



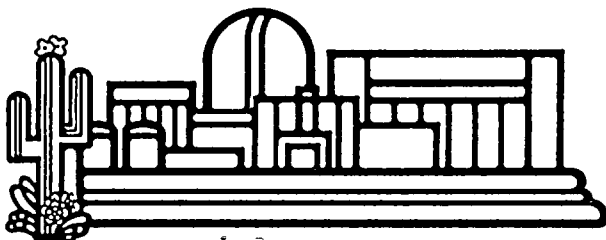
Arizona Nuclear Power Project

NDE Summary Report

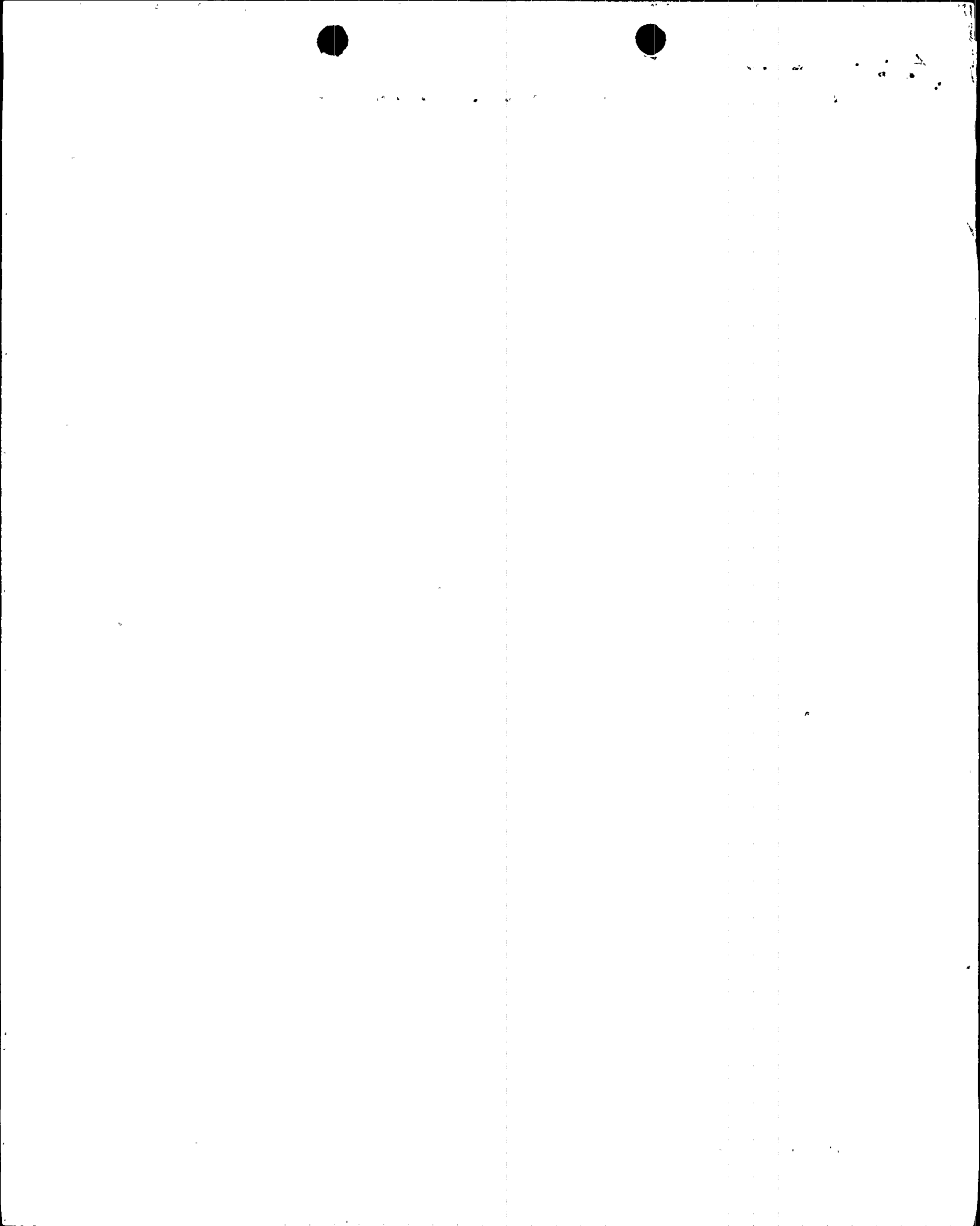
UNIT 1 STEAM GENERATOR EDDY CURRENT EXAMINATION

2ND REFUELING OUTAGE

JUNE/JULY 1989



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PALO VERDE NUCLEAR GENERATING STATION
UNIT 1 STEAM GENERATOR EDDY CURRENT EXAMINATION
2ND REFUELING OUTAGE

JUNE/JULY 1989

ARIZONA NUCLEAR POWER PROJECT
P. O. BOX 52034
PHOENIX, AZ 85072

PREPARED BY: *J. B. Strickler* DATE: 8/17/89
REVIEWED BY: *Alan Monow* DATE: 8-17-89
APPROVED BY: *D. B. House* DATE: 8-17-89

COMMERCIAL SERVICE DATE: 1/28/86
REPORT DATE: 8/18/89



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UNIT 1 STEAM GENERATOR EDDY CURRENT EXAMINATION

1.0 Summary

The second refueling outage for Palo Verde Unit 1 officially began on April 7, 1989. All of the tubing in both steam generators was examined full length. The decision to perform a 100% examination was based on several factors including:

- The observance of random wear patterns during Unit 2's first refueling outage.
- The availability of examination time due to reactor coolant pump maintenance activities.

The overall results of the examination are encouraging, in that after completion of the second fuel cycle, the total number of degraded and/or defective tubes is minimal and no significant wear patterns have been observed.

2.0 Examination Results

The examination results are summarized in Table 1 on Page 2 of this report. In addition, the summary data sheets in Appendix A list all tubes identified in both steam generators with thru wall indications from 0 - 100%.

The examination revealed additional wear indications at the eggcrates on the cold leg side of both steam generators in the low-row corners of the tube bundles. One degraded tube was identified in steam generator 11 and four degraded tubes were identified in steam generator 12.

Several tubes in the outer periphery in both steam generators have wear indications at the eggcrates. The indications in steam generator 11 are all <20% thru wall and extremely small, however, there does appear to be some growth since testing performed during the first refueling outage. Twelve degraded tubes as well as several tubes with <20% thru wall indications were identified in this area of steam generator 12.

Five tubes in steam generator 11 and three tubes in steam generator 12 were observed as having batwing wear indications. All of the indications appear to have grown since the previous examinations.

Numerous tubes in both steam generators have indications at the vertical straps. Most of the indications are extremely small (<20% thru wall and 1 volt), however, five tubes in steam generator 11 and five tubes in steam generator 12 are degraded.

Possible loose part (PLP) indications were observed in both steam generators. Of the nine tubes identified in steam generator 11 two tubes were noted with PLP's in previous examinations. Of the five tubes identified in steam generator 12 one tube was noted with PLP's in previous examination. Two tubes in steam generator 11 and one tube in steam generator 12 had wear indications associated with the PLP. No tube wear was observed with any of the other PLP indications.



TABLE 1

| INDICATION CATEGORY | STEAM GENERATOR 11 | STEAM GENERATOR 12 |
|--|--------------------|--------------------|
| Corner Eggcrate Wear <20% Degraded | - 1 | - 4 |
| Periphery Eggcrate Wear <20% Degraded | 2 - | 2 12 |
| Batwing Wear <20% Degraded | - 5 | 2 1 |
| Vertical Strap Wear <20% Degraded | 14 2 | 15 5 |
| Possible Loose Part Indications With Wear Without Wear | 2 7 | 1 5 |
| Obstructed Tubes | 1 | 2 |
| Baseline Indications | 31 | 36 |

The examination identified one tube in steam generator 11 and two tubes in steam generator 12 as being obstructed. The tube in steam generator 11 is a partial length tube installed by Combustion Engineering during steam generator fabrication. One of the tubes in steam generator 12 has been obstructed since the baseline and was inadvertently omitted from the baseline plugging list. All obstructed tubes have been plugged.

Numerous tubes in both steam generators were identified as having baseline indications (BLI). These indications are small manufacturing anomalies on the ID of the tubes. All indications were compared to the baseline and no significant changes were observed. In addition to these indications, steam generator 11 had one tube with an 82% thru wall, ID oriented indication and one tube with a 79% thru wall, OD oriented indication in the tubesheet. Also, steam generator 12 had one tube with

a 26% thru wall OD oriented indication. All three of these indications were present on the baseline exam, however, they were not identified at that time. There has been no significant change in the signal response to these indications.

Numerous tubes were identified in each steam generator as having minor dings and dents. The majority of these indications were identified either during previous outages or the baseline examination. No significant changes were observed.

Sludge profiling was also performed during the examination and was found to be relatively minor. Steam generator 11 had 953 tubes and steam generator 12 had 448 tubes with sludge indications. Approximately 10% of the tubes with sludge indications were at the first support and the balance of the sludge indications were at the tubesheet. The average depth of sludge is less than one inch and the maximum depth is less than two inches.

The examination resulted in plugging an additional twelve tubes in steam generator 11 and seven (plus one tube where a plug was installed in the wrong location) tubes in steam generator 12. The tubesheet maps in Appendix B show the total tubes plugged to date. Engineering Evaluation Request (EER) numbers 89-RC-173, 89-RC-174, 89-RC-179, and 89-RC-180 were initiated to track the examination results and subsequent plugging. The NIS-1 form in Appendix C lists each of the tubes, by row and line, plugged as a result of this examination.

3.0 Examination Techniques and Equipment

The eddy current acquisition was performed by Westinghouse Electric Corporation using MIZ-18A digital data acquisition systems. The following test frequencies were used during the examination:

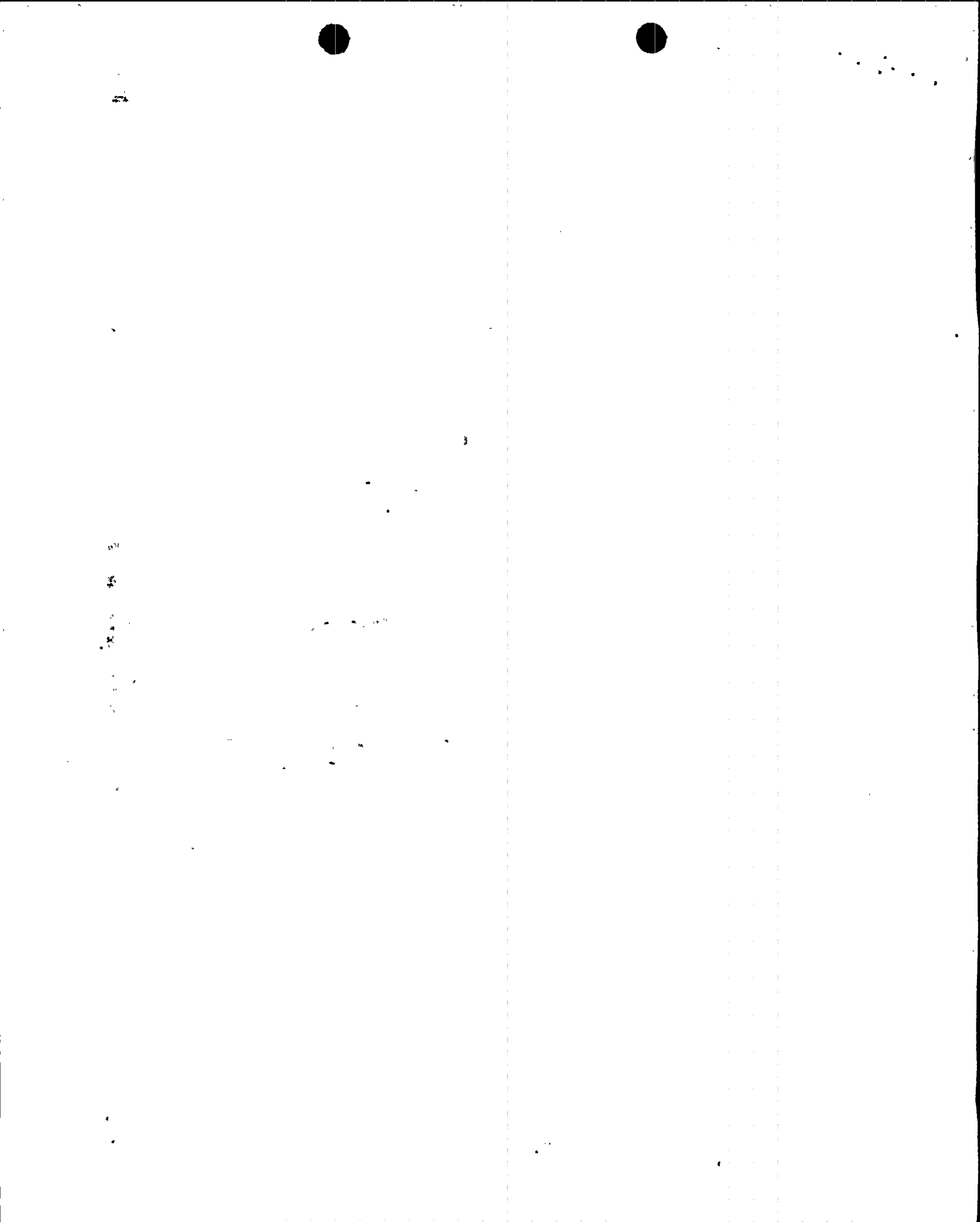
- 550 kHz differential and absolute
- 990 kHz differential and absolute
- 100 kHz differential and absolute
- 20 kHz differential and absolute

All tubing was tested with Echoram manufactured EB style probes, either 0.610 inch, 0.590 inch, 0.560 inch, or 0.520 inch diameter. A rotating pancake probe was used to characterize indications at various locations. Data acquisition was facilitated by using ROSA "no entry" probe positioning fixtures in both hot and cold leg plenums.

The eddy current data analysis was performed using IDEA automated data screening and MIZ-18 digital data analysis systems. Westinghouse provided the primary data analysis and Conam Inspection performed an independent secondary analysis. A Combustion Engineering data analyst provided a third review of specific tubes as requested.

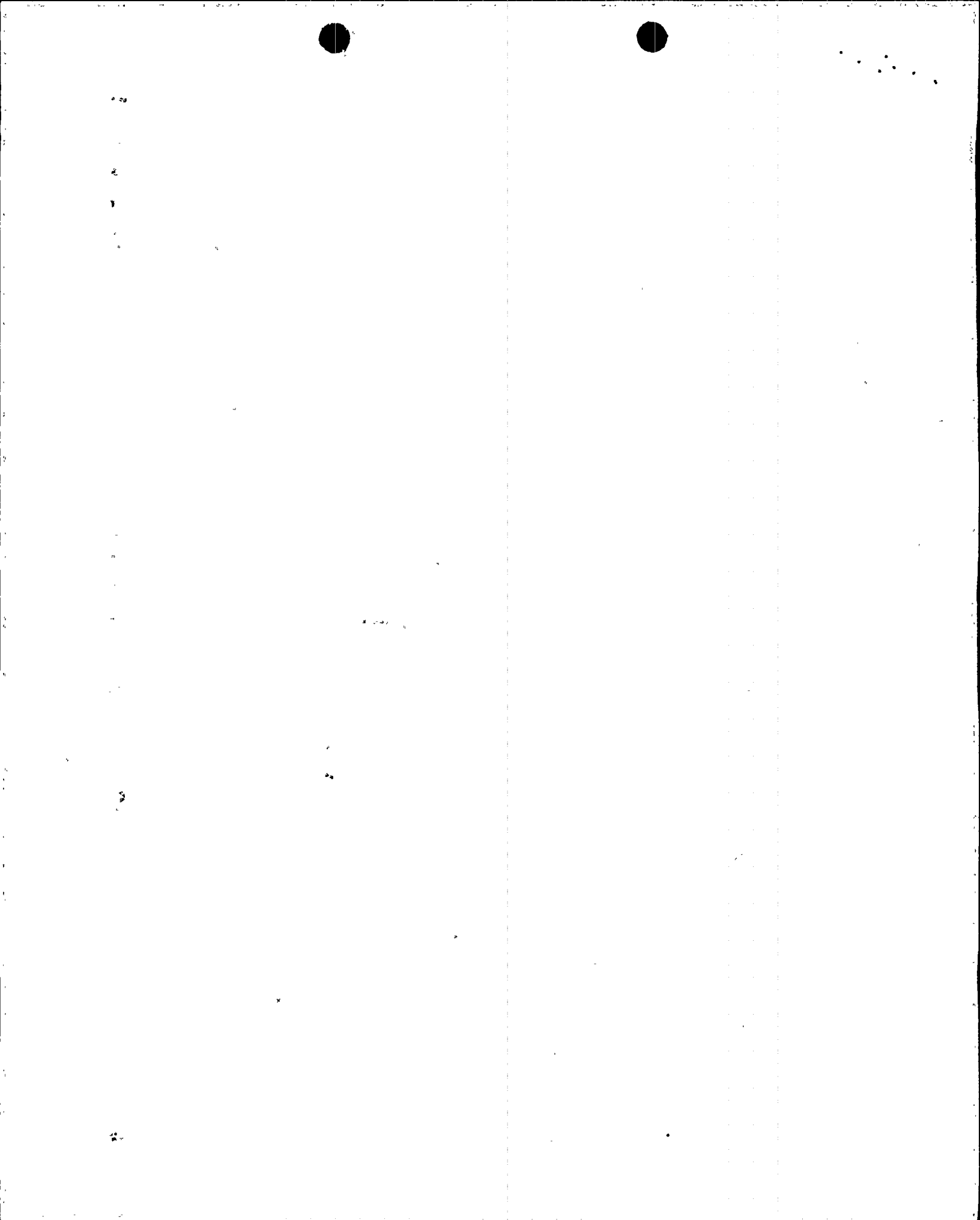
APPENDIX A

SUMMARY
DATA
SHEETS

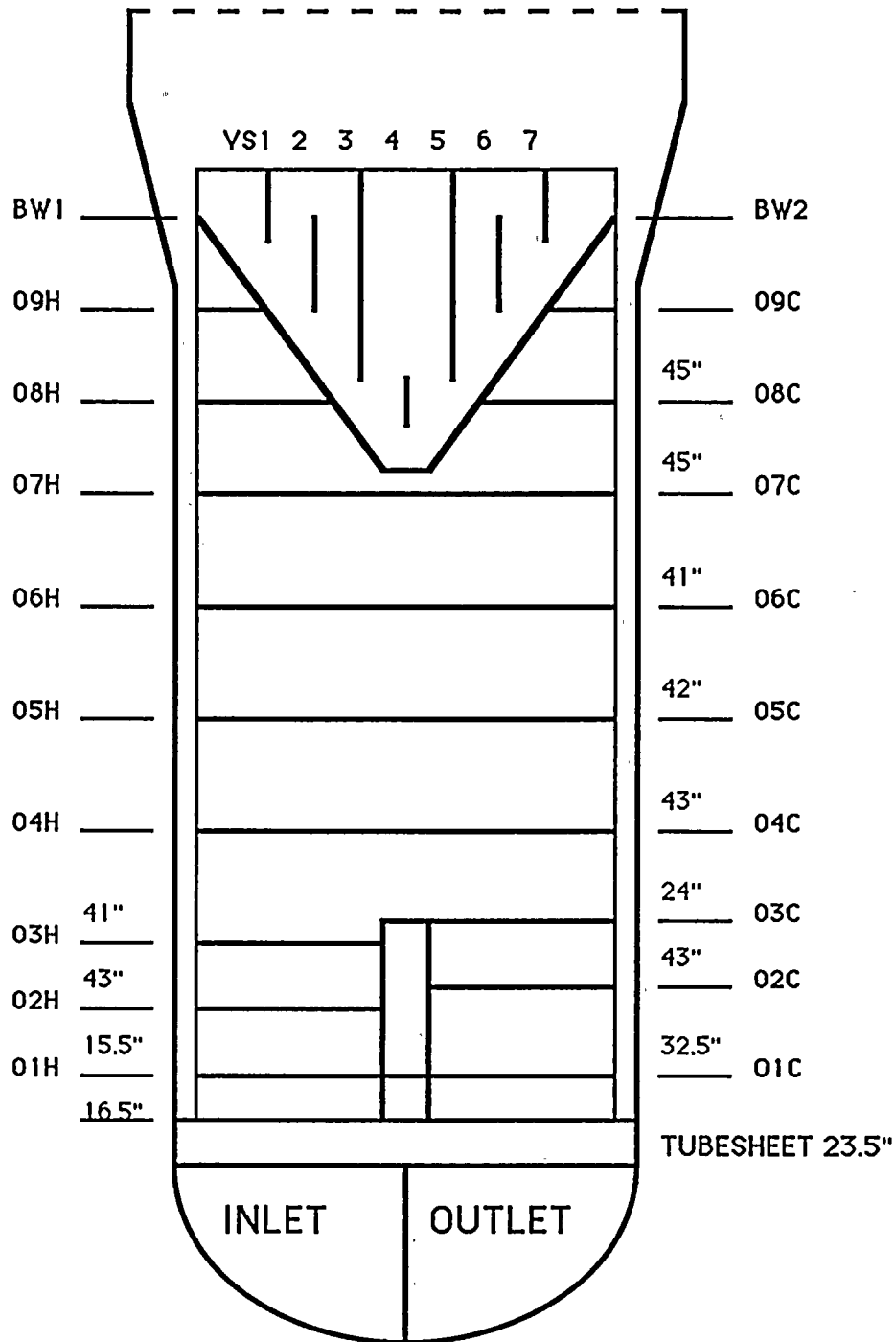


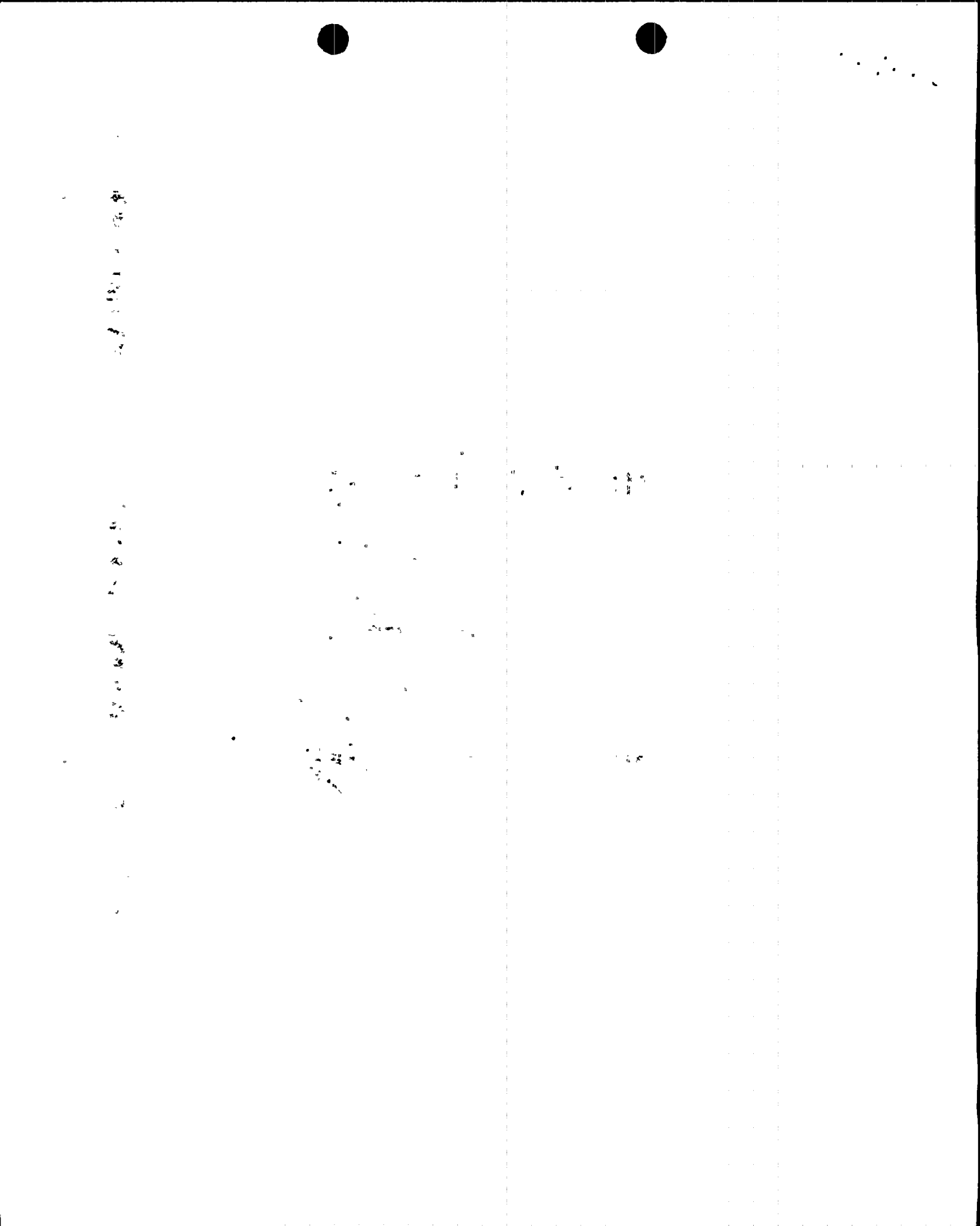
LEGEND

- ROW:** Indicates the row number of a given tube.
- LIN:** Indicates the column number of a given tube.
- LEG:** Indicates the tube leg from which the examination was performed; either the hot (H) leg or cold (C) leg.
- EXTENT REQ:** Indicates the tube length required to be examined, i.e., F/L = full length, 07H = the seventh support on hot leg side.
- EXTENT TST:** Indicates the tube length actually examined.
- REM:** Remarks column used for comments relating to examination, i.e., RIT = Rerun - ID Tube.
- REEL:** Indicates reel number data was recorded on.
- PROBE:** Indicates probe diameter and style used for examination.
- LOCATION:** Gives indication location relative to known landmarks such as supports and batwings. Location are as follows:
- VS1 - #1 Vertical Support Strap
 - BW1 - #1 Batwing
 - 01H - #1 Support Plate in Hot Leg
 - 07C - #7 Support Plate in Cold Leg
 - TSH - Top of the Tubesheet in Hot Leg
 - TSC - Top of the Tubesheet in Cold Leg
 - TEH - Tube End Hot Leg
 - TEC - Tube End Cold Leg
- VOLTS:** Indicates the peak-to-peak voltage of a given indication response.
- DEG:** The measured phase angle of a given indication response.
- %:** The percent through the tube wall of a given indication based on the measured phase angle/amplitude and the calibration curve established for that particular channel, or analysis comment codes, e.g., PLP = Possible Loose Part, etc.
- CH:** Indicates the channel used to measure and evaluate a given indication.



CE SYSTEM 80 STEAM GENERATOR TUBE SUPPORT DIAGRAM





CUMULATIVE REPORT
06/89, ARIZONA PUBLIC SERVICE CO., PALO VERDE, UNIT 1

STEAM GENERATOR: 11
LOCATION: ALL
CRITERIA: 0% TO 100%

PAGE: 1 OF 1
DATE: 07/12/89
TIME: 15:56:24

| ROW | LIN | HEAT# | LEG | EXAM EXTENT | | REM | REEL | PROBE | LOCATION | CURRENT | | | | |
|-----|-----|-------|-----|-------------|---------|-----|------|-------|--------------------|---------|-----|-----|-----|----|
| | | | | PROGRAM | ACTUAL | | | | | VOLTS | MIL | DEG | % | CH |
| 67 | 14 | | H | TEH-TEC | TEH-TEC | | 154 | 610EB | 01C+ 1.2 | 0.7 | | 152 | 20 | 1 |
| 117 | 32 | | H | TEH-TEC | TEH-TEC | | 168 | 610EB | 09H+ 1.0 | 0.6 | | 0 | <20 | M2 |
| 88 | 33 | | H | TEH-TEC | TEH-TEC | | 122 | 610EB | VS5+ 0.6 | 0.9 | | 0 | <20 | M2 |
| 82 | 35 | | H | TEH-TEC | TEH-TEC | | 124 | 610EB | VS3- 0.5 | 0.6 | | 0 | <20 | M2 |
| 111 | 36 | | C | TEC-TEH | TEC-TEH | | 066 | 610EB | VS2- 0.8 | 0.4 | | 0 | <20 | M2 |
| 110 | 37 | | C | TEC-TEH | TEC-TEH | | 066 | 610EB | VS2+ 0.7 | 0.4 | | 0 | <20 | M2 |
| 113 | 40 | | H | TEH-TEC | TEH-TEC | | 168 | 610EB | VS5+ 0.9 | 0.4 | | 0 | <20 | M2 |
| 80 | 47 | | C | TEC-TEH | TEC-TEH | | 088 | 610EB | VS3- 0.8 | 2.2 | | 0 | 36 | M2 |
| 9 | 72 | | H | TEH-TEC | TEH-TEC | | 132 | 610EB | 02C+ 34.9 TO+ 39.3 | 3.2 | | 0 | 39 | M2 |
| 38 | 93 | | H | TEH-TEC | TEH-TEC | | 079 | 610EB | BW1- 1.9 | 2.5 | | 0 | 36 | M2 |
| | | | H | TEH-TEC | TEH-TEC | | 079 | 610EB | BW2- 1.8 | 1.2 | | 0 | 24 | M2 |
| 125 | 94 | | H | TEH-TEC | TEH-TEC | | 064 | 610EB | VS2- 0.7 | 0.5 | | 0 | <20 | M2 |
| 159 | 94 | | C | TEC-TEH | TEC-04H | RIT | 209 | 610EB | VS7+ 1.0 | 0.7 | | 0 | <20 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 211 | 610EB | VS7+ 1.0 | 0.9 | | 0 | 20 | M2 |
| 41 | 96 | | C | TEC-TEH | TEC-TEH | | 009 | 610EB | BW1- 1.8 | 2.1 | | 0 | 36 | M2 |
| 38 | 99 | | C | TEC-TEH | TEC-TEH | | 010 | 610EB | BW1- 1.9 | 1.9 | | 0 | 34 | M2 |
| 157 | 110 | | H | TEH-VS1 | TEH-BW2 | | 207 | 610EB | VS7+ 0.7 | 0.8 | | 0 | <20 | M2 |
| | | | C | TEC-TEH | TEC-VS1 | | 209 | 610EB | VS7+ 0.6 | 1.2 | | 0 | 26 | M2 |
| | | | C | TEC-TEH | TEC-VS1 | | 209 | 610EB | VS7- 0.7 | 0.9 | | 0 | 23 | M2 |
| | | | H | TEH-VS1 | TEH-BW2 | | 207 | 610EB | VS7- 0.8 | 1.0 | | 0 | <20 | M2 |
| | | | H | TEH-VS1 | TEH-BW2 | | 207 | 610EB | BW2+ 2.4 | 0.6 | | 0 | <20 | M2 |
| | | | C | TEC-TEH | TEC-VS1 | | 209 | 610EB | BW2- 1.8 | 1.0 | | 0 | 23 | M2 |
| | | | H | TEH-VS1 | TEH-BW2 | | 207 | 610EB | BW2- 1.9 | 1.1 | | 0 | <20 | M2 |
| 82 | 111 | | C | TEC-TEH | TEC-TEH | | 127 | 610EB | VS3- 0.8 | 0.9 | | 0 | 23 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 127 | 610EB | VS5+ 0.8 | 1.0 | | 0 | 25 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 127 | 610EB | VS5+ 0.0 | 0.9 | | 0 | 24 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 127 | 610EB | VS5- 0.7 | 1.3 | | 0 | 30 | M2 |
| 111 | 112 | | C | TEC-TEH | TEC-TEH | | 042 | 610EB | VS3+ 0.7 | 0.7 | | 0 | <20 | M2 |
| 53 | 116 | | C | TEC-TEH | TEC-TEH | | 159 | 610EB | VS4+ 16.1 | 8.3 | | 33 | 82 | 1 |
| 151 | 120 | | H | TEH-TEC | TEH-TEC | | 193 | 610EB | VS7+ 0.6 | 0.8 | | 0 | <20 | M2 |
| 83 | 134 | | C | TEC-TEH | TEC-TEH | | 142 | 610EB | VS3+ 0.9 | 0.5 | | 0 | <20 | M2 |
| 82 | 141 | | C | TEC-TEH | TEC-TEH | | 145 | 610EB | VS3- 0.9 | 0.7 | | 0 | <20 | M2 |
| 129 | 146 | | H | TEH-TEC | TEH-TEC | | 181 | 610EB | 03C- 0.8 | 0.8 | | 0 | <20 | M2 |
| 76 | 159 | | C | TEC-TEH | TEC-TEH | | 032 | 610EB | VS3+ 0.8 | 0.6 | | 0 | <20 | M2 |
| 106 | 165 | | C | TEC-TEH | TEC-TEH | | 067 | 610EB | BW2+ 1.2 | 1.9 | | 0 | 32 | M2 |
| 76 | 169 | | C | TEC-TEH | TEC-TEH | | 035 | 610EB | VS3- 0.6 | 0.7 | | 0 | <20 | M2 |
| 39 | 182 | | C | TEC-TEH | TEC-TEH | | 050 | 610EB | TEH+ 13.3 | 3.4 | | 92 | 79 | M4 |
| 3 | 186 | | C | TEC-TEH | TEC-TEH | | 054 | 590EB | 03C+ 1.0 | 1.3 | | 0 | 28 | M2 |
| | | | H | TEH-TEC | TEH-TEC | | 163 | 610EB | 03C+ 0.9 | 1.3 | | 0 | 24 | M2 |
| 39 | 186 | | C | TEC-TEH | TEC-TEH | | 050 | 610EB | 05C- 0.9 | 0.5 | | 0 | <20 | M2 |

NUMBER OF TUBES SELECTED FROM CURRENT OUTAGE: 28

NO TREND ANALYSIS REQUESTED

CONAM INSPECTION

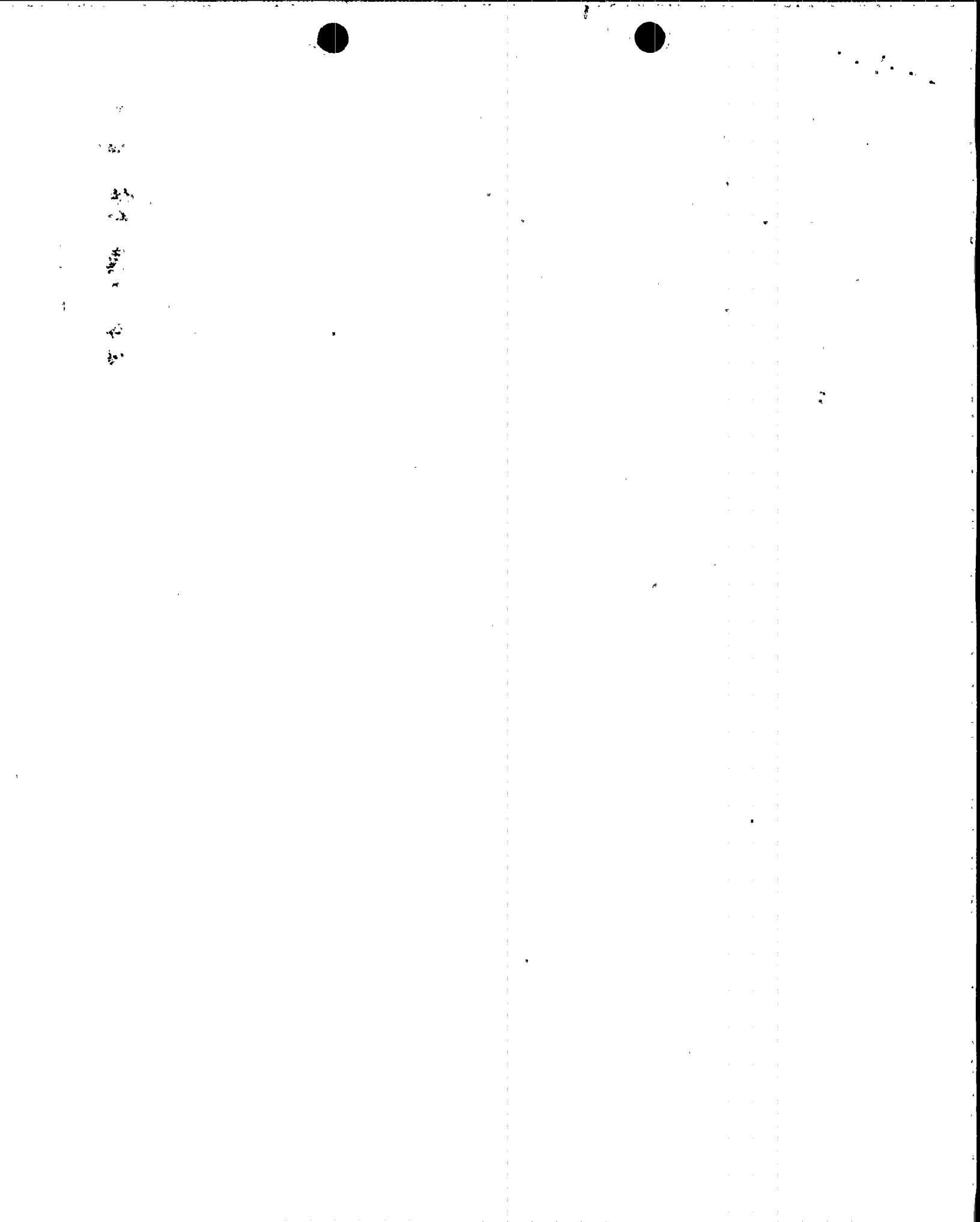
CUMULATIVE REPORT
06/89, ARIZONA PUBLIC SERVICE CO., PALO VERDE, UNIT 1

STEAM GENERATOR: 12
LOCATION: ALL
CRITERIA: 0% TO 100%

PAGE: 1 OF 2
DATE: 07/12/89
TIME: 16:20:51

| ROW | LIN | HEAT# | LEG | EXAM EXTENT | | REM | REEL | PROBE | LOCATION | CURRENT | | | | |
|-----|-----|-------|-----|-------------|---------|-----|------|-------|-----------|---------|-----|-----|-----|----|
| | | | | PROGRAM | ACTUAL | | | | | VOLTS | MIL | DEG | % | CH |
| 2 | 3 | | H | TEH-TEC | TEH-TEC | | 174 | 590EB | 02C+ 0.5 | 7.3 | | 0 | 54 | M2 |
| 91 | 18 | | C | TEC-TEH | TEC-TEH | | 112 | 610EB | 04C+ 0.0 | 0.7 | | 0 | 20 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 112 | 610EB | 04C- 0.8 | 0.7 | | 0 | 20 | M2 |
| 93 | 20 | | C | TEC-TEH | TEC-TEH | | 062 | 610EB | 04H+ 37.0 | 0.6 | | 139 | 26 | 1 |
| 99 | 22 | | C | TEC-TEH | TEC-TEH | | 112 | 610EB | 03C+ 1.0 | 0.7 | | 0 | 21 | M2 |
| 98 | 23 | | C | TEC-TEH | TEC-TEH | | 112 | 610EB | 03C+ 1.0 | 0.4 | | 0 | <20 | M2 |
| 73 | 28 | | H | TEH-TEC | TEH-TEC | | 106 | 610EB | VS3+ 0.5 | 0.8 | | 0 | 21 | M2 |
| 81 | 38 | | H | TEH-TEC | TEH-TEC | | 119 | 610EB | VS5- 0.8 | 0.8 | | 0 | 21 | M2 |
| 79 | 40 | | H | TEH-TEC | TEH-TEC | | 121 | 610EB | VS3- 0.7 | 0.5 | | 0 | <20 | M2 |
| 81 | 40 | | H | TEH-TEC | TEH-TEC | | 121 | 610EB | VS3- 0.8 | 0.7 | | 0 | <20 | M2 |
| 111 | 50 | | C | TEC-TEH | TEC-TEH | | 017 | 610EB | VS3- 0.9 | 0.4 | | 0 | <20 | M2 |
| 80 | 77 | | C | TEC-TEH | TEC-TEH | | 026 | 610EB | VS5- 0.8 | 0.5 | | 0 | <20 | M2 |
| 158 | 83 | | C | TEC-TEH | TEC-TEH | | 096 | 610EB | 04C- 0.7 | 1.0 | | 0 | 30 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 096 | 610EB | 03C- 1.0 | 0.8 | | 0 | 20 | M2 |
| 159 | 86 | | C | TEC-TEH | TEC-TEH | | 094 | 610EB | 04C- 1.0 | 0.8 | | 0 | 23 | M2 |
| 158 | 87 | | C | TEC-TEH | TEC-TEH | | 094 | 610EB | 05C- 0.8 | 0.8 | | 0 | 25 | M2 |
| 153 | 88 | | C | TEC-TEH | TEC-TEH | | 092 | 610EB | VS1- 0.8 | 0.9 | | 0 | 25 | M2 |
| 156 | 89 | | C | TEC-TEH | TEC-TEH | | 092 | 610EB | BW2+ 1.7 | 0.4 | | 0 | <20 | M2 |
| 111 | 92 | | H | TEH-TEC | TEH-TEC | | 159 | 610EB | VS3+ 0.8 | 1.0 | | 0 | 26 | M2 |
| 113 | 92 | | H | TEH-TEC | TEH-TEC | | 159 | 610EB | VS3+ 0.8 | 0.6 | | 0 | <20 | M2 |
| 117 | 106 | | C | TEC-TEH | TEC-TEH | | 123 | 610EB | 09H+ 0.5 | 1.0 | | 0 | 25 | M2 |
| 32 | 107 | | C | TEC-TEH | TEC-TEH | | 138 | 610EB | VS4+ 0.9 | 0.4 | | 0 | <20 | M2 |
| 110 | 113 | | C | TEC-TEH | TEC-TEH | | 042 | 610EB | VS2+ 0.9 | 0.5 | | 0 | <20 | M2 |
| 76 | 119 | | C | TEC-TEH | TEC-TEH | | 040 | 610EB | VS5- 0.9 | 0.5 | | 0 | <20 | M2 |
| 154 | 119 | | C | TEC-TEH | TEC-TEH | | 080 | 610EB | 06C- 0.1 | 0.4 | | 0 | <20 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 080 | 610EB | 03C- 1.0 | 1.0 | | 0 | 24 | M2 |
| 151 | 120 | | C | TEC-TEH | TEC-TEH | | 080 | 610EB | 04C- 0.1 | 1.2 | | 0 | 28 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 080 | 610EB | 04C- 0.9 | 0.8 | | 0 | 21 | M2 |
| 80 | 121 | | C | TEC-TEH | TEC-TEH | | 039 | 610EB | VS5+ 1.2 | 0.5 | | 0 | <20 | M2 |
| 110 | 121 | | C | TEC-TEH | TEC-TEH | | 039 | 610EB | 08H+ 0.8 | 0.4 | | 0 | <20 | M2 |
| 101 | 124 | | C | TEC-TEH | TEC-TEH | | 038 | 610EB | BW1+ 2.0 | 0.7 | | 0 | 20 | M2 |
| 100 | 125 | | C | TEC-TEH | TEC-TEH | | 038 | 610EB | BW1+ 1.6 | 0.6 | | 0 | <20 | M2 |
| 97 | 126 | | C | TEC-TEH | TEC-TEH | | 037 | 610EB | 08H+ 0.8 | 0.6 | | 0 | 20 | M2 |
| 145 | 134 | | C | TEC-TEH | TEC-TEH | | 101 | 610EB | 03C+ 0.8 | 1.6 | | 0 | 31 | M2 |
| 144 | 135 | | C | TEC-TEH | TEC-TEH | | 101 | 610EB | 03C+ 0.8 | 1.0 | | 0 | 24 | M2 |
| 143 | 136 | | C | TEC-TEH | TEC-TEH | | 101 | 610EB | 03C+ 0.8 | 0.4 | | 0 | <20 | M2 |
| 141 | 138 | | C | TEC-TEH | TEC-TEH | | 101 | 610EB | 07H+ 0.0 | 1.0 | | 0 | 24 | M2 |
| | | | C | TEC-TEH | TEC-TEH | | 101 | 610EB | VS1+ 0.7 | 0.5 | | 0 | <20 | M2 |
| 76 | 141 | | C | TEC-TEH | TEC-TEH | | 033 | 610EB | VS3- 0.8 | 1.0 | | 0 | 26 | M2 |
| 77 | 144 | | C | TEC-TEH | TEC-TEH | | 034 | 610EB | VS3+ 0.8 | 0.5 | | 0 | <20 | M2 |
| 79 | 148 | | C | TEC-TEH | TEC-TEH | | 188 | 610EB | VS3+ 0.8 | 0.5 | | 0 | <20 | M2 |
| 82 | 151 | | C | TEC-TEH | TEC-TEH | | 189 | 610EB | VS3- 0.8 | 0.4 | | 0 | <20 | M2 |
| 84 | 155 | | C | TEC-TEH | TEC-TEH | | 192 | 610EB | VS3- 0.8 | 0.6 | | 0 | <20 | M2 |
| 73 | 160 | | C | TEC-TEH | TEC-TEH | | 183 | 610EB | VS5+ 0.7 | 0.6 | | 0 | <20 | M2 |
| 80 | 173 | | C | TEC-TEH | TEC-TEH | | 196 | 610EB | VS5+ 0.8 | 0.5 | | 0 | <20 | M2 |

CONAM INSPECTION



CUMULATIVE REPORT
06/89, ARIZONA PUBLIC SERVICE CO., PALO VERDE, UNIT 1

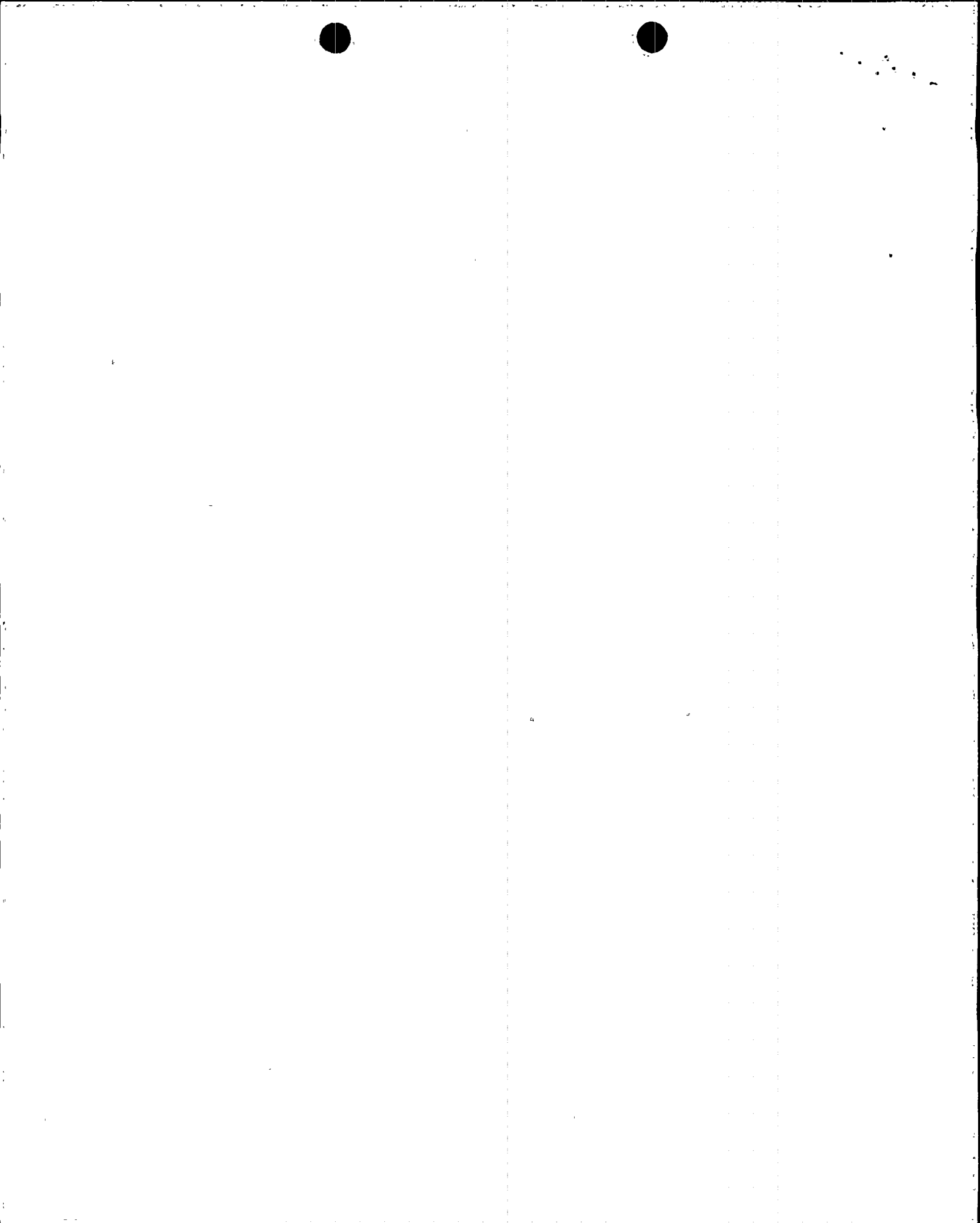
STEAM GENERATOR: 12
LOCATION: ALL
CRITERIA: 0% TO 100%

PAGE: 2 OF 2
DATE: 07/12/89
TIME: 16:20:51

| ROW | LIN | HEAT# | LEG | EXAM EXTENT | | REM | REEL | PROBE | LOCATION | CURRENT | | | | |
|-----|-----|-------|-----|-------------|---------|-----|------|-------|-----------|---------|-----|-----|----|----|
| | | | | PROGRAM | ACTUAL | | | | | VOLTS | MIL | DEG | % | CH |
| 1 | 182 | | C | TEC-TEH | TEC-TEH | | 173 | 590EB | 04C- 0.9 | 1.4 | | 0 | 30 | M2 |
| 1 | 184 | | C | TEC-TEH | TEC-TEH | | 173 | 590EB | 03C+ 0.9 | 1.5 | | 0 | 31 | M2 |
| 46 | 185 | | C | TEC-TEH | TEC-TEH | | 199 | 610EB | 02C+ 36.4 | 1.0 | | 0 | 25 | M2 |
| 12 | 189 | | C | TEC-TEH | TEC-TEH | | 176 | 610EB | 05C+ 0.0 | 1.0 | | 0 | 23 | M2 |

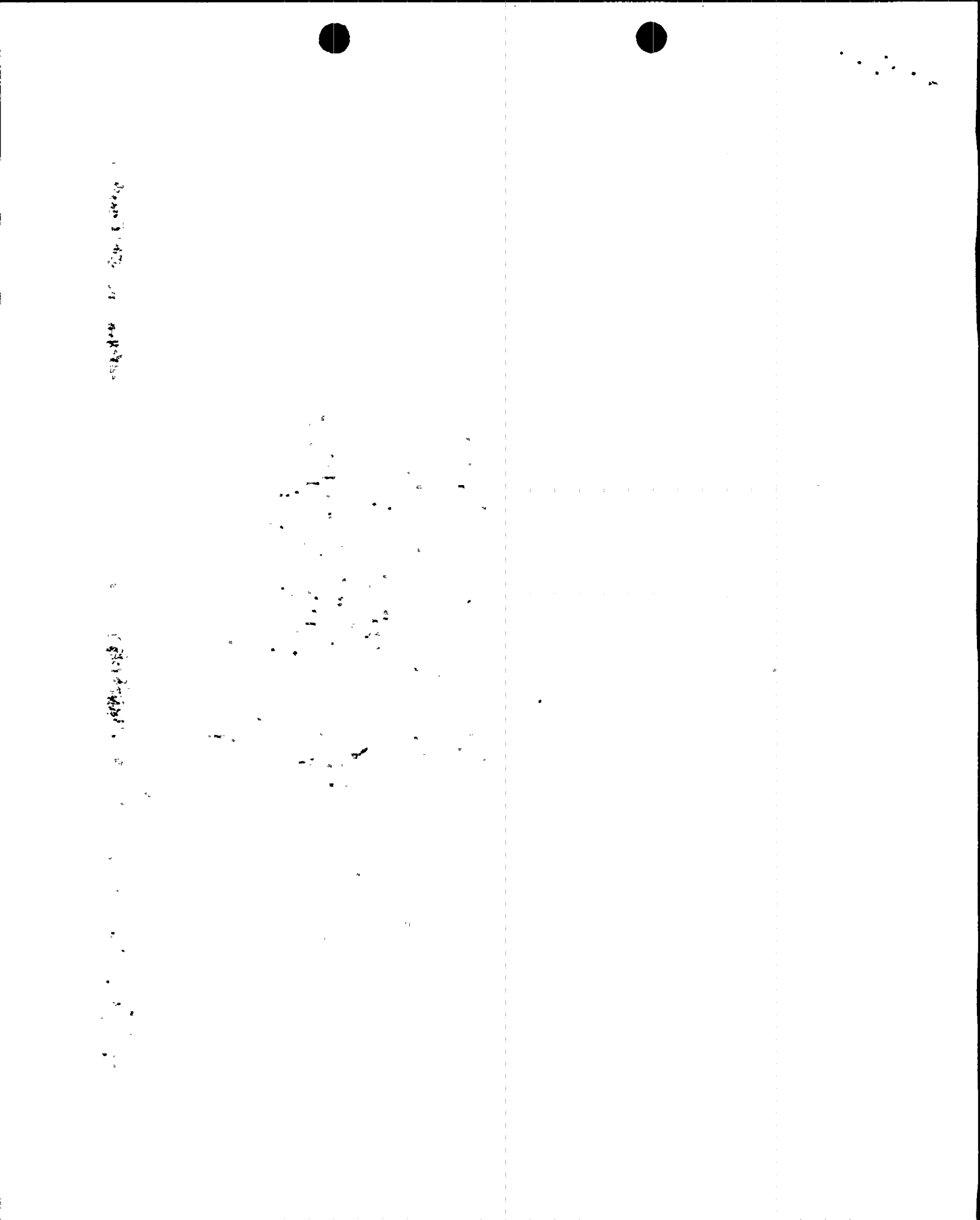
NUMBER OF TUBES SELECTED FROM CURRENT OUTAGE: 44

NO TREND ANALYSIS REQUESTED



APPENDIX B

TUBESHEET
MAPS



06/89, ARIZONA PUBLIC SERVICE CO., PALO VERDE, UNIT 1

STEAM GENERATOR: 11

LOCATION: ALL
CRITERIA: PLG

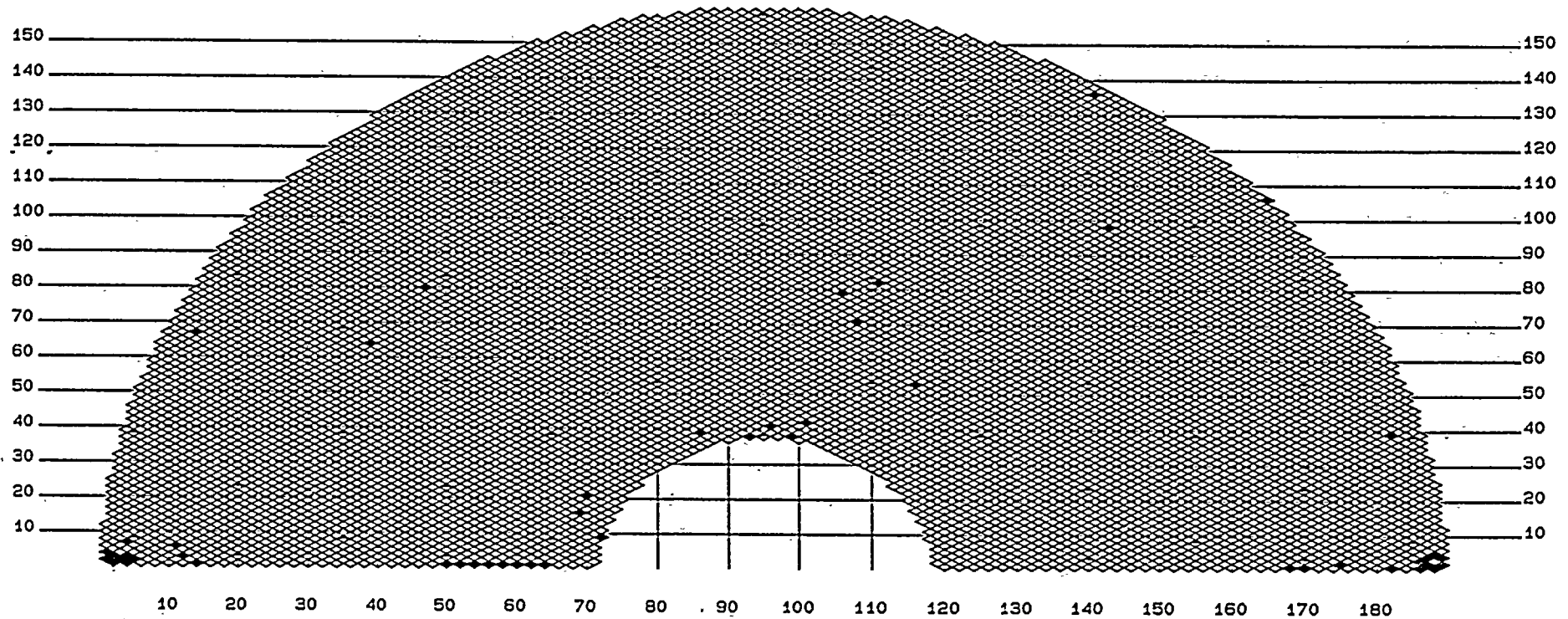
DATE: 07/19/89

TIME: 14: 45: 24

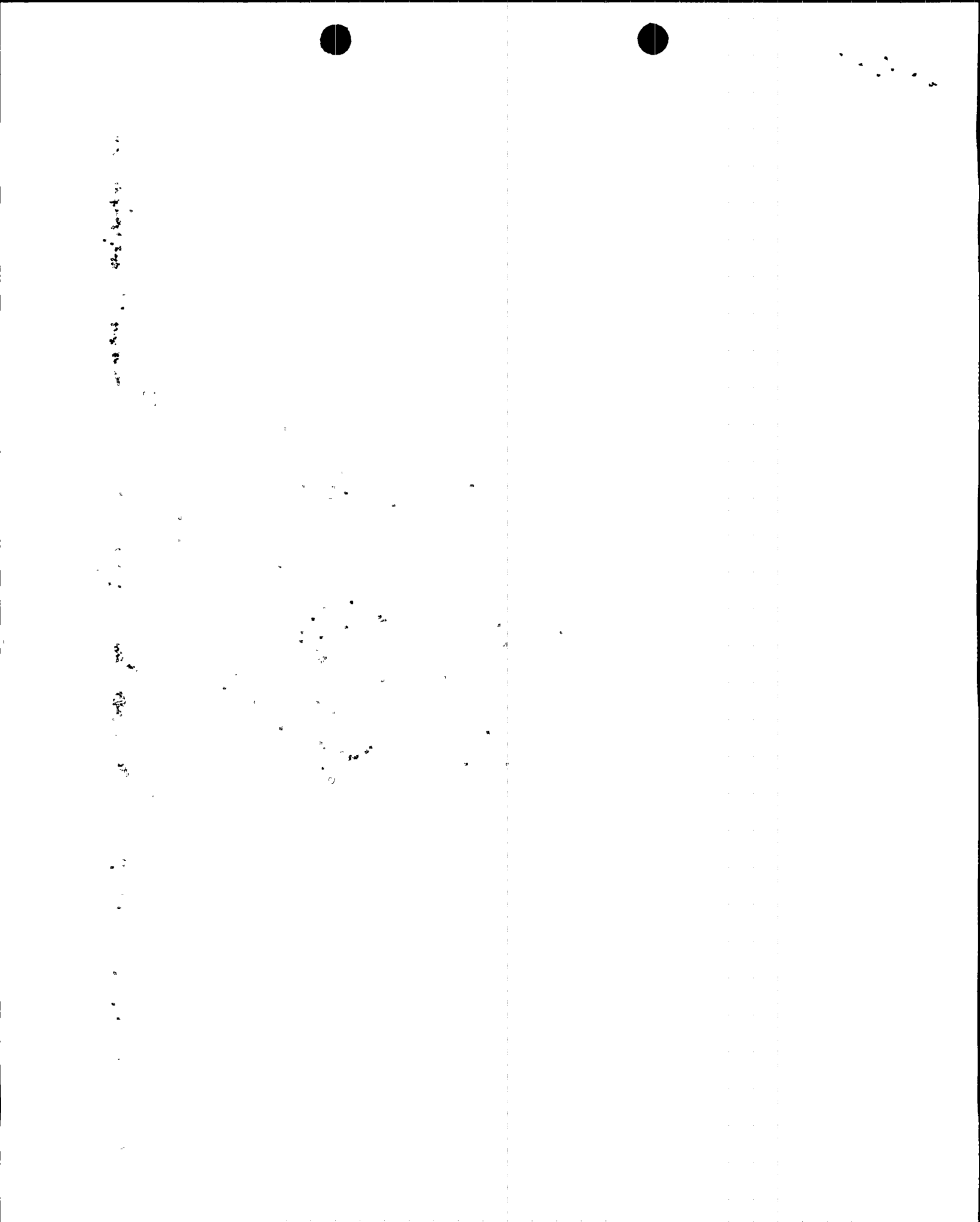
STAYS

PLG

51



CCNAM INSPECTION



06/89, ARIZONA PUBLIC SERVICE CO., PALO VERDE, UNIT 1

STEAM GENERATOR: 12

LOCATION: ALL
CRITERIA: PLG

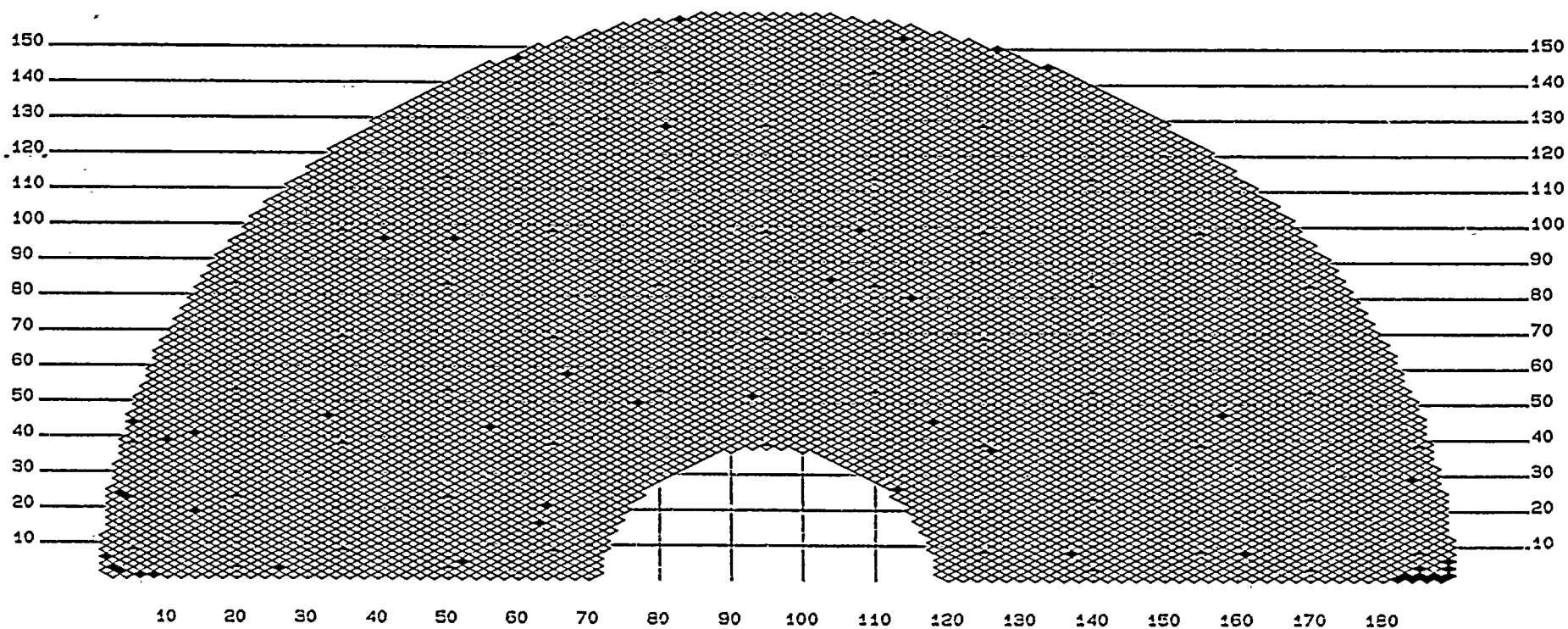
DATE: 08/09/89
TIME: 11: 19: 58

STAYS

PLG

49

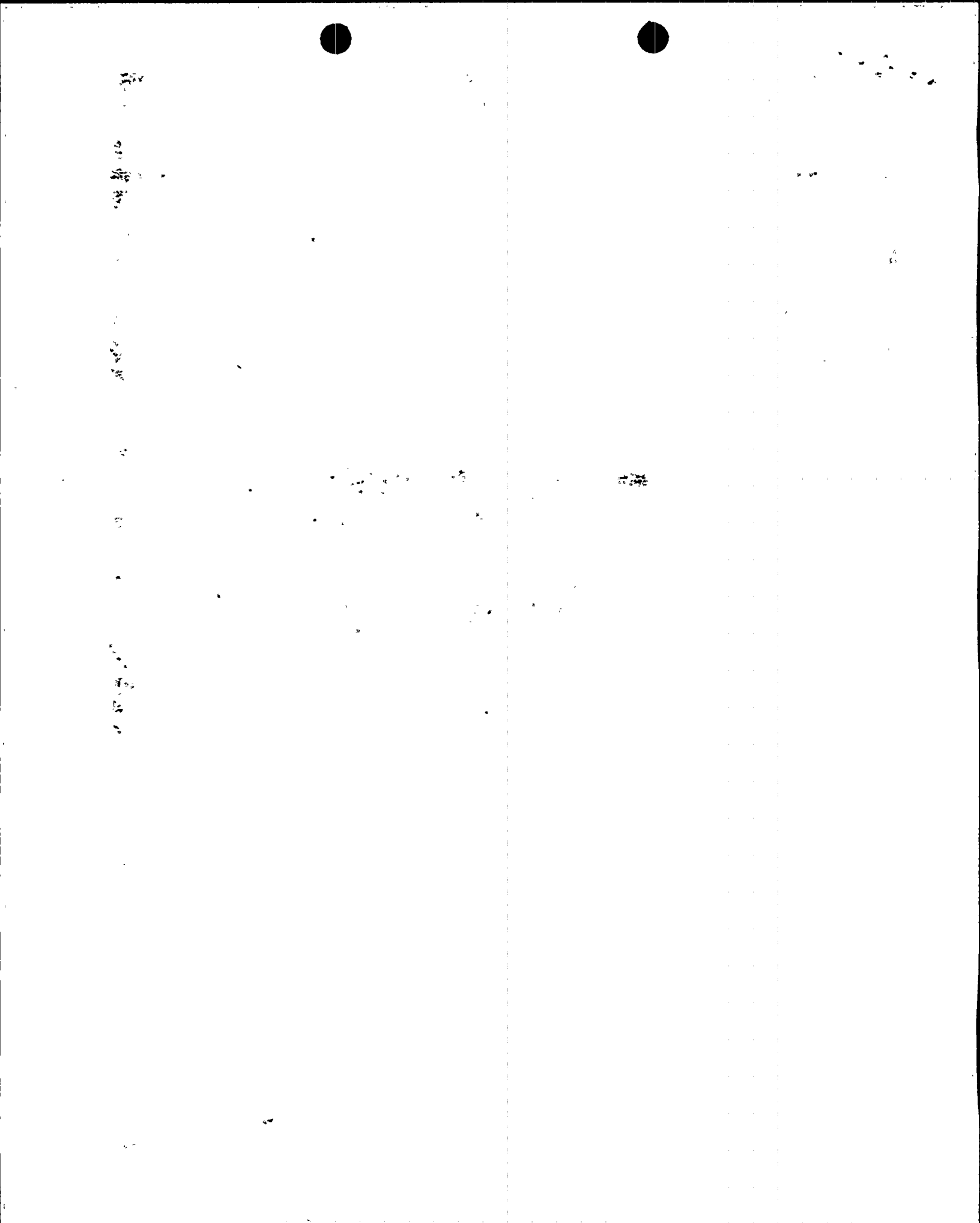
Page B2 of 2



CCNAM INSPECTION

APPENDIX C

FORM
NIS-1



ANPP

NIS-1 FORM

OWNERS' DATA REPORT FOR INSERVICE INSPECTIONS

1. OWNER ARIZONA PUBLIC SERVICE COMPANY, ET AL

ADDRESS P.O. BOX 53999 PHOENIX, ARIZONA

2. PLANT PALO VERDE NUCLEAR GENERATING PLANT

ADDRESS 4 MILES SOUTH WINTERSBURG, ARIZONA

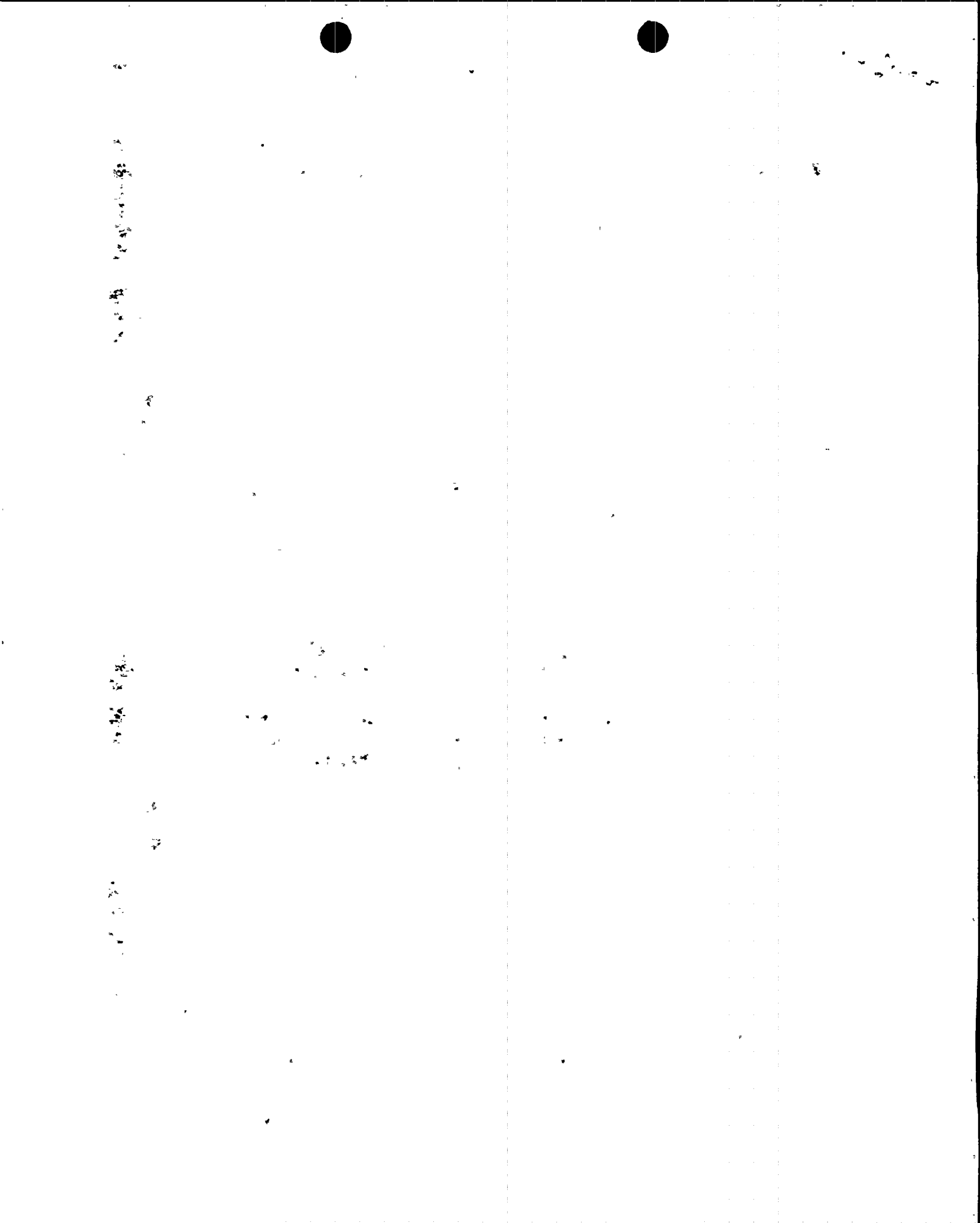
3. UNIT NUMBER: 1

4. OWNERS CERTIFICATE OF AUTHORIZATION NONE

5. COMMERCIAL SERVICE DATE: 1/28/86

6. COMPONENTS INSPECTED:

| COMPONENT OR APPURTENANCE | MANUFACTURER OR INSTALLER | SERIAL NUMBER | STATE OR PROVINCE | NATIONAL BOARD NO |
|---|---------------------------|---------------|-------------------|-------------------|
| 1MRCEE01A Steam Generator 11 Tubing | Combustion Engineering | 78273-1 | N/A | 22499 |
| 1MRCEE01B Steam Generator 12 Tubing | Combustion Engineering | 78273-2 | N/A | 22500 |



ANPP

NIS-1 BACK

OWNERS' DATA REPORT FOR INSERVICE INSPECTIONS

7. EXAM DATES 6/16/89 TO 7/11/89
8. INSPECTION INTERVAL FROM 1/28/86 TO 3/17/97 *
9. ABSTRACT OF EXAMINATIONS. INCLUDE A LIST OF EXAMINATIONS AND A STATEMENT CONCERNING STATUS OF WORK REQUIRED FOR CURRENT INTERVAL.

One hundred percent of the tubing in each steam generator was examined. Several degraded/defective tubes were observed. These are documented in Appendix B of this report.

The following tubes were plugged and/or staked as a result of this examination:

S/G 11: R67 L14, R80 L47, R9 L72, R38 L93, R41 L96, R38 L99, R82 L111, R53 L116, R106 L165, R39 L182, R3 L186, and R136 L141

S/G 12: R1 L6, R1 L8, R2 L3, R158 L83, R80 L115, R145 L134, R1 L182, and R1 L184

* Common Interval Date

WE CERTIFY THAT THE STATEMENTS MADE IN THIS REPORT ARE CORRECT AND THE EXAMINATIONS AND CORRECTIVE MEASURES TAKEN CONFORM TO THE RULES OF THE ASME CODE, SECTION XI.

DATE 8-17-89 SIGNED: ARIZONA PUBLIC SERVICE COMPANY BY [Signature]

CERTIFICATE OF INSERVICE INSPECTION

I, THE UNDERSIGNED, HOLDING A VALID COMMISSION ISSUED BY THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS AND THE STATE OF PROVINCE OF ARIZONA EMPLOYED BY KEMPER GROUP OF LONG GROVE, ILLINOIS HAVE INSPECTED THE COMPONENTS DESCRIBED IN THIS OWNERS REPORT DURING THE PERIOD 6/89 TO 7/89, AND STATE THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE OWNER HAS PERFORMED EXAMINATIONS AND TAKEN CORRECTIVE MEASURES DESCRIBED IN THIS OWNERS REPORT IN ACCORDANCE WITH THE REQUIREMENTS OF THE ASME CODE, SECTION XI. BY SIGNING THIS CERTIFICATE NEITHER THE INSPECTOR NOR HIS EMPLOYER MAKES ANY WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE EXAMINATIONS AND CORRECTIVE MEASURES DESCRIBED IN THIS OWNERS REPORT. FURTHERMORE, NEITHER THE INSPECTOR NOR HIS EMPLOYER SHALL BE LIABLE IN ANY MANNER FOR ANY PERSONAL INJURY OR PROPERTY DAMAGE OR A LOSS OF ANY KIND ARISING FROM OR CONNECTED WITH THIS INSPECTION.

INSPECTOR [Signature] COMMISSIONS NB 6153 / AL 52
DATE 8/18/89 NAT'L BOARD, STATE, PROVINCE



10-10-10