | 58 | 21 | 0 | 77 | 887 |
| TOT SLEEVED | | | | | | | | | | | | | | | 3 | 100* | | | 103 |
| T. L. OUTAGE | | | | | | | | | | | | | | 1 | | | | | * |

UTILITY CONTACT: Gustavo Bollini

* Six sleeves plugged after installation

PHONE NUMBER: 34-1-6516700

UTILITY : CSES

TOTAL TUBES : 14,022

PLANT : ALMARAZ 2

TUBE MATERIAL : I-600 MA

PLUGGED: 779

SG MODEL : W-D3

EFP' : 7.8

H. L. TEMP (F) : 616

C.L. TEMP (F) : 553

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | 2 | 39 | 87 | | 101 | 157 | 386 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 21 | 12 | 33 |
| ID SCC TS | | | | | | | | | | | | 10 | 22 | 27 | 46 | | 131 | 66 | 302 |
| ID SCC UB | | | | | | | | | | | | | 1 | | | | | | 1 |
| FRET (PREH) | | | | | | | | | | | | | | | 7 | | 10 | 24 | 41 |
| FRET (AVB) | | | | | | | | | | | | | | | 2 | | 2 | 2 | 6 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 5 | | | 1 | | 2 | | 2 | | | | 10 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 10 | 27 | 66 | 144 | 0 | 265 | 261 | 779 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Gustavo Bollini

PHONE NUMBER: 34-1-6516700

UTILITY : FURNAS CENTRAIS

TOTAL TUBES : 8,918

PLANT : ANGRA 1

TUBE MATERIAL : I-600 MA

PLUGGED: 447

SG MODEL : W-D3

EFPY : 2.0

H. L. TEMP (F) : 620

C.L. TEMP (F) : 549

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-------|-----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | 20 | | 7 | | 27 | |
| OD S/IGA SP | | | | | | | | | | | | | | | 2 | | 364 | | 366 | |
| OD S/IGA TS | | | | | | | | | | | | | | | 8 | | 15 | | 23 | |
| ID SCC TS | | | | | | | | | | | | | | | 6 | | 14 | | 20 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | | | 4 | | | | | 7 | | | | 11 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 7 | 6 | 30 | 0 | 400 | 0 | 447 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: _____

PHONE NUMBER: _____

UTILITY : ENTERGY OPERATIONS, INC.

TOTAL TUBES : 31062

PLANT : ANO-1

TUBE MATERIAL : I-600

PLUGGED : 642

SG MODEL : OTSG

EFPY : 11.4

H. L. TEMP (F) : 602

C.L. TEMP (F) : 556

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|-----|----|-----|----|----|----|-----|----|-----|----|-----|-------|---|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | 2 | | 26 | 2 | 9 | | | | 4 | | | | | 43 | |
| OD S/IGA TS | | | | 1 | | 9 | | 116 | 37 | 101 | | | | | | 9 | | 196 | 469 | |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | 1 | | | | | | 1 | |
| ERR/CORR | | | | | | | | | 1 | | | | | | | | | | 1 | |
| OTHER | | | | | | | | | 3 | 1 | | 5 | | 9 | | | | 110 | 128 | |
| TOT PLUGGED | 0 | 0 | 0 | 1 | 0 | 11 | 0 | 142 | 43 | 111 | 0 | 5 | 1 | 13 | 0 | 9 | 0 | 306 | 642 | |
| TOT SLEEVED | | | | | | | | | | 10 | | 40 | | 174 | | 106 | | 572 | 902 | |
| T. L. OUTAGE | | | | | | 2 | | 1 | 1 | | | | 1 | | | | | | 5 | |

UTILITY CONTACT: Darol Harrison

PHONE NUMBER: (501) 964-8909

UTILITY : ENTERGY OPERATIONS, INC.

TOTAL TUBES : 16822

PLANT : ANO-2

TUBE MATERIAL : I-600 MA

PLUGGED : 367

SG MODEL : CE-2815

EFPY : 8.9

H. L. TEMP (F) : 600

C.L. TEMP (F) : 544

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | 52 | 129 | 181 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 5 | 76 | 81 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | 6 | | | 16 | 38 | 60 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 44 | | | | 1 | | | | | | | | | | | 45 |
| TOT PLUGGED | 0 | 0 | 0 | 44 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 73 | 243 | 367 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | 444 | 444 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | 1 | 1 |

UTILITY CONTACT: Darol Harrison

PHONE NUMBER: (501) 964-8909

UTILITY : ANA

TOTAL TUBES : 14,022

PLANT : ASCO 1

TUBE MATERIAL : I-600 MA

PLUGGED: 1351

SG MODEL : W-D3

EFPY : 7.0

H. L TEMP (F) : 620

C.L TEMP (F) : 556

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|--------|-----|--------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | 14 | 132 | 385 | 120** | 334 | 985 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 1 | 3 | 4 |
| ID SCC TS | | | | | | | | | | | 6 | 15 | 21 | 28 | 15 | 231 | 1 | 2 | 319 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | 1 | 3 | 6 | 10 |
| FRET (AVB) | | | | | | | | | | | | | | | | 6 | 7 | 5 | 18 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 7 | | 1 | 2 | | | | 1 | 1 | 3 | 15 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 17 | 21 | 42 | 147 | 624 | 133 | 353 | 1351 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | 115*** | 4# | 111*** |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Gustavo Bollini

* 20 tubes plugged by C. L. Indications

PHONE NUMBER: 34-1-6516700

** 30 tubes plugged by C. L. Indications

***1 tube sleeved for ODSCC indication
in the free span region of the tube

4 tubes sleeved in 1991 were plugged in 1992

UTILITY : ANA

TOTAL TUBES : 14,022

PLANT : ASCO 2

TUBE MATERIAL : I-600 MA

PLUGGED : 442

SG MODEL : W-D3

EFPY : 5.8

H. L. TEMP (F) : 620

C.L. TEMP (F) : 556

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | 2 | 36 | 105 | 126** | 98 | 367 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 9 | 2 | 11 |
| ID SCC TS | | | | | | | | | | | | | | 4 | | 32 | 10 | 3 | 49 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | 2 | | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | 1* | | | | 1 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 4 | | | | | | 1 | | 7 | | | 12 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 7 | 37 | 144 | 147 | 103 | 442 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Gustavo Bollini

* Plugged after evaluation for tube vibration induced fatigue

PHONE NUMBER: 34-1-6516700

** 3 tubes plugged for ODSCC in free span tube and 5 tubes plugged for C. L. indications

UTILITY : CNEA

TOTAL TUBES : 7,890

PLANT : ATUCHA-1

TUBE MATERIAL : I-800

PLUGGED : 89

SG MODEL : KWU

EPFY : 11.9

H. L. TEMP (F) : 582

C.L. TEMP (F) : 521

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | 1 | | | | | 2 | | | | | | 3 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | 1 | | | 2 | 74 | | | | | 2 | 79 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | * 7 | | | | | | 7 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 83 | 0 | 0 | 0 | 0 | 2 | 89 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | 1 | | | 2 | 2 | | | | | | 5 |

UTILITY CONTACT: S. Ódar / R. Bouecke

* Plugged preventively

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : DUQUESNE LIGHT CO.

TOTAL TUBES : 10,164

PLANT : BEAVER VALLEY 1

TUBE MATERIAL : I-600 MA

PLUGGED : 1054

SG MODEL : W-51

EFPY : 9.1

H. L. TEMP (F) : 607

C.L. TEMP (F) : 542

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|-------|
| WASTAGE | | | | | | | | | 2 | 15 | | 27 | 15 | | 11 | | 17 | | 87 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | 8 | | 117 | | 735 | | 860 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC JB | | | | | | | | | | | | | 42 | | 9 | | | | 51 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | 3 | | 4 | | | 2 | | 1 | | 10 |
| FRET (LP) | | | | | | | | | | | | | | | 12 | | | | 12 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 1 | 6 | 6 | | 7 | 7 | | | | 7 | | 34 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 24 | 0 | 38 | 72 | 0 | 151 | 0 | 760 | 0 | 1054 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | 1 | | | | | | | | | | | 1 |

UTILITY CONTACT: Greg Kammerdeiner

PHONE NUMBER: 412-393-5677

UTILITY : DUQUESNA LIGHT CO.

TOTAL TUBES : 10,128

PLANT : BEAVER VALLEY 2

TUBE MATERIAL : I-600 MA

PLUGGED : 33

SG MODEL : W-51M

EPFY : 3.9

H. L. TEMP (F) : 607

C.L. TEMP (F) : 542

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | 8 | 8 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | J |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 2 | 2 |
| FRET (LP) | | | | | | | | | | | | | | | 4 | | | | 4 |
| HC FATIGUE | | | | | | | | | | | | | | | 2 | 2 | | | 4 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | 14 | | | | | 1 | 15 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 6 | 2 | 0 | 11 | 33 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | 1 | 1 | | | 2 |

UTILITY CONTACT: Greg Kammerdeiner

PHONE NUMBER: 412-393-5877

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : BELLEVILLE 1

TUBE MATERIAL : I-600 TT

PLUGGED : 29

SG MODEL : FRAM-68/19

EPY : 3.3

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | 2 | | 10 | 12 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (LP) | | | | | | | | | | | | | | | | 2 | | | 2 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | | | | | | | | | 1 | 11 | | 3 | 15 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 13 | 0 | 13 | 29 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : BELLEVILLE 2

TUBE MATERIAL : I-600 TT

PLUGGED: 58

SG MODEL : FRAM-68/19

EFPY : 3.0

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | 2 | 3 | 5 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | 8 | | | | 8 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | 9 | 31 | 5 | 45 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 9 | 33 | 58 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : RHEINISCH-WESTFALISCHES ELEKTRIZITATSWERK AG
 PLANT : BIBLIS-A
 PLUGGED : 604
 EFPY : 12.2
 TOTAL TUBES : 16,240
 TUBE MATERIAL : I-800
 SG MODEL : KWU
 H. L. TEMP (F) : 596
 C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|-----|----|----|----|-----|----|----|-------|-----|-----|----|------|------|------|----|----|-------|
| WASTAGE | | | | | | 1 | 10* | 1 | 2 | 101 | 140 | 179 | 19 | 2 | 3 | 6 | 4 | 12 | 480 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | 37 | 2 | | 4 | 5 | | | | 1 | 49 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | 2** | | | | | | | 66*** | | | | 2*** | 4*** | 1*** | | | 75 |
| TOT PLUGGED | 0 | 0 | 2 | 0 | 0 | 1 | 10 | 1 | 2 | 204 | 142 | 179 | 23 | 9 | 7 | 7 | 4 | 13 | 604 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | 1 | | | | | | | | | | 1 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 /
49-9131-18-9410

* 3 tubes out of 10 were pulled for investigation

** 2 tubes were pulled for investigation

*** Total of 73 tubes were plugged preventively

(63 due to AVB repair,

10 due to uninspectability of the tubes)

UTILITY : RHEINISCH-WESTFALISCHES
ELEKTRIZITATSWERK AG

TOTAL TUBES : 16,084

PLANT : BIBLIS-B

TUBE MATERIAL : I- 800

PLUGGED: 81

SG MOCEL : KWU

EPY : 10.3

H. L. TEMP (F) : 607

C.L. TEMP (F) : 551

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | * | 1** | | 1 | | | | 2 | | | | | | 7 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | 6 | | 22 | 1 | 1 | 1 | 7 | | 5 | 7 | 50 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 3 | | | | | | | | | | | | | | 1 | 4 |
| TOT PLUGGED | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 7 | 0 | 22 | 1 | 3 | 1 | 7 | 0 | 5 | 8 | 61 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

* 2 tubes out of 3 were pulled because of uninterpretable ECT-signals
Result: Wastage + Pitting

** Tube was pulled because of uninterpretable ECT-signals. Result: Wastage + ODSCC

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : BLAYAIS 1

TUBE MATERIAL : I-600 MA

PLUGGED: 170

SG MODEL : FRAM-51M

EPY : 8.1

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 27 | | 4 | 31 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | 1 | 16 | 1 | | 5 | | 11 | 13 | 8 | 30 | 85 |
| ID SCC UB | | | | | | | | | | | | | | | 2 | | | | 2 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 1 | | 1 | 2 | 4 |
| FRET (LP) | | | | | | | | | | 2 | 1 | | | | 3 | 2 | | | 8 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 18 | | | | | | | | 1 | 21 | | 40 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 1 | 18 | 2 | 0 | 5 | 0 | 17 | 43 | 30 | 36 | 170 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,987

PLANT : BLAYAIS 2

TUBE MATERIAL : I-600 MA

PLUGGED : 84

SG MODEL : FRAM-51B1

EFPY : 7.4

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 54 | 2 | | | 56 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | 2 | 1 | 2 | | | 2 | | 1 | | | 8 |
| ID SCC UB | | | | | | | | | | | | | | | 1 | | | | | 1 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | 4 |
| FRET (LP) | | | | | | | | | | | 3 | 2 | 1 | | | | | | | 6 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | 1 | | | | | 1 |
| OTHER | | | | | | | | | 4 | | | | | | | 1 | 1 | 2 | | 8 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 4 | 4 | 1 | 0 | 5 | 56 | 5 | 3 | | 84 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,987

PLANT : BLAYAIS 3

TUBE MATERIAL : I-600 MA

PLUGGED : 104

SG MODEL : FRAM-51B1

EPFY : 6.8

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|-----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 62 | 20 | | | 82 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | 1 | 1 | | | | | 5 | 3 | | | 10 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 1 | 1 | | 1 | | 3 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 6 | | | | | 1 | | 2 | | | | 9 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 1 | 0 | 0 | 1 | 1 | 70 | 23 | 1 | 104 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-85-78

UTILITY : EDF

TOTAL TUBES : 9,990

PLANT : CLAYAIS 4

TUBE MATERIAL : I-600 MA (SG1,SG2)
: I-600 TT (SG3)

PLUGGED: 211

SG MODEL : FRAM-51B

EFPY : 6.9

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 53 | 2 | 4 | 59 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | 6 | | | | | 6 |
| ID SCC UB | | | | | | | | | | | | | | 1 | | | | | 1 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | 4 | 1 | | 5 | 3 | 3 | | | 16 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | 3 | | | 8 | 1 | | 1 | 4 | | 106 | 6 | | 129 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 8 | 5 | 1 | 1 | 16 | 3 | 162 | 8 | 4 | 211 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EPZ

TOTAL TUBES : 8,468

PLANT : BORSSELE

TUBE MATERIAL : I-800

PLUGGED: 123

SG MODEL : KWU

EPY : 15.1

H. L. TEMP (F) : 606

C.L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | 49 | | 41 | 1 | | 3 | | 3 | | 3 | | 13 | 1 | | 114 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | 9 | | 9 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 49 | 0 | 41 | 1 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 13 | 10 | 0 | 123 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | 1 | | 1 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : COMMONWEALTH EDISON

TOTAL TUBES : 18,696

PLANT : BRAIDWOOD 1

TUBE MATERIAL : I-600 MA

PLUGGED: 216

SG MODEL : W-D4

EPFY : 3.2

H. L. TEMP (F) : 608

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | 30 | 166 | 196 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 2 | | 4 | 6 | 12 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | 1 | | 1 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | 4 | | 1 | 2 | 7 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 36 | 174 | 216 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Blomgren

PHONE NUMBER: 708-515-7215

UTILITY : COMMONWEALTH EDISON

TOTAL TUBES : 18,696

PLANT : BRAIDWOOD 2

TUBE MATERIAL : I-600 TT

PLUGGED : 2

SG MODEL : W-D5

EFY : 3.2

H. L. TEMP (F) : 608

C.L. TEMP (F) : 552

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Blomgren

PHONE NUMBER: 708-515-7215

UTILITY : KERNKRAFTWERK
 BROKDORF GmbH
 PLANT : BROKDORF

TOTAL TUBE'S : 16,344
 TUBE MATERIAL : I-800

PLUGGED : 0

SG MODEL : KWU-54GS

EFPY : 4.9

H. L. TEMP (F) : 618

C.L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : EDF

TOTAL TUBES : 10,164

PLANT : BUGEY 2

TUBE MATERIAL : 1-600 MA

PLUGGED : 342

SG MODEL : FRAM-51A

EPY : 8.6

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | 2 | 1 | 26 | 4 | 33 |
| ID SCC TS | | | | | | | | | | | | | | | 1 | 7 | 13 | 3 | 24 |
| ID SCC UB | | | | | | | | | 10 | 84 | 94 | | | | | 1 | | | 189 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | 10 | 2 | | 3 | | 4 | 4 | 23 |
| FRET (LP) | | | | | | | | | | 1 | 4 | | | | 12 | | 3 | 8 | 28 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 4 | | | | | | 29 | 10 | 2 | 45 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 89 | 98 | 10 | 2 | 0 | 18 | 38 | 56 | 21 | 342 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,164

PLANT : BUGEY 3

TUBE MATERIAL : I-600 MA

PLUGGED: 157

SG MODEL : FRAM-51A

EFPY : 8.5

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | 10 | | | | | 10 |
| OD S/IGA TS | | | | | | | | | | | | | | | | 2 | 6 | | 8 |
| ID SCC TS | | | | | | | | | 1 | | 1 | 3 | 2 | | | 1 | 13 | | 21 |
| ID SCC UB | | | | | | | | | 1 | | | | | | 2 | | | | 3 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | 34 | 7 | 3 | | 28 | 8 | | 80 |
| FRET (LP) | | | | | | 1 | | | | | | | | 11 | | | 9 | | 21 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 11 | | | 1 | | | | | 1 | | | 1 | | 14 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 3 | 0 | 1 | 37 | 9 | 27 | 0 | 31 | 37 | 0 | 157 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | 1 | | | | | | | | | | 1 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,164

PLANT : BUGEY 4

TUBE MATERIAL : I-600 MA

PLUGGED : 426

SG MODEL : FRAM-51A

EFPY : 8.6

H. L TEMP (F) : 613

C.L TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | 2 | | | 2 |
| OD S/IGA TS | | | | | | | | | | | | | | | 2 | 53 | | 27 | 82 |
| ID SCC TS | | | | | | | | | | 3 | | 1 | | 2 | 1 | 2 | | 6 | 15 |
| ID SCC UB | | | | | | | | | | 94 | 186 | | | | 3 | | | 4 | 287 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | 5 | | 2 | 4 | | | 1 | 12 |
| FRET (LP) | | | | | | | | | | | | | | | 9 | | | 9 | 18 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 6 | | | | | 1 | 2 | | | 1 | 10 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 97 | 186 | 6 | 0 | 5 | 21 | 57 | 0 | 48 | 426 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,164

PLANT : BUGEY 5

TUBE MATERIAL : I-600 MA

PLUGGED: 1064

SG MODEL : FRAM-51A

EPY : 9.0

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-------|------|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | 1 | | 3 | 2 | | 6 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 2 | 1 | | 3 |
| ID SCC TS | | | | | | | | 9 | 3 | 62 | 12 | 19 | 61 | | 53 | 215 | 312 | 203 | | 949 |
| ID SCC IB | | | | | | | | | | 1 | | 3 | 6 | | 3 | | | | | 13 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | 1 | | | | 6 | 8 | | | 4 | 7 | 7 | | | 33 |
| FRET (LP) | | | | | | | 4 | | | | | | | | 1 | | | 11 | | 16 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 6 | | | | | | 4 | | | | | 9 | 2 | 7 | 16 | | 44 |
| TOT PLUGGED | 0 | 0 | 0 | 6 | 0 | 0 | 5 | 9 | 3 | 67 | 18 | 30 | 67 | 0 | 71 | 224 | 331 | 233 | | 1064 |
| TOT SLEEVED | | | | | | | | | | | | | | | 76 | | | | | 76 |
| T. L. OUTAGE | | | | | | | | | | | | 1 | 1 | | | | | 1 | | 3 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : COMMONWEALTH EDISON

TOTAL TUBES : 18,696

PLANT : BYRON 1

TUBE MATERIAL : I-600 MA

PLUGGED : 239

SG MODEL : W-D4

EFPY : 5.5

H. L. TEMP (F) : 608

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-------|
| WASTAGE | | | | | | | | | | | | | 4 | 5 | | | | | 9 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | 11 | | 11 |
| OD S/IGA SP | | | | | | | | | | | | | | | | 13 | 135 | | 148 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | 2 | 1 | | 1 | 2 | | 6 |
| ID SCC UB | | | | | | | | | | | | | 1 | 39 | | | | | 40 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AV3) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | 1 | | | | | | 1 |
| OTHER | | | | | | | | | 19 | | | | 2 | 1 | | 2 | | | 24 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 10 | 46 | 0 | 16 | 148 | 0 | 239 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | 2 | | | | | 2 |

UTILITY CONTACT: John Blomgren

PHONE NUMBER: 708-515-7215

UTILITY : COMMONWEALTH EDISON

TOTAL TUBES : 18,696

PLANT : BYRON 2

TUBE MATERIAL : I-600 TT

PLUGGED : 72

SG MODEL : W-D5

EPY : 4.0

H. L. TEMP (F) : 608

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 24 | 24 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | | | | | | 11 | | | 32 | | 5 | 48 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 32 | 0 | 29 | 72 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Blomgren

PHONE NUMBER: 708-515-7215

UTILITY : UNION ELECTRIC COMPANY

TOTAL TUBES : 22504

PLANT : CALLAWAY

TUBE MATERIAL : I-600MA

PLUGGED : 104

SG MODEL : W-F

EFPY : 6.6

H. L. TEMP (F) : 618

C.L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|-------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 10 | | 12 | 22 | | 29 | 73 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 25 | | | | 3 | | | 1 | | 2 | 31 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 13 | 0 | 12 | 23 | 0 | 31 | 104 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T L OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Ron Affolter

PHONE NUMBER: (314) 676-8240

UTILITY : BALTIMORE GAS & ELECTRIC

TOTAL TUBES : 17038

PLANT : CALVERT CLIFFS 1

TUBE MATERIAL : I-600 MA

PLUGGED: 195

SG MODEL : CE-67

EFPY : 11.5

H. L. TEMP (F) : 595

C.L. TEMP (F) : 548

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | 14 | 20 | | 63 | 2 | 11 | | 10 | 120 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | 2 | 9 | | 1 | | | | 8 | 20 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 3 | | | | 26 | 5 | | 6 | 10 | | 4 | | 1 | | | 55 |
| TOT PLUGGED | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 26 | 5 | 0 | 22 | 39 | 0 | 68 | 2 | 12 | 0 | 18 | 195 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: KEITH HOFFMAN/ PAUL KLEIN

PHONE NUMBER: (301) 260-4850/ 260-3871

UTILITY : BALTIMORE GAS & ELECTRIC

TOTAL TUBES : 17038

PLANT : CALVERT CLIFFS 2

TUBE MATERIAL : I-600 MA

PLUGGED: 113

SG MODEL : CE-67

EPFY : 11.0

H. L. TEMP (F) : 595

C.L. TEMP (F) : 547

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | 3 | 7 | | 36 | | 13 | | | | 59 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PFEH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | 1 | 2 | | 9 | | 7 | | | | 19 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 9 | | | | 2 | | 2 | 4 | | 16 | | 2 | | | | 35 |
| TOT PLUGGED | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 2 | 0 | 6 | 13 | 0 | 61 | 0 | 22 | 0 | 0 | 0 | 113 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: KEITH HOFFMAN/ PAUL KLEIN

PHONE NUMBER: (301) 260-4850/ 260-3871

UTILITY : DUKE POWER CO.

TOTAL TUBES : 18,696

PLANT : CATAWBA 1

TUBE MATERIAL : I-600 MA

PLUGGED : 740

SG MODEL : W-D3

EPY : 5.2

H. L. TEMP (F) : 617

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-------|-----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | 17 | | | 17 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 158 | 89 | 247 | |
| ID SCC TS | | | | | | | | | | | | | | 53 | | 140 | 45 | 41 | 279 | |
| ID SCC UB | | | | | | | | | | | | | | 1 | | | 15 | 5 | 21 | |
| FRET (PREH) | | | | | | | | | | | | | | | | 3 | 1 | 6 | 10 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 1 | 1 | |
| FRET (LP) | | | | | | | | | | | | | | | | | 7 | | 7 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | | | | | 12 | | 8 | | 22 | 4 | 112 | 158 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 62 | 0 | 182 | 230 | 254 | 740 | |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | 75 | 108 | 183 |
| T. L. OUTAGE | | | | | | | | | | | | | | 1 | | | | | | 1 |

UTILITY CONTACT: Dan Mayes

PHONE NUMBER: 704-382-4211

UTILITY : DUKE POWER CO.

TOTAL TUBES : 18,696

PLANT : CATAWBA 2

TUBE MATERIAL : I-600 TT

PLUGGED: 60

SG MODEL : W-D5

EFPY : 4.5

H. L. TEMP (F) : 618

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|-------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | 14 | 6 | | 20 |
| FRET (LP) | | | | | | | | | | | | | | 3 | 4 | 3 | 5 | | 15 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | 14 | | 4 | 4 | 2 | 1 | | 25 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 7 | 8 | 19 | 12 | 0 | 60 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T L OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Dan Mayes

PHONE NUMBER: 704-382-4211

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : CATTENOM 1

TUBE MATERIAL : I-600 TT

PLUGGED: 51

SG MODEL : FRAM-68/19

EPFY : 3.3

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 21 | | 3 | 24 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | 12 | 12 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | 15 | 15 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 15 | 15 | 51 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : CATTENOM 2

TUBE MATERIAL : I-600 TT

PLUGGED: 160

SG MOOEL : FRAM-68/19

EPY : 3.2

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | 72 | | 1 | | 73 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | 4 | | | 5 | 9 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | 2 | 74 | 2 | 78 |
| TOT PLUGGLD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 76 | 2 | 75 | 7 | 160 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-48-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : CATTENOM 3

TUBE MATERIAL : I-600 TT

PLUGGED : 9

SG MODEL : FRAM-68/19

EFPY : 1.2

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|---|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | | | | | | | | | | | 9 | 9 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 9 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : CATTENOM 4

TUBE MATERIAL : I-600 TT

PLUGGED: 15

SG MODEL : FRAM-68/19

EFPY : 0.8

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | 15 | | | 15 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. CUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,987

PLANT : CHINON B1

TUBE MATERIAL : I-600 MA

PLUGGED : 6

SG MODEL : FRAM-51B1

EFPY : 6.9

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | 2 | | | | 2 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LF) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | 2 | | | | | | | 2 | | | | | 4 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 6 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,990

PLANT : CHINON B2

TUBE MATERIAL : I-600 MA

PLUGGED : 42

SG MODEL : FRAM-51B

EFPY : 6.2

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | 9 | 3 | 20 | | 32 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 7 | | | | | | | | | | 3 | | 10 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 6 | 20 | 42 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,987

PLANT : CHINON B3

TUBE MATERIAL : I-600 TT

PLUGGED : 10

SG MODEL : FRAM-51B

EPY : 4.3

H. L TEMP (F) : 613

C.L TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|-------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | 10 | | | | | | | | 10 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,987

PLANT : CHINON B4

TUBE MATERIAL : I-600 TT

PLUGGED : 13

SG MODEL : FRAM-51B

EFPY : 3.7

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 5 | | | 5 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | 5 | 5 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | 2 | | | | | 1 | | 3 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 5 | 1 | 5 | 13 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : TEXAS UTILITIES ELECTRIC

TOTAL TUBES : 18,696

PLANT : COMANCHE PEAK 1

TUBE MATERIAL : I-600 MA

PLUGGED : 0

SG MODEL : W-D4

EFPY : 1.6

H. L. TEMP (F) : 622

C.L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: James Hoss

PHONE NUMBER: 817-897-5210

UTILITY : NORTHEAST UTILITIES

TOTAL TUBES : 15,176

PLANT : CONNECTICUT YANKEE (HADDAM NECK) TUBE MATERIAL : I-600 MA

PLUGGED : 1189

SG MODEL : W-27

EFPY : 17.7

H. L. TEMP (F) : 585

C.L. TEMP (F) : 534

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|-----|----|----|-----|-----|----|-----|----|-----|----|-------|
| WASTAGE | 30 | 1 | 1 | | | | | | | | | | | | | | 4 | | 36 |
| DENTING SP | | | | | | | 3 | | 200 | 20 | | 6 | | | | 1 | 1 | | 231 |
| DENTING TS | | | | | | | | | 12 | | | | | | | | | | 12 |
| PITTING | | 1 | | | | | 12 | | 7 | 32 | | 51 | 50 | | 18 | | 16 | | 187 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 4 | | 4 |
| ID SCC TS | 2 | | | | | | | | | | | 119 | 289 | | 141 | | 104 | | 655 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | 2 | 2 | 1 | | 1 | | 2 | | | | | 2 | 4 | | | | | | 14 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 4 | | | | | 2 | 8 | | 1 | 15 | | 9 | 10 | | | | 1 | | 50 |
| TOT PLUGGED | 38 | 4 | 2 | 0 | 1 | 2 | 25 | 0 | 220 | 67 | 0 | 187 | 353 | 0 | 159 | 1 | 130 | 0 | 1189 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | 1 | | | | | | | | | | | | | | | | | | 1 |

UTILITY CONTACT: John Kliesiewicz

PHONE NUMBER: 203-665-3969

UTILITY : AMERICAN ELECTRIC POWER

TOTAL TUBES : 13,552

PLANT : D. C. COOK 1

TUBE MATERIAL : I-600

PLUGGED : 952

SG MODEL : W-51

EFPY : 10.9

H. L TEMP (F) : 599

C.L TEMP (F) : 536

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|-----|----|--------|--------|------|
| WASTAGE | | | | | | | | | | | 1 | | 9 | | 14 | 10 | | 20 | 54 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/GA SP | | | | | | | | | | | | | 1 | | 2 | | | 45 | 48 | |
| OD S/GA TS | | | | | | | | | 6 | | 23 | | 255 | | 131 | 104 | | 284 | 803 | |
| ID SCC TS | | | | | | | | | | | | | 4 | | 133 | 51 | | | 188 | |
| ID SCC UB | | | | | | | | | 3 | | | | | | | | | 1 | 4 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | 5 | | 4 | | | | 1 | 5 | | | 15 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | 1 | | | | | | | | | | 1 | |
| OTHER | 1 | | | | | 20 | | 20 | 3 | | | | | | | | | 4 | 48 | |
| TOT PLUGGED | 1 | 0 | 0 | 0 | 0 | 20 | 0 | 20 | 18 | 0 | 28 | 0 | 269 | 0 | 281 | 170 | 0 | ** 354 | 952 | |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 1840** | 1840 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Jensen

* Does not include 4 good tubes plugged with sentinel plugs.

PHONE NUMBER: 614-223-1975

** 209 previously plugged tubes were sleeved and returned to service.

UTILITY : AMERICAN ELECTRIC POWER

TOTAL TUBES : 13,552

PLANT : D. C. COOK 2 (ORIGINAL S. G.)

TUBE MATERIAL : I-600

PLUGGED : 951

SG MODEL : W-51

EFPY : 6.6

H. L. TEMP (F) : 606

C.L. TEMP (F) : 541

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | 3 | 1 | 1 | | | | | | | 5 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | R | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | 16 | 20 | 34 | E | | | | | 70 |
| OD S/GA TS | | | | | | | | | 3 | 68 | 125 | 129 | 133 | P | | | | | 458 |
| ID SCC TS | | | | | | | | | | | | | 19 | L | | | | | 19 |
| ID SCC UB | | | | | | | 3 | 5 | 6 | | | | | A | | | | | 14 |
| FRET (PREH) | | | | | | | | | | | | | | C | | | | | 0 |
| FRET (AVB) | | | | | | | | 3 | | 1 | | | | E | | | | | 4 |
| FRET (LP) | | | | | | | | | | | | | | D | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | 2 | 1 | | | | | | | | 3 |
| OTHER | | | 1 | | | 6 | 14 | 22 | | 328 | 4 | 1 | 2 | | | | | | 378 |
| TOT PLUGGED | 0 | 0 | 1 | 0 | 0 | 6 | 17 | 30 | 9 | 402 | 147 | 151 | 188 | 0 | 0 | 0 | 0 | 0 | 951 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Jensen

PHONE NUMBER: 614-223-1975

UTILITY : AMERICAN ELECTRIC POWER

TOTAL TUBES : 14,368

PLANT : D. C. COOK 2 (REPLACEMENT S. G.)

TUBE MATERIAL : I-690 TT

PLUGGED : 0

SG MODEL : W-54F

EFPY : 2.2

H. L. TEMP (F) : 606

C.L. TEMP (F) : 541

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Jensen

PHONE NUMBER: 614-223-1975

UTILITY : EDF

TOTAL TUBES : 9,990

PLANT : CRUAS 1

TUBE MATERIAL : I-600 TT

PLUGGED : 48

SG MODEL : FRAM-51B

EPFY : 6.2

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | 18 | | 2 | 20 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC TS | | | | | | | | | | | | | | | 1 | 2 | | | 3 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | 17 | 17 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | 8 | | | | | | | | | | | 8 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 20 | 0 | 19 | 48 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,990

PLANT : CRUAS 2

TUBE MATERIAL : I-600 TT

PLUGGED : 10

SG MODEL : FRAM-51B

EFPY : 5.6

H. L. TEMP (F) : 613

C.L. TEMP (F) : 549

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|-------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | 4 | | 4 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | 2 | | | 2 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | 2 | | | | 2 | | | 4 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 4 | 0 | 10 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T L OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,990

PLANT : CRUAS 3

TUBE MATERIAL : I-600 TT

PLUGGED: 10

SG MODEL : FRAM-51B

EFPY : 6.1

H. L. TEMP (F) : 613

C.L. TEMP (F) : 547

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 1 | | | | | | | 3 | 4 | 2 | 10 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 2 | 10 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. COMBY

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,990

PLANT : CRUAS 4

TUBE MATERIAL : I-600 TT

PLUGGED : 30

SG MODEL : FRAM-51B

EFPY : 5.5

H. L. TEMP (F) : 613

C.L. TEMP (F) : 547

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | 1 | | | 1 | 2 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERRCORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 3 | | | | 4 | | 3 | | 18 | | 28 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 18 | 1 | 30 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : FLORIDA POWER CORP.

TOTAL TUBES : 31,062

PLANT : CRYSTAL RIVER 3

TUBE MATERIAL : I-600

PLUGGED : 162

SG MODEL : OTSG

EFPY : 9.1

H. L. TEMP (F) : 603

C.L. TEMP (F) : 554

| DEFECTS | 76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | 2 | | 2 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 3 | 3 | | 8 | 17 | 1 | 1 | | | | | | 3 | | 1 | 31 | | 92 | 160 |
| TOT PLUGGED | 3 | 3 | 0 | 8 | 17 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 33 | 0 | 92 | 162 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Rocky Thompson

PHONE NUMBER: (904) 563-4548

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : DAMPIERRE 1 (ORIGINAL S. G.)

TUBE MATERIAL : I-600 MA

PLUGGED : 714

SG MODEL : FRAM-51M

EPFY : 6.7

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | R | | | 0 |
| PITTING | | | | | | | | | | | | | | | | E | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | P | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | L | | | 0 |
| ID SCC TS | | | | | | | | | | 22 | 89 | 53 | 57 | 931 | | A | | | 314 |
| ID SCC UB | | | | | | | | | | | 90 | 172 | 85 | | | C | | | 347 |
| FRET (PREH) | | | | | | | | | | | | | | | | E | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | 2 | | D | | | 2 |
| FRET (LP) | | | | | | | | 2 | | | | | 1 | | | | | | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 14 | | | | | | 1 | 12 | 14 | | 7 | | | | | 48 |
| TOT PLUGGED | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 2 | 23 | 191 | 239 | 143 | 102 | 0 | 0 | 0 | 0 | 714 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | 1 | | 1 | | 1 | | | | | | 3 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : DAMPIERRE 1 REPLACEMENT S. G.

TUBE MATERIAL : I-690 TT

PLUGGED : 0

SG MODEL : FRAM-51B

EFPY : 1.6

H. L TEMP (F) : 613

C.L TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : DAMPIERRE 2

TUBE MATERIAL : I-600 MA

PLUGGED : 396

SG MODEL : FRAM-51M

EPFY : 7.9

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | 1 | 1 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 23 | | 23 |
| ID SCC TS | | | | | | | | | 2 | 1 | 14 | 7 | 30 | | 39 | 13 | 42 | 15 | 163 |
| ID SCC UB | | | | | | | | | | | 180 | | | | | | | 6 | 186 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 1 | | | 7 | | 2 | 10 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHEH | | | | | 11 | | | | | 1 | | | 1 | | | | | | 13 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 2 | 2 | 194 | 7 | 32 | 0 | 39 | 20 | 55 | 24 | 396 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | 1 | | | | | | | | 1 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : DAMPIERRE 3

TUBE MATERIAL : I-600 MA

PLUGGED : 762

SG MODEL : FRAM-51M

EPFY : 8.4

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 88 | | | 88 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | 14 | 14 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 3 | 1 | 4 |
| ID SCC TS | | | | | | | | | | 12 | 15 | | 7 | 93 | 38 | 36 | 24 | 44 | 269 |
| ID SCC UB | | | | | | | | | | | | | | | 1 | | 163 | 83 | 247 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 1 | 1 | | | 4 | 2 | 8 |
| FRET (LP) | | | | | | | | | | 2 | 2 | | 1 | 2 | 2 | 6 | | | 15 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | 2 | | | | | 2 |
| OTHER | | | | | | 7 | | | | 1 | 2 | | | | 2 | 1 | 37 | 65 | 115 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 15 | 19 | 0 | 9 | 98 | 43 | 131 | 231 | 209 | 762 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | 1 | | | | | | | | | 1 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : DAMPIERRE 4

TUBE MATERIAL : I-600 MA

PLUGGED: 353

SG MODEL : FRAM-51M

EPY : 7.9

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 10 | | 7 | 17 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | 13 | 13 |
| ID SCC TS | | | | | | | | | | 30 | | | | 3 | 1 | | | 1 | 35 |
| ID SCC UB | | | | | | | | | | 90 | 88 | | | | | | | | 178 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | 1 | | 4 | 5 |
| FRET (LP) | | | | | | | | | | | | | | | | 1 | | 4 | 5 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 10 | | | | 1 | 3 | | | 1 | | 63 | | 22 | 100 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 121 | 91 | 0 | 0 | 4 | 1 | 75 | 0 | 51 | 353 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | 1 | | | | | | | | 1 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : TOLEDO EDISON

TOTAL TUBES : 30,914

PLANT : DAVIS BESSE

TUBE MATERIAL : I-600

PLUGGED : 74

SG MODEL : OTSG

EPFY : 7.6

H. L. TEMP (F) : 608

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | 10 | | 10 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | 2 | | | 2 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | 18 | | | | 2 | 7 | | 1 | | 19 | | 2 | | 10 | 3 | | 52 |
| TOT PLUGGED | 0 | 0 | 18 | 0 | 0 | 0 | 2 | 7 | 0 | 1 | 0 | 19 | 0 | 2 | 0 | 12 | 13 | 0 | 74 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | 1 | | | | | | | | | | | | 1 |

UTILITY CONTACT: Gene Matranqa

PHONE NUMBER: 419-321-8369

UTILITY : PACIFIC GAS & ELECTRIC

TOTAL TUBES : 13,552

PLANT : DIABLO CANYON 1

TUBE MATERIAL : I-600 MA

PLUGGED : 40

SG MODEL : W-51

EPFY : 5.9

H. L. TEMP (F) : 603

C.L. TEMP (F) : 545

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|--------|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | 1 1/4* | | | | 17 | 18 |
| FRET (PREH) | | | | | | | | | | | | | | | 1 | 1 | | | 2 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 12 | 12 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | 1 | | | | 7 | | | | 8 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 11 | 1 | 0 | 29 | 40 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: David Hampshire

* One tube unplugged and returned to service in 1989

PHONE NUMBER: 415-972-6568

UTILITY : PACIFIC ELECTRIC & GAS

TOTAL TUBES : 13,552

PLANT : DIABLO CANYON 2

TUBE MATERIAL : I-600 MA

PLUGGED : 15

SG MODEL : W-51

EPY : 5.4

H. L. TEMP (F) : 603

C.L. TEMP (F) : 545

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | 7 | | | | | 7 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | 2 | 24 | (19)* | | 1 | | 8 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 31 | -19 | 0 | 1 | 0 | 15 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: David Hampshire

* 19 Tubes unplugged and returned to service in 1989

PHONE NUMBER: 415-972-6568

UTILITY : EBES

TOTAL TUBES : 6520

PLANT : DOEL 1

TUBE MATERIAL : I-600

PLUGGED: 111

SG MODEL : ACE-44

EFPY : 15.0

H. L. TEMP (F) : 598

C.L. TEMP (F) : 544

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|-------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 5 | | 5 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 32 | | 19 | | 51 |
| FRET (LP) | | 1 | 8 | 13 | | | | | | 3 | | | | 2 | | | | | 27 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 3 | 1 | 1 | | | 11 | | | | 2 | 1 | | | | | 4 | | 5 | 28 |
| TOT PLUGGED | 3 | 2 | 9 | 13 | 0 | 11 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 2 | 32 | 4 | 24 | 5 | 111 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T L OUTAGE | | | 3 | | | | | | | | | | | | | | | | 3 |

UTILITY CONTACT: Paul Hernalsteen

PHONE NUMBER: (02) 3820551

UTILITY : EBES

TOTAL TUBES : 6520

PLANT : DOEL 2

TUBE MATERIAL : I-600

PLUGGED: 663

SG MODEL : ACE-44

EPFY : 13.2

H. L. TEMP (F) : 598

C.L. TEMP (F) : 544

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|-----|----|----|-------|------|----|-----|----|----|----|----|-----|----|----|-------|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | 1 | | | 1 | | 3 | 4 | | | | | | 4 | | 13 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 8 | 3 | | 11 |
| ID SCC TS | 1 | | 2 | 25 | 34 | 6 | 7 | 10 | 18 | 43 | 149 | 40 | | | | 57 | 5 | | | 397 |
| ID SCC UB | | | | | 1 | | | | | | 107 | | | | | | | | | 108 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 8 | 2 | | | | 10 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 3 | | | 3 | 77 | 1 | | | | | 1 | 2 | 22 | | 8 | 1 | | 6 | | 124 |
| TOT PLUGGED | 4 | 0 | 2 | 28 | 112 | 8 | 7 | 10 | 19 | 43 | 260 | 46 | 22 | 0 | 16 | 60 | 13 | 13 | | 663 * |
| MINI SLEEVE | | | | | | | | 133** | 54** | | | | | | | | | | | 187** |
| KISS SLEEVE | | | | | | | | | | | 10 | 81 | | | | | | | | 91# |
| NICKEL PLATE | | | | | | | | | | | | | | | | 348 | | | | 348 |
| T. I. OUTAGE | | | | | | | | 1 | 1 | | | | | | 1 | | | | | 3 |

UTILITY CONTACT: Paul Hernalsteen

* 175 of the 663 plugs removed for repair

PHONE NUMBER: (02) 3820551

** 186 of the 187 sleeved tubes subsequently plugged

10 of the kiss sleeves subsequently removed

UTILITY : EBES

TOTAL TUBES : 10,083

PLANT : DOEL 3

TUBE MATERIAL : I-600

PLUGGED: 555

SG MODEL : FRAM-51M

EPY : 8.8

H. L. TEMP (F) : 617

C.L. TEMP (F) : 547

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|------|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | 35 | 17 | 52 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | 5 | 3 | 1 | 2 | 51 | 16 | 16 | 28 | 42 | 35 | 199 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 14 | | | | 14 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 23 | | 1 | | | 266* | | | | | | 24 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 5 | 4 | 1 | 2 | 317 | 16 | 30 | 28 | 77 | 52 | 555 |
| TOT SLEEVED | | | | | | | | | | | | | | 55 | | | | | 55 |
| T. L. OUTAGE | | | | | | | | | | | | | 3 | | | | | 1 | 4 |

UTILITY CONTACT: Paul Hernalsteen

* 264 preventive row 1 plugging

PHONE NUMBER: (02) 3820551

UTILITY : EBES

TOTAL TUBES : 14,592

PLANT : DOEL 4

TUBE MATERIAL : I-600

PLUGGED : 310

SG MODEL : ACE-E

EPY : 6.5

H. L. TEMP (F) : 616

C.L. TEMP (F) : 560

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | 3 | 50 | 24 | 77 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | 43 | 43 |
| ID SCC TS | | | | | | | | | | | | | | | | 3 | 17 | 5 | 25 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | 2 | | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 19 | | | | | | | 8 | 136 | 163 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 6 | 77 | 208 | 310 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | 1 | 1 |

UTILITY CONTACT: Paul Hernalsteen

PHONE NUMBER: (02) 3820551

UTILITY : KERNKRAFTWERKE
 LIPPE-EMS GmbH
 PLANT : EMSLAND

TOTAL TUBES : 16,472
 TUBE MATERIAL : I-800

PLUGGED : 0

SG MODEL : KWU-54SK

EFPY : 4.2

H. L. TEMP (F) : 616

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : ALABAMA POWER COMPANY

TOTAL TUBES : 10,164

PLANT : FARLEY 1

TUBE MATERIAL : I-600 MA

PLUGGED : 358

SG MODEL : W-51

EFPY : 11.3

H. L. TEMP (F) : 607

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|-------|----|----|----|----|----|----|----|----|----|--------|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | 3 | | | 2 | | 95 | 22 | 122 |
| OD S/IGA TS | | | | | | | | | | | 1 | 3 | | 16 | 22 | | 42 | 9 | 93 |
| ID SCC TS | | | | | | | | | | | | | | 1 | | | 75 | 2 | 78 |
| ID SCC UB | | | | | 1 | 4 | 277** | | | | | | | | | | (226)# | | 56 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | 9 | | | | | | | | | 9 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 1 | 4 | 277 | 0 | 0 | 9 | 1 | 6 | 0 | 17 | 24 | 0 | 14 | 33 | 358 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | 136 | 136 |
| T. L. OUTAGE | | | | | | 1 | | | | | | | | | | | | | 1 |

UTILITY CONTACT: Forrest Hundley

* ODSCC above tubesheet (full depth expansion)
(some pitting associated with these indications)

PHONE NUMBER: 205-870-6998

** 274 Row 1 tubes preventively plugged

226 tube returned to service

UTILITY : ALABAMA POWER COMPANY TOTAL TUBES : 10,164

PLANT : FARLEY 2 TUBE MATERIAL : I-600 MA

PLUGGED : 817 SG MODEL : W-51

EPFY : 9.4 H. L. TEMP (F) : 607

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|------|----|----|----|----|-----|----|----|-------|----|----|-------|---|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | 1 | 2 | 28 | 76 | | 10 | 238 | | 19 | 374 | |
| OD S/IGA TS | | | | | | | | | | | 1 | | | | | | | | 1 | |
| ID SCC TS | | | | | | | | | | | | 40 | 30 | | 16 | 310 | | 22 | 418 | |
| ID SCC UB | | | | | | | | *280 | | | | | | | | **279 | | | 1 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | 6 | 2 | 2 | | 1 | | | | 11 | |
| FRET (LP) | | | | | | | | 3 | | 2 | | | | | | | | | 5 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | 1 | | 1 | | | | 5 | | 1 | | | -1 | | | 7 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 283 | 0 | 3 | 14 | 70 | 109 | 0 | 27 | 268 | 0 | 41 | 817 | |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | 29 | 29 | |
| T. L. OUTAGE | | | | | | | | | | 1 | | | | | | | | | 1 | |

UTILITY CONTACT: Forrest Hundley

* Row 1 preventively plugged

PHONE NUMBER: 205-870-6998

** One recovered F* tube was replugged

UTILITY : EDF

TOTAL TUBES : 10,164

PLANT : FESSENHEIM 1

TUBE MATERIAL : I-600 MA

PLUGGED : 492

SG MODEL : FRAM-51A

EFPY : 9.6

H. L. TEMP (F) : 611

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | 20 | | | | | | | 20 |
| OD S/IGA TS | | | | | | | | | | | | | | | 1 | 3 | 1 | | 5 |
| ID SCC TS | | | | | | | 26 | 2 | 45 | 1 | 9 | 1 | | | 5 | | 2 | | 91 |
| ID SCC UB | | | | | | | | 2 | 15 | 89 | 171 | | | 2 | 3 | 3 | 10 | | 295 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | 1 | 6 | 1 | 5 | | | | 1 | 1 | 1 | | 16 |
| FRET (LP) | | | | | | | | | | | | | | | | | 3 | | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 6 | | | | | | | 1 | 12 | 11 | 3 | 5 | | 7 | 3 | 2 | 12 | | 62 |
| TOT PLUGGED | 6 | 0 | 0 | 0 | 0 | 0 | 26 | 3 | 60 | 33 | 102 | 202 | 0 | 9 | 13 | 9 | 29 | 0 | 492 |
| TOT SLEEVED | | | | | | | | | | 10* | | | | | | | | | 10 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

* Subsequently Pluggeed

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,164

PLANT : FESSENHEIM 2

TUBE MATERIAL : I-600 MA

PLUGGED : 104

SG MODEL : FRAM-51A

: 10.0

H. L. TEMP (F) : 611

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | 1 | | 1 |
| OD S/IGA TS | | | | | | | | | | | | | | | | 31 | 27 | 7 | 65 |
| ID SCC TS | | | | | | | | | | | | | | | | | 6 | | 6 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | 1 | | | | 4 | 1 | | 6 |
| FRET (LP) | | | | | | | 1 | | | | | | | | | | | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | 12 | | | | | | | 4 | | | 1 | 1 | | | | 4 | 3 | 25 |
| TOT PLUGGED | 0 | 12 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 2 | 1 | 0 | 0 | 35 | 39 | 10 | 104 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : FLAMANVILLE 1

TUBE MATERIAL : I-600 TT

PLUGGED : 56

SG MODEL : FRAM-68/19

EFPY : 4.4

H. L TEMP (F) : 616

C.L TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|-------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 4 | 4 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 11 | | | 7 | 2 | | 3 | 29 | | | 52 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 7 | 2 | 0 | 3 | 29 | 4 | | 56 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : FLAMANVILLE 2

TUBE MATERIAL : I-600 TT

PLUGGED : 57

SG MODEL : FRAM-68/19

EFPY : 4.1

H. L TEMP (F) : 616

C.L TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | 5 | | | | 5 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | 2 | | | | 1 | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | 18 | | | 25 | 6 | 49 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 5 | 0 | 25 | 7 | 57 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : OMAHA PUBLIC POWER DISTRICT TOTAL TUBES : 10,010

PLANT : FORT CALHOUN TUBE MATERIAL : I-600 MA

PLUGGED: 109 SG MODEL : CE-71

EFPY : 13.0 H. L. TEMP (F) : 594

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | 1 | | | | | | | | | 1 |
| DENTING SP | | | | | | | | | | 9 | 28 | | | | | | | | 37 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | 8 | 2 | | | | | | | | 10 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | 1 | | | | | | 1 | | | | | | | | | 2 |
| OTHER | 49 | | | 3 | | | | | | 4 | 3 | | | | | | | | 59 |
| TOT PLUGGED | 49 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 23 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 109 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | 1 | | | | | | | | | 1 |

UTILITY CONTACT: J.M. Gate

PHONE NUMBER: (402) 533-6834

UTILITY : KYUSHU ELECTRIC POWER COMPAN TOTAL TUBES : 6,776

PLANT : GENKAI 1

TUBE MATERIAL : I-600 MA

PLUGGED: 649

SG MODEL : MHI-51

CFPY : 11.8

H. L. TEMP (F) : 601

C. L. TEMP (F) : 551

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|------------------------|-----|----|----|----|----|----|-----|-----|----|-----|-----|-----|------|----|-----|-----|---------|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING T ₃ | | | | | | | | | | | | | | | | | | | 0 |
| PITTING ₂ | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | 233 | 167 | | 105 | 17 | 38 | -106 | | -7 | -40 | 26/11* | | 422 |
| OD S/GA TS | | | | | | | | 9 | | 15 | 124 | 62 | 90 | | 20 | -27 | 14/89* | | 218 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | 1 | | | | | | | | | | | | | | | | | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 4 | 2 | | | | | | | | | 1 | | 1 | | | | | | 8 |
| TOT PLUGGED | 5 | 2 | 0 | 0 | 0 | 0 | 233 | 176 | 0 | 120 | 142 | 100 | -15 | | 13 | -67 | 40/100* | 0 | 649 |
| TOT SLEEVED | | | | | | | | | | | 147 | 342 | 384 | | 870 | 805 | 447 | | 2995 |
| T. L. OUTAGE | 1 | | | | | | | | | | | | | | | | | | 1 |

UTILITY CONTACT: H. Takamatsu

* Plugged 26 tubes, removed 11 plugs

* Plugged 14 tubes, removed 89 plugs

* Plugged 40 tubes, removed 100 plugs

PHONE NUMBER: 06-441-8821

UTILITY : KYUSHU ELECTRIC POWER COMPANY TOTAL TUBES : 6,764

PLANT : GENKAI 2 TUBE MATERIAL : I-600 MA

PLUGGED : 1 SG MODEL : MHI-51M

EFPY : 9.8 H. L. TEMP (F) : 599

C.L. TEMP (F) : 551

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HG FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | 1 | | | | | | | | 1 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : ROCHESTER GAS & ELECTRIC

TOTAL TUBES : 6520

PLANT : GINNA

TUBE MATERIAL : I-600 MA

PLUGGED : 504

SG MODEL : W-44

EFPY : 17.1

H. L. TEMP (F) : 601

C.L. TEMP (F) : 552

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|-----|-----|--------|-------|
| WASTAGE | 32 | 19 | | 1 | | 1 | | | | 1 | | | | | 4 | | | | 58 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | 46 | 39 | 13 | | 13 | 34 | 7 | 49 | 5 | 2 | 6 | 24 | 85 | 59 | 14 | 10 | | 37/49* | 394 |
| ID SCC TS | | | | | | | | | | | | | | | | 6 | | | 6 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | 1 | | | | | | | | | | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | 25 | | | | | 25 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 1 | | 6 | 23 | 6 | | | 3 | | | | | | 2 | | -8 | -13 | | 20 |
| TOT PLUGGED | 79 | 58 | 19 | 24 | 19 | 35 | 7 | 53 | 5 | 3 | 6 | 24 | 85 | 86 | 18 | 8 | -13 | -12 | 504 |
| TOT SLEEVED | | | | | | 5 | 16 | | 77 | 8 | 69 | 39 | 101 | -3 | 502 | 241 | 207 | 425 | 1887 |
| T. L. OUTAGE | 1 | 1 | 1 | 1 | 1 | | | 1 | | | | | | 1 | | | | | 7 |

UTILITY CONTACT: John Smith

* 37 tubes plugged and
49 returned to service.

PHONE NUMBER: (716) 724 8363

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : GOLFECH 1

TUBE MATERIAL : I-600 TT

PLUGGED : 14

SG MODEL : FRAM-68/19

EPY : 0.9

H. L TEMP (F) : 616

C.L TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | 10 | | | | 4 | 14 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 4 | 14 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : KERNKRAFTWERK
GÖSGEN-DANIKEN

TOTAL TUBES : 12,318

PLANT : GÖSGEN

TUBE MATERIAL : I-800

PLUGGED : 12

SG MODEL : KWU

EPFY : 11.5

H. L. TEMP (F) : 610

C.L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | * 1 | | | | | | | | | | | 1 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | 1 | | 4 | | 5 | 10 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | * 1 | | | | | | | | | | | 1 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | | 4 | 0 | 5 | 12 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

* Tube pulled for investigation

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : BAYERNWERK AG

TOTAL TUBES : 16,344

PLANT : GRAFENRHEINFELD

TUBE MATERIAL : I-800

PLUGGED : 0

SG MODEL : KWU-54GS

EFPY : 9.2

H. L. TEMP (F) : 618

C.L. TEMP (F) : 555

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : GRAVELINES 1

TUBE MATERIAL : I-600 MA

PLUGGED: 662

SG MODEL : FRAM-51M

EFPY : 8.0

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|-----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 4 | | | 4 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 20 | | 20 |
| ID SCC TS | | | | | | | | | | 2 | 12 | 18 | 10 | 25 | 38 | 203 | 11 | | 319 |
| ID SCC UB | | | | | | | | | | | 179 | | | | | | | | 179 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | 2 | 1 | | 3 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 10 | | | 2 | | 1 | | 2 | | | | | 86 | 36 | | 137 |
| TOT PLUGGED | 0 | 0 | 0 | 10 | 0 | 0 | 2 | 0 | 1 | 2 | 193 | 18 | 10 | 25 | 38 | 295 | 68 | 0 | 662 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | 1 | | | | | 1 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : GRAVELINES 2

TUBE MATERIAL : I-600

PLUGGED : 707

SG MODEL : FRAM-51M

EFPY : 8.6

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFELTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|-----|-----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 19 | | | 19 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 50 | | 50 |
| ID SCC TS | | | | | | | | | | | 7 | | 11 | 15 | 16 | 25 | 72 | 7 | 153 |
| ID SCC UB | | | | | | | | | | | 179 | | | | | | 5 | 2 | 186 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | 2 | 2 | 1 | 1 | 5 | 11 |
| FRET (LP) | | | | | | | | | | | | | | 10 | 6 | 3 | 1 | | 20 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | 4 | | | | | | 2 | | | | | 176 | 81 | 5 | 268 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 188 | 0 | 11 | 27 | 24 | 224 | 210 | 19 | 707 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | 1 | | | | | 1 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : GRAVELINES 3

TUBE MATERIAL : I-600 MA

PLUGGED : 308

SG MODEL : FRAM-51M

EPY : 8.5

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 6 | | | 6 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | 2 | 4 | | 11 | | 1 | 10 | 8 | 30 | 66 |
| ID SCC UB | | | | | | | | | | | 90 | | | | | | | 4 | 94 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 9 | | 24 | 8 | 3 | 5 | 49 |
| FRET (LP) | | | | | | | | | | | 4 | | 1 | | 16 | 4 | 4 | | 29 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 8 | | | | | 3 | | | | | 11 | 38 | 4 | 64 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 101 | 0 | 21 | 0 | 41 | 39 | 53 | 43 | 308 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | 1 | 1 | | | | | | | 2 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : GRAVELINES 4

TUBE MATERIAL : I-600 MA

PLUGGED: 379

SG MODEL : FRAM-51M

EPY : 8.3

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 22 | | 9 | 31 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| CD S/IGA TS | | | | | | | | | | | | | | | | | | 4 | 4 |
| ID SCC TS | | | | | | | | | | 15 | | | | 1 | 4 | 11 | | 18 | 49 |
| ID SCC UB | | | | | | | | | | | 180 | | | 10 | | | | | 190 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 2 | | | 1 | 3 |
| FRET (LP) | | | | | | | | 2 | | | | | | 2 | 3 | 9 | | | 16 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 6 | | | | 1 | | | 2 | | 1 | 52 | | 24 | 36 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 | 16 | 180 | 0 | 2 | 13 | 10 | 94 | 0 | 58 | 379 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | 1 | 1 | 1 | | | | | | | | 3 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,990

PLANT : GRAVELINES 5

TUBE MATERIAL : I-600 TT

PLUGGED : 16

SG MODEL : FRAM-51B

EFPY : 5.8

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 9 | | | 9 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | 1 | | | 2 | 1 | | | 4 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 2 | | | 1 | | | | | | | 3 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 10 | 0 | 0 | 16 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 9,990

PLANT : GRAVELINES 6

TUBE MATERIAL : I-600 TT

PLUGGED : 31

SG MODEL : FRAM-51B

EFPY : 5.3

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | 6 | | 10 | | 1 | 8 | 25 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 5 | | 1 | | | | | | | 6 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 6 | 0 | 10 | 0 | 1 | 8 | 31 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : GEMEINSCHAFTSKERN-
KRAFTWERK GROHNDE GmbH

TOTAL TUBES : 16,344

PLANT : GROHNDE

TUBE MATERIAL : I-800

PLUGGED : 1

SG MOEEL : KWU-54GS

EPFY : 7.2

H. L. TEMP (F) : 620

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|---|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | * 1 | 1 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

* Probably FRET (AVB)

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : SHIKOKU ELECTRIC POWER

TOTAL TUBES : 6,776

PLANT : IKATA 1

TUBE MATERIAL : I-600 MA

PLUGGED : 272

SG MODEL : MHI-51

EFPY : 11.9

H. L. TEMP (F) : 603

C. L. TEMP (F) : 550

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | 134 | | 18 | 6 | 12 | | | 12 | 14 | 55 | | 251 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | 9 | | | | | | | | | | | | 9 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 12 | | | | | | | | | | | 12 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 146 | 0 | 18 | 6 | 12 | 0 | 0 | 12 | 14 | 55 | 0 | 272 |
| TOT SLEEVED | | | | | | | | | | 14 | | | | | | | | | 14 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : SHIKOKU ELECTRIC POWER

TOTAL TUBES : 6,764

PLANT : IKATA 2

TUBE MATERIAL : I-600 MA

PLUGGED : 4

SG MODEL : MHI-51M

EFPY : 9.0

H. L. TEMP (F) : 604

C.L. TEMP (F) : 550

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 4 | 4 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : CONSOLIDATED EDISON

TOTAL TUBES : 13,040

PLANT : INDIAN POINT 2

TUBE MATERIAL : I-600 MA

PLUGGED : 1072

SG MODEL : W-44

EFPY : 12

H. L. TEMP (F) : 589

C.L. TEMP (F) : 530

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|-----|----|-----|-----|----|-----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | 3 | | 8 | 26 | 16 | 10 | 20 | | 84 | | 33 | 19 | | 55 | | 1 | | 275 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | 79 | | 78 | 90 | | 76 | | 27 | | 348 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | 3 | | | | | | | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 394 | 3 | | 14 | | | | 2 | | 6 | | | 2 | | 13 | | 12 | | 446 |
| TOT PLUGGED | 394 | 6 | 0 | 22 | 26 | 16 | 10 | 22 | 0 | 169 | 0 | 112 | 111 | 0 | 144 | 0 | 40 | 0 | 1072 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | 1 | | | | | 1 | | | 1 | | | | 1 | | | | | 4 |

UTILITY CONTACT: Jimmy Mark

PHONE NUMBER: 212-460-3599

UTILITY : NEW YORK POWER AUTHORITY

TOTAL TUBES

PLANT : INDIAN POINT 3 (REPLACEMENT S. G.)

TUBE MATERIAL : I-690 TT

PLUGGED : 0

SG MODEL : W-44F

EFPY : 2.5

H. L. TEMP (F) :

C.L. TEMP (F) :

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SF | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Jim Gillen

PHONE NUMBER: 914-736-8450

UTILITY : GEMEINSCHAFTSKERN-
KRAFTWERK ISAR 2 GmbH

TOTAL TUBES : 16,472

PLANT : ISAR-2

TUBE MATERIAL : I-800

PLUGGED : 0

SG MODEL : KWU-54SK

EFPY : 3.8

H. L. TEMP (F) : 615

C.L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : UNION ELECTRICA FENOSA

TOTAL TUBES : 2,604

PLANT : JOSE CABERA (ZORITA)

TUBE MATERIAL : I-600 MA

PLUGGED: 147

SG MODEL : W-24

EFPY : 17.1

H. L. TEMP (F) : 584

C.L. TEMP (F) : 537

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | 3 | | | | 1 | 4 | 2 | | | | | | 7 | 2 | | | | | 19 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | 1 | | 2 | 1 | 1 | 5 |
| ID SCC TS | | | | | | | 7 | 51 | | | 4 | 5 | 5 | 4 | 2 | 3 | | | 81 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | 1 | | | 1 | 2 | 1 | 1 | 2 | | | 1 | | 1 | | 3 | 5 | 1 | 2 | 21 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 5 | | | 7 | 1 | | 1 | 1 | | | 2 | 1 | 2 | | | | | 1 | 21 |
| TOT PLUGGED | 9 | 0 | 0 | 8 | 4 | 5 | 11 | 54 | 0 | 0 | 7 | 6 | 15 | 7 | 5 | 10 | 3 | 3 | 147 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Gustavo Bollini

PHONE NUMBER: 34-1-6516700

UTILITY : WISCONSIN PUBLIC SERVICE CORP. TOTAL TUBES : 6,776

PLANT : KEWAUNEE TUBE MATERIAL : I-600

PLUGGED: 496 SG MODEL : W-51

EPY : 14.8 H. L. TEMP (F) : 599

C.L. TEMP (F) : 536

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|-----|------|------|-----|-------|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | 6 | 1 | 6 | 10 | 12 | 43 | 66 | 56 | 200 |
| OD S/IGA TS | | | | | | | | | 63 | 25 | 43 | 71 | 116 | 29 | 36 | 185 | 91 | 8 | 667 |
| ID SCC TS | | | | | | | | | | | | | | | 4 | | | | 4 |
| ID SCC UB | | | | | | | | | | | | 2 | 1 | 1 | | | | 1 | 5 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | 9 | | | | | | | | | | 9 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | 3 | | 3 | *-395 | | 399 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 72 | 25 | 49 | 74 | 123 | 43 | 52 | 231 | -238 | 65 | 496 |
| TOT SLEEVED | | | | | | | | | | | | | | 1940 | 1698 | | 690 | 16 | 4344 |
| T. L. OUTAGE | | | | | | | | | | | | | | | 1 | | | | 1 |

UTILITY CONTACT: Chuck Smoker

PHONE NUMBER: 414-388-2560 EXT. 2608

* 395 tubes deplugged, sleeved and returned to service.

UTILITY : KOREA ELECTRIC POWER CO.

TOTAL TUBES : 6,776

PLANT : KORI 1

TUBE MATERIAL : I-600 MA

PLUGGED: 754

SG MODEL : W-51

EFPY : 10.0

H. L. TEMP (F) : 607

C.L. TEMP (F) : 541

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|-----|----|-----|-----|-----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | 419 | 175 | | 54 | 15 | 25 | | | 688 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | 1 | | 1 |
| ID SCC UB | | | | | | | | | | | | | | | | | 2 | 3 | 5 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | 14 | 25 | 21 | 60 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 419 | 175 | 0 | 54 | 29 | 53 | 0 | 24 | 754 |
| TOT SLEEVED | | | | | | | | | | | | | | 558 | 178 | 415 | | 330 | 1481 |
| T. L. OUTAGE | | | | | | | | | | | 1 | | | | | 1 | | | 2 |

UTILITY CONTACT: YANG UOO CHOE

PHONE NUMBER: _____

UTILITY : KOREA ELECTRIC POWER CO.

TOTAL TUBES : 11,252

PLANT : KORI 2

TUBE MATERIAL : I-600 TT

PLUGGED: 178

SG MODEL : W-F

EFPY : 7.7

H. L. TEMP (F) : 616

C.L. TEMP (F) : 550

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | 7 | 116 | | | | | 2 | 125 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | 14 | 10 | 1 | | 8 | 4 | 12 | 49 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | 2 | 1 | 1 | | | | | 4 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 127 | 2 | 0 | 8 | 4 | 14 | 178 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: YANG UOO CHOE

PHONE NUMBER: _____

UTILITY : KOREA ELECTRIC POWER CO.

TOTAL TUBES : 16,878

PLANT : KORI 3

TUBE MATERIAL : I-600 TT

PLUGGED : 30

SG MODEL : W-F

EFY : 5.9

H. L. TEMP (F) : 619

C.L. TEMP (F) : 556

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | 7 | 6 | 4 | 3 | 9 | 29 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | 1 | | | | | 1 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 6 | 4 | 3 | 9 | 30 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: YANG HOO CHOE

PHONE NUMBER: _____

UTILITY : KOREA ELECTRIC POWER CO.

TOTAL TUBES : 16,878

PLANT : KORI 4

TUBE MATERIAL : I-600 TT

PLUGGED: 32

SG MODEL : W-5

EFPY : 5.4

H. L. TEMP (F) : 619

C.L. TEMP (F) : 556

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 3 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | 5 | 3 | 2 | 9 | 13 | 32 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | | | | | | | | | | | | 0 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 2 | 9 | 13 | 32 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: YANG UOO CHOE

PHONE NUMBER: _____

UTILITY : IMATRAN VOIMA OY

TOTAL TUBES : 33216

PLANT : LOVIISA 1

TUBE MATERIAL : AISI 321

PLUGGED: 0

SG MODEL : AEE-B-213

EFPY : 12.3

H. L. TEMP (F) : 567

C.L. TEMP (F) : 505

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | 1* | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: THOMAS BUDDAS

* Defect in manufacture

PHONE NUMBER: 358 15 5501

UTILITY : IMATRAN VOIMA OY

TOTAL TUBES : 33216

PLANT : LOVIISA 2

TUBE MATERIAL : AISI 321

PLUGGED : 1

SG MODEL : AEE-B-213

EPFY : 10.4

H. L. TEMP (F) : 567

C.L. TEMP (F) : 505

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA 3P | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 1* | | | | | | | | | | | 1 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: THOMAS BUDDAS

* Defect in manufacture

PHONE NUMBER: 358 15 5501

UTILITY : MAINE YANKEE ATOMIC POWER CO. TOTAL TUBES : 17109

PLANT : MAINE YANKEE TUBE MATERIAL : I-600 MA

PLUGGED : 210 SG MODEL : CE-67

EFPY : 14.0 H. L. TEMP (F) : 602

C.L. TEMP (F) : 550

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | 12 | | | 11 | | | | | | | | 23 |
| DENTING SP | | | | | | | | | | | | | | 5 | | | | 25 | 30 |
| DENTING TS | | | | | | | | | | | | | 1 | | | | | | 1 |
| PITTING | | | | | | | | | | | 20 | | 1 | 6 | | 17 | | 12 | 56 |
| OD S/GA SP | | | | | | | | | | | | | | | | 1 | | | 1 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | 31 | | 21 | 52 |
| ID SCC UB | | | | | | | | | | | | | | | | 10 | | 4 | 14 |
| FRET (PREH) | | | | | | | | | | | 2 | | | | | | | | 2 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | 2 | | | | | 2 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 6 | | | 15 | | | | 1 | | | 3 | | | | | 3 | | 1 | 29 |
| TOT PLUGGED | 6 | 0 | 0 | 15 | 0 | 0 | 0 | 13 | 0 | 0 | 36 | 0 | 2 | 13 | 0 | 62 | 0 | 63 | 210 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | 1 | | | 1 |

UTILITY CONTACT: LINCOLN SPEED

PHONE NUMBER: (207) 882-5182

UTILITY : DUKE POWER CO.

TOTAL TUBES : 18,696

PLANT : McGUIRE 1

TUBE MATERIAL : I-600 MA

PLUGGED: 1492

SGMODEL : W-D2

EFPY : 6.8

H. L. TEMP (F) : 618

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|----|-----|-----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | 7 | | 21 | 17 | 45 |
| OD S/IGA TS | | | | | | | | | | | | | | | 1 | 8 | | | 9 |
| ID SCC TS | | | | | | | | | | | 4 | 37 | 152 | 113 | 58 | 166 | 41 | 6 | 577 |
| ID SCC UB | | | | | | | | | | | | 383 | | 2 | | | 4 | | 389 |
| FRET (PREH) | | | | | | | | 7 | 2 | | | | | 7 | 1 | 1 | | 1 | 19 |
| FRET (AVB) | | | | | | | | | | | | | | | | | 7 | 4 | 11 |
| FRET (LP) | | | | | | | | | | | | | | | 1 | 4 | 1 | | 6 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 80 | | 2 | | | | | 1 | 3 | 6 | 6 | 8 | 330 | 436 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 80 | 0 | 9 | 2 | 0 | 4 | 420 | 153 | 125 | 74 | 185 | 82 | 358 | 1492 |
| TOT SLEEVED | | | | | | | | | | | | | | | | 397 | 458 | | 855 |
| T. L. OUTAGE | | | | | | | | | | | 1 | | | | 1 | | | 1 | 3 |

UTILITY CONTACT: Dan Mayes

PHONE NUMBER: 704-382-4211

UTILITY : DUKE POWER CO.

TOTAL TUBES : 18,696

PLANT : McGUIRE 2

TUBE MATERIAL : I-600 MA

PLUGGED: 1099

SG MODEL : W-D3

EPY : 6.5

H. L. TEMP (F) : 618

C. L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | 6 | 6 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | 4 | 4 |
| ID SCC TS | | | | | | | | | | | | 5 | 141 | 152 | 139 | 4 | | | 441 |
| ID SCC UB | | | | | | | | | | | 50 | 406 | | | | | | | 456 |
| FRET (PREH) | | | | | | | | | | | | | | | 3 | | | 3 | 6 |
| FRET (AVB) | | | | | | | | | | | | | | | | 1 | | 4 | 5 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 1 | | | | | | | 31 | 12 | | 137 | 181 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 50 | 411 | 141 | 152 | 173 | 17 | 0 | 154 | 1099 |
| TOT SLEEVED | | | | | | | | | | | | | | | | 478 | | 137 | 615 |
| T. L. OUTAGE | | | | | | | | | | | 1 | | | | | | | | 1 |

UTILITY CONTACT: Dan Mayes

PHONE NUMBER: 704-382-4211

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 8,852

PLANT : MIHAMA 1

TUBE MATERIAL: I-600 MA

PLUGGED: 1875

SG MODEL : CE

EFPY : 9.4

H. L. TEMP (F) : 599

C.L. TEMP (F) : 553

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|------|-----|----|----|----|----|----|----|----|----|----|----|----|-----|------|------|----|-----|-------|
| WASTAGE | 1149 | 180 | | | | | | | | | | | | | | | | | 1329 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | 6 | | | 243 | 249 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 870 | 15 | | | | | 13 | | | | | | | -47 | -320 | -235 | | 1 | 297 |
| TOT PLUGGED | 2019 | 195 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | -47 | -314 | -235 | 0 | 244 | 1875 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | 2 | | | | | | | | | | | | | | | | | 1 | 3 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 6,520

PLANT : MIHAMA 2

TUBE MATERIAL : I-600 MA

PLUGGED: 412

SG MODEL : MHI-44

EFPY : 11.5

H. L. TEMP (F) : 591

C.L. TEMP (F) : 553

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|
| WASTAGE | 266 | | | | | | | | | | | | | | | 11 | | | 277 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | 13 | | | | | | | | | | | 13 |
| OD S/IGA TS | | | | | 25 | 17 | | | 7 | 6 | | | 2 | 1 | | | | | 58 |
| ID SCC TS | | | | | | | | | 36 | | | | | | | 5 | | | 41 |
| ID SCC UB | | | | | | | | | | | | 1 | | | | | | | 1 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | 1 | 4 | | | | | | 5 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | 1 | 1 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | 4 | | 8 | | 1 | | | | | | 1 | | 2 | | | | | 16 |
| TOT PLUGGED | 266 | 4 | 0 | 8 | 25 | 18 | 0 | 13 | 43 | 6 | 0 | 3 | 6 | 3 | 0 | 16 | 1 | 0 | 412 |
| TOT SLEEVED | | | | | | | | 3 | 14 | 25 | | -1 | | | | | | | 41 |
| T. L. OUTAGE | 1 | | | | 1 | | | | 1 | | | | | | | | | * 1 | 4 |

UTILITY CONTACT: akamatsu

* Longterm outage due to tube break
by highcycle fretting fatigue

PHONE NUMBER: 06-441-8821

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 10,164

PLANT : MIHAMA 3

TUBE MATERIAL : I-600 MA

PLUGGED : 535

SG MODEL : MHI-51

EFPY : 11.5

H. L. TEMP (F) : 608

C.L. TEMP (F) : 551

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | 51 | 61 | 112 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | 108 | 3 | 17 | | 12 | 22 | 60 | | 108 | 89 | 418 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | 2 | | | | | | | | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 2 | | | | | | | | | | | | | | | 1 | | | 3 |
| TOT PLUGGED | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 108 | 3 | 19 | 0 | 12 | 23 | 60 | 0 | 159 | 149 | 535 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : NORTHEAST UTILITIES

TOTAL TUBES : 17,038

PLANT : MILLSTONE 2 (ORIGINAL S. G.)

TUBE MATERIAL : I-600 MA

PLUGGED: 3080

SG MODEL : CE-67

EFPY : 10.9

H. L. TEMP (F) : 604

C.L. TEMP (F) : 550

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|-----|----|----|----|-----|----|------|----|------|-----|----|-----|-----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | 763 | | 4 | 1 | | | | | | 3 | | 6 | | 6 | 13 | | 796 |
| DENTING TS | | | | | | | 4 | | 11 | | 3 | | | | | | | | 18 |
| PITTING | | | | | | | 704 | | 180 | | 56 | 22 | 36 | 366 | 236 | 54 | 1 | | 1655 |
| OD S/GA SP | | | | | | | | | | | | | | | | | 2 | | 2 |
| OD S/GA TS | | | | | | | | | | | | | 1 | 26 | 413 | 30 | 34 | | 504 |
| ID SCC TS | | | | | | | | | | | | | | | | | | R | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | E | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | P | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | L | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | A | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | C | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | E | 0 |
| OTHER | 30 | | | | 1 | | 1 | | 1 | | 4 | 3 | 44 | 3 | | 4 | 14 | D | 105 |
| TOT PLUGGED | 30 | 0 | 763 | 0 | 5 | 1 | 709 | 0 | 192 | 0 | 63 | 28 | 81 | 401 | 649 | 94 | 64 | | 3080 |
| TOT SLEEVED | | | | | | | | | 2022 | | 2917 | 225 | | | | | | | *5164 |
| T. L. OUTAGE | | | | | | | | | 1 | | | | 1 | | | 1 | | | 3 |

UTILITY CONTACT: John Kliesiewick

* Approximately 535 sleeved tubes
have been plugged.

PHONE NUMBER: 203-665-3969

UTILITY : NORTHEAST UTILITIES

TOTAL TUBES :

PLANT : MILLSTONE 2 (REPLACEMENT S. G.)

TUBE MATERIAL : I-690 TT

PLUGGED : 3080

SG MODEL : B&W CANADA

EFPY : 0.0

H. L. TEMP (F) :

C.L. TEMP (F) :

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Klesiewick

PHONE NUMBER: 203-665-3969

UTILITY : NORTHEAST UTILITIES

TOTAL TUBES : 22054

PLANT : MILLSTONE 3

TUBE MATERIAL : I-600 TT

PLUGGED : 21

SG MODEL : W-F

EPY : 4.5

H. L. TEMP (F) : 621

C.L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 2 | | 3 | | 5 | | 10 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 5 | 5 | | | | 1 | | | | 11 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 2 | 0 | 4 | 0 | 5 | 0 | 21 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Klesiewicz

PHONE NUMBER: 203-665-3969

UTILITY : GEMEINSCHAFTSKERN-
KRAFTWERK NECKAR GmbH
PLANT : NECKARWESTHEIM-1

TOTAL TUBES : 12,063
TUBE MATERIAL : I-800

PLUGGED : 18

SG MODEL : KWU

EFPY : 12.6

H. L. TEMP (F) : 612

C.L. TEMP (F) : 560

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | 3 | | 1 | 1 | | | | 1 | 5 | | 1 | | | 12 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | 3 | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | * 3 | | | | | | | | | | | | | 3 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 5 | 0 | 1 | 3 | 0 | 18 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

* 3 Tubes pulled for investigation

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : GEMEINSCHAFTSKERN-
KRAFTWERK NECKAR GmbH

TOTAL TUBES : 16,472

PLANT : NECKARWESTHEIM-2

TUBE MATERIAL : I-800

PLUGGED : 0

SG MODEL : KWU-54SK

EPY : 3.4

H. L. TEMP (F) : 616

C.L. TEMP (F) : 558

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : NOGENT / SEINE 1

TUBE MATERIAL : I-600 TT

PLUGGED : 279

SG MODEL : FRAM-68/19

EPY : 3.0

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|----|----|-------|-----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | 246 | 8 | 3 | 2 | | 259 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | 1 | | | | 1 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | 6 | | | | | 6 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | 1 | 11 | 1 | | 13 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 252 | 10 | 14 | 3 | 279 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : NOGENT / SEINE 2

TUBE MATERIAL : I-600 TT

PLUGGED : 57

SG MODEL : FRAM-68/19

EFY : 2.8

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 1 | 1 | 10 | | 12 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 4 | | 4 |
| FRET (LP) | | | | | | | | | | | | | | | 15 | | | | | 15 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | 3 | | | | | 21 | 2 | 26 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 15 | 1 | 22 | 16 | | 57 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | 1 | | | | 1 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : Virginia Power

TOTAL TUBES : 10164

PLANT : North Anna 1

TUBE MATERIAL : 1-600 MA

PLUGGED : 2065

SG MODEL : W-51

EPFY : 9.5

H. L. TEMP (F) : 614

C.L. TEMP (F) : 547

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|------|----|----|----|----|----|----|----|------|----|-----|----|----------|-----|-------|
| WASTAGE | | | | | | | | | | | | | 1 | | | | | | 1 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | 2 | | 92 | 470 | 564 |
| OD S/IGA TS | | | | | | | | | | 1 | 2 | | 45 | | 3 | | 49 | | 100 |
| ID SCC TS | | | | | | | | | | | | | 45 | | 28 | | 198 | 36 | 307 |
| ID SCC UB | | | | | 279* | | 3 | | | | | | 1 | | 2 | | | | 285 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 3 | | | | 3 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | 1 | | | | | | 1 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | 2 | | | | | 24 | 84 | | 423* | | 118 | | 268/136# | 21 | 804 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 281 | 0 | 3 | 0 | 0 | 25 | 86 | 0 | 516 | 0 | 156 | 0 | 471 | 527 | 2065 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | 1 | 1 | | 1 | | 1 | | | | 4 |

UTILITY CONTACT: Joe Eastwood

* 279 preventively plugged

PHONE NUMBER: (804) 273-2730

^ 245 plugged to IDSCC at tube support plate
178 plugged due to 7th support plate fatigue issue.

136 previously plugged tubes returned to service

UTILITY : Virginia Power

TOTAL TUBES : 10164

PLANT : North Anna 2

TUBE MATERIAL : I-600 MA

PLUGGED : 712

SG MODEL : W-51

EPY : 9.3

H. L. TEMP (F) : 614

C.L. TEMP (F) : 547

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|------|----|----|----|----|----|----|----|------|----|----|-----|--------|-----|-------|
| WASTAGE | | | | | | | | | | 1 | | 1 | 16 | | | | | | 18 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | 8 | 30 | | 204 | 242 |
| OD S/IGA TS | | | | | | | | | | | | | | | 1 | 30 | | 9 | 40 |
| ID SCC TS | | | | | | | | | | | | 2 | 5 | | 7 | | | 13 | 45 |
| ID SCC UB | | | | | 282* | | | | | | | 6 | 5 | | 6 | 2 | | | 301 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 7 | | 6 | 11 | | 9 | 33 |
| FRET (LP) | | | | | | | | | | 2 | | | 2 | | | | | | 4 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | 120* | | | 1 | 9/116# | 15 | 29 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 282 | 0 | 0 | 0 | 0 | 3 | 0 | 9 | 155 | 0 | 29 | -16 | 0 | 250 | 712 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | 1 | 1 | | 1 | | 1 | | | | 4 |

UTILITY CONTACT: Joe Eastwood

* 282 preventively plugged (Row 1)

PHONE NUMBER: (804) 273-2730

^ 118 preventively plugged due to
7th support plate fatigue issue

116 previously plugged tubes returned to service
(7th support plate fatigue issue)

UTILITY : KERNKRAFTWERK
 OBRIGHEIM GmbH
 PLANT : OBRIGHEIM (ORIGINAL S. G.)

TOTAL TUBES : 5,210
 TUBE MATERIAL : I-600 MA

PLUGGED : 461

SG MODEL : KWJ

EPFY : 11.2

H. L. TEMP (F) : 589

C.L. TEMP (F) : 541

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | R | | | | | | | | | | 0 |
| PITTING | | | | | | | | | E | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | P | | | | | | | | | | 0 |
| OD S/IGA TS | 26 | | 1 | | | 3 | 2 | | L | | | | | | | | | | 32 |
| ID SCC TS | | | | | 5 | 16 | 29 | 88 | A | | | | | | | | | | 138 |
| ID SCC UB | 12 | | | | 1 | 2 | | | C | | | | | | | | | | 15 |
| FRET (PREH) | | | | | | | | | E | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | D | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER * | 160 | 8 | 23 | 32 | 9 | 28 | 14 | 2 | | | | | | | | | | | 276 |
| TOT PLUGGED | 198 | 8 | 24 | 32 | 15 | 49 | 45 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 461 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | 6 | 1 | 2 | | | | | | | | | | | | | | | | 9 |

UTILITY CONTACT: S. Odar / R. Bouecke

* Probably SCC

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : KERNKRAFTWERK
 OBRIGHEIM GmbH

TOTAL TUBES : 6,020

PLANT : OBRIGHEIM (REPLACEMENT S. G.)

TUBE MATERIAL : I-800

PLUGGED : 0

SG MODEL : KWU

EFPY : 6.9

H. L. TEMP (F) : 589

C. L. TEMP (F) : 534

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : DUKE POWER

TOTAL TUBES : 31602

PLANT : OCONEE 1

TUBE MATERIAL : I-600 MA

PLUGGED : 1266

SG MODEL : OTSG

EFPY : 13.6

H. L. TEMP (F) : 604

C.L. TEMP (F) : 554

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HJ FATIGUE | | 6 | 2 | | | | 1 | | | | | | 20 | | | | | 2 | 31 |
| ERR/CORR | | | 45 | | 75 | | 41 | | 24 | 48 | | | 59 | | 50 | 50 | 49 | 550 | 991 |
| OTHER | 2 | | 8 | 47 | 9 | | 3 | 2 | | 8 | 3 | 81 | | | 11 | 10 | | 50 | 244 |
| TOT PLUGGED | 2 | 6 | 55 | 47 | 84 | 0 | 45 | 2 | 24 | 56 | 3 | 81 | 79 | 0 | 61 | 60 | 49 | 612 | 1266 |
| TOT SLEEVED | | | | 6 | | | | | | | | | 469 | | | | | | 475 |
| T. L. OUTAGE | | 2 | 4 | 1 | 1 | | 1 | 2 | | | 1 | 2 | | | | | | | 14 |

UTILITY CONTACT: Dan Mayes

PHONE NUMBER: (704) 382-4211

UTILITY : DUKE POWER

TOTAL TUBES : 31602

PLANT : OCONEE 2

TUBE MATERIAL : I-600 MA

PLUGGED : 180

SG MODEL : OTSG

EPY : 13.1

H. L. TEMP (F) : 604

C.L. TEMP (F) : 554

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | 1 | | | 5 | | | 1 | | | | | | | 12 | 1 | | | | 20 |
| ERR/CORR | | 1 | | | | | | | 8 | | | | | 16 | 5 | | | 70 | 100 |
| OTHER | 10 | 3 | | 8 | | 1 | | 9 | | | 9 | | | 9 | 3 | 1 | | 7 | 60 |
| TOT PLUGGED | 11 | 4 | 0 | 13 | 0 | 1 | 1 | 9 | 8 | 0 | 9 | 0 | 0 | 37 | 9 | 1 | 0 | 77 | 180 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | 1 | | 1 | | | 1 | | | | | | | 1 | | 1 | | | 5 |

UTILITY CONTACT: Dan Mayes

PHONE NUMBER: (704) 382-4211

UTILITY : DUKE POWER

TOTAL TUBES : 31602

PLANT : OCONEE 3

TUBE MATERIAL : I-600 MA

PLUGGED: 376

SG MODEL : OTSG

EFPY : 12.8

H. L. TEMP (F) : 604

C.L. TEMP (F) : 554

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | 3 | 3 | | | 5 | | | | | | | 18 | 8 | | | | | 37 |
| ERR/CORR | | | | | | | | | | 13 | | | 55 | 41 | | | | 114 | 223 |
| OTHER | | | 12 | 1 | 2 | | | 22 | | | 16 | 7 | | 23 | 21 | | | 12 | 116 |
| TOT PLUGGED | 0 | 3 | 15 | 1 | 2 | 5 | 0 | 22 | 0 | 13 | 16 | 7 | 73 | 72 | 21 | 0 | 0 | 126 | 376 |
| TOT SLEEVED | | | | | | | | | | | | | | 247 | | | | | 247 |
| T. L. OUTAGE | | 1 | 3 | | | 1 | | 2 | | 1 | 2 | 1 | 1 | 1 | | | | | 13 |

UTILITY CONTACT: Dan Mayes

PHONE NUMBER: (704) 382-4211

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 13,552

PLANT : OHI 1

TUBE MATERIAL : I-600 MA

PLUGGED : 2018

SG MODEL : W-51A

EFY : 7.6

H. L. TEMP (F) : 613

C.L. TEMP (F) : 552

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|-----|----|-----|----|-----|-----|-----|-----|------|-----|---------|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | 26 | 285 | | 475 | -60 | 31 | 89 | -57 | -10 | 150/94 | | 835 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | 46 | 105 | | 185 | 42 | 25 | 121 | -59 | -48 | 76/66 | | 427 |
| ID SCC UB | | | | | | | 31 | | | | | | | | | | | | 31 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | 723 | | | | 1 | | | 1 | | | | | 725 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 754 | 72 | 390 | 0 | 661 | -18 | 56 | 211 | -116 | -58 | 226/160 | 0 | 2018 |
| TOT SLEEVED | | | | | | | | | | 81 | 443 | 650 | 743 | 162 | 1122 | 863 | 877 | | 4941 |
| T. L. OUTAGE | | | | | | | 1 | | | | | | | | | | | | 1 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

- * Plugged 150 tubes, removed 94 plugs
- * Plugged 76 tubes, removed 66 plugs
- * Plugged 226 tubes, removed 160 plugs

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 13,552

PLANT : OHI 2

TUBE MATERIAL : I-600 MA

PLUGGED : 485

SG MODEL : MHI-51A

EPFY : 9.3

H. L. TEMP (F) : 613

C.L. TEMP (F) : 552

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | 63 | | 19 | 8 | | 3 | 14 | | 34 | 32 | 286 | 485 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 1 | 7 | | 5 | 4 | | | 17 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 3 | | | | | | | | | | | | 3 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 63 | 0 | 19 | 8 | 0 | 10 | 21 | 0 | 39 | 36 | 286 | 485 | |
| TOT SLEEVED | | | | | | | | | | 8 | | | | | | | | | | 4 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 13,528

PLANT : OHI 3

TUBE MATERIAL : I-690 TT

PLUGGED : 0

SG MODEL : MHI-52FA

EFPY : 1.0

H. L. TEMP (F) : 617

C.L. TEMP (F) : 553

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : CONSUMERS POWER CO.

TOTAL TUBES : 17,038

PLANT : PALISADES (ORIGINAL S. G.)

TUBE MATERIAL : 1-600

PLUGGED : 4486

SG MODEL : CE

EFPY : 8.3

H. L. TEMP (F) : 599

C.L. TEMP (F) : 548

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|------|-----|----|----|----|----|----|----|----|-----|----|----|----|----|-----|-----|----|----|-------|
| WASTAGE | 2951 | 711 | | 12 | 14 | | 44 | | | 3 | | | | | | | | | 3735 |
| DENTING SP | | | | 4 | 6 | | 5 | | | 6 | 8 | | 3 | 19 | | | | | 51 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | R | | | 0 |
| OD S/IGA SP | | | | | | | | | | 27 | | | 15 | 18 | 96 | E | | | 156 |
| OD S/IGA TS | | | | | | | | | | | | | | | | P | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | L | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | A | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | C | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | E | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | D | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | 2 | 4 | | | | | 6 |
| OTHER | | | | | | | | 2 | | 244 | | | | | 5 | 287 | | | 538 |
| TOT PLUGGED | 2951 | 711 | 0 | 16 | 20 | 0 | 49 | 2 | 0 | 280 | 8 | 0 | 20 | 46 | 383 | 0 | 0 | 0 | 4486 |
| TOT SLEEVED | | 10 | | 23 | | | | | | | | | | | | | | | 33 |
| T. L. OUTAGE | 2 | | | | | | | | 1 | | | | 1 | 2 | 2 | | | | 8 |

UTILITY CONTACT: Ron Hilterman

PHONE NUMBER: 616-764-8913 ext. 0318

UTILITY : CONSUMERS POWER CO.

TOTAL TUBES

PLANT : PALISADES (REPLACEMENT S. G.)

TUBE MATERIAL : I-600 MA

PLUGGED : 617

SG MODEL : CE

EPY : 1.8

H. L. TEMP (F) : 591

C.L. TEMP (F) : 545

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|-------|
| WASTAGE | | | | | | | | | | | | | | | | R | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | E | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | P | | | 0 |
| PITTING | | | | | | | | | | | | | | | | L | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | A | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | C | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | E | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | D | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | *617 | 617 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 617 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Ron Hiltzman

* Preventively plugged

PHONE NUMBER: 616-764-8913 ext. 0318

UTILITY : ARIZONA PUBLIC SERVICE CO.

TOTAL TUBES : 22,024

PLANT : PALO VERDE 1

TUBE MATERIAL : I-600 MA

PLUGGED : 140

SG MODEL : CE-80

EPY : 3.9

H. L. TEMP (F) : 621

C.L. TEMP (F) : 565

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | 8 | 8 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | 29 | | 6 | | | | 35 |
| FRET (AVB) | | | | | | | | | | | | | | | 6 | | | 7 | 13 |
| FRET (LP) | | | | | | | | | | | | | 9 | | 2 | | | | 11 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | *34 | | | 6 | | 8 | | | 25 | 73 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 44 | 0 | 22 | 0 | 0 | 40 | 140 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | 1 | | | | | | 1 |

UTILITY CONTACT: Kevin Sweeney

* Baseline

PHONE NUMBER: 602-340-4809

UTILITY : ARIZONA PUBLIC SERVICE CO.

TOTAL TUBES : 22,024

PLANT : PALO VERDE 2

TUBE MATERIAL : I-600 MA

PLUGGED : 310

SG MODEL : CE-80

EFPY : 3.9

H. L. TEMP (F) : 621

C.L. TEMP (F) : 565

| DEFECTS | <70 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|-----|-----|----|-------|-----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | 6 | | 6 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | 51 | 12 | | 2 | 8 | | | 73 |
| FRET (AVB) | | | | | | | | | | | | | | 44 | | 100 | 18 | | | 162 |
| FRET (LP) | | | | | | | | | | | | | | 1 | | | 7 | | | 8 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | *47 | | 4 | | 8 | 2 | | | 61 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 0 | 51 | 61 | 0 | 110 | 41 | 0 | 310 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Kevin Sweeney

* Baseline

PHONE NUMBER: 602-340-4809

UTILITY : ARIZONA PUBLIC SERVICE CO.

TOTAL TUBES : 22,024

PLANT : PALO VERDE 3

TUBE MATERIAL: I-600 MA

PLUGGED: 199

SG MODEL : CE-80

EFPY : 4.4

H. L. TEMP (F) : 621

C.L. TEMP (F) : 565

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|-----|-------|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | **120 | | | | | | 120 |
| FRET (AVB) | | | | | | | | | | | | | | | 4 | | 2 | 11 | 17 |
| FRET (LP) | | | | | | | | | | | | | | | 9 | | | | 9 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | *36 | | | 4 | | 1 | 12 | 53 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 120 | 0 | 17 | 0 | 3 | 23 | 199 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Kevin Sweeney

* Baseline

** Preventively plugged

PHONE NUMBER: 602-340-4809

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : PALUEL 1

TUBE MATERIAL : I-600 TT

PLUGGED : 139

SG MODEL : FRAM-68/19

EPFY : 5.4

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 13 | | 1 | 22 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | 1 | 1 | | 2 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | 4 | 2 | 15 | 21 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | 2 | | | 2 |
| OTHER | | | | | | | | 32 | | | | 22 | 1 | | 13 | 5 | 19 | | 92 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 22 | 1 | 0 | 20 | 21 | 27 | 16 | 139 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : PALUEL 2

TUBE MATERIAL : I-600 TT

PLUGGED : 130

SG MODEL : FRAM-68/19

EPY : 5.2

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 40 | | | 40 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | 2 | | 47 | 1 | | 50 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | 1 | | | | 2 | | 1 | 4 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 9 | | | 3 | 3 | 1 | | 5 | 4 | 11 | 36 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 4 | 3 | 3 | 0 | 84 | 5 | 12 | 130 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : PALUEL 3

TUBE MATERIAL : I-600 TT

PLUGGED: 132

SG MODEL : FRAM-68/19

EFPY : 5.0

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | 48 | 2 | | | 50 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | 4 | | 6 | 29 | | | | 39 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | 1 | | | | 1 |
| OTHER | | | | | | | | | 25 | | | | | | | 15 | | 2 | 42 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 4 | 0 | 6 | 78 | 17 | 0 | 2 | 132 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : PALUEL 4

TUBE MATERIAL : I-600 TT

PLUGGED : 144

SG MODEL : FRAM-68/19

EPY : 4.5

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | 68 | 1 | 6 | 2 | 77 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | 2 | 1 | | 3 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 1 | 1 |
| FRET (LP) | | | | | | | | | | | | | | 1 | 26 | | | | 27 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 16 | | | 1 | 2 | | 4 | 13 | | 36 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 1 | 3 | 94 | 7 | 20 | 3 | 144 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : PENLY 1

TUBE MATERIAL : I-600 TT

PLUGGED : 37

SG MODEL : FRAM-68/19

EFPY : 1.4

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | 17 | | | 17 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | 16 | | | 4 | | 20 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 17 | 4 | 37 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | 1 | | 1 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : PENLY 2

TUBE MATERIAL : I-690 TT

PLUGGED : 4

SG MODEL : FRAM-68/19

EPY : 0.4

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | 4 | | 4 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : KERNKRAFTWERK
 PHILIPPSBURG GmbH
 PLANT : PHILIPPSBURG-2

TOTAL TUBES : 16,424
 TUBE MATERIAL : I-800

PLUGGED : 0

SG MODEL : KWU-54S

EPFY : 6.6

H. L. TEMP (F) : 622

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|---|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : WISCONSIN ELECTRIC POWER

TOTAL TUBES : 6,520

PLANT : POINT BEACH 1 (ORIGINAL S. G.)

TUBE MATERIAL : I-600 MA

PLUGGED : 905

SG MODEL : W-44

EPFY : 9.2

H. L. TEMP (F) : 597

C.L. TEMP (F) : 545

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | 167 | | 1 | | | 1 | 1 | 6 | | | | | | | | | | | 178 |
| DENTING SP | | | 10 | 1 | | | | | | | | | | | | | | | 11 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | R | | | | | | | | | 0 |
| OD S/GA SP | 180 | | | | 5 | | | | | E | | | | | | | | | 185 |
| OD S/GA TS | | | 3 | 10 | 271 | 110 | 20 | 59 | | P | | | | | | | | | 473 |
| ID SCC TS | | | | | | | | | | L | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | A | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | C | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | E | | | | | | | | | 0 |
| FRET (LP) | | | | 2 | | | | 11 | | D | | | | | | | | | 13 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 18 | | | | 14 | 12 | | 3 | | | | | | | | | | | 47 |
| TOT PLUGGED | 365 | 0 | 14 | 13 | 290 | 123 | 21 | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 905 |
| TOT SLEEVED | | | | | | | 13 | | | | | | | | | | | | 13 |
| T. L. OUTAGE | 1 | | 1 | 3 | 4 | | | | | | | | | | | | | | 9 |

UTILITY CONTACT: Gary Frieling

PHONE NUMBER: 414-221-2017

UTILITY : WISCONSIN ELECTRIC POWER

TOTAL TUBES : 6,520

PLANT : POINT BEACH 1 (REPLACEMENT S. G.)

TUBE MATERIAL : I-600 TT

PLUGGED : 5

SG MODEL : W-44F

EFPY : 7.1

H. L. TEMP (F) : 597

C.L. TEMP (F) : 545

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|---|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 2 | | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | 2 | | | | 1 | | | | | 3 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 5 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Gary Frieling

PHONE NUMBER: 414-221-2017

UTILITY : WISCONSIN ELECTRIC POWER

TOTAL TUBES : 6,520

PLANT : POINT BEACH 2

TUBE MATERIAL : I-600 MA

PLUGGED : 589

SG MODEL : W-44

EPFY : 16.3

H. L. TEMP (F) : 597

C.L. TEMP (F) : 545

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|------|----|----|----|----|-----|----|-----|----|----|-------|
| WASTAGE | 3 | 16 | 5 | | 1 | 35 | 39 | 7 | 2 | 1 | 43 | 55 | | 3 | 4 | | | | 214 |
| DENTING SP | | | 2 | | | | | | | | | | 1 | | | | | | 3 |
| DENTING TS | | | | | | | | | | | | | | | 2 | | | | 2 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | 7 | | | | | | | | | | | | 2 | 1 | | 7 | | | 17 |
| OD S/IGA TS | | | | | | 1 | 2 | 9 | 8 | 14 | 11 | 17 | 41 | 21 | 27 | 109 | | 85 | 345 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 1 | | | | | | | | | 2 | | | 4 | | | 1 | | | 8 |
| TOT PLUGGED | 11 | 16 | 7 | 0 | 1 | 36 | 41 | 16 | 10 | 17 | 54 | 72 | 48 | 25 | 33 | 117 | 0 | 85 | 589 |
| TOT SLEEVED | | | | | | | | | 3001 | | | | 87 | 509 | | | | | *3597 |
| T. L. OUTAGE | 1 | | | | | 1 | | | | | | | | | | | | | 2 |

UTILITY CONTACT: Gary Frieling

* 2310 tubes with one hot leg sleeve
596 tubes sleeved in hot and cold legs

PHONE NUMBER: 414-221-2017

UTILITY : NORTHERN STATE POWER CO.

TOTAL TUBES : 6,776

PLANT : PRAIRIE ISLAND 1

TUBE MATERIAL : I-600 MA

PLUGGED : 194

SG MODEL : W-51

EPY : 15.3

H. L. TEMP (F) : 590

C.L. TEMP (F) : 530

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------|----|-----|-------|
| WASTAGE | | | | | | | 4 | | 4 | 3 | 4 | 5 | 7 | 4 | | 10 | 1 | 2 | 44 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | 1 | | | 1 |
| OD S/IGA TS | | | | | | 1 | | | 9 | 5 | 6 | 6 | 22 | 9 | | *4/26 | 14 | 46 | 97 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | 1 | | 1 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | 18 | | 5 | | 5 | | | | | | | | 28 |
| FRET (LP) | | | | | 6 | | | | | | | 1 | | | | | | | 7 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | 4 | | | 1 | 1 | 3 | 2 | 4 | | *0/1 | 1 | 1 | 16 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 6 | 1 | 26 | 0 | 18 | 9 | 16 | 15 | 31 | 17 | 0 | *15/27 | 17 | 49 | 194 |
| TOT SLEEVED | | | | | | | | | | | | | 26 | 73 | | 62 | | 158 | 319 |
| T. L. OUTAGE | | | | | 1 | 1 | | | 1 | 2 | | | 1 | | | | | 1 | 7 |

UTILITY CONTACT: Richard Pearson

* Total of 27 tubes returned to service

PHONE NUMBER: (612) 388-1121

UTILITY : NORTHERN STATE POWER CO.

TOTAL TUBES : 6,776

PLANT : PRAIRIE ISLAND 2

TUBE MATERIAL : I-600 MA

PLUGGED : 237

SG MODEL : W-51

EPFY : 15.1

H. L. TEMP (F) : 590

C.L. TEMP (F) : 530

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | 13 | 18 | 18 | 19 | 27 | 12 | 24 | | 5 | 7 | 29 | | 10 | 182 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | 1 | | | | 1 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | 23 | 6 | | 6 | 4 | | | | | | | | 39 |
| FRET (LP) | | | | | | 4 | | | | | | | | | | | | | 4 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | 1 | | | | | | | | | | | | 1 |
| OTHER | | | 1 | | | 1 | | 3 | 1 | | 3 | | | | | | | 1 | 10 |
| TOT PLUGGED | 0 | 0 | 1 | 0 | 0 | 18 | 42 | 27 | 20 | 33 | 19 | 24 | 0 | 5 | 8 | 29 | 0 | 11 | 237 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | 1 | | | | | | | | | | | | 1 |

UTILITY CONTACT: Richard Pearson

PHONE NUMBER: (612) 388-1121

UTILITY : SACRAMENTO MUNICIPAL UTIL. DIST. TOTAL TUBES : 15547

PLANT : RANCHO SECO

TUBE MATERIAL : I-600 TT

PLUGGED : 221

SG MODEL : OTSG

EFPY :

H. L. TEMP (F) : 604

C.L. TEMP (F) : 554

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | S | | | | 0 |
| OD S/IGA SP | | | | | | | 4 | | | | | | | | H | | | | 4 |
| OD S/IGA TS | | | | | | | | 9 | | | | | | | U | | | | 9 |
| ID SCC TS | | | | | | | | | | | | | | | T | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | D | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | O | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | W | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | N | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | 24 | | | 3 | | 12 | | 3 | 29 | 38 | 83 | 16 | | | | | 208 |
| TOT PLUGGED | 0 | 0 | 24 | 0 | 0 | 3 | 4 | 21 | 0 | 3 | 29 | 38 | 83 | 16 | 0 | 0 | 0 | 0 | 221 |
| TOT SLEEVED | | | | | | | | | | | | 508 | | | | | | | 508 |
| T. L. OUTAGE | | | | | | | 1 | 1 | 1 | 3 | | | | | | | | | 6 |

UTILITY CONTACT: Jim Field

PHONE NUMBER: (209) 333-2935

UTILITY : SWEDISH STATE POWER BOARD TOTAL TUBES : 15,390

PLANT : RINGHALS 2 (REPLACEMENT S. G.) TUBE MATERIAL : I-690 TT

PLUGGED : 0 SG MODEL : KWU

EFPY : 2.5 H. L. TEMP (F) : 613

C.L. TEMP (F) : 548

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Jan Engstrom

PHONE NUMBER: (08) 739-5000

UTILITY : SWENISH STATE POWER BOARD

TOTAL TUBES : 14,022

PLANT : RINGHALS 3

TUBE MATERIAL : I-600

PLUGGED: 249

SG MODEL : W-D3

EFPY : 7.6

H. L. TEMP (F) : 610

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | 1 | 1 | 16 | 3 | | | 21 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | 6 | 3 | 27 | 42 | 22 | 4 | 6 | 110 |
| ID SCC UB | | | | | | | | | | | | | 4 | | | 13 | 11 | | 28 |
| FRET (PREH) | | | | | | | 2 | 23 | 8 | | | | | | | | 1 | | 34 |
| FRET (AVB) | | | | | | | | | | | | | | 3 | | | 2 | | 6 |
| FRET (LP) | | | | | | | | | | 1 | 2 | 6 | | | | | | | 9 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 1 | | 7 | 1 | 2 | 11 | 8 | 4 | 7 | 41 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 23 | 8 | 2 | 2 | 19 | 9 | 33 | 69 | 47 | 22 | 13 | 249 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | 57 | | 57 |
| T. L. OUTAGE | | | | | | | 1 | | | | | | | | | | | | 1 |

UTILITY CONTACT: Jan Engstrom

PHONE NUMBER: (08) 739-5000

UTILITY : SWEDISH STATE POWER BOARD

TOTAL TUBES : 14,022

PLANT : RINGHALS 4

TUBE MATERIAL : I-600

PLUGGED : 173

SG MODEL : W-E

EFPY : 7.2

H. L. TEMP (F) : 610

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | 1 | 2 | 2 | 5 | 5 | 9 | 5 | 26 | 37 | 92 |
| ID SCC UB | | | | | | | | | | | | 3 | 16 | 4 | 7 | | 1 | 1 | 32 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | 2 | 2 |
| FRET (AVB) | | | | | | | | | | | | | | | 2 | 2 | | 5 | 9 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 1 | 3 | | | | 11 | 12 | 10 | | 1 | 38 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 2 | 5 | 21 | 20 | 30 | 17 | 27 | 46 | 173 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | 1 | | | | | | | 1 |

UTILITY CONTACT: Jan Engstrom

PHONE NUMBER: (08) 739-5000

UTILITY : CAROLINA POWER & LIGHT CO.

TOTAL TUBES : 9,642

PLANT : H. B. ROBINSON (ORIGINAL S. G.)

TUBE MATERIAL : I-600 MA

PLUGGED: 2290

SG MODEL : W-44

EFPY : 8.5

H. L. TEMP (F) : 601

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | 14 | 12 | 19 | 21 | 23 | 211 | 102 | 100 | 69 | | | | | | | | | | 571 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | R | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | 66 | E | | | | | | | | | 66 |
| OD S/GA TS | 70 | | | | 11 | | 300 | 87 | 800 | P | | | | | | | | | 1268 |
| ID SCC TS | | | | | | | | | | L | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | A | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | C | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | E | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | D | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 377 | | | | 5 | | | | 3 | | | | | | | | | | 385 |
| TOT PLUGGED | 461 | 12 | 19 | 21 | 39 | 211 | 402 | 187 | 938 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2290 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | 1 | | | 1 | 2 | 1 | 2 | | 2 | 1 | | | | | | | | | 10 |

UTILITY CONTACT: Jerry Waldorf

PHONE NUMBER: 919-546-4141

UTILITY : CAROLINA POWER & LIGHT

TOTAL TUBES : 9,642

PLANT : H. B. ROBINSON (REPLACEMENT S. G.)

TUBE MATERIAL : I-600 TT

PLUGGED : 3

SG MODEL : W-44F

EFPY : 5.5

H. L. TEMP (F) : 604

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | 1 | | 1 | | | 2 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | 1 | 1 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Jerry Waldorf

PHONE NUMBER: 919-546-4141

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : SAINT-ALBAN 1

TUBE MATERIAL : I-600 TT

PLUGGED: 45

SGMODEL : FRAM-68/19

EPY : 4.1

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | 9 | 14 | 23 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | 3 | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | 7 | | 1 | | | | 1 | 10 | 19 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 10 | 27 | 45 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 21,368

PLANT : SAINT-ALBAN 2

TUBE MATERIAL : I-600 TT

PLUGGED: 299

SG MODEL : FRAM-68/19

EPY : 3.5

H. L. TEMP (F) : 616

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | 260 | | | | 260 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | 1 | 5 | | | 6 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | 1 | | | | | 2 | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | 5 | | | | 5 |
| OTHER | | | | | | | | | | | | | 9 | | 1 | | 10 | 5 | 25 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 267 | 5 | 10 | 7 | 299 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : SAINT-LAURENT-DES EAUX B1

TUBE MATERIAL : I-600 MA

PLUGGED : 274

SG MODEL : FRAM-51M

EFPY : 7.0

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | 1 | 1 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | 1 | | | | 33 | 77 | 111 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | 1 | | | 4 | | 3 | 8 |
| ID SCC UB | | | | | | | | | | | 90 | | 2 | | | | | 3 | 95 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | 2 | 3 | 10 | 15 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | 6 | | | | | | 1 | | | | | | 1 | 36 | 44 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 91 | 0 | 4 | 0 | 0 | 6 | 37 | 130 | 274 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : SAINT-LAURENT-DES EAUX B2

TUBE MATERIAL : 1-600 MA

PLUGGED : 197

SG MODEL : FRAM-51M

EFPY : 7.1

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | 2 | | | 1 | | 2 | | | 5 |
| ID SCC UB | | | | | | | | | | | 180 | | | | | | | | 180 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | 2 | | | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 10 | | | | | | | | | | | | | 10 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 182 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 197 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : PUBLIC SERVICE ELECTRIC & GAS TOTAL TUBES : 13,552

PLANT : SALEM 1 TUBE MATERIAL : I-600 M/A

PLUGGED : 480 SG MOOEL : W-51

EFPY : 9.3 H. L. TEMP (F) : 602

C.L. TEMP (F) : 544

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|----|----|----|-------|
| WASTAGE | | | | | | | | 29 | | | | | 1 | | 18 | | | 2 | 50 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | 4 | 1 | 5 |
| ID SCC UB | | | | | | | | | | | | | | 1 | *335 | | | | 336 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | 4 | | | | | | | 7 | | 13 | | 24 |
| FRET (LP) | | | | | | | | | | | | | | | 1 | | | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | 1 | | | | | | | | | | | 1 |
| OTHER | 1 | | 30 | | | | | 13 | | | | | 2 | | 2 | | 12 | 3 | 63 |
| TOT PLUGGED | 1 | 0 | 30 | 0 | 0 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 3 | 1 | 363 | 0 | 29 | 6 | 480 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | 1 | | | | | 1 |

UTILITY CONTACT: Mahesh Danak

* Preventively plugged

PHONE NUMBER: 609-339-1872

UTILITY : PUBLIC SERVICE ELECTRIC & GAS

TOTAL TUBES : 13,552

PLANT : SALEM 2

TUBE MATERIAL : I-600 MA

PLUGGED: 440

SG MODEL : W-51

EFPY : 6.7

H. L. TEMP (F) : 604

C.L. TEMP (F) : 545

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|------|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | 12 | | | 12 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | 1 | | | | | | | | | | 1 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | 5 | | | 5 |
| ID SCC TS | | | | | | | | | | | | | | | | | 1 | | 1 |
| ID SCC UB | | | | | | | | | | | | | 2 | *334 | | | | | 336 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 3 | | | 22 | 7 | | 32 |
| FRET (LF) | | | | | | | | | | 1 | | | | | | | | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 1 | 41 | | | | | 2 | | | 8 | 52 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 42 | 0 | 0 | 5 | 336 | 0 | 39 | 16 | 0 | 440 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Maresh Danak

* Preventively plugged

PHONE NUMBER: 609-339-1872

UTILITY : SOUTHERN CALIFORNIA EDISON

TOTAL TUBES : 11,382

PLANT : SAN ONOFRE 1

TUBE MATERIAL : I-600 MA

PLUGGED: 1456

SG MODEL : W-27

EPFY : 13.4

H. L. TEMP (F) : 572

C.L. TEMP (F) : 528

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|-----|----|----|----|------|----|----|----|----|----|----|----|-----|----|----|----|----|-------|
| WASTAGE | | 12 | 6 | 5 | | | | 1 | | | 40 | | | 2 | | 6 | 17 | | 89 |
| DENTING SP | 31 | 3 | 9 | 11 | | 3 | | 6 | | 4 | | | | | | 1 | | | 68 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | 21 | 213 | | 21 | | | | | | 2 | | 3 | | | 260 |
| ID SCC TS | | | | | | | | 5 | | | | | | 147 | | 4 | 1 | | 157 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | 37 | 87 | 26 | 3 | | 13 | | | | | 23 | | | | | | | | 189 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 9 | 1 | 3 | 1 | | 450 | | 3 | | 1 | | | | 188 | | 15 | 22 | | 693 |
| TOT PLUGGED | 77 | 103 | 44 | 20 | 21 | 679 | 0 | 36 | 0 | 5 | 63 | 0 | 0 | 339 | 0 | 29 | 40 | 0 | 1456 |
| TOT SLEEVED | | | | | | 6929 | | | | | | | | | | | | | 6929 |
| T. L. OUTAGE | 3 | 1 | | | 1 | | | | | | | | | | | | | | 5 |

UTILITY CONTACT: Al Matheny

PHONE NUMBER: 714-368-9011

UTILITY : SOUTHERN CALIFORNIA EDISON

TOTAL TUBES : 18,700

PLANT : SAN ONOFFRE 2

TUBE MATERIAL : I-600 MA

PLUGGED : 614

SG MODEL : CE-3410

FFPY : 6.9

H. L. TEMP (F) : 607

C.L. TEMP (F) : 554

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | 18 | | 15 | | 33 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | 249 | 17 | 136 | | 44 | | 23 | | 469 |
| FRET (LP) | | | | | | | | | | | 2 | | 1 | | | | | | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 21 | | 1 | 79 | | 5 | | | | 3 | | 109 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 1 | 330 | 17 | 142 | 0 | 62 | 0 | 41 | 0 | 614 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | 1 | | | | 1 | 1 | | | | 3 |

UTILITY CONTACT: Al Matheny

PHONE NUMBER: 714-368-9011

UTILITY : SOUTHERN CALIFORNIA EDISON

TOTAL TUBES : 18,700

PLANT : SAN ONOFRE 3

TUBE MATERIAL : I-600 MA

PLUGGED : 554

SG MODEL : CE-3410

EFPY : 6.5

H. L. TEMP (F) : 607

C.L. TEMP (F) : 554

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|-----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 1 | | 5 | 6 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | 234 | 19 | | 177 | | 17 | | 21 | 468 |
| FRET (LP) | | | | | | | | | | | | | | | | 15 | | | 15 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 34 | 2 | 24 | 1 | | | | 1 | | 3 | 65 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 2 | 258 | 20 | 0 | 177 | 0 | 34 | 0 | 29 | 554 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | 2 | | | | | | | | | 2 |

UTILITY CONTACT: Al Matheny

PHONE NUMBER: 714-368-9011

UTILITY : NORTHEAST UTILITIES

TOTAL TUBES : 22,054

PLANT : SEABROOK

TUBE MATERIAL : I-600 TT

PLUGGED : 13

SG MODEL : W-F

EFPY : 1.9

H. L TEMP (F) : 618

C.L TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|-------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERF/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | 13* | | | | 13 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 13 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: John Kliesiewicz

* Baseline

PHONE NUMBER: 203-665-3969

UTILITY : KYUSHU ELECTRIC POWER

TOTAL TUBES : 10,146

PLANT : SENDAI 1

TUBE MATERIAL : I-600 TT

PLUGGED : 17

SG MODEL : MHI-51M

EPFY : 7.0

H. L TEMP (F) : 610

C.L TEMP (F) : 544

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|-------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | 17 | | 17 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | | | | | | | | | | | | 0 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 17 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : KYUSHU ELECTRIC POWER

TOTAL TUBES : 10,146

PLANT : SENDAI 2

TUBE MATERIAL : I-600 TT

PLUGGED : 19

SG MODEL : MHI-51F

EFPY : 5.9

H. L. TEMP (F) : 610

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | 19 | | 19 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | | | | | | | | | | | | 0 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 19 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : TENNESSEE VALLEY AUTHORITY

TOTAL TUBES

PLANT : SEQUOYAH 1

TUBE MATERIAL : I-600 MA

PLUGGED : 144

SG MODEL : W-51

EFPY : 6.0

H. L. TEMP (F) : 610

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|------|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | 1 | | 1 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | 2 | 2 | | 4 |
| ID SCC TS | | | | | | | | | | | | | | | | 2 | 68 | | 70 |
| ID SCC UB | | | | | | | | | | | 376 | | 364* | 50 | | | 1 | | 63 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | 1 | 1 | | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | 3 | | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | 1 | | | | | 1 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 376 | 0 | 364* | 51 | 0 | 5 | 76 | 0 | 144 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: David Goetcheus

PHONE NUMBER: 615-751-7652

* 376 row 1 u-bend tubes were unplugged, heat treated, and inspected; 12 tubes were replugged.

UTILITY : TENNESSE VALLFY AUTHORITY

TOTAL TUBES : 13,552

PLANT : SEQUOYAH 2

TUBE MATERIAL : I-600 MA

PLUGGED : 434

SG MODEL : W-51

EPFY : 5.8

H. L. TEMP (F) : 610

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|------|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | 3 | | 12 | 15 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | 1 | 1 |
| OD S/IGA TS | | | | | | | | | | | | | | | | 1 | | | 1 |
| ID SCC TS | | | | | | | | | | | | | | | | 4 | | 19 | 23 |
| ID SCC UB | | | | | | | | | | | | 24 | | 352* | | | | | 376 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | 8 | | 6 | 14 |
| FRET (LP) | | | | | | | | | 1 | | | | | | | | | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 1 | | | | | | | | | | | | | | | 2 | | | 3 |
| TOT PLUGGED | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 24 | 0 | 352 | 0 | 18 | 0 | 38 | 434 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. CUTAGE | | | | | | | | | 1 | | | | | | 1 | | | | 2 |

UTILITY CONTACT: David Goetcheus

* The remainder of row 1 tubes were preventively plugged.

PHONE NUMBER: 615-751-7652

UTILITY : CAROLINA POWER & LIGHT

TOTAL TUBES : 13,734

PLANT : SHEARON HARRIS

TUBE MATERIAL : I-600 MA

PLUGGED : 32

SG MODEL : W-D4

EPY : 4.3

H. L. TEMP (F) : 619

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | 2 | | | | | 2 |
| DENTING TS | | | | | | | | | | | | | 4 | | | | | | 4 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | 2 | | | | 2 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | 4 | | 4 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | 7 | 1 | | | | 8 |
| FRET (LP) | | | | | | | | | | | | | | | | 2 | | | 2 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 7 | | | | | 1 | | | | 2 | 10 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 4 | 10 | 3 | 2 | 4 | 2 | 32 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Jerry Waldorf

PHONE NUMBER: 919-546-4141

UTILITY : HOUSTON LIGHTING & POWER

TOTAL TUBES : 19,456

PLANT : SOUTH TEXAS PROJECT 1

TUBE MATERIAL : I-600 MA

PLUGGED : 15

SG MODEL : W-E

EFPY : 2.8

H. L. TEMP (F) : 624

C.L. TEMP (F) : 560

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | * 6 | | 4 | | 5 | | | | | | | | 15 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Fawaz Jabali

* Shop plugged

PHONE NUMBER: 512-972-8623

UTILITY : HOUSTON LIGHTING & POWER

TOTAL TUBES : 19,404

PLANT : SOUTH TEXAS PROJECT 2

TUBE MATERIAL : I-600 MA

PLUGGED : 15

SG MODEL : W-E

EFPPY : 2.5

H. L. TEMP (F) : 624

C.L. TEMP (F) : 560

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 | |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 | |
| PITTING | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 | |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 | |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 | |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 1 | 1 | |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 | |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 | |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 | |
| OTHER | | | | | | | | *13 | | | | | | 1 | | | | | 14 | |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 15 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Fawaz Jabali

* Shop plugged

PHONE NUMBER: 512-972-8623

UTILITY : KERNKRAFTWERK
 STADE GmbH

TOTAL TUBES : 11,972

PLANT : STADE

TUBE MATERIAL : I-800

PLUGGED: 325

SG MODEL : KWU

EFPY : 16.7

H. L. TEMP (F) : 597

C.L. TEMP (F) : 544

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | 1 | 45 | 118 | 43 | 9 | 24 | 1 | 18 | 25 | 11 | 14 | 4 | 4 | | 317 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER * | 3 | | | | 2 | | 1 | | | | | | | 1 | | | | 1 | 8 |
| TOT PLUGGED | 3 | 0 | 0 | 0 | 3 | 45 | 119 | 43 | 9 | 24 | 1 | 18 | 25 | 12 | 14 | 4 | 4 | 1 | 325 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | 1 | | | | | | | | | | | | 1 |

UTILITY CONTACT: S. Odar / R Bouecke

* 2 Tubes plugged preventively
 6 Tubes pulled for investigation

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : FLORIDA POWER & LIGHT

TOTAL TUBES : 17,038

PLANT : ST LUCIE 1

TUBE MATERIAL : I-600 MA

PLUGGED : 1688

SG MODEL : CE-67

EFPY : 12.3

H. L. TEMP (F) : 601

C.L. TEMP (F) : 549

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|-----|----|----|-----|----|----|----|-----|----|-----|-----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | 23 | | 109 | | 138 | 297 | | 567 |
| OD S/IGA TS | | | | | | | | | | | | | | | | 43 | 152 | | 195 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | 23 | | | 22 | | 103 | | | 507 | 66 | | 76 | 129 | | | | | 926 |
| TOT PLUGGED | 0 | 23 | 0 | 0 | 22 | 0 | 103 | 0 | 0 | 507 | 66 | 23 | 76 | 238 | 0 | 181 | 449 | 0 | 1688 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | 1 | | 1 |

UTILITY CONTACT: G. L. Boyers

PHONE NUMBER: 407-694-4909

UTILITY : FLORIDA POWER & LIGHT

TOTAL TUBES : 16,882

PLANT : ST. LUCIE 2

TUBE MATERIAL : I-600 MA

PLUGGED : 458

SG MODEL : CE-3410

EPFY : 8.5

H. L. TEMP (F) : 601

C.L. TEMP (F) : 549

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | 8 | | | 8 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | 264 | 15 | 17 | | 20 | 31 | | 36 | 383 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 47 | | | 19 | 1 | | | | | | 67 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 0 | 264 | 34 | 18 | 0 | 20 | 39 | 0 | 36 | 458 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: G. L. Boyers

PHONE NUMBER: 407-694-4909

UTILITY : SOUTH CAROLINA ELECTRIC & GAS

TOTAL TUBES : 14,022

PLANT : V. C. SUMMER

TUBE MATERIAL : I-600 MA

PLUGGED : 1573

SG MODEL : W-D3

EFPY : 7.0

H. L. TEMP (F) : 619

C.L. TEMP (F) : 556

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|-----|-----|----|-----|-----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | 51 | | 51 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | 164 | | 236 | 556 | | 279 | 150 | | 1385 |
| ID SCC UB | | | | | | | | | | 4 | 3 | | | | | | | | 7 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | 7 | 3 | | | 110 | | 8 | | | | 2 | | 130 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 3 | 0 | 4 | 277 | 0 | 244 | 556 | 0 | 279 | 203 | 0 | 1573 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | 125 | 610 | 735 |
| T. L. OUTAGE | | | | | | | | | | 1 | 1 | | | | | | | | 2 |

UTILITY CONTACT: John Frick / Rollin Kelso

PHONE NUMBER: 803-345-4379 / 4065

UTILITY : Virginia Power

TOTAL TUBES : 10164

PLANT : Surry 1 (Original SG)

TUBE MATERIAL : I-600 MA

PLUGGED : 2594

SG MODEL : W-51

EFPY : 4.4

H. L. TEMP (F) : 605

C.L. TEMP (F) : 536

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | 502 | | | 2 | | 90 | | | | | | | | | | | | | 594 |
| DENTING SP | | 963 | 640 | 364 | 29 | | | | | | | | | | | | | | 1996 |
| DENTING TS | | | | | 2 | | | | | | | | | | | | | | 2 |
| PITTING | | | | | | | R | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | E | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | P | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | L | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | A | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | C | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | E | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | D | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 2 | | | | | | | | | | | | | | | | | | 2 |
| TOT PLUGGED | 504 | 963 | 640 | 366 | 31 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2594 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | 2 | 6 | | | | 1 | | | | | | | | | | | | | 9 |

UTILITY CONTACT: Joe Eastwood

PHONE NUMBER: (804) 273-2730

UTILITY : Virginia Power

TOTAL TUBES : 10026

PLANT : Surry 1 (Replacement SG)

TUBE MATERIAL : I-600 TT

PLUGGED : 14

SG MODEL : W-51F

EPY : 7.6

H. L TEMP (F) : 605

C.L TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PIITING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | 2 | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | 2 | | | | 4 | | | | | 2 | | | 12 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 2 | 14 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Joe Eastwood

PHONE NUMBER: (804) 273-2730

UTILITY : Virginia Power

TOTAL TUBES : 10164

PLANT : Surry 2 (Original SG)

TUBE MATERIAL : I-600 MA

PLUGGED : 2154

SG MODEL : W-51

EFPY : 3.6

H. L. TEMP (F) : 605

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | 190 | | | | | | | | | | | | | | | | | | 190 |
| DENTING SP | | 797 | 899 | 268 | | | | | | | | | | | | | | | 1964 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | R | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | E | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | P | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | L | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | A | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | C | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | E | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | D | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 190 | 797 | 899 | 268 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2154 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | 4 | 3 | | | | | | | | | | | | | | | | 7 |

UTILITY CONTACT: Joe Eastwood

PHONE NUMBER: (804) 273-2730

UTILITY : Virginia Power

TOTAL TUBES : 10026

PLANT : Surry 2 (Replacement SG)

TUBE MATERIAL : I-600 TT

PLUGGED : 3

SG MODEL : W-51F

EFPY : 8.4

H. L. TEMP (F) : 605

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVS) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | 1 | | | | | | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 2 | | | | | | 1 * | | | | | | -1 | 2 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | -1 | 3 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | 1 | | | | | | | 1 |

UTILITY CONTACT: Joe Eastwood

* Tube misplugged in 1986;
plug removed in 1991

PHONE NUMBER: (804) 273-2730

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 10,164

PLANT : TAKAHAMA 1

TUBE MATERIAL : I-600 MA

PLUGGED: 763

SG MODEL : W-51

EPFY : 10.7

H. L. TEMP (F) : 608

C.L. TEMP (F) : 551

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|
| WASTAGE | 98 | | | | | | | | | | | | | | | | | | 98 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | 1 | 7 | 3 | | 2 | 6 | 7 | | 31 | 57 |
| OD S/IGA TS | | | 32 | 25 | | 12 | | 9 | | 40 | 6 | 7 | | 7 | 8 | 4 | | | 150 |
| ID SCC TS | | | | | | | | 1 | | | | 5 | | | 20 | 45 | | 61 | 132 |
| ID SCC UB | | | 31 | 10 | | 55 | | 1 | | 1 | 2 | 1 | | 1 | 6 | 13 | | 17 | 138 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 186 | | | | | 1 | | | 1 | | | | | 188 |
| TOT PLUGGED | 98 | 0 | 63 | 35 | 0 | 253 | 0 | 11 | 0 | 42 | 16 | 16 | 0 | 11 | 40 | 69 | 0 | 109 | 763 |
| TOT SLEEVED | | | | | | 2 | 4 | 32 | | 59 | -6 | -1 | | 6 | | -3 | | -4 | 89 |
| T. L. OUTAGE | | | 1 | | | | | | | | | | | | | | | | 1 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 10,164

PLANT : TAKAHAMA 2

TUBE MATERIAL : I-600 MA

PLUGGED: 1610

SG MODEL : MHI-51

EFPY : 9.8

H. L. TEMP (F) : 608

C.L. TEMP (F) : 551

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|-----|----|-----|-----|-----|-----|-----|------|------|--------|--------|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | 143 | | 219 | 30 | -30 | -57 | -56 | | 55 | *19/12 | *73/11 | | 373 |
| OD S/GA TS | | | | | | | 53 | | 183 | 246 | 456 | 110 | 121 | 32 | -118 | *11/43 | *14/37 | | 1028 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | 1 | | | | | | | | | | | | 192 | | | 16 | | 209 |
| TOT PLUGGED | 0 | 1 | 0 | 0 | 0 | 0 | 196 | 0 | 402 | 276 | 456 | 80 | 64 | 168 | 0 | -63 | -9 | 39 | 1610 |
| TOT SLEEVED | | | | | | | | | | 231 | -67 | 330 | 468 | 1007 | | 1139 | 675 | 644 | 4425 |
| T. L. OUTAGE | | | | | | | | | | | 1 | | | 1 | | | | | 2 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

* Plugged 19 tubes, removed 12 plugs

* Plugged 11 tubes, removed 43 plugs

* Plugged 73 tubes, removed 11 plugs

* Plugged 14 tubes, removed 37 plugs

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 10,146

PLANT : TAKAHAMA 3

TUBE MATERIAL : I-600 TT

PLUGGED : 26

SG MODEL : MHI-51F

EFPY : 6.7

H. L. TEMP (F) : 610

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 23 | 2 | | | 25 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 1 | | | | | | | | | 1 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 23 | 2 | 0 | 0 | 26 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : KANSAI ELECTRIC POWER

TOTAL TUBES : 10,146

PLANT : TAKAHAMA 4

TUBE MATERIAL : I-600 TT

PLUGGED : 21

SG MODEL : MHI-51F

EFPY : 6.3

H. L. TEMP (F) : 610

C.L. TEMP (F) : 543

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | 21 | | 21 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 21 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : SEMO

TOTAL TUBES : 10,164

PLANT : TIHANGE 1

TUBE MATERIAL : I-600

PLUGGED: 371

SG MODEL : ACLF-51

EPY : 13.8

H. L TEMP (F) : 611

C.L TEMP (F) : 547

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | 11 | | 11 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | 17 | | 17 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 181 | | 181 |
| ID SCC TS | | | | | | | | | | | | | | | | | 7 | | 7 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | 3 | 51 | | | | | | | | | 54 |
| FRET (LP) | | | | | | | | 5 | | | | | | | 1 | | | | 6 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | 1 | | | | | | | | | 1 |
| OTHER | 3 | 13 | 2 | 13 | 27 | 1 | | 1 | 26 | | | 2 | | 3 | | 2 | 1 | | 94 |
| TOT PLUGGED | 3 | 13 | 2 | 13 | 27 | 1 | 0 | 6 | 29 | 52 | 0 | 2 | 0 | 3 | 1 | 2 | 217 | 0 | 371 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | 1 | 1 | 1 | | | | | | | 3 |

UTILITY CONTACT: Paul Hernalsteen

PHONE NUMBER: (02) 3820551

UTILITY : INTERCOM

TOTAL TUBES : 10,083

PLANT : TIHANGE 2

TUBE MATERIAL : I-600

PLUGGED: 232

SG MODEL : FRAM-51M

EFPY : 8.5

H. L TEMP (F) : 617

C.L TEMP (F) : 547

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | 7 | 20 | | 1 | 30 | 21 | 39 | 32 | 11 | 161 |
| ID SCC UB | | | | | | | | | | | | | 1 | | | | | | 1 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | 1 | | | | | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | 1 | | 1 |
| OTHER | | | | | | | | 2 | | | | | | | | | 2 | 64 | 68 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 7 | 20 | 0 | 3 | 30 | 21 | 39 | 35 | 75 | 232 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| NICKEL PLATE | | | | | | | | | | | | | | | | | | 601 | 601 |
| T. L OUTAGE | | | | | | | | | | | | | | | | | 1 | | 1 |

UTILITY CONTACT: Paul Hernalsteen

PHONE NUMBER: (02) 3820551

UTILITY : INTERCOM

TOTAL TUBES : 14,532

PLANT : TIIHANGE 3

TUBE MATERIAL : I-600

PLUGGED: 61

SG MODEL : ACE-E

EFPY : 6.6

H. L. TEMP (F) : 626

C.L. TEMP (F) : 560

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | 4 | 12 | | | 16 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | 22 | 3 | | | 25 |
| FRET (LP) | | | | | | | | | | | | | | | 6 | | | | | 6 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | 2 | | | | | | | | 2 |
| OTHER | | | | | | | | | 3 | | | 4 | | | 1 | | 4 | | | 12 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 6 | 0 | 0 | 7 | 26 | 19 | 0 | | 61 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Paul hernaistein

PHONE NUMBER: (02) 3820551

UTILITY : HOKKAIO ELECTRIC POWER

TOTAL TUBES : 6,764

PLANT : TOMARI 1

TUBE MATERIAL : I-600 TT

PLUGGED : 0

SG MODEL : MHI-51F

EPY : 2.8

H. L. TEMP (F) : 613

C.L. TEMP (F) : 550

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : HOKKAIO ELECTRIC POWER

TOTAL TUBES : 6,764

PLANT : TOMARI 2

TUBE MATERIAL : I-600 TT

PLUGGED : 0

SG MODEL : MHI-51F

EPY : 1.3

H. L. TEMP (F) : 613

C.L. TEMP (F) : 550

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UE | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 06-441-8821

UTILITY : GENERAL PUBLIC UTILITIES

TOTAL TUBES : 31,062

PLANT : TMI-1

TUBE MATERIAL : I-600 MA

PLUGGED: 1640

SG MODEL : OTSG

EPFY : 9.3

H. L TEMP (F) : 601

C.L TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL | |
|--------------|-----|----|----|----|----|----|----|-----|-----|----|-----|----|----|-----|----|----|----|-----|-------|------|
| WASTAGE | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | 4 | | | | | | 4 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | 331 | 856 | 3 | 336 | 64 | | 171 | | 8 | 3 | | | 1618 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | 1 | | | | 1 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | 2 | | 9 | 1 | 3 | 1 | | | | | | | | | | 1 | | | | 17 |
| TOT PLUGGED | 2 | 0 | 9 | 1 | 3 | 1 | 0 | 331 | 856 | 3 | 336 | 64 | 0 | 21 | 0 | 10 | 3 | 0 | | 1640 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | 250 | | 250 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | 1 | | | | 1 |

UTILITY CONTACT: Julien Abramovici

PHONE NUMBER: 201-316-7038

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : TRICASTIN 1

TUBE MATERIAL : I-600 MA

PLUGGED: 571

SG MODEL : FRAM-51M

EFPY : 8.9

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | 1 | | 1 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | 65 | | 65 |
| ID SCC TS | | | | | | | | | | | 2 | 17 | 32 | 10 | 26 | 20 | 8 | 18 | 133 |
| ID SCC UB | | | | | | | | | | | | | 1 | | | | | | 1 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | 4 | 5 | 6 | 3 | 4 | 22 |
| FRET (LP) | | | | | | | 3 | | | | | 3 | 58 | 54 | 39 | 10 | 1 | 7 | 175 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 7 | | | | | 1 | 2 | 1 | 1 | | 3 | | 141 | 17 | 1 | 174 |
| TOT PLUGGED | 0 | 0 | 0 | 7 | 0 | 0 | 3 | 0 | 1 | 2 | 3 | 21 | 91 | 71 | 70 | 177 | 95 | 30 | 571 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : TRICASTIN 2

TUBE MATERIAL : I-600 MA

PLUGGED: 307

SG MODEL : FRAM-51M

EPFY : 8.5

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 9 | | 12 | 21 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 3 | 1 | 4 |
| ID SCC TS | | | | | | | | | | 1 | | 16 | 28 | 21 | | 15 | 23 | 19 | 123 |
| ID SCC UB | | | | | | | | | | 3 | 85 | | 1 | | | | | | 89 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | 1 | | 1 |
| FRET (LP) | | | | | | | | | | 2 | | | | | | | 3 | | 5 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 15 | | | | | | 2 | 3 | 3 | 1 | | | | | 40 | 64 |
| TOT PLUGGED | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 8 | 88 | 19 | 30 | 21 | 0 | 24 | 30 | 72 | 307 |
| TOT SLEEVED | | | | | | | | | | | 14* | | | | | | | | 14 |
| T. L. OUTAGE | | | | | | | | | | 1 | 1 | | | | | | | | 2 |

UTILITY CONTACT: R. Comby

* 8 tubes subsequently plugged

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : TRICASTIN 3

TUBE MATERIAL : I-600 MA

PLUGGED : 603

SG MODEL : FRAM-51M

EFPY : 9.9

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | 12 | | 12 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 133 | | 133 |
| ID SCC TS | | | | | | | | | | 2 | | 7 | 4 | 16 | 4 | 7 | 4 | 32 | 76 |
| ID SCC UB | | | | | | | | | | 89 | 89 | | | | | 2 | | 3 | 183 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | 1 | | 1 |
| FRET (LP) | | | | | | | | | | | | | | 1 | | | | 2 | 3 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | 6 | | | | | | | | | | | 188 | 1 | | 195 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 91 | 89 | 7 | 4 | 17 | 4 | 197 | 151 | 37 | 603 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : EDF

TOTAL TUBES : 10,083

PLANT : TRICASTIN 4

TUBE MATERIAL : I-600 MA

PLUGGED: 200

SG MODEL : FRAM-51M

EFPY : 8.0

H. L. TEMP (F) : 613

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | 7 | 2 | | 9 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | 53 | | 53 |
| ID SCC TS | | | | | | | | | | 3 | 2 | 1 | 7 | 14 | 1 | 2 | 6 | | 36 |
| ID SCC UB | | | | | | | | | | | | | | 7 | 3 | | | | 10 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | 7 | 4 | 1 | 2 | | 14 |
| FRET (LP) | | | | | | | | | | | | | | | | | 1 | | 1 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | 6 | | | | | 1 | | | | | 1 | 63 | 6 | | 77 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 4 | 2 | 1 | 7 | 28 | 9 | 73 | 70 | 0 | 200 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: R. Comby

PHONE NUMBER: 1-49-22-86-78

UTILITY : A. N. TRILLO 1

TOTAL TUBES : 12,258

PLANT : TRILLO 1

TUBE MATERIAL : I-800

PLUGGED : 9

SG MODEL : KWU-54GT

EPFY : 3.5

H. L. TEMP (F) : 619

C.L. TEMP (F) : 561

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | 4 | | | 4 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | 4 | | | | 4 | 1* | -4** | 5 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 8 | -3 | 0 | 9 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Gustavo Bollini

PHONE NUMBER: 34-1-6516700

* This tube was pulled
and four plugs were also removed.

** Four plugs removed in 1991

UTILITY : PORTLAND GENERAL ELECTRIC

TOTAL TUBES : 13,552

PLANT : TROJAN

TUBE MATERIAL : I-600 MA

PLUGGED: 2442

SG MODEL : W-51

EPFY : 8.2

H. L. TEMP (F) : 615

C.L. TEMP (F) : 552

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-----|------|------|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | S | 0 |
| PITTING | | | | | | | | | | 3 | 3 | 3 | | | 3 | | | H | 12 |
| OD S/IGA SP | | | | | | | | | | | | | | | 146 | 123 | 1542 | U | 1811 |
| OD S/IGA TS | | | | | | | | | | | 2 | | 7 | 40 | 22 | 14 | T | 85 | |
| ID SCC TS | | | | | | | | | | | | | | | 56 | 2 | 13 | D | 71 |
| ID SCC UB | | | | | 9 | 10 | 333 | | | 1 | 36 | 1 | 7 | | | | 10 | O | 407 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | W | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | N | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | 1 | | 53 | | | | 3 | | | | | | | 1 | | 58 |
| TOT PLUGGED | 0 | 0 | 0 | 1 | 9 | 63 | 333 | 0 | 0 | 7 | 3 | 41 | 1 | 14 | 245 | 147* | 1580 | | 2442 |
| TOT SLEEVED | | | | | | | | | | | | | | | | 2 | 1061 | | 1063 |
| T. L. OUTAGE | | | | | 1 | 1 | 1 | | | | | | | | | | | | 3 |

UTILITY CONTACT: Greg Kent

* Two tubes, previously plugged, were restored to service via sleeving in 1990.

PHONE NUMBER: 503-556-7716

UTILITY : JAPAN ELECTRIC POWER COMPANY TOTAL TUBES : 13,528

PLANT : TSURUGA 2

TUBE MATERIAL : I-600 TT

PLUGGED : 2

SG MODEL : M41-51FA

EPY : 5.2

H. L. TEMP (F) : 612

C.L. TEMP (F) : 552

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | 2 | | 2 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: H. Takamatsu

PHONE NUMBER: 03-441-8821

UTILITY : FLORIDA POWER & LIGHT

TOTAL TUBES : 9780

PLANT : TURKEY POINT 3 (ORIGINAL S. G.)

TUBE MATERIAL : I-600 MA

PLUGGED : 1986

SG MODEL : W-44

EPY : 5.2

H. L. TEMP (F) : 602

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|-----|-----|----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | 51 | | | 40 | 21 | | | | | | | | | | | | | 112 |
| DENTING SP | | 138 | 604 | 1 | 690 | 259 | 59 | | | | | | | | | | | | 1749 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | R | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | E | | | | | | | | | | | 0 |
| OD S/IGA TS | 34 | | | | | | | P | | | | | | | | | | | 34 |
| ID SCC TS | | | | | | | | L | | | | | | | | | | | 0 |
| ID SCC UB | | 88 | | | | | | A | | | | | | | | | | | 88 |
| FRET (PREH) | | | | | | | | C | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | E | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | D | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | 1 | | | | | | | | | | | | | | | 1 |
| OTHER | | | | | | | 2 | | | | | | | | | | | | 2 |
| TOT PLUGGED | 34 | 275 | 604 | 2 | 730 | 280 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1986 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | 1 | | 5 | | 1 | | 1 | | | | | | | | | | | | 8 |

UTILITY CONTACT: G. L. BOYERS

PHONE NUMBER: 407-694-4909

UTILITY : FLORIDA POWER & LIGHT

TOTAL TUBES : 9642 (REPLACEMENT)

PLANT : TURKEY POINT 3 REPLACEMENT S. G.

TUBE MATERIAL : I-600 TT

PLUGGED : 62

SG MODEL : W-44F

EFPY : 6.3

H. L. TEMP (F) : 602

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | 7 | | 3 | 10 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | 39 | | | 4 | | 1 | | | 4 | | 4 | 52 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 11 | 0 | 7 | 62 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: G. L. Boyers

PHONE NUMBER: 407-694-4909

UTILITY : FLORIDIA POWER & LIGHT

TOTAL TUBES : 9780

PLANT : TURKEY POINT 4 (ORIGINAL S. G.)

TUBE MATERIAL : I-600 MA

PLUGGED : 2351

SG MODEL : W-44

EPFY : 4.0

H. L TEMP (F) : 602

C.L TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|-------------|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | 5 | | 21 | 6 | 39 | | | | | | | | | | | | | 71 |
| DENTING SP | 5 | 52 | 629 | 510 | 179 | 267 | 93 | | | | | | | | | | | | 1735 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | R | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | E | | | | | | | | | | 0 |
| OD S/IGA TS | 159 | | | | | | | | P | | | | | | | | | | 159 |
| ID SCC TS | | | | | | | | | L | | | | | | | | | | 0 |
| ID SCC UB | | 294 | | | | | | | A | | | | | | | | | | 294 |
| FRET (PREH) | | | | | | | | | C | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | E | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | D | | | | | | | | | | 0 |
| HG FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | 2 | 11 | 79 | | | | | | | | | | | 92 |
| TOT PLUGGED | 164 | 351 | 629 | 531 | 185 | 308 | 104 | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2351 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L OUTAGE | 3 | 6 | 5 | 1 | | | | 1 | | | | | | | | | | | 16 |

UTILITY CONTACT: G. L. Boyers

PHONE NUMBER: 407-694-4909

UTILITY : FLORIDA POWER & LIGHT

TOTAL TUBES : 9,642

PLANT : TURKEY POINT 4 (REPLACEMENT S. G.)

TUBE MATERIAL : I-600 TT

PLUGGED : 33

SG MODEL : W-44F

EPY : 5.3

H. L. TEMP (F) : 602

C.L. TEMP (F) : 546

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | 1 | | 1 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 31 | | | | | 1 | | | | | 32 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 33 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: G. L. Boyers

PHONE NUMBER: 407-894-4909

UTILITY : KERNKRAFTWERK
 UNTERWESER GmbH
 PLANT : UNTERWESER

TOTAL TUBES : 16,084

TUBE MATERIAL : I-800

PLUGGED : 0

SG MODEL : KWU

EPY : 11.2

H. L. TEMP (F) : 604

C.L. TEMP (F) : 548

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERRRCORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: S. Odar / R. Bouecke

PHONE NUMBER: 49-9131-18-2077 / 49-9131-18-9410

UTILITY : A. N. V.

TOTAL TUBES : 16,878

PLANT : VANDELLOS 2

TUBE MATERIAL I-600 TT

PLUGGED: 216

SG MODEL : W-F

EFPY : 3.8

H. L. TEMP (F) : 620

G.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/GA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 30 | 54 | 88 | 30 | 202 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | 11 | | | 1 | | 2 | | 14 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 31 | 54 | 90 | 30 | 216 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Gustavo Bollini

PHONE NUMBER: 34-1-6516700

UTILITY : GEORGIA POWER

TOTAL TL BES : 22,504

PLANT : VOGTLE 1

TUBE MATERIAL : I-600 TT

PLUGGED : 11

SG MODEL : W-F

EFPY : 4.5

H. L. TEMP (F) : 618

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 3 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | * 6 | | | 1 | | 4 | | | 11 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 4 | 0 | | 11 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: FORREST HUNDLEY

* Shop Plugged

PHONE NUMBER: 205-870-6998

UTILITY : GEORGIA POWER

TOTAL TUBES : 22,504

PLANT : VOGTLE 2

TUBE MATERIAL : I-600 TT

PLUGGED : 15

SG MODEL : W-F

EPFY : 3.0

H. L. TEMP (F) : 618

C.L. TEMP (F) : 557

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|------|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | * 13 | 2 | | | | | | 15 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 2 | 0 | 0 | 0 | 0 | 0 | 15 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: FORREST HUNDLEY

* Shop plugged

PHONE NUMBER: 205-870-6998

UTILITY : ENERGY OPERATIONS

TOTAL TUBES : 18,700

PLANT : WATERFORD 3

TUBE MATERIAL : I-600 MA

PLUGGED : 518

SG MODEL : CE-3410

EFPY : 5.5

H. L. TEMP (F) : 607

C.L. TEMP (F) : 552

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|------|----|----|----|----|----|------|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | 298* | | 1 | 3 | 19 | | 156* | 7 | 484 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 25 | | | | | | | | 9 | | 34 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 298 | 0 | 1 | 3 | 19 | 0 | 165 | 7 | 518 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Mike Layton

* Preventively plugged

PHONE NUMBER: 504-464-3454

UTILITY : TENNESSE VALLEY AUTHORITY

TOTAL TUBES : 18,696

PLANT : WATTS BAR 1

TUBE MATERIAL : I-600 MA

PLUGGED : 8

SG MODEL : W-D3

EPFY : 0.0

H. L. TEMP (F) : 617

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 3 | | | 4 | | | | | 1 | | 8 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 8 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: David Goetcheus

PHONE NUMBER: 615-751-7652

UTILITY : TENNESSEE VALLEY AUTHORITY

TOTAL TUBES : 18,696

PLANT : WATTS BAR 2

TUBE MATERIAL : I-600 MA

PLUGGED: 5

SGMODEL : W-D3

EPY : 0.0

H. L TEMP (F) : 617

C.L TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | 3 | | | | 2 | | | | | | 5 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 5 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: David Goetcheus

PHONE NUMBER: 615-751-7652

UTILITY : KANSAS GAS & ELECTRIC

TOTAL TUBES : 22,504

PLANT : WOLF CREEK

TUBE MATERIAL : I-600 TT

PLUGGED : 39

SG MODEL : W-F

EPY : 4.8

H. L. TEMP (F) : 618

C.L. TEMP (F) : 559

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | 19 | | 2 | | | 21 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | 15 | | | | 3 | | | | | 18 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 22 | 0 | 2 | 0 | 39 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: Mark Covey / Tim Card

PHONE NUMBER: 316-364-8831

UTILITY : YANKEE ATOMIC

TOTAL TUBES : 6,480

PLANT : YANKEE ROWE

TUBE MATERIAL : 304 SS

PLUGGED: 334

SG MODEL : W-13

EPY : 22.0

H. L. TEMP (F) : 553

C.L. TEMP (F) : 496

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | 66 | 2 | 15 | 30 | | | 3 | 9 | | 123 | 1 | | 58 | 8 | | 17 | | | 332 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | 2 | | | | | | 2 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 66 | 2 | 15 | 30 | 0 | 0 | 3 | 9 | 0 | 123 | 1 | 0 | 60 | 8 | 0 | 17 | 0 | 0 | 334 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: J. K. Thayer

PHONE NUMBER: 508-779-6711

UTILITY : KOREA ELECTRIC POWER CO.

TOTAL TUBES : 16,878

PLANT : YOUNGKWANG 1

TUBE MATERIAL : I-600 TT

PLUGGED : 17

SG MODEL : W-F

EFPY : 5.3

H. L. TEMP (F) : 619

C.L. TEMP (F) : 556

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | 2 | 1 | 4 | 1 | 5 | 2 | 15 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | 2 | | | | 2 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 6 | 1 | 5 | 2 | 17 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: YANG UOO CHOE

PHONE NUMBER: _____

UTILITY : KOREA ELECTRIC POWER CO.

TOTAL TUBES : 16,878

PLANT : YOUNGKWANG 2

TUBE MATERIAL : I-600 TT

PLUGGED : 27

SG MODEL : W-F

EPFY : 4.5

H. L. TEMP (F) : 619

C.L. TEMP (F) : 556

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| WASTAGE | | | | | | | | | | | | | | | | | | | 0 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC TS | | | | | | | | | | | | | | | | | | | 0 |
| ID SCC UB | | | | | | | | | | | | | | | | | | | 0 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | | | | | | | | | 6 | 11 | 2 | 8 | 27 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | | | | 0 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 11 | 2 | 8 | 27 |
| TOT SLEEVED | | | | | | | | | | | | | | | | | | | 0 |
| T. L. OUTAGE | | | | | | | | | | | | | | | | | | | 0 |

UTILITY CONTACT: YANG UOO CHOE

PHONE NUMBER: _____

UTILITY : COMMONWEALTH EDISON

TOTAL TUBES : 13,552

PLANT : ZION 1

TUBE MATERIAL : I-600 MA

PLUGGED: 907

SG MODEL : W-51

EFPY : 10.9

H. L. TEMP (F) : 594

C.L. TEMP (F) : 530

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|-----|----|----|----|-----|----|----|-----|----|----|-----|-------|
| WASTAGE | | | | | | | 2 | 24 | 3 | 2 | 9 | 7 | | 12 | | | | 4 | 63 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | 11 | | | | | 11 |
| OD S/IGA TS | | | | | | | | 12 | 19 | 37 | 64 | 75 | | | 69 | | | 29 | 305 |
| ID SCU TS | | | | | | | | | | | | | | | | | | 18 | 18 |
| ID SCC UB | | | | | | | 19 | 377 | | | | | | | | | | | 396 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | 4 | 53 | | | | 1 | | | 1 | | | 2 | 61 |
| FRET (LP) | | | | | | | | | | | | | | | | | | | 0 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | 2 | 7 | 6 | | 1 | | | 13 | 24 | | | | 53 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 473 | 28 | 39 | 74 | 83 | 0 | 36 | 94 | 0 | 0 | 53 | 907 |
| TOT SLEEVED | | | | | | | | | | | | 128 | | 47 | 445 | | | 125 | 745 |
| T. L. OUTAGE | | | | | | | | | | 1 | | | | | | | | | 1 |

UTILITY CONTACT: John Blomgren

PHONE NUMBER: 312-294-2838

UTILITY : COMMONWEALTH EDISON

TOTAL TUBES : 13,552

PLANT : ZION 2

TUBE MATERIAL : I-600 MA

PLUGGED : 525

SG MODEL : W-51

EPY : 11.2

H. L. TEMP (F) : 594

C.L. TEMP (F) : 530

| DEFECTS | <76 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | TOTAL |
|--------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|-----|-------|
| WASTAGE | | | | | | | 2 | | 1 | | 1 | | 2 | 8 | | | | 2 | 16 |
| DENTING SP | | | | | | | | | | | | | | | | | | | 0 |
| DENTING TS | | | | | | | | | | | | | | | | | | | 0 |
| PITTING | | | | | | | | | | | | | | | | | | | 0 |
| OD S/IGA SP | | | | | | | | | | | | | | | | 1 | | | 1 |
| OD S/IGA TS | | | | | | | | | 7 | | | | 3 | 7 | | | | 1 | 18 |
| ID SCC TS | | | | | | | | | | | | | 16 | 249 | 1 | 17 | | 101 | 384 |
| ID SCC UB | | | | | | | | | | 2 | 1 | | 3 | 2 | 6 | 28 | | 29 | 71 |
| FRET (PREH) | | | | | | | | | | | | | | | | | | | 0 |
| FRET (AVB) | | | | | | | 11 | | 7 | 4 | 2 | | 3 | | | | | | 27 |
| FRET (LP) | | | | | | | | | | | | | | 6 | | | | | 6 |
| HC FATIGUE | | | | | | | | | | | | | | | | | | | 0 |
| ERR/CORR | | | | | | | | | | | | | | | | | | | 0 |
| OTHER | | | | | | | | | | | | | | | | 1 | | 1 | 2 |
| TOT PLUGGED | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 15 | 6 | 4 | 0 | 27 | 272 | 7 | 47 | 0 | 134 | 525 |
| TOT SLEEVED | | | | | | | | | | | | | | | | 82 | | 170 | 252 |
| T. L. OUTAGE | | | | | | | | | | | | | | | 1 | | | | 1 |

UTILITY CONTACT: John Blomgren

PHONE NUMBER: 312-294-2828