



**REPORT OF THE SUMMER 1993 AND MARCH 1994
TESTING OF THE STEAM GENERATOR TUBES**

of the

**SOUTH TEXAS PROJECT
ELECTRIC GENERATING STATION - UNIT 1
P.O. Box 289
Wadsworth, Texas 77483**

Owner: Houston Lighting and Power Company
City Public Service Board of San Antonio
Central Power and Light Company
City of Austin

Address: P.O. Box 1700
Houston, Texas 77001

Commercial
Operation: AUGUST 25, 1988

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1.0 SUMMARY REPORT

1.1 Introduction

This report describes Houston Lighting & Power Company's (HL&P's) inservice inspection (ISI) of steam generator tubes of the South Texas Project Electric Generating Station, Unit 1 (STPEGS-1). It summarizes the eddy current and ultrasonic testing (ET and UT) of tubes conducted during the outage which began February 4, 1993 and ended February 25, 1994. It also summarizes the ET of tubes conducted during the outage which began February 28, 1994 and ended March 22, 1994. Refueling was not conducted during these outages. The STPEGS-1 ISI program for welds and component supports is scheduled in accordance with Program B of the American Society of Mechanical Engineers (ASME) Section XI Code "Inservice Inspection of Nuclear Power Plant Components". The STPEGS-1 ISI Program for steam generator tubing is scheduled in accordance with STPEGS Technical Specification 3/4.4.5 (NUREG-1346). The first ten (10) year inspection interval of STPEGS-1 began August 25, 1988. Because STPEGS-1 was out of service continuously for approximately thirteen (13) months, the inspection interval will be extended for a period equivalent to the length of the mid-cycle outage in accordance with IWA-2400(c) of ASME Section XI. This would extend the inspection interval to September 25, 1999. The second inspection period began August 25, 1991 and will extend to September 25, 1996. Therefore, the ISI summarized herein was performed during the second inspection period of the first inspection interval of STPEGS-1. Figure 1 of this Section depicts the first ten (10) year interval and Periods 1 through 3 of STPEGS-1.

The STPEGS-1 ISI program for the first inspection interval is described in the Ten Year ISI Plan previously filed with the Nuclear Regulatory Commission (NRC) and the State of Texas. The STPEGS-1 ISI Program was developed and is being implemented in accordance with 10CFR50.55a, the 1983 Edition of ASME Section XI Code with the Summer 1983 Addenda, and other regulatory and Code bases as specified in the Ten Year ISI Plan. This report satisfies the reporting requirements of Technical Specification 4.4.5.5 (b) with regard to steam generator tubing inspection. The summary report of the ISI of selected Class 1, 2, and 3 components of the STPEGS-1, required by ASME Section XI IWA-6230, will be submitted within ninety (90) days of the completion of the next refueling outage.

1.2 Scope of Report

The report describes the scope of examinations performed; describes the personnel, procedures, and equipment utilized for the examinations; provides a summary of the examinations, examination results, and corrective actions; and includes copies of the examination certification (NIS-1) form.

ISI performed on steam generator tubing is described in Section 2.0. These examinations were performed in accordance with ASME Section XI Subsection IWB (Examination

Category B-Q), STPEGS Technical Specification 4.4.5, and other bases as specified in the Ten Year ISI Plan.

UNIT 1

CO - Commercial Operation
EOI - End of Interval
XO - Extended Outage

FIGURE 1

2.0 STEAM GENERATOR TUBE EXAMINATIONS

2.1 Introduction

The STPEGS-1 plant design contains four (4) steam generators. Each of the steam generators is a model E2 recirculating design generator, designed and fabricated by Westinghouse Electric Corporation of Tampa, Florida. Each generator contains 4864 tubes. The tubing is ASTM SB-163 Inconel mill-annealed material having a nominal outer diameter (OD) of 0.75 inches and nominal wall thickness of 0.043 inches.

The examination agency for the ET and UT of steam generator tubes was B&W Nuclear Technologies (BWNT). During the Summer 1993, BWNT performed a large scale scheduled steam generator tube ET ISI activity. BWNT acquired the first ET data on September 14, 1993. Limited UT was performed to characterize indications in selected tubes. The last ET data analysis was performed on October 6, 1993.

In early March 1994, it was discovered that Steam Generator C tube number 42-101 contained a plug which was leaking. Six (6) tubes, adjacent to tube 42-101, were examined by ET to establish a disposition of this condition. BWNT acquired and analyzed the ET of these six (6) tubes on March 8, 1994.

2.2 Scope of Examinations

The STPEGS-1 Ten Year ISI Plan, previously filed with the NRC, describes the ISI program for examination of steam generator tubing. Additionally, a supplemental ISI plan (ISI Outage Plan) entitled, "1993 Outage Plan for the Inservice Inspection of Steam Generator Tubing at the South Texas Project Electric Generating Station, Unit 1" was prepared by BWNT and approved by HL&P. The ISI Outage Plan identified the steam generator tube areas expected to be examined and the ET procedures expected to be used during this ISI. Prior to the beginning of the ISI, tubes were selected and assigned to the scope of tubes in each of the four (4) steam generators to be examined. These scopes were listed in the ISI Outage Plan.

The initial scope consisted of the following planned examinations:

- bobbin coil probe ET of the full length of all inservice tubes.
- Motorized Rotating Probe Coil (MRPC) ET of areas in 1022 tubes in each steam generator. The areas of tube to be examined extend one (1) inch above and below the edges of the first baffle plate and the first support plate (plates 01H and 02H) and two (2) inches above to one (1) inch below the secondary face of the tubesheet on the hot leg side (TSH). The 01H baffle plate has a half moon shaped area cut out of its center. Of these 1022 tubes, the approximately fifty (50) tubes which did not intersect with 01H were to be examined only at 02H and TSH.

- MRPC ET of 325 selected tube areas in the total plant. Approximately eighty (80) of these areas would be tight radiused U-bends examined between the bend transitions, inclusively. Approximately eighty (80) of these areas would be tube expansions at preheater baffle plates. The remaining areas were selected where experience indicated a higher potential for degradation and would be examined over an approximate length of three (3) inches.

This scope exceeds the requirements for the first ISI sample of tubes specified in 4.4.5.2 of the STPEGS Technical Specification. Because the results of the initial examinations identified by the ISI Outage Plan could have identified a situation where additional examinations of other tube areas or the same tube areas (with different nondestructive examination techniques or methods) would be required or advisable, the ISI Outage Plan established a method for quickly changing the plan scope or other details during the outage. If plan changes were desired, they would be made by issuing Outage Plan Change Forms. No such forms were issued during this outage. The ISI Outage Plan is consistent with the requirements of the Ten Year ISI Plan.

In March 1994, the examinations of tubes adjacent to 42-101 in Steam Generator C were performed in accordance with the requirements defined in Service Request SG-201664. Because the leak occurred by an Inconel 690 mechanical plug in a tube previously removed from service, rather than through an in-service tube wall, no tube examinations were required by Technical Specification 4.4.5.0. Six (6) tubes were designated in the Service Request to be examined.

2.3 Personnel, Procedures, and Equipment

2.3.1 Personnel Qualifications

The personnel who performed ET or UT and data analysis during the Summer 1993 ISI and on March 8, 1994 were employed by BWNT or Allen Nuclear Associates (ANA). They were certified in accordance with the requirements of IWA-2300 of ASME Code Section XI and the certification practices of their respective employers. All ET data analysts were required to have satisfactorily completed specific training in ET data analysis. Prior to performing ET data analysis during the Summer 1993 ISI, all ET data analysts (except Mr. H. Smith) satisfactorily completed site specific training. Mr. Smith taught and administered the site specific training course. The site specific training lecture addressed the specific design and operating history, previous ET results, and the data acquisition procedure and analysis guideline to be used for the STPEGS Unit 1 and 2 steam generators. The site specific training also included hands-on review of indications of flaw types which have been experienced at plants of similar design to that of the STPEGS. Successful completion of the site specific course required the passing of a written and practical (hands-on) test. The BWNT and ANA personnel who performed examinations and/or data analysis, their certification levels, and their identification numbers are listed in Appendix A.

Mr. H. Smith and Mr. R. Himmelspoch of BWNT acquired and analyzed the ET data on March 8, 1994. Mr. Himmelspoch did not participate in the ET performed during the Summer 1993 ISI of STPEGS-1. However, he did satisfactorily complete the site specific training course prior to performing data analysis during the STPEGS-2 ET ISI conducted between August 21, 1993 and September 4, 1993.

2.3.2 Examination and Analysis Procedures

Bobbin coil probe ET was performed in accordance with the BWNT procedure ISI-424 Revision 20 entitled, "Multifrequency Eddy Current Examination of .750" OD x .043" Wall RSG Tubing for ASME Exam. and Wear at Tube Support Plates" with Change Authorization No. HL&P-93-001. This procedure, with the change authorization, is STPEGS document no. 400999-00018-AZU. This technique was used in each tube examined to record 550, 300, 130, and 10 kHz frequency data using both differential and absolute bobbin probe coil configurations. The BWNT bobbin coil probe procedure is an alternative to the technique described in ASME Code Section V, Article 8, I-42, which requires that the probe pull speed not exceed 14 inches per second. Instead, a maximum pull speed of 24 inches per second with a digital signal sampling rate of 800 samples per second was used. Procedure ISI-424 paragraph 8.2 permitted the higher pull speed with the approval of a BWNT ET Level III and a STPEGS representative. The approval was granted on a signed form entitled "ET EXAMINATION DATA SHEET". This procedure, using the faster probe pull speed, was demonstrated to the satisfaction of the Authorized Nuclear Inservice Inspector (ANII) in accordance with IWA-2240 of Section XI.

MRPC probe ET was performed in accordance with the BWNT procedure ISI-510 Revision 13 entitled, "RPC System Operating Procedure". This procedure is STPEGS document no. 400999-00022-AZU. This technique was used in each area examined to record 300, 200, 100, and 10 kHz frequency data.

The ET data analysts worked to HL&P Engineering Instruction EI-8.01, "Steam Generator Eddy Current Data Analysis Guidelines", Revision 1 including the Analysis Guideline Exception Forms entitled "Bobbin Eddy Current Guidelines #1", "Bobbin Eddy Current Guidelines #2", "Bobbin Eddy Current Guidelines #3", and "Data Quality - Change # 4". The data for each steam generator tube was subjected to two (2) separate independent analyses in accordance with HL&P Engineering Instruction EI-8.02, "Steam Generator Eddy Current Data Control", Revision 1. The bobbin coil probe ET data acquired during the Summer 1993 was analyzed once by a technician using Zetec, Inc. Eddynet software and once automatically by computer using Zetec, Inc. Computer Data Screening software. The MRPC ET data acquired during the Summer 1993 and bobbin coil ET data acquired on March 8, 1994 were analyzed manually by two independent technicians using Eddynet software.

The data sheets for each examination are stored as records. Each ET system calibration, with the associated calibration verifications, has a unique "calibration group number". The

raw ET signal for each examination is recorded on a digital re-writable optical disk that has a unique number. The raw signals for every system calibration and calibration verification are also included, with the calibration group number, on a digital re-writable optical disk. The unique number of the digital re-writable optical disk, the calibration group number, and the dates and times of system calibrations and calibration verifications have been recorded on the data sheets and optical disks. Therefore, the system calibration and calibration verification raw signals for each tube examination can be easily recalled.

Angle beam shear wave UT was performed in accordance with the BWNT procedure ISI-197 Revision 2 entitled, "UT Procedure for Crack Detection". This procedure is STPEGS document no. 400999-00021-A2U. Straight beam longitudinal wave UT was performed in accordance with the BWNT procedure ISI-192 Revision 4 entitled, "UT Procedure for Zero Degree Examination". This procedure is STPEGS document no. 400999-00023-A2U.

2.3.3 Equipment

BWNT used MIZ-18A ET instruments. BWNT also used the Eddynet computer software, Version 21, to acquire and analyze the ET data. The MIZ-18A instruments and Eddynet software are manufactured and produced by Zetec, Inc.. The MIZ-18A uses digital equipment and software which have a significantly improved dynamic range and signal-to-noise ratio as compared to analog systems. The MIZ-18A is capable of being operated at locations remote from the steam generators (e.g., in low radiation areas). For conducting bobbin coil ET, BWNT used 0.610 inch diameter magnetic biased probes. However, 0.590 inch diameter bobbin probes were used in some Rows 1, 2, and 3 tubes where the small radiused U-bends hindered the passage of 0.610 inch diameter probes. Bobbin probes with 0.590, 0.560, or 0.520 inch diameters were also used to examine twelve (12) areas in twelve (12) tubes that were obstructed to the passage of larger diameter probes. For conducting MRPC ET in the straight sections of tubing, BWNT used 0.610 inch diameter three (3) coil MRPC probes. For conducting MRPC ET in the U-bend section of tubes, BWNT used 0.580 inch diameter one (1) coil MRPC probes. ASME Boiler and Pressure Vessel Code, Nuclear Components Code Case N-401, "Eddy Current Examination - Section XI, Division 1", was used after the digital equipment and the ET technique used were demonstrated to the ANII in accordance with Case N-401.

UT was performed using the BWNT "UT-360" system. The system has the ability to deliver a longitudinal wave directed into the part perpendicular to the tube surface or a shear wave directed axially or circumferentially with a refracted angle of 45 degrees. The piezoelectric element that create the ultrasound have a rated frequency of 20 MHz. Water is injected into the annulus between seals, attached to the probe above and below the piezoelectric element, to provide a coupling medium for the ultrasound. All of the probe designs use a rotating head. The straight beam probe head uses a surface-riding design. The angle beam probe head uses a mirror to reflect the ultrasound into the part at the desired angle while the probe head, mirror, and piezoelectric element rotate. All of the UT probe designs rotate at a nominal speed of one (1) revolution per second. The UT-360 system uses a Le Croy

digitizer to digitize the UT signals. The UT analog signals were sampled at a rate of 200 million samples per second. The UT-360 presents the data using three (3) views. The first, called the C-scan, is the view from the outer surface of the tube. The other views are axial and circumferential sections of the examination volume. The system has the capability of displaying a color image of the signal based on signal amplitude or time of flight (thickness).

2.3.4 Calibration Standards

The U-bend areas of the Row 1 and 2 tubes in each steam generator have received an in situ heat treatment to improve their resistance to stress corrosion cracking. The ET calibration standards used were not subjected to that heat treatment. ASME Boiler and Pressure Vessel Code, Nuclear Components Code Case N-402, "Eddy Current Calibration Standard Material, Section XI, Division 1" was used after it was demonstrated to the satisfaction of the ANII that calibration standards with and without this heat treatment result in equivalent examinations. Otherwise, the design and material of the ET calibration standards used meet the requirements of the ASME Code Section XI.

The standard used to calibrate the UT-360 system was fabricated from Inconel 600 tubing material with an OD of 0.750 inches. The nominal wall thickness of the UT calibration standard was 0.040 inches. The standard contained a series of axial and circumferential 0.006 inch wide notches on the inner and outer surfaces of the tube. Each set of notches range in depth from 20 to 100 percent through wall.

2.4 Summary of Examinations

The following numbers of tubes were examined by the bobbin coil ET method over their full length (from tube end to tube end) :

<u>Steam Generator</u>	<u>Number Examined</u>
A	4861
B	4860
C	4861
D	4844

Thus, all in-service tubes in each of Steam Generators A, B, and C were examined by the bobbin coil method. Nearly all in-service tubes in Steam Generator D were also examined full length by the bobbin coil method, except for fifteen (15) tubes. Steam Generator D tube 40-17 was examined from the upper most tube support plate on the hot leg side (10H) to the tube end on the hot leg side (TEH) only. Bobbin coil ET examinations were conducted in the tubes depicted by the plots included as Appendix B.

Distorted, ambiguous or non-quantifiable bobbin coil ET indications at tube support or baffle plates were examined by MRPC ET. Bobbin coil ET free span indications (e.g., anomalous indications, dings, manufacturing burnishing marks, permeability variations, etc.) which were not clearly due to flaws were either examined by MRPC ET or compared to the data or analysis results of previous examinations. The comparison was performed, discounting the effects of frequency and set up difference between outages, to identify whether indications were newly formed or changed as a result of degradation. In the majority of cases, their locations, amplitudes, and phase angles (as applicable) were compared to the results of the analysis of the data obtained during previous ET programs as recorded on the computer data base management system, reports, or data sheets. If the comparison to recorded analysis results was not conclusive, comparison was done to the past digitized signals as displayed by the digital data analysis system. When the results were judged to be similar to the past data no action other than recording the indication was required. However, when the results were significantly different or the indication did not exist in the past, then the location was tested by a MRPC probe.

MRPC ET examinations were conducted in the 01H, 02H, and/or TSH tube areas depicted by the plots included as Appendix C. MRPC of Steam Generator B tube 48-74 was attempted at TSH. However, this tube was obstructed by an inner diameter restriction inside the tubesheet on the hot leg side. Consequently, this tube was removed from service by plugging. MRPC ET was also conducted at the various other tube locations listed in Appendix D.

UT was performed to determine the character of a few conditions that had been detected by ET and to verify those ET results. UT was also performed on areas of tubes that were removed from the steam generators. The tube areas examined by UT are listed in Appendix E.

In March 1994, the following six (6) tubes adjacent to tube 42-101 in Steam Generator C were examined full length by bobbin coil ET only:

43-100
42-100
41-100
41-101
41-102
42-102

2.5 Examination Results and Corrective Actions

The location of ET indications were recorded relative to the adjacent tube support and baffle plates and anti-vibration bars. The tube support plates and baffle plates were numbered consecutively from 01H to 10H (on the hot leg) and from 11C to 23C (on the cold leg). Thus, the numbering started on the hot leg side, over the U-bends, and down the cold leg

side of the steam generator. The anti-vibration bars were numbered AV1, AV2, AV3, and AV4 from the hot leg to the cold leg side, respectively. Indications in the tubesheet area were recorded relative to TEH or TSH (hot leg) or TEC or TSC (cold leg) depending on whether the indications were at the tube end (E) or secondary face (S). In addition, the vertical distances from these landmarks to indications were recorded.

ET indications reported in this report were assigned three letter codes. The indication codes reflect the suspected nature of the discontinuity. Some of the indications used are as follows:

- DNG - ding
- DNT - dent
- MAI - multiple axial indication
- MBM - manufacturing Burnishing Marks
- MCI - multiple circumferential indication
- MVI - multiple volumetric indication
- ODI - outer diameter indication
- SAI - single axial indication
- SCI - single circumferential indication
- SVI - single volumetric indication

Lists, including the locations and depths, of all ET indications which are characterized as reductions in the tube wall thickness in the Summer 1993 ET ISI are included in Appendix F. Included in Appendix F are the MAI, MCI, SAI, and SCI indications detected by MRPC ET. These indications are expected to be the result of cracks which may be considered to be reductions in the tube wall thickness. The maximum depth of the MAI, MCI, SAI, and SCI discontinuities were not determined during the ISI. The depths of five (5) outer surface volumetric discontinuities were measured by UT and are reported in Appendix E.

SVI and MVI MRPC ET indications are often associated with very shallow volumetric gouges, scrapes, or MBM's. SVI and MVI indications are not listed in Appendix F. However, essentially all of the tubes were examined by the bobbin coil ET method. The bobbin coil ET method is especially good at detecting volumetric flaws twenty (20) percent through wall or greater. The bobbin coil ET method was used to report these imperfections.

Lists of all dents and dings detected in each steam generator by the Summer 1993 ET ISI are included in Appendix G.

The number of degraded and defective tubes detected are as follows:

- Steam Generator A

Four (4) areas of tube degradation, as defined by the Technical Specifications in 4.4.5.4, were detected in four (4) tubes. Of these indications of degradation, three

(3) areas in three (3) tubes are considered to be defects, as defined by the Technical Specification 4.4.5.4.

Bobbin coil ET detected two (2) outer diameter indications in the free span on the cold leg side of tube 4-98. Bobbin coil ET estimated the depths of the indications to be 29 and 33 percent in through wall dimension (TWD). Neither indication was detected by the bobbin coil ET that was conducted in tube 4-98 prior to service. Both indications were then examined using the MRPC technique. MRPC detected no indication where the bobbin coil said there was a 29 percent TWD indication. MRPC detected a "single volumetric indication" (SVI) at the location where the bobbin coil detected the 33 percent TWD indication. It was then decided to perform UT on the SVI. UT indicated an eleven (11) percent through wall OD volumetric (as opposed to crack-like) indication. Neither of these two (2) conditions were considered to be degraded as defined by the Technical Specification.

Bobbin coil ET confirmed the existence of a loose part adjacent to tubes 5-96, 5-97, 6-96, and 6-97 which was detected during the 1RE01 outage and reported previously on RFA 89-1-236. No wear was detected in these tubes at this location.

- Steam Generator B

Six (6) areas of tube degradation were detected in five (5) tubes. Of these indications of degradation, two (2) areas in two (2) tubes are considered to be defects.

A tube diameter restriction was detected within the tube sheet on the hot leg side of tube 48-74. The restriction was large enough to obstruct the passage of a 0.610 inch diameter probe. The restriction was not detected during examinations conducted prior to service and during the 1RE01 outage.

- Steam Generator C

Ten (10) areas of tube degradation were detected in ten (10) tubes. Of these indications of degradation, eight (8) areas in eight (8) tubes are considered to be defects.

Tube 35-34 has a free span indication which is not service induced. It is not considered to be degraded as defined by the Technical Specifications. Prior to operation the depth of the flaw was measured to be 36 percent in TWD. The depth measurement during this surveillance indicates that it is 40 percent through wall. This variance in depth measurements is typical of the method used. The most recent depth measurement, required this tube to be removed from service. This tube was plugged.

A shallow indication was detected on the outer diameter of tube 12-68. The depth was estimated to be 24 percent in TWD. This indication was detected and sized as a 19 percent TWD indication prior to service. The indication is not considered to be degradation as defined by the Technical Specifications.

- Steam Generator D

Six (6) areas of tube degradation were detected in six (6) tubes. Of these indications of degradation, six (6) areas in six (6) tubes are considered to be defects.

Bobbin coil ET revealed that tube 3-116 had not been rolled into the tube sheet on the cold leg side. UT was also conducted on the tube sheet area and confirmed the condition.

Bobbin coil ET detected an outer diameter indication in the free span of tube 14-26 on the cold leg side. The depth of the indication was measured to be thirty four (34) percent in through wall penetration. The indication was present when the tube was examined prior to service.

Bobbin coil ET detected a "distorted support indication" (DSI) from the first hot leg tube support plate of tube 20-100. The DSI was detected by the bobbin coil ET that was conducted in tube 20-100 prior to service. The location of the indication was then examined using the MRPC technique. MRPC detected a SVI. UT indicated a fourteen (14) percent through wall outer diameter volumetric (as opposed to crack-like) indication at the location of the SVI. The condition was considered to be degraded as defined by the Technical Specification.

The minimum required size of the initial inspection sample is defined in Technical Specification Table 4.4-2. It requires that the minimum initial sample for inspecting four (4) steam generators be three (3) percent of the total tubes installed in each generator. The "1993 Outage Plan for the Inservice Inspection of Steam Generator Tubing at the South Texas Project Electric Generating Station - Unit 1" required, as an initial sample, that all of the tubes be examined by the bobbin coil method of eddy current testing. Nearly all of the tubes were examined. So, the initial sample requirements were met.

Each steam generator had at least one (1) defective tube detected. However, the portions of population of tubes tested that were defective and degraded in each steam generator were less than one (1) and ten (10) percent, respectively. Consequently, the results of the inspection should be categorized as Category C-2. Category C-2 is defined in the Technical Specifications as follows:

"One or more tubes, but not more than 1% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes."

The consequence of the initial and subsequent examination results being categorized as C-2 is, according to Table 4.4-2, the addition of eighteen (18) percent additional tubes to be inspected. The maximum number of tubes required to be examined when the results are consistently categorized as C-2 are twenty one (21) percent. Since nearly all of the in-service tubes were tested by the bobbin coil method full length and all of the tubes were tested by the MRPC method at the hot leg top of tube sheet, the requirement to test twenty one (21) percent of the tubes was met.

The tubes which were removed from service by plugging prior to this ISI are as follows:

Steam Generator	A	B	C	D
	14-32	12-102	27-8	44-44
	35-77	17-22	29-11	47-52
	44-48	28-30	42-101	47-94
		32-78		48-70
				48-80

The tubes that were removed from service by plugging during the Summer 1993 ET ISI are as follows:

Steam Generator	A	B	C	D
	3-1	7-21	2-16	2-37
	4-98	11-22	12-68	3-116
	5-43	11-103	20-42	4-37
	7-40	13-102	23-44	14-26
	11-83	19-62	23-76	20-100
	12-115	20-58	26-50	23-80
	13-119	30-102	26-55	25-58
	14-118	34-102	26-58	31-20
	16-109	37-94	27-113	35-81
	23-72	41-69	28-113	
	39-74	43-100	32-38	

Table Continued from Previous Page				
Steam Generator	A	B	C	D
	42-19	45-62	32-58	
	42-59	46-24	35-34	
	42-68	48-74	39-37	

Steam Generator C tube 32-58 was plugged because of a stabilizer inserted by error. No degradation was detected in this tube.

The bobbin coil ET conducted in March 1994 detected the following indications:.

Row - Column	Indication	% Depth	Elevation
41-100	MBM		17C+13.26
41-102	DNG		10H+9.12
41-102	MBM		12C+16.87
41-102	MBM		14C+37.18
41-102	MBM		14C+19.76
41-102*	MBM		12C+18.14
42-102*	DNT		15C+0.52
42-102	DNT		15C-0.34
42-102	ODI	18%	02H+8.49

All of these indications were detected and reported on Plant Change Form 115713A during the Summer 1993 except those two (2) marked by an asterisk above. The two (2) new indications were reported on Plant Change Form 201661B. The leaking mechanical plug was replaced by a welded plug. No other plugs were installed in March 1994.

2.6 Certification of Inspections

A Section XI NIS-1 form, "Owner's Report for Inservice Inspections," has been prepared to certify the STPEGS Unit 1 ISI examinations described in this report. The STPEGS Unit 1 ISI examinations have been certified by our ANII, Factory Mutual Engineering Association, on the NIS-1 form included in Appendix H.

APPENDIX A

LIST OF EXAMINATION AND DATA ANALYSIS PERSONNEL

APPENDIX A

LIST OF EXAMINATION AND DATA ANALYSIS PERSONNEL

EDDY CURRENT TESTING DATA ACQUISITION PERSONNEL

<u>NAME</u>	<u>COMPANY</u>	<u>ET CERT. LEVEL</u>	<u>ID NO.</u>
Anderson, D. A.	ANA	I	A3502
Blankinship, M. B.	BWNT	II	B6768
Bryant, D. N.	BWNT	II	B2224
Burch, K. W.	BWNT	II	B3905
Cauvan, M. D.	ANA	II	C1950
Cecil, W.R.	BWNT	II	C3697
Childers, J. E.	ANA	IIA	C4330
Close, D. R.	BWNT	I	C1407
Collier, R. R.	BWNT	IT	C6253
Digorgio, P. J.	ANA	IIA	D9866
Duffield, T. S.	BWNT	I	D6502
Eagan, F. J.	BWNT	II	E7518
Galloway, G. V.	BWNT	IT	G5307
Gordon, V. M.	BWNT	IT	G5008
Griffith, T. E.	ANA	II	G6920
Guill, R. L.	BWNT	II	G9134
Hollis, D. R.	BWNT	I	H5331
Hooker, M. A.	BWNT	IT	H1497
Hufford, C. A.	ANA	II	H9833
Hyland, D. P.	ANA	I	H3071
Kellar, J. L.	ANA	IIA	K9208
Kithcart, B. R.	BWNT	II	K1731
Knox, B. L.	BWNT	II	K6388
Kovalesky, T. L.	BWNT	II	K2858
Lawson, J. P.	ANA	II	L8876
Lawyer, D. G.	ANA	II	L3093
Lloyd, M. K.	BWNT	II	L5290
Martin, A. C.	BWNT	IIA	M2421
Mason, J. R.	BWNT	II	M8048
McMillan, W. P.	BWNT	II	M9460
McMillon, B. A.	ANA	II	M2141
Mezzano, D. M.	BWNT	I	M9693
Miller, D. C.	BWNT	IT	M4021
Miller, K. W.	BWNT	IT	M4817
Mitchell, T. L.	BWNT	II	M5765
Morgan, B. K.	ANA	IIA	M3442
Munsterman, T. H.	BWNT	II	M8912

APPENDIX A

LIST OF EXAMINATION AND DATA ANALYSIS PERSONNEL

EDDY CURRENT TESTING DATA ACQUISITION PERSONNEL (Cont'd)

<u>NAME</u>	<u>COMPANY</u>	<u>ET CERT. LEVEL</u>	<u>ID NO.</u>
Nolan, C. D.	BWNT	I	N3559
Pavia, F. B.	BWNT	I	P2472
Petty, D. R.	BWNT	II	P2272
Rutledge, J. K.	BWNT	IT	R4847
Wieber, J. A.	ANA	II	W2155
Williamson, A.G.	ANA	I	W7939
Williamson, J. C.	ANA	I	W4786
Williamson, L. R.	ANA	II	W5710

APPENDIX A

LIST OF EXAMINATION AND DATA ANALYSIS PERSONNEL

EDDY CURRENT TESTING DATA ANALYSIS PERSONNEL

<u>NAME</u>	<u>COMPANY</u>	<u>ET CERT. LEVEL</u>	<u>ID NO.</u>
Bowler, S. R.	ANA	IIA	B7702
Bridgforth, W.	BWNT	IIA	B1055
Childers, J.	ANA	IIA	C4330
Cooper, L. R.	BWNT	IIA	C9813
de la Pintiere, L.	ANA	III	P5006
Digiorgio, P.	ANA	IIA	D9866
Gardner, C. L.	ANA	IIA	G4841
Hako, E. J.	ANA	IIA	H4495
Himmelspoch, R. J. *	BWNT	IIA	H8259
Holden, T. A.	ANA	III	H1748
Howe, D. W.	ANA	IIA	H8551
Kellar, J.	ANA	IIA	K9208
Korkowski, E. M.	BWNT	IIA	K7060
Loer, M. J.	BWNT	IIA	L7871
Maben, D. E.	ANA	IIA	M6078
Miller, R. S.	ANA	IIA	M8902
Moon, B. C.	BWNT	IIA	M0155
Morgan, B.	ANA	IIA	M3442
Morgan, D. E.	ANA	IIA	M1908
Neff, A. S.	ANA	III	N6550
Parrish, J. M.	BWNT	IIA	P5436
Pendergrass, R. A.	BWNT	IIA	P2201
Perkins, C. S.	ANA	IIA	P9375
Raper, L. J.	ANA	IIA	R6878
Ribaric, T. A.	BWNT	IIA	R6452
Schlicht, W. R.	BWNT	IIA	S6369
Schwenn, J. S.	BWNT	IIA	S1848
Singh, M. T.	ANA	IIA	S2748
Smith, H. L.	BWNT	III	S2680
Storey, M. M.	BWNT	III	S4373
Whatley, C. H.	ANA	IIA	W9213
Wiltsey, W. J.	ANA	IIA	W3386

* Acquired and analyzed data during the March 8, 1994 ET only.

APPENDIX A

LIST OF EXAMINATION AND DATA ANALYSIS PERSONNEL

ULTRASONIC TESTING DATA ACQUISITION AND ANALYSIS PERSONNEL

<u>NAME</u>	<u>COMPANY</u>	<u>ET CERT. LEVEL</u>	<u>ID NO.</u>
Krotke, R. G.	BWNT	II (Limited UT360)	K1721
Key, M. W.	BWNT	II	K2915
Szuster, M. J.	BWNT	II (Limited UT360)	S3596

APPENDIX B

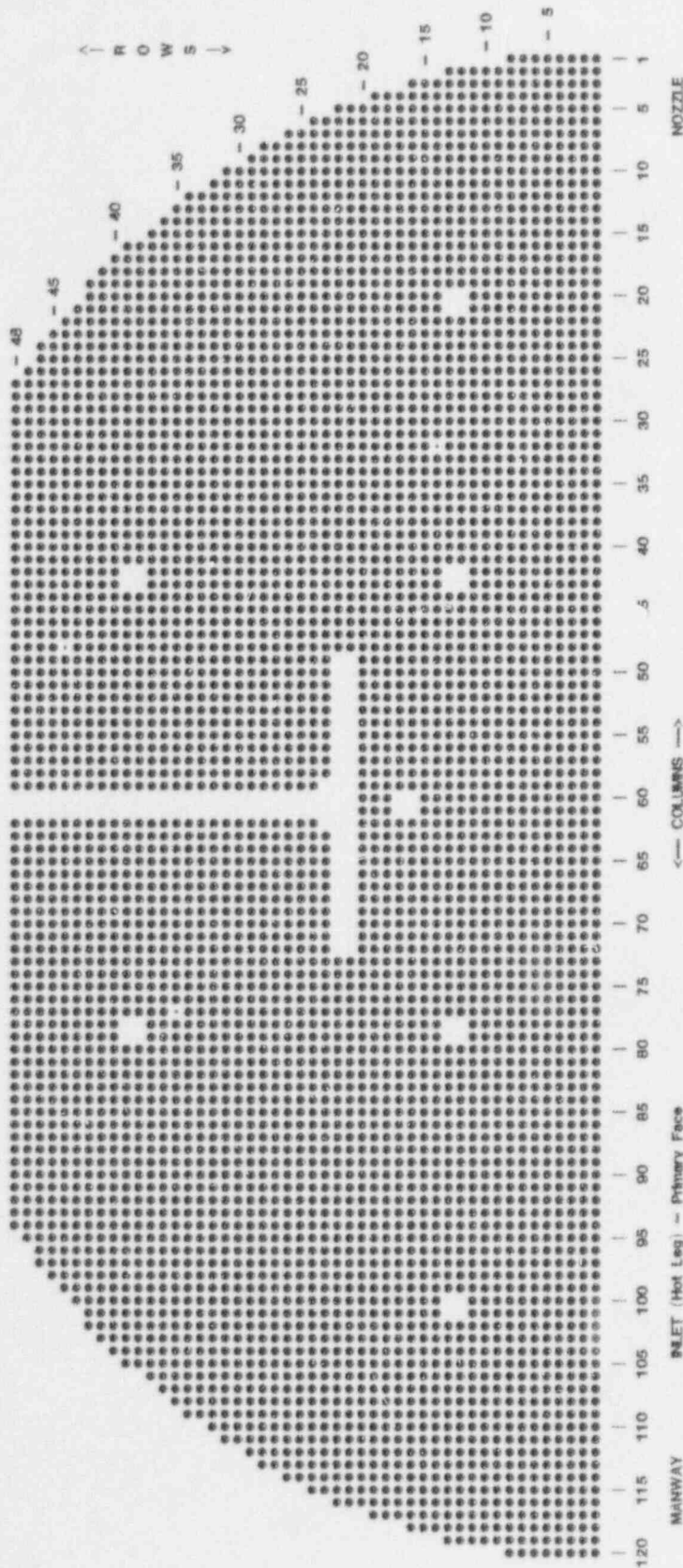
TUBES EXAMINED BY BOBBIN COIL ET IN THE SUMMER 1993

Tubes Examined by Bobbin Coil ET

South Texas Project - Unit 1
Total Tubes : 4864

S/G A
Out Of Service () : N/A

Tubes Selected : 4861



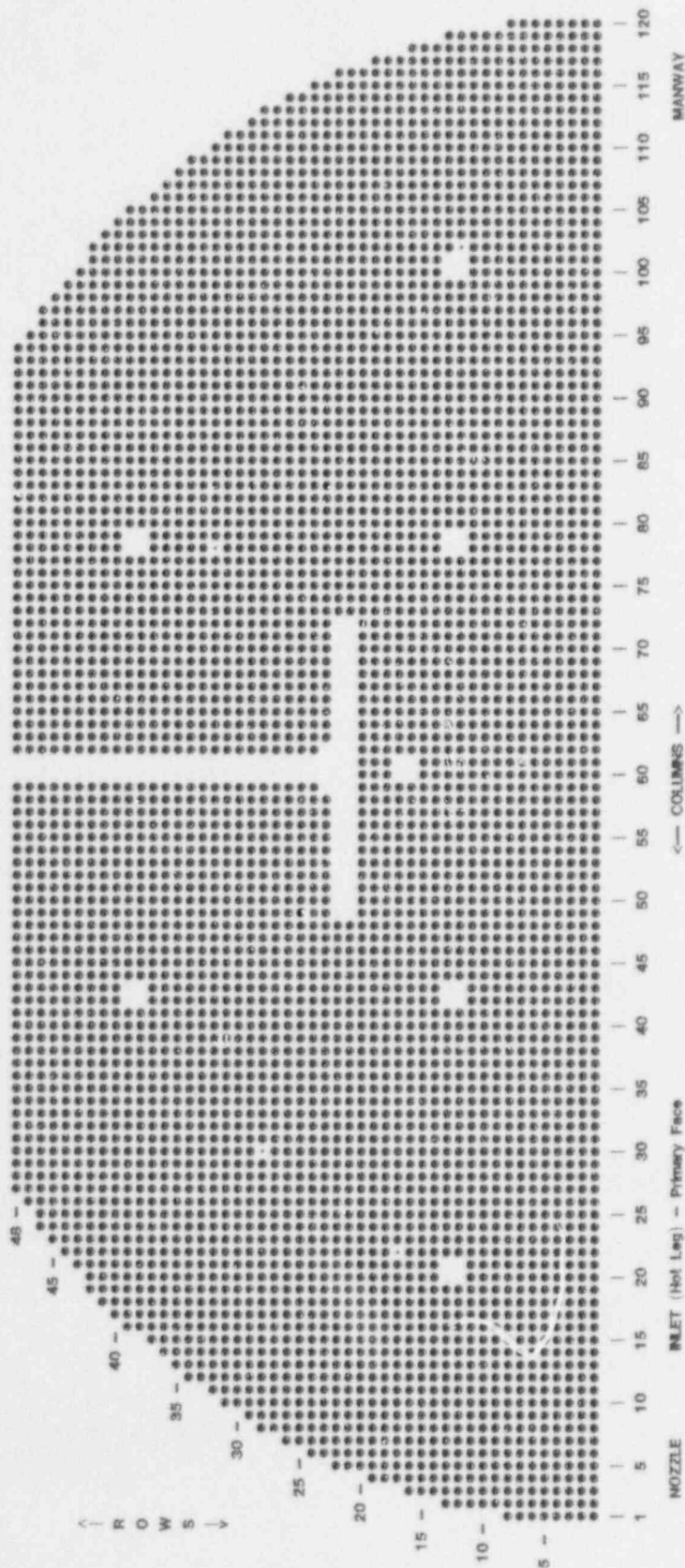
Bobbin Coil - 4861

Tubes Examined by Bobbin Coil ET

South Texas Project - Unit 1
Total Tubes : 4864

S/G B
Out Of Service () : N/A

Tubes Selected : 4860



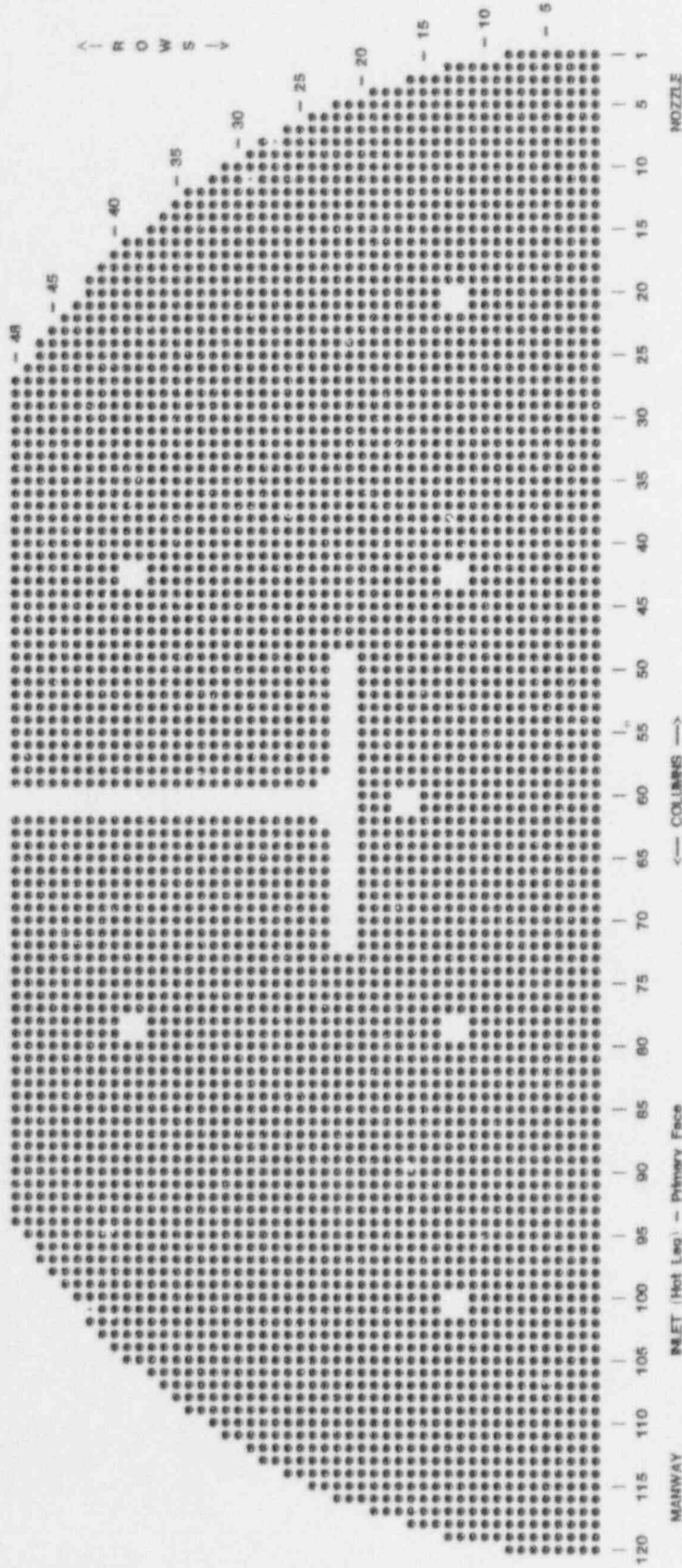
Bobbin Coil - 4860

Tubes Examined by Bobbin Coil ET

South Texas Project - Unit 1
Total Tubes : 4864

S/G C
Out Of Service () : N/A

Tubes Selected : 4861



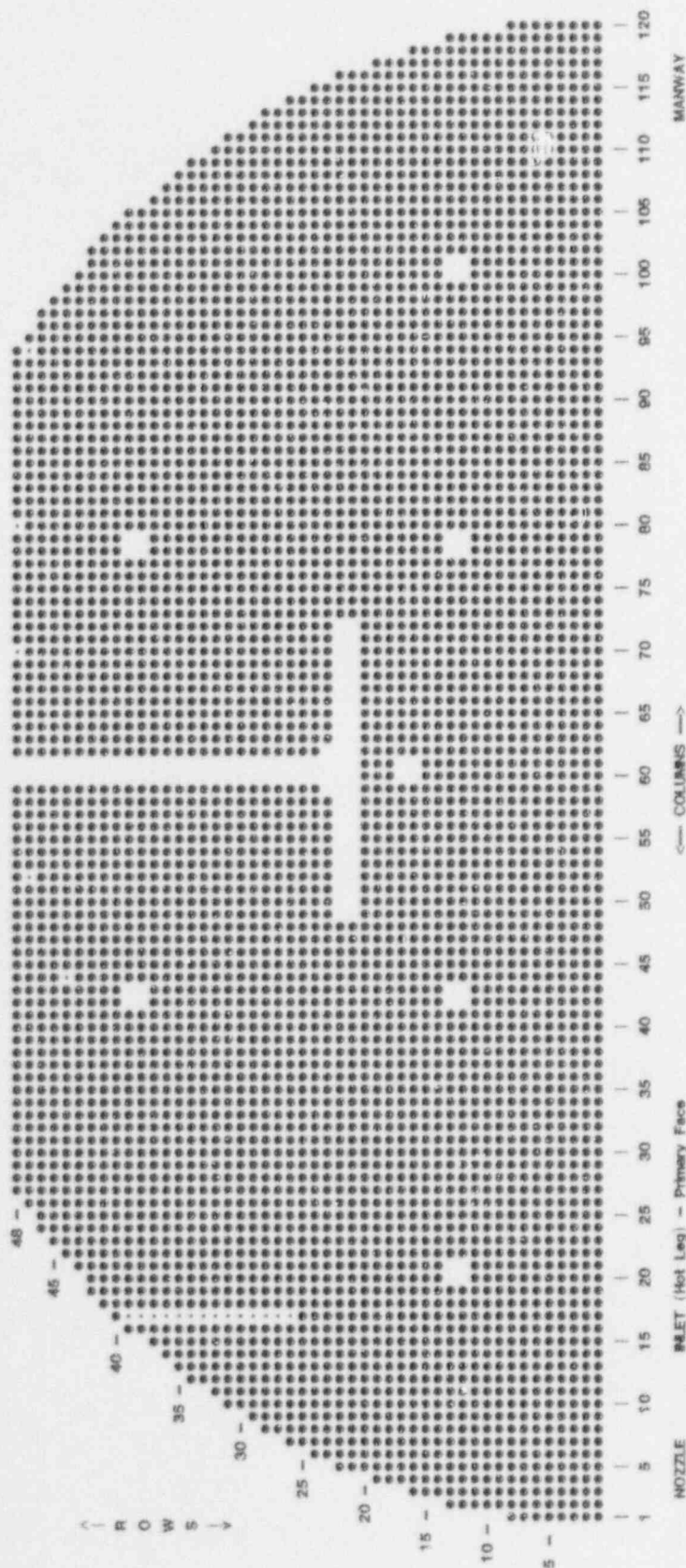
Bobbin Coil - alert

Tubes Examined by Bobbin Coil ET

South Texas Project - Unit 1
Total Tubes : 4864

S/G D
Out Of Service () : N/A

Tubes Selected : 4845



Bobbin Coil - 4845

APPENDIX C

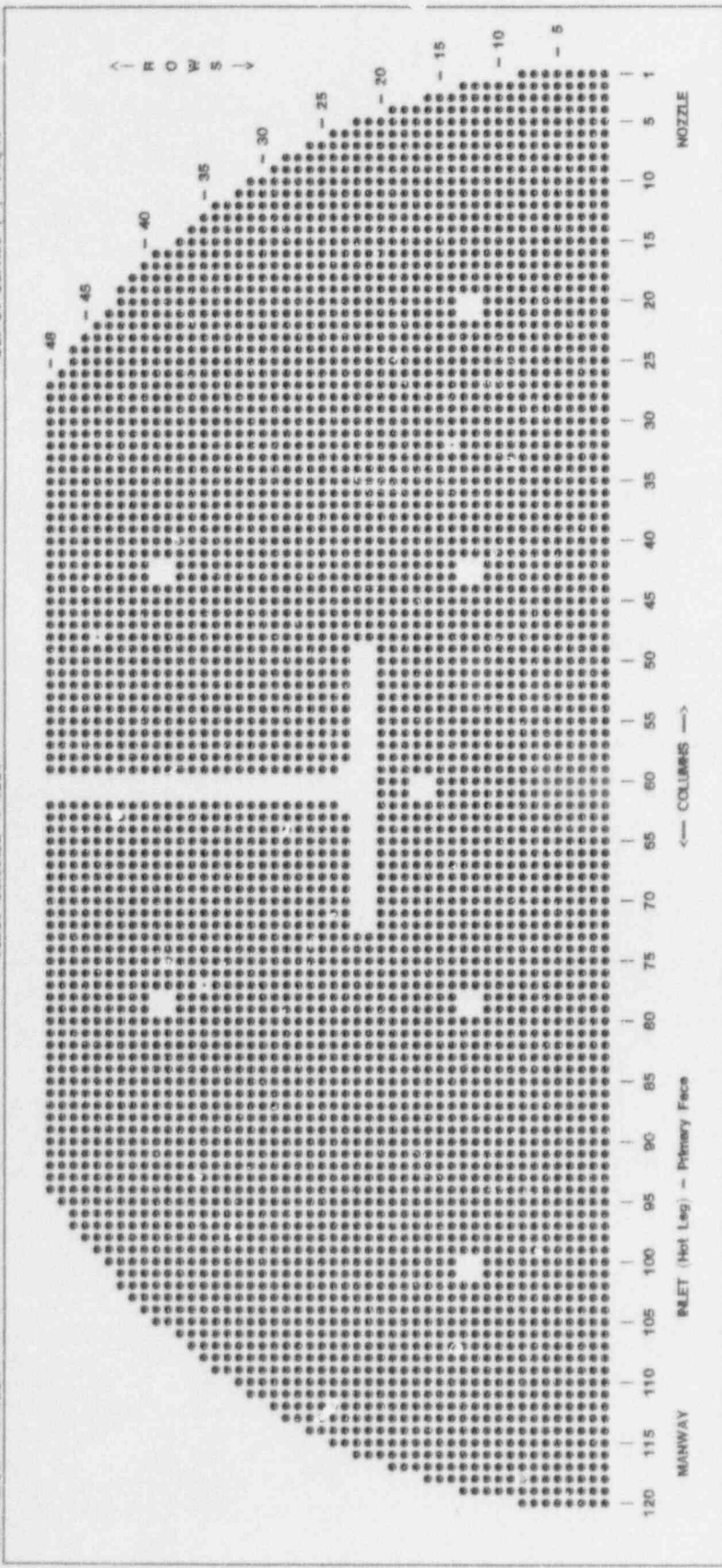
TUBES EXAMINED BY MRPC AT ELEVATION 01H, 02H, OR TSH

Tubes Examined by MRPC at Elevation TSH

South Texas Project - Unit 1
Total Tubes : 4864

S/G A
Out Of Service () : N/A

Tubes Selected : 4861



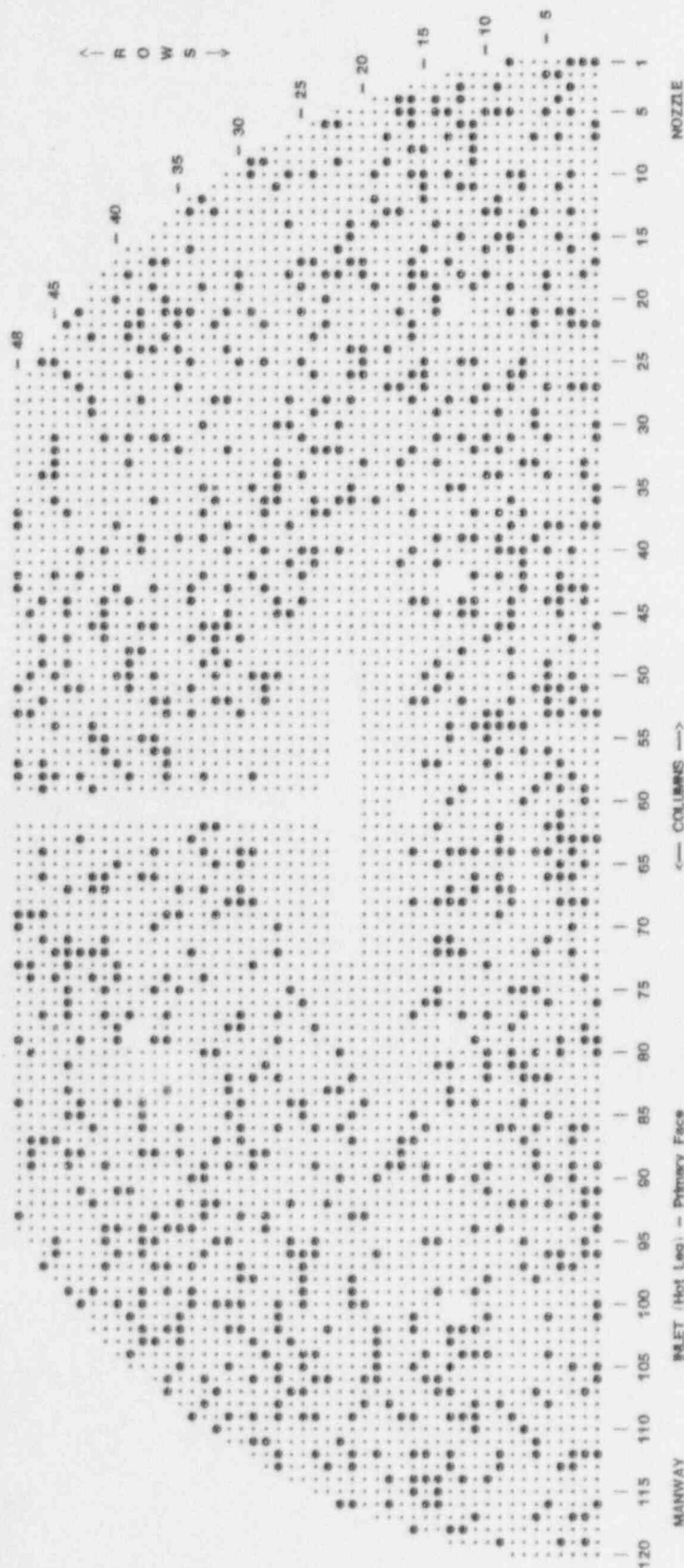
21% Random MRPC - 4861

Tubes Examined by MRPC at Elevation 01H

South Texas Project - Unit 1
Total Tubes : 4864

S/G A
Out Of Service () : N/A

Tubes Selected : 976



● 21% Random MRPC - 875

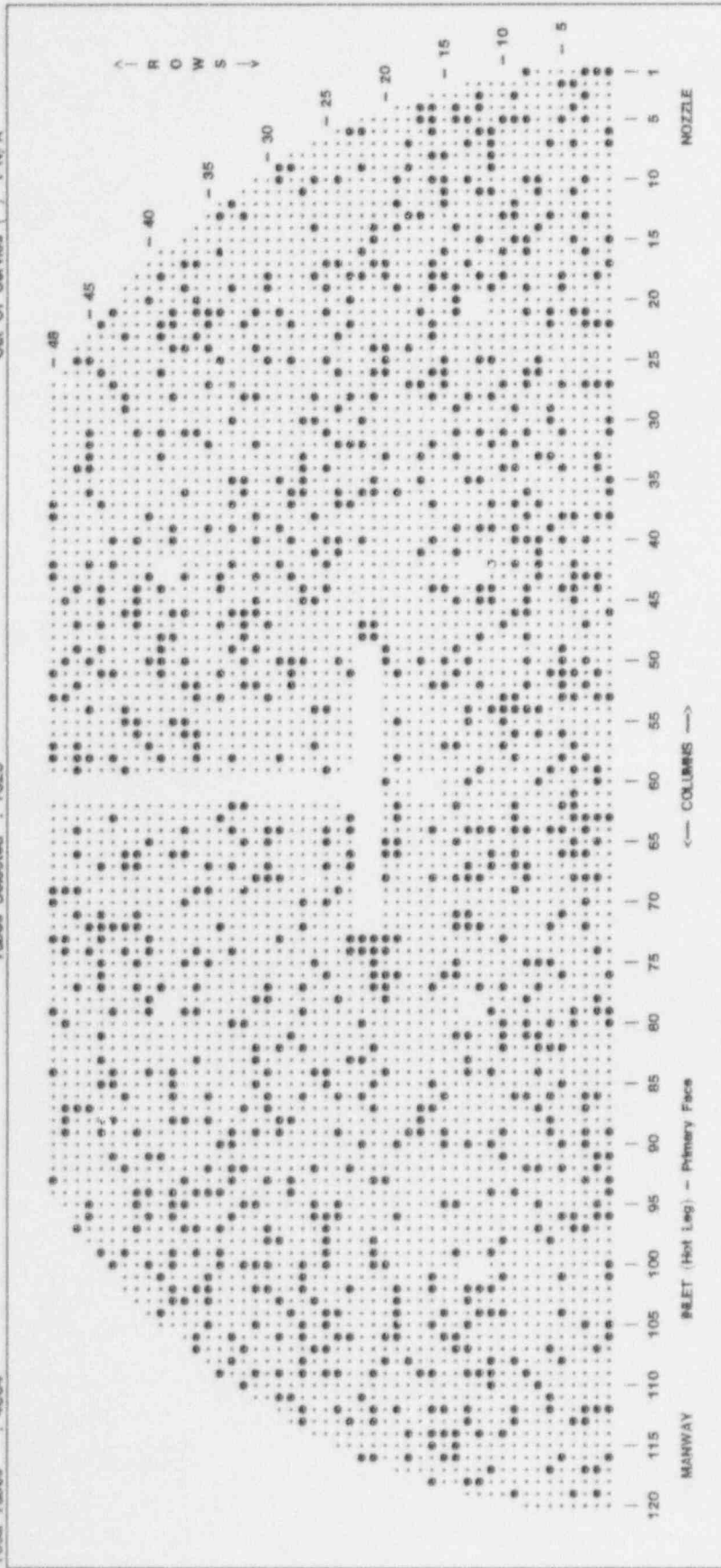
○ Selected Tube MRPC - 2

Tubes Examined by MRPC at Elevation 02H

South Texas Project - Unit 1
Total Tubes : 4864

S/G A
Out Of Service () : N/A

Tubes Selected : 1025



21% Reactor MRPC - 1

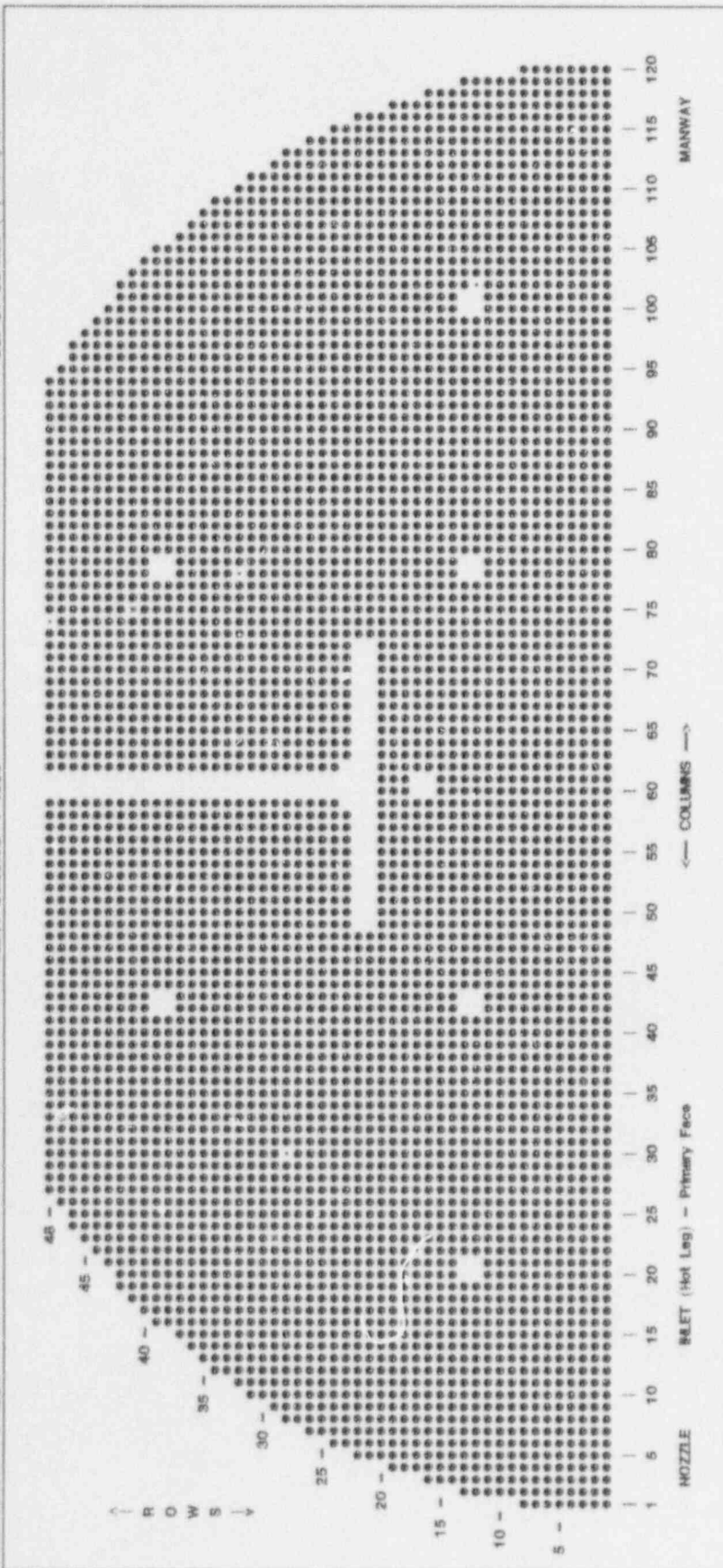
21% Reactor MRPC - 1024

Tubes Examined by MRPC at Elevation TSH

South Texas Project -- Unit 1
Total Tubes : 4864

S/G B
Out Of Service () : N/A

Tubes Selected : 4859



● 21% Random MRPC - 4859

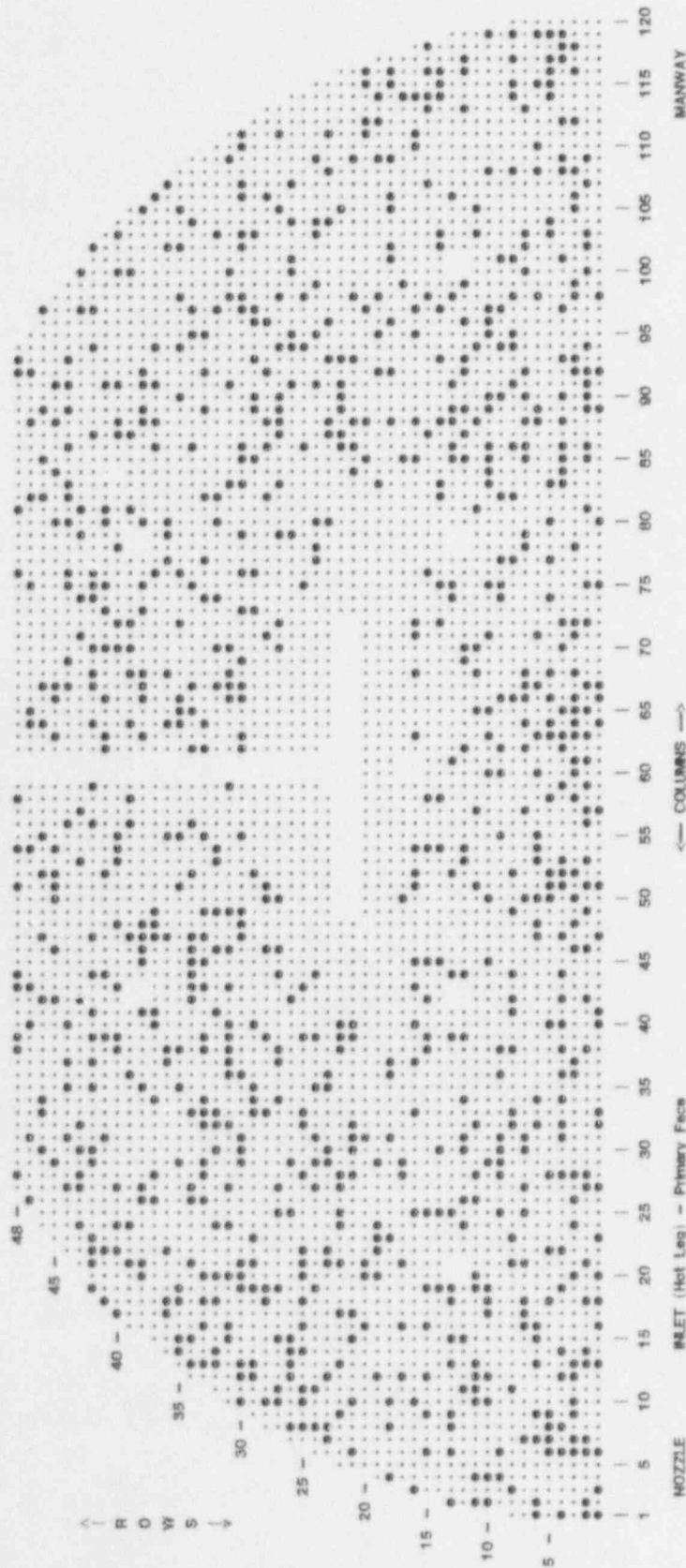
● Selected Tube MRPC - 2

Tubes Examined by MRPC at Elevation 01H

South Texas Project -- Unit 1
Total Tubes : 4854

S/G B
Out Of Service () : N/A

Tubes Selected : 977



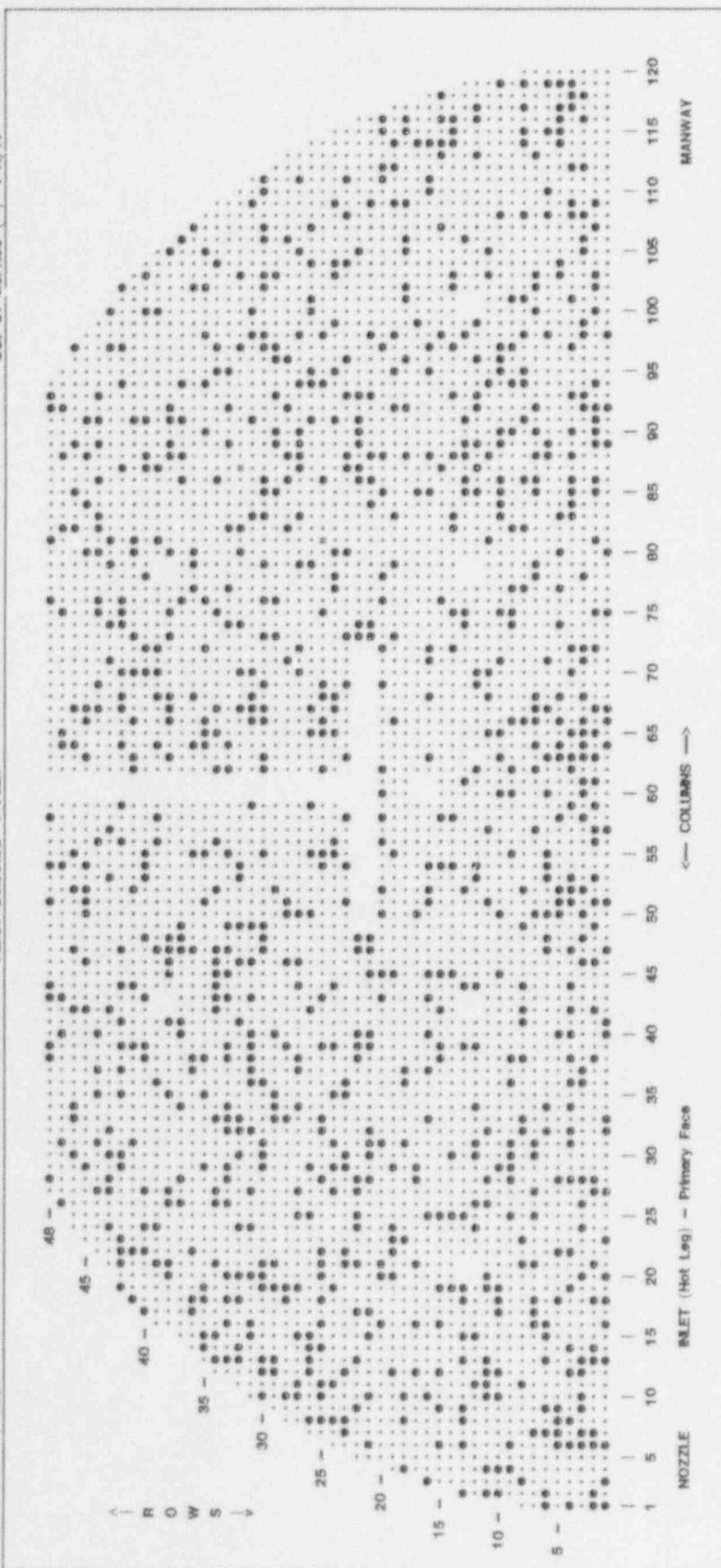
• - 977

Tubes Examined by MRPC at Elevation 02H

South Texas Project - Unit 1
Total Tubes : 4854

S/G B
Out Of Service () : N/A

Tubes Selected : 1027



● 2177 Random MRPC - 1024

● Selected Tube MRPC - 5

← COLUMNS →

INLET (Hot Leg) - Primary Face

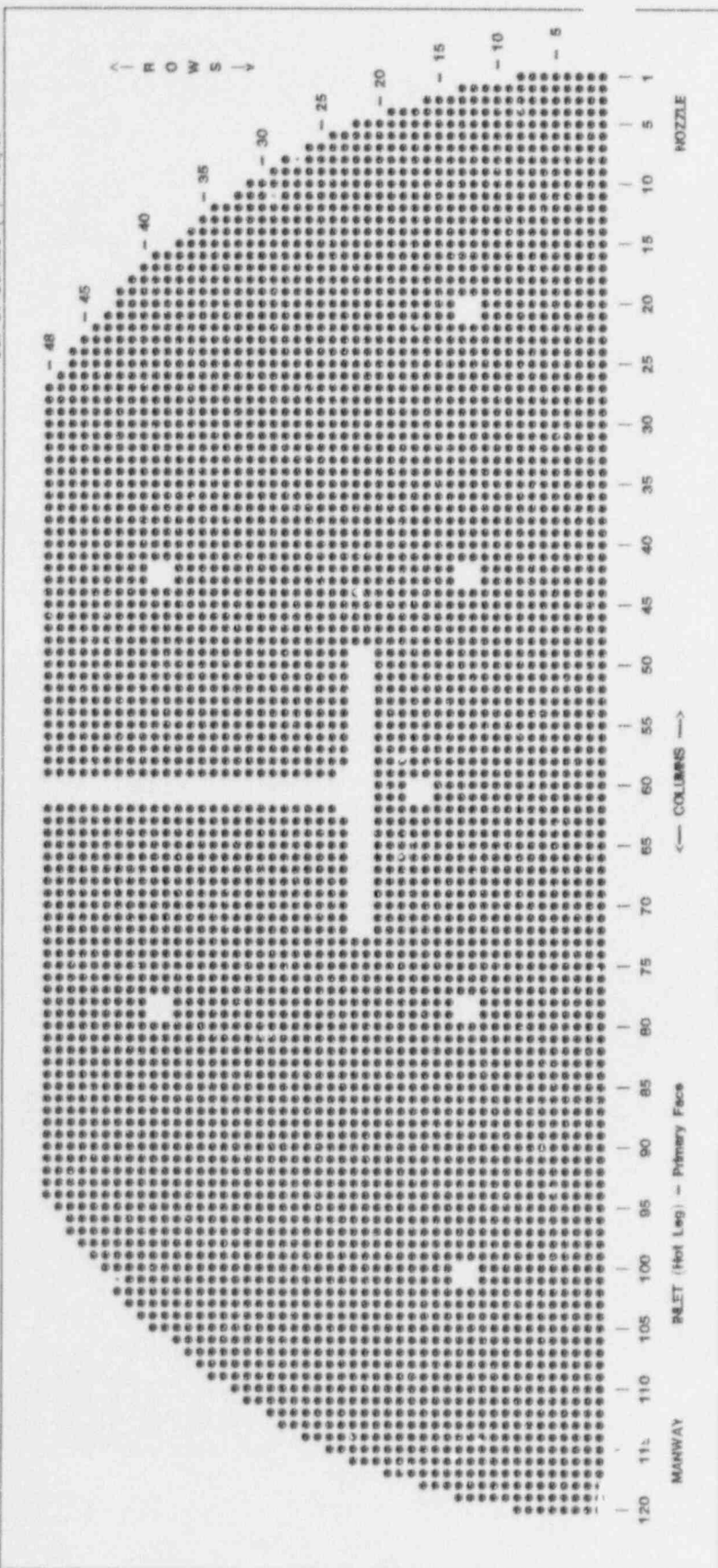
NOZZLE

Tubes Examined by MRPC at Elevation TSH

South Texas Project - Unit 1
Total Tubes : 4864

S/G C
Out Of Service () : N/A

Tubes Selected : 4861



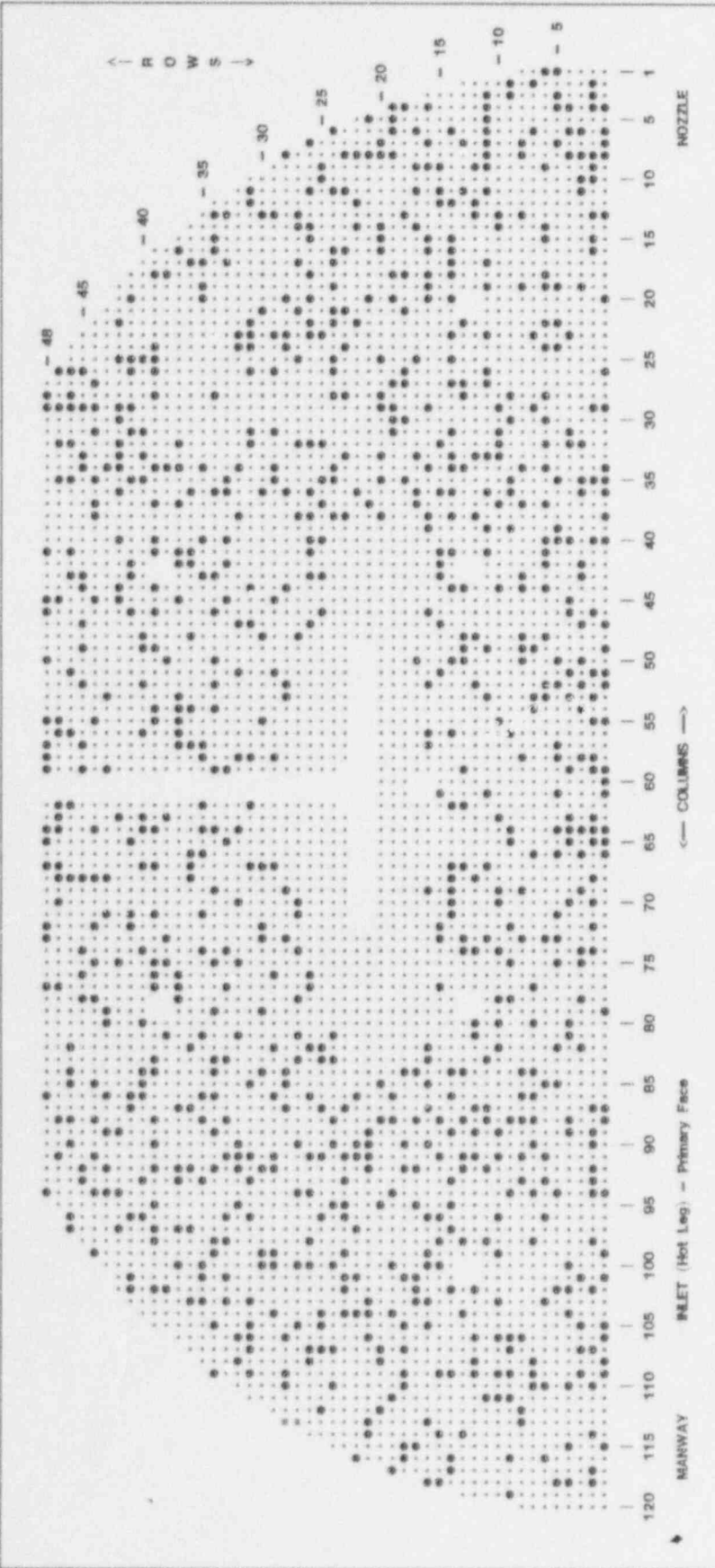
21. Random 188°C - 4861

Tubes Examined by MRPC at Elevation 01H

South Texas Project - Unit 1
Total Tubes : 4864

S/G C
Out Of Service () : N/A

Tubes Selected : 982



● 21% Random MRPC - 800

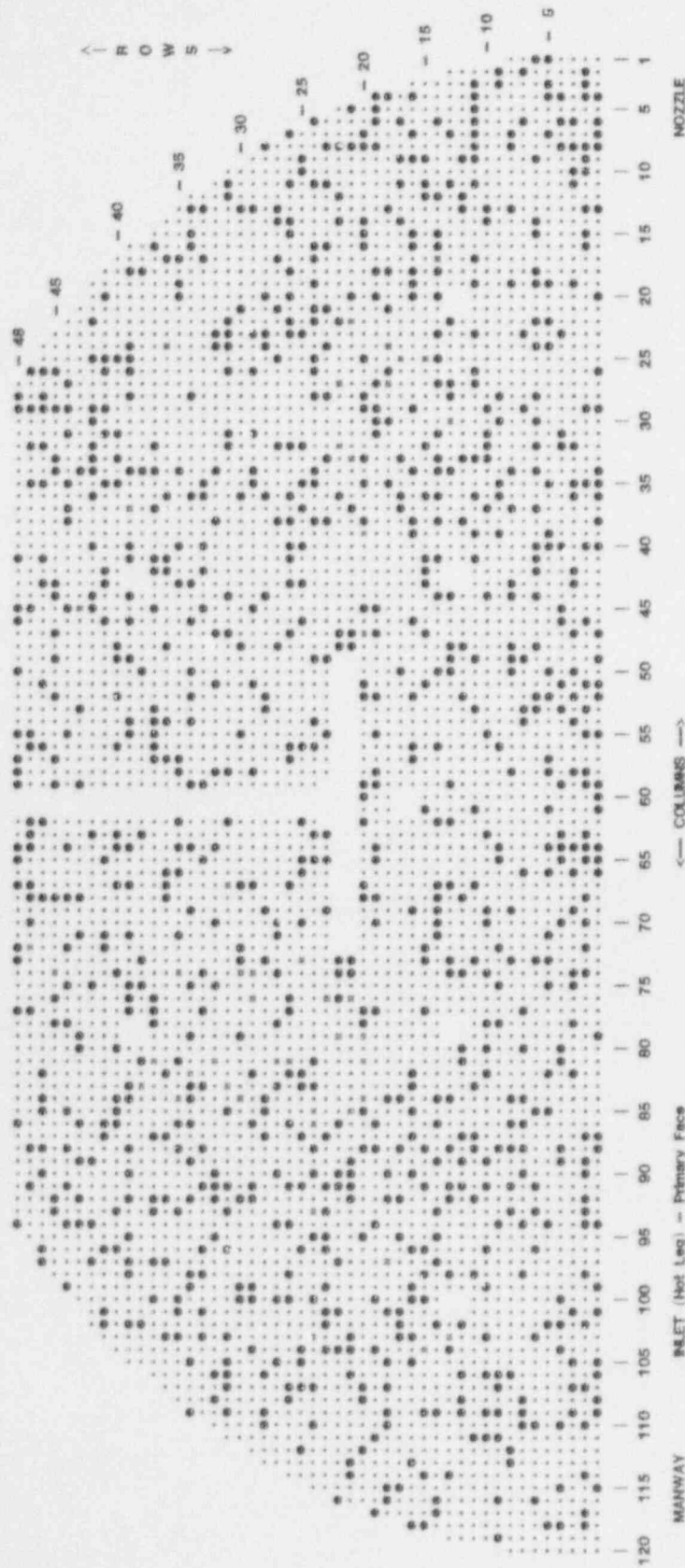
○ 10% Selected Tube MRPC - 2

Tubes Examined by MRPC at Elevation 02H

South Texas Project - Unit 1
Total Tubes : 4864

S/G C
Out of Service () : N/A

Tubes Selected : 1063



Selected Tube MRPC - 48

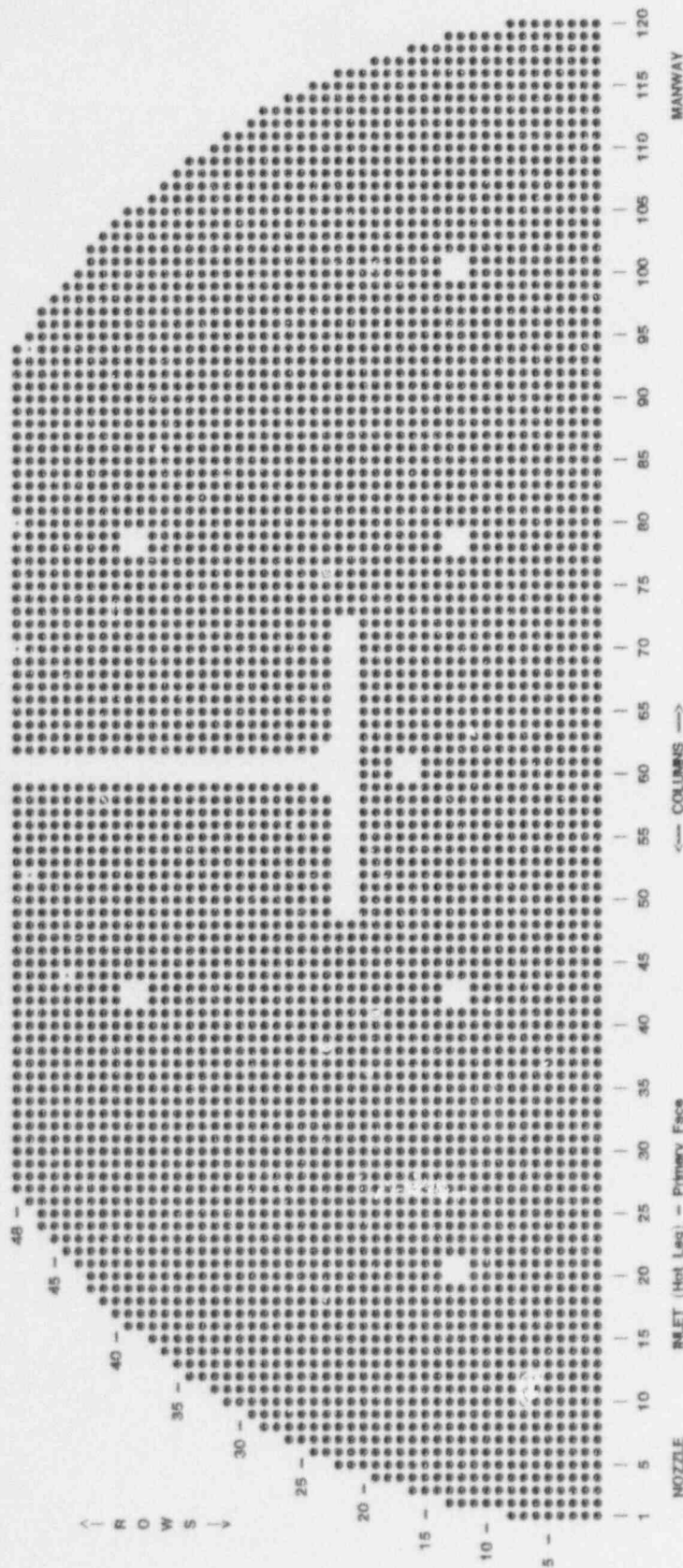
21% Random MRPC - 1000

Tubes Examined by MRPC at Elevation TSH

South Texas Project -- Unit 1
Total Tubes : 4964

S/G D
Out Of Service () : N/A

Tubes Selected : 4859



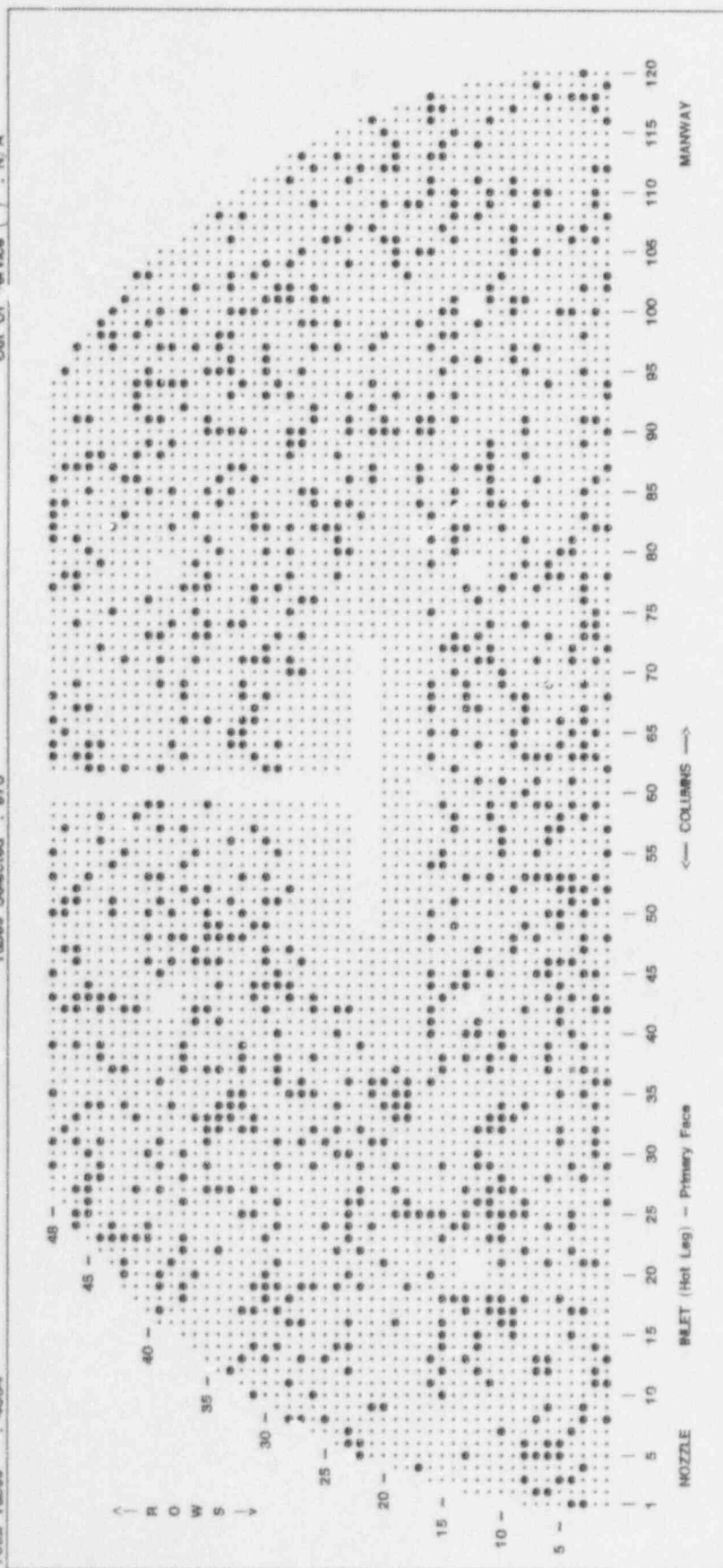
217 Nucleon MRPC - 4859

Tubes Examined by MRPC at Elevation 01H

South Texas Project - Unit 1
Total Tubes : 4864

S/G D
Out Of Service () : N/A

Tubes Selected : 973



● 21% Random MRPC - 973

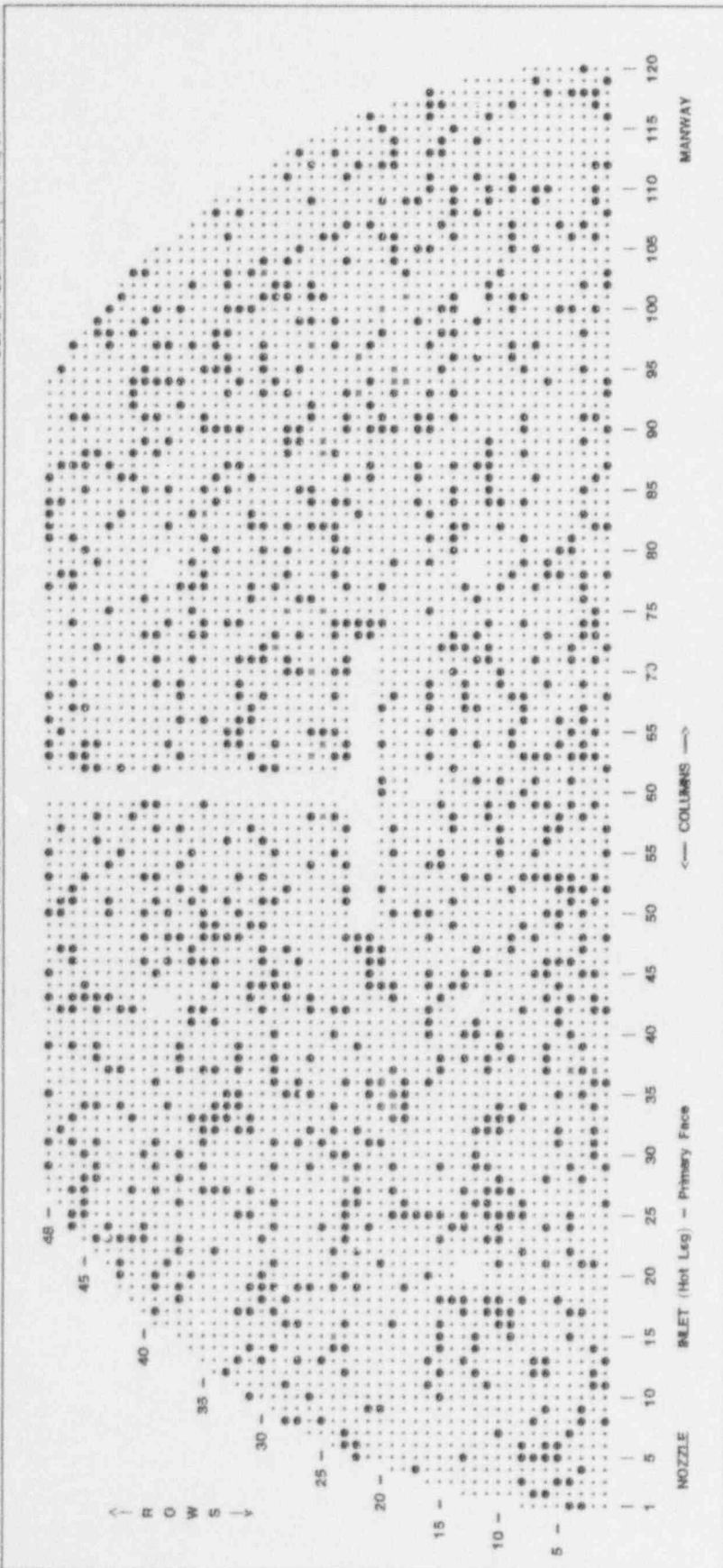
● Selected Tube MRPC - 2

Tubes Examined by MRPC at Elevation 02H

South Texas Project - Unit 1
Total Tubes : 4664

S/G D
Out Of Service () : N/A

Tubes Selected : 1044



● 217 Random MRPC - 1024

● Selected Tube MRPC - 24

APPENDIX D

**TUBE AREAS EXAMINED BY MRPC AT LOCATIONS
OTHER THAN 01H, 02H, OR TSH**

STEAM GENERATOR A

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW COL LEG EXTENT1 EXTENT2 PROBE

1	19	TEH	11C	10H	580
1	24	TEH	11C	10H	580
1	25	TEH	11C	10H	580
1	31	TEH	11C	10H	580
1	34	TEH	11C	10H	580
1	42	TEH	11C	10H	580
1	46	TEH	03H	03H	610
1	51	TEH	11C	10H	580
1	78	TEH	11C	10H	580
1	86	TEH	11C	10H	580
1	94	TEH	11C	10H	580
1	100	TEH	11C	10H	580
1	105	TEH	11C	10H	580
1	120	TEH	11C	10H	580
2	11	TEH	11C	10H	580
2	20	TEC	11C	11C	610
2	26	TEC	11C	11C	610
2	27	TEC	11C	11C	610
2	40	TEH	11C	10H	580
2	82	TEH	11C	10H	580
2	84	TEH	11C	10H	580
2	86	TEH	11C	10H	580
2	87	TEH	11C	10H	580
2	102	TEH	11C	10H	580
3	97	TEC	TSC	TSC	610
3	106	TEC	TSC	TSC	610
4	98	TEC	13C	13C	610
4	98	TEC	14C	14C	610
5	23	TEC	TSC	TSC	610
5	31	TEC	TSC	TSC	610
6	53	TEH	11C	10H	580
6	120	TEC	18C	18C	610
8	46	TEH	03H	03H	610
8	71	TEC	TSC	TSC	610
9	46	TEH	03H	03H	610
9	97	TEH	11C	10H	580
10	47	TEH	03H	03H	610
13	28	TEC	13C	13C	610
13	35	TEC	TEC	TEC	610
13	35	TEC	TSC	TSC	610
14	62	TEH	05H	05H	610
14	67	TEH	09H	09H	610
17	30	TEH	03H	03H	610
19	78	TEC	22C	22C	610
20	60	TEC	21C	21C	610
21	17	TEC	13C	13C	610
21	83	TEH	04H	04H	610
21	106	TEC	TSC	TSC	610
22	7	TEC	TSC	TSC	610

STEAM GENERATOR A

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW COL LEG EXTENT1 EXTENT2 PROBE

23	115	TEC	12C	12C	610
24	27	TEC	13C	13C	610
25	16	TEH	10H	10H	610
26	30	TEH	09H	09H	610
27	75	TEH	10H	10H	610
27	84	TEC	TSC	TSC	610
28	62	TEC	21C	21C	610
28	62	TEC	21C	21C	610
31	21	TEC	17C	17C	610
31	59	TEC	22C	22C	610
33	27	TEC	12C	12C	610
33	27	TEH	03H	03H	610
34	31	TEC	15C	15C	610
34	63	TEC	TSC	TSC	610
35	21	TEC	TSC	TSC	610
35	81	TEH	04H	04H	610
36	69	TEC	12C	13C	610
37	52	TEC	TSC	TSC	610
38	24	TEC	TSC	TSC	610
38	53	TEC	14C	14C	610
38	70	TEC	TSC	TSC	610
38	74	TEC	TSC	TSC	610
39	51	TEC	TSC	TSC	610
39	105	TEC	TSC	TSC	610
40	65	TEH	04H	04H	610
41	21	TEC	TSC	TSC	610
41	25	TEC	TSC	TSC	610
42	19	TEC	TSC	TSC	610
43	36	TEC	11C	12C	610
43	36	TEH	07H	06H	610
43	36	TEH	08H	08H	610
43	92	TEC	15C	16C	610
44	53	TEH	04H	04H	610
44	73	TEC	TSC	TSC	610
45	46	TEC	14C	14C	610
45	55	TEC	22C	22C	610
45	59	TEC	22C	22C	610
46	28	TEC	17C	17C	610
46	35	TEC	21C	21C	610
46	37	TEC	21C	21C	610
46	37	TEC	22C	22C	610
46	68	TEC	21C	21C	610
47	30	TEC	16C	16C	610
47	30	TEC	22C	22C	610
47	32	TEC	21C	21C	610
47	46	TEC	21C	21C	610
47	50	TEC	22C	22C	610
47	66	TEC	21C	21C	610
47	70	TEC	22C	22C	610

STEAM GENERATOR A

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW	COL	LEG	EXTENT1	EXTENT2	PROBE
47	74	TEC	21C	21C	610
47	75	TEC	22C	22C	610
47	81	TEC	22C	22C	610
48	33	TEC	21C	21C	610
48	46	TEC	22C	22C	610
48	55	TEC	21C	21C	610
48	67	TEC	21C	21C	610
48	74	TEC	22C	22C	610
48	90	TEC	22C	22C	610

STEAM GENERATOR B

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW COL LEG EXTENT1 EXTENT2 PROBE

1	14	TEH	14C	14C	610
1	17	TEC	10H	11C	580
1	22	TEC	10H	11C	580
1	24	TEC	10H	11C	580
1	49	TEH	11C	10H	580
1	65	TEH	11C	10H	580
1	88	TEH	11C	10H	610
1	92	TEH	11C	10H	580
1	95	TEH	11C	10H	580
1	100	TEH	11C	10H	580
1	120	TEH	11C	10H	580
2	27	TEC	10H	11C	580
2	31	TEH	11C	10H	610
2	35	TEH	11C	10H	610
2	36	TEH	11C	10H	610
2	52	TEH	11C	10H	580
2	57	TEH	11C	10H	580
2	60	TEH	11C	10H	580
2	61	TEH	11C	10H	580
2	65	TEH	11C	10H	580
2	104	TEH	11C	10H	580
2	112	TEC	TSC	TSC	610
2	113	TEH	11C	10H	580
3	2	TEH	11C	10H	580
3	58	TEC	TSC	TSC	610
3	69	TEH	11C	10H	580
4	34	TEC	TSC	TSC	610
4	96	TEC	19C	19C	610
4	100	TEC	TSC	TSC	610
4	112	TEC	TSC	TSC	610
6	16	TEH	TSC	TSC	610
6	68	TEH	11C	10H	580
7	90	TEH	11C	10H	610
8	59	TEC	21C	21C	610
8	89	TEC	16C	16C	610
8	120	TEC	TSC	TSC	610
10	62	TEH	06H	06H	610
10	100	TEH	11C	10H	580
11	75	TEH	11C	11C	610
12	74	TEH	TSC	TSC	610
13	7	TEH	TSC	TSC	610
13	38	TEH	07H	07H	610
14	89	TEC	TSC	TSC	610
14	104	TEC	TSC	TSC	610
14	116	TEC	11C	11C	610
16	33	TEH	06H	06H	610
18	60	TEC	21C	21C	610
19	10	TEC	13C	13C	610
19	61	TEC	21C	21C	610

STEAM GENERATOR B

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW	COL	LEG	EXTENT1	EXTENT2	PROBE
-----	-----	-----	---------	---------	-------

19	62	TEC	21C	21C	610
20	60	TEC	21C	21C	610
20	62	TEC	21C	21C	610
20	108	TEC	TSC	TSC	610
23	39	TEC	15C	15C	610
23	110	TEC	TSC	TSC	610
23	115	TEC	TSC	TSC	610
24	36	TEC	TSC	TSC	610
24	40	TEC	TSC	TSC	610
27	19	TEH	TSC	TSC	610
28	51	TEC	TSC	TSC	610
29	19	TEH	TSC	TSC	610
29	51	TEC	TSC	TSC	610
29	87	TEH	09H	09H	610
30	102	TEC	TSC	TSC	610
32	38	TEC	TSC	TSC	610
32	39	TEC	TSC	TSC	610
33	34	TEC	TSC	TSC	610
33	38	TEC	TSC	TSC	610
33	54	TEC	TSC	TSC	610
33	87	TEH	04H	04H	610
35	95	TEH	10H	10H	610
37	62	TEC	TSC	TSC	610
39	98	TEC	TSC	TSC	610
39	102	TEC	TSC	TSC	610
40	76	TEH	05H	05H	610
41	59	TEC	21C	21C	610
41	97	TEC	TSC	TSC	610
41	101	TEC	TSC	TSC	610
42	21	TEH	TSC	TSC	610
42	101	TEC	TSC	TSC	610
43	65	TEC	TSC	TSC	610
45	87	TEC	TSC	TSC	610
46	28	TEH	21C	21C	610
46	34	TEC	22C	22C	610
46	35	TEC	22C	22C	610
46	48	TEC	22C	22C	610
46	54	TEC	22C	22C	610
46	64	TEC	22C	22C	610
20	60	TEC	21C	21C	610
20	62	TEC	21C	21C	610
20	108	TEC	TSC	TSC	610
23	39	TEC	15C	15C	610
23	110	TEC	TSC	TSC	610
23	115	TEC	TSC	TSC	610
24	36	TEC	TSC	TSC	610
24	40	TEC	TSC	TSC	610
27	19	TEH	TSC	TSC	610
28	51	T2C	TSC	TSC	610

STEAM GENERATOR B

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW COL LEG EXTENT1 EXTENT2 PROBE

29	19	TEH	TSC	TSC	610
29	51	TEC	TSC	TSC	610
29	87	TEH	09H	09H	610
30	102	TEC	TSC	TSC	610
32	38	TEC	TSC	TSC	610
32	39	TEC	TSC	TSC	610
33	34	TEC	TSC	TSC	610
33	38	TEC	TSC	TSC	610
33	54	TEC	TSC	TSC	610
33	87	TEH	04H	04H	610
35	95	TEH	10H	10H	610
37	62	TEC	TSC	TSC	610
39	98	TEC	TSC	TSC	610
39	102	TEC	TSC	TSC	610
40	76	TEH	05H	05H	610
41	59	TEC	21C	21C	610
41	97	TEC	TSC	TSC	610
41	101	TEC	TSC	TSC	610
42	21	TEH	TSC	TSC	610
42	101	TEC	TSC	TSC	610
43	65	TEC	TSC	TSC	610
45	87	TEC	TSC	TSC	610
46	28	TEH	21C	21C	610
46	34	TEC	22C	22C	610
46	35	TEC	22C	22C	610
46	48	TEC	22C	22C	610
46	54	TEC	22C	22C	610
46	64	TEC	22C	22C	610
46	67	TEC	22C	22C	610
46	81	TEC	TSC	TSC	610
47	29	TEH	22C	22C	610
47	33	TEC	21C	21C	610
47	38	TEC	22C	22C	610
47	43	TEC	22C	22C	610
47	62	TEC	21C	21C	610
47	66	TEC	22C	22C	610
47	81	TEC	TSC	TSC	610
47	85	TEC	21C	21C	610
47	88	TEC	TSC	TSC	610
47	93	TEC	21C	21C	610
48	46	TEC	21C	21C	610
48	63	TEC	22C	22C	610
48	75	TEC	21C	21C	610
48	76	TEC	11C	11C	610
48	83	TEC	21C	21C	610
48	91	TEC	21C	21C	610

STEAM GENERATOR C

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW	COL	LEG	EXTENT1	EXTENT2	PROBE
1	2	TEH	11C	10H	580
1	3	TEH	11C	10H	580
1	21	TEH	11C	10H	580
1	22	TEH	11C	10H	580
1	28	TEH	11C	10H	580
1	37	TEC	10H	11C	580
1	57	TEH	11C	10H	580
1	64	TEH	11C	10H	580
1	72	TEH	11C	10H	580
1	82	TEC	10H	11C	580
1	91	TEH	11C	10H	580
1	104	TEH	11C	10H	580
1	112	TEH	11C	10H	580
2	10	TEH	11C	10H	580
2	11	TEC	TSC	TSC	610
2	12	TEH	11C	10H	580
2	23	TEH	11C	10H	580
2	27	TEH	11C	10H	580
2	35	TEC	TSC	TSC	610
2	37	TEC	10H	11C	580
2	82	TEC	10H	11C	580
2	91	TEC	TSC	TSC	610
2	100	TEH	11C	10H	580
2	112	TEH	11C	10H	580
2	118	TEH	11C	10H	580
3	13	TEH	11C	10H	580
3	69	TEH	11C	10H	580
3	89	TEC	TSC	TSC	610
5	36	TEC	TSC	TSC	610
5	44	TEC	TSC	TSC	610
5	49	TEC	TSC	TSC	610
5	60	TEC	16C	16C	610
5	62	TEC	TSC	TSC	610
5	72	TEH	11C	10H	580
5	107	TEC	TSC	TSC	610
6	38	TEC	TSC	TSC	610
6	90	TEC	TSC	TSC	610
8	72	TEH	11C	10H	580
9	23	TEC	TSC	TSC	610
9	45	TEC	TSC	TSC	610
9	107	TEC	TSC	TSC	610
10	28	TEC	TSC	TSC	610
10	29	TEC	TSC	TSC	610
10	52	TEC	TSC	TSC	610
10	68	TEC	11C	12C	610
11	30	TEC	TSC	TSC	610
12	52	TEC	TSC	TSC	610
12	88	TEC	13C	13C	610
13	29	TEC	TSC	TSC	610

STEAM GENERATOR C

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW	COL	LEG	EXTENT1	EXTENT2	PROBE
-----	-----	-----	---------	---------	-------

13	35	TEC	TSC	TSC	610
13	45	TEC	TSC	TSC	610
13	47	TEC	TSC	TSC	610
13	91	TEC	TSC	TSC	610
13	93	TEC	TSC	TSC	610
14	6	TEC	22C	22C	610
15	30	TEC	TSC	TSC	610
15	36	TEC	TSC	TSC	610
15	92	TEC	TSC	TSC	610
16	15	TEC	TSC	TSC	610
16	29	TEC	TSC	TSC	610
16	30	TEC	TSC	TSC	610
16	45	TEC	TSC	TSC	610
16	48	TEC	TSC	TSC	610
16	49	TEC	TSC	TSC	610
17	16	TEC	TSC	TSC	610
17	92	TEC	TSC	TSC	610
18	4	TEH	05H	05H	610
18	46	TEC	TSC	TSC	610
19	38	TEC	TSC	TSC	610
20	9	TEH	03H	03H	610
20	38	TEH	03H	03H	610
20	41	TEH	03H	03H	610
20	90	TEC	TSC	TSC	610
21	11	TEC	TSC	TSC	610
22	85	TEC	TSC	TSC	610
23	15	TEC	TSC	TSC	610
24	87	TEC	TSC	TSC	610
25	10	TEC	TSC	TSC	610
25	17	TEC	TSC	TSC	610
25	110	TEC	TSC	TSC	610
29	23	TEC	TSC	TSC	610
29	63	TEH	03H	03H	610
30	81	TEC	TSC	TSC	610
30	104	TEC	TSC	TSC	610
31	101	TEC	TSC	TSC	610
32	34	TEH	09H	09H	610
32	70	TEC	TSC	TSC	610
33	47	TEC	15C	15C	610
33	101	TEC	TSC	TSC	610
35	77	TEC	TSC	TSC	610
35	85	TEH	04H	04H	610
36	34	TEH	10H	10H	610
38	44	TEC	14C	14C	610
38	49	TEH	04H	04H	610
38	68	TEH	04H	04H	610
39	83	TEC	TSC	TSC	610
39	96	TEC	TSC	TSC	610
39	97	TEC	TSC	TSC	610

STEAM GENERATOR C

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW COL LEG EXTENT1 EXTENT2 PROBE

40	48	TEH	04H	04H	610
40	50	TEH	04H	04H	610
40	72	TEH	03H	03H	610
40	75	TEH	04H	04H	610
42	33	TEH	08H	08H	610
42	57	TEC	20C	20C	610
43	62	TEC	21C	21C	610
43	62	TEC	TSC	TSC	610
44	22	TEC	TSC	TSC	610
45	58	TEC	21C	21C	610
46	53	TEC	21C	21C	610
46	53	TEC	22C	22C	610
46	65	TEC	22C	22C	610
46	66	TEC	21C	21C	610
46	66	TEC	TSC	TSC	610
46	93	TEC	21C	21C	610
47	29	TEC	22C	22C	610
47	44	TEC	22C	22C	610
47	45	TEC	TSC	TSC	610
47	48	TEC	21C	21C	610
47	48	TEC	22C	22C	610
47	56	TEC	21C	21C	610
47	89	TEC	22C	22C	610
47	92	TEC	21C	21C	610
47	95	TEC	22C	22C	610
47	95	TEC	TSC	TSC	610
48	27	TEC	22C	22C	610
48	33	TEH	08H	08H	610
48	37	TEC	22C	22C	610
48	38	TEC	21C	21C	610
48	45	TEC	TSC	TSC	610
48	51	TEC	21C	21C	610
48	76	TEC	22C	22C	610
48	77	TEC	21C	21C	610
48	77	TEC	22C	22C	610
48	77	TEC	TSC	TSC	610
48	80	TEC	22C	22C	610

STEAM GENERATOR D

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW	COL	LEG	EXTENT1	EXTENT2	PROBE
1	2	TEC	10H	11C	580
1	6	TEC	10H	11C	580
1	16	TEC	10H	11C	580
1	22	TEC	10H	11C	580
1	27	TEC	10H	11C	580
1	30	TEC	10H	11C	580
1	32	TEC	TSC	TSC	610
1	49	TEC	TSC	TSC	610
1	51	TEH	11C	10H	580
1	100	TEH	11C	10H	580
1	111	TEH	11C	10H	580
1	113	TEH	11C	10H	580
1	119	TEH	11C	10H	580
2	7	TEH	07H	07H	610
2	17	TEC	10H	11C	580
2	28	TEC	10H	11C	580
2	32	TEC	10H	11C	580
2	58	TEH	11C	10H	580
2	74	TEC	10H	11C	580
2	91	TEH	11C	10H	580
2	92	TEH	11C	10H	580
2	94	TEC	TSC	TSC	610
2	95	TEC	TSC	TSC	610
2	107	TEH	11C	10H	580
2	120	TEH	11C	10H	580
3	94	TEC	TSC	TSC	610
3	96	TEC	TSC	TSC	610
3	118	TEH	07H	07H	610
4	29	TEC	TSC	TSC	610
4	80	TEC	10H	11C	580
6	51	TEC	13C	13C	610
7	49	TEC	14C	14C	610
7	51	TEC	13C	13C	610
7	111	TEC	TSC	TSC	610
10	41	TEC	TSC	TSC	610
11	20	TEC	TSC	TSC	610
11	42	TEC	TSC	TSC	610
12	47	TEC	13C	13C	610
13	19	TEH	07H	07H	610
13	86	TEH	TEH	TEH	610
14	35	TEC	TSC	TSC	610
14	39	TEC	TSC	TSC	610
15	15	TEC	TSC	TSC	610
15	19	TEC	TSC	TSC	610
15	25	TEC	TSC	TSC	610
15	38	TEH	05H	04H	610
15	52	TEC	TSC	TSC	610
17	33	TEC	TSC	TSC	610
17	35	TEC	TSC	TSC	610

STEAM GENERATOR D

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW COL LEG EXTENT1 EXTENT2 PROBE

17	37	TEC	TSC	TSC	610
17	38	TEC	TSC	TSC	610
18	6	TEC	21C	22C	610
18	44	TEC	TSC	TSC	610
18	47	TEC	TSC	TSC	610
18	48	TEC	TSC	TSC	610
19	33	TEC	TSC	TSC	610
19	34	TEC	TSC	TSC	610
19	55	TEC	TSC	TSC	610
19	59	TEC	TSC	TSC	610
19	88	TEC	TSC	TSC	610
19	90	TEC	TSC	TSC	610
20	46	TEC	TSC	TSC	610
21	82	TEC	TSC	TSC	610
22	9	TEC	16C	17C	610
23	75	TEH	04H	04H	610
24	109	TEC	11C	12C	610
25	24	TEC	TSC	TSC	610
25	58	TEH	TSH	TEH	610
25	112	TEC	TSC	TSC	610
26	17	TEC	14C	14C	610
27	97	TEH	03H	03H	610
30	17	TEH	10H	10H	610
30	108	TEC	TSC	TSC	610
31	20	TEH	TEH	TEH	610
31	74	TEH	04H	04H	610
31	74	TEH	08H	08H	610
33	17	TEC	20C	20C	610
33	81	TEC	TSC	TSC	610
34	72	TEC	TSC	TSC	610
35	62	TEC	21C	21C	610
35	76	TEC	TSC	TSC	610
35	91	TEH	04H	04H	610
36	47	TEC	TSC	TSC	610
36	51	TEC	TSC	TSC	610
36	84	TEC	TSC	TSC	610
37	30	TEC	TSC	TSC	610
37	34	TEC	TSC	TSC	610
37	51	TEC	13C	13C	610
37	71	TEC	TSC	TSC	610
37	76	TEC	TSC	TSC	610
40	17	TEC	16C	16C	610
40	73	TEC	TSC	TSC	610
41	28	TEH	10H	10H	610
42	94	TEH	03H	03H	610
43	34	TEH	05H	05H	610
43	62	TEC	21C	21C	610
44	31	TEC	15C	15C	610
46	31	TEC	21C	21C	610

STEAM GENERATOR D

Tube Areas Examined by MRPC at Locations Other Than 01H, 02H, or TSH

ROW	COL	LEG	EXTENT1	EXTENT2	PROBE
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46	43	TEC	21C	21C	610
46	46	TEC	22C	22C	610
46	49	TEC	21C	21C	610
46	64	TEC	22C	22C	610
46	74	TEC	21C	21C	610
46	83	TEC	21C	21C	610
47	33	TEC	21C	21C	610
47	34	TEC	21C	21C	610
47	38	TEC	22C	22C	610
47	39	TEC	22C	22C	610
47	42	TEC	15C	15C	610
47	44	TEC	22C	22C	610
47	49	TEC	21C	21C	610
47	79	TEC	21C	21C	610
47	82	TEC	22C	22C	610
47	87	TEC	22C	22C	610
48	52	TEC	21C	21C	610
48	52	TEC	22C	22C	610
48	62	TEC	22C	22C	610
48	83	TEC	22C	22C	610

APPENDIX E

TUBE AREAS EXAMINED BY ULTRASONIC TESTING

TUBE AREAS EXAMINED BY ULTRASONIC TESTING

Steam Generator	Tube Number	Straight Beam	Angle Beam	Depth	Elevation
A	4-98	X		11%	14C-0.44
A	7-40	X	X		TSH-1.12
A	36-69	X	X	7%	13C-21.29
C	20-42	X	X		TSH-0.23
C	23-44	X	X		TSH-0.33
C	23-76	X	X		TSH-0.43
C	26-50	X	X		TSH-0.17
C	26-55	X	X		TSH-0.11
C	26-58	X	X		TSH-0.20
C	27-113	X	X	23%	01H
C	28-113	X	X	28%	01H+0.64
C	39-37	X	X		02H
C	39-37	X	X		TSH
D	2-37	X	X		TSH-0.05
D	3-116	X			TEC-TSC
D	20-100	X		14%	02H-0.11
D	20-100	X	X		TSH
D	25-58	X	X		TSH-0.05

APPENDIX F

FLAWS WITH TUBE WALL THICKNESS REDUCTION

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GENERATOR ROW COL %TW IND LOCATION

TAPE#

S/G A	4	98	29	ODI	13C	-0.48	110
S/G A	4	98	33	ODI	14C	-0.44	110
S/G A	5	43		MAI	TSH	-1.05	149
S/G A	7	40		MAI	TSH	-1.12	37
S/G A	9	34	13	ODI	14C	+41.00	42
S/G A	9	91	12	ODI	03H	+8.73	57
S/G A	10	54	9	ODI	03H	+34.36	17
S/G A	11	83		SAI	TSH	-0.05	161
S/G A	14	43	16	ODI	14C	+9.09	56
S/G A	14	87	14	ODI	TSC	+6.95	119
S/G A	16	64	9	ODI	17C	+20.44	84
S/G A	17	64	8	ODI	06H	+25.29	84
S/G A	20	36	13	ODI	17C	+23.65	52
S/G A	22	43	9	ODI	20C	+2.05	56
S/G A	22	43	11	ODI	20C	+0.86	56
S/G A	25	39	12	ODI	13C	+30.44	54
S/G A	25	58	4	ODI	23C	+6.03	70
S/G A	27	62	6	ODI	07H	+7.15	84
S/G A	27	65	11	ODI	14C	+14.93	84
S/G A	27	89	15	ODI	TSC	+1.71	102
S/G A	28	62	11	ODI	21C	-0.34	144
S/G A	30	63	7	ODI	05H	+5.17	84
S/G A	31	59	10	ODI	22C	-0.30	144
S/G A	34	107	3	ODI	15C	+8.35	112
S/G A	35	80	14	ODI	09H	+4.69	94
S/G A	35	80	16	ODI	09H	+7.86	94
S/G A	36	92	18	ODI	09H	+6.64	57
S/G A	38	51	34	ODI	15C	+39.43	60
S/G A	41	72	7	ODI	13C	+43.72	86
S/G A	41	97	24	ODI	11C	-0.50	110
S/G A	45	62	4	ODI	07H	+15.05	71
S/G A	46	57	9	ODI	02H	+11.17	123
S/G A	47	30	10	ODI	22C	+0.32	144
S/G B	6	111	12	ODI	05H	+19.41	69
S/G B	8	54	13	ODI	01H	+7.51	19
S/G B	10	117	12	ODI	15C	+20.76	130
S/G B	10	117	16	ODI	05H	+34.51	71
S/G B	11	103		SAI	TSH	-1.16	7
S/G B	18	60	22	ODI	21C	+0.00	74
S/G B	18	61	22	ODI	05H	+25.89	88
S/G B	18	101	14	ODI	04H	+16.39	65
S/G B	19	62	37	ODI	21C	-0.34	88
S/G B	20	58		MAI	TSH	-1.07	37
S/G B	20	60	13	ODI	21C	-0.05	156
S/G B	20	62	8	ODI	21C	-0.31	152
S/G B	20	62	29	ODI	21C	-0.34	88
S/G B	20	63	3	ODI	03H	+17.56	88
S/G B	23	37	12	ODI	09H	+1.52	60
S/G B	23	107	27	ODI	09H	+3.73	67
S/G B	26	64	13	ODI	12C	+12.34	88
S/G B	26	81	15	ODI	AV1	+0.00	108
S/G B	29	23	12	ODI	01H	+5.92	24
S/G B	29	23	13	ODI	TSH	+1.01	24
S/G B	29	23	19	ODI	01H	-0.94	24
S/G B	29	62	2	ODI	15C	+6.54	88
S/G B	29	62	4	ODI	03H	+24.71	88
S/G B	29	62	5	ODI	03H	+27.94	88
S/G B	29	62	6	ODI	03H	+21.19	88
S/G B	30	21	11	ODI	03H	+30.25	22
S/G B	31	20	13	ODI	15C	+15.63	22
S/G B	32	94	6	ODI	08H	+4.71	61
S/G B	35	95	13	ODI	09H	+32.95	61
S/G B	37	52	5	ODI	03H	+31.63	72
S/G B	39	50	12	ODI	06H	+7.20	72
S/G B	41	75	24	ODI	TSH	+3.83	79
S/G B	43	34	11	ODI	05H	+25.06	77

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GENERATOR ROW COL %TW IND LOCATION

TAPE#

S/G B	45	62	24	ODI	AV3	+0.00	82
S/G B	45	62	38	ODI	AV2	+0.00	82
S/G B	46	48	10	ODI	22C	+0.16	156
S/G B	46	76	11	ODI	03H	+23.76	79
S/G C	1	6	11	ODI	09H	+23.29	117
S/G C	1	6	14	ODI	09H	+23.30	129
S/G C	1	69	14	ODI	07H	+1.70	119
S/G C	1	6	28	ODI	07H	+1.76	127
S/G C	2	1	14	ODI	20C	+4.86	46
S/G C	2			SAI	TSH	+0.02	107
S/G C	2	2	10	ODI	22C	+4.45	46
S/G C	2	117	7	ODI	16C	+12.48	120
S/G C	3	1	6	ODI	15C	+35.21	46
S/G C	3	3	17	ODI	03H	+4.92	129
S/G C	3	3	20	ODI	03H	+4.74	117
S/G C	3	12	19	ODI	13C	+8.81	46
S/G C	3	15	10	ODI	13C	+20.37	46
S/G C	3	16	12	ODI	12C	+24.73	44
S/G C	3	25	26	ODI	02H	+24.87	44
S/G C	4	86	19	ODI	15C	+21.87	92
S/G C	5	111	6	ODI	08H	+41.69	57
S/G C	6	16	11	ODI	08H	+27.25	18
S/G C	7	58	13	ODI	03H	+28.30	17
S/G C	7	85	14	ODI	13C	+42.52	97
S/G C	8	5	12	ODI	14C	+1.39	4
S/G C	9	25	9	ODI	04H	+15.70	24
S/G C	9	111	22	ODI	09H	+16.14	57
S/G C	9	115	8	ODI	06H	+18.62	57
S/G C	10	100	14	ODI	06H	+1.41	53
S/G C	10	100	18	ODI	06H	+9.87	53
S/G C	10	100	20	ODI	06H	+14.49	53
S/G C	10	100	20	ODI	09H	+34.51	53
S/G C	10	100	24	ODI	09H	+38.66	53
S/G C	10	100	25	ODI	06H	+30.50	53
S/G C	10	100	33	ODI	06H	+13.23	53
S/G C	11	71	14	ODI	02H	+9.70	119
S/G C	11	71	17	ODI	02H	+9.71	127
S/G C	12	68	15	ODI	02H	+16.69	119
S/G C	12	68	24	ODI	02H	+16.75	125
S/G C	12	88	10	ODI	13C	+10.93	94
S/G C	12	90	18	ODI	15C	+1.11	96
S/G C	12	102	22	ODI	02H	+33.90	53
S/G C	14	47	14	ODI	04H	+32.04	17
S/G C	15	7	15	ODI	15C	+7.77	50
S/G C	15	57	18	ODI	08H	+21.98	17
S/G C	16	13	8	ODI	12C	+4.63	14
S/G C	16	32	18	ODI	12C	+27.21	36
S/G C	17	20	19	ODI	06H	+10.39	18
S/G C	17	97	6	ODI	19C	+2.42	108
S/G C	17	114	16	ODI	07H	+30.05	57
S/G C	18	17	12	ODI	05H	+32.54	18
S/G C	18	47	2	ODI	05H	+12.04	56
S/G C	19	105	29	ODI	08H	+4.83	53
S/G C	20	9	15	ODI	03H	+0.88	10
S/G C	20	42		SCI	TSH	-0.23	159
S/G C	20	101	10	ODI	04H	+11.25	53
S/G C	23	44		SCI	TSH	-0.33	161
S/G C	23	76		SCI	TSH	-0.43	169
S/G C	24	110	14	ODI	09H	+27.71	57
S/G C	24	110	15	ODI	09H	+34.20	57
S/G C	24	110	15	ODI	09H	+38.37	57
S/G C	25	99	15	ODI	08H	+22.72	53
S/G C	26	50		SCI	TSH	-0.18	161
S/G C	26	55		SCI	TSH	-0.22	163
S/G C	26	58		SCI	TSH	-0.20	165
S/G C	27	113	35	ODI	01H	+0.70	57

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GENERATOR ROW COL %TW IND LOCATION

TAPE#

S/G C	27	113	38	ODI	01H	+0.84	143
S/G C	28	113	29	ODI	01H	+0.81	57
S/G C	28	113	32	ODI	01H	+0.77	143
S/G C	29	85	16	ODI	06H	+38.79	97
S/G C	32	30	8	ODI	17C	+31.21	30
S/G C	33	94	15	ODI	16C	+17.53	108
S/G C	34	39	16	ODI	22C	+13.67	40
S/G C	35	34	40	ODI	12C	+18.61	36
S/G C	35	87	16	ODI	09H	+3.85	92
S/G C	35	91	25	ODI	15C	+22.97	106
S/G C	36	24	16	ODI	17C	+29.92	24
S/G C	36	67	12	ODI	17C	+35.53	79
S/G C	36	104	17	ODI	05H	+11.66	53
S/G C	39	30	9	ODI	05H	+35.43	30
S/G C	39	37		SAI	02H	+0.00	25
S/G C	39	37		SAI	02H	+0.05	139
S/G C	39	50	19	ODI	04H	+29.35	117
S/G C	39	50	19	ODI	08H	+32.13	117
S/G C	39	62	5	ODI	08H	+39.02	77
S/G C	40	50	8	ODI	04H	+23.03	61
S/G C	42	68	4	ODI	15C	+16.92	76
S/G C	42	68	5	ODI	17C	+1.93	76
S/G C	42	68	13	ODI	17C	+36.06	76
S/G C	42	102	15	ODI	02H	+8.47	15
S/G C	43	84	11	ODI	21C	+2.99	78
S/G C	43	94	15	ODI	09H	+28.95	15
S/G C	45	82	16	ODI	18C	+14.44	78
S/G C	46	71	23	ODI	10H	+28.79	76
S/G C	48	50	6	ODI	09H	+5.46	61
S/G D	2	37		MAI	TSH	-0.07	149
S/G D	2	37		MAI	TSH	-0.15	237
S/G D	4	37		MAI	TSH	+0.00	151
S/G D	5	93	9	ODI	12C	+17.65	118
S/G D	5	93	15	ODI	12C	+17.53	98
S/G D	6	85	15	ODI	07H	+17.16	79
S/G D	8	9	18	ODI	09H	+35.69	4
S/G D	8	85	22	ODI	09H	+44.14	79
S/G D	9	87	16	ODI	14C	+20.07	79
S/G D	10	73	13	ODI	12C	+40.92	28
S/G D	10	116	20	ODI	09H	+16.10	55
S/G D	12	86	15	ODI	16C	+34.84	79
S/G D	14	26	34	ODI	21C	+4.26	22
S/G D	14	78	10	ODI	16C	+20.63	73
S/G D	19	106	16	ODI	21C	+11.09	106
S/G D	20	54	23	ODI	12C	+39.53	66
S/G D	21	7	11	ODI	06H	+7.95	4
S/G D	22	48	11	ODI	TSH	+27.84	62
S/G D	22	88	10	ODI	06H	+11.45	83
S/G D	23	80		SCI	TSH	-0.01	109
S/G D	23	80		SCI	TSH	-0.53	37
S/G D	23	80		SCI	TSH	-0.77	53
S/G D	23	93	12	ODI	18C	+9.97	98
S/G D	23	108	16	ODI	13C	+21.30	106
S/G D	24	9	10	ODI	03H	+14.50	4
S/G D	24	30	22	ODI	01H	+21.02	24
S/G D	24	96	20	ODI	19C	+3.44	100
S/G D	25	55	15	ODI	15C	+42.79	66
S/G D	25	58		SCI	TSH	-0.06	163
S/G D	25	58		SCI	TSH	-0.23	237
S/G D	25	77	22	ODI	12C	+9.24	73
S/G D	26	26	14	ODI	09H	+17.32	22
S/G D	28	14	14	ODI	05H	+38.52	10
S/G D	28	102	21	ODI	06H	+6.45	173
S/G D	30	55	14	ODI	02H	+6.13	67
S/G D	30	86	15	ODI	04H	+22.05	79
S/G D	30	91	12	ODI	17C	+5.67	98

BWNS TUBAN II (Version 1.0) 09/19/1994 18:53:53

South Texas Project - Unit 1

S/G A,S/G B,S/G C,S/G D

09/93 RFO

21% Random MRPC,Bobbin Coil,Info Only BOBBIN,Info Only MRPC,Selected Tube MRPC

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GENERATOR ROW COL %TW IND LOCATION

TAPE#

S/C D	31	15	6	ODI	20C	+3.71	48
S/G D	31	20		MAI	TEH	+11.52	223
S/G D	35	62	11	ODI	21C	-0.38	130
S/G D	35	62	13	ODI	21C	-0.37	63
S/G D	35	81		MAI	TEH	+11.27	223
S/G D	38	91	18	ODI	19C	+11.01	98
S/G D	39	16	12	ODI	10H	+32.01	10
S/G D	41	23	8	ODI	05H	+40.17	229
S/G D	41	23	11	ODI	05H	+40.21	225
S/G D	43	23	4	ODI	04H	+44.52	225
S/G D	43	38	10	ODI	12C	+37.43	74

Total Indications Found = 209

Total Tubes Found = 168

APPENDIX G
DINGS AND DENTS

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GENERATOR ROW COL IND LOCATION

TAPE#

S/G A	1	111	DNG	09H	+44.71	19
S/G A	1	111	DNG	10H	-1.60	134
S/G A	2	9	DNG	22C	+4.18	38
S/G A	2	54	DNG	04H	+9.07	17
S/G A	2	67	DNG	16C	+10.57	32
S/G A	3	22	DNG	16C	+21.24	38
S/G A	4	10	DNG	13C	+35.77	6
S/G A	4	35	DNG	23C	+2.70	42
S/G A	4	117	DNG	TSC	+6.48	116
S/G A	5	1	DNG	02H	+29.84	2
S/G A	5	1	DNG	02H	+30.63	2
S/G A	5	53	DNG	13C	+30.54	122
S/G A	5	53	DNG	13C	+31.24	122
S/G A	5	56	DNG	13C	+31.76	122
S/G A	5	56	DNG	13C	+32.98	122
S/G A	5	59	DNG	13C	+28.53	124
S/G A	5	59	DNG	13C	+29.35	124
S/G A	5	65	DNG	04H	+14.88	109
S/G A	6	1	DNG	17C	+6.88	2
S/G A	6	2	DNG	15C	+3.36	2
S/G A	6	82	DNT	02H	-0.29	49
S/G A	6	82	DNT	02H	-0.30	98
S/G A	7	49	DNG	13C	+27.97	122
S/G A	7	109	DNG	18C	+2.13	114
S/G A	9	54	DNG	09H	+39.88	17
S/G A	10	23	DNG	07H	+25.11	44
S/G A	10	23	DNG	07H	+25.14	18
S/G A	10	102	DNG	08H	+7.88	63
S/G A	10	104	DNG	08H	+30.60	63
S/G A	10	117	DNG	08H	+6.95	67
S/G A	11	116	DNG	15C	+2.95	116
S/G A	12	61	DNG	16C	+43.59	28
S/G A	12	69	DNG	06H	+2.16	109
S/G A	12	115	DNG	10H	+3.86	116
S/G A	13	5	DNG	08H	+23.42	4
S/G A	13	99	DNT	11C	+0.96	110
S/G A	13	103	DNG	22C	+15.01	112
S/G A	13	105	DNG	01H	+25.96	63
S/G A	13	119	DNT	10H	+0.42	67
S/G A	13	119	DNT	10H	+0.45	116
S/G A	13	119	DNT	10H	-0.30	67
S/G A	13	119	DNT	10H	-0.33	116
S/G A	14	64	DNG	13C	+25.13	28
S/G A	14	67	DNG	08H	+27.53	109
S/G A	14	67	DNG	08H	+28.22	109
S/G A	14	67	DNG	09H	-15.93	129
S/G A	14	67	DNG	09H	-17.11	129
S/G A	14	74	DNT	04H	+0.86	109
S/G A	14	109	DNG	15C	+32.79	114
S/G A	14	118	DNT	10H	+0.42	67
S/G A	14	118	DNT	10H	+0.52	116
S/G A	16	72	DNG	06H	+29.67	90
S/G A	16	97	DNT	11C	+0.44	110
S/G A	16	99	DNT	11C	+0.42	110
S/G A	17	53	DNG	16C	+38.75	60
S/G A	17	62	DNG	10H	+69.93	84
S/G A	18	47	DNG	15C	+8.09	56
S/G A	18	54	DNG	03H	+14.99	62
S/G A	18	91	DNG	02H	+33.42	57
S/G A	18	113	DNG	04H	+28.33	65
S/G A	19	30	DNG	15C	+41.81	24
S/G A	19	31	DNG	14C	+39.91	40
S/G A	19	40	DNG	17C	+10.87	54
S/G A	19	74	DNG	TSH	+28.07	92
S/G A	20	107	DNG	AV3	+5.84	112
S/G A	21	15	DNG	01H	+6.23	10

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S/G A	21	35	DNG	01H	+15.47	42
S/G A	21	35	DNG	TSH	+6.73	42
S/G A	21	43	DNG	04H	+35.41	56
S/G A	21	77	DNG	23C	+3.26	92
S/G A	21	86	DNG	08H	+13.59	100
S/G A	22	25	DNG	16C	+15.06	22
S/G A	22	114	DNG	03H	+17.34	65
S/G A	22	116	DNT	08H	-0.44	67
S/G A	23	8	DNG	12C	+30.48	4
S/G A	23	26	DNG	05H	+17.18	22
S/G A	23	63	DNG	16C	+6.12	84
S/G A	23	72	DNG	08H	+21.62	90
S/G A	23	72	DNG	09H	+5.61	90
S/G A	23	72	DNG	10H	+13.80	90
S/G A	23	72	DNG	TSH	+2.54	90
S/G A	23	75	DNG	14C	+11.00	92
S/G A	23	111	DNG	16C	+8.07	114
S/G A	23	115	DNT	12C	+0.00	116
S/G A	24	14	DNT	20C	-0.24	10
S/G A	24	78	DNG	04H	+30.10	94
S/G A	25	77	DNG	13C	+43.44	94
S/G A	26	57	DNG	09H	+42.98	70
S/G A	26	108	DNG	14C	+20.26	114
S/G A	26	108	DNG	14C	+20.97	114
S/G A	27	13	DNG	09H	+8.25	10
S/G A	27	36	DNG	AV4	+8.36	52
S/G A	27	68	DNG	05H	+6.50	119
S/G A	28	22	DNG	20C	+11.66	18
S/G A	29	56	DNG	12C	+40.23	70
S/G A	29	58	DNG	TSC	+8.20	70
S/G A	29	76	DNG	21C	+9.47	92
S/G A	29	76	DNG	22C	+3.53	92
S/G A	29	76	DNG	22C	+15.45	92
S/G A	29	112	DNG	12C	+0.88	114
S/G A	30	79	DNG	03H	+25.28	94
S/G A	30	102	DNG	17C	+15.44	112
S/G A	31	18	DNG	14C	+19.54	14
S/G A	31	21	DNG	17C	+36.61	18
S/G A	31	21	DNT	17C	+36.71	140
S/G A	31	54	DNG	09H	+41.34	62
S/G A	31	54	DNG	09H	+42.12	62
S/G A	31	77	DNG	AV1	+4.55	94
S/G A	31	82	DNG	AV3	+18.31	98
S/G A	31	109	DNG	17C	+16.55	114
S/G A	32	15	DNG	09H	+34.51	10
S/G A	32	15	DNG	09H	+35.24	10
S/G A	32	15	DNG	09H	+38.71	10
S/G A	32	15	DNG	09H	+39.72	10
S/G A	32	35	DNG	01H	+9.41	42
S/G A	32	35	DNG	01H	+13.87	42
S/G A	32	43	DNG	02H	+25.55	56
S/G A	32	43	DNG	04H	+13.70	56
S/G A	33	47	DNG	04H	+20.60	58
S/G A	33	57	DNG	21C	+13.50	70
S/G A	33	57	DNG	21C	+14.72	70
S/G A	34	17	DNG	09H	+38.35	14
S/G A	34	18	DNG	09H	+37.70	14
S/G A	34	18	DNG	09H	+38.01	14
S/G A	34	18	DNG	09H	+38.18	14
S/G A	34	25	DNG	07H	+34.48	22
S/G A	34	41	DNG	22C	+10.18	54
S/G A	34	42	DNG	13C	+15.62	54
S/G A	34	42	DNG	14C	+0.80	54
S/G A	34	53	DNT	10H	-0.15	60
S/G A	34	53	DNT	11C	+0.13	60
S/G A	34	57	DNG	19C	+7.82	70

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GENERATOR ROW COL IND LOCATION

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S/G A	34	71	DNG	07H	+17.18	90
S/G A	34	84	DNG	06H	+29.49	98
S/G A	34	86	DNG	17C	+40.74	100
S/G A	34	88	DNG	03H	+19.64	102
S/G A	34	90	DNG	09H	+41.28	104
S/G A	34	91	DNG	17C	+23.30	106
S/G A	34	92	DNG	09H	+39.59	57
S/G A	34	92	DNG	09H	+41.64	57
S/G A	34	92	DNG	09H	+42.39	57
S/G A	34	92	DNG	09H	+43.57	57
S/G A	34	92	DNG	10H	-2.16	106
S/G A	34	92	DNG	10H	-3.18	106
S/G A	34	92	DNG	10H	-3.75	106
S/G A	34	92	DNG	10H	-5.25	106
S/G A	34	95	DNG	09H	+36.35	75
S/G A	34	95	DNG	09H	+37.12	75
S/G A	34	95	DNG	10H	-8.53	108
S/G A	34	95	DNG	10H	-9.19	108
S/G A	34	106	DNG	05H	+2.96	63
S/G A	34	106	DNG	06H	+35.49	63
S/G A	35	76	DNG	03H	+17.27	92
S/G A	35	84	DNG	23C	+3.13	98
S/G A	35	84	DNG	23C	+3.83	98
S/G A	35	102	DNT	11C	+0.36	112
S/G A	36	21	DNG	15C	+22.90	18
S/G A	36	65	DNG	12C	+34.44	84
S/G A	36	91	DNG	09H	+42.45	57
S/G A	36	102	DNT	11C	+0.39	112
S/G A	36	106	DNG	09H	+35.81	63
S/G A	36	106	DNG	10H	-10.43	112
S/G A	36	107	DNG	23C	+5.64	112
S/G A	37	42	DNG	21C	+9.19	54
S/G A	37	46	DNG	14C	+43.11	56
S/G A	37	51	DNG	12C	+42.79	60
S/G A	37	91	DNG	10H	-9.97	106
S/G A	37	99	DNG	09H	+31.16	63
S/G A	37	99	DNG	10H	-14.88	110
S/G A	38	32	DNG	09H	+14.48	40
S/G A	38	32	DNG	09H	+22.35	40
S/G A	38	54	DNG	12C	+35.51	62
S/G A	39	80	DNT	11C	+0.46	94
S/G A	40	20	DNG	15C	+22.01	16
S/G A	40	33	DNG	17C	+2.46	76
S/G A	40	97	DNG	15C	+30.11	110
S/G A	41	57	DNG	08H	+19.41	81
S/G A	41	63	DNG	12C	+13.89	78
S/G A	41	78	DNG	12C	+37.51	82
S/G A	41	92	DNG	16C	+25.29	106
S/G A	41	95	DNG	19C	-1.23	108
S/G A	42	19	DNG	16C	+43.41	48
S/G A	42	19	DNT	15C	+0.71	48
S/G A	42	19	DNT	15C	-0.88	48
S/G A	42	38	DNG	09H	+42.36	69
S/G A	42	39	DNG	09H	+42.59	69
S/G A	42	51	DNG	12C	+42.52	78
S/G A	42	52	DNG	12C	+43.38	78
S/G A	42	68	DNG	01H	+6.33	73
S/G A	42	68	DNG	01H	+12.39	73
S/G A	42	68	DNG	01H	+18.54	73
S/G A	42	68	DNG	01H	+24.72	73
S/G A	42	68	DNG	02H	+2.84	73
S/G A	42	68	DNG	02H	+8.99	73
S/G A	42	68	DNG	03H	+34.24	73
S/G A	42	68	DNG	TSH	+3.49	73
S/G A	42	68	DNT	01H	+0.23	73
S/G A	43	27	DNG	03H	+2.95	107

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GENERAL ROW COL IND LOCATION

TAPE#

S/G A	43	36	DNG	02H	+33.48	69
S/G A	43	36	DNG	06H	+12.49	69
S/G A	43	36	DNG	06H	+20.59	69
S/G A	43	36	DNG	06H	+26.93	69
S/G A	43	36	DNG	07H	+25.50	69
S/G A	43	36	DNG	12C	+22.77	76
S/G A	43	62	DNG	09H	+37.89	71
S/G A	43	63	DNG	09H	+31.62	71
S/G A	43	63	DNG	09H	+32.36	71
S/G A	43	63	DNG	10H	+10.72	78
S/G A	43	63	DNG	10H	-11.99	78
S/G A	43	63	DNG	10H	-12.56	78
S/G A	43	64	DNG	10H	+10.35	78
S/G A	43	66	DNG	16C	+4.90	78
S/G A	43	69	DNG	10H	+9.76	73
S/G A	43	69	DNG	10H	+10.54	80
S/G A	43	92	DNG	16C	+38.66	106
S/G A	43	92	DNT	16C	+38.21	142
S/G A	44	38	DNG	09H	+37.87	69
S/G A	44	63	DNG	13C	+24.44	78
S/G A	44	67	DNG	05H	+24.28	73
S/G A	44	67	DNG	06H	+17.13	73
S/G A	44	99	DNG	AV2	+13.92	110
S/G A	44	99	DNG	AV2	+15.97	110
S/G A	45	52	DNG	18C	+13.44	78
S/G A	45	72	DNG	22C	-1.01	86
S/G A	45	98	DNT	11C	+0.24	110
S/G A	46	28	DNG	17C	+11.84	24
S/G A	46	91	DNG	09H	+33.85	19
S/G A	46	91	DNG	10H	-11.11	106
S/G A	47	54	DNG	01H	+16.13	123
S/G A	47	67	DNG	01H	+3.23	73
S/G A	47	68	DNT	01H	+0.64	73
S/G A	47	70	DNG	01H	+4.35	81
S/G A	47	72	DNG	09H	+34.53	81
S/G A	47	72	DNG	10H	-2.90	86
S/G A	47	72	DNG	10H	-11.08	86
S/G A	48	32	DNT	AV3	+0.00	76
S/G A	48	33	DNT	AV2	+0.00	76
S/G A	48	37	DNG	AV2	+2.89	76
S/G A	48	43	DNG	17C	+21.88	76
S/G A	48	62	DNG	15C	+19.69	78
S/G A	48	71	DNG	02H	+29.36	81
S/G A	48	88	DNG	13C	+26.66	82
S/G A	48	89	DNG	20C	+12.04	82
S/G A	48	90	DNG	20C	+11.23	82
S/G A	48	90	DNG	20C	+11.96	82
S/G B	1	44	DNG	22C	+3.20	48
S/G B	1	44	DNG	23C	+7.19	48
S/G B	1	44	DNG	TSC	+8.15	48
S/G B	2	60	DNG	13C	+32.83	144
S/G B	3	33	DNG	09H	+10.38	87
S/G B	3	76	DNG	12C	+36.63	52
S/G B	3	84	DNG	17C	+30.37	52
S/G B	4	41	DNG	21C	+14.91	62
S/G B	4	96	DNG	19C	-7.31	154
S/G B	4	96	DNG	20C	+10.16	118
S/G B	5	88	DNG	10H	+25.27	112
S/G B	5	110	DNG	20C	+16.91	124
S/G B	7	21	DNT	10H	+0.44	22
S/G B	7	21	DNT	11C	+0.44	22
S/G B	7	80	DNT	AV2	-0.50	106
S/G B	8	120	DNG	08H	+11.94	71
S/G B	9	20	DNG	02H	+4.43	22
S/G B	9	34	DNG	23C	+1.39	58
S/G B	9	42	DNG	01H	+18.79	64

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S/G B	9	62	DNG	19C	+15.71	36
S/G B	9	84	DNG	18C	+9.39	110
S/G B	10	2	DNG	02H	+27.65	2
S/G B	10	38	DNG	01H	+5.86	60
S/G B	10	42	DNG	01H	+6.87	64
S/G B	10	100	DNG	10H	+43.02	122
S/G B	11	22	DNT	10H	+0.57	22
S/G B	11	22	DNT	11C	+0.37	22
S/G B	11	31	DNG	07H	+26.19	54
S/G B	12	118	DNG	09H	+26.76	71
S/G B	12	118	DNG	12C	+26.15	130
S/G B	13	62	DNG	12C	+10.07	34
S/G B	13	63	DNG	05H	+37.68	127
S/G B	13	102	DNG	12C	+45.10	122
S/G B	13	102	DNG	AV4	+14.00	159
S/G B	13	102	DNT	10H	+52.37	153
S/G B	14	78	DNG	16C	+44.32	104
S/G B	14	100	DNG	13C	+5.78	122
S/G B	14	116	DNG	09H	+32.68	71
S/G B	14	116	DNG	12C	+33.24	130
S/G B	15	56	DNG	15C	+39.82	142
S/G B	15	101	DNG	19C	+16.15	122
S/G B	16	17	DNG	20C	+11.50	16
S/G B	16	62	DNT	10H	+0.63	88
S/G B	16	66	DNG	02H	+26.61	90
S/G B	17	5	DNG	12C	+27.61	6
S/G B	17	30	DNG	16C	+3.21	30
S/G B	17	62	DNG	AV4	+17.39	88
S/G B	17	63	DNG	05H	+35.78	88
S/G B	17	66	DNG	02H	+11.00	90
S/G B	17	102	DNG	06H	+34.61	65
S/G B	18	28	DNG	03H	+10.92	28
S/G B	18	36	DNG	22C	+1.32	58
S/G B	18	69	DNG	20C	+7.78	92
S/G B	18	96	DNG	13C	+11.38	118
S/G B	18	105	DNG	21C	+11.94	126
S/G B	19	40	DNG	18C	+11.49	62
S/G B	19	40	DNT	17C	-0.51	62
S/G B	19	77	DNG	03H	+17.38	102
S/G B	20	33	DNG	03H	+30.66	54
S/G B	20	63	DNG	TSH	+21.08	88
S/G B	20	95	DNG	19C	+6.39	118
S/G B	20	110	DNG	01H	+24.69	67
S/G B	21	19	DNG	14C	+43.23	22
S/G B	21	19	DNG	16C	+30.52	22
S/G B	21	34	DNG	12C	+21.23	56
S/G B	21	36	DNG	06H	+34.94	58
S/G B	21	105	DNG	16C	+25.26	126
S/G B	22	5	DNT	11C	+0.10	151
S/G B	22	5	DNT	11C	-0.35	133
S/G B	22	5	DNT	12C	+43.78	153
S/G B	22	5	DNT	14C	-0.29	153
S/G B	22	5	DNT	15C	+44.92	100
S/G B	22	94	DNG	09H	+11.12	61
S/G B	22	102	DNG	03H	+1.21	65
S/G B	22	116	DNT	13C	-0.46	130
S/G B	23	28	DNG	20C	+5.25	28
S/G B	23	28	DNG	20C	+11.37	28
S/G B	23	44	DNG	16C	+42.47	64
S/G B	24	34	DNG	03H	+5.55	56
S/G B	24	38	DNG	18C	+12.87	60
S/G B	24	63	DNG	AV4	+19.56	88
S/G B	25	104	DNG	17C	+36.30	124
S/G B	27	8	DNG	07H	+2.05	8
S/G B	27	20	DNG	17C	+33.13	22
S/G B	27	70	DNG	15C	+44.84	92

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S/G B	27	77	DNG	21C	+8.87	102
S/G B	28	67	DNG	09H	+2.29	92
S/G B	28	70	DNG	09H	+1.69	92
S/G B	28	70	DNG	10H	+18.28	92
S/G B	28	92	DNT	11C	+0.00	116
S/G B	29	14	DNG	TSH	+3.55	14
S/G B	29	24	DNG	12C	+18.42	24
S/G B	29	38	DNG	13C	+18.17	60
S/G B	29	45	DNG	04H	+3.98	64
S/G B	29	71	DNG	09H	+30.52	92
S/G B	29	71	DNG	12C	+35.82	92
S/G B	29	102	DNT	11C	+0.41	122
S/G B	30	65	DNG	02H	+23.38	90
S/G B	30	69	DNG	19C	+13.09	92
S/G B	30	69	DNG	19C	+14.28	92
S/G B	30	69	DNG	19C	+15.72	92
S/G B	30	69	DNG	19C	+17.14	92
S/G B	30	94	DNG	09H	+34.90	61
S/G B	30	94	DNG	12C	+41.43	116
S/G B	30	94	DNG	20C	+15.93	116
S/G B	30	102	DNT	10H	+0.49	122
S/G B	30	102	DNT	11C	+0.36	122
S/G B	31	93	DNG	12C	+41.59	116
S/G B	31	93	DNG	12C	+42.37	116
S/G B	32	18	DNG	09H	+17.95	16
S/G B	32	64	DNG	10H	+4.47	88
S/G B	32	71	DNG	09H	+38.60	92
S/G B	32	71	DNG	09H	+39.40	92
S/G B	32	93	DNG	07H	+38.83	61
S/G B	32	98	DNG	22C	+6.25	118
S/G B	33	17	DNT	22C	-0.23	16
S/G B	33	26	DNG	09H	+36.80	26
S/G B	33	31	DNG	12C	+40.96	54
S/G B	34	26	DNG	09H	+29.66	26
S/G B	34	26	DNG	09H	+30.39	26
S/G B	34	26	DNG	09H	+31.11	26
S/G B	34	34	DNG	03H	+15.64	56
S/G B	34	37	DNG	15C	+42.82	60
S/G B	34	78	DNG	17C	+20.81	104
S/G B	34	102	DNT	10H	+0.54	122
S/G B	34	105	DNG	09H	+27.74	67
S/G B	35	55	DNG	04H	+5.89	72
S/G B	35	63	DNT	18C	-0.03	88
S/G B	35	77	DNG	08H	+43.95	104
S/G B	35	77	DNG	17C	+9.08	104
S/G B	35	105	DNG	12C	+39.64	126
S/G B	35	108	DNG	04H	+25.93	67
S/G B	36	76	DNG	17C	+17.89	94
S/G B	36	76	DNG	23C	+4.38	94
S/G B	36	77	DNG	03H	+14.66	104
S/G B	36	80	DNG	18C	+7.19	106
S/G B	36	89	DNG	03H	+18.27	112
S/G B	36	89	DNG	19C	+16.06	112
S/G B	36	105	DNG	12C	+29.24	126
S/G B	37	24	DNG	04H	+28.80	24
S/G B	37	40	DNG	10H	+13.85	62
S/G B	37	68	DNG	15C	+23.76	92
S/G B	37	68	DNG	15C	+29.96	92
S/G B	37	68	DNG	22C	+2.49	92
S/G B	37	94	DNT	10H	+0.23	61
S/G B	37	94	DNT	10H	+0.26	116
S/G B	37	94	DNT	11C	+0.10	116
S/G B	38	19	DNG	04H	+38.75	22
S/G B	38	20	DNG	09H	+41.13	22
S/G B	38	73	DNG	21C	+8.02	94
S/G B	38	76	DNG	09H	+35.22	94

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S/G B	38	81	DNG	09H	+40.19	108
S/G B	38	81	DNG	09H	+40.77	108
S/G B	38	83	DNG	01H	+10.93	110
S/G B	38	87	DNG	TSH	+1.70	112
S/G B	39	94	DNG	21C	+13.74	116
S/G B	39	102	DNG	12C	+40.29	122
S/G B	40	38	DNG	02H	+16.87	77
S/G B	40	48	DNG	20C	+6.19	80
S/G B	40	49	DNG	23C	+5.44	80
S/G B	40	91	DNG	22C	+14.86	116
S/G B	40	96	DNG	04H	+18.05	21
S/G B	41	18	DNG	05H	+35.85	133
S/G B	41	37	DNG	03H	+30.25	77
S/G B	41	47	DNG	01H	+18.47	75
S/G B	41	53	DNG	02H	+4.82	75
S/G B	41	55	DNG	09H	+38.22	73
S/G B	41	55	DNG	10H	-8.23	80
S/G B	41	69	DNG	10H	+0.48	82
S/G B	41	69	DNG	10H	+0.48	83
S/G B	41	102	DNT	11C	-0.18	122
S/G B	42	49	DNG	10H	+8.04	75
S/G B	42	49	DNG	10H	+9.36	80
S/G B	42	51	DNG	10H	+9.67	80
S/G B	42	58	DNG	12C	+43.50	82
S/G B	42	58	DNG	12C	+44.18	82
S/G B	42	58	DNG	17C	+5.85	82
S/G B	42	68	DNG	10H	+9.38	82
S/G B	42	71	DNG	14C	+43.24	82
S/G B	42	80	DNG	17C	+24.10	86
S/G B	42	102	DNT	16C	+0.46	122
S/G B	43	85	DNT	23C	+0.46	86
S/G B	43	100	DNT	10H	+0.29	21
S/G B	43	100	DNT	10H	+0.46	122
S/G B	43	100	DNT	10H	-0.23	21
S/G B	44	41	DNT	08H	-0.22	75
S/G B	44	42	DNG	12C	+29.13	78
S/G B	44	42	DNG	12C	+29.94	78
S/G B	44	49	DNT	10H	+0.15	80
S/G B	44	54	DNG	22C	+8.77	80
S/G B	44	55	DNG	12C	+39.74	80
S/G B	44	70	DNG	18C	+5.06	82
S/G B	44	98	DNT	22C	-0.21	118
S/G B	45	94	DNG	18C	+2.68	116
S/G B	46	24	DNT	10H	+0.42	133
S/G B	46	24	DNT	10H	+0.58	24
S/G B	46	24	DNT	11C	+0.39	24
S/G B	46	24	DNT	11C	-0.39	24
S/G B	46	63	DNG	11C	-1.02	82
S/G B	46	97	DNG	08H	+43.77	21
S/G B	46	97	DNG	09H	+43.52	21
S/G B	46	97	DNG	09H	+44.08	21
S/G B	46	97	DNG	09H	-0.47	21
S/G B	46	97	DNG	10H	-1.93	118
S/G B	46	97	DNG	10H	-2.73	118
S/G B	47	34	DNG	09H	+41.49	77
S/G B	47	34	DNG	10H	-4.86	78
S/G B	47	42	DNG	12C	+32.07	78
S/G B	47	43	DNG	09H	+32.40	75
S/G B	47	43	DNG	10H	-12.07	78
S/G B	47	50	DNG	01H	+10.43	75
S/G B	47	50	DNG	01H	+11.13	75
S/G B	47	50	DNG	12C	+42.23	80
S/G B	47	59	DNG	16C	+21.23	82
S/G B	47	86	DNG	12C	+35.08	86
S/G B	48	53	DNG	15C	+3.21	80
S/G B	48	65	DNG	04H	+1.48	83

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S/G B	48	74	DNG	TEH	+12.81	123
S/G C	1	9	DNG	04H	+0.94	117
S/G C	1	9	DNT	04H	+0.88	129
S/G C	1	10	DNG	04H	+0.82	129
S/G C	1	10	DNG	04H	+0.86	117
S/G C	1	15	DNG	14C	+38.88	58
S/G C	1	15	DNG	14C	+39.67	58
S/G C	1	43	DNG	03H	+25.17	91
S/G C	1	47	DNG	22C	+0.21	122
S/G C	1	52	DNG	04H	+1.00	19
S/G C	1	62	DNG	08H	+8.02	127
S/G C	1	62	DNG	08H	+8.47	117
S/G C	1	64	DNG	08H	+6.08	127
S/G C	1	64	DNG	08H	+10.05	117
S/G C	1	65	DNG	08H	+7.72	127
S/G C	1	65	DNG	08H	+8.35	127
S/G C	1	65	DNG	13C	+8.58	34
S/G C	2	6	DNG	05H	+3.00	129
S/G C	2	6	DNG	05H	+3.22	117
S/G C	2	64	DNG	06H	+22.74	117
S/G C	2	64	DNG	06H	+23.28	127
S/G C	2	65	DNG	08H	+20.54	127
S/G C	2	65	DNG	08H	+20.94	127
S/G C	2	65	DNG	12C	+15.70	34
S/G C	2	65	DNG	12C	+16.49	34
S/G C	2	65	DNT	12C	-0.40	34
S/G C	2	74	DNG	01H	+4.59	127
S/G C	2	74	DNT	01H	+4.65	121
S/G C	2	112	DNT	10H	+9.16	116
S/G C	2	112	DNT	10H	+9.57	116
S/G C	3	1	DNG	05H	+23.12	117
S/G C	3	1	DNG	05H	+23.23	129
S/G C	3	25	DNG	17C	+42.44	44
S/G C	3	62	DNG	03H	+16.72	117
S/G C	3	79	DNG	13C	+8.10	60
S/G C	4	1	DNG	07H	+3.89	2
S/G C	4	9	DNG	07H	+3.19	10
S/G C	4	72	DNT	05H	-0.37	119
S/G C	4	72	DNT	05H	-0.39	127
S/G C	4	80	DNT	05H	-0.43	85
S/G C	4	109	DNG	07H	+17.15	55
S/G C	4	119	DNT	TSC	+6.96	116
S/G C	4	119	DNT	TSC	+7.59	116
S/G C	4	120	DNT	14C	+2.84	116
S/G C	5	11	DNG	17C	+43.79	10
S/G C	5	16	DNG	10H	+6.74	18
S/G C	5	55	DNG	04H	+21.06	17
S/G C	5	107	DNG	TSC	+1.91	112
S/G C	5	115	DNG	03H	+18.46	57
S/G C	6	5	DNG	14C	+3.03	4
S/G C	6	12	DNT	20C	+0.59	14
S/G C	6	25	DNG	14C	+3.28	24
S/G C	6	48	DNG	18C	+8.43	98
S/G C	6	56	DNG	22C	+6.73	100
S/G C	6	63	DNG	AV4	+6.64	32
S/G C	7	45	DNG	17C	+31.82	54
S/G C	7	88	DNG	21C	+7.63	94
S/G C	7	114	DNG	05H	+2.22	57
S/G C	7	114	DNG	05H	+3.00	57
S/G C	7	115	DNG	05H	+17.46	57
S/G C	7	116	DNG	05H	+3.12	57
S/G C	7	116	DNG	05H	+3.50	57
S/G C	7	119	DNT	14C	+3.01	116
S/G C	7	120	DNT	13C	+27.62	116
S/G C	8	40	DNG	02H	+34.80	42
S/G C	8	116	DNG	05H	+23.87	57

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S/G C	8	116	DNG	05H	+25.35	57
S/G C	8	120	DNG	07H	+43.08	59
S/G C	9	12	DNG	07H	+2.13	14
S/G C	9	12	DNG	07H	+2.89	14
S/G C	9	12	DNG	14C	+3.35	14
S/G C	9	12	DNG	15C	+43.39	14
S/G C	9	12	DNG	15C	+44.15	14
S/G C	9	13	DNG	14C	+41.45	14
S/G C	9	43	DNG	04H	+2.22	52
S/G C	9	43	DNG	04H	+3.19	52
S/G C	9	43	DNG	04H	+3.63	52
S/G C	9	43	DNG	19C	+4.33	52
S/G C	9	49	DNG	17C	+17.80	98
S/G C	9	74	DNG	12C	+9.63	32
S/G C	9	74	DNG	12C	+10.59	32
S/G C	9	100	DNG	12C	+10.42	110
S/G C	9	104	DNG	10H	+10.64	112
S/G C	9	106	DNG	10H	+10.34	112
S/G C	9	107	DNG	10H	+10.77	53
S/G C	9	107	DNG	10H	+10.80	112
S/G C	9	107	DNG	TSC	+1.90	112
S/G C	9	109	DNG	10H	+10.54	114
S/G C	9	110	DNT	10H	+10.33	114
S/G C	9	111	DNT	10H	+10.74	116
S/G C	9	113	DNT	10H	+11.01	116
S/G C	10	6	DNG	04H	-0.65	48
S/G C	10	9	DNG	20C	+8.74	10
S/G C	10	10	DNG	06H	+9.01	10
S/G C	10	10	DNG	06H	+33.15	10
S/G C	10	32	DNG	15C	+38.68	36
S/G C	10	36	DNG	02H	+6.19	38
S/G C	10	44	DNG	20C	+12.05	52
S/G C	10	70	DNG	16C	+3.89	32
S/G C	10	113	DNG	05H	+34.98	57
S/G C	10	119	DNG	08H	+34.98	59
S/G C	10	119	DNG	08H	+35.70	59
S/G C	10	119	DNT	14C	+4.38	116
S/G C	10	119	DNT	16C	+3.18	116
S/G C	10	119	DNT	17C	+3.24	116
S/G C	11	12	DNG	14C	+8.23	14
S/G C	11	22	DNT	23C	+7.59	24
S/G C	11	40	DNG	17C	+8.52	42
S/G C	11	59	DNG	06H	+33.27	19
S/G C	11	88	DNG	22C	+4.96	94
S/G C	12	12	DNG	20C	+10.98	14
S/G C	12	74	DNG	03H	+11.01	127
S/G C	12	74	DNG	03H	+12.17	127
S/G C	12	74	DNT	03H	+10.51	121
S/G C	12	74	DNT	03H	+11.74	121
S/G C	13	99	DNT	10H	+0.50	53
S/G C	14	3	DNG	03H	+6.20	2
S/G C	14	15	DNG	03H	+30.88	16
S/G C	14	21	DNG	12C	+28.03	50
S/G C	14	62	DNG	13C	+6.08	32
S/G C	14	62	DNG	13C	+7.02	32
S/G C	14	62	DNG	AV1	+12.93	32
S/G C	14	69	DNG	13C	+43.79	32
S/G C	14	93	DNG	08H	+25.36	51
S/G C	14	93	DNG	08H	+36.24	51
S/G C	14	93	DNG	10H	+29.10	106
S/G C	14	93	DNG	13C	+25.55	106
S/G C	14	93	DNG	13C	+26.32	106
S/G C	14	114	DNG	05H	+42.88	57
S/G C	15	102	DNG	04H	+2.93	53
S/G C	15	102	DNG	05H	+3.00	53
S/G C	15	104	DNG	05H	+2.89	53

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S/G C	16	30	DNG	06H	+40.09	30
S/G C	16	30	DNG	08H	+41.24	30
S/G C	16	30	DNT	12C	-0.26	30
S/G C	16	44	DNG	02H	+29.29	52
S/G C	16	108	DNG	09H	+10.95	55
S/G C	17	39	DNG	12C	+19.93	40
S/G C	18	7	DNG	19C	+2.65	50
S/G C	18	58	DNG	01H	+26.16	70
S/G C	18	58	DNG	02H	+6.33	70
S/G C	18	62	DNG	15C	+42.10	77
S/G C	18	62	DNG	15C	+42.93	77
S/G C	18	62	DNG	15C	+44.20	77
S/G C	19	11	DNG	17C	+8.73	14
S/G C	19	98	DNG	13C	+7.42	110
S/G C	19	108	DNG	15C	+37.40	114
S/G C	20	6	DNG	07H	+3.54	48
S/G C	20	6	DNG	07H	+4.09	48
S/G C	20	44	DNG	09H	+23.43	52
S/G C	20	44	DNG	09H	+23.90	52
S/G C	20	48	DNG	17C	+12.96	56
S/G C	20	48	DNG	19C	+13.35	56
S/G C	20	59	DNG	09H	+41.46	70
S/G C	20	78	DNT	20C	+0.93	83
S/G C	20	113	DNG	05H	+11.23	57
S/G C	21	6	DNG	07H	+2.66	48
S/G C	21	6	DNG	07H	+3.45	48
S/G C	21	46	DNT	23C	-0.46	54
S/G C	21	78	DNG	09H	+5.32	83
S/G C	21	78	DNG	09H	+6.05	83
S/G C	21	86	DNG	03H	+11.73	92
S/G C	21	86	DNT	02H	+0.49	92
S/G C	21	87	DNG	22C	+12.44	92
S/G C	22	5	DNG	03H	+33.37	48
S/G C	22	18	DNG	07H	+27.63	18
S/G C	22	41	DNG	08H	+15.41	52
S/G C	22	94	DNG	TSH	+4.25	51
S/G C	22	94	DNG	TSH	+5.25	51
S/G C	22	94	DNG	TSH	+6.48	51
S/G C	22	94	DNG	TSH	+7.33	51
S/G C	22	109	DNT	15C	+10.10	114
S/G C	23	13	DNG	12C	+24.15	50
S/G C	23	40	DNT	10H	-0.52	40
S/G C	23	107	DNG	05H	+11.85	55
S/G C	24	29	DNG	AV1	+13.26	28
S/G C	24	80	DNG	03H	+28.44	83
S/G C	25	20	DNG	02H	+18.26	18
S/G C	25	34	DNG	15C	+22.04	36
S/G C	25	35	DNT	04H	-0.11	38
S/G C	25	45	DNT	AV1	-0.03	54
S/G C	26	63	DNG	19C	+16.78	77
S/G C	27	41	DNG	04H	+32.51	52
S/G C	27	63	DNT	10H	-0.59	77
S/G C	27	80	DNG	04H	+10.44	83
S/G C	28	28	DNT	02H	+23.18	28
S/G C	28	28	DNT	02H	+30.00	28
S/G C	28	28	DNT	06H	+0.99	28
S/G C	28	28	DNT	20C	+12.85	28
S/G C	28	59	DNG	TSC	+3.58	70
S/G C	28	59	DNG	TSC	+4.31	70
S/G C	28	59	DNG	TSH	+9.51	70
S/G C	28	59	DNG	TSH	+10.29	70
S/G C	28	59	DNG	TSH	+15.99	70
S/G C	28	59	DNG	TSH	+16.71	70
S/G C	28	59	DNG	TSH	+17.15	70
S/G C	28	59	DNG	TSH	+17.98	70
S/G C	28	59	DNG	TSH	+18.81	70

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S/G C	28	59	DNG TSH	+21.01	70
S/G C	28	86	DNG 03H	+15.24	92
S/G C	28	93	DNG 19C	+13.01	106
S/G C	29	21	DNG 06H	+0.94	22
S/G C	29	21	DNG 06H	+2.03	22
S/G C	29	21	DNG 06H	+2.77	22
S/G C	29	41	DNG 01H	+3.61	52
S/G C	29	76	DNG 19C	+7.85	81
S/G C	29	95	DNG 20C	+6.51	108
S/G C	29	103	DNG 22C	+10.45	112
S/G C	30	21	DNG 06H	+3.49	22
S/G C	30	23	DNT 12C	+43.25	24
S/G C	30	42	DNG 18C	+13.17	52
S/G C	30	55	DNG 19C	+11.77	66
S/G C	30	57	DNG 14C	+2.45	66
S/G C	30	57	DNG 14C	+3.21	66
S/G C	31	21	DNG 06H	+1.15	22
S/G C	31	21	DNG 06H	+2.53	22
S/G C	31	21	DNG 06H	+3.33	22
S/G C	31	25	DNT 22C	+12.95	24
S/G C	31	31	DNG 04H	+10.44	36
S/G C	31	84	DNG 01H	+15.37	85
S/G C	31	84	DNG 15C	+27.37	85
S/G C	31	86	DNG 02H	+18.49	92
S/G C	31	86	DNG 04H	+1.83	92
S/G C	31	92	DNG 16C	+31.73	106
S/G C	31	99	DNG 17C	+32.88	110
S/G C	31	99	DNT AV4	+0.00	110
S/G C	32	62	DNG 01H	+9.76	77
S/G C	32	69	DNG TSH	+8.37	79
S/G C	33	37	DNG 01H	+9.51	40
S/G C	33	37	DNG 01H	+10.24	40
S/G C	33	37	DNG 23C	+7.28	40
S/G C	33	37	DNT 22C	+0.40	40
S/G C	34	17	DNG 04H	+2.77	18
S/G C	34	33	DNG 06H	+14.44	36
S/G C	34	79	DNG 17C	+10.62	83
S/G C	34	101	DNG 12C	+32.19	110
S/G C	34	106	DNG 02H	+29.53	53
S/G C	34	108	DNG 02H	+29.68	55
S/G C	34	109	DNG 02H	+28.95	57
S/G C	34	109	DNG 02H	+29.69	57
S/G C	34	109	DNT 09H	+0.32	57
S/G C	34	109	DNT 09H	-0.32	57
S/G C	34	109	DNT 20C	+17.17	114
S/G C	35	44	DNT 10H	+0.45	52
S/G C	35	47	DNG 17C	+30.66	56
S/G C	35	63	DNG 12C	+36.09	77
S/G C	35	63	DNG 12C	+36.86	77
S/G C	35	101	DNG 03H	+26.32	53
S/G C	35	107	DNG 23C	+6.76	112
S/G C	35	108	DNT 09H	+0.38	55
S/G C	36	14	DNG 02H	+33.33	16
S/G C	36	23	DNT 08H	+12.61	24
S/G C	36	34	DNT 10H	-0.20	36
S/G C	36	62	DNG 12C	+22.46	77
S/G C	36	99	DNG 14C	+15.89	110
S/G C	36	106	DNG 17C	+11.83	112
S/G C	36	107	DNT 16C	+1.91	130
S/G C	37	42	DNG 22C	+7.52	52
S/G C	37	43	DNG 14C	+1.20	52
S/G C	37	44	DNG 08H	+28.37	52
S/G C	37	44	DNG 08H	+34.40	52
S/G C	37	49	DNG 17C	+17.15	98
S/G C	37	49	DNG 17C	+17.55	104
S/G C	37	69	DNG 12C	+38.57	79

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S/G C	37	74	DNG	04H	+1.79	81
S/G C	37	87	DNG	14C	+3.71	92
S/G C	37	88	DNG	04H	+3.35	92
S/G C	37	97	DNG	05H	+19.59	51
S/G C	37	97	DNG	05H	+21.46	51
S/G C	37	103	DNG	09H	+38.80	53
S/G C	37	106	DNT	03H	+0.40	53
S/G C	38	44	DNG	14C	+1.18	136
S/G C	38	44	DNG	14C	+1.20	52
S/G C	38	71	DNG	20C	+16.02	81
S/G C	38	90	DNG	22C	+10.41	94
S/G C	38	103	DNG	TSH	+3.89	53
S/G C	39	21	DNG	12C	+37.28	22
S/G C	39	44	DNG	17C	+3.16	52
S/G C	39	44	DNG	20C	+11.66	52
S/G C	39	44	DNT	15C	+0.61	52
S/G C	39	56	DNG	15C	+43.36	66
S/G C	39	88	DNG	17C	+1.18	92
S/G C	39	88	DNG	17C	+1.98	92
S/G C	39	88	DNG	17C	+2.01	92
S/G C	39	88	DNG	17C	+2.81	92
S/G C	39	88	DNG	17C	+40.27	92
S/G C	39	88	DNG	17C	+41.76	92
S/G C	39	104	DNG	05H	+1.02	53
S/G C	39	105	DNG	06H	+37.49	53
S/G C	39	105	DNG	06H	+38.22	53
S/G C	39	105	DNG	06H	+38.76	53
S/G C	40	27	DNG	12C	+30.29	26
S/G C	40	47	DNG	09H	+38.97	61
S/G C	40	80	DNG	07H	+35.99	67
S/G C	41	21	DNG	06H	+3.16	93
S/G C	41	50	DNG	12C	+39.18	74
S/G C	41	74	DNG	10H	+9.96	67
S/G C	41	74	DNG	14C	+3.45	78
S/G C	41	75	DNG	10H	+9.02	78
S/G C	41	75	DNG	10H	+9.08	67
S/G C	41	77	DNG	10H	+8.73	67
S/G C	41	77	DNG	10H	+9.49	78
S/G C	41	81	DNG	10H	+9.23	67
S/G C	41	81	DNG	10H	+9.36	78
S/G C	41	82	DNG	10H	+9.37	78
S/G C	41	82	DNG	10H	+9.52	67
S/G C	41	82	DNG	14C	+3.75	78
S/G C	41	82	DNG	22C	+1.68	78
S/G C	41	83	DNG	AV4	+24.57	78
S/G C	41	84	DNG	AV4	+24.32	78
S/G C	41	85	DNG	10H	+8.90	67
S/G C	41	85	DNG	10H	+9.09	78
S/G C	41	86	DNG	03H	+6.49	67
S/G C	41	86	DNG	10H	+7.82	67
S/G C	41	86	DNG	10H	+9.18	78
S/G C	41	87	DNG	10H	+8.65	67
S/G C	41	87	DNG	10H	+9.72	78
S/G C	41	88	DNG	10H	+10.28	67
S/G C	41	88	DNG	10H	+10.53	78
S/G C	41	88	DNT	11C	-0.17	78
S/G C	41	89	DNG	10H	+8.31	67
S/G C	41	89	DNG	10H	+8.80	78
S/G C	41	90	DNG	10H	+9.04	67
S/G C	41	90	DNG	10H	+10.26	78
S/G C	41	91	DNG	10H	+9.65	106
S/G C	41	92	DNG	10H	+9.94	106
S/G C	41	93	DNG	10H	+10.05	106
S/G C	41	94	DNG	10H	+9.37	108
S/G C	41	95	DNG	10H	+9.32	108
S/G C	41	96	DNG	10H	+9.34	108

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S/G C	41	97	DNG	10H	+9.98	110
S/G C	41	98	DNG	10H	+9.75	110
S/G C	41	99	DNG	10H	+9.84	110
S/G C	41	102	DNG	10H	+9.40	110
S/G C	41	103	DNT	10H	+9.05	135
S/G C	41	103	DNT	12C	+44.23	135
S/G C	41	103	DNT	16C	+1.44	130
S/G C	42	19	DNG	05H	+0.43	93
S/G C	42	20	DNG	05H	+0.97	93
S/G C	42	21	DNG	02H	+28.79	93
S/G C	42	21	DNG	02H	+29.66	93
S/G C	42	33	DNG	08H	+21.68	61
S/G C	42	57	DNG	20C	+7.63	74
S/G C	42	58	DNG	14C	+20.95	74
S/G C	42	68	DNT	11C	+0.40	76
S/G C	42	102	DNT	15C	-0.29	110
S/G C	43	21	DNG	06H	+3.15	93
S/G C	43	31	DNG	09H	+40.23	61
S/G C	43	32	DNG	16C	+41.32	72
S/G C	43	32	DNG	16C	+42.55	72
S/G C	43	54	DNG	12C	+36.14	74
S/G C	43	54	DNG	12C	+36.83	74
S/G C	43	54	DNG	12C	+39.44	74
S/G C	43	55	DNG	14C	+3.14	74
S/G C	43	64	DNG	12C	+37.52	74
S/G C	43	66	DNG	09H	+33.86	67
S/G C	43	66	DNG	12C	+36.60	74
S/G C	43	69	DNG	01H	+24.49	67
S/G C	43	71	DNG	TSH	+2.79	67
S/G C	43	71	DNG	TSH	+6.14	67
S/G C	43	71	DNG	TSH	+6.98	67
S/G C	43	71	DNG	09H	+35.87 to +*	67
S/G C	43	84	DNG	06H	+32.10	67
S/G C	43	89	DNT	10H	+0.12	67
S/G C	43	89	DNT	10H	+0.24	104
S/G C	43	95	DNG	22C	+3.69	108
S/G C	43	99	DNG	21C	+16.03	110
S/G C	44	22	DNG	06H	+41.27	93
S/G C	44	22	DNG	16C	+34.29	22
S/G C	44	22	DNT	07H	+0.45	93
S/G C	44	22	DNT	07H	-0.42	93
S/G C	44	41	DNG	12C	+44.48	72
S/G C	44	41	DNT	11C	-0.32	72
S/G C	44	45	DNG	09H	+31.88	61
S/G C	44	57	DNG	16C	+42.80	74
S/G C	44	58	DNG	16C	+22.53	74
S/G C	44	58	DNG	16C	+23.23	74
S/G C	44	58	DNG	16C	+24.04	74
S/G C	44	71	DNG	09H	+36.39	67
S/G C	44	71	DNG	12C	+34.58	76
S/G C	44	71	DNG	12C	+35.27	76
S/G C	44	83	DNG	12C	+44.42	78
S/G C	44	83	DNT	11C	-0.35	78
S/G C	44	86	DNT	11C	+0.46	78
S/G C	45	29	DNG	09H	+36.41	73
S/G C	45	29	DNG	10H	-9.36	30
S/G C	45	29	DNG	10H	-12.73	30
S/G C	45	32	DNG	10H	+0.93	72
S/G C	45	32	DNT	10H	+0.89	61
S/G C	45	34	DNG	09H	+40.48	61
S/G C	45	39	DNT	11C	-0.29	72
S/G C	45	44	DNG	06H	+3.26	61
S/G C	45	57	DNG	15C	+10.65	74
S/G C	45	65	DNG	12C	+38.78	74
S/G C	45	68	DNT	10H	+0.37	67
S/G C	45	68	DNT	10H	+0.43	76

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S/G C	45	71	DNG	09H	+40.68	67
S/G C	45	74	DNT	11C	+0.20	78
S/G C	45	74	DNT	11C	-0.64	78
S/G C	45	77	DNG	01H	+0.46	67
S/G C	45	77	DNT	01H	-0.15	67
S/G C	45	85	DNG	03H	+21.86	67
S/G C	45	86	DNG	09H	+39.73	67
S/G C	45	93	DNT	11C	+0.41	106
S/G C	45	93	DNT	11C	-0.30	106
S/G C	45	94	DNT	11C	+0.34	108
S/G C	45	96	DNG	09H	+37.47	15
S/G C	45	96	DNG	09H	+38.07	15
S/G C	45	97	DNG	09H	+35.06	15
S/G C	45	97	DNG	09H	+36.96	15
S/G C	45	97	DNG	09H	+37.83	15
S/G C	45	97	DNG	09H	+38.46	15
S/G C	45	97	DNG	09H	+39.18	15
S/G C	46	25	DNG	07H	+34.65	93
S/G C	46	54	DNG	12C	+31.73	74
S/G C	46	54	DNG	12C	+32.43	74
S/G C	46	54	DNG	12C	+35.92	74
S/G C	46	90	DNT	11C	+0.38	78
S/G C	46	90	DNT	12C	+44.60	78
S/G C	46	97	DNG	02H	+29.67	15
S/G C	46	97	DNG	07H	+2.58	15
S/G C	46	97	DNG	07H	+3.22	15
S/G C	46	97	DNG	12C	+3.80	110
S/G C	46	97	DNG	12C	+9.28	110
S/G C	47	30	DNT	AV4	+36.39	30
S/G C	47	51	DNG	09H	+34.06	61
S/G C	47	78	DNG	TSH	+5.88	67
S/G C	47	83	DNG	01H	+20.75	67
S/G C	47	88	DNG	15C	+44.23	78
S/G C	48	33	DNG	07H	+39.91	61
S/G C	48	52	DNG	14C	+18.40	74
S/G C	48	53	DNG	03H	+3.48	61
S/G C	48	55	DNG	09H	+37.44	61
S/G C	48	56	DNG	09H	+35.01	61
S/G C	48	56	DNG	09H	+35.61	61
S/G C	48	56	DNG	10H	-9.18	74
S/G C	48	56	DNG	10H	-9.74	74
S/G C	48	56	DNT	10H	+0.54	61
S/G C	48	56	DNT	10H	+0.67	74
S/G C	48	69	DNG	12C	+35.91	76
S/G C	48	70	DNG	09H	+39.23	67
S/G C	48	70	DNG	09H	+40.16	67
S/G C	48	70	DNG	12C	+36.68	76
S/G C	48	79	DNG	12C	+37.29	78
S/G C	48	79	DNG	12C	+37.96	78
S/G C	48	79	DNG	20C	+1.22	78
S/G C	48	86	DNT	11C	+0.00	78
S/G C	48	87	DNT	11C	+0.00	78
S/G D	1	95	DNG	18C	+4.41	112
S/G D	2	6	DNG	03H	+10.21	225
S/G D	2	13	DNG	15C	+14.00	32
S/G D	2	49	DNG	17C	+1.66	114
S/G D	2	116	DNG	09H	+38.10	19
S/G D	3	11	DNG	04H	+40.55	225
S/G D	3	42	DNG	04H	+34.79	175
S/G D	3	101	DNG	15C	+33.76	108
S/G D	3	102	DNG	11C	+27.68	108
S/G D	3	103	DNG	17C	+35.91	108
S/G D	4	79	DNG	18C	+15.77	73
S/G D	4	80	DNG	10H	+14.25	75
S/G D	4	97	DNG	18C	+13.39	100
S/G D	5	37	DNG	15C	+24.65	54

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S/G D	5	37	DNG	18C	+9.33	54
S/G D	6	49	DNG	14C	+29.47	96
S/G D	6	68	DNG	10H	+4.85	28
S/G D	6	117	DNG	02H	+3.96	55
S/G D	7	18	DNT	08H	+41.08	14
S/G D	7	28	DNG	08H	+28.68	24
S/G D	7	28	DNG	08H	+29.44	24
S/G D	7	33	DNG	02H	+8.11	50
S/G D	7	34	DNG	22C	+0.76	52
S/G D	7	34	DNG	22C	+2.02	52
S/G D	7	37	DNG	22C	+7.91	54
S/G D	7	62	DNG	10H	+33.67	28
S/G D	7	67	DNG	10H	+34.04	28
S/G D	7	67	DNT	02H	+0.00	227
S/G D	7	94	DNG	14C	+25.82	100
S/G D	7	113	DNG	23C	+8.67	106
S/G D	8	117	DNG	09H	+27.50	55
S/G D	8	117	DNG	09H	+28.25	55
S/G D	8	117	DNG	12C	+27.18	108
S/G D	8	117	DNG	12C	+27.86	108
S/G D	8	118	DNG	12C	+30.81	108
S/G D	8	118	DNG	12C	+31.51	108
S/G D	9	100	DNG	12C	+29.47	102
S/G D	10	73	DNG	16C	+19.89	28
S/G D	10	92	DNG	01H	+26.15	45
S/G D	10	92	DNG	01H	+26.88	45
S/G D	10	92	DNG	02H	+7.70	45
S/G D	10	92	DNG	02H	+8.43	45
S/G D	11	22	DNG	TSC	+1.61	20
S/G D	11	22	DNG	TSC	+1.62	18
S/G D	11	22	DNG	TSC	+7.50	20
S/G D	11	22	DNG	TSC	+7.76	18
S/G D	11	111	DNG	16C	+7.93	106
S/G D	12	2	DNG	02H	+29.27	2
S/G D	12	9	DNG	13C	+15.01	4
S/G D	13	63	DNG	10H	+5.03	28
S/G D	13	63	DNG	10H	+16.51	28
S/G D	13	63	DNG	10H	+22.32	28
S/G D	13	63	DNT	AV4	+0.00	28
S/G D	13	80	DNG	AV4	+13.66	75
S/G D	13	90	DNG	17C	+20.12	85
S/G D	13	106	DNG	03H	+18.49	49
S/G D	13	111	DNG	09H	+28.91	77
S/G D	14	16	DNG	10H	+30.07	10
S/G D	14	71	DNG	03H	+31.58	227
S/G D	14	71	DNG	07H	+40.87	227
S/G D	14	71	DNG	08H	+13.20	227
S/G D	14	76	DNG	02H	+25.33	73
S/G D	14	78	DNG	AV4	+13.30	73
S/G D	14	80	DNG	TSC	+4.47	75
S/G D	14	81	DNG	TEC	+21.38	75
S/G D	14	98	DNG	21C	+3.25	102
S/G D	15	51	DNG	14C	+17.75	96
S/G D	16	34	DNG	04H	+39.01	89
S/G D	16	89	DNG	17C	+42.90	83
S/G D	16	89	DNG	22C	+16.43	83
S/G D	17	75	DNG	17C	+26.06	71
S/G D	17	106	DNG	16C	+1.41	106
S/G D	17	106	DNG	16C	+7.27	106
S/G D	17	106	DNG	16C	+13.24	106
S/G D	17	106	DNG	16C	+19.05	106
S/G D	17	106	DNG	17C	+29.34	106
S/G D	17	106	DNG	17C	+41.07	106
S/G D	17	106	DNG	21C	+13.43	106
S/G D	18	28	DNT	03H	+29.73	24
S/G D	18	31	DNG	TSH	+0.00	50

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S/G D	18	32	DNG	09H	+2.15	50
S/G D	18	46	DNG	04H	+36.89	62
S/G D	18	51	DNG	19C	+8.28	62
S/G D	18	81	DNG	07H	+37.01	75
S/G D	18	102	DNG	14C	+5.85	102
S/G D	19	39	DNG	09H	+26.94	58
S/G D	19	54	DNG	05H	+15.72	66
S/G D	19	73	DNG	02H	+2.31	69
S/G D	19	73	DNG	02H	+3.04	69
S/G D	19	73	DNG	02H	+5.10	69
S/G D	19	73	DNG	02H	+5.80	69
S/G D	19	73	DNG	02H	+6.63	69
S/G D	19	73	DNG	02H	+7.47	69
S/G D	19	73	DNG	02H	+8.30	69
S/G D	20	72	DNG	TSH	+15.36	69
S/G D	20	77	DNT	10H	+0.81	73
S/G D	20	102	DNT	11C	+0.29	102
S/G D	20	114	DNG	12C	+14.78	108
S/G D	21	30	DNG	05H	+33.77	75
S/G D	21	80	DNG	05H	+39.81	75
S/G D	21	81	DNG	13C	+0.96	75
S/G D	21	102	DNT	11C	+0.26	102
S/G D	22	74	DNG	08H	+42.28	69
S/G D	22	102	DNG	12C	+4.37	102
S/G D	22	116	DNG	12C	+43.55	108
S/G D	23	6	DNG	18C	+10.67	4
S/G D	23	31	DNG	02H	+5.77	50
S/G D	23	38	DNG	03H	+10.36	56
S/G D	23	50	DNG	23C	+2.87	62
S/G D	23	75	DNG	08H	+14.43	71
S/G D	24	59	DNG	02H	+26.99	68
S/G D	24	71	DNG	14C	+15.21	69
S/G D	24	87	DNG	TSH	+5.22	83
S/G D	25	21	DNG	09H	+33.06	16
S/G D	25	26	DNG	10H	+13.90	22
S/G D	25	81	DNG	14C	+27.24	75
S/G D	25	106	DNG	23C	+3.93	106
S/G D	26	54	DNG	03H	+20.83	66
S/G D	26	64	DNG	06H	+41.03	67
S/G D	26	103	DNG	17C	+12.31	102
S/G D	26	104	DNG	13C	+12.23	102
S/G D	26	104	DNG	14C	+39.08	102
S/G D	27	68	DNG	17C	+14.76	69
S/G D	27	72	DNG	18C	+2.65	69
S/G D	27	102	DNT	01H	-0.24	173
S/G D	27	106	DNG	04H	+13.36	49
S/G D	28	10	DNG	08H	+2.56	4
S/G D	28	22	DNG	17C	+10.96	18
S/G D	28	78	DNG	06H	+36.77	73
S/G D	28	110	DNG	09H	+6.90	49
S/G D	29	74	DNG	07H	+33.95	69
S/G D	30	47	DNG	22C	+13.31	62
S/G D	31	72	DNG	20C	+3.41	69
S/G D	31	78	DNG	17C	+1.81	73
S/G D	31	78	DNG	AV3	+8.85	73
S/G D	31	78	DNG	AV3	+9.52	73
S/G D	31	78	DNG	AV3	+10.75	73
S/G D	31	78	DNG	AV3	+11.63	73
S/G D	31	79	DNG	03H	+24.51	73
S/G D	31	82	DNG	05H	+24.53	75
S/G D	31	111	DNG	13C	+41.78	106
S/G D	32	33	DNG	18C	+14.27	50
S/G D	32	80	DNG	18C	+4.79	75
S/G D	32	84	DNG	18C	+4.79	79
S/G D	32	105	DNG	07H	+40.58	49
S/G D	33	18	DNG	20C	+6.70	12

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S/G D	33	65	DNG	04H	+7.00	67
S/G D	33	75	DNG	18C	+4.28	73
S/G D	33	91	DNG	AV2	+3.32	98
S/G D	34	26	DNG	02H	+28.23	22
S/G D	34	41	DNG	17C	+36.86	58
S/G D	34	41	DNG	17C	+38.31	58
S/G D	34	41	DNG	17C	+39.38	58
S/G D	34	57	DNG	23C	+4.54	66
S/G D	34	100	DNG	12C	+29.10	102
S/G D	34	100	DNG	12C	+29.87	102
S/G D	35	33	DNG	06H	+36.67	92
S/G D	35	33	DNG	12C	+22.49	92
S/G D	35	38	DNG	08H	+28.36	56
S/G D	35	45	DNG	16C	+42.08	62
S/G D	35	54	DNG	09H	+40.89	66
S/G D	35	54	DNG	09H	+41.57	66
S/G D	35	58	DNG	09H	+40.58	66
S/G D	35	58	DNG	09H	+41.14	66
S/G D	35	59	DNG	09H	+38.89	68
S/G D	35	59	DNG	09H	+39.48	68
S/G D	35	62	DNG	03H	+11.81	63
S/G D	35	70	DNG	09H	+37.81	69
S/G D	35	77	DNG	10H	+3.52	73
S/G D	35	100	DNG	12C	+34.51	102
S/G D	35	100	DNG	12C	+35.07	102
S/G D	35	101	DNG	12C	+37.88	102
S/G D	36	30	DNT	09H	+6.92	24
S/G D	36	44	DNG	17C	+19.67	60
S/G D	36	47	DNG	09H	+40.62	62
S/G D	36	47	DNG	17C	+1.91	62
S/G D	36	70	DNG	17C	+22.88	69
S/G D	36	100	DNG	12C	+43.76	102
S/G D	37	19	DNG	06H	+27.84	48
S/G D	37	27	DNG	22C	+2.82	22
S/G D	37	36	DNG	12C	+14.36	54
S/G D	37	55	DNG	05H	+1.02	66
S/G D	37	59	DNG	08H	+42.74	68
S/G D	37	77	DNG	19C	+16.02	73
S/G D	37	79	DNG	12C	+32.28	73
S/G D	37	84	DNG	14C	+6.26	79
S/G D	37	85	DNG	01H	+10.63	79
S/G D	37	85	DNG	01H	+11.27	79
S/G D	37	85	DNG	05H	+3.33	79
S/G D	37	85	DNG	06H	+2.20	79
S/G D	37	85	DNG	06H	+2.85	79
S/G D	37	86	DNG	18C	+1.59	79
S/G D	37	94	DNG	14C	+21.46	98
S/G D	37	94	DNG	16C	+11.79	98
S/G D	37	94	DNG	20C	+12.26	98
S/G D	37	98	DNG	03H	+8.09	47
S/G D	38	21	DNG	23C	+4.43	18
S/G D	38	21	DNG	TSC	+4.35	18
S/G D	38	21	DNG	TSC	+5.12	18
S/G D	38	54	DNG	09H	+17.90	66
S/G D	38	54	DNG	09H	+18.61	66
S/G D	38	54	DNG	09H	+23.86	66
S/G D	38	54	DNG	09H	+24.54	66
S/G D	38	54	DNG	12C	+44.71	66
S/G D	38	96	DNT	18C	+0.66	100
S/G D	39	32	DNG	08H	+7.89	57
S/G D	39	32	DNG	08H	+7.90	50
S/G D	39	32	DNG	08H	+39.20	50
S/G D	39	32	DNG	08H	+39.35	50
S/G D	39	32	DNG	17C	+34.92	50
S/G D	39	52	DNG	01H	+10.57	64
S/G D	39	52	DNG	01H	+11.42	64

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S/G D	39	77	DNG	17C	+15.17	73
S/G D	39	77	DNG	19C	+16.33	73
S/G D	39	81	DNG	15C	+27.47	75
S/G D	39	92	DNG	09H	+38.40	45
S/G D	39	93	DNG	22C	+11.26	98
S/G D	39	101	DNG	14C	+25.51	102
S/G D	39	104	DNG	01H	+26.86	77
S/G D	39	104	DNG	TSH	+4.92	77
S/G D	40	25	DNG	06H	+5.32	229
S/G D	40	25	DNG	06H	+5.39	225
S/G D	40	77	DNG	22C	+1.50	80
S/G D	40	87	DNG	01H	+1.96	61
S/G D	40	87	DNG	12C	+4.92	80
S/G D	40	87	DNG	TSH	+1.99	61
S/G D	40	87	DNG	TSH	+2.82	61
S/G D	40	91	DNG	13C	+5.01	98
S/G D	40	91	DNG	21C	+5.92	98
S/G D	40	94	DNG	12C	+2.46	98
S/G D	40	104	DNG	AV1	+27.30	102
S/G D	41	19	DNG	10H	+10.45	14
S/G D	41	20	DNG	09H	+38.59	14
S/G D	41	20	DNG	09H	+38.91	227
S/G D	41	20	DNG	09H	+39.32	14
S/G D	41	20	DNG	09H	+39.68	227
S/G D	41	20	DNG	09H	+42.42	14
S/G D	41	20	DNG	09H	+42.82	227
S/G D	41	21	DNG	09H	+39.61	225
S/G D	41	21	DNG	09H	+39.66	229
S/G D	41	21	DNG	09H	+40.13	229
S/G D	41	21	DNG	09H	+40.17	225
S/G D	41	22	DNG	10H	+10.56	48
S/G D	41	23	DNG	10H	+9.36	20
S/G D	41	28	DNG	10H	+8.51	24
S/G D	41	31	DNG	10H	+8.72	74
S/G D	41	39	DNG	09H	+37.84	57
S/G D	41	39	DNG	10H	-7.17	74
S/G D	41	71	DNG	12C	+12.73	78
S/G D	41	83	DNG	18C	+10.09	80
S/G D	41	85	DNG	07H	+22.28	80
S/G D	41	85	DNG	07H	+22.69	61
S/G D	41	100	DNG	12C	+31.16	102
S/G D	41	100	DNG	12C	+32.86	102
S/G D	41	100	DNG	12C	+37.86	102
S/G D	42	19	DNG	AV2	+0.85	116
S/G D	42	19	DNG	AV2	+0.85	225
S/G D	42	19	DNT	12C	+0.00	116
S/G D	42	21	DNT	10H	+0.49	18
S/G D	42	27	DNG	07H	+36.42	225
S/G D	42	27	DNG	07H	+36.44	229
S/G D	42	32	DNG	09H	+40.44	57
S/G D	42	32	DNG	10H	-5.07	74
S/G D	42	32	DNG	AV1	+0.83	74
S/G D	42	32	DNG	AV1	+0.91	57
S/G D	42	32	DNG	AV1	+5.99	57
S/G D	42	32	DNG	AV1	+6.01	74
S/G D	42	32	DNG	AV1	+9.66	57
S/G D	42	32	DNG	AV1	+9.94	74
S/G D	42	34	DNG	09H	+40.85	57
S/G D	42	36	DNG	09H	+40.88	57
S/G D	42	38	DNG	09H	+39.38	57
S/G D	42	40	DNG	09H	+40.27	57
S/G D	42	41	DNG	09H	+40.56	57
S/G D	42	45	DNG	09H	+40.48	59
S/G D	42	78	DNG	02H	+11.66	61
S/G D	42	81	DNG	12C	+36.39	80
S/G D	42	87	DNG	10H	+25.77	80

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S/G D	42	87	DNG	10H	+26.39	61
S/G D	42	87	DNG	10H	+30.11	80
S/G D	42	87	DNG	10H	+30.93	61
S/G D	42	87	DNG	12C	+36.12	80
S/G D	42	87	DNG	12C	+36.84	80
S/G D	42	87	DNG	AV1	+0.86	80
S/G D	42	87	DNG	AV1	+0.89	61
S/G D	42	92	DNG	AV1	+27.49	98
S/G D	42	100	DNG	12C	+28.00	102
S/G D	42	100	DNG	12C	+35.25	102
S/G D	42	100	DNG	12C	+36.55	102
S/G D	42	102	DNT	10H	+0.00	102
S/G D	42	102	DNT	10H	-0.41	19
S/G D	43	30	DNG	05H	+28.92	225
S/G D	43	30	DNG	05H	+29.01	229
S/G D	43	42	DNG	12C	+42.62	74
S/G D	43	42	DNG	12C	+43.45	74
S/G D	43	47	DNG	09H	+12.72	59
S/G D	43	55	DNG	12C	+36.53	76
S/G D	43	55	DNG	12C	+37.40	76
S/G D	43	56	DNG	12C	+38.84	76
S/G D	43	57	DNG	12C	+39.85	76
S/G D	43	57	DNG	12C	+40.61	76
S/G D	43	59	DNG	12C	+35.02	76
S/G D	43	65	DNG	12C	+40.23	76
S/G D	43	68	DNG	09H	+39.54	61
S/G D	43	78	DNG	04H	+6.49	61
S/G D	43	83	DNG	AV1	+1.97	61
S/G D	43	83	DNG	AV1	+2.21	80
S/G D	43	83	DNG	AV1	+7.06	61
S/G D	43	83	DNG	AV1	+7.43	80
S/G D	43	83	DNG	AV1	+11.87	80
S/G D	43	83	DNG	AV1	+11.98	61
S/G D	43	83	DNG	AV1	+16.61	61
S/G D	43	83	DNG	AV1	+16.66	80
S/G D	43	83	DNG	AV1	+21.04	80
S/G D	43	83	DNG	AV1	+21.26	61
S/G D	43	83	DNG	AV1	+25.92	80
S/G D	43	83	DNG	AV2	+0.36	61
S/G D	43	83	DNG	AV2	+1.06	80
S/G D	43	83	DNG	AV2	+11.65	61
S/G D	43	83	DNG	AV2	+13.13	80
S/G D	43	83	DNG	AV2	+19.29	61
S/G D	43	83	DNG	AV2	+21.79	80
S/G D	43	83	DNG	AV3	+2.26	80
S/G D	43	83	DNG	AV3	+4.47	80
S/G D	43	83	DNG	AV3	+5.28	80
S/G D	43	83	DNG	AV3	+7.08	80
S/G D	43	83	DNG	AV3	+13.10	80
S/G D	43	83	DNG	AV3	+18.46	80
S/G D	43	88	DNG	17C	+17.53	80
S/G D	43	100	DNG	20C	+12.29	102
S/G D	44	30	DNT	12C	+44.15	24
S/G D	44	32	DNG	07H	+37.50	57
S/G D	44	34	DNG	07H	+36.77	57
S/G D	44	36	DNG	10H	+17.11	57
S/G D	44	50	DNG	09H	+14.51	59
S/G D	44	56	DNG	AV4	+5.69	76
S/G D	44	56	DNG	AV4	+15.68	76
S/G D	44	56	DNT	10H	+0.08	59
S/G D	44	56	DNT	10H	+0.53	76
S/G D	44	56	DNT	10H	+0.60	59
S/G D	44	56	DNT	10H	-0.15	76
S/G D	44	74	DNG	05H	+28.60	61
S/G D	44	77	DNG	TSH	+2.21	61
S/G D	44	77	DNG	TSH	+3.10	61

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S/G D	44	83	DNG	AV3	+8.09	80
S/G D	44	83	DNG	AV3	+11.18	80
S/G D	44	83	DNG	AV3	+14.81	80
S/G D	44	83	DNG	AV3	+18.53	80
S/G D	44	86	DNG	04H	+38.92	61
S/G D	44	86	DNG	04H	+44.17	61
S/G D	44	86	DNG	17C	+23.10	80
S/G D	45	27	DNG	05H	+3.49	225
S/G D	45	27	DNG	05H	+3.68	229
S/G D	45	33	DNG	02H	+6.11	57
S/G D	45	41	DNG	03H	+14.75	57
S/G D	45	41	DNG	03H	+15.39	57
S/G D	45	56	DNG	12C	+32.83	76
S/G D	45	56	DNG	12C	+33.58	76
S/G D	45	66	DNG	09H	+40.24	59
S/G D	45	73	DNG	AV2	+16.58	61
S/G D	45	73	DNG	AV2	+16.72	78
S/G D	45	75	DNG	15C	+4.81	80
S/G D	45	87	DNG	AV4	+33.13	80
S/G D	45	88	DNG	10H	+31.58	80
S/G D	45	90	DNT	10H	+0.42	61
S/G D	45	90	DNT	10H	+0.50	80
S/G D	45	90	DNT	11C	+0.44	80
S/G D	45	90	DNT	11C	-0.35	80
S/G D	46	39	DNG	TSC	+4.41	74
S/G D	46	59	DNG	01H	+11.56	59
S/G D	46	78	DNG	AV4	+25.12	80
S/G D	46	89	DNT	10H	-0.29	80
S/G D	47	45	DNG	10H	-1.21	74
S/G D	47	45	DNT	10H	-0.32	59
S/G D	47	45	DNT	10H	-0.38	74
S/G D	47	45	DNT	10H	-1.07	59
S/G D	47	46	DNG	04H	+36.24	59
S/G D	47	46	DNG	04H	+36.94	59
S/G D	47	46	DNG	04H	+40.13	59
S/G D	47	46	DNG	04H	+40.83	59
S/G D	47	46	DNG	17C	+35.62	74
S/G D	47	46	DNG	AV2	+6.65	74
S/G D	47	53	DNG	09H	+35.95	59
S/G D	47	59	DNG	09H	+35.48	59
S/G D	47	59	DNG	09H	+36.30	59
S/G D	47	59	DNG	09H	+42.06	59
S/G D	47	62	DNG	09H	+43.53	59
S/G D	47	62	DNG	09H	+44.22	59
S/G D	47	64	DNT	10H	+0.11	59
S/G D	47	64	DNT	10H	+0.59	76
S/G D	47	64	DNT	10H	+0.89	59
S/G D	48	27	DNT	AV2	+0.29	22
S/G D	48	55	DNG	03H	+33.66	59
S/G D	48	55	DNG	08H	+38.35	59
S/G D	48	55	DNG	08H	+44.46	59
S/G D	48	55	DNG	09H	+17.68	59
S/G D	48	55	DNG	09H	+36.48	59
S/G D	48	55	DNG	09H	+42.61	59
S/G D	48	62	DNT	10H	+0.44	59
S/G D	48	62	DNT	10H	-0.22	59
S/G D	48	63	DNG	19C	+12.61	76
S/G D	48	88	DNG	10H	+35.42	80

Total Indications Found = 1312

Total Tubes Found = 778

APPENDIX H

OWNER'S REPORT FOR INSERVICE INSPECTIONS
NIS-1 FORM

FORM NIS-1 (Back)

8. Examination Dates 9-14-93 to 3-8-94 9. Inspection Interval from 8-25-88 to 9-25-99
10. Abstract of Examinations. Include a list of examinations and a statement concerning status of work required for current interval. (ASME Code Class 1 (IWB) Items - Steam Generator Tubes)
See Section 2.4 of the Report of the Summer 1993 and March 1994 Testing of the Steam Generator Tubes of the STPEGS-1.
11. Abstract of Conditions Noted.
See Section 2.5 of the Report of the Summer 1993 and March 1994 Testing of the Steam Generator Tubes of the STPEGS-1.
12. Abstract of Corrective Measures Recommended and Taken.
See Section 2.5 of the Report of the Summer 1993 and March 1994 Testing of the Steam Generator Tubes of the STPEGS-1.

We certify that the statements made in this report are correct and the examinations and corrective measures taken conform to the rules of ASME Code, Section XI.

Certificate of Authorization No.(if applicable) N.A. Expiration Date N.A.

Date 9/22 19 94 Signed Houston Lighting & Power Co. By J. C. Younger
Owner

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 or Province of Texas and employed by Arkwright Mutual Insurance Co. of Norwood, Mass have inspected the components described in this Owner's Report during the period 2-4-93 to 3-22-94, and state that to the best of my knowledge and belief, the Owner has performed examinations and taken corrective measures described in this Owner's Report in accordance with the inspection plan and as required by the ASME Code, Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, express or implied, concerning the examinations and corrective measures described in this Owner's 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.

B. R. Russell

Inspector's Signature
B. R. Russell

Commissions

Factory Mutual Engineering Association

Tex 826

National Board, State, Province, and Endorsements

Date 9-22-19 94