**ATTACHMENT 1**

**VIRGINIA ELECTRIC AND POWER COMPANY**

**SURRY POWER STATION UNIT 2**

**1993 ANNUAL STEAM GENERATOR**
**INSERVICE INSPECTION REPORT**

**VIRGINIA ELECTRIC AND POWER COMPANY**

In Steam Generator "B", 3342 tubes were inspected full length with bobbin probes. Supplemental examinations were also performed using Rotating Pancake probes where additional confirmatory or other data was desired. This included an examination of 301 tubes in the top of the tubesheet transition area. Of the tubes inspected, 91 tubes contained one or more indications. Two tubes were preventively plugged for anti-vibration bar wear. Including the plugged tubes, 30 tubes had indications between 20% and 29% through wall, 45 tubes had indications between 10% and 19% through wall, 20 tubes with 21 SAA signals, one tube with a PVN signal and one tube with a DRI signal. See the attached list for details.

## SURRY UNIT 2, APRIL 1993
## STEAM GENERATOR "B"
## EDDY CURRENT EXAMINATION
## INDICATION LIST

| ROW | COL | LOCN | IND | REMARKS |
|-----|-----|------|-----|---------|
| 15 | 9 | 6H | 16 | |
| 18 | 9 | 7C | SAA | |
| 3 | 10 | 7C | 22 | |
| 16 | 11 | 5C | 14 | |
| 21 | 11 | 6H | 13 | |
| 4 | 12 | 4H | 13 | |
| 30 | 15 | 5H | 14 | |
| 28 | 16 | 4C | 25 | |
| 7 | 17 | 2C | PVN | |
| 12 | 19 | 6C | 21 | |
| 13 | 19 | 6H | 16 | |
| 2 | 23 | 4C | 17 | |
| 30 | 26 | 2H | 15 | |
| 15 | 27 | 6H | 11 | |
| 17 | 27 | 1H | 17 | |
| 3 | 28 | TSH | SAA | |
| 13 | 28 | 6H | 22 | |
| 28 | 31 | 6H | 28 | |
| 43 | 31 | 2C | 29 | |
| 18 | 35 | 3H | 27 | |
| 2 | 36 | 1C | 10 | |
| 3 | 36 | 2H | 19 | |

## SURRY UNIT 2, APRIL 1993
## STEAM GENERATOR "B"
## EDDY CURRENT EXAMINATION
## INDICATION LIST

| ROW | COL | LOCN | IND | REMARKS |
|-----|-----|------|-----|---------|
| 19 | 36 | TSC | 19 | |
| 21 | 36 | TSH | 15 | |
| 12 | 38 | 6C | 19 | |
| 45 | 38 | 7H | 11 | |
| 25 | 39 | 4H | 15 | |
| 44 | 39 | 1C | 10 | |
| 45 | 39 | 1C | 17 | |
| 29 | 40 | 6H | 19 | |
| 13 | 41 | 1H | 11 | |
| 12 | 42 | TSH | SAA | |
| 26 | 42 | 2H | 16 | |
| 10 | 43 | TSC | 10 | |
| 13 | 43 | 1H | 25 | |
| 42 | 44 | 4H | 15 | |
| 34 | 45 | 6H | 15 | |
| 7 | 46 | TSH | SAA | |
| 14 | 46 | 6C | 18 | |
| 34 | 46 | BPC | 14 | |
| 32 | 47 | 4C | 15 | |
| 40 | 47 | 3C | 21 | |
| 3 | 48 | 2C | 16 | |
| 23 | 48 | 2C | 24 | |

## SURRY UNIT 2, APRIL 1993
## STEAM GENERATOR "B"
## EDDY CURRENT EXAMINATION
## INDICATION LIST

| ROW | COL | LOCN | IND | REMARKS |
|-----|-----|------|-----|---------|
| 45 | 48 | 6H | SAA | |
| 9 | 50 | 4H | 16 | |
| 19 | 50 | TSH | SAA | |
| 44 | 50 | 6H | 13 | |
| 1 | 56 | TSH | 25 | |
| 9 | 56 | 6C | 20 | |
| 9 | 56 | TSH | SAA | |
| 36 | 56 | 2C | 14 | |
| 41 | 56 | 1C | 23 | |
| 3 | 57 | TSC | SAA | |
| 17 | 57 | 5H | 24 | |
| 17 | 57 | 4C | 16 | |
| 25 | 57 | 6C | 10 | |
| 41 | 57 | 4C | 26 | |
| 34 | 58 | 4C | 23 | |
| 36 | 58 | 2C | 22 | |
| 41 | 58 | 6C | 17 | |
| 42 | 58 | 1H | 11 | |
| 4 | 59 | 4C | 18 | |
| 4 | 59 | TSC | SAA | |
| 30 | 59 | 2C | 22 | |
| 32 | 59 | 6C | 27 | |
| 38 | 59 | 4C | 12 | |

## SURRY UNIT 2, APRIL 1993
## STEAM GENERATOR "B"
## EDDY CURRENT EXAMINATION
## INDICATION LIST

| ROW | COL | LOCN | IND | REMARKS |
|-----|-----|------|-----|---------|
| 24 | 60 | 2C | 27 | |
| 40 | 60 | AV3 | 20 | plugged * |
| 1 | 61 | 3H | SAA | |
| 3 | 61 | 7H | SAA | |
| 3 | 62 | TSH | SAA | |
| 3 | 62 | 3H | SAA | |
| 38 | 62 | 7H | SAA | |
| 20 | 63 | 7H | SAA | |
| 33 | 63 | AV2 | 20 | plugged * |
| 33 | 63 | AV3 | 14 | |
| 3 | 64 | 4C | 18 | |
| 12 | 64 | TSH | SAA | |
| 4 | 65 | 6C | 29 | |
| 12 | 65 | 4C | 13 | |
| 32 | 65 | TEH | DRI | |
| 32 | 65 | 7H | 22 | |
| 3 | 66 | TSH | SAA | |
| 22 | 66 | 2C | 27 | |
| 2 | 67 | 1H | 22 | |
| 2 | 67 | 6H | SAA | |
| 1 | 68 | TSH | SAA | |
| 20 | 69 | 1C | 11 | |
| 4 | 72 | 2C | 29 | |
| 37 | 74 | 4C | 13 | |

## SURRY UNIT 2, APRIL 1993
## STEAM GENERATOR "B"
## EDDY CURRENT EXAMINATION
## INDICATION LIST

| ROW | COL | LOCN | IND | REMARKS |
|-----|-----|------|-----|---------|
| 3 | 80 | 4C | 27 | |
| 19 | 80 | 7H | SAA | |
| 2 | 83 | 3C | 24 | |
| 13 | 84 | 3C | 14 | |
| 18 | 87 | 5C | 21 | |
| 20 | 87 | 6C | 10 | |
| 15 | 89 | 1C | SAA | |

*   These tubes were preventively plugged.

**ATTACHMENT 2**

GLOSSARY OF TERMS

SURRY POWER STATION

ANNUAL STEAM GENERATOR

INSERVICE INSPECTION REPORT

**VIRGINIA ELECTRIC AND POWER COMPANY**

## VIRGINIA ELECTRIC AND POWER COMPANY
## STEAM GENERATOR EDDY CURRENT TUBE INSPECTION

### GLOSSARY OF TERMS

1. ROW, COL - COLUMN - tube identifier numbers - an X-Y coordinate system.

2. IND - INDICATION - Character codes and numerics that represent the analysis results of the data for that tube, e.g., SAA, 25%, etc.

3. INF - Indication Not Found - Indicates that a previously reported Indication, from current inspection data or historical data, is not found in the data being analyzed - also used to address the case where a tube/ signal is being retested for positive identification (PID) and the retest data does not show any signal present.

4. LOCN - LOCATION - The location in the tube of the INDICATION called.

5. DRI - DISTORTED ROLL TRANSITION INDICATION - A possible tube wall loss condition that is unquantifiable with a numeric percent call due to the signal characteristics and is located at the roll transition - often retested with RPC (Rotating Pancake Coil Probe).

6. 55 - A number in the indication column shows the % through wall depth of the indication.

7. PVN - PERMEABILITY VARIATION - A variance in the tube permeability that produces a signal that can mask other signals of interest.

8. SAA - SINGLE AXIAL ANOMALY - Describes a single axially oriented anomaly signal from RPC (Rotating Pancake Probe) data. The anomaly is based on metallurgical evaluation of tube pull data and is caused by lift-off from a slight inside diameter depression in the tube.

9 TEH - Tube End Hot leg.

10. TEC - Tube End Cold leg.

11. TSH - Top of Tubesheet Hot leg.

12. TSC - Top of Tubesheet Cold leg.

13. BPH, BPC - Baffle Plate Hot Leg and Cold Leg

**VIRGINIA ELECTRIC AND POWER COMPANY**
**STEAM GENERATOR EDDY CURRENT TUBE INSPECTION**

**GLOSSARY OF TERMS**

14.  #C,  #H  -  (# = number) of Support Plate Hot or Cold leg.
     e.g., 3H, 6H, 7C.

15.  AV1, AV2, AV3, AV4  -  Anti-Vibration Bars 1 through 4.


Note: Where no comment appears in the remarks column the tube is
still in service.

# ATTACHMENT 3

# VIRGINIA ELECTRIC AND POWER COMPANY

# SURRY POWER STATION UNIT 2

# TUBESHEET MAPS

**VIRGINIA ELECTRIC AND POWER COMPANY**

# S/G - B  TUBES TO BE PLUGGED

Surry Unit 2          VIR-B   SERIES 51F

03-29-1993      12:01 HRS.       SUPERTUBIN
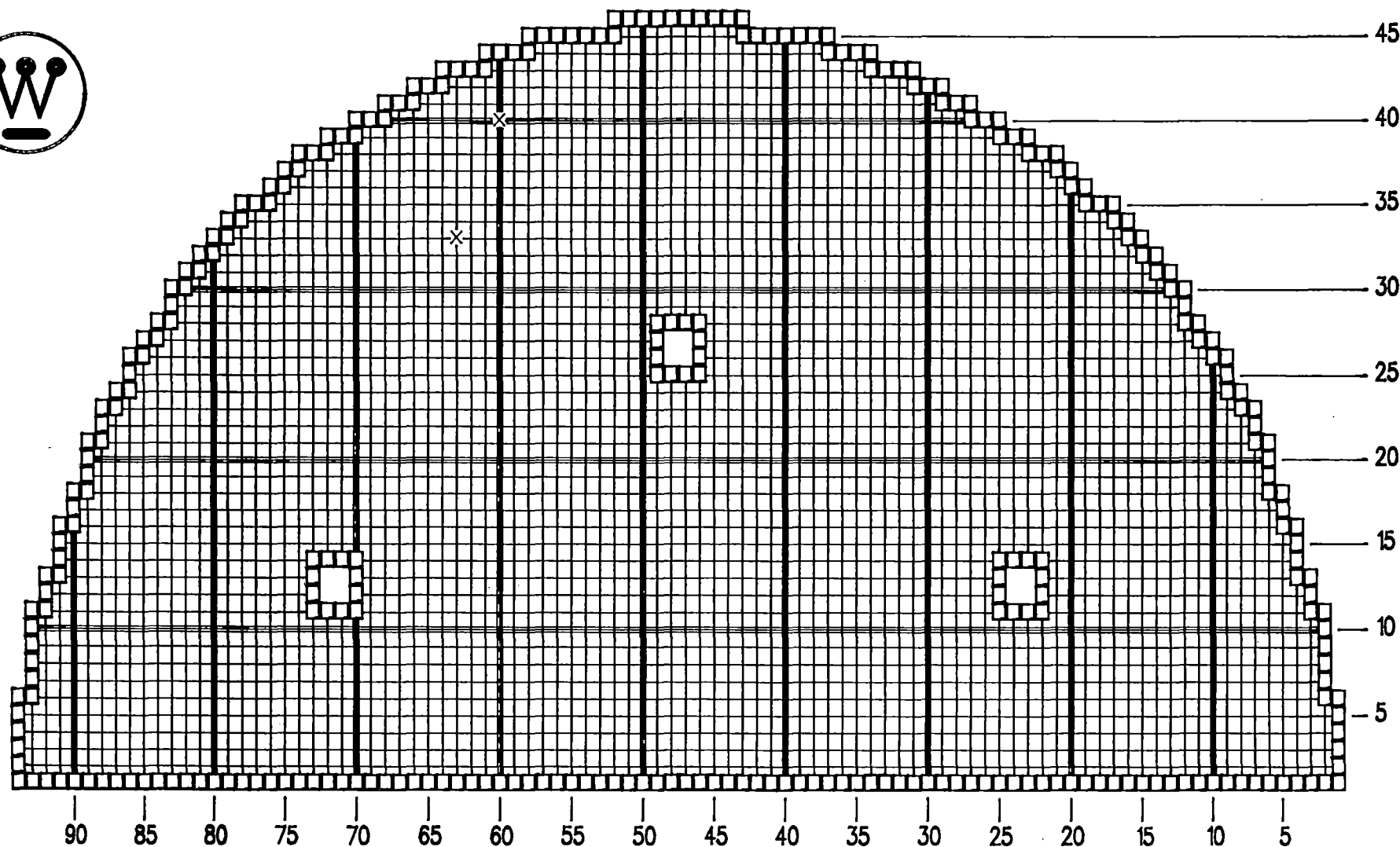
# HOT LEG BOBBIN INDICATION DISTRIBUTION
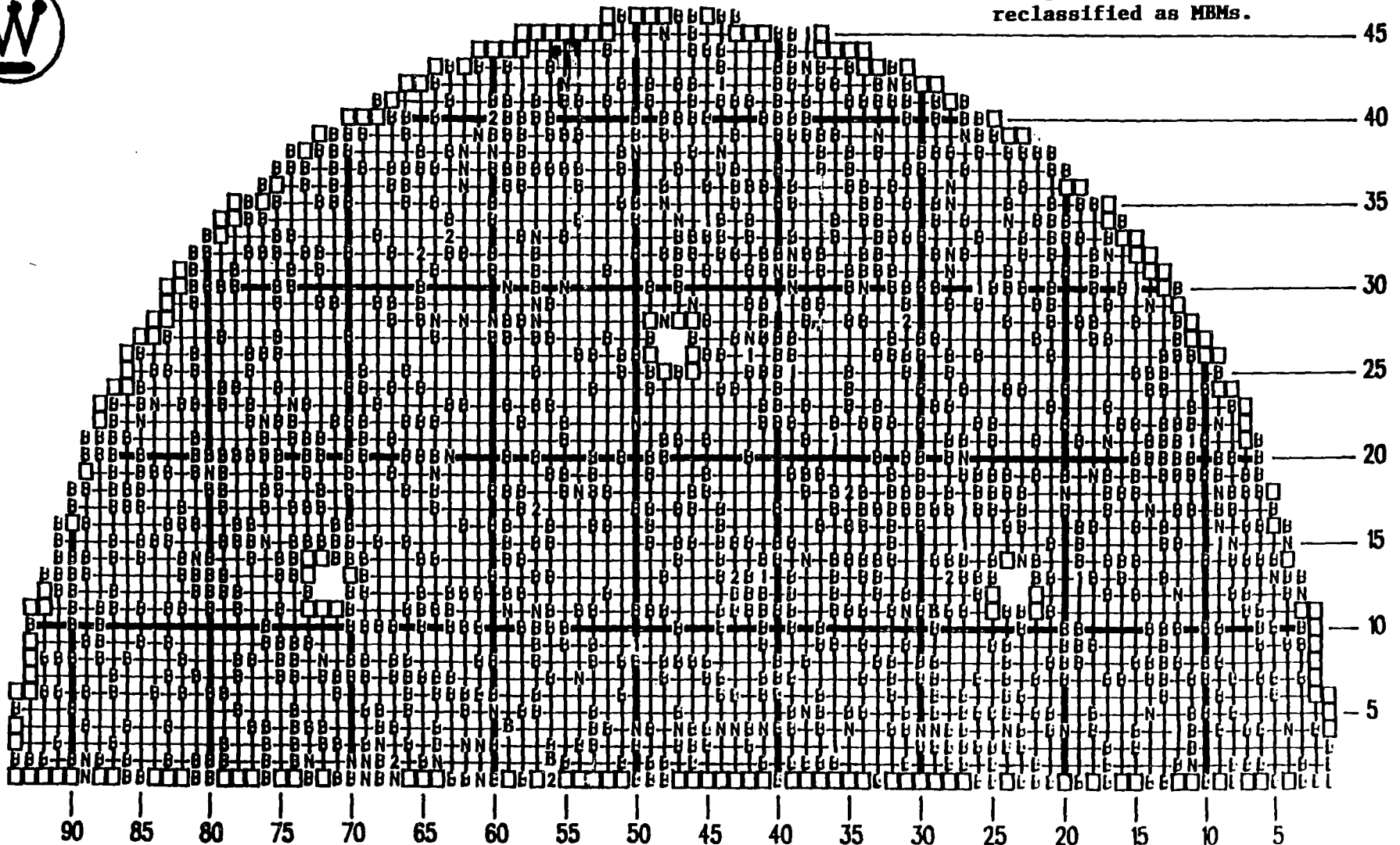
Surry Unit 2                    VIR-B    SERIES 51F

03-29-1993          03:30 HRS.              SUPERTUBIN

# COLD LEG BOBBIN INDICATION DISTRIBUTION

Surry Unit 2      VIR–B    SERIES 51F

03–29–1993     08:09 HRS.     SUPERTUBIN

| | | |
|---|---|---|
| * N : | 80 | NON–QUANTIFIABLE INDICATION (INDICATION TESTED WITH RPC) |
| 2 : | 20 | 20 % – 29 % INDICATION |
| 1 : | 25 | 10 % – 19 % INDICATION |
| B : | 1187 | MANUFACTURES BUFF MARK |
| * : | | Same note as hot leg map. |