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13. ABSTRACT (Maximum 200 words)

OVER THE PERIOD MARCH 13-20, 1989, A SERIES OF T-SCAN THICKNESS MAPPING SURVEYS WERE CONDUCTED TO ESTABLISH A CORROSION MONITORING BASELINE OF STORAGE TANK #2. CONTINUATION OF THE PROGRAM IN OCTOBER, 1989, INCLUDED RE-SCANNING OF THE TANK #2 BASELINE AREAS, PLUS ESTABLISHING BASELINE DATA ON TANKS #1 AND #3. THIS REPORT DESCRIBES AND DOCUMENTS THE SCANNING DONE DURING THE OCTOBER SURVEY.

THE THREE STORAGE TANKS WERE SUBJECTED TO EIGHT VERTICAL AUTOMATED THICKNESS MAPPING EXAMINATIONS USING THE P-SCAN EQUIPMENT. TWO HORIZONTAL SCANS WERE ALSO PERFORMED FOR EACH TANK. THE AREAS SCANNED REVEALED ONLY SLIGHT VARIATIONS OF WALL THICKNESS, ALTHOUGH A SMALL LOCALIZED AREA OF TANK #2 WAS FOUND TO HAVE EXPERIENCED A WALL LOSS OF 0.090 INCHES SINCE MARCH.

RADIOGRAPHIC SURVEYS WERE PERFORMED ON THE ATTACHMENT VALVES, V-1 THROUGH V-8. TWO VALVES ON TANK #2 WERE FOUND TO HAVE CORROSION.

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**T-SCAN SURVEYS OF INTERIM STORAGE TANK
NUMBERS 1, 2, AND 3; BASIN F, ROCKY MOUNTAIN ARSENAL**

For
SIP Engineering/Shell Chemicals

October 6-25, 1989

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Project Number: P15489

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DNV INDUSTRIAL SERVICES. INC.

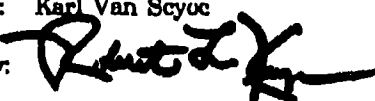
REPORT OF T-SCAN EXAMINATION UTILIZING EXTREME
VALUE ANALYSIS

Tested By: Karl Van Scyoc
Patrick Burke

Test Date: 25OCT89

Prepared By: Karl Van Scyoc

Date: 15NOV89

Approved By: 

Date: 08DEC.'89

CLIENT: SIP Engineering/Shell Chemicals

Test Location: Rocky Mountain Arsenal, Denver, Colorado

Test Item: Basin F, Interim Storage Tank Numbers 1, 2, 3

Exam Surface: Original paint intact, girth welds ground flush at examination areas.

System: PSP-3 #205

Probe: Sigma, 4MHz Dual

Scanner: AWS-5S #002

I-CODE: EDGE contact, PEAK-EDGE Contact

Evaluation: PEAK-EDGE Contact

RESULT SUMMARY

Storage Tank Numbers 1, 2 and 3 were subjected to eight vertical automated thickness mapping examinations using the P-SCAN equipment. Additionally, two 10' long horizontal scans were performed for each tank. These scans served to establish a baseline for Tanks 1 and 3, and re-assess the existing baseline areas of Tank #2 (Ref. DNV Report C04489). The areas scanned on Tanks 1, 2, and 3, reveal only slight variations of wall thickness, although a small localized area of Tank #2 was found to have experienced a wall loss of 0.090 inches since the March 1989 baseline. This thinning prompted scanning of two additional horizontal scans to evaluate the extent of the thickness reduction.

Application of Extreme Value Analysis, EVA (a statistical technique used to calculate the maximum pit depth for the entire tank wall) predicted slight wall loss in Tanks 1 and 3, and predicted the presence of the Tank #2 thin area.

Radiographic surveys were performed on the attachment valves, V-1 through V-8. Two exposures (horizontal and vertical) were obtained for each valve. Tank #2, V-7 and V-8 were the only valves reported to have corrosion. A machine screw was found in Tank #1, V-5.

A full accounting of the surveys may be found in the following sections.

EVA Procedure: Version 1.1

MEVA Rev: HP V1.2

DNV-ISI Job Number: P15489, Report Revision 1 (Summary of Results)

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1.0 INTRODUCTION

Three storage tanks 70' diameter and 40' in height were placed in service in 1987 for interim storage of hazardous waste at the Rocky Mountain Arsenal. The tank walls were constructed of five steel plate courses ranging in nominal thickness from 0.75" to 0.95", thereby providing ample corrosion allowance. Each tank was fitted with a plastic liner which extended over the floor and against the wall. It was discovered that the liner in Tank #2 had developed perforations which allowed storage-product contact with the steel wall.

At the time of liner perforation, the rate of corrosion was not determined. As an complement to corrosion rate studies (which showed corrosion rates from 0.028" to 0.260" per year), an in-situ corrosion monitoring program was formulated.

Over the period of March 18 through March 20, 1989, DNV Industrial Services conducted a series of T-SCAN thickness mapping surveys to establish a corrosion monitoring baseline of Tank #2. Continuation of the program in October, 1989 included re-scanning of the Tank #2 baseline areas, plus establishing baseline data of Tank #1 and Tank #3.

This report describes and documents the scanning conducted during the October survey. Vessel referencing and scanning technique are addressed to ensure reproducibility in subsequent scanning sessions.

1.1 Previous Ultrasonic Baseline Data

Members of the DNV QAS group obtained pre-service baseline thickness data in May, 1988. Twelve sample areas were selected for each of the three tanks, with each sample area measuring 18 x 24 inches. Thickness measurements were taken within each sample area using a 3" grid, providing a total of 83 measurements for each sample area. Paint was removed at each measurement location. Full details of the DNV QAS baseline measurement project may be found in the QAS report number 88-1400-83-01. Excerpts of the QAS report that are relevant to this examination report are noted in the Discussion-section.

2.0 EQUIPMENT

The following equipment was used to conduct the T-SCAN surveys of Basin F Storage Tanks.

P-SCAN Processor	#205
Automatic Scanner AWS-58	#002
DSC Block, Steel	#797021
Step Wedge, Steel	#88-5014
Couplant	Water/Water-antifreeze
Cables	RG-58, 25 meters
Search unit	Sigma, Dual Element, 4.0 MHz, SDC4-F8.5, s/n 7001-88008

All ultrasonic equipment has current calibration in accordance with DNV procedures.

3.0 PROJECT SCOPE

The goals of the October, 1989 scanning session were to execute all of the following tasks for each of the three tanks:

- a. Perform automated thickness mapping of a 12" wide vertical strip extending vertically from the wind girder to the primary floor. A vertical scan was to be performed approximately every 45 degrees, for a total of eight scan sequences.
- b. Perform automated thickness mapping of two 12" wide horizontal strips, each extending for 120" in length. The horizontal scans were confined to Course 5 and placed (1) between the transfer line flanges and (2) over the manway without the code plate.
- c. Apply a statistical extrapolation (known as Extreme Value Analysis, EVA) to the automated T-SCAN vertical surveys to predict the maximum pit depth.
- d. Obtain vertical and horizontal radiographic exposures of eight 1.5" diameter valves. Hence, for each tank, 16 exposures were required.

3.1 Additional Documentation of Tank #2

During evaluation of survey data, it was noted that a localized area of Tank #2 experienced a substantial change in wall profile. Consequently, DNV was requested to carry out two additional horizontal scans to assess the extent of wall loss.

PROJECT ORGANIZATION AND VESSEL REFERENCING

An arbitrary referencing scheme was established at the inspection site, which is illustrated in Figure 4.1 through Figure 4.6 and discussed below.

Course Numbering The wall courses are arbitrarily numbered as 1 through 5. The top course with the wind girder is Course 1, and the bottom course at the primary floor is Course 5.

Scan Sequence Nos. Scan sequences are designated by numbers extending from Scan 1 through Scan 8, with Scan 1 on the North side. Scan Sequence numbering continued counter-clockwise (looking from the top). Scan sequences were positioned whereby automated exams would intersect the pre-service grid measurement areas where practicable.

Nozzle Referencing Nozzles and manway designations are noted in Figures 4.1 through 4.3. Valves V-1 through V-8 were subjected to radiographic examination.

4.1 Scan Sequences and T-SCAN File Convention

Each image, or part, of a scanning sequence is identified with a filename (ITEM) which may be used to correlate the image with a uniquely identifiable portion of the scan area. The filename may be found at the lower right corner of each T-SCAN printout. Filenames for the surveys were defined as discussed below.

4.1.1 Vertical Scans

While a continuous vertical scan was accomplished at each of the eight scan locations, each vertical scan was divided into 5 scan sequences of approximate length 96 inches. (Figure 4.6). Additionally, each 96" long sequence is composed of 4 parts or images of dimension 12" x 24". The segmenting of image data is necessary for documentation and accurate referencing. The image files saved on 3.5" floppy diskettes follow the convention:

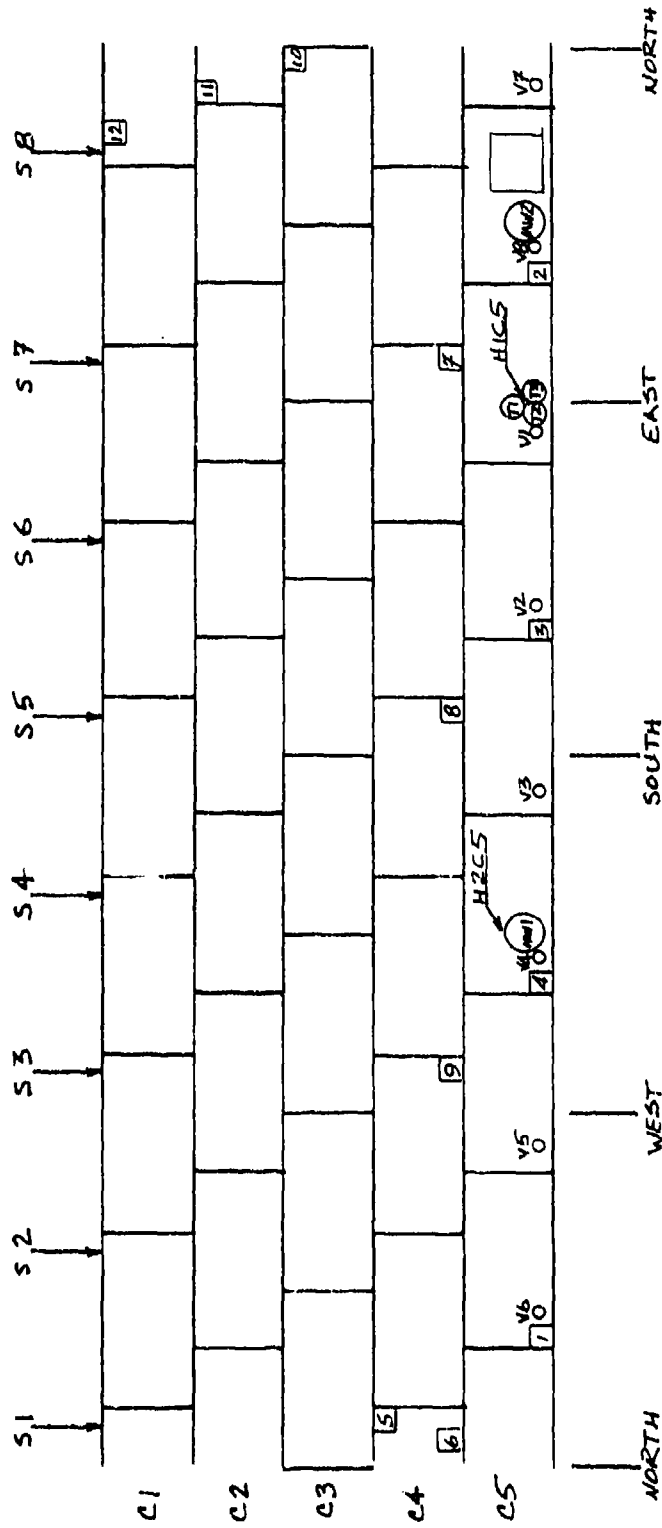
TKn-SsCc.p	where	TKn	Identifies the Tank Number, 'n'
		Ss	Identifies the vertical Scan number
		Cc	Identifies the Course number, 'c'
		.p	Denotes the part number

4.1.2 Horizontal Scans

All horizontal scans are 120" in length and reside in course 5. The horizontal scan file convention is similar to that of the vertical scans:

TKn-HhCc.p	where	TKn	Identifies the Tank Number, 'n'
		Hh	Identifies the Horizontal scan number, 'h'
		Cc	Identifies the Course number, 'c'
		.p	Denotes the part number.

Horizontal scan locations are documented in Figures 4.4 and 4.5.

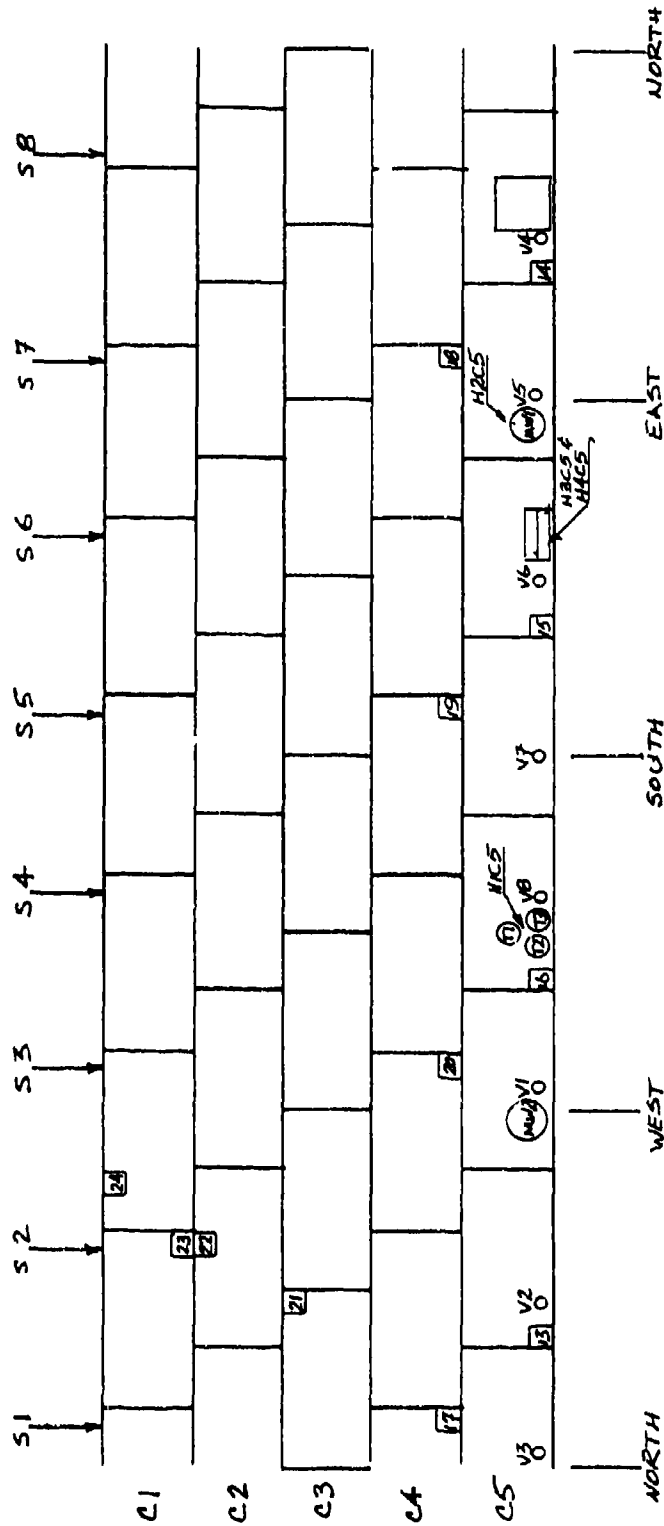


- NOTES
1. Cn DENOTES COURSE #
 2. Sn DENOTES VERTICAL SCAN #
 3. Vn DENOTES VALVE #
 4. MWn DENOTES MANWAY #
 5. Tn DENOTES TRANSFER LINE #
 6. NUMBERS 1-12 DENOTE DNV-GAS PRESERVE THICKNESS GRIPS
 7. Hn DENOTES HORIZONTAL SCAN LOCATIONS

DNV INDUSTRIAL
SERVICES, INC.
(73) 579-9003

TITLE: ROCKY MOUNTAIN
ARSENAL; BASIN F
TANK #

DATE: 01/01/89 SCALE: — NUMBER
DRAWN: KWS APPROVED: KWS. FIG 4.1
JOB: P15489



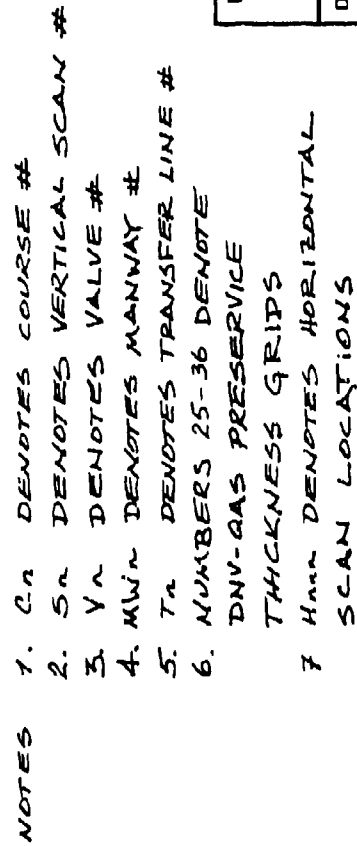
- NOTES
1. Cn DENOTES COURSE #
 2. Sn DENOTES VERTICAL SCAN #
 3. Vn DENOTES VALVE #
 4. MWN DENOTES MANWAY #
 5. Tn DENOTES TRANSFER LINE #
 6. NUMBERS 13-24 DENOTE DNV-GAS PRESERVICE THICKNESS GRIPS
 7. Hnn DENOTES HORIZONTAL SCAN LOCATIONS

DNV INDUSTRIAL
SERVICES, INC.
(713) 579-9003

TITLE: ROCKY MOUNTAIN
ARSENAL; BASIN F
TANK # 2

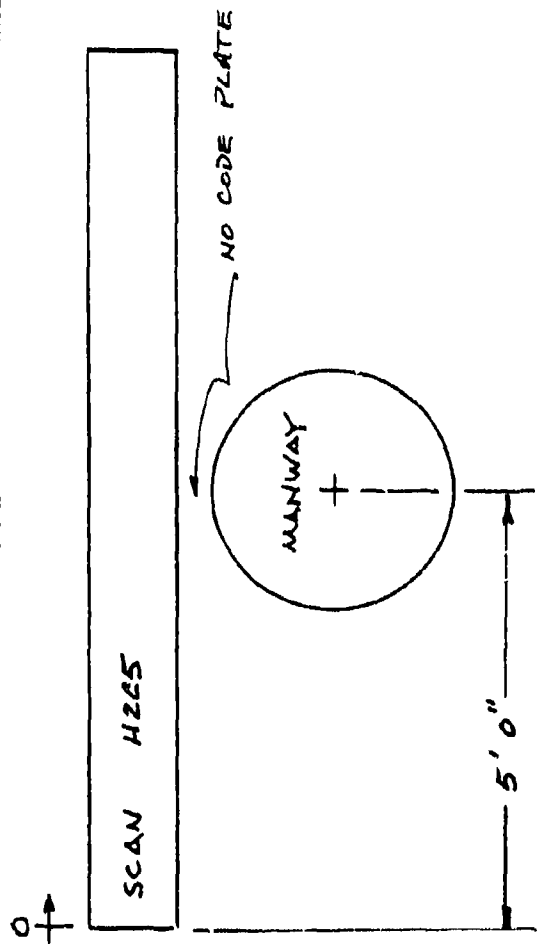
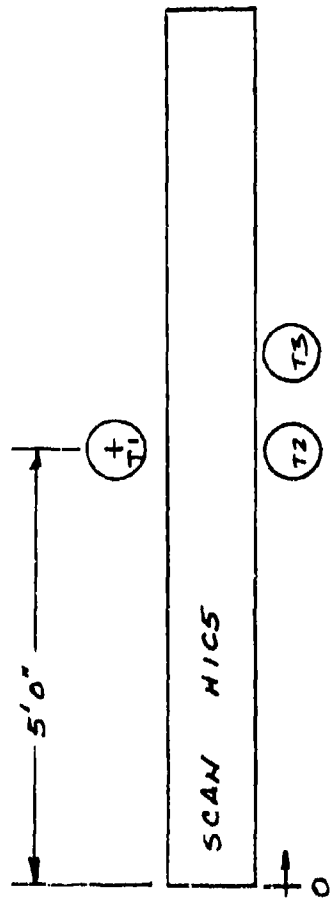
DATE: 04/10/89
DRAWN: KVS
JOB: P15489

SCALE: —
APPROVED: FVS.
NUMBER
FIG 4.2

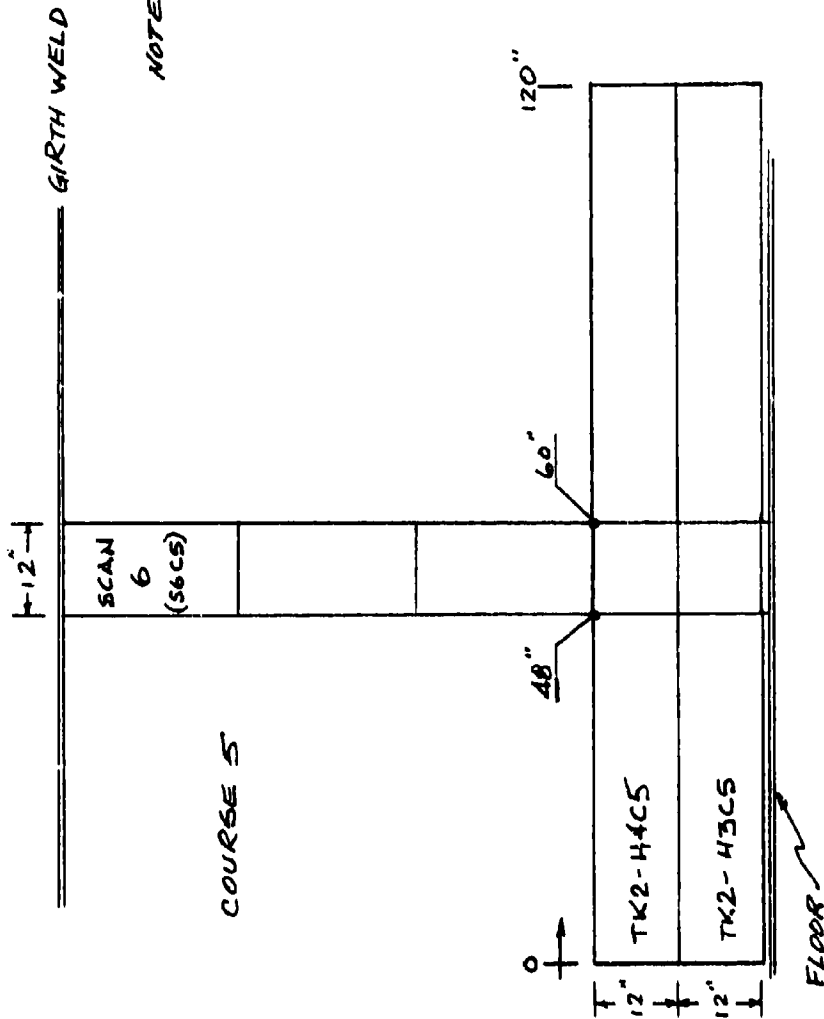


DNV INDUSTRIAL SERVICES, INC. (713) 573-9003	TITLE: ROCKY MOUNTAIN ARSENAL; BASIN F TANK #3	NUMBER FIG. 4.3
DATE: 04/10/89 DRAWN: KWS JOB: P15489	SCALE: — APPROVED: KWS.	

- NOTES: 1. EACH SCAN MEASURES 120" LONG
2. HICS REFERENCED 5' FROM CENTER OF UPPER TRANSFER LINE
3. H2C5 REFERENCED FROM CENTER OF MAINWAY WITHOUT CODE PLATE
4. POSITION POINTS STAMPED AND IDENTIFIED ON WALL
5. SCAN WIDTH = 12"
6. TYPICAL FOR TANKS # 1, 2, 3
7. BOTH SCANS WITHIN COURSE 5

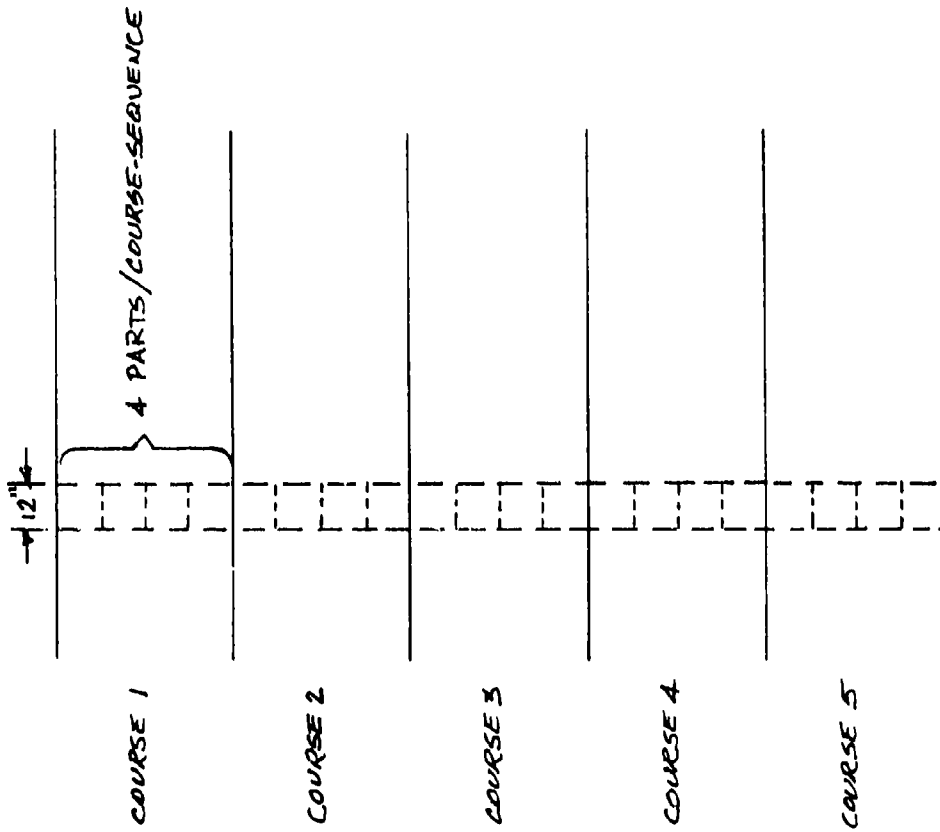


DNV INDUSTRIAL SERVICES, INC. (713) 579-9003	TITLE: HORIZONTAL SCAN REFERENCING.
DATE: 11/06/89 DRAWN: Kuf. JOB: P.5489	SCALE: APPROVED: Kuf. NUMBER FIG. 4.4

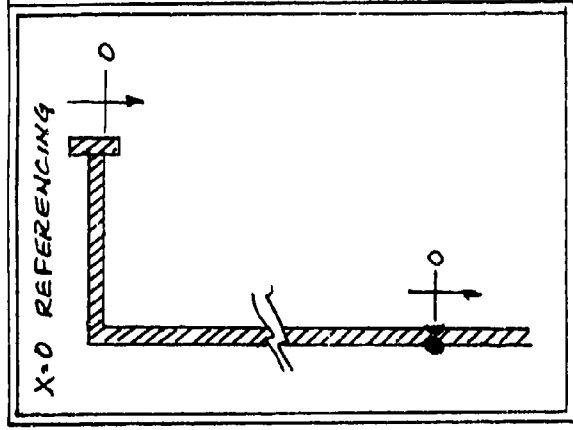


- NOTES:
1. H3CS & H4CS INTERSECT VERTICAL SCAN #6 AT X = 48"
 2. POSITION POINTS STAMPED AND IDENTIFIED
 3. SCAN LENGTH = 120"

DNV INDUSTRIAL SERVICES, INC. (713) 579-9003	TITLE: TANK #2, RMA, BASIN F, HORIZONTAL SCANS AT FLOOR LEVEL AT TK2-56CS:4
DATE 11/04/89 DRAWN: KVS JOB: P15489.	SCALE: — APPROVED: — NUMBER FIG 4.5



EACH PART MEASURES 12" x 24"



DNV INDUSTRIAL SERVICES, INC. (713) 579-9003	TITLE: ROCKY MOUNTAIN ARSENAL, BASIN F. STORAGE TANK VERTICAL SCAN SCHEME	DATE: 11/20/89 DRAWN: KJS JOB: P15-189	SCALE: APPROVED: KJS NUMBER FIG 4.6
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4.2 Zero Referencing

For each vertical course sequence 2-5, the zero reference point is the center of the upper course girth weld as illustrated in Figure 4.6. The bottom of the wind girder was utilized as the zero reference for Course 1.

Zero referencing for horizontal sequences is illustrated in Figures 4.4 and 4.5.

4.3 Scan Location Marks

The extremes of the 12" scan width are stamped and identified with paint. This identification was performed at the scan-start and scan-end. In terms of T-SCAN positioning, the stamp mark pairs denote y-travel from -6.0 to +6.0 inches.

5.0 Scanner Positioning

The automatic scanner AWS-5S attaches to the vessel wall by means of magnetic wheels, and scanner travel is directed by microswitches aligned with a magnetic strip. Consequently, placement of the strip is critical to reproducibility. For this application, a chalk line was used to produce a visible reference line for magnetic guide strip placement. In this fashion, the magnetic strip is spaced equidistantly from the inspection area.

5.1 Scanner Re-Positioning

In the course of subsequent surveys, it is recommended that the chalk line be equally spaced from the position stamp marks to ensure optimum scan reproducibility.

EXAMINATION INFLUENCES**Paint**

The presence of paint will affect the measured thickness of steel by approximately 3 to 4 times the paint thickness. For example, if paint is 0.005" thick, the measured wall thickness is increased by approximately 0.015 to 0.020". In the course of these surveys, variations in paint thickness and smoothness were observed.

Surface Inconsistencies

Examination surface irregularities (eg. grit imbedded in the paint, rolling gouges) were observed in the course of scanning. These influences, while unavoidable, may promote increased thickness measurements in localized areas.

Wind

Fairly strong winds were encountered during scanning. While wind does not affect thickness measurement, it is possible that a small displacement of the 'plumb' chalk line resulted from winds, which would affect scanner positioning with respect to the desired inspection area. The strip displacement did not exceed 1 inch.

Temperature

We observed air temperatures ranging from 25F to 80F. The temperature variations encountered during a scanning day necessitated frequent calibration checks--often exceeding the minimum requirement of procedure. In no case did calibration vary in excess of 0.005 inches from known values.

Girth Welds

Prior to the October scanning, the girth welds were ground flush with the shell material. This enabled, in most cases, thickness measurement over the weld area. It is important to note that the Tank #2 scanning of March, 1989 was performed with reinforcement in the as-welded condition, and thickness measurement adjacent to and over the weld was not possible.

Stairwell

The stairwell obstructed data collection for a portion of some vertical scan sequences. The unscanned length is noted on the data sheet.

Wind Girder

The wind girder obstructed scanning for approximately the first 19 inches of the vertical course 1 scanning sequence.

7.0 DATA REPORTING

7.1 T-SCAN Data (Appendix 1, 2, and 3)

Data from the automated scans is presented in table and hardcopy image form. The tables indicate the maximum, average, and minimum thickness for each scan part. The biased minimum thickness (in millimeter units) used in EVA calculations is noted in the 'comments' column for part :02 of each vertical scan. Additionally, for Tank #2, the measured thickness difference (denoted as 'delta' T) between the March 1989 baseline scanning and the October 1989 examinations is noted adjacent to the Minimum Thickness value. It is suggested that all subsequent scanning sessions be compared to the original T-SCAN baseline data.

Hardcopy T-SCAN images are printed in Course-Sequences whereby thickness values less than the nominal thickness are shown in the TOP view.

7.2 EVA Figures and Tables (Appendix 4)

EVA plots and graphs are included for documentation. Discussion of the significance of EVA calculations is included in Section 10.0

7.3 Radiographic Reproductions (Appendix 5)

Photographic reproductions of the original radiographs are presented in Appendix 5 with a discussion of measurement technique.

8.0 UNDERSTANDING T-SCAN HARDCOPY

The end result of a T-SCAN survey is a permanent record of thickness measurements presented in the form of a T-SCAN image. T-SCAN images (parts) of the scan area may be hardcopied singly or in continuous sequences. T-SCAN images consist of two views of the inspection volume, scaling information, display lines, and color referencing. Figure 8.1 is an example of a T-SCAN printout, and the following image evaluation discussion is based on the figure.

8.1 T-SCAN Image Views

The T-SCAN image of Figure 8.1 is configured to represent two projection planes of the inspection volume. These projection planes are labelled as 'TOP' and 'SIDE'. Each projection plane, or 'view' is bordered by a rectangular frame. By simultaneous use of two projection planes (views), one is able to visualize a three dimensional relief of the inspection volume.

TOP View Frame

The TOP view is as if an observer was viewing the testpiece from above the examination surface. The image length (distance in the x-direction) of the figure is 125 mm. The image width (distance in the y-direction) is 120 mm. Therefore, this image represents a scan area of 125 x 120 mm. Both image length and width may be selected by the operator during a test to minimize inspection time and maximize resolution. The TOP view frame size will not typically vary in dimension for different length/width combinations, and is composed of 15000 thickness data points.

SIDE View Frame

The SIDE view of the figure is a projection view as if an observer was viewing the inspection volume from the side. A projected side view does not represent any single 'slice' of the testpiece, but rather a composite of all side views of the inspection volume projected into one plane. Normally, the top of the SIDE view frame does not represent the outside surface of the testpiece. Hence, SIDE view scaling may be selected to provide increased screen resolution in the thickness dimension. In the figure, the SIDE view frame is a window or expansion of measured thickness where the Upper and Lower display limit is 1.5 and 15.0 mm respectively, as noted to the left of the SIDE view frame.

8.2 T-SCAN Display Level and Color Coding

Display Level: Extending horizontally across the SIDE view is a dotted line denoted as the **Display Level**. The display level may be varied by the operator to investigate thinning trends and locate areas of minimum thicknesses. In the Figure, the display level is set at 14.8 mm. Any portion of the inspection volume which is measured to be less than 14.8 mm is displayed graphically in the TOP view above.

Color Coding: Since T-SCAN images are 'topographic' maps of the inspection volume, colors are used to denote thickness contours or steps. Up to eight colors may be used to visualize the thickness steps. In the Figure, the thickness (color) steps begin at 13.5 mm (BASIS) and continue at thickness intervals to 8.8 mm. Therefore, with a single hardcopy, one may see the extent of corrosion (by use of the display level) and identify the worst-case thinning (by use of the color steps). Thickness 'steps' may be selected by the operator.



FIGURE 8.1: TYPICAL T-SCAN IMAGE

8.3 Data Dropout

Though the T-SCAN image is an invaluable tool for corrosion and thickness mapping, it must be understood that occasional indications may be superfluous. These inconsistent data may be caused by surface roughness or probe liftoff. Inconsistent data are sometimes called data dropout. T-SCAN procedures describe criteria for dropout acceptance levels which evolved from numerous tests at DNV. Inconsistent data normally may be distinguished by unusual distribution, extreme 'depth', and number of data points involved.

8.4 Additional T-SCAN Hardcopy Options

Though the Figure is a typical hardcopy configuration, the following display features are available when detailed image evaluation is desired:

- Inch/mm conversion
- Per-cent wall loss
- Projected END View
- Sectioned SIDE or END View
- Image Coding (Normally for complex surveys)
- Position Cross Hairs

9.0 APPLICATION OF EVA TO BASIN F STORAGE TANK SURVEYS

9.1 EVA Overview

Extreme Value Analysis (EVA) is a statistical sampling technique frequently used on storage tank bottoms to predict the minimum remaining thickness based on data collected with the P-SCAN instrument. In conventional examinations, the EVA surveys are performed as follows:

- Determine the optimum number of survey locations to be surface prepared. DNV specifies this number based on tank diameter and statistical requirements.
- Surface prepare the required number of survey locations by needle gun/wire brushing or light sandblasting.
- Perform T-SCAN thickness mapping of each location
- Analyze T-SCAN data files to determine minimum thickness for each survey location.
- Input the minimum thickness values into the Extreme Value Analysis program and produce curves for three methods of analysis.

9.2 Modification of EVA to Basin F Tank Surveys

EVA procedures and analysis software currently approach predictions of wall loss by means of extreme minimum thicknesses for each sample area. The presumption made is that factors promoting corrosive wall loss result in a consistent pitting distribution. In the case of the Basin F Storage tanks, the nominal wall thickness is not a constant for all courses; the lower courses are thicker. Consequently, in order to apply the EVA concepts, the following considerations were given for Part :02 of each vertical course-sequence:

- Minimum and average thickness for Courses 1, 2, and 3 were converted to millimeters.
- The arithmetic mean of all tabulated average thicknesses (for courses 1, 2, and 3) was calculated. For these surveys, the calculated mean was found to be:

TANK #1:	0.778 " (19.8 mm)
TANK #2:	0.778 " (19.8 mm)
TANK #3:	0.785 " (19.9 mm)

- For data of courses 4 and 5, it was necessary to bias the thickness to represent the thickness of Courses 1, 2, and 3. Therefore, for Course 4 and 5 part :02 data, the difference between the tabulated average thickness and the tabulated minimum thickness was subtracted from the arithmetic mean calculated above.
- EVA calculations are performed on the biased data, and the minimum predicted thickness is presented by the EVA program. This minimum thickness is then subtracted from the mean thickness to provide the maximum predicted wall loss.

9.3 Understanding EVA Plots (Appendix 1)

A full understanding of EVA plots may be accomplished only with complete knowledge of Extreme Value Statistics. For those unfamiliar with Extremal Statistics, general attributes of the EVA plots are noted below:

- Plot Title: Appears at the top of the plot and is generally used to identify the tank number and client.
- EVA Frame: Appears at the upper right of the plot with a number of analysis parameters:
 - METH Identifies the algorithm method used to produce the plot. Currently, three methods are available for use.
 - DATE: Date of EVA Survey
 - RTN: Numerical value of the Return Period, a parameter used to derive the predicted minimum thickness for the METHOD. For all tanks, the return period was calculated to be 7897.
 - DEVY: For least squares linear regression, this denotes the Standard Deviation in the thickness dimension.
 - CORR: Denotes the correlation coefficient of the total sample variate for the METHOD in current use. A 'good' correlation is considered to be between -0.95 and -1.0 and data points will closely approximate the regression line.
- Plot Scaling: Four scales are incorporated in the EVA plots
 - 1 Remaining Thickness: Directly related to the minimas derived from the original T-SCAN tabulated data.
 - 2/3 Standard Extremal Variate and Probability
Two mathematically related scales used in statistical evaluation after data reduction and transformation.
 - 4 Return Period (Not shown) A horizontal scale mathematically related to Standard Extremal Variate and Probability scales and is used in defining the minimum predicted thickness for the METHOD in current use.
- Data Points: All unique minima values are assigned a corresponding Standard Extremal Variate and are plotted as points or squares, depending on the METHOD in current use. A best fit regression line is calculated and extrapolated to intersect with the appropriate return period. The corresponding minimum thickness for the METHOD is printed adjacent to the line.

10.0 DISCUSSION

10.1 Comparison of T-SCAN Data with DNV-QAS Preservice Baseline

A comparison of the minimum measured thickness of the automated surveys and the pre-service grid measurements was made and the following table summarizes the results. It must be emphasized that the pre-service grid measurements were obtained after removing localized areas of paint. Hence, the grid measurements are without paint influence. Conversely, T-SCAN measurements were influenced by paint.

TANK NO.	QAS-Loc.	T-SCAN Image	DNV-QAS Data		T-SCAN Data	
			Min T.	Avg T.	Min T.	Avg T.
1	09	TK1-S3C4.4	0.850	0.862	0.850	0.885
1	06	TK1-S1C4.1	0.822	0.837	0.820	0.855
1	08	TK1-S5C4.4	0.833	0.838	0.815	0.855
1	07	TK1-S7C4.4	0.845	0.850	0.850	0.870
2	17	TK2-S1C4.4	0.827	0.836	0.825	0.850
2	18	TK2-S7C4.4	0.835	0.839	0.820	0.845
2	19	TK2-S5C4.4	0.849	0.858	0.860	0.880
2	20	TK2-S3C4.4	0.825	0.838	0.835	0.860
2	22	TK2-S2C1.4	0.743	0.752	0.730	0.770
2	23	TK2-S2C2.1	0.742	0.746	0.730	0.770
3	29	TK3-S1C4.4	0.833	0.840	0.830	0.860
3	30	TK3-S7C4.4	0.848	0.854	0.845	0.860
3	31	TK3-S5C4.4	0.822	0.826	0.840	0.855
3	32	TK3-S3C4.4	0.833	0.836	0.840	0.855
3	33	TK3-S4C4.1	0.826	0.833	0.815	0.850

10.2 Isolated Thin Areas

During evaluation of the data, several small isolated areas of thinning were noted. While it is possible that the thinning was the result of corrosion, it is likely that some of the 'pit' measurements were actually surface gouges or 'pock-marks' that existed at fabrication. A casual visual examination of the outside surface noted scattered areas of gouges (presumably from rolling) and small depressions. It is assumed that similar anomalies exist internally. External grinding was noted where alignment lugs were once welded during construction. Since the inside surface of the wall was smoothed by grinding and sandblasting, it is probable that shallow depressions remained after surface preparation. Indeed, adjacent to some girth welds, reduced thickness (by 0.010 to 0.060") was measured.

10.3 Tank #2 Wall Profile Changes

Following data evaluation and application of EVA, it was found that a general wall loss of approximately 0.015" has occurred since March 1989. However, a deviation of the general wall loss observation was identified in Scan 6, Course 5, Part 4 (File TK2-S6C5.4).

In March 1989, the minimum thickness for Image TK2-S6C5.4 was found to be 0.915". The October 1989 minimum measurement for the same area was 0.825". These data indicate a localized wall loss of approximately 0.090"/6 months. Concurrent with the wall loss was a band of reduced measurements just above the floor level as evidenced by horizontal scans TK2-H3C5 and TK2-H4C5. This band, which was not as pronounced in March 1989, currently extends for approximately 10 feet about the circumference.

10.0 DISCUSSION

10.1 Comparison of T-SCAN Data with DNV-QAS Preservice Baseline

A comparison of the minimum measured thickness of the automated surveys and the pre-service grid measurements was made and the following table summarizes the results. It must be emphasized that the pre-service grid measurements were obtained after removing localized areas of paint. Hence, the grid measurements are without paint influence. Conversely, T-SCAN measurements were influenced by paint.

TANK NO.	QAS-Loc.	T-SCAN Image	DNV-QAS Data		T-SCAN Data	
			Min T.	Avg T.	Min T.	Avg T.
1	09	TK1-S3C4.4	0.850	0.862	0.850	0.885
1	05	TK1-S1C4.1	0.822	0.837	0.820	0.855
1	08	TK1-S5C4.4	0.833	0.838	0.815	0.855
1	07	TK1-S7C4.4	0.845	0.850	0.850	0.870
2	17	TK2-S1C4.4	0.827	0.836	0.825	0.850
2	18	TK2-S7C4.4	0.835	0.839	0.820	0.845
2	19	TK2-S5C4.4	0.849	0.858	0.860	0.880
2	20	TK2-S3C4.4	0.825	0.838	0.835	0.860
2	22	TK2-S2C1.4	0.742	0.752	0.730	0.770
2	23	TK2-S2C2.1	0.742	0.746	0.730	0.770
3	29	TK3-S1C4.4	0.833	0.840	0.830	0.860
3	30	TK3-S7C4.4	0.848	0.854	0.845	0.860
3	31	TK3-S5C4.4	0.822	0.826	0.840	0.855
3	32	TK3-S3C4.4	0.833	0.836	0.840	0.855
3	33	TK3-S4C4.1	0.828	0.833	0.815	0.850

10.2 Isolated Thin Areas

During evaluation of the data, several small isolated areas of thinning were noted. While it is possible that the thinning was the result of corrosion, it is likely that some of the 'pit' measurements were actually surface gouges or 'pock-marks' that existed at fabrication. A casual visual examination of the outside surface noted scattered areas of gouges (presumably from rolling) and small depressions. It is assumed that similar anomalies exist internally. External grinding was noted where alignment lugs were once welded during construction. Since the inside surface of the wall was smoothed by grinding and sandblasting, it is probable that shallow depressions remained after surface preparation. Indeed, adjacent to some girth welds, reduced thickness (by 0.010 to 0.060") was measured.

10.3 Tank #2 Wall Profile Changes

Following data evaluation and application of EVA, it was found that a general wall loss of approximately 0.015" has occurred since March 1989. However, a deviation of the general wall loss observation was identified in Scan 6, Course 5, Part 4 (File TK2-S6C5.4).

In March 1989, the minimum thickness for Image TK2-S6C5.4 was found to be 0.915". The October 1989 minimum measurement for the same area was 0.825". These data indicate a localized wall loss of approximately 0.090"/6 months. Concurrent with the wall loss was a band of reduced measurements just above the floor level as evidenced by horizontal scans TK2-H3C5 and TK2-H4C5. This band, which was not as pronounced in March 1989, currently extends for approximately 10 feet about the circumference.

10.4 EVA Results

The maximum predicted pit depth for the tanks was calculated to be:

TANK 1:	0.085" $\pm$ 0.020"
TANK 2:	0.126" $\pm$ 0.020"
TANK 3:	0.099" $\pm$ 0.015"

It is clear that Tank #2 has a general thickness distribution slightly less than Tanks 1 and 3. The comparatively small predicted wall loss of Tank 1 and Tank 3 is likely to be the result of plate nominal thickness variations and slight corrosion arising from condensation.

10.4.1 EVA Predictions and Tank #2 Measurements

Measured Wall Loss

The most significant reduction of wall thickness was found to be at the bottom of Scan 6, Course 5. The current (October 1989) minimum thickness of this scan area was found to be 0.825 inches. The average thickness of the steel plate in which the thinning occurred was measured in the pre-service baseline as 0.952 inches. Hence, the approximate wall loss may be found:

$$0.952 - 0.825 = 0.127 \text{ inches.}$$

Predicted Wall Loss

The EVA calculations based on the data of October 1989 predict a maximum pit depth of 0.126 inches. This prediction is based only on part :02 data. The thinning detected in part :04 with a minimum measurement of 0.825" played no role in the EVA calculations. Hence, it is important to note that even if the thinning was not detected, the depth of pitting would have been predicted. The wall loss observed in Scan 6, Course 5 is, at this time, consistent with the pitting distribution model assumed in EVA calculations. It appears to be coincidence that the scan areas of the corrosion monitoring program include the 'worst-case' thinning.

10.5 Radiographic Observations

The minimum valve stem thickness, as determined by radiographic methods were found to be:

TANK 1:	0.530"
TANK 2:	0.530"
TANK 3:	0.525"

Slight corrosion was noted in V-7 and V-8 of Tank #2. Evidence of sediment or other substance build-up was observed with all tanks. A machine screw was detected in Tank #1, Valve #5.

APPENDIX 1
TANK 1: T-SCAN Data Tables and Hardcopy



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 1

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: RMA, Tank #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 12 Oct 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY		DATA T		DATA T		DATA T		COMMENTS
	FROM	TO	INCH	mm	INCH	mm	INCH	mm	
SIC1	19	24	0.775		0.760		0.765		
SIC1	24	48	0.780		0.750		0.765		19.1
SIC1	48	72	0.775		0.745		0.755		
SIC1	72	96	0.775		0.735		0.760		
SIC2	0	24	0.790		0.745		0.770		
SIC2	24	48	0.790		0.760		0.775		19.3
SIC2	48	72	0.790		0.760		0.775		
SIC2	72	96	0.790		0.740		0.770		
COMMENTS									

EXAMINER:
EXAMINER:

LEVEL: EMP. #:
LEVEL: EMP. #:

ITL REVIEW: Kal Chh... LEVEL: III EMP. #: 7222 DATE: 23 Oct 89

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: 7-154-89 DATA SHEET #: 2

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #1
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 12 06 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

* SIC4- Stair obstruction from 66" to 96".

EXAMINER: _____
EXAMINER: _____

LEVEL: _____ EMP. #: _____
LEVEL: _____ EMP. #: _____

ITL REVIEW: Full/Partial LEVEL: II EMP. #: 7222 DATE: 23 Oct 09

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 3

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #1
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 12-04-87
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

→ Stair obstruction from $0''$ to $7''$.

EXAMINER: _____
EXAMINER: _____

LEVEL: _____ EMP. #: _____
LEVEL: _____ EMP. #: _____

ITL REVIEW: K. M. K. K. LEVEL: II EMP. #: 7222 DATE: 23 OCT 09

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: D-154-89 DATA SHEET #: 4

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK # 1
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 10 OCT 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: _____
EXAMINER: _____

LEVEL: _____ EMP. #: _____
LEVEL: _____ EMP. #: _____

ITL REVIEW: Kul Ch Go LEVEL: III EMP. #: 7222 DATE: 23 OCT 89



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 5

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 16 DEC-89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY		DATA T MAX		DATA T MIN		DATA T AVG		COMMENTS EVA-T (mm)
	FROM	TO	INCH	mm	INCH	mm	INCH	mm	
S2C3	0	24	0.800		0.755		0.780		
S2C3	24	48	0.805		0.770		0.785		19.6
S2C3	48	72	0.795		0.755		0.780		
S2C3	72	96	0.795		0.770		0.780		
S2C4	0	24	0.880		0.790		0.855		
S2C4	24	48	0.880		0.840		0.860		19.3
S2C4	48	72	0.880		0.840		0.860		
S2C4	72	96	0.880		0.840		0.860		

COMMENTS

EXAMINER:
EXAMINER:

LEVEL: EMP. #:
LEVEL: EMP. #:

ITL REVIEW: Karl (Ch) [Signature] LEVEL: II EMP. #: 7222 DATE: 23 DEC 89



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-15489 DATA SHEET #: 7

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 10 OCT-89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T MIN INCH	mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
S3C1	19	24	0.780		0.760		0.770		
S3C1	24	48	0.780		0.740		0.745		18.8
S3C1	48	72	0.780		0.755		0.760		
S3C1	72	96	0.780		0.735		0.760		
S3C2	0	24	0.815		0.775		0.790		
S3C2	24	48	0.810		0.785		0.790		19.9
S3C2	48	72	0.810		0.790		0.795		
S3C2	72	96	0.805		0.775		0.790		

COMMENTS

EXAMINER: Karl A. [Signature]
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 8

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 10-OCT-89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	IDENTITY TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
S3C3	0	24	0.805		0.735		0.785		
S3C3	24	48	0.805		0.775		0.790		19.7
S3C3	48	72	0.800		0.775		0.785		
S3C3	72	96	0.800		0.765		0.780		
S3C4	0	24	0.890		0.835		0.875		
S3C4	24	48	0.900		0.870		0.885		19.4
S3C4	48	72	0.905		0.865		0.885		
S3C4	72	96	0.900		0.850		0.885		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



SITE: RMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 10-01-89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: 2.154-89 DATA SHEET #: 10

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 10 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
S4C1	19	24	0.795		0.770		0.780		
S4C1	24	48	0.800		0.765		0.780		19.4
S4C1	48	72	0.795		0.770		0.780		
S4C1	72	96	0.780		0.750		0.770		
S4C2	0	24	0.790		0.745		0.775		
S4C2	24	48	0.795		0.760		0.775		19.3
S4C2	48	72	0.795		0.760		0.775		
S4C2	72	96	0.795		0.755		0.770		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #:



SITE: RMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 10 Oct - 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

ITL REVIEW: LEVEL: EMP A. 11-11-77



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P154-89 DATA SHEET #: 13

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 11 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
55C1	19	24	0.800		0.775		0.790		
55C1	24	48	0.775		0.770		0.785		19.6
55C1	48	72	0.775		0.770		0.780		
55C1	72	96	0.795		0.745		0.775		
55C2	0	24	0.795		0.735		0.770		
55C2	24	48	0.785		0.765		0.775		19.4
55C2	48	72	0.790		0.770		0.780		
55C2	72	96	0.785		0.755		0.770		

COMMENTS

EXAMINER: [Signature]
EXAMINER:

LEVEL: IV
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 14

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 11 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
SSC3	0	24	0.800		0.765		0.785		
SSC3	24	48	0.800		0.775		0.785		19.7
SSC3	48	72	0.800		0.780		0.780		
SSC3	72	96	0.800		0.760		0.785		
SSC4	0	24	0.875		0.825		0.850		
SSC4	24	48	0.875		0.840		0.855		19.4
SSC4	48	72	0.875		0.815		0.855		
SSC4	72	96	0.875		0.815		0.855		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: 7-154-09 DATA SHEET #: 15

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #1
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 11 OCT-89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

EXAMINER: Paul W. Ryan LEVEL: ICL EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____

ITL REVIEW: LEVEL: EMP. #: DATE:

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 16

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #1
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 11 DEC 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

FILE #	IDENTITY FROM	TO	DATA INCH T MAX mm	DATA INCH T MIN mm	DATA INCH T AVG mm	COMMENTS EVA-T (mm)
S6C1	19	24	0.785	0.775	0.785	
S6C1	24	48	0.800	0.775	0.790	19.7
S6C1	48	72	0.800	0.775	0.795	
S6C1	72	96	0.800	0.750	0.790	
S6C2	0	24	0.800	0.745	0.790	
S6C2	24	48	0.800	0.780	0.790	19.8
S6C2	48	72	0.800	0.745	0.790	
S6C2	72	96	0.800	0.770	0.790	

COMMENTS

EXAMINER: Paul W. [Signature]
EXAMINER: _____

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 17

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 11 OCT - 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T MAX INCH mm	DATA T MIN INCH mm	DATA T AVG INCH mm	COMMENTS EVA-T (mm)
SLC3	12	24	0.805	0.765	0.795	
SLC3	24	48	0.805	0.790	0.795	20.0
SLC3	48	72	0.805	0.790	0.795	
SLC3	72	96	0.800	0.780	0.790	
SLC4	0	24	0.875	0.825	0.860	
SLC4	24	48	0.875	0.845	0.865	19.2
SLC4	48	72	0.880	0.830	0.865	
SLC4	72	96	0.875	0.840	0.865	

COMMENTS

EXAMINER: [Signature]
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



SITE: RMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 12 OCT 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

FILE #	IDENTITY		DATA T MAX		DATA T MIN		DATA T AVG		COMMENTS EVA-T (mm)
	FROM	TO	INCH	mm	INCH	mm	INCH	mm	
S7C1	19	24	0.800		0.785		0.790		
S7C1	24	48	0.800		0.780		0.795		19.8
S7C1	48	72	0.805		0.785		0.795		
S7C1	72	96	0.805		0.760		0.795		
S7C2	0	24	0.795		0.765		0.780		
S7C2	24	48	0.795		0.770		0.780		19.6
S7C2	48	72	0.795		0.770		0.780		
S7C2	72	96	0.795		0.755		0.775		
COMMENTS									

EXAMINER: Paul M. Segre LEVEL: III EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P15489 DATA SHEET #: 20

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 12 Oct 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
S7C3	0	24	0.790		0.755		0.775		
S7C3	24	48	0.790		0.770		0.775		19.6
S7C3	48	72	0.790		0.770		0.780		
S7C3	72	96	0.790		0.760		0.775		
S7C4	0	24	0.885		0.830		0.870		
S7C4	24	48	0.885		0.860		0.870		19.5
S7C4	48	72	0.890		0.860		0.870		
S7C4	72	96	0.890		0.850		0.870		

COMMENTS

EXAMINER: [Signature]
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW: LEVEL: EMP. #:

DATE:

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-15489 DATA SHEET #: 21

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #1
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 12 Oct 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: [Signature]
EXAMINER: [Signature]

LEVEL: ~~SECRET~~
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 23

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #1
PIPE DIA: IN.
REF. PT.

EXAM DATE: 12 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY		DATA T MAX		DATA T MIN		DATA T AVG		COMMENTS EVA-T (mm)
	FROM	TO	INCH	mm	INCH	mm	INCH	mm	
SBL3	0	24	0.800		0.765		0.785		
SBL3	24	48	0.800		0.775		0.790		19.7
SBL3	48	72	0.800		0.780		0.785		
SBL3	72	96	0.795		0.775		0.780		
SBL4	0	24	0.885		0.820		0.860		
SBL4	24	48	0.870		0.845		0.855		19.5
SBL4	48	72	0.885		0.840		0.860		
SBL4	72	96	0.895		0.845		0.870		

COMMENTS

EXAMINER: [Signature] LEVEL: ITL EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



SITE: 2MA PAGE: OF REF. CAL. SHT:

EXAM DATE: 13 OCT -89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW
Top 12.01 in

Mag 1 Off
Mag 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW
Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK1-S1C1.1

Proj

in 47.97 in 47.97 in

Projection view

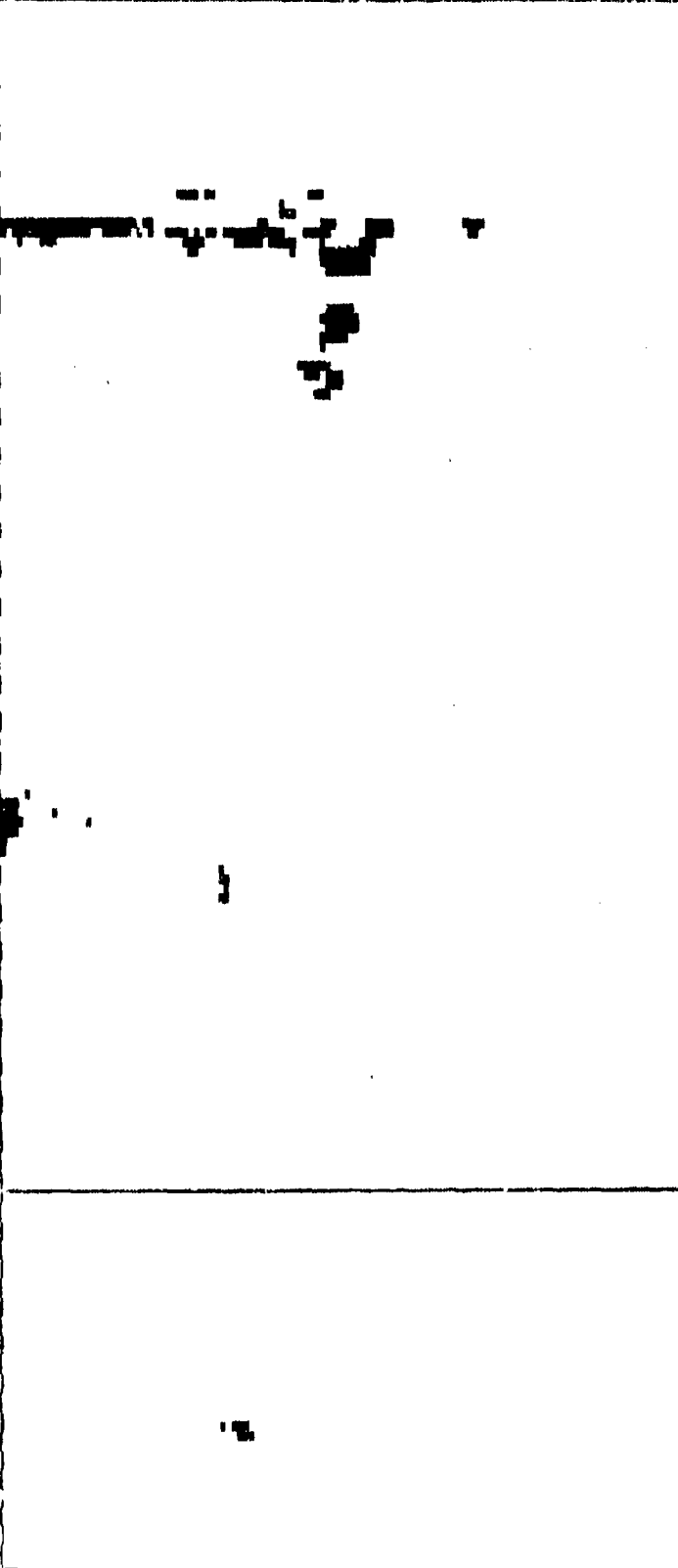
Item TK1-S1C1.2

Item TK1

ection view

71.96 in 71.96 in

95.94 in



Projection view	Item TK1-S1C1.4

S1C1.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item YK1-S1C2.1

Proj

in

47.97 in 47.97 in

ection view

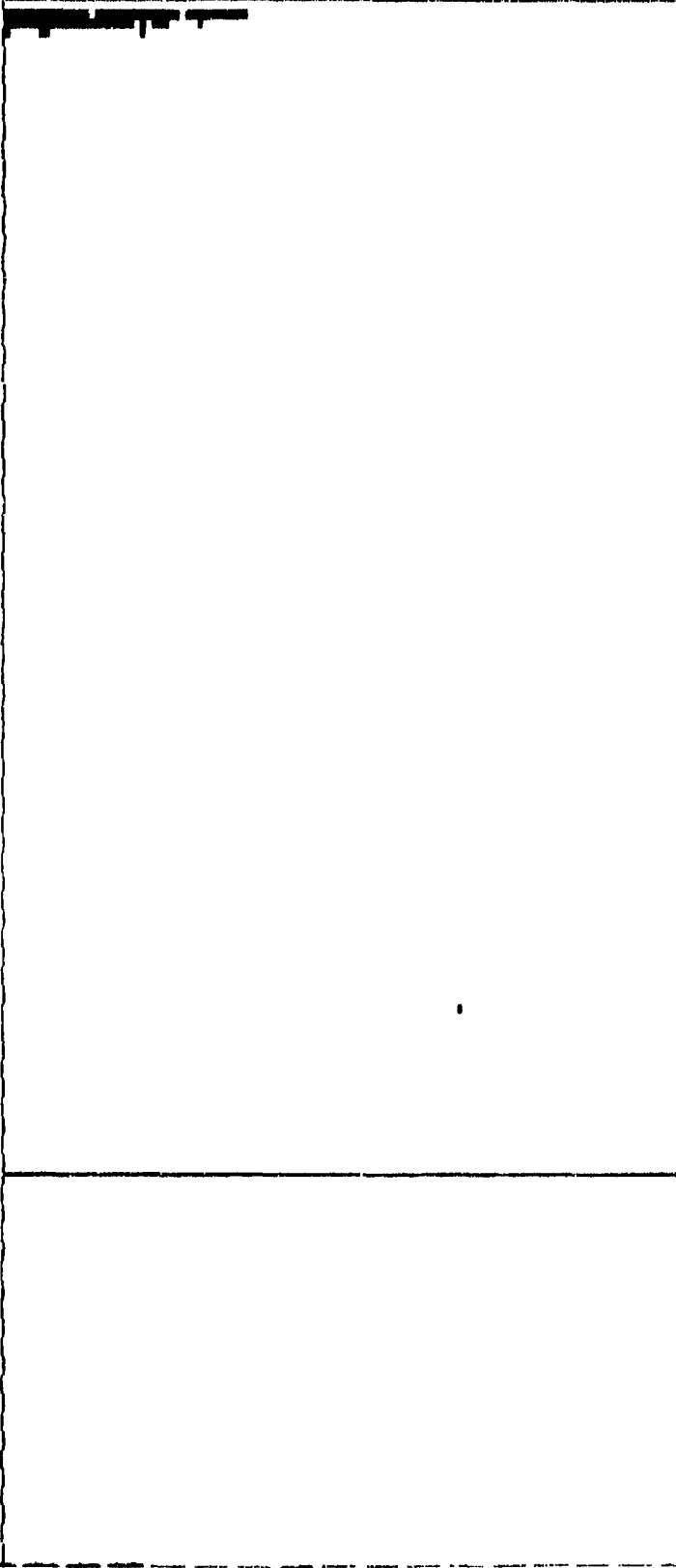
Item TK1-S1C2.2

Projection view

Item TK1-

71.96 in 71.96 in

95.94 in



S1C2.3

Projection view

Item TK1-S1C2.4

T-SCAN IMAGE

0.80 in

23.99 in 23.99

TOP VIEW

Top 12.81 in

Mag 1 Off
Mag 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Rasis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TM1-S1C3.1

Proj

3 in

47.97 in 47.97 in

ection view

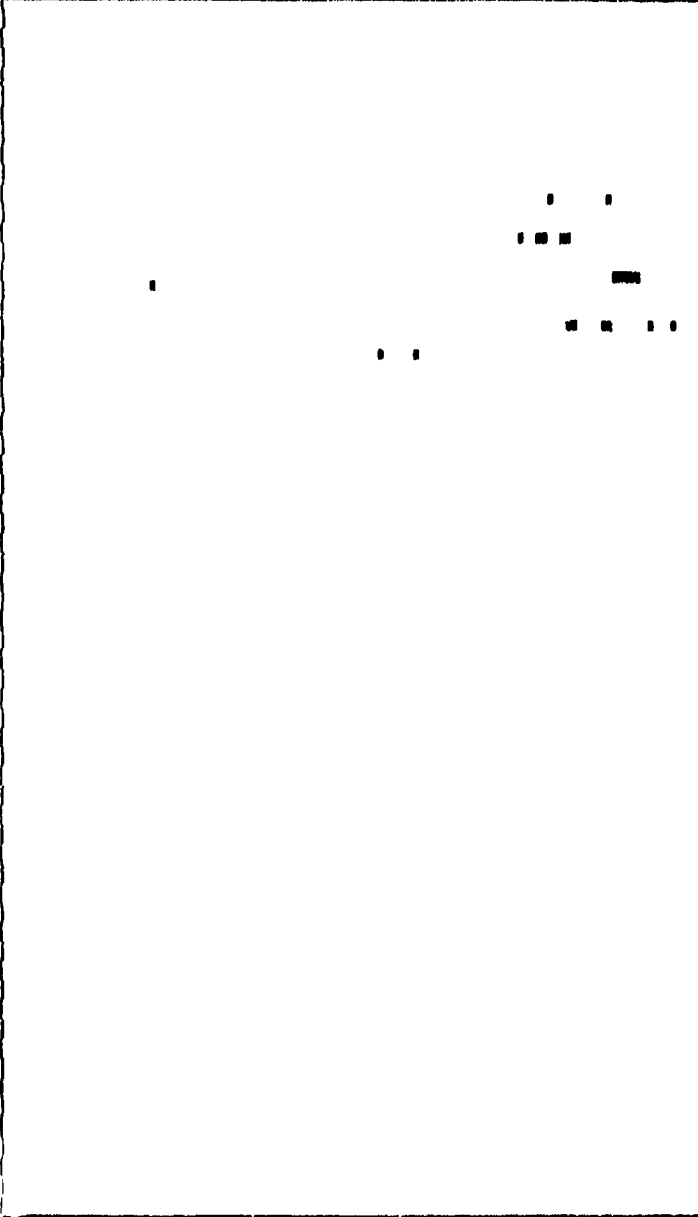
Item TK1-S1C3.2

Projection view

Item TK1-

71.96 in 71.96 in

95.94 in



S1C3.3

Projection view

Item TK1-S1C3.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99

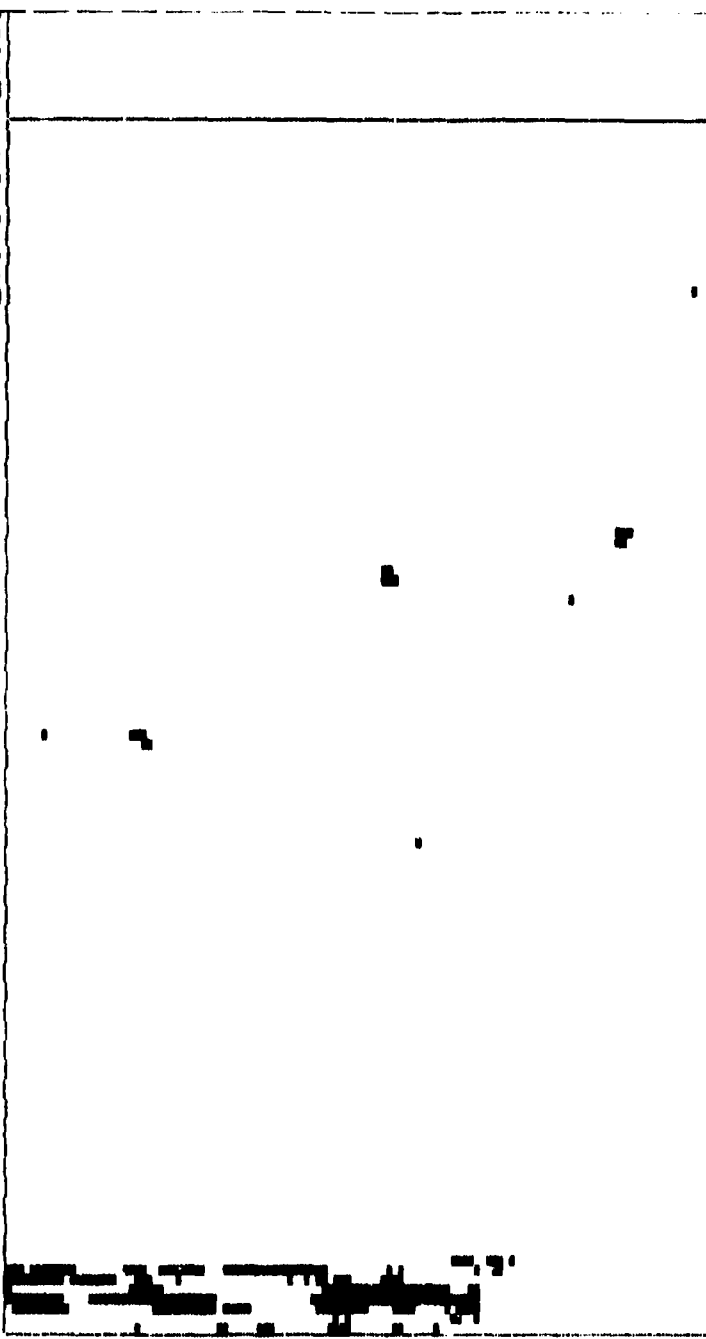
TOP VIEW

Top 12.01 in

log 1 Off
log 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in



SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in



Projection view

Item TK1-S1C4.1

Proj

47.97 in 47.97 in

F.

Item TK1-

Projection view

Item TK1-S1C4.2

tion view

71.96 in	71.96 in	95.94 in
S1C4.3	Projection view	Item TK1-S1C4.4

T-SCAN IMAGE

0.00 in

23.93 in 23.93

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.800 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.800 in

Projection view

Item TK1-S1C5.1

Proj

in

47.97 in 47.97 in

tion view

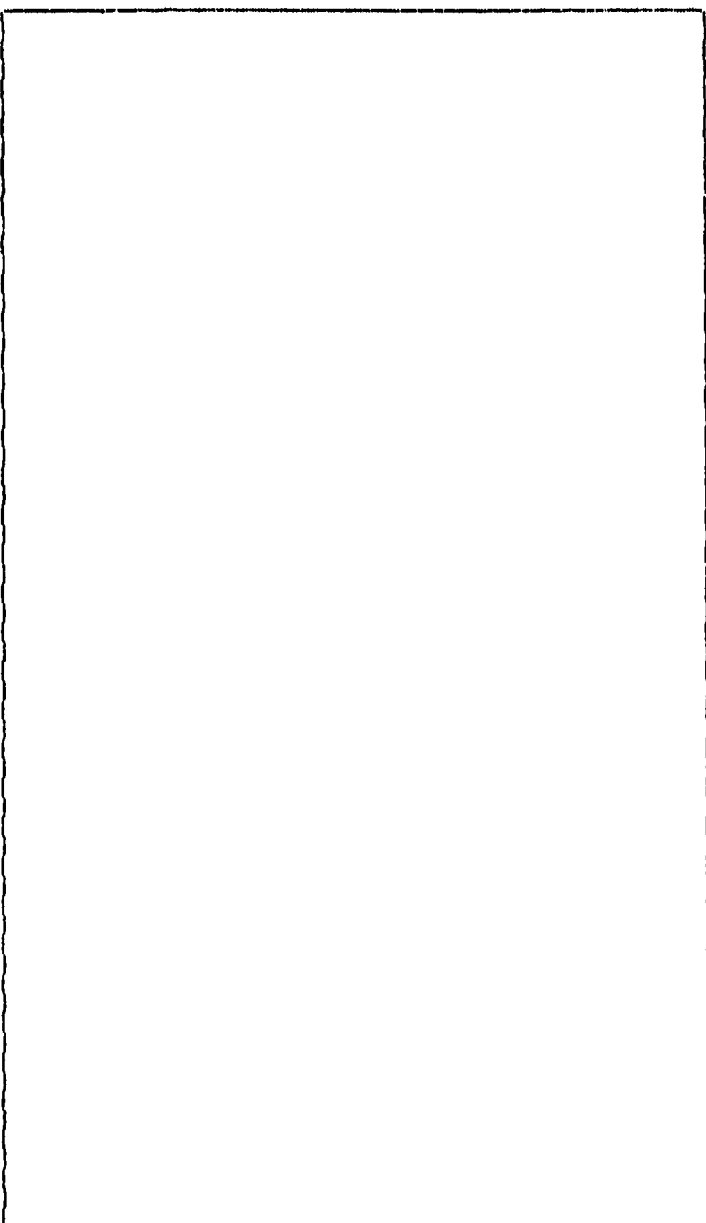
Item TK1-S1C5.2

Projection view

Item TK1-

71.96 in 71.96 in

95.94 in



Item TK1-S105.4

Projection view

S105.3

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item IK1-S2C1.1

Projection

47.97 in 47.97 in

eu

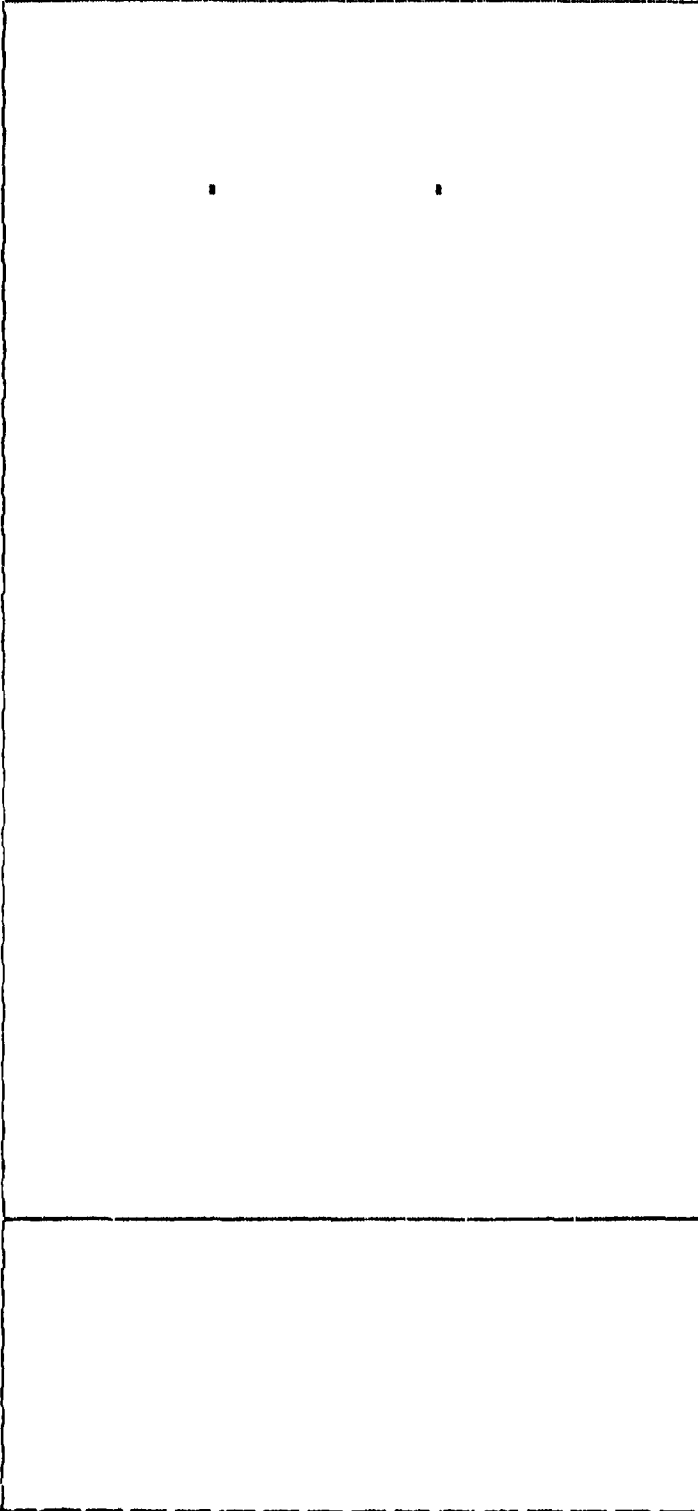
Item TK1-S2C1.2

Projection view

Item TK1-S2C1.3

71.96 in 71.96 in

95.94 in





Projection view

Item TK1-S2C1.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item IK1-S2C2.1

Projection

47.97 in 47.97 in

iew

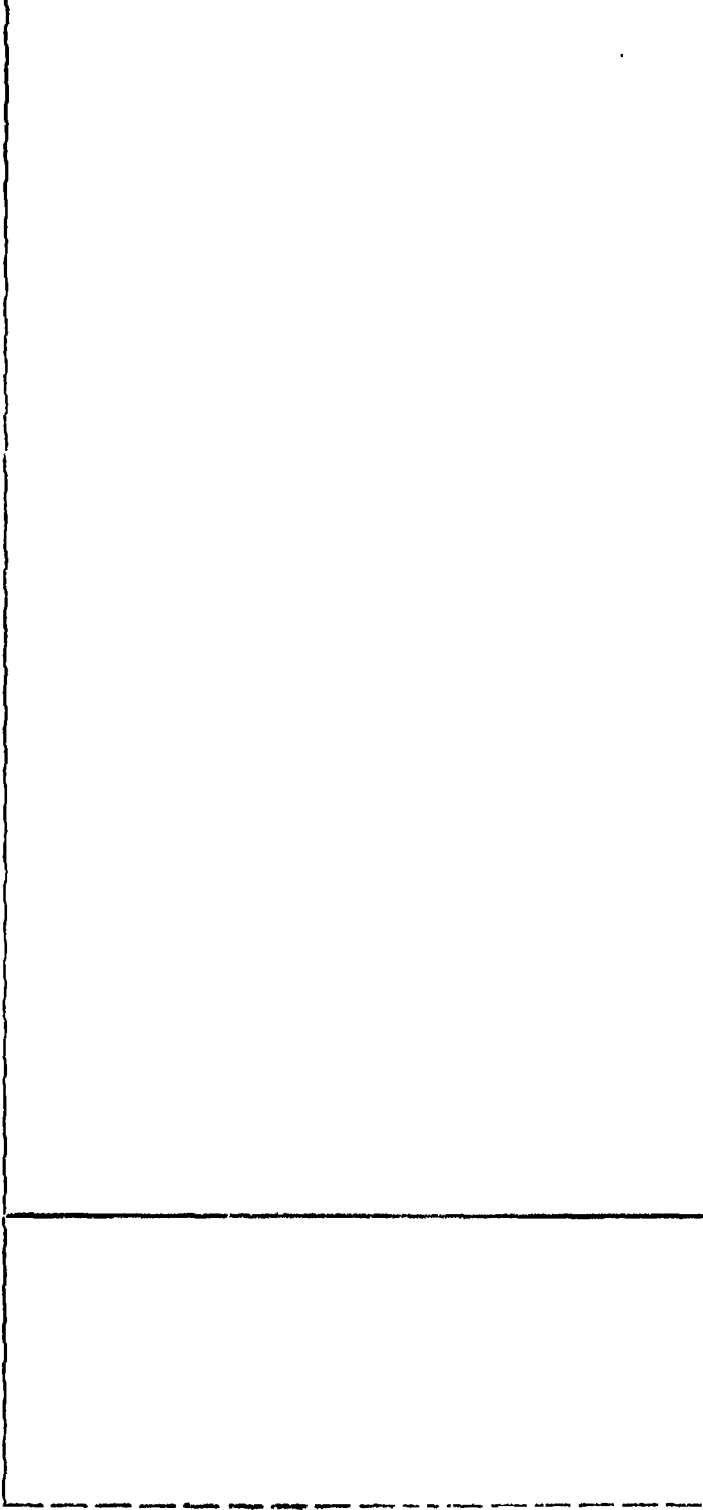
Item TK1-S2C2.2

Projection view

Item TK1-S2C2.2

71.96 in 71.96 in

95.94 in



Projection view

Item TK1-S2C2.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item IK1-S2C3.1

Projection

47.97 in 47.97 in

Item IXI-S2C3.3

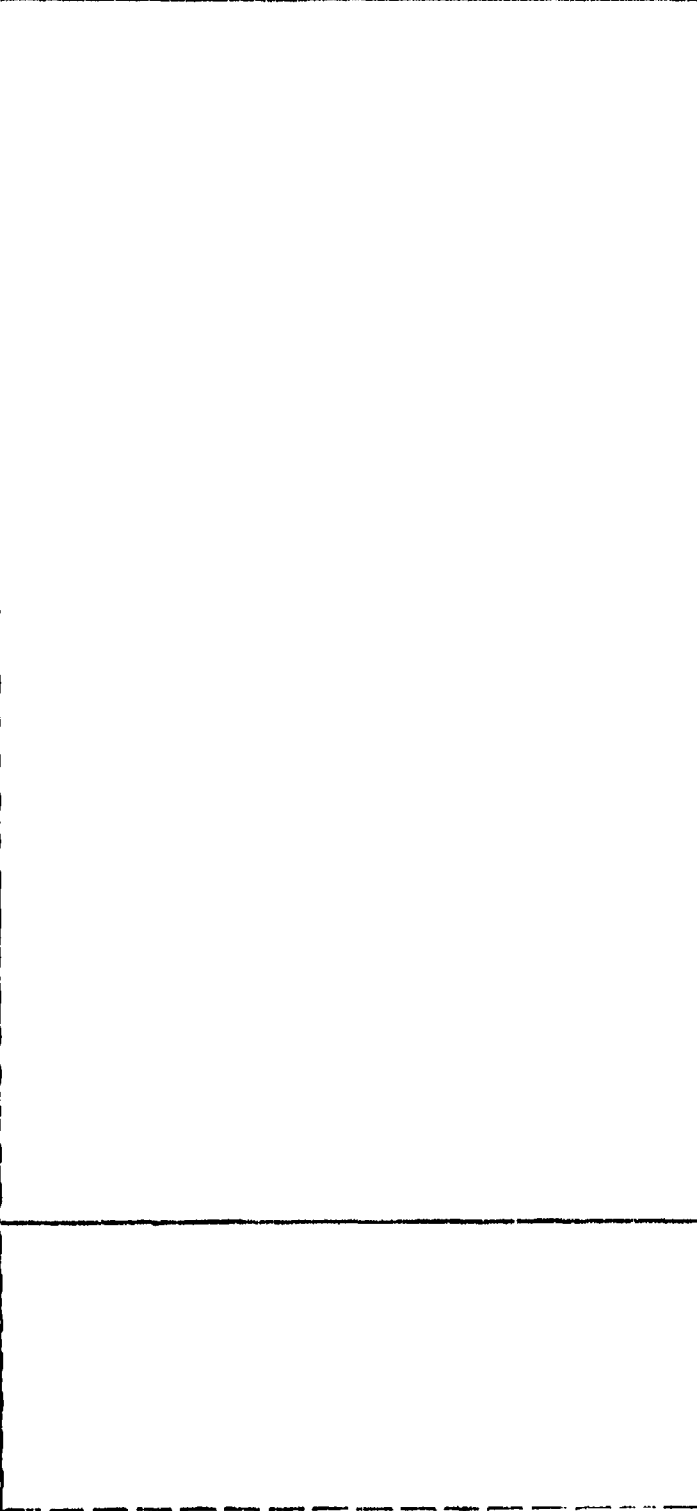
Projection view

Item IXI-S2C3.2

iew

71.96 in 71.96 in

95.94 in



Projection view

Item IK1-S2C3.4

I-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.495 in
 Le3 0.595 in
 Le5 0.695 in
 Le7 0.795 in
 Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.845 in
 Lower 1.000 in

Projection view

Item TN1-SZC4.1

Proj

47.97 in 47.97 in

Projection view

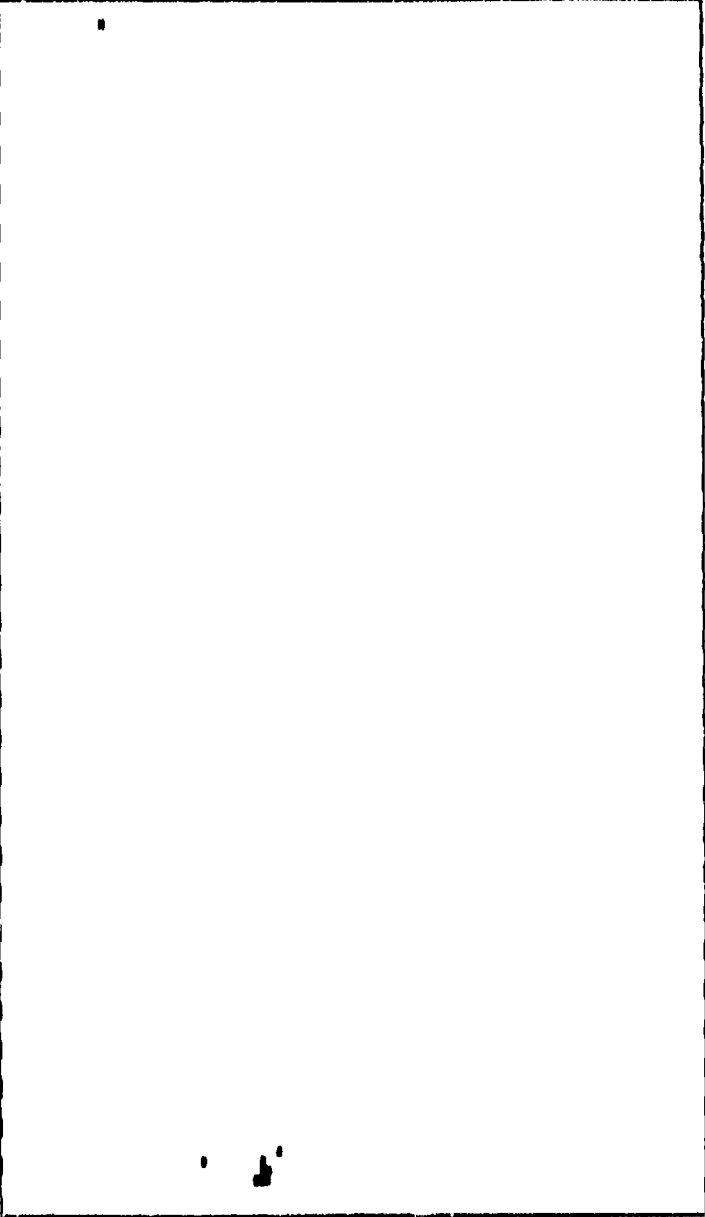
Item TK1-S2C4.2

Item TK1-

ion view

71.96 in 71.96 in

95.94 in



S2C4.3

Projection view

Item TK1-S2C4.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Log 1 Off
Log 2 On

Le1 0.600 in
Le3 0.700 in
Le5 0.800 in
Le7 0.900 in
Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.950 in
Lower 1.000 in

Projection view

Item TK1-SZC5.1

Proj

47.97 in 47.97 in

Item TK1-

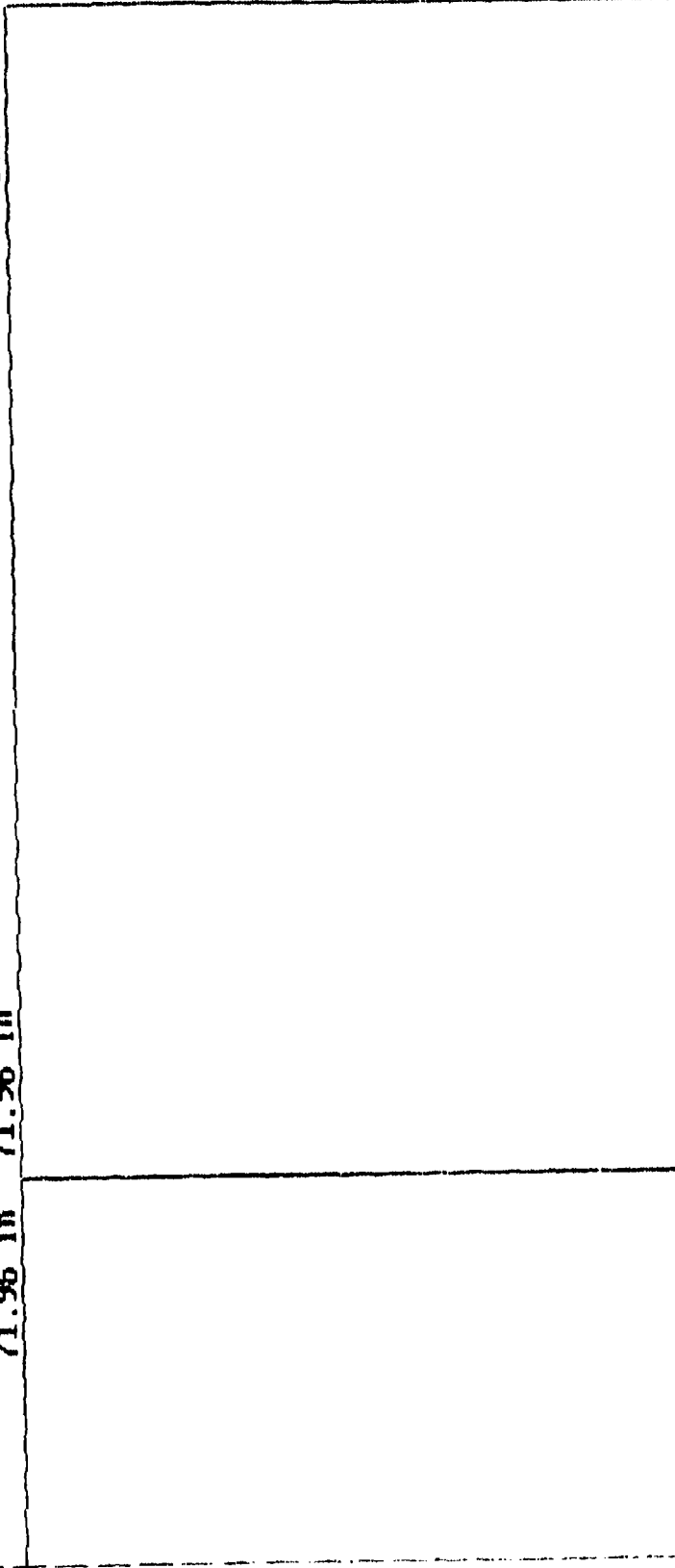
Projection view

Item TK1-S2C5.2

ion view

95.94 in

71.96 in



Item TK1-S205.4

Projection view

S205.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

leg 1 Off
leg 2 Or

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK1-S3C1.1

Proj

47.97 in 47.97 in



2

in view

Item TK1-S3C1.2

Projection view

Item TK1-

71.96 in 71.96 in

95.94 in



S3C1.3

Projection view

Item TH1-S3C1.4

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.81 in

Log 1 Off
Log 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item IK1-S3C2.1

Projection

47.97 in 47.97 in

Item IK1-S3C2.2

Projection view

Item IK1-S3C2.2

cu

95.94 in

71.96 in 71.96 in

Item TK1-S3C2.4

Projection view

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Log 1 Off

Log 2 On

Le1

0.400 in

Le3

0.500 in

Le5

0.600 in

Le7

0.700 in

Basis

0.750 in

Side

1.000 in

SIDE VIEW

Upper

0.400 in

Level

0.750 in

Lower

1.000 in

Projection view

Item TK1-S3C3.1

Projection

47.97 in 47.97 in

Item IK1-S3C3.

Projection view

Item IK1-S3C3.2

T-SCAN IMAGE

0.00 in

23.59 in 23.99

TOP VIEW

Top 12.01 in

leg 1 Off
leg 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.815 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view

Item TK1-S3C4.1

Proj

47.97 in 47.97 in

on view

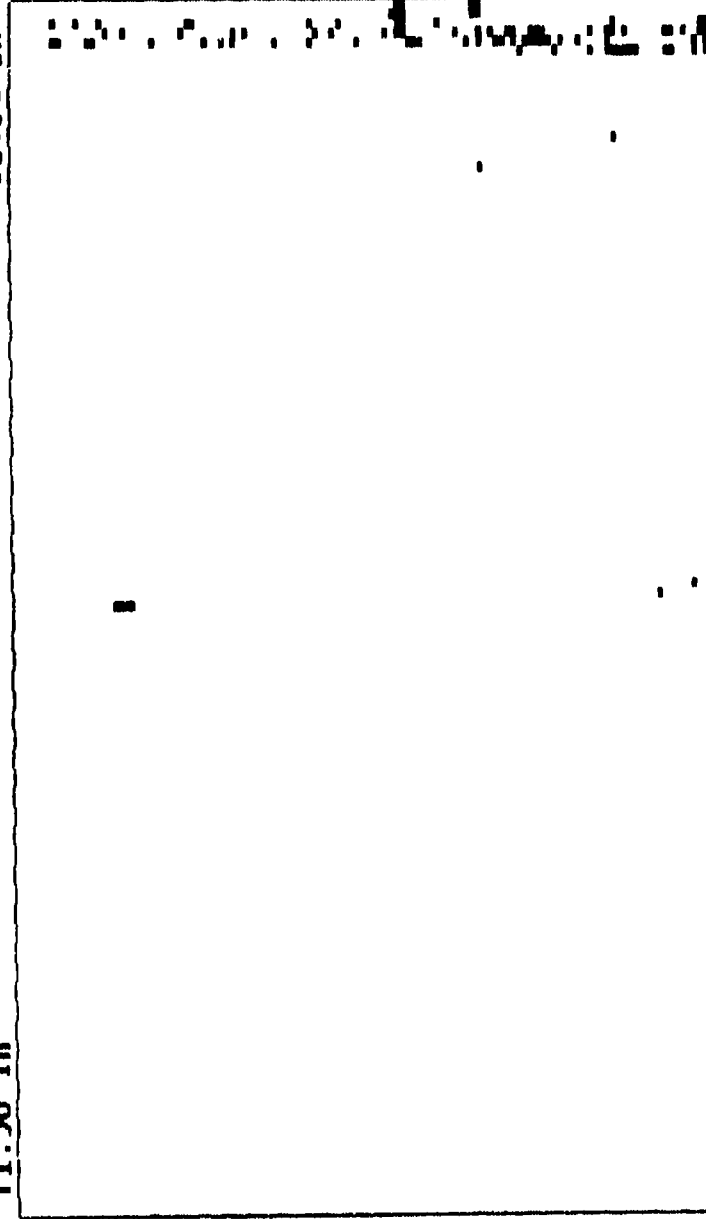
Item TK1-S3C4.2

Projection view

Item TK1-

71.96 in 71.96 in

95.94 in



Projection view

Item TK1-S3C4.4

S3C4.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK1-S3C5.1

Proj

47.97 in 47.97 in

on view

Item TK1-S3C5.2

Projection view

Item TK1-

71.96 in	71.96 in	95.94 in
S3C5.3	Projection view	Item TK1-S3C5.4

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK1-S4C1.1

Projection

47.97 in 47.97 in

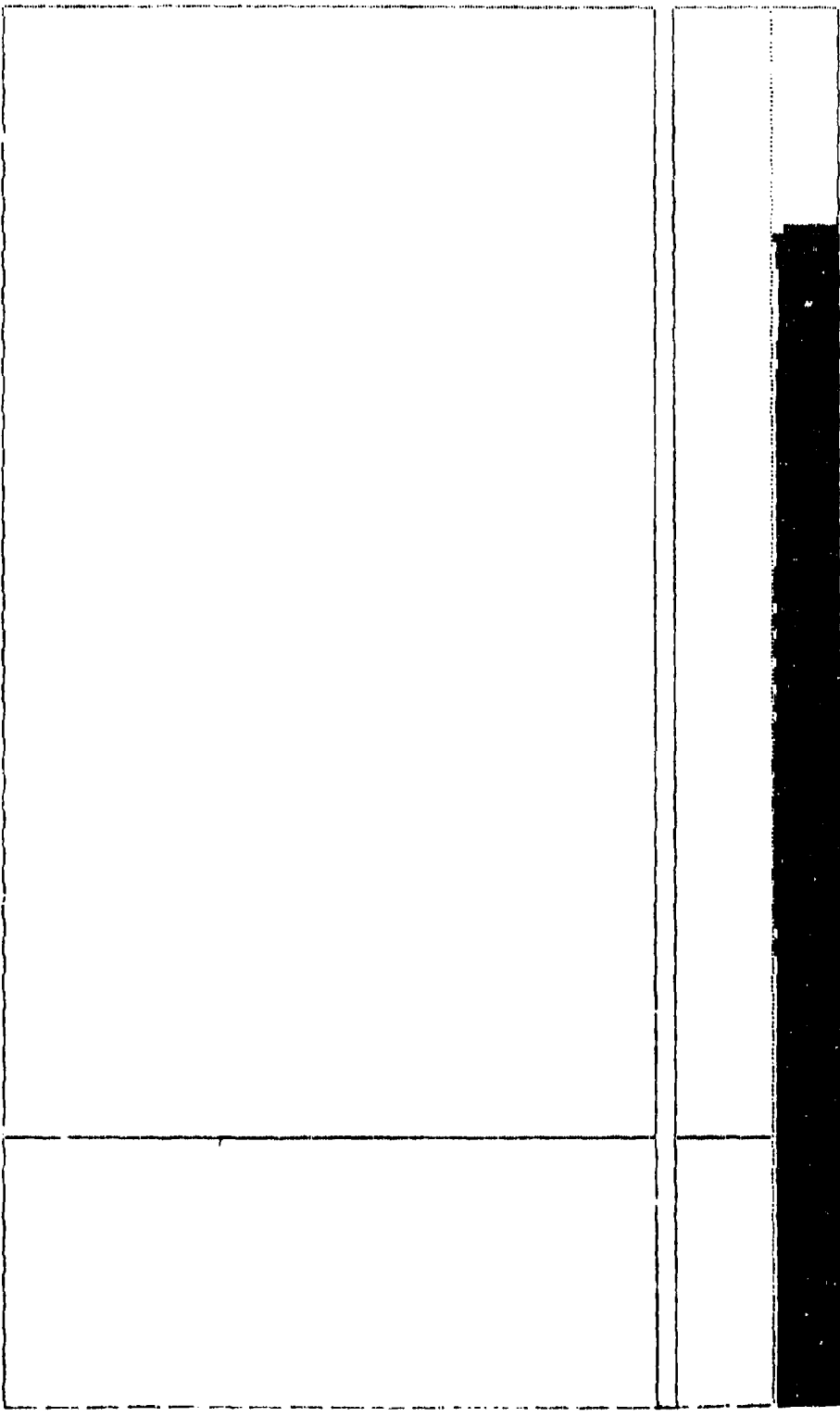
view

Item TK1-S4C1.2

Projection view

Item TK1-S4C1

71.96 in 71.96 in 95.94 in



Projection view Item TX1-S4C1.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Mag 1 Off
Mag 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK1-S4C2.1

Proj

in

47.97 in 47.97 in

ection view

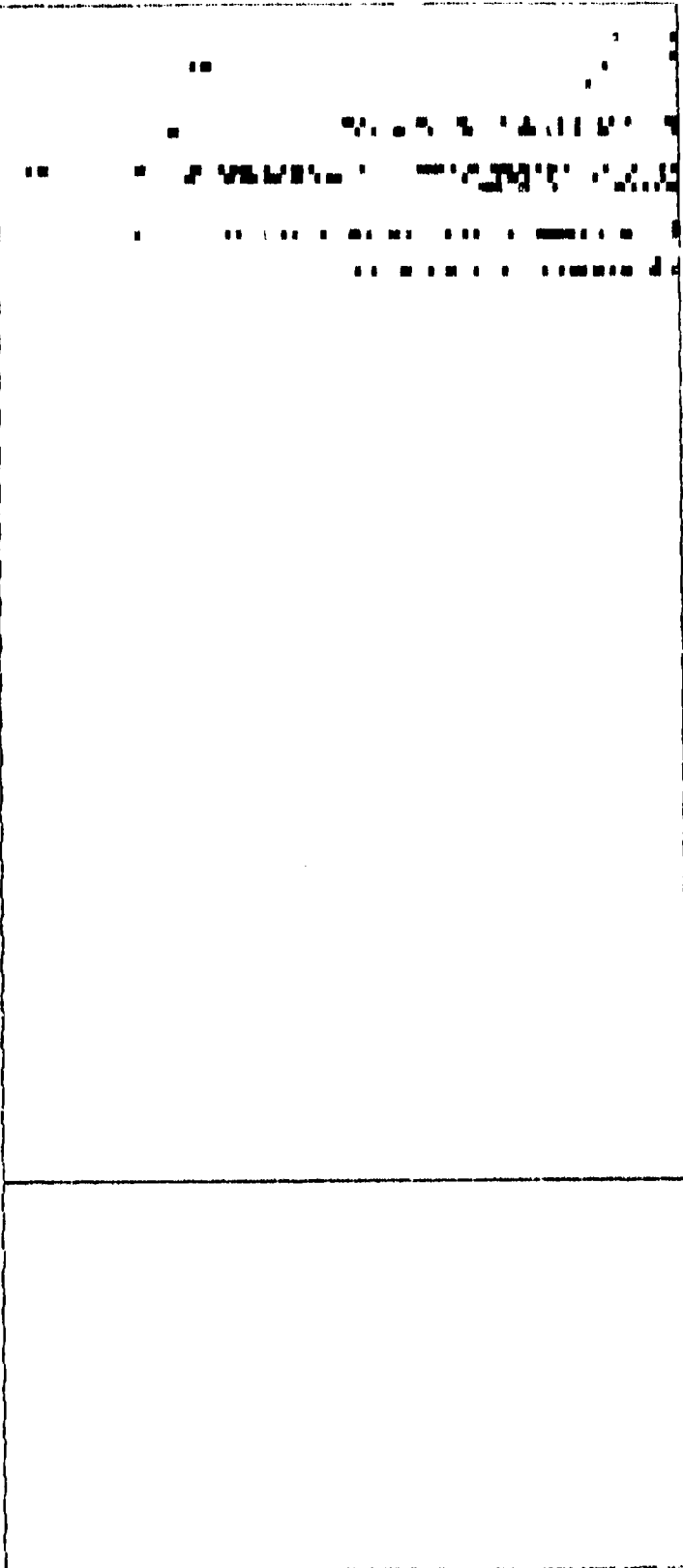
Item TK1-S4C2.2

Projection view

Item TK

71.96 in 71.96 in

95.94 in



S4C2.3

Projection view

Item TK1-S4C2.4

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

IOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK1-S4C3.1

Projection

47.97 in 47.97 in

view

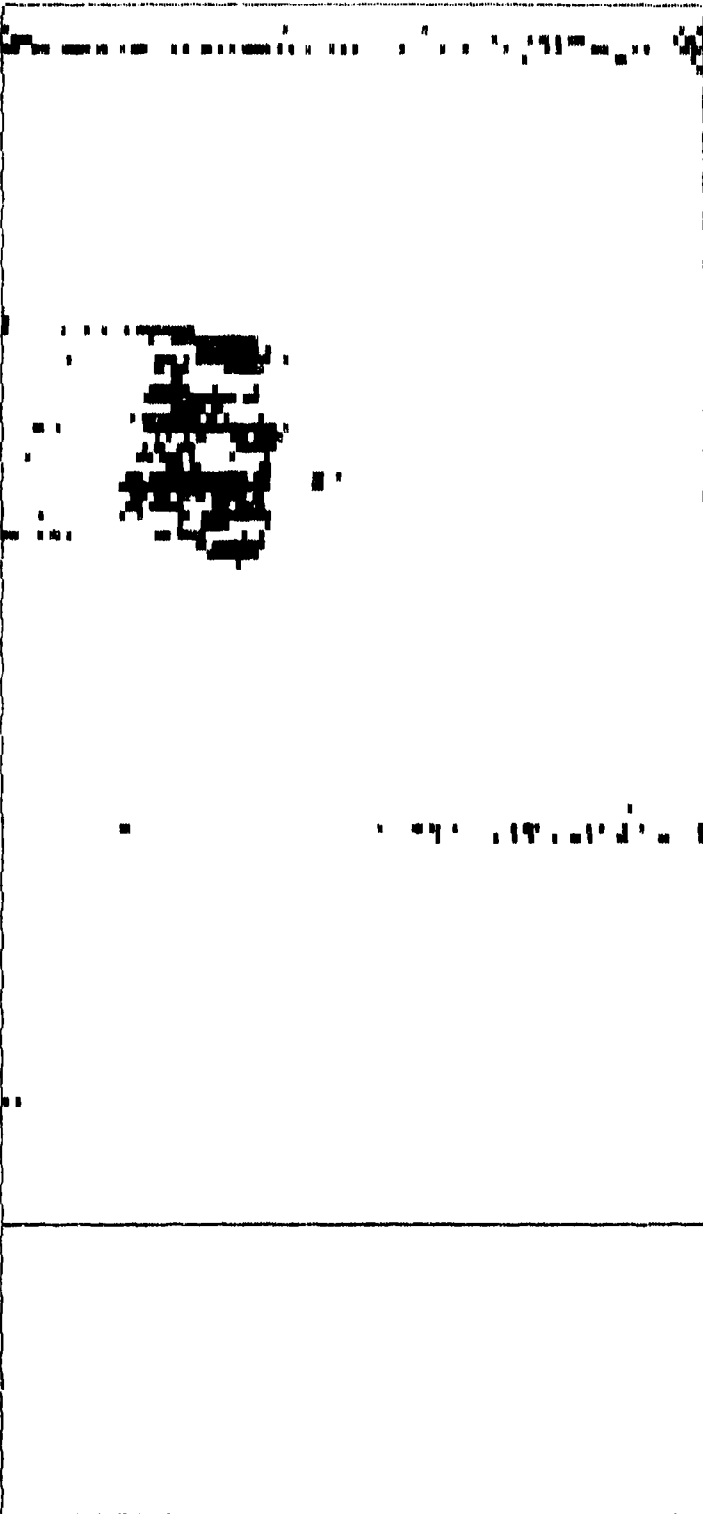
Item TK1-S4C3.2

Projection view

Item TK1-S4C3.2

71.96 in 71.96 in

95.94 in



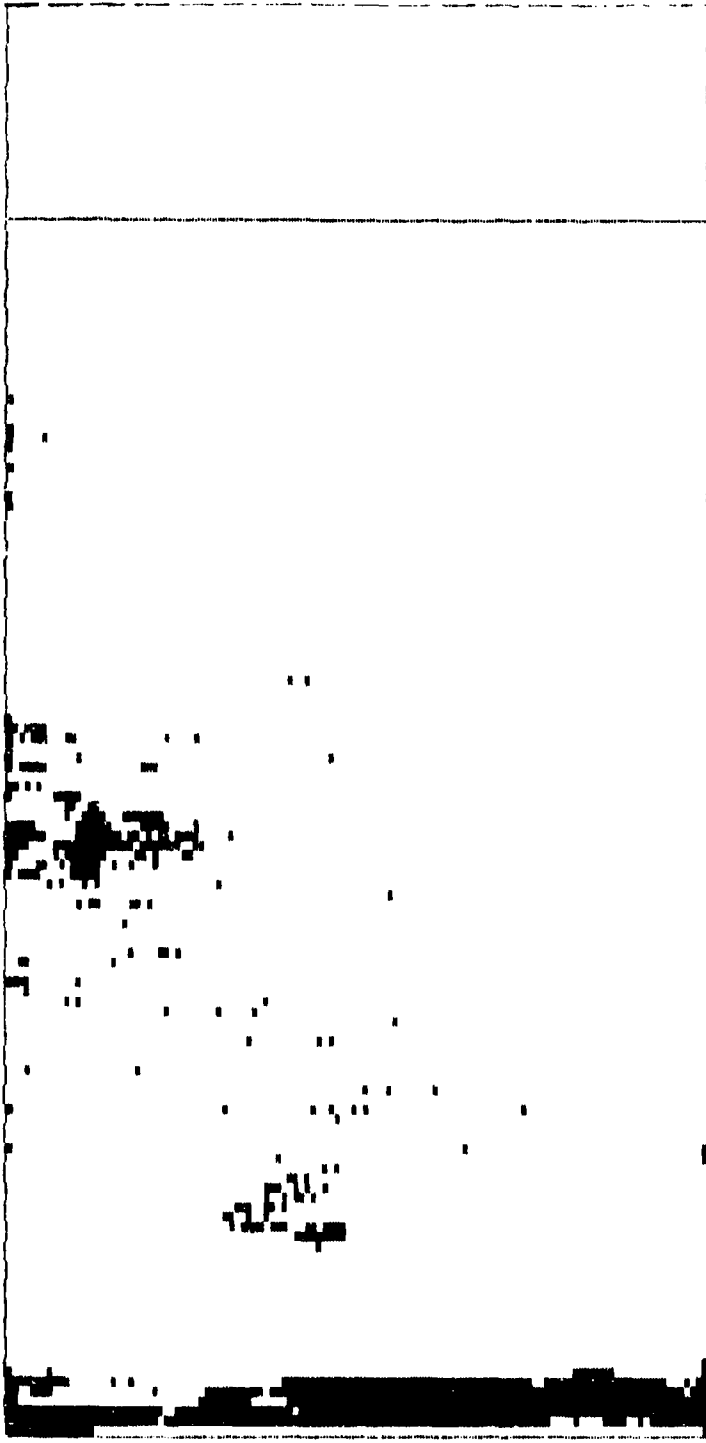
Projection view

Item TK1-S4C3.4

T-SCAN IMAGE

8.88 in

23.99 in 23.99 in



TOP VIEW

Top 12.81 in

Log 1 Off

Log 2 On

Le1 0.495 in

Le3 0.595 in

Le5 0.695 in

Le7 0.795 in

Basis 0.845 in

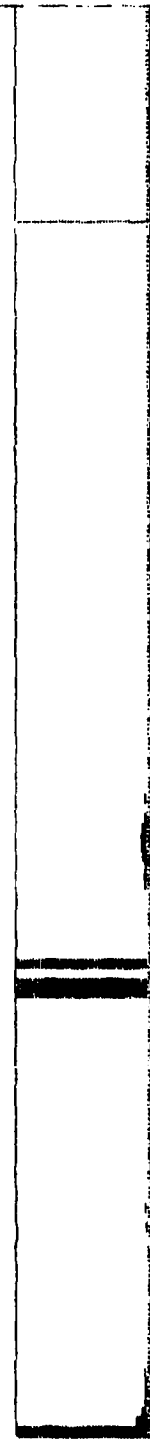
Side 1.000 in

SIDE VIEW

Upper 0.480 in

Level 0.845 in

Lower 1.000 in



Projection view

Item IM1-S404.1

Projection

47.97 in 47.97 in



1

view

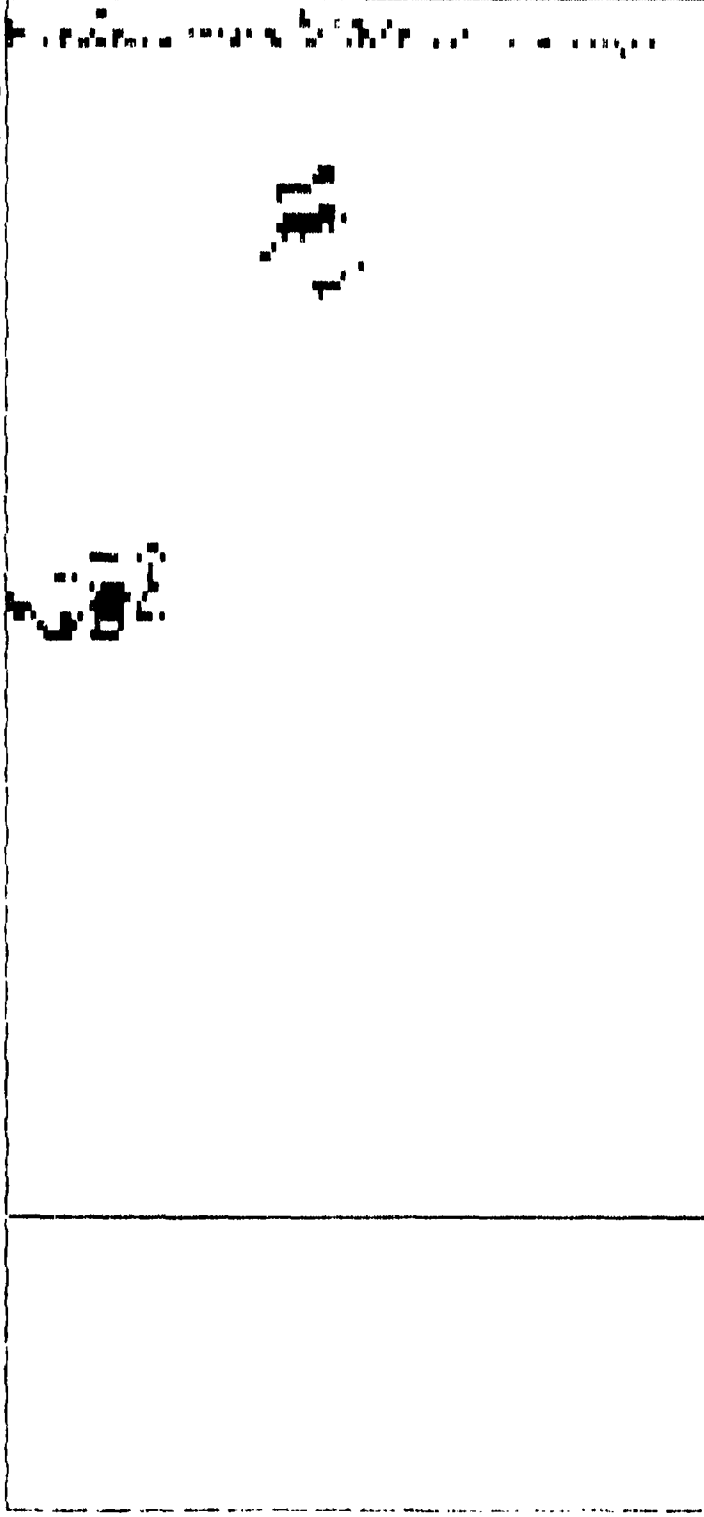
Item TK1-S4C4.2

Projection view

Item TK1-S4C4

71.96 in 71.96 in

95.94 in



Projection view

Item TK1-S4C4.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TX1-S4C5.1

Projection

47.97 in 47.97 in

view

Item TK1-S4C5.2

Projection view

Item TK1-S4C5

71.96 in 71.96 in

95.94 in

Projection view

Item IK1-S4C5.4

T-SCAN IMAGE

8.88 in

23.99 in 23.99 in

TOP VIEW

Top 12.81 in

Log 1 Off
Log 2 On

Le1 8.488 in
Le3 8.588 in
Le5 8.688 in
Le7 8.788 in
Basis 8.758 in

Side 1.888 in

SIDE VIEW

Upper 8.488 in
Level 8.758 in
Lower 1.888 in

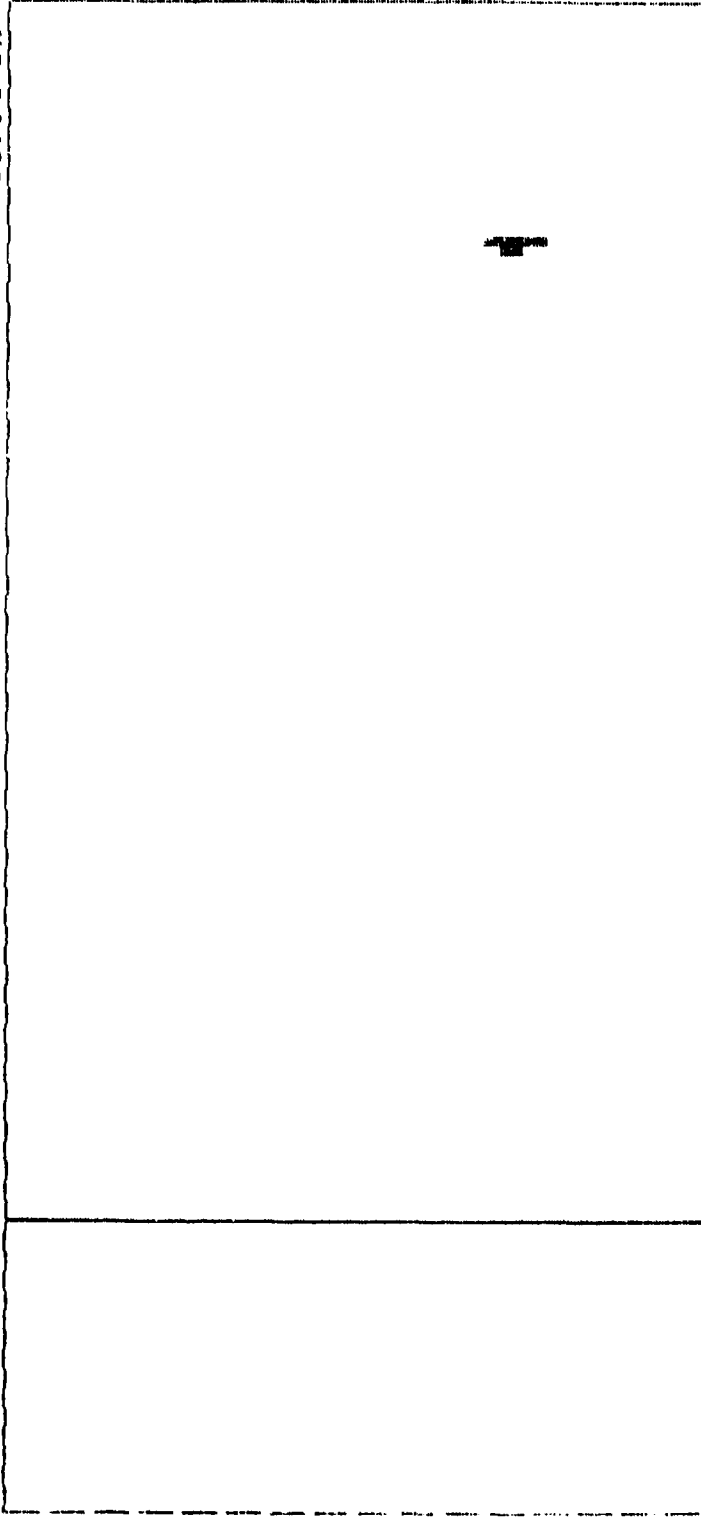
Projection view

Item TK1-S5C1.1

Projection

71.96 in 71.96 in

95.94 in



Projection view

Item TK1-S5C1.4

47.97 in 47.97 in

view

Item IK1-S5C1.2

Projection view

Item IK1-S

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK1-S5C2.1

Projection

47.97 in 47.97 in

view

Item TK1-S5C2.2

Projection view

Item TK1-S5C

71.96 in 71.96 in

95.94 in

Projection view

Item IM-S5C2.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.81 in

Log 1 Off
Log 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK1-S5C3.1

Proj

in

47.97 in 47.97 in

ection view

Item TK1-S5C3.2

Projection view

Item TK

E-3055

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

IOP VIEW

Iop 12.01 in

Img 1 Off
 Img 2 On

Le1 0.495 in
 Le3 0.595 in
 Le5 0.695 in
 Le7 0.795 in
 Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.845 in
 Lower 1.000 in

Projection view

Item TKI-S5C4.1

Projection

47.97 in 47.97 in



view

Item TK1-S5C4.2

Projection view

Item TK1-S5C4

71.96 in 71.96 in

95.94 in



Projection view

Item TK1-S5C4.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

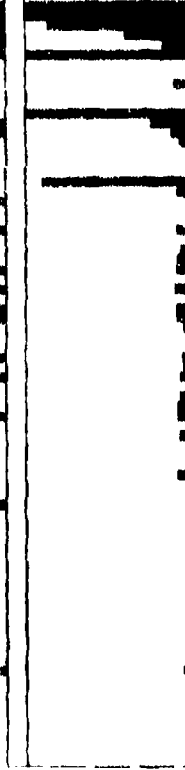
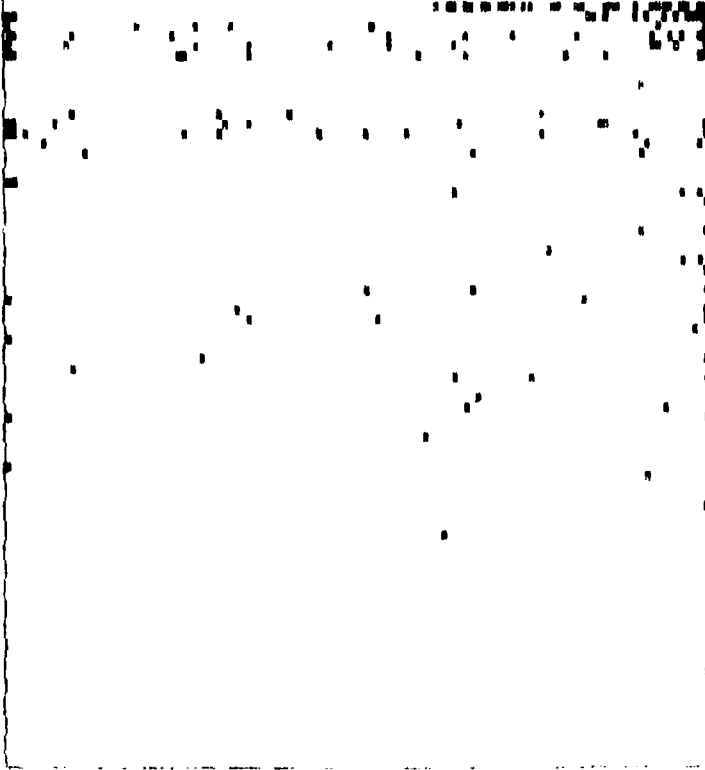
Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item IX1-S5C5.1

Projection

47.97 in 47.97 in



view

Item TK1-S5C5.2

Projection view

Item TK1-S5C5.2

71.96 in 71.96 in

95.94 in

Projection view

Item TK1-S5C5.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Log 1 Off
Log 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK1-S6C1.1

Proj

47.97 in 47.97 in

in



ction view

Item TK1-S6C1.2

Projection view

Item TK1

71.96 in 71.96 in

95.94 in



S6C1.3

Projection view

Item TK1-S6C1.4

T-SCAN IMAGE

8.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Log 1 Off
Log 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK1-S6C2.1

Proj

47.97 in 47.97 in

in

Item TK1

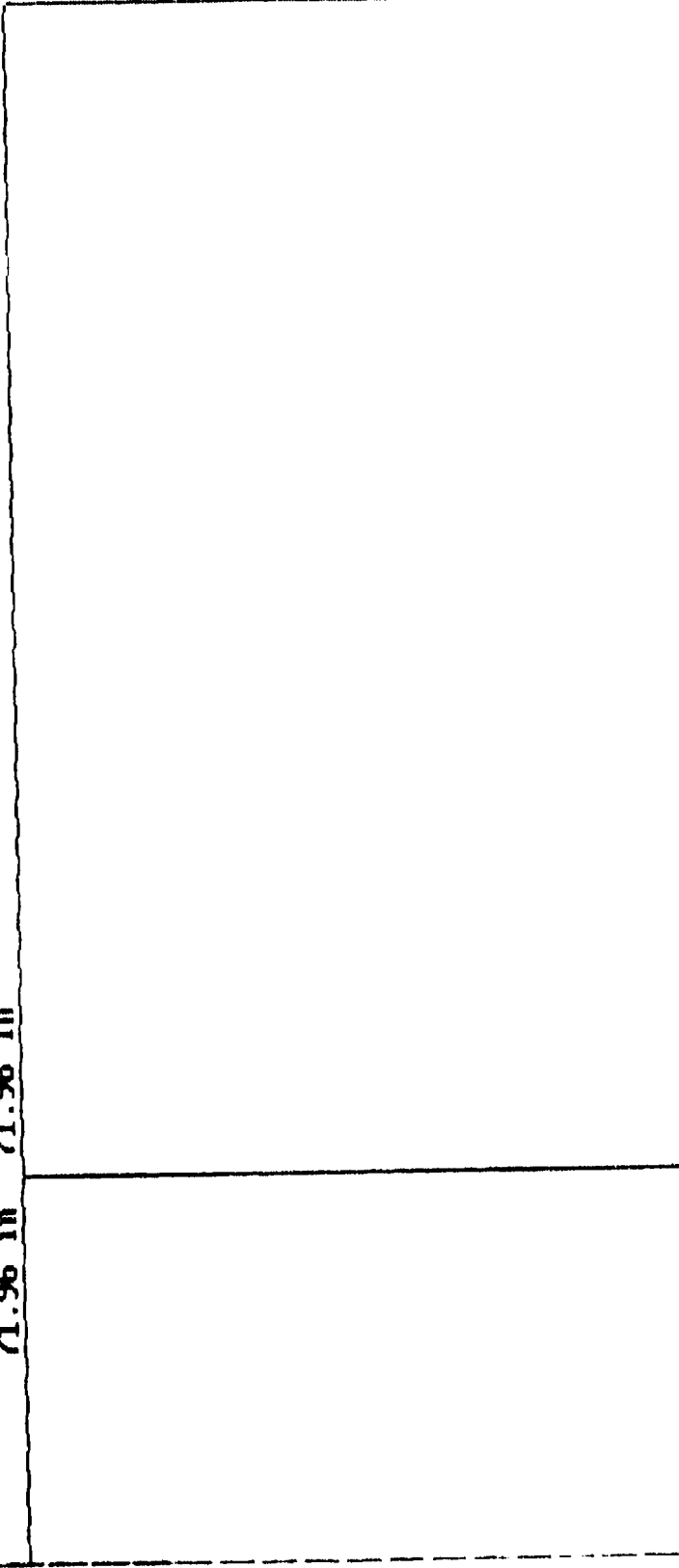
Projection view

Item TK1-S6C2.2

ection view

95.94 in

71.96 in 71.96 in



Item TK1-S6C2.4

Projection view

S6C2.3

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item IK1-S6C3.1

Projection

47.97 in 47.97 in

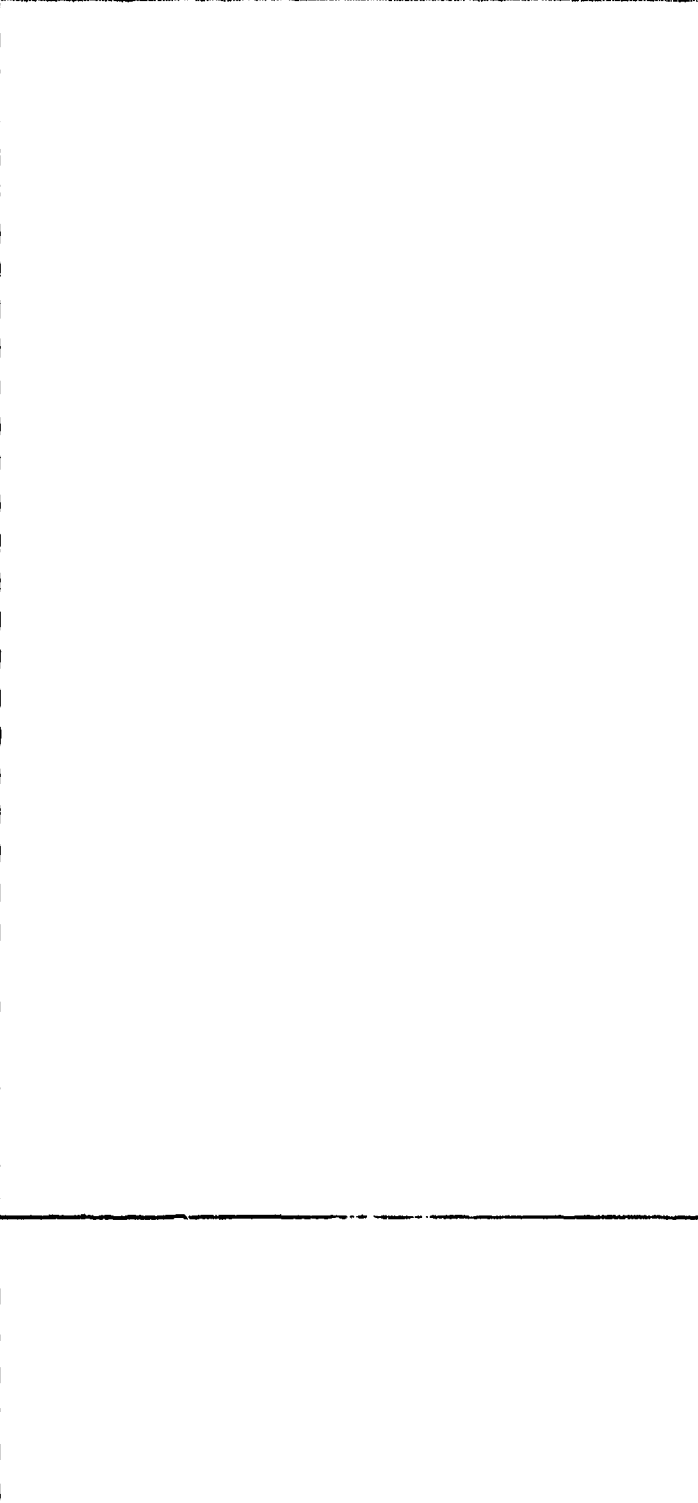
view

Item TK1-S6C3.2

Projection view

Item TK1-S6C3.3

71.96 in 71.96 in 95.94 in



Item TK1-S6C3.4

Projection view

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view

Item TK1-S6C4.1

Proj

in

47.97 in 47.97 in

TK1

ection view

Item TK1-S6C4.2

Projection view

Item TK1

71.96 in 71.96 in

95.94 in



S6C4.3

Projection view

Item TK1-S6C4.4

0.88 in 23.99 in 23.99

T-SCAN IMAGE

TOP VIEW

Top 12.81 in

Log 1 Off
Log 2 On

Le1 0.688 in
Le3 0.788 in
Le5 0.888 in
Le7 0.988 in
Basis 0.958 in

Side 1.888 in

SIDE VIEW

Upper 0.488 in
Level 0.958 in
Lower 1.888 in

Item TK1-S6C5.1

Projection view

Proj

47.97 in 47.97 in

in

Projection view

Item TK1-S6C5.2

Section view

Item TK1-

71.96 in 71.96 in

95.94 in



Projection view

Item TK1-S6C5.4

S6C5.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK1-S7C1.1

Proj

in

47.97 in 47.97 in

ction view

Item TK1-S7C1.2

Projection view

Item TK1-

71.96 in 71.96 in

95.94 in

S7C1.3

Projection view

Item TR1-S7C1.4

I-SCAN IMAGE

0.00 in

23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK1-SYC2.1

23.99 in

47.97 in 47.97 in

Projection view

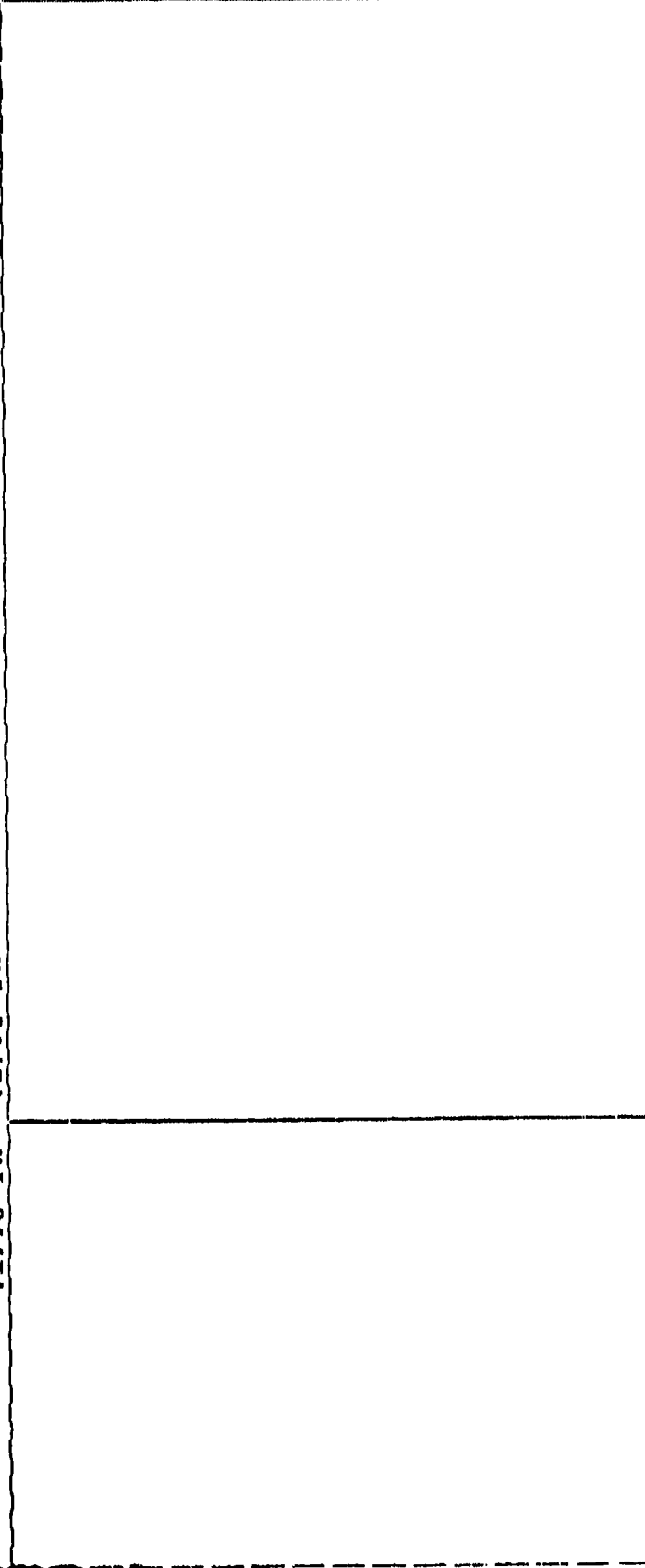
Item TK1-STC2.2

Projection view

Item

71.96 in 71.96 in

95.94 in



IK1-S7C2.3

Projection view

Item IK1-S7C2.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

leg 1 Off

leg 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK1-S7C3.1

Proj

in 47.97 in 47.97 in

ction view Item TK1-S7C3.2 Projection view Item TK1

95.94 in

71.96 in 71.96 in

Item TK1-S7C3.4

Projection view

S7C3.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Mag 1 Off
Mag 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view

Item TK1-S7C4.1

Proj

71.96 in 71.96 in

95.94 in



S7C4.3

Projection view

Item TN1-S7C4.4

in 47.97 in 47.97 in

action view Item TK1-S7C4.2 Projection view Item TK1-

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item IM1-S7C5.1

Proj

3 in

47.97 in 47.97 in

ection view

Item IK1-S7C5.2

Projection view

Item IK1

71.96 in 71.96 in

95.94 in

-S7C5.3

Projection view

Item TK1-S7C5.4

I-SCAN IMAGE

0.80 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

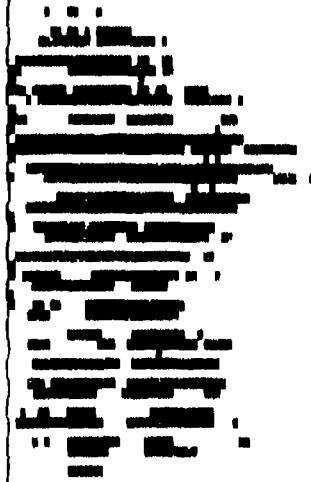
Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item IK1-S8Cl.1

Proj

47.97 in 47.97 in



ion view

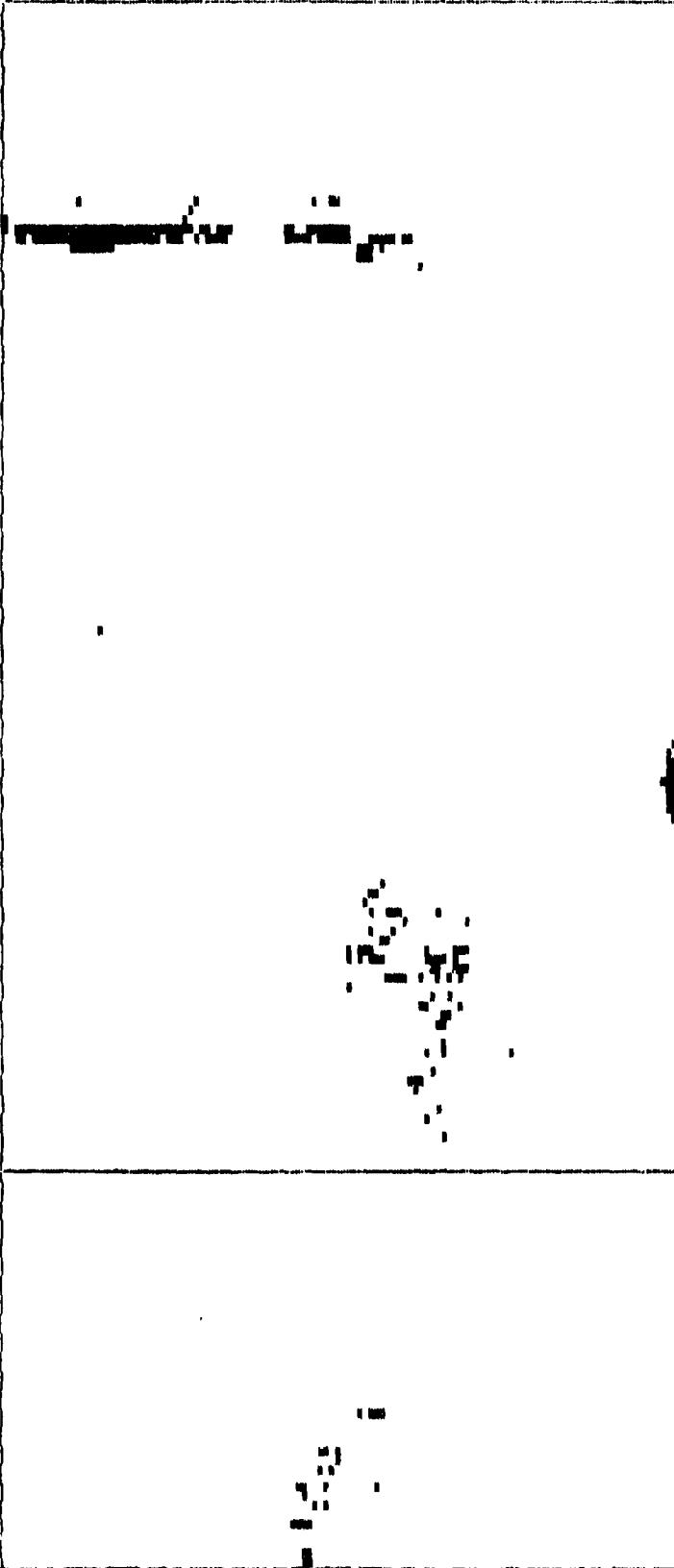
Item TK1-S8C1.2

Projection view

Item TK1

71.96 in 71.96 in

95.94 in



S8C1.3

Projection view

Item TK1-S8C1.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

leg 1 Off
leg 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK1-S8C2.1

Proje

in 47.97 in 47.97 in

Item TK1-

Projection view

Item TK1-S8C2.2

ction view

71.96 in 71.96 in

95.94 in

S8C2.3

Projection view

Item TK1-S8C2.4

T-SCAN IMAGE

8.88 in

23.99 in 23.99

TOP VIEW

Top 12.81 in

Img 1 Off
Img 2 On

Le1 0.488 in
Le3 0.588 in
Le5 0.688 in
Le7 0.788 in
Basis 0.758 in

Side 1.888 in

SIDE VIEW

Upper 0.488 in
Level 0.758 in
Lower 1.888 in

Projection view

Item IW1-S8C3.1

Proj

47.97 in 47.97 in

in

Projection view

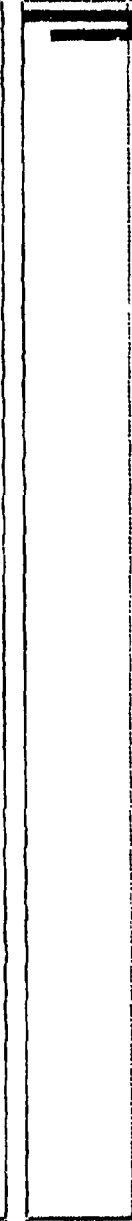
Item TK1-S8C3.2

Item TK1-

tion view

71.96 in 71.96 in

95.94 in



S8C3.3

Projection view

Item TK1-S8C3.4

I-SCAN IMAGE

8.88 in

23.99 in 23.9

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.495 in
 Le3 0.595 in
 Le5 0.695 in
 Le7 0.795 in
 Basis 0.845 in

Side 1.888 in

SIDE VIEW

Upper 0.488 in
 Level 0.845 in
 Lower 1.888 in

Projection view

Item TK1-S8C4.1

Proj

47.97 in 47.97 in

Item TK1

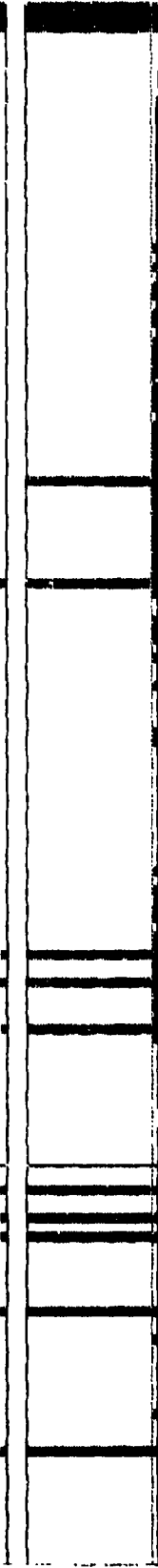
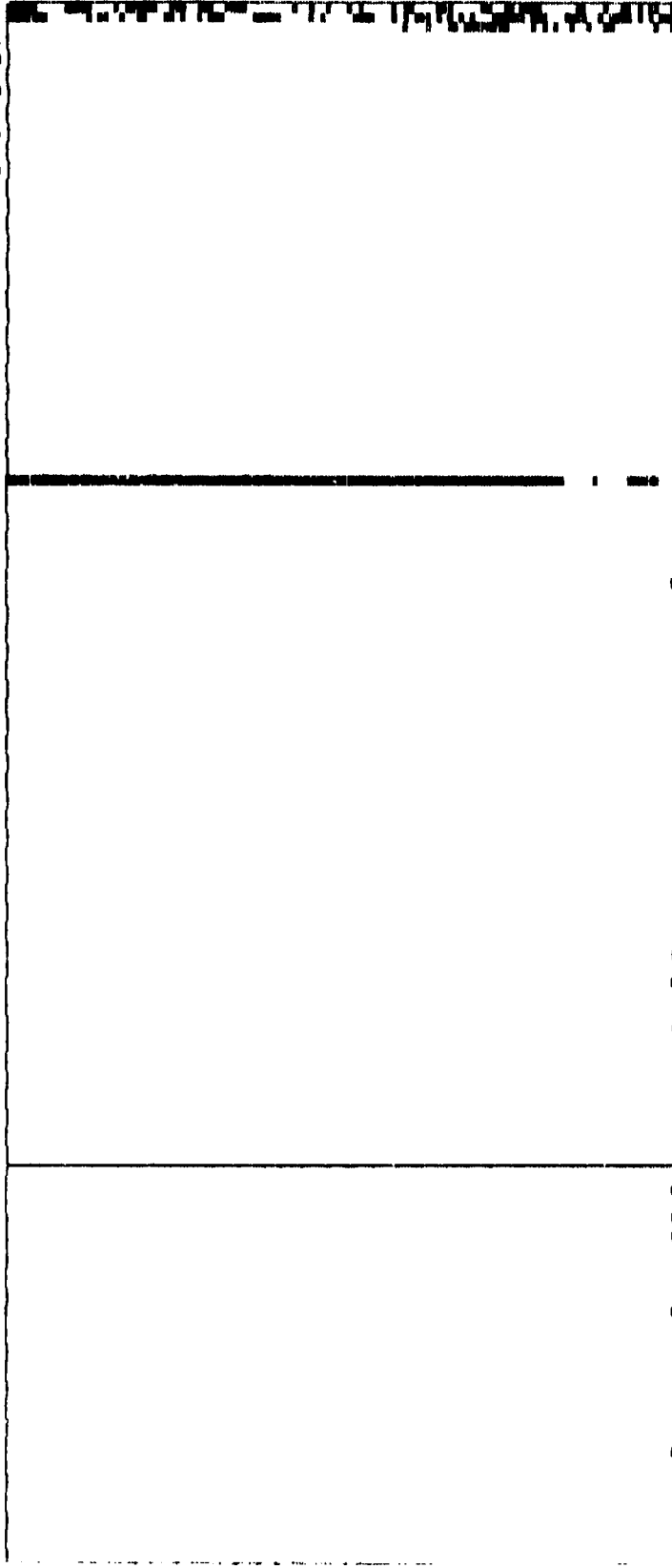
Projection view

Item TK1-S8C4.2

tion view

71.96 in 71.96 in

95.94 in



-S8C4.3

Projection view

Item TK1-S8C4.4

23.99 in 23.99

Top 12.01 in

On

Basis 0.950 in

1.000 in

Lower 1.000 in

Proj

47.97 in 47.97 in

ion view

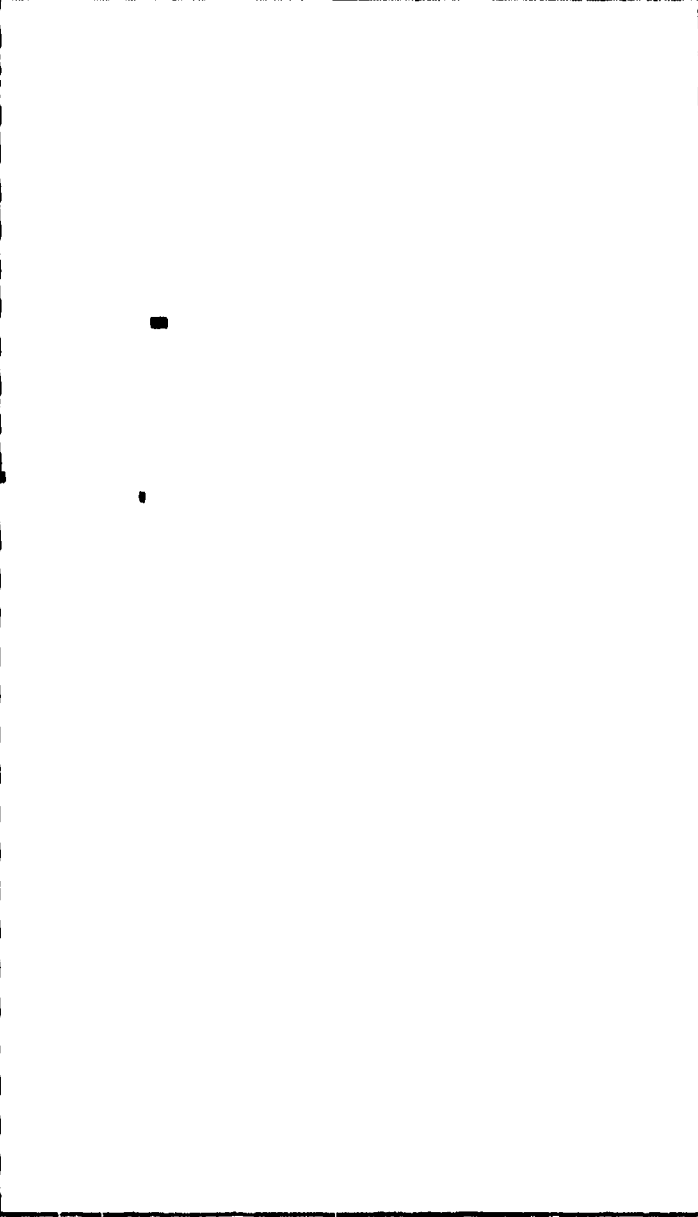
Item TK1-S0C5.2

Projection view

Item TK1-

71.96 in 71.96 in

95.94 in



Projection view

Item TK1-S8C5.4

S8C5.3

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK1-H1C5.1

Proj

in

47.97 in 47.97 in

ection view

Item IX1-H1C5.2

Projection view

Item IX1

71.96 in 71.96 in

95.94 in 95.94 in

- - -

-H1C5.3

Projection view

Item TK1-H1C5.4

Projection vi

95.94 in 95.94 in

119.93 in

Projection view

Item TK1-H1C5.5

2

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.600 in
Le3 0.700 in
Le5 0.800 in
Le7 0.900 in
Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.950 in
Lower 1.000 in

Projection view

Item TK1-H2C5.1

Proj

47.97 in 47.97 in

30 view

Item TK1-H2C5.2

Projection view

Item TK1

71.96 in 71.96 in

95.94 in 95.94 in

2C5.3

Projection view

Item TX1-H2C5.4

Projection view

119.93 in

Item TK1-H2C5.5

APPENDIX 2
TANK 2: T-SCAN Data Tables and Hardcopy



SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2 EXAM DATE: 04 Oct 89
 PIPE DIA: _____ IN. CIRCUMFERENCE: _____
 REF. PT. _____ DATA TAPE #: _____
 DATA FILE #: _____

EXAMINER: Paul A. Byers LEVEL: III EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____



SITE: RMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 04-Oct-89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P15489 DATA SHEET #: 30

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 04 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY		DATA T MAX		DATA T MIN		DATA T AVG		COMMENTS EVA T MIN (mm)
	FROM	TO	INCH	mm	INCH	ΔT	INCH	mm	
S2C1	19	24	0.770		0.735	-0.015	0.760		
S2C1	24	48	0.775		0.735	-0.010	0.770		18.7
S2C1	48	72	0.775		0.745	-0.000	0.765		
S2C1	72	96	0.775		0.732	+0.010	0.755		
S2C2	0	24	0.785		0.730	-0.020	0.770		
S2C2	24	48	0.780		0.760	-0.000	0.765		19.3
S2C2	48	72	0.785		0.765	+0.005	0.770		
S2C2	72	96	0.790		0.750	-0.005	0.775		
COMMENTS									

EXAMINER: [Signature]
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P15489 DATA SHEET #: 31

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 05 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T MIN INCH	ΔT	DATA T AVG INCH	AVG mm	COMMENTS EVA T MIN(mm)
S2C3	0	24	0.800		0.760	-0.005	0.790		
S2C3	24	48	0.810		0.780	+0.005	0.800		19.8
S2C3	48	72	0.810		0.790	+0.010	0.800		
S2C3	72	96	0.805		0.775	+0.005	0.790		
S2C4	0	24	0.895		0.845	-0.010	0.880		
S2C4	24	48	0.900		0.865	-0.000	0.880		19.4
S2C4	48	72	0.900		0.860	+0.005	0.885		
S2C4	72	96	0.895		0.860	-0.000	0.880		

COMMENTS

EXAMINER: [Signature]
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:



SITE: BMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 05 OCT 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

EXAMINER: Paul W. Myers LEVEL: III EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P15489 DATA SHEET #: 34

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 05 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T MIN INCH	ΔT	DATA T AVG INCH	AVG mm	COMMENTS EVA T MIN (mm)
S3C3	0	24	0.805		0.755	-0.030	0.790		
S3C3	24	48	0.805		0.780	-0.010	0.790		19.8
S3C3	48	72	0.805		0.780	-0.010	0.790		
S3C3	72	96	0.800		0.775	-0.015	0.785		
S3C4	0	24	0.885		0.830	-0.015	0.865		
S3C4	24	48	0.880		0.850	-0.010	0.865		19.4
S3C4	48	72	0.875		0.835	-0.010	0.860		
S3C4	72	96	0.875		0.835	-0.015	0.860		

COMMENTS

EXAMINER: Karl Christensen
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW:

LEVEL:

EMP. #



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 36

SITE: Tank #2, RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 07.06.89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY		DATA T MAX		DATA T MIN		DATA T AVG		COMMENTS EVA-T (mm)
	FROM	TO	INCH	mm	INCH	ΔT	INCH	mm	
S4C1	19	24	0.780		0.760	-0.000	0.770		
S4C1	24	48	0.790		0.745	-0.005	0.765		18.9
S4C1	48	72	0.790		0.755	+0.010	0.770		
S4C1	72	96	0.790		0.710	-0.015	0.765		
S4C2	0	24	0.790		0.715	-0.030	0.770		
S4C2	24	48	0.790		0.760	+0.010	0.775		19.3
S4C2	48	72	0.790		0.760	+0.010	0.770		
S4C2	72	96	0.785		0.735	-0.010	0.765		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:

DNV Industrial Services Inc

CORROSCAN DATA SHEET

JOB #: P15489

DATA SHEET #: 38

SITE: RMA

PAGE: OF

REF. CAL. SHT:

COMP. ID: TAUK #2

PIPE DIA: _____ IN.

REF. PT. _____

EXAM DATE: 07 OCT 89

CIRCUMFERENCE: _____

DATA TAPE #:

DATA FILE #:

SUMMARY

[illegible]

EXAMINER:

EXAMINER:

LEVEL:

LEVEL:

EMP. #: 7222

C.P. #:

ITL REVIEW:

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DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 39

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 07 Oct. 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN ΔT	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
SSC1	19	24	0.800		0.770	-0.005	0.785		
SSC1	24	48	0.805		0.760	-0.015	0.775		19.3
SSC1	48	72	0.800		0.775	-0.000	0.790		
SSC1	72	96	0.800		0.740	-0.030	0.780		
SSC2	0	24	0.805		0.760	-0.000	0.780		
SSC2	24	48	0.800		0.775	-0.000	0.785		19.7
SSC2	48	72	0.800		0.770	-0.005	0.785		
SSC2	72	96	0.800		0.760	-0.005	0.785		

COMMENTS

EXAMINER: [Signature] LEVEL: TLL EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITI. REVIEW: LEVEL: EMP. #: DATE:

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 40

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK # 2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 07 OCT -89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: Karl M. Styer LEVEL: III EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P15489 DATA SHEET #: 41

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 07 OCT 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: Karl M. Sauer
EXAMINER: _____

LEVEL: ~~SECRET~~
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW:

LEVEL: _____ FST #.



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P15480 DATA SHEET #: 42

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 07 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY		DATA T INCH	MAX mm	DATA T MIN		DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
	FROM	TO			INCH	ΔT			
S6C1	19	24	0.800		0.760	-0.015	0.780		
S6C1	24	48	0.800		0.760	-0.010	0.790		19.3
S6C1	48	72	0.805		0.765	-0.010	0.790		
S6C1	72	96	0.800		0.750	-0.020	0.790		
S6C2	0	24	0.800		0.740	-0.035	0.780		
S6C2	24	48	0.805		0.775	-0.015	0.790		19.7
S6C2	48	72	0.805		0.780	-0.015	0.790		
S6C2	72	96	0.800		0.755	-0.035	0.785		
COMMENTS									

EXAMINER: [Signature]
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW:

LEVEL:

EMP. #:

DATE:

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: 95489 DATA SHEET #: 43

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TAUK #2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 07 OCT 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: Karl C. [Signature] LEVEL: III EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____

ITL REVIEW:

LEVEL:

FAM #

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P15480 DATA SHEET #: 44

SITE: PMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 07 OCT 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

EXAMINER: Paul Michael Ryan LEVEL: III EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____

ITL REVIEW: _____ LEVEL: _____ EXP. #: _____ DATE: _____

DNV Industrial Services Ir

CORROSCAN DATA SHEET JOB #: D-154-89

DATA SHEET #: 45

SITE: RMA

PAGE: OF

REF. CAL. SHT: _____

COMP. ID: TANK #2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 06 Oct-89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: Paul C. [Signature]
EXAMINER: [Signature]

LEVEL: 2
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW:

LEVEL

END 4

11



SITE: RMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 06-OCT-89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

[illegible]

COMMENTS

100

DNV Industrial Services Inc.

CORROSCAN DATA SHEET JOB #: 7-154-89 DATA SHEET #: 47

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 06-OCT-89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER:

EXAMINER:

LEVEL: III

LEVEL:

EMP. #: 7222

EMP. #: _____

ITL REVIEW:

• ע'פ'י •

END E.

פרייז



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P15489 DATA SHEET #: 48

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 23 Oct 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN ΔT	DATA T INCH	AVG mm	COMMENTS EVA T MIN (mm)
S8C1	12	24	0.765		0.720	-0.035	0.750		
S8C1	24	48	0.775		0.720	-0.035	0.760		18.3
S8C1	48	72	0.765		0.735	-0.010	0.755		
S8C1	72	96	0.770		0.735	+0.005	0.755		
S8C2	0	24	0.775		0.735	-0.015	0.765		18.7
S8C2	24	48	0.780		0.735	-0.010	0.765		
S8C2	48	72	0.780		0.745	-0.005	0.765		
S8C2	72	96	0.780		0.720	-0.035	0.760		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: DIS4-89 DATA SHEET #: 49

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 04 OCT 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN ΔT	DATA T INCH	AVG mm	COMMENTS EVA T MIN (mm)
S8C3	0	24	0.785		0.745	-0.045	0.770		
S8C3	24	48	0.780		0.755	-0.025	0.770		19.2
S8C3	48	72	0.785		0.745	-0.040	0.770		
S8C3	72	96	0.785		0.755	-0.030	0.770		
S8C4	0	24	0.870		0.825	-0.045	0.850		19.4
S8C4	24	48	0.865		0.840	-0.025	0.855		
S8C4	48	72	0.865		0.835	-0.030	0.855		
S8C4	72	96	0.870		0.825	-0.045	0.850		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW:

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: D154-88 DATA SHEET #: 50

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 04 Oct-89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: [Signature] LEVEL: III EXP. #: 7222
EXAMINER: _____ LEVEL: _____ EXP. #: _____

ד"ר דעמלעך.



SITE: RMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 05 OCT 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

ITL REVIEW:

1541 •

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7. 3. 3. 3.

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: 7-154-89 DATA SHEET #: 52

SITE: PMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK #2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 09 OCT 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: Paul M. Ryan LEVEL: TH EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____

ITL REVIEW:	LEVEL:	FWD #.	DATE:
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DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 53

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #2 EXAM DATE: 19-OCT-87
PIPE DIA: _____ IN. CIRCUMFERENCE: _____
REF. PT. _____ DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: Paul (Mike) Byrne LEVEL: III EXP. #: 7227
EXAMINER: _____ LEVEL: _____ EXP. #: _____

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89

DATA SHEET #: 54

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #2
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 19 06 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

COMMENTS

EXAMINER: Paul C. [Signature]
EXAMINER: [Signature]

LEVEL: III EMP. #: 7222
LEVEL: _____ EMP. #: _____

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item IK2-S1C1.1

Projection

23.99 in

47.97 in 47.97 in

Projection view

Item TK2-S1C1.2

Projection view

Item 1

②

71.96 in 71.96 in

95.94 in

Item TK2-SIC1.3

Projection view

Item TK2-SIC1.4

(3)

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK2-SIC2.1

Proj

9 in

47.97 in 47.97 in

ection view

Item TK2-S1C2.2

Projection view

Item I

71.96 in 71.96 in

95.94 in



S1C2.3

Projection view

Item TK2-S1C2.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK2-S1C3.1

Proj

in

47.97 in 47.97 in

ction view

Item IK2-S1C3.2

Projection view

Item 14

71.96 in 71.96 in

95.94 in

S1C3.3

Projection view

Item TWZ-S1C3.4

I-SCAN IMAGE

0.00 in

23.99 in

23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.495 in
 Le3 0.595 in
 Le5 0.695 in
 Le7 0.795 in
 Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.845 in
 Lower 1.000 in

Projection view

Item TK2-51C4.1

Proj

9 in

47.97 in 47.97 in

11.

11

11

ection view

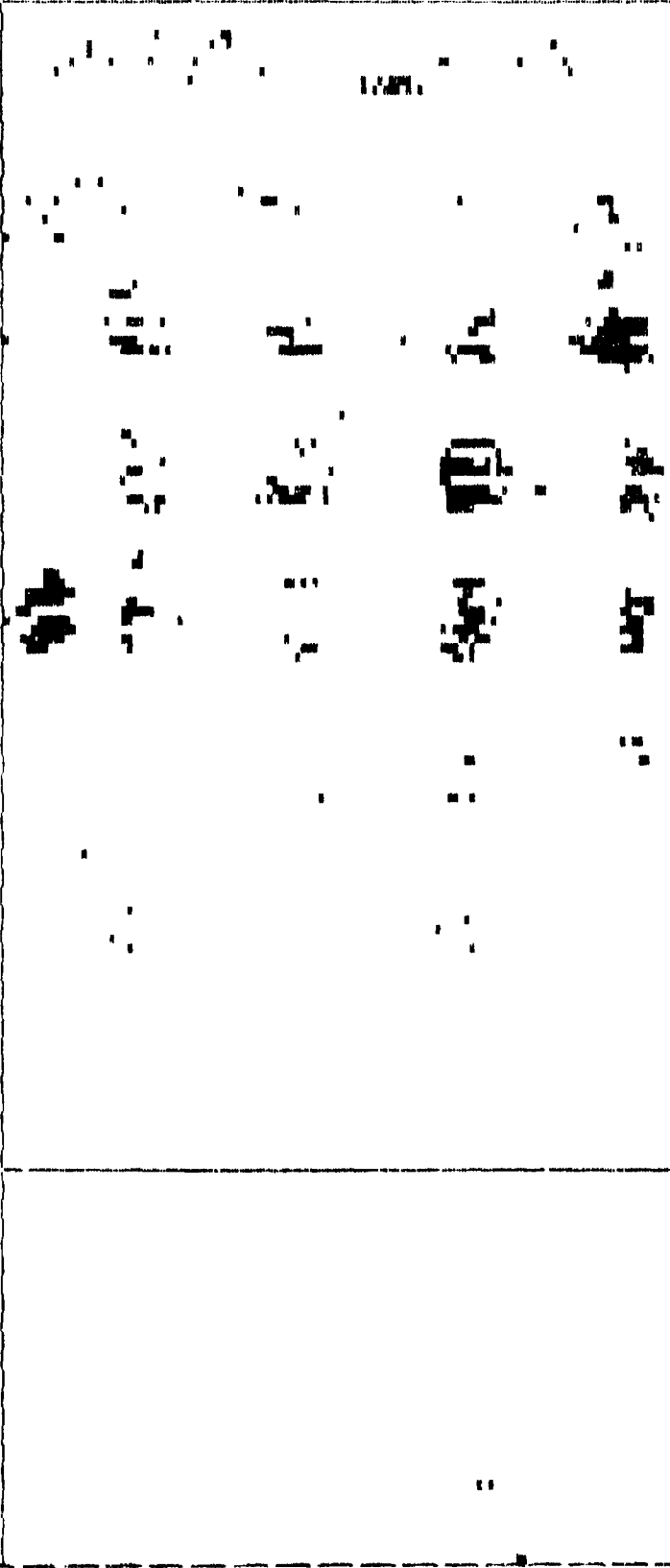
Item IK2-S1C4.2

Projection view

Item IK2

71.96 in 71.96 in

95.94 in



-SIC4.3

Projection view

Item TK2-SIC4.4

T-SCAN IMAGE

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

0.00 in

23.99 in 23.9

Projection view

Item IK2-S1C5.1

Proj

in

47.97 in 47.97 in



ction view

Item IK2-SIC5.2

Projection view

Item IK2

71.96 in 71.96 in

95.94 in

-SIC5.3

Projection view

Item IK2-SIC5.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Level 1.000 in

Projection view

Item WK2-S2C1.1

Projecti

47.97 in 47.97 in

Projection view

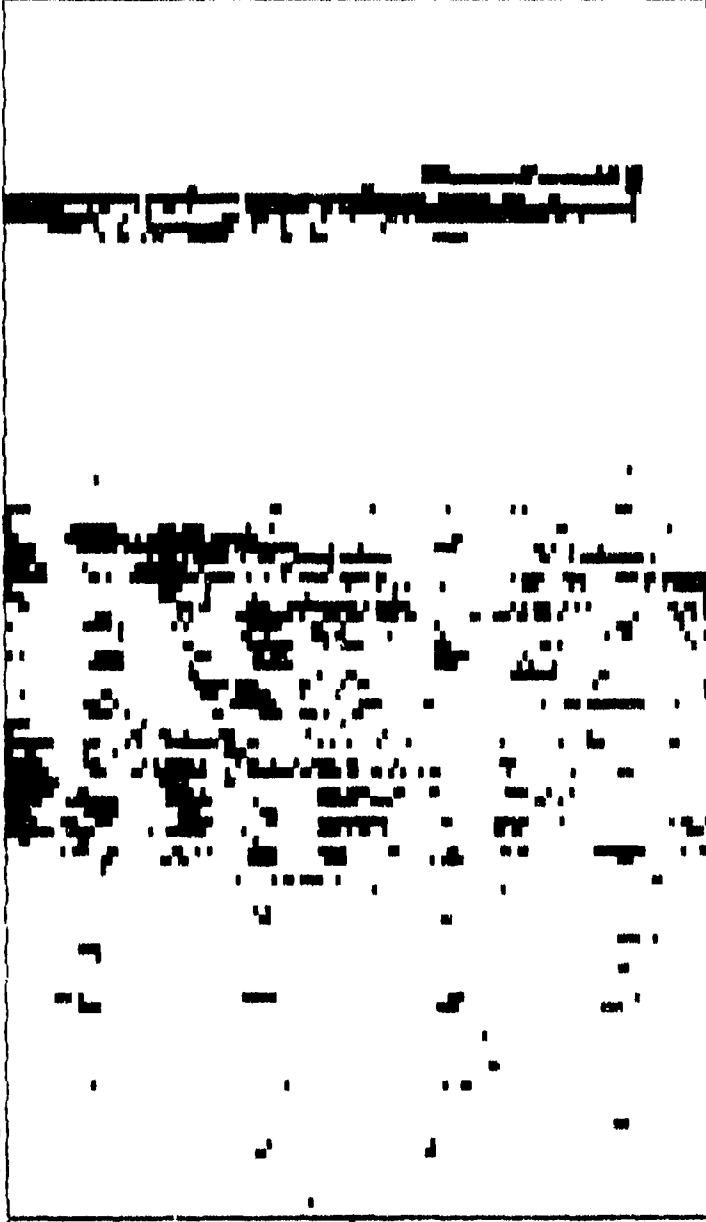
Item TK2-S2C1.2

on view

Item TK2-S2C

71.96 in 71.96 in

95.94 in



1.3

Projection view

Item WK2-S2C1.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.61 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TX2-S2C2.1

Projecti

47.97 in 47.97 in

on view

Item TK2-S2C2.2

Projection view

Item TK2-S2C

71.96 in 71.96 in

95.94 in

1.3

Projection view

Item TK2-S2C2.4

T-SCAN IMAGE		0.00 in	23.99 in	23.99 in
TOP VIEW				
Top	12.01 in			
Lag 1	Off			
Lag 2	On			
Le1	0.400 in			
Le3	0.500 in			
Le5	0.600 in			
Le7	0.700 in			
Basis	0.750 in			
Side	1.000 in			
SIDE VIEW				
Upper	0.400 in			
Level	0.750 in			
Lower	1.000 in			

Projection view

Item IR2-S2C3.1

Project

47.97 in 47.97 in

on view

Item WK2-S2C3.2

Projection view

Item WK2-S2C

71.96 in 71.96 in 95.94 in

71.96 in 71.96 in

Item 1K2-S2C3.4

Projection view

2.3

I-SCAN IMAGE 0.00 in 23.99 in 23.9

TOP VIEW
Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in

SIDE VIEW
Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view Item IK2-S2C4.1 Proj

9 in

47.97 in 47.97 in

ection view

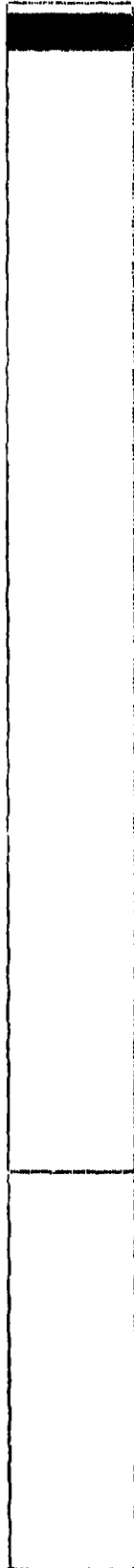
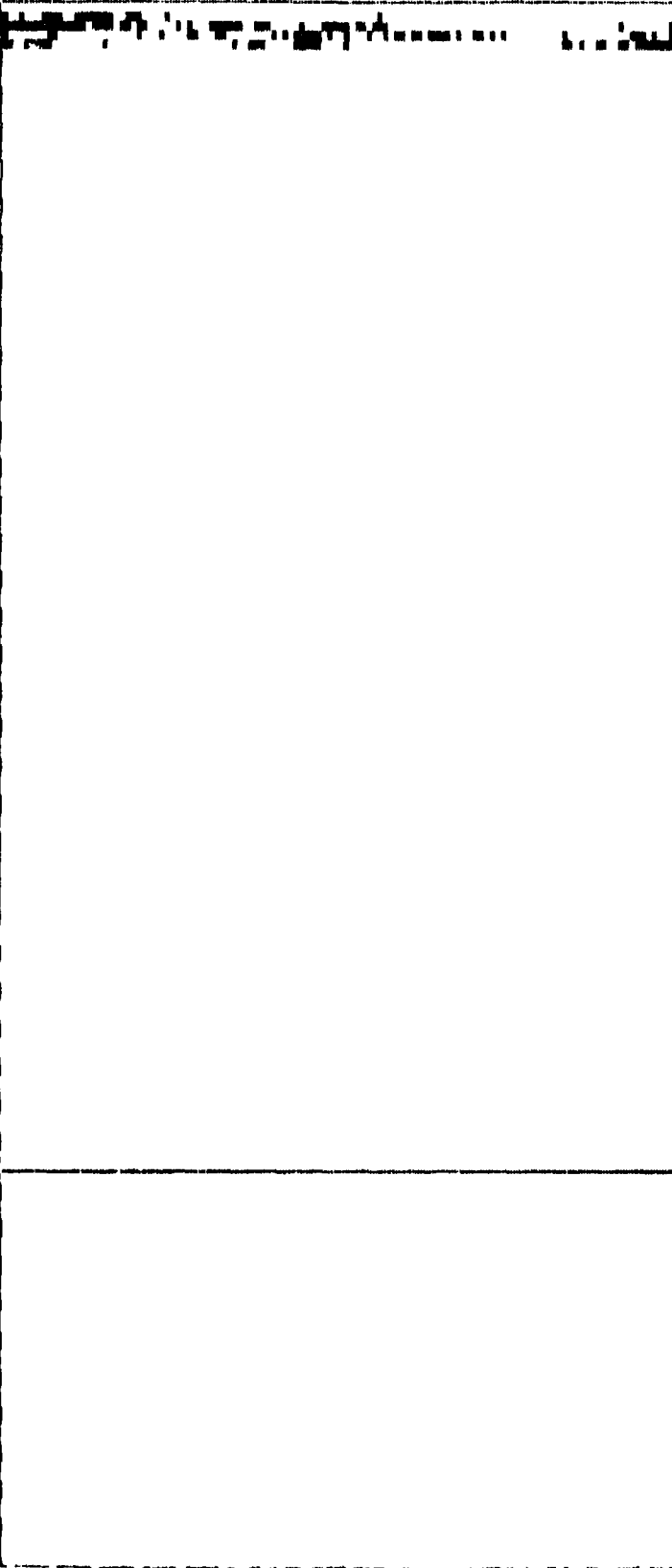
Item TK2-S2C4.2

Projection view

Item TK2

71.96 in 71.96 in

95.94 in



S2C4.3

Projection view

Item TK2-S2C4.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK2-S2C5.1

Projection

47.97 in 47.97 in

Item TK2-S2C

Projection view

Item TK2-S2C5.2

on view

71.96 in 71.96 in

95.94 in

5.3

Projection view

Item IK2-S2C5.4

T-SCAN IMAGE

8.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 8.400 in
 Le3 8.500 in
 Le5 8.600 in
 Le7 8.700 in
 Basis 8.750 in

Side 1.000 in

SIDE VIEW

Upper 8.400 in
 Level 8.750 in
 Lower 1.000 in

Projection view

Item IK2-S3C1.1

Proj

9 in

47.97 in 47.97 in

ection view

Item IK2-S3C1.2

Projection view

Item IK2

71.96 in 71.96 in

95.94 in

Projection view

Item IR2-S3C1.4

S3C1.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

lag 1 Off
lag 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK2-S3C2.1

Projecti

47.97 in 47.97 in

on view

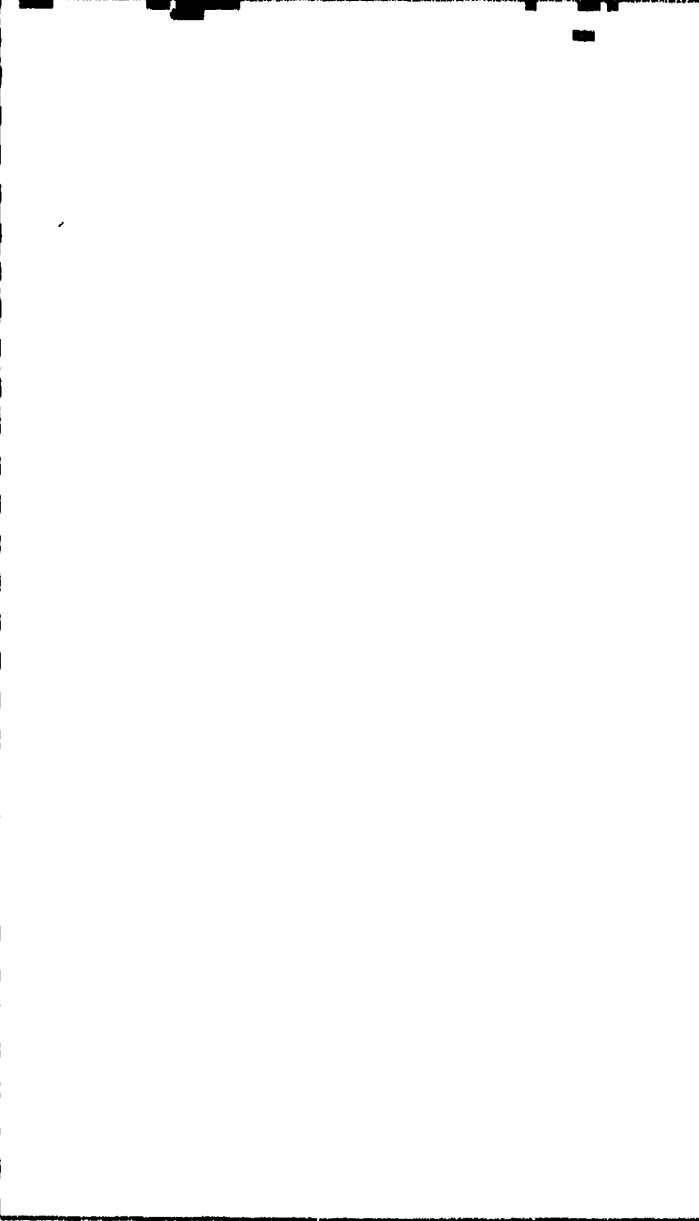
Item TK2-S3C2.2

Projection view

Item TK2-S3C

71.96 in 71.96 in

95.94 in



2.3

Projection view

Item TK2-S3C2.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK2-S3C3.1

Project

47.97 in 47.97 in

Projection view

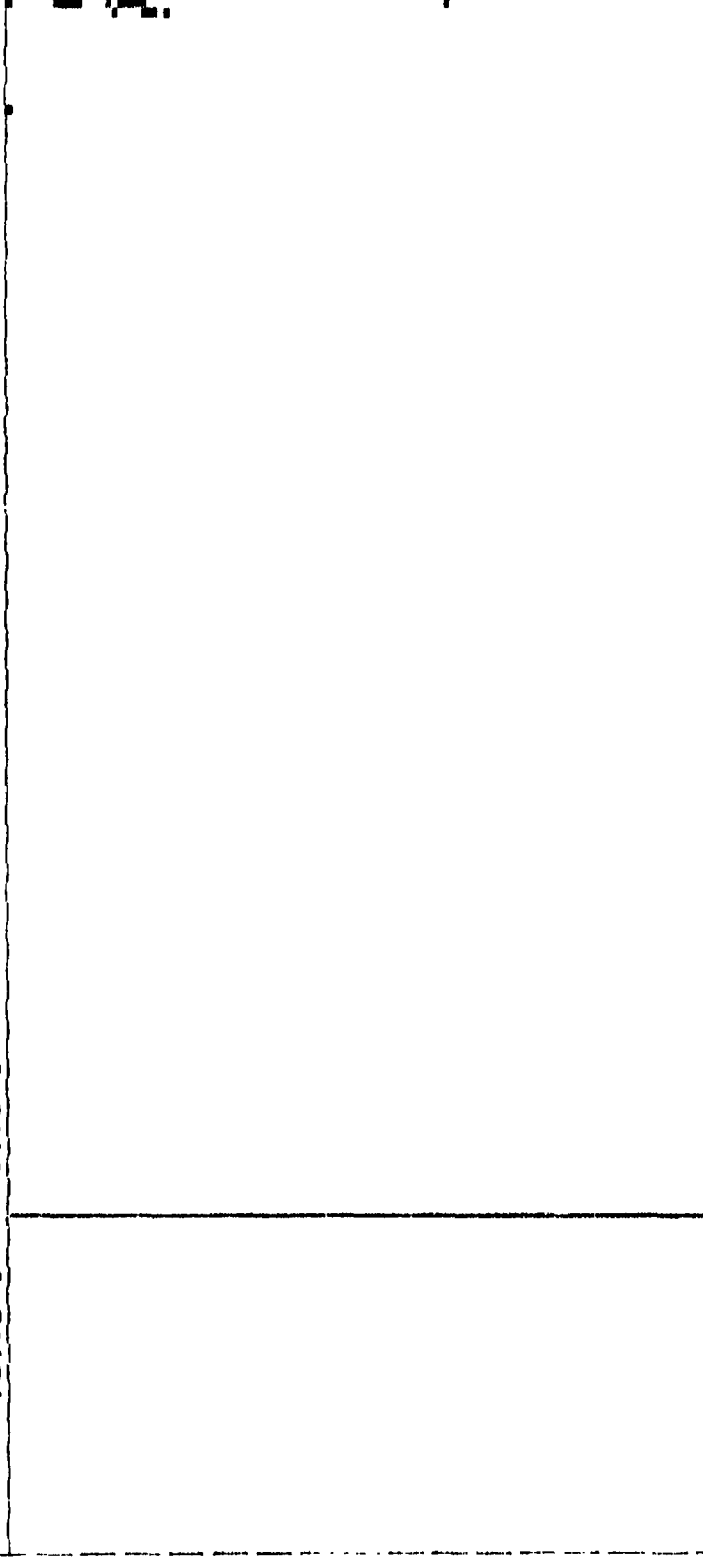
Item TK2-S3C

Item TK2-S3C3.Z

in view

71.96 in 71.96 in

95.94 in



Projection view

Item TK2-S3C3.4

2.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view

Item IN2-S3C4.1

Projecti

47.97 in 47.97 in

2

on view

Item TK2-S3C4.2

Projection view

Item TK2-S3C4

71.96 in 71.96 in

95.94 in



Projection view

Item TK2-S3C4.4

1.3

T-SCAN IMAGE

TOP VIEW

Top 12.81 in

Leg 1 Off
Leg 2 On

Le1 0.680 in
Le3 0.780 in
Le5 0.880 in
Le7 0.980 in
Basis 0.950 in

Side 1.880 in

SIDE VIEW

Upper 0.480 in
Level 0.950 in
Lower 1.880 in

0.00 in 23.99 in 23.99 in

Projection view

Item TK2-S305.1

Projecti

47.97 in 47.97 in

Projection view

Item TK2-S3C5.2

Item TK2-S3C5

view

71.96 in 71.96 in

95.94 in

3

Projection view

Item TK2-S3C5.4

T-SCAN IMAGE

8.88 in

23.99 in 23.9

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 8.488 in
 Le3 8.588 in
 Le5 8.688 in
 Le7 8.788 in
 Basis 8.758 in

Side 1.888 in

SIDE VIEW

Upper 8.488 in
 Level 8.758 in
 Lower 1.888 in

Projection view

Item IX2-S4C1.1

Proj

19 in

47.97 in 47.97 in

ection view

Item TK2-S4C1.2

Projection view

Item TK2

95.94 in

71.96 in 71.96 in



Item IK2-S4C1.4

Projection view

-S4C1.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK2-S4C2.1

Projecti

47.97 in 47.97 in

on view

Item TK2-S4C2.2

Projection view

Item TK2-S4C3

71.96 in	71.96 in	95.94 in

.3

Projection view

Item IW2-S4C2.4

1-SCAN IMAGE

0.00 in

23.99 in

23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK2-S4C3.1

Proj

47.97 in 47.97 in

ion view

Item TK2-S4C2

Projection view

Item TK2-S4C1

71.96 in 71.96 in

95.94 in



Projection view

Item TK2-S4C3.4

3

I-SCAN IMAGE

8.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view

Item IK2-S4C4.1

Proj

47.97 in 47.97 in

Item IK2

Projection view

Item IK2-S4C4.2

on view

71.96 in 71.96 in

95.94 in

S4C4.3

Projection view

Item IK2-S4C4.4

T-SCAN IMAGE

5.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item IK2-S4C5.1

Pro

47.97 in 47.97 in

Projection view

Item TK2-S405.2

Item TK2

tion view

71.96 in 71.96 in

95.94 in

S405.3

Projection view

Item TW2-S405.4

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK2-S5C1.1

Pro

47.97 in 47.97 in

Projection view

Item IK2

Item IK2-S5C1.2

tion view

71.96 in 71.96 in

95.94 in

71.96 in

S5C1.3

Projection view

Item TK2-S5C1.4

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item WK2-S5C2.1

Proj

47.97 in 47.97 in

Projection view

Item TR2-S5C2.2

Item TR2

ction view

95.94 in

71.96 in

71.96 in

Item TK2-S5C2.4

Projection view

-S5C2.3

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK2-S5C3.1

Proj

47.97 in 47.97 in

Item IK2

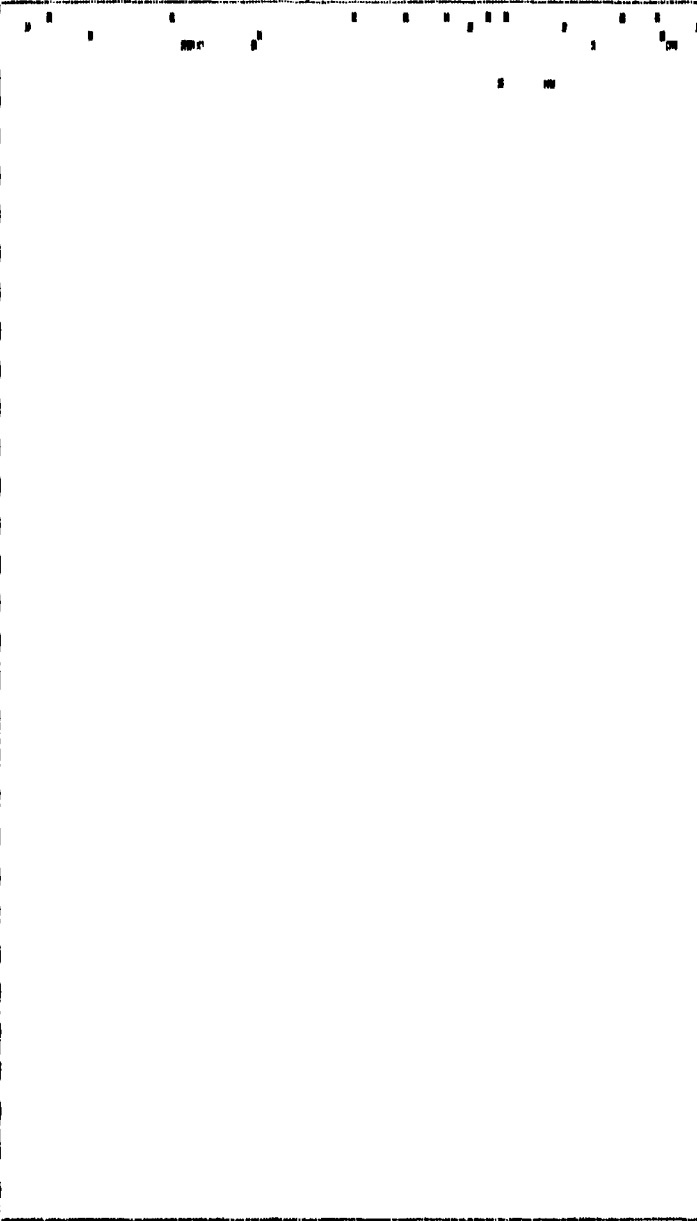
Projection view

Item IK2-S5C3.2

tion view

71.96 in 71.96 in

95.94 in



Projection view

Item TK2-S5C3.4

-S5C3.3

T-SCAN IMAGE

0.00 in

23.99 in Z3.

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1

0.495 in

Le3

0.595 in

Le5

0.695 in

Le7

0.795 in

Basis

0.845 in

Side

1.000 in

SIDE VIEW

Upper

0.400 in

Level

0.845 in

Lower

1.000 in

Projection view

Item IX2-S5C4.1

Pro

47.97 in 47.97 in

Item TK2

Projection view

Item TK2-S5C4.2

ion view

71.96 in 71.96 in

95.94 in



-S5C4.3

Projection view

Item TK2-S5C4.4

T-SCAN IMAGE

0.00 in

23.99 in 23.

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK2-8505.1

Pro

47.97 in 47.97 in

Item TK2

Projection view

Item TK2-S505.2

on view

71.96 in

95.94 in

-S505.3

Projection view

Item IX2-S505.4

23.99 in 23.9

0.88 in

T-SCAN IMAGE

TOP VIEW

Top 12.81 in

Img 1 Off

Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK2-S6C1.1

Proj

47.97 in 47.97 in

Projection view

Item IX2-S6C1.2

Item IX2

ion view

71.96 in 71.96 in

95.94 in

S6C1.3

Projection view

Item IX2-S6C1.4

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1

Off

Img 2

On

Le1

0.400 in

Le3

0.500 in

Le5

0.600 in

Le7

0.700 in

Basis

0.750 in

Side

1.000 in

SIDE VIEW

Upper

0.400 in

Level

0.750 in

Lower

1.000 in

Projection view

Item TK2-S6C2.1

Proj

3 in

47.97 in 47.97 in

ection view

Item 1K2-S6C2.2

Projection view

Item 1

71.96 in 71.96 in

95.94 in

-S6C2.3

Projection view

Item TK2-S6C2.4

T-SCAN IMAGE

0.90 in

23.99 in 23

TOP VIEW

Top 12.81 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item IK2-3603.1

Proj

2 in

47.97 in 47.97 in

ection view

Item TK2-S6C3.2

Projection view

Item 1

71.96 in 71.96 in

95.94 in

S6C3.3

Projection view

Item INZ-S6C3.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Mag 1 Off
Mag 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view

Item TK2-S6C4.1

Projection

47.97 in 47.97 in

view

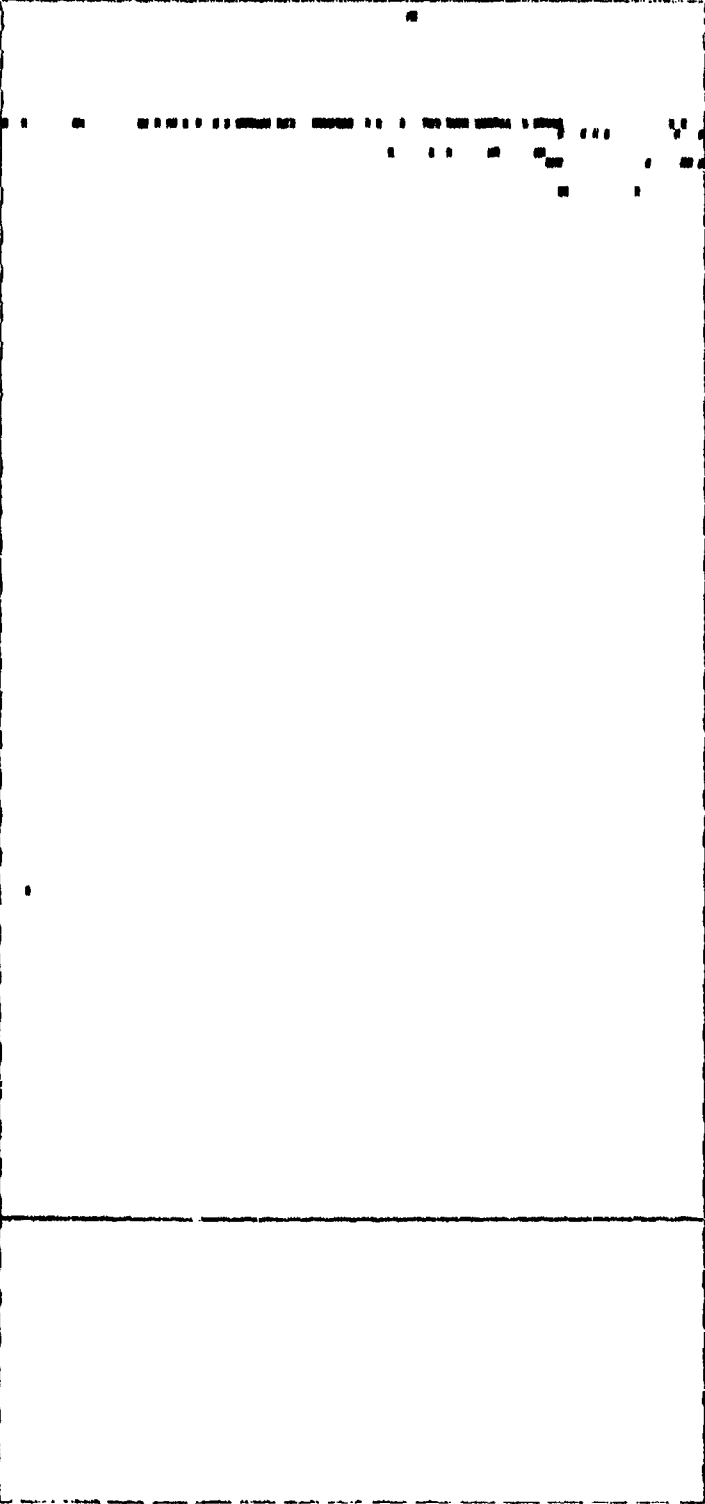
Item TK2-S6C4.2

Projection view

Item TK2-S6C

71.96 in 71.96 in

95.94 in



Projection view

Item TK2-S6C4.4

T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.600 in
Le3 0.700 in
Le5 0.800 in
Le7 0.900 in
Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.950 in
Lower 1.000 in

Projection view

Item RK2-S6C5.1

Pro

99 in

47.97 in 47.97 in

ection view

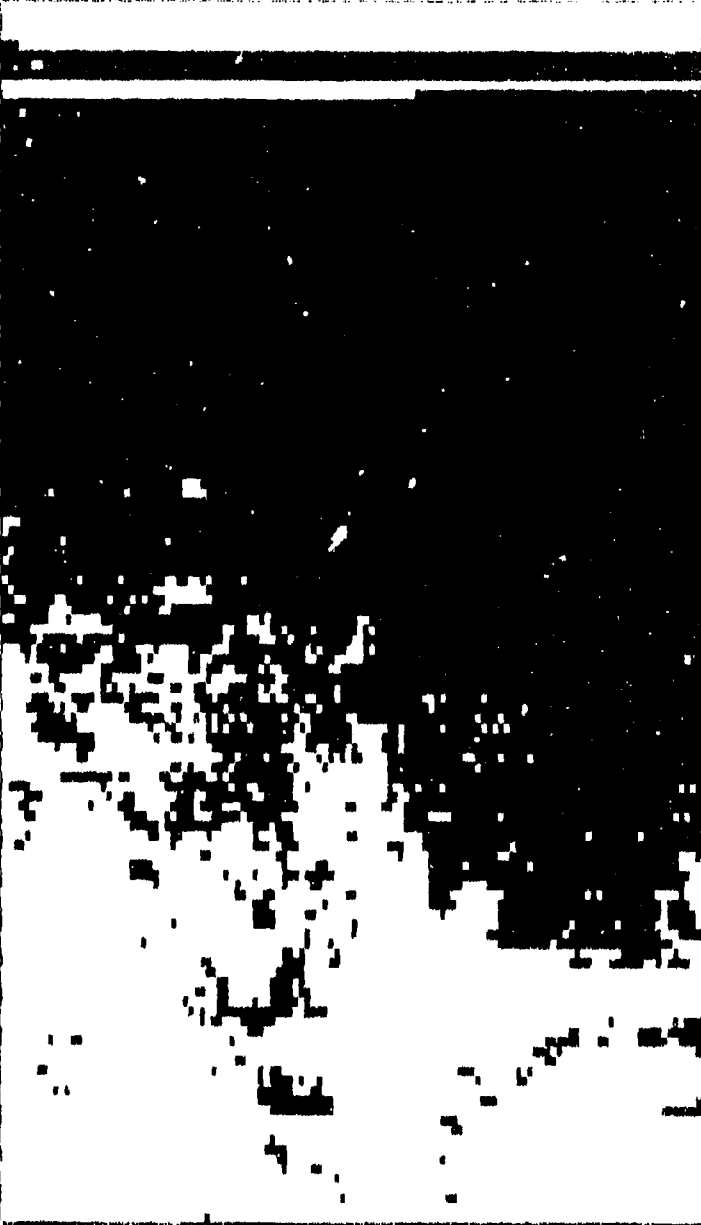
Item YKZ-S6C5.2

Projection view

Item

71.96 in 71.96 in

95.94 in



2-S6053

Projection view

Item TK2-S605.4

I-SCAN IMAGE

0.00 in

23.99 in 24

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK-8701.1

Page

49 in

47.97 in 47.97 in

jection view

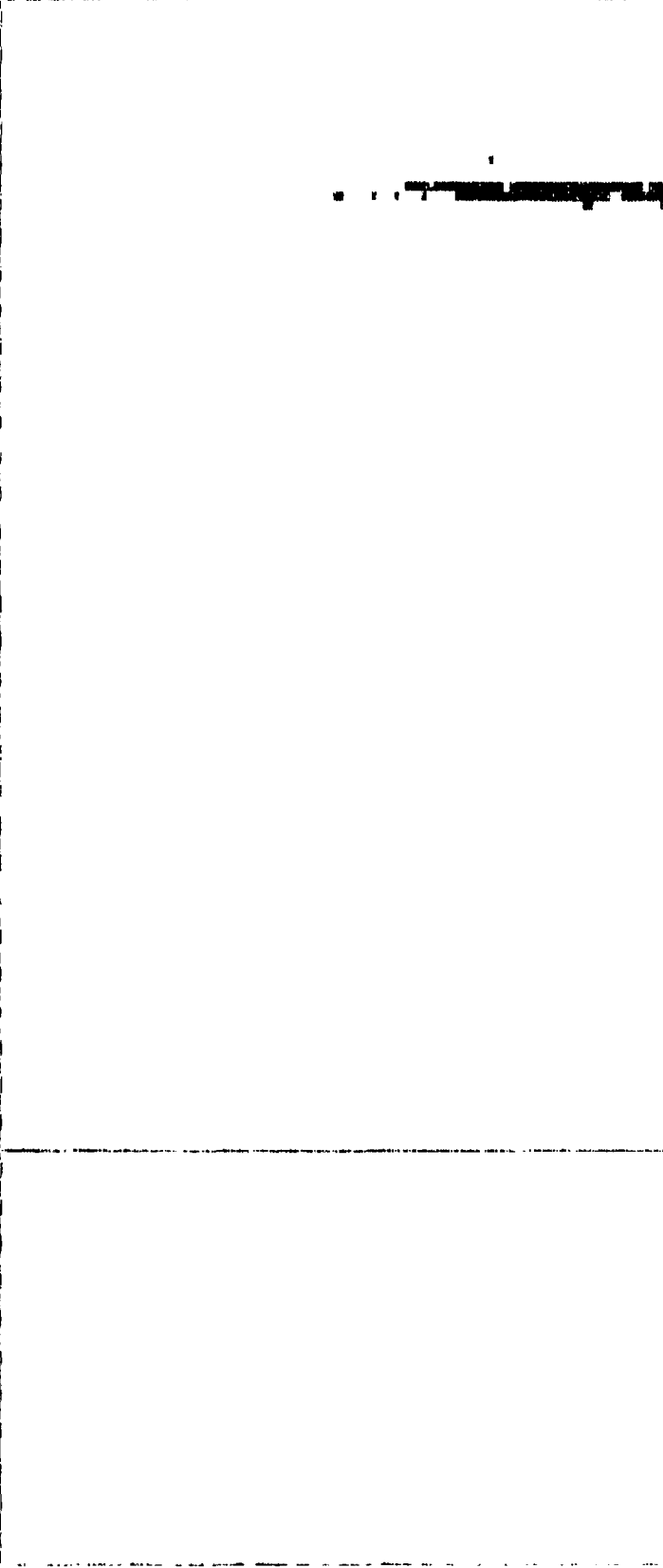
Item TK2-S7C1.2

Projection view

Item

71.96 in 71.96 in

95.94 in



2-S7C1.3

Projection view

Item 1K2-S7C1.4



T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item IKZ-S7C2.1

Pr

99 in

47.97 in 47.97 in

ection view

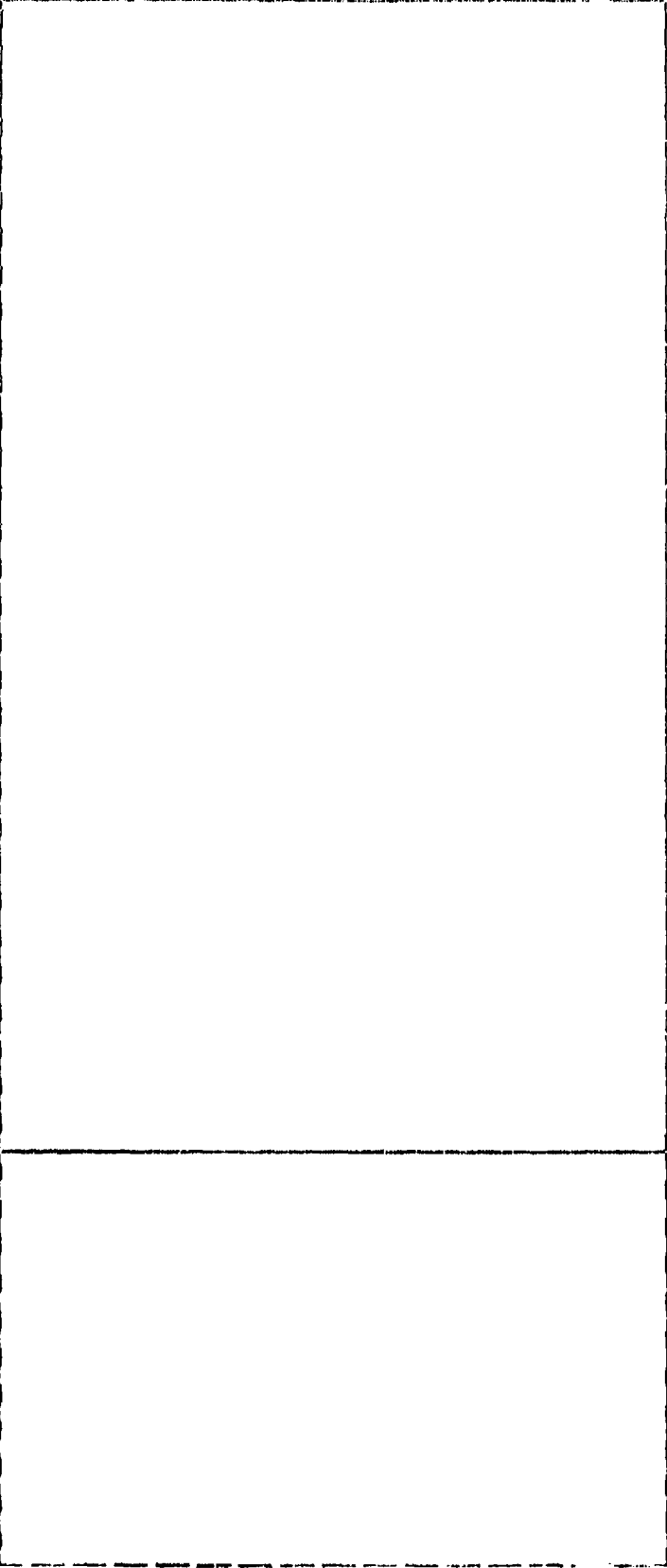
Item TK2-S7C2.2

Projection view

Item 1

71.96 in 71.96 in

95.94 in



2-S7C2.3

Projection view

Item TR2-S7C2.4



T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

log 1 Off
log 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in
Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item WK2-S7C3.1

Page

69 in

47.97 in 47.97 in

ection view

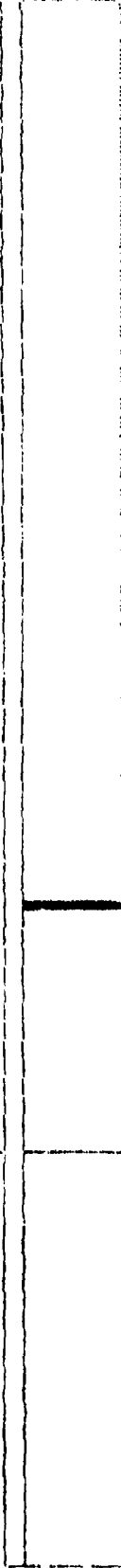
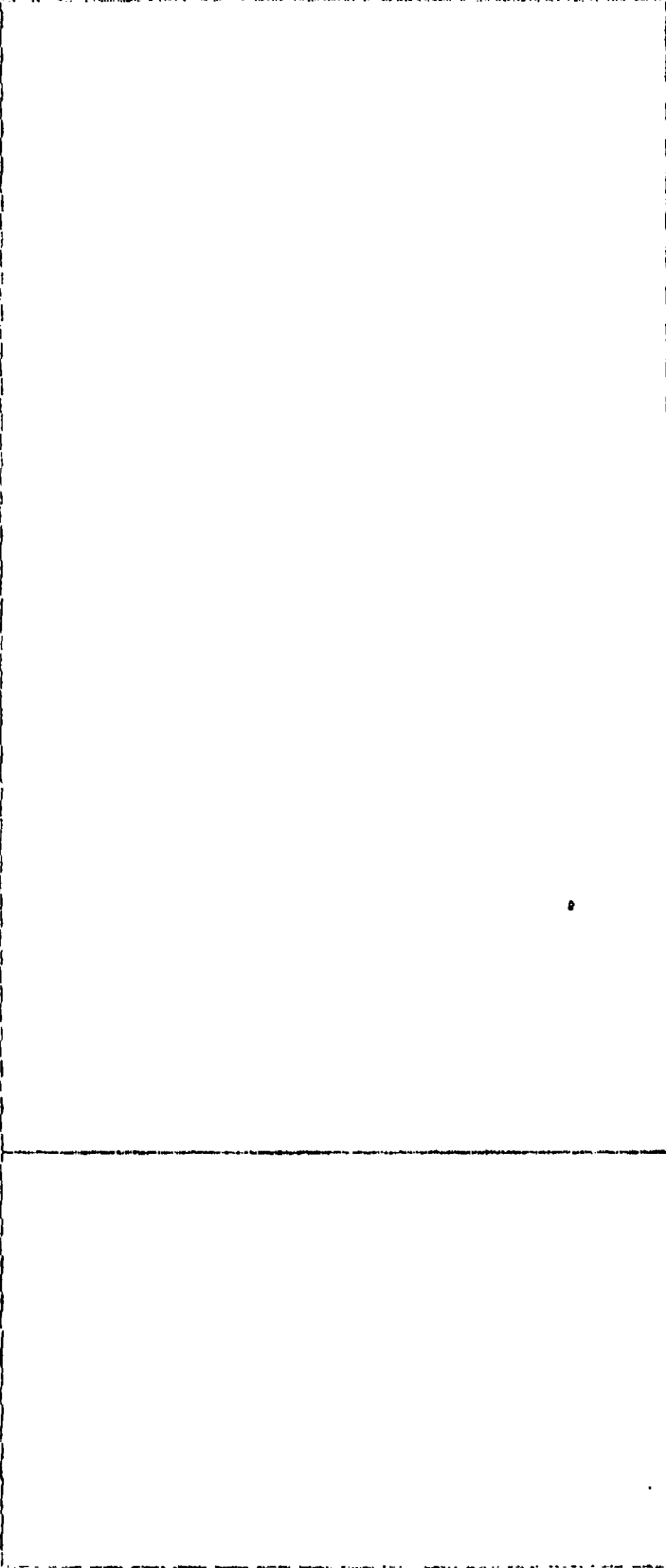
Item TK2-S7C3.2

Projection view

Item

71.96 in 71.96 in

95.94 in



2-S7C3.3

Projection view

Item TK2-S7C3.4

T-SCAN IMAGE

0.80 in

23.99 in 23

TOP VIEW

Top 12.81 in

Img 1 Off
Img 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.200 in

SIDE VIEW

Upper 0.406 in
Level 0.845 in
Lower 1.000 in

Projection view

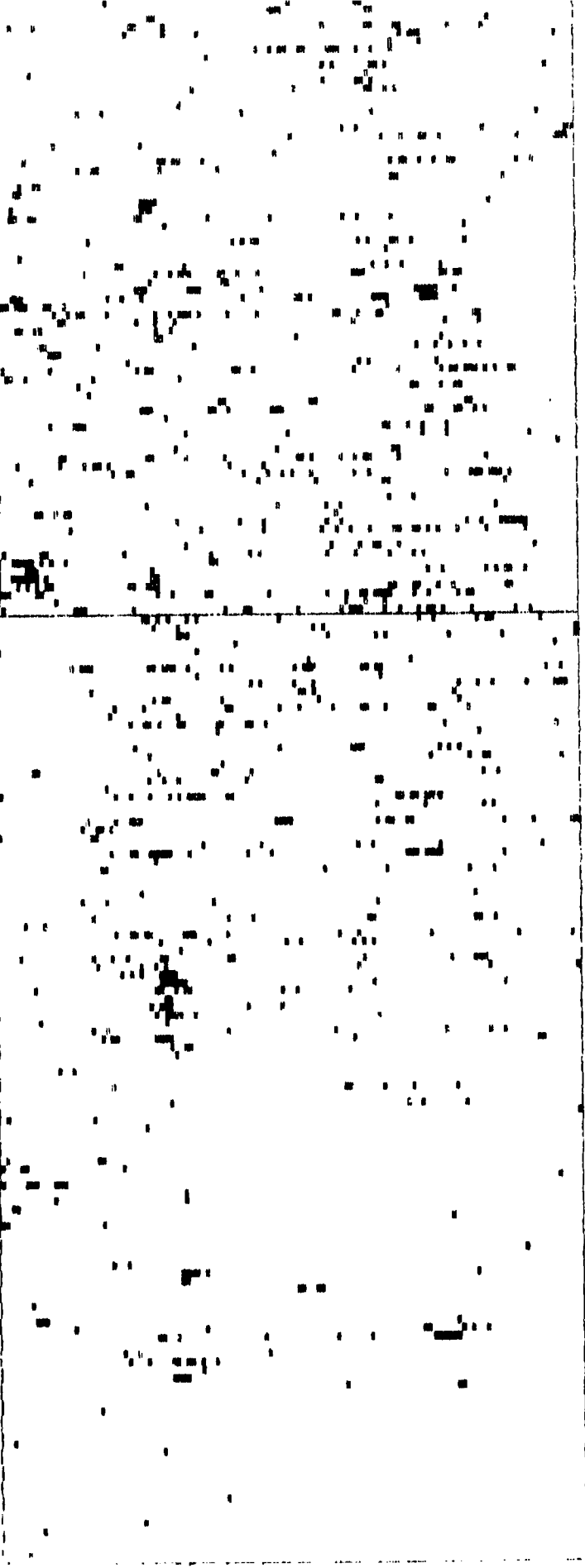
Item TK2-S7C4.1

Page

99 in

47.97 in

47.97 in



ection view

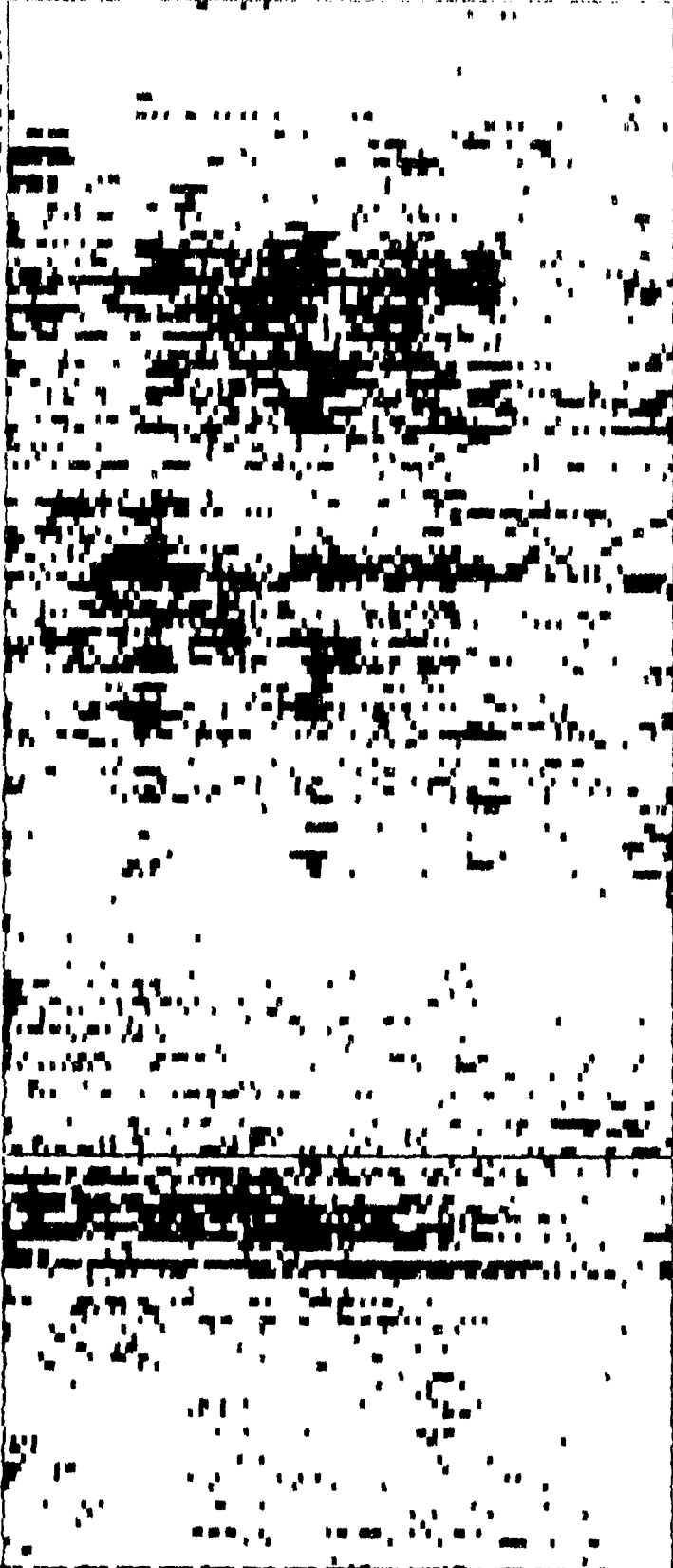
Item IX2-S7C4.2

Projection view

Item

71.96 in

95.94 in



P-S7C4.3

Projection view

Item TK2-S7C4.4

T-SCAN IMAGE

0.00 in

23.99 in

23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item IK2-S7C5.1

Proj

in

47.97 in 47.97 in

ection view

Item IK2-S7C5.2

Projection view

Item I

71.96 in 71.96 in

95.94 in

S7C5.3

Projection view

Item IX2-S7C5.4

T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

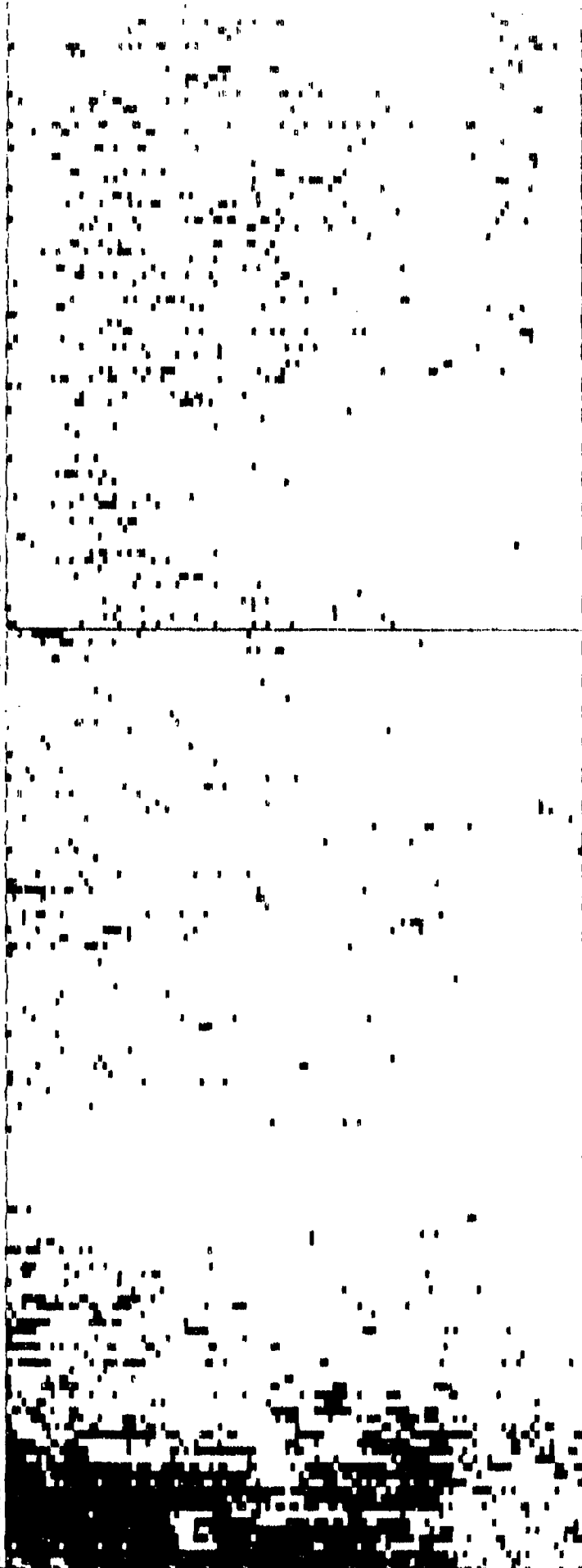
Projection view

Item 1A2-SBC1.1

Pro

39 in

47.4 in 47.97 in



jection view

Item TW2-S8C1.2

Projection view

Item 1

71.96 in 71.96 in

95.94 in



2-SHC1.3

Projection view

Item TK2-SHC1.4

T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK2-S8C2.1

Prd

99 in

47.97 in 47.97 in

jection view

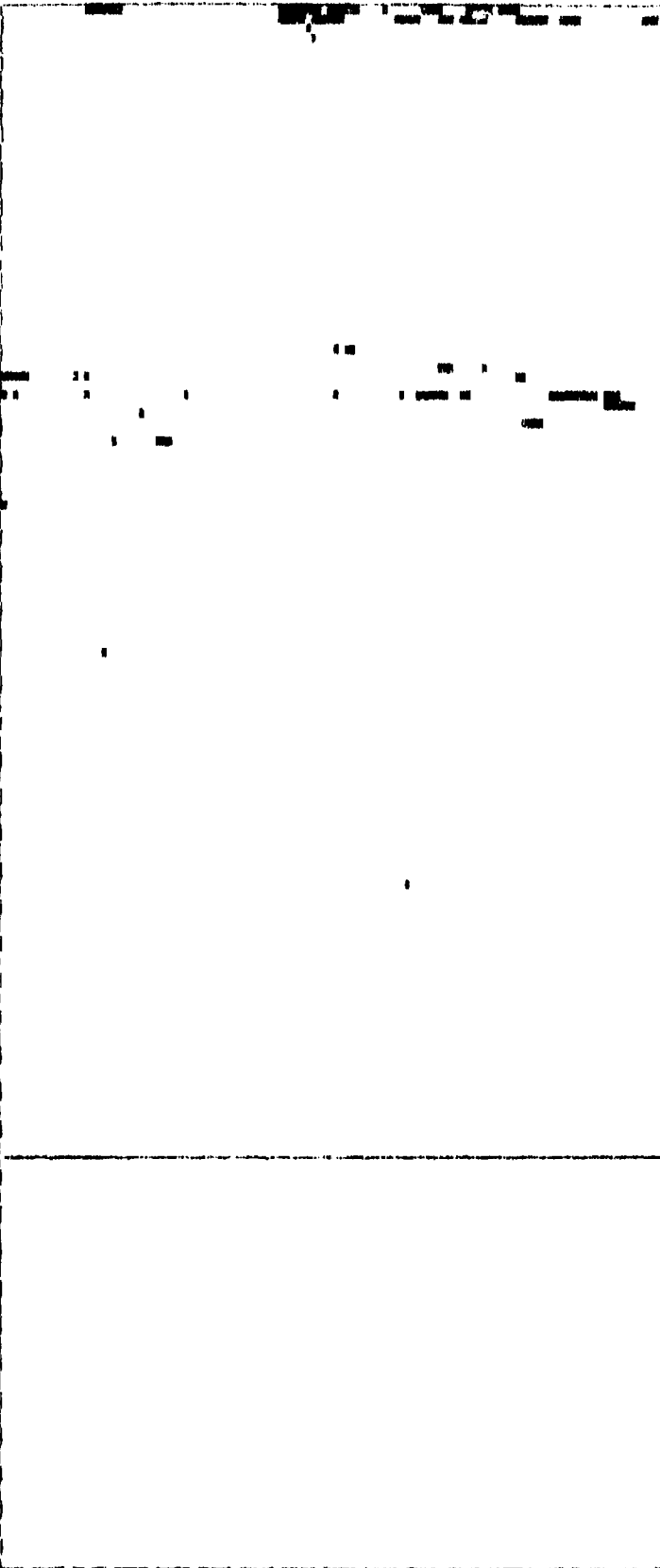
Item TW2-S8C2.2

Projection view

Item TW

71.96 in 71.96 in

95.94 in



2-S8C2.3

Projection view

Item TK2-S8C2.4

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Mag 1 Off

Mag 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK2-S8C3.1

Proj

9 in

47.97 in 47.97 in

ection view

Item IK2-S8C3.2

Projection view

Item I

71.96 in 71.96 in

95.94 in

1 1 1 1 1

S8C3.3

Projection view

Item TK2-S8C3.4

T-SCAN IMAGE

TOP VIEW

Top 12.81 in

log 1 Off
log 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

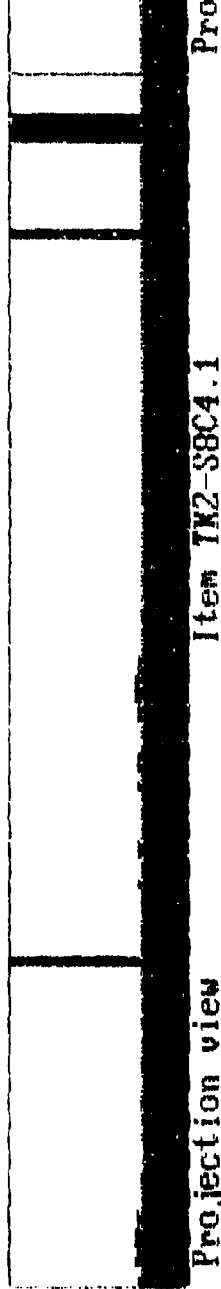
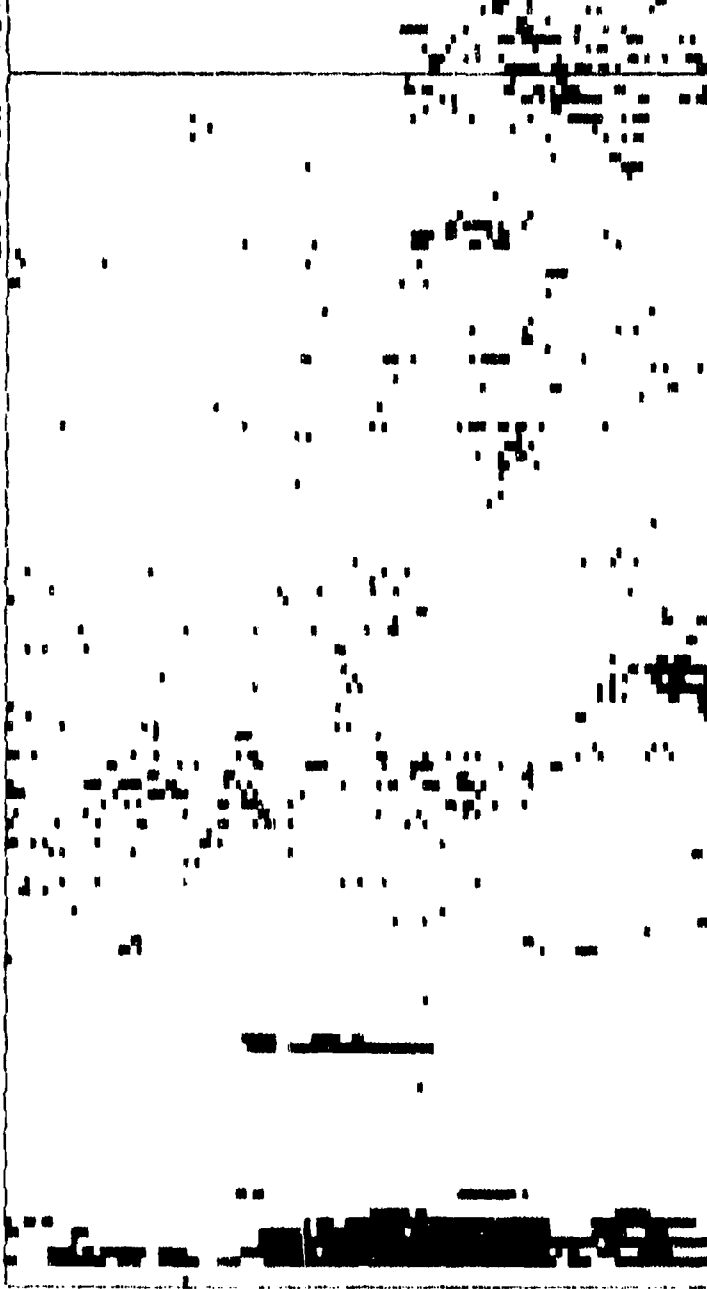
Side 1.000 in

SIDE VIEW

Upper 0.488 in
Level 0.845 in
Lower 1.000 in

0.800 in

23.99 in 23.



Projection view

Item TN2-S8C4.1

Pro

99 in

47.97 in 47.97 in

1 3

jection view

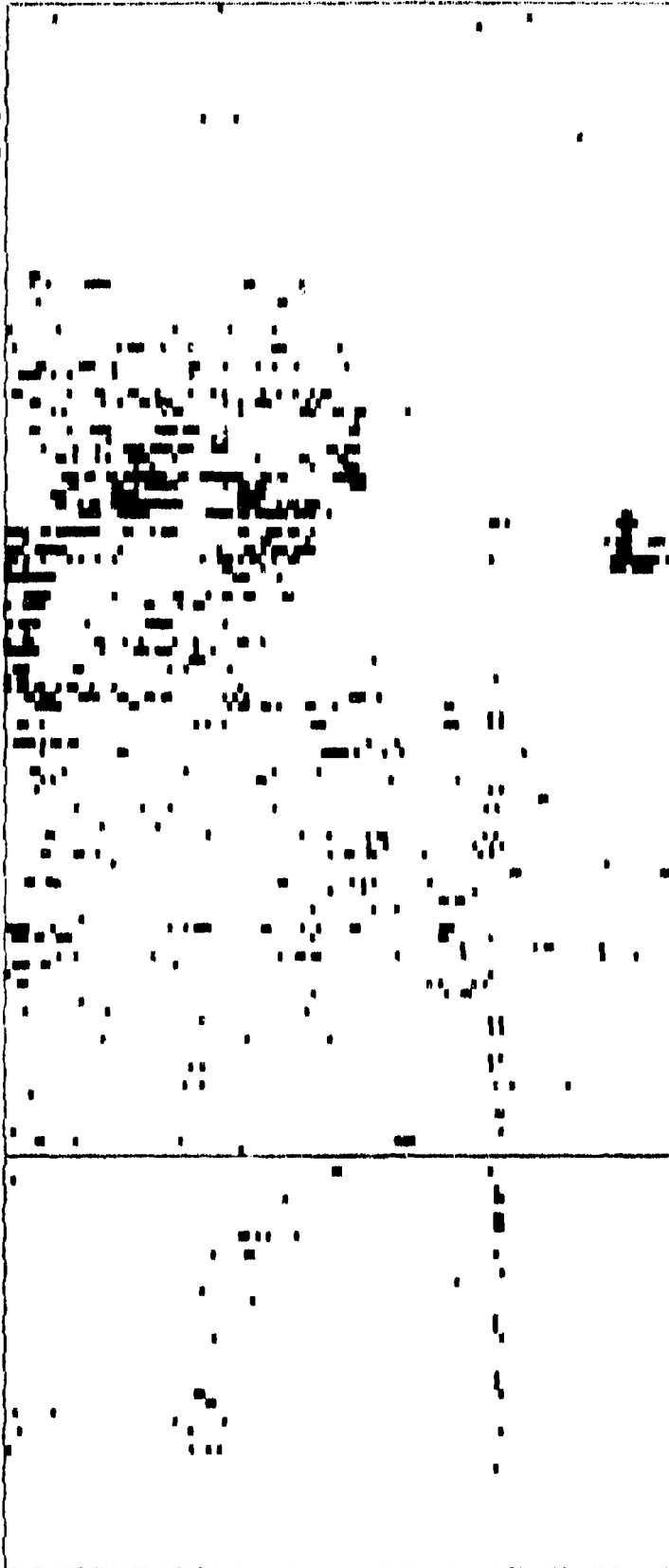
Item TK2-S804.2

Projection view

Item 1

71.96 in

95.94 in



Projection view

Item TK2-S8C4.4

2-S8C4.3

T-SCAN IMAGE

0.00 in 23.99 in

TOP VIEW

Top 12.01 in

log 1 Off
log 2 On

Le1 0.600 in
Le3 0.700 in
Le5 0.800 in
Le7 0.900 in
Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.950 in
Lower 1.000 in

Projection view

Item TK2-S8C5.1

Pro

99 in 47.97 in 47.97 in



Item TK2-S8C5.2

section view

Projection view

Item TK2-S8C5.2

71.96 in 71.96 in

95.94 in

2-S805.3

Projection view

Item TK2-S805.4

T-SCAN IMAGE

0.80 in

23.99 in 23

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

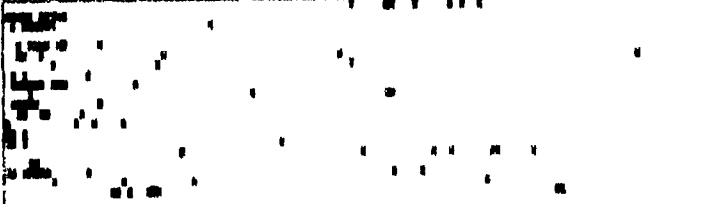
Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK2-H1C5.1

Proj

47.97 in 47.97 in



53 in



jection view

Item TK2-H1C5.2

Projection view

Item TK

71.96 in 71.96 in

95.94 in 95.94 in

2-H1C5.3

Projection view

Item TN2-H1C5.4

Projection vi

119.93 in

Item TK2-H1C5.5

EV

T-SCAN IMAGE

0.00 in

23.99 in 23.

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK2-H2C5.1

Pro

99 in

47.97 in 47.97 in

ection view

Item TK2-H2C5.2

Projection view

Item TK

71.96 in 71.96 in

95.94 in 95.94 in

2-H205.3

Projection view

Item TK2-H205.4

Projection vi

119.93 in

Item TK2-H2C5.5

PU

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

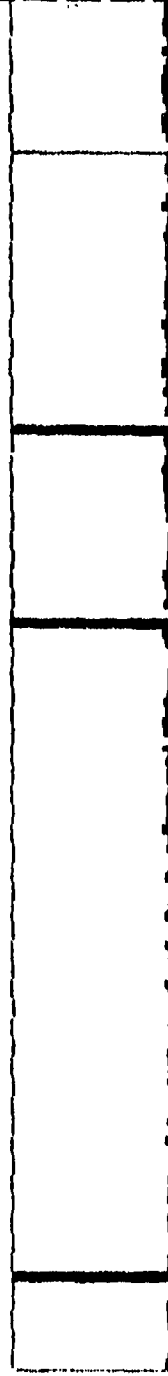
Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

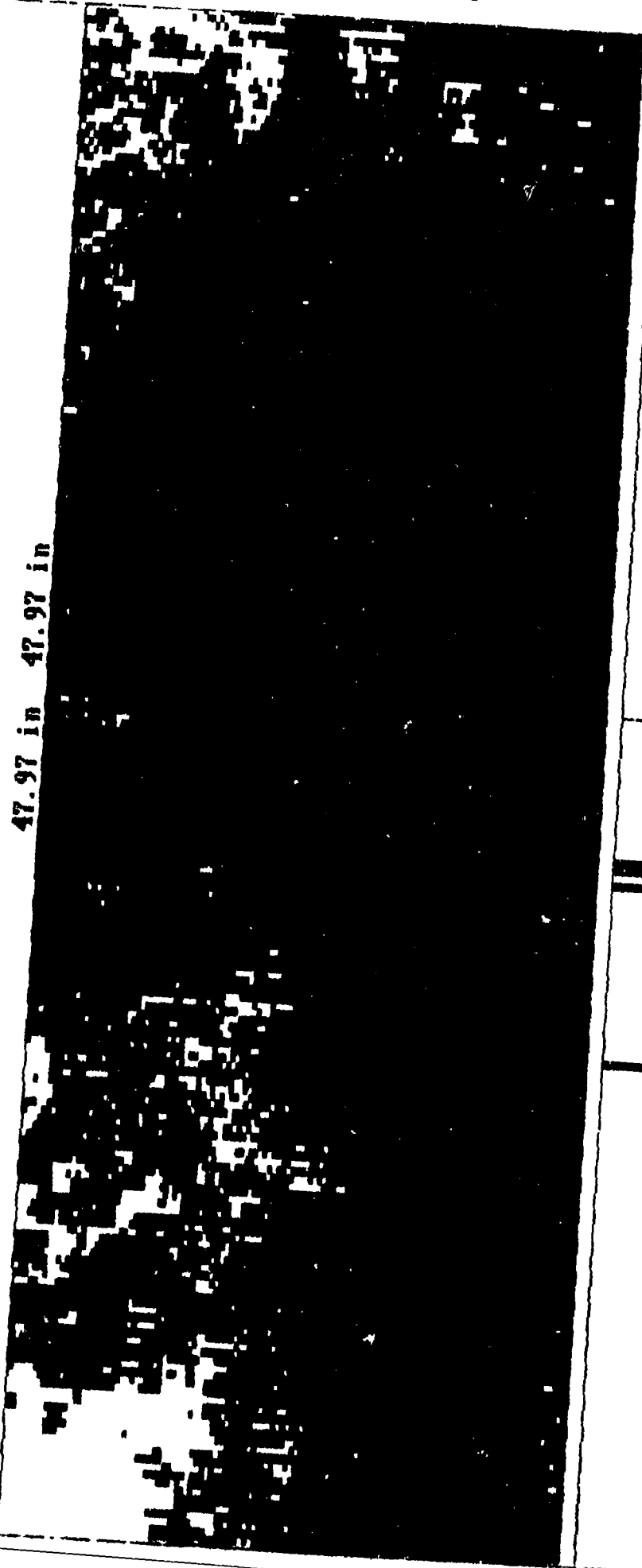


Projection view

Item TX2-H3C5.1

Project

47.97 in 47.97 in



ion view

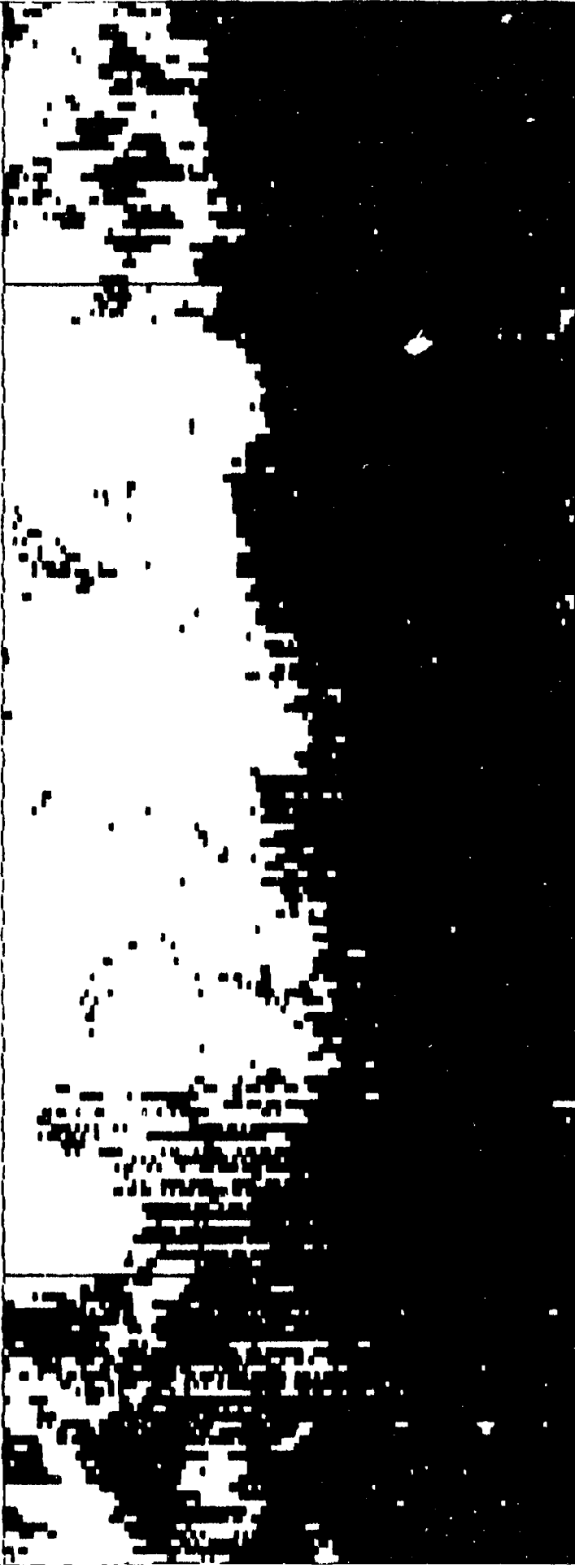
Item TK2-H3C5.2

Projection view

Item TK2-H3

71.96 in 71.96 in

95.94 in 95.94 in



5.3

Projection view

Item 1K2-H3C5.4

Projection view

119.93 in



1

Item IK2-H3C5.5

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item IX2-H4C5.1

Project

47.97 in 47.97 in



Item IK2-H4

Projection view

Item IK2-H4C5.2

on view

71.96 in 71.96 in

95.94 in 95.94 in

5.3

Projection view

Item IK2-H4C5.4

Projection view

119.93 in



Item IX2-H4C5.5

APPENDIX 3
TANK 8: T-SCAN Data Tables and Hardcopy



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 55

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #5
PIPE DIA: IN.
REF. PT.

EXAM DATE: 18 DEC 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T MAX INCH mm	DATA T MIN INCH mm	DATA T AVG INCH mm	COMMENTS EVA-T (mm)
SIC1	19	24	0.805	0.780	0.795	
SIC1	24	48	0.810	0.765	0.800	19.4
SIC1	48	72	0.810	0.790	0.800	
SIC1	72	96	0.805	0.740	0.795	
SIC2	0	24	0.810	0.725	0.800	
SIC2	24	48	0.810	0.785	0.800	19.9
SIC2	48	72	0.800	0.780	0.795	
SIC2	72	96	0.800	0.775	0.790	

COMMENTS

EXAMINER: [Signature]
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 56

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 18 Oct 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T MIN INCH	mm	DATA T AVG INCH	mm	COMMENTS EVA-T (mm)
5163	0	24	0.805		0.730		0.790		
5163	24	48	0.805		0.785		0.795		19.9
5163	48	72	0.805		0.785		0.795		
5163	72	96	0.805		0.775		0.790		
3164	0	24	0.885		0.765		0.860		
5164	24	48	0.885		0.850		0.865		19.6
3164	48	72	0.880		0.850		0.860		
3164	72	96	0.875		0.830		0.860		

COMMENTS

EXAMINER: Karl C. [Signature]
EXAMINER:

LEVEL: III
LEVEL:

EMP. #: 7222
EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



SITE: RMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 16 DEC 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

EXAMINER: Paul W. Lyons LEVEL: III EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____
ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P154-89 DATA SHEET #: 62

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #3
PIPE DIA: IN.
REF. PT.

EXAM DATE: 13 Oct-89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
S3C3	0	24	0.795		0.725		0.765		
S3C3	24	48	0.790		0.755		0.760		19.2
S3C3	48	72	0.790		0.755		0.760		
S3C3	72	96	0.790		0.750		0.765		
S3C4	0	24	0.875		0.795		0.850		
S3C4	24	48	0.870		0.845		0.860		19.6
S3C4	48	72	0.875		0.835		0.860		
S3C4	72	96	0.885		0.840		0.855		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7227
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc.

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 65

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: TANK # 3
PIPE DIA: IN.
REF. PT.

EXAM DATE: 16 DEC-89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
S4C3	0	24	0.800		0.740		0.775		
S4C3	24	48	0.800		0.775		0.785		19.7
S4C3	48	72	0.800		0.780		0.785		
S4C3	72	96	0.800		0.775		0.785		
S4C4	0	24	0.880		0.815		0.850		
S4C4	24	48	0.875		0.830		0.850		19.4
S4C4	48	72	0.870		0.835		0.860		
S4C4	72	96	*		*		*		

COMMENTS

* Stair obstruction from 62" to 96"

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 67

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #3
PIPE DIA: IN.
REF. PT.

EXAM DATE: 17 DEC 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY		DATA T MAX		DATA T MIN		DATA T AVG		COMMENTS EVA-T (mm)
	FROM	TO	INCH	mm	INCH	mm	INCH	mm	
SSC1	19	24	0.805		0.785		0.790		
SSC1	24	48	0.810		0.780		0.790		19.8
SSC1	48	72	0.815		0.785		0.795		
SSC1	72	96	0.815		0.765		0.795		
SSC2	0	24	0.805		0.755		0.785		
SSC2	24	48	0.805		0.780		0.790		19.8
SSC2	48	72	0.805		0.760		0.790		
SSC2	72	96	0.805		0.755		0.785		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



SITE: RMA PAGE: OF REF. CAL. SHT:

EXAM DATE: 17 Oct 89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 70

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #2
PIPE DIA: IN.
REF. PT.

EXAM DATE: 1206C-89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
S6C1	19	24	0.810		0.785		0.795		
S6C1	24	48	0.810		0.755		0.790		19.2
S6C1	48	72	0.805		0.780		0.790		
S6C1	72	96	0.800		0.730		0.785		
S6C2	0	24	0.805		0.745		0.775		
S6C2	24	48	0.800		0.775		0.780		19.7
S6C2	48	72	0.795		0.775		0.780		
S6C2	72	96	0.795		0.745		0.775		

COMMENTS

EXAMINER: Karl M. [Signature] LEVEL: 7222 EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-87 DATA SHEET #: 71

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #3
PIPE DIA: IN.
REF. PT.

EXAM DATE: 17 OCT - 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T MAX INCH mm	DATA T MIN INCH mm	DATA T AVG INCH mm	COMMENTS EVA-T (mm)
* S6C3	0	24	0.795	0.620	0.765	
S6C3	24	48	0.790	0.760	0.770	19.3
S6C3	48	72	0.790	0.760	0.770	
S6C3	72	96	0.780	0.755	0.770	
S6C4	0	24	0.880	0.815	0.860	
S6C4	24	48	0.880	0.890	0.860	19.2
S6C4	48	72	0.875	0.840	0.860	
S6C4	72	96	0.880	0.835	0.860	

COMMENTS

* 0 to 24" - Probable lamination or other mid-wall discontinuity.
I.D. connection not confirmed. Does not exhibit characteristics of pitting.

EXAMINER: Karl [Signature] LEVEL: III EMP. #: 3222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 73

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank # 3
PIPE DIA: IN.
REF. PT.

EXAM DATE: 18 Oct 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T MIN INCH	mm	DATA T AVG INCH	mm	COMMENTS EVA-T (mm)
57C1	19	24	0.795		0.770		0.780		
57C1	24	48	0.795		0.735		0.780		18.7
57C1	48	72	0.795		0.770		0.780		
57C1	72	96	0.790		0.720		0.775		
57C2	0	24	0.795		0.760		0.765		
57C2	24	48	0.790		0.760		0.770		19.3
57C2	48	72	0.790		0.760		0.765		
57C2	72	96	0.780		0.735		0.765		
COMMENTS									

EXAMINER: Karl W. L. Lye

LEVEL: III

EMP. #: 7222

EXAMINER:

LEVEL:

EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P134-89 DATA SHEET #: 74

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #3
PIPE DIA: IN.
REF. PT.

EXAM DATE: 10 DEC 89
CIRCUMFERENCE:
DATA TAPE #:
DATA FILE #:

SUMMARY

FILE #	IDENTITY FROM	TO	DATA T INCH	MAX mm	DATA T INCH	MIN mm	DATA T INCH	AVG mm	COMMENTS EVA-T (mm)
S7C3	0	24	0.800		0.725		0.780		
S7C3	24	48	0.800		0.775		0.780		19.7
S7C3	48	72	0.800		0.775		0.780		
S7C3	72	96	0.795		0.770		0.780		
S7C4	0	24	0.875		0.790		0.855		
S7C4	24	48	0.875		0.850		0.860		19.4
S7C4	48	72	0.875		0.840		0.860		
S7C4	72	96	0.880		0.845		0.860		

COMMENTS

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: LEVEL: EMP. #:

ITL REVIEW: LEVEL: EMP. #: DATE:



DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 76

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank #3
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 1966-89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

FILE #	IDENTITY		DATA T	MAX	DATA T	MIN	DATA T	AVG	COMMENTS
	FROM	TO	INCH	mm	INCH	mm	INCH	mm	EVA-T (mm)
SBC1	12	24	0.790		0.750		0.770		
SBC1	24	48	0.795		0.750		0.775		19.1
SBC1	48	72	0.795		0.765		0.775		
SBC1	72	96	0.770		0.745		0.775		
SBC2	0	24	0.800		0.690		0.770		
SBC2	24	48	0.800		0.760		0.780		19.3
SBC2	48	72	0.800		0.765		0.780		
SBC2	72	96	0.795		0.750		0.780		
COMMENTS									

EXAMINER: [Signature] LEVEL: III EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____

DNV Industrial Services Inc

DNV Industrial Services Inc

CORROSCAN DATA SHEET JOB #: P-154-89 DATA SHEET #: 80.

SITE: RMA PAGE: OF REF. CAL. SHT:

COMP. ID: Tank # 3
PIPE DIA: _____ IN.
REF. PT. _____

EXAM DATE: 19 DEC -89
CIRCUMFERENCE: _____
DATA TAPE #: _____
DATA FILE #: _____

SUMMARY

[illegible]

EXAMINER: Karl White Ryan LEVEL: IV EMP. #: 7222
EXAMINER: _____ LEVEL: _____ EMP. #: _____

ITL REVIEW: _____ LEVEL: _____ EMP. #: _____ DATE: _____

I-SCANNING GE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item IX3-S1C1.1

Proj

47.97 in 47.97 in

ion view

Item TK3-S1C1.2

Projection view

Item TK3

95.94 in

71.96 in 71.96 in

TK3-SICL.4

Item TK3-SICL.4

Projection view

-SICL.3

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S1C2.1

Proj

1 in

47.97 in 47.97 in

ection view

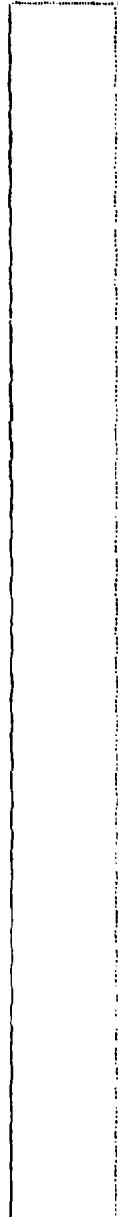
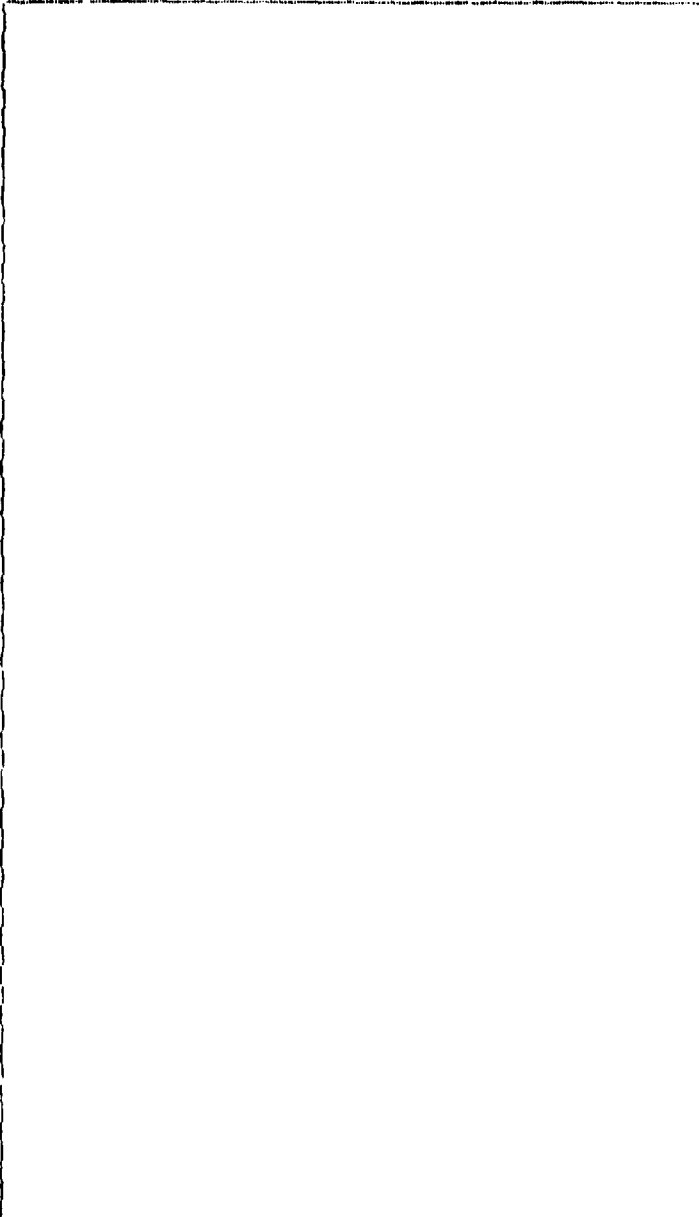
Item TK3-S1C2.2

Projection view

Item TK3

71.96 in 71.96 in

95.94 in



-SIC2.3

Projection view

Item IK3-SIC2.4

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S1C3.1

Pro

47.97 in 47.97 in

in

Projection view

Item TK3

Item TK3-S1C3 2

Section view

71.96 in 71.96 in

95.94 in



-S1C3.3

Projection view

Item TW3-S1C3.4

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.0 1 in

Img 1 Of f
 Img 2 0 n

Le1 0.49 5 in
 Le3 0.59 5 in
 Le5 0.69 5 in
 Le7 0.79 5 in
 Basis 0.84 5 in

Side 1.00 0 in

SIDE VIEW

Upper 0.40 0 in
 Level 0.84 5 in
 Lower 1.00 0 in

Projection view

Item TK3-SIC4.1

Proj

47.97 in 47.97 in

ion view

Item TK3-S104.2

Projection view

Item TK3

71.96 in 71.96 in

95.94 in

Projection view

Item TK3-S1C4.4

S1C4.3

T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

i

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK3-S105.1

Proc

29 in

47.97 in 47.97 in

ection view

Item IW3-S105.2

Projection view

Item IW

71.96 in 71.96 in

95.94 in

3-S1C5.3

Projection view

Item TW3-S1C5.4

T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S2C1.1

Proj

99 in

47.97 in 47.97 in

ection view

Item IX3-S2C1.2

Projection view

Item

71.96 in 71.96 in

95.94 in

1.1.1.1

3-S2C1.3

Projection view

Item TK3-S2C1.4

I-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK3-S2C2.1

Pro

99 in

47.97 in 47.97 in

Section view

Item WK3-S2C2.2

Projection view

Item

71.96 in 71.96 in

95.94 in

B-S2C2.3

Projection view

Item TW3-S2C2.4

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1
Img 2

Off
On

Le1
Le3
Le5
Le7
Basis

0.400 in
0.500 in
0.600 in
0.700 in
0.750 in

Side

1.000 in

SIDE VIEW

Upper
Level
Lower

0.400 in
0.750 in
1.000 in

Projection view

Item IK3-S2C3.1

Proj

9 in

47.97 in 47.97 in

Section view

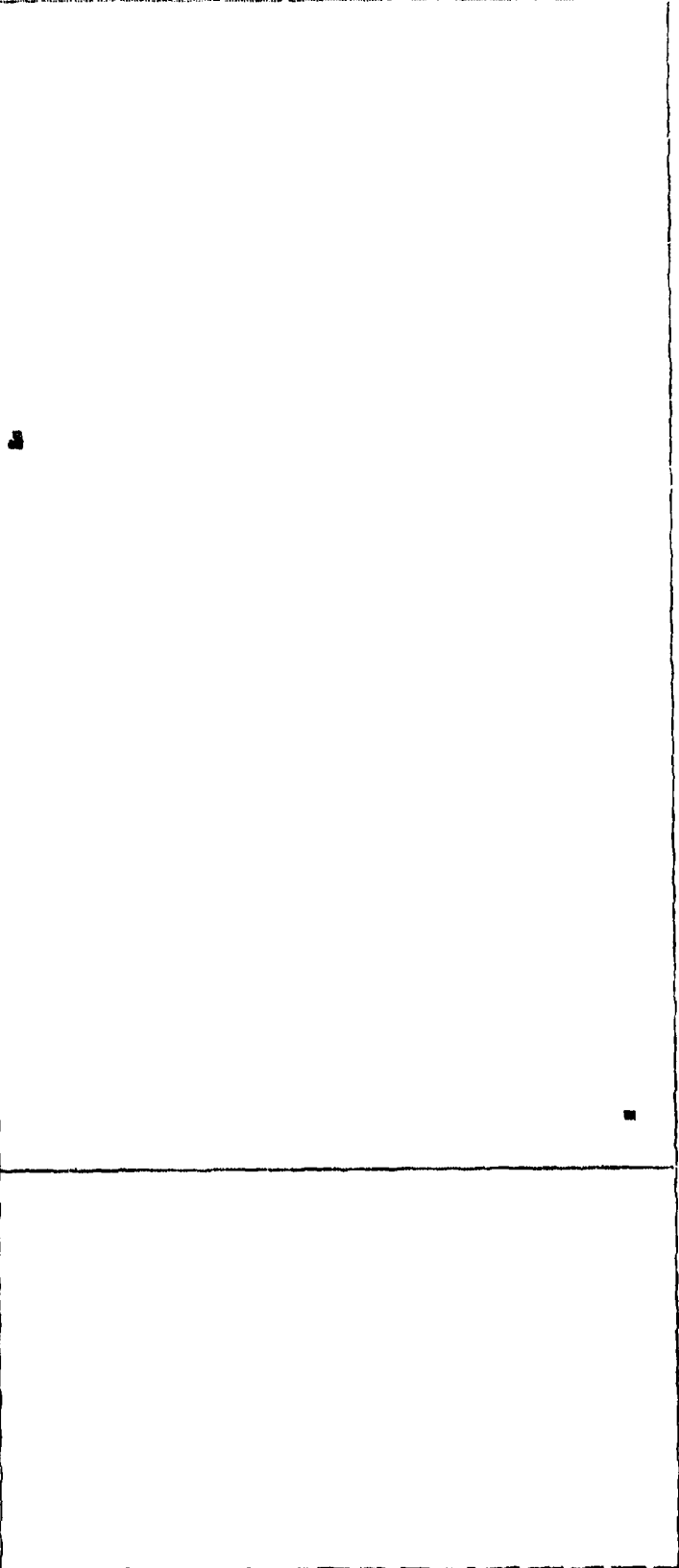
Item TK3-S2C3.2

Projection view

Item

71.96 in 71.96 in

95.94 in



-S2C3.3

Projection view

Item TK3-S2C3.4

T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.495 in
 Le3 0.595 in
 Le5 0.695 in
 Le7 0.795 in
 Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.845 in
 Lower 1.000 in

Projection view

Item TK3-SZC4.1

Proc

99 in

47.97 in 47.97 in



ection view

Item IR3-S2C4.2

Projection view

Item 1

71.96 in 71.96 in

95.94 in



3-S2C4.3

Projection view

Item TK3-S2C4.4

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK3-S2C5.1

Proj

9 in

47.97 in 47.97 in

ection view

Item TK3-SZC5.2

Projection view

Item TK3

71.96 in 71.96 in

95.94 in



S2C5.3

Projection view

Item TK3-S2C5.4

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S3C1.1

Prod

9 in

47.97 in 47.97 in

• • • • •

• • • • •

ection view

Item IK3-S3C1.2

Projection view

Item IX

71.96 in 71.96 in

95.94 in



FS3C1.3

Projection view

Item TK3-S3C1.4

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1

0.400 in

Le3

0.500 in

Le5

0.600 in

Le7

0.700 in

Basis

0.750 in

Side

1.000 in

SIDE VIEW

Upper

0.400 in

Level

0.750 in

Lower

1.000 in

Projection view

Item TK3-S3C2.1

Proj

9 in

47.97 in 47.97 in

ection view

Item IK3-S3C2.2

Projection view

Item I

71.96 in 71.96 in

95.94 in



-S3C2.3

Projection view

Item TK3-S3C2.4

T-SCAN IMAGE

0.00 in

23.99 in 23

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S3C3.1

Pro

99 in

47.97 in 47.97 in

ection view

Item TK3-S3C3.2

Projection view

Item TK

95.94 in

71.96 in 71.96 in

Item TK3-S3C3.4

Projection view

B-S3C3.3

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.495 in

Le3 0.595 in

Le5 0.695 in

Le7 0.795 in

Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in

Level 0.845 in

Lower 1.000 in

Projection view

Item IK3-S3C4.1

Proj

9 in

47.97 in 47.97 in

2
3

ection view

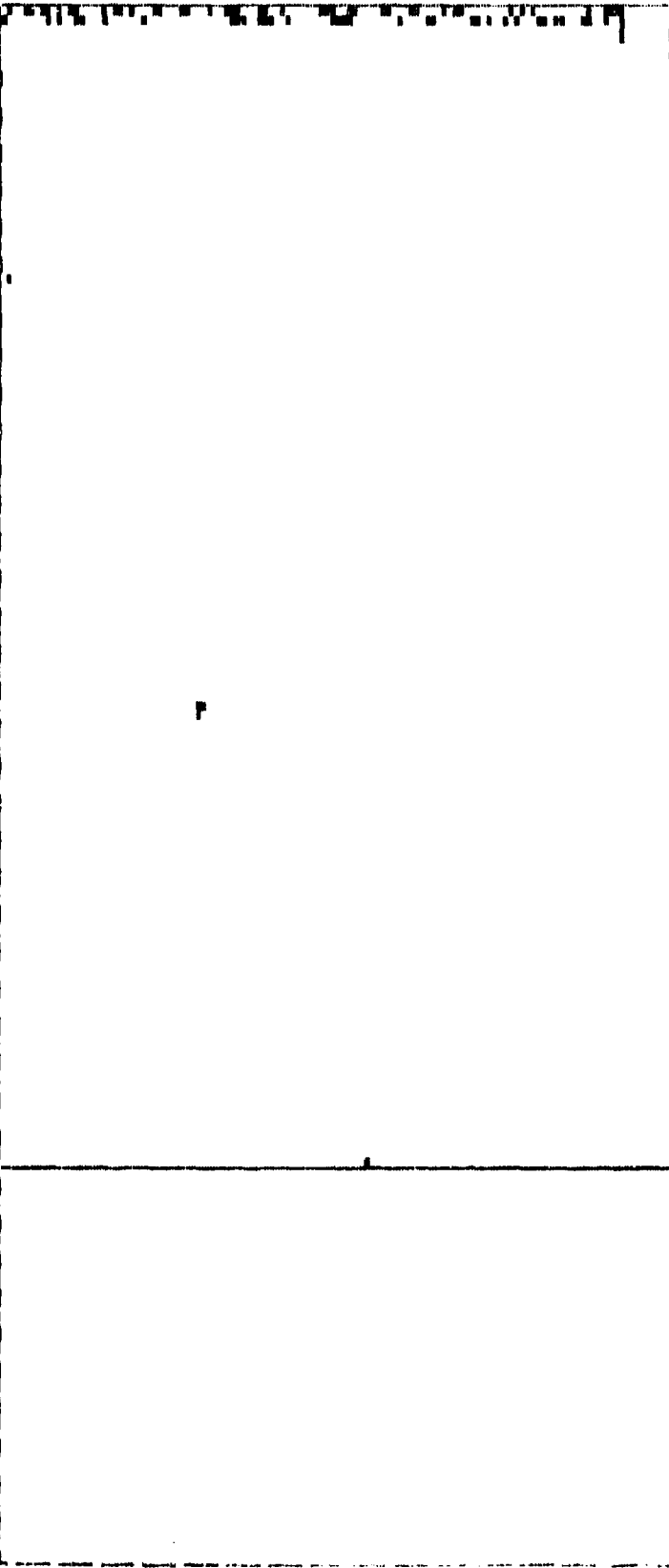
Item TK3-S3C4.2

Projection view

Item TK3

71.96 in 71.96 in

95.94 in



S3C4.3

Projection view

Item IK3-S3C4.4

I-SCAN IMAGE

TOP VIEW
Top 12.81 in

Img 1 Off
Img 2 On

Le1 0.688 in
Le3 0.788 in
Le5 0.888 in
Le7 0.988 in
Basis 0.958 in

Side 1.888 in

SIDE VIEW
Upper 0.488 in
Level 0.958 in
Lower 1.888 in

0.88 in

23.99 in 23.9

Projection view

Item IX3-S3C5.1

Pro

9 in

47.97 in 47.97 in

ection view

Item IK3-S3C5.2

Projection view

Item IK3

95.94 in

71.96 in 71.96 in

71.96 in

Item TK3-S3C5.4

Projection view

S3C5.3

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S4C1.1

Proj

47.97 in 47.97 in

9 in

Item IK3

Projection view

Item IK3-S4C1.2

ection view

71.96 in 71.96 in

95.94 in

S4C1.3

Projection view

Item IK3-S4C1.4

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.400 in

Le3 0.500 in

Le5 0.600 in

Le7 0.700 in

Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in

Level 0.750 in

Lower 1.000 in

Projection view

Item TK3-S4C2.1

Proj

9 in

47.97 in 47.97 in

ection view

Item IK3-S4C2.2

Projection view

Item IK3

71.96 in 71.96 in

95.94 in



-S4C2.3

Projection view

Item TK3-S4C2.4

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.81 in

Log 1 Off
Log 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK3-S4C3.1

Pro

in 47.97 in 47.97 in

ction view

Item IK3-S4C3.2

Projection view

Item IK3

95.94 in

71.96 in 71.96 in

Item IK3-S4C3.4

Projection view

S4C3.3

I-SCAN IMAGE

0.88 in

23.99 in 23.9

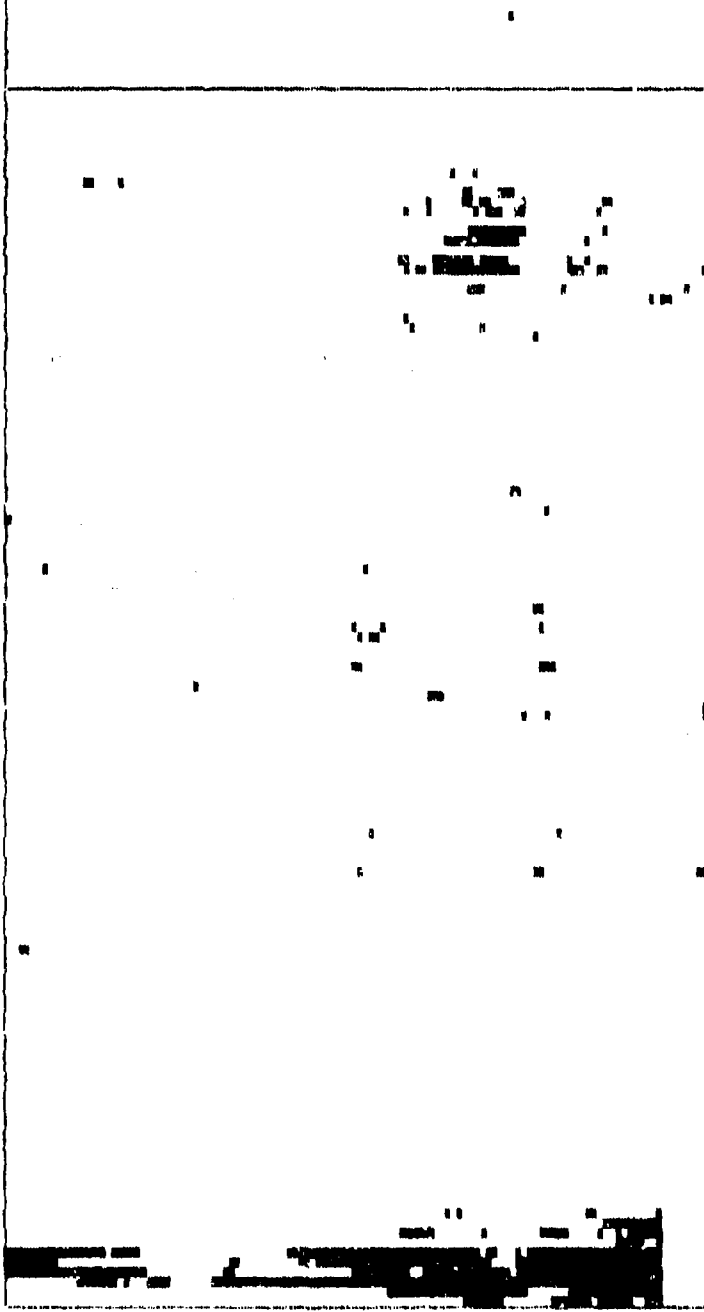
TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.495 in
 Le3 0.595 in
 Le5 0.695 in
 Le7 0.795 in
 Basis 0.845 in

Side 1.888 in



SIDE VIEW

Upper 0.488 in
 Level 0.845 in
 Lower 1.888 in



Projection view

Item TK3-S4C4.1

Proj

47.97 in 47.97 in

in

Item IK3

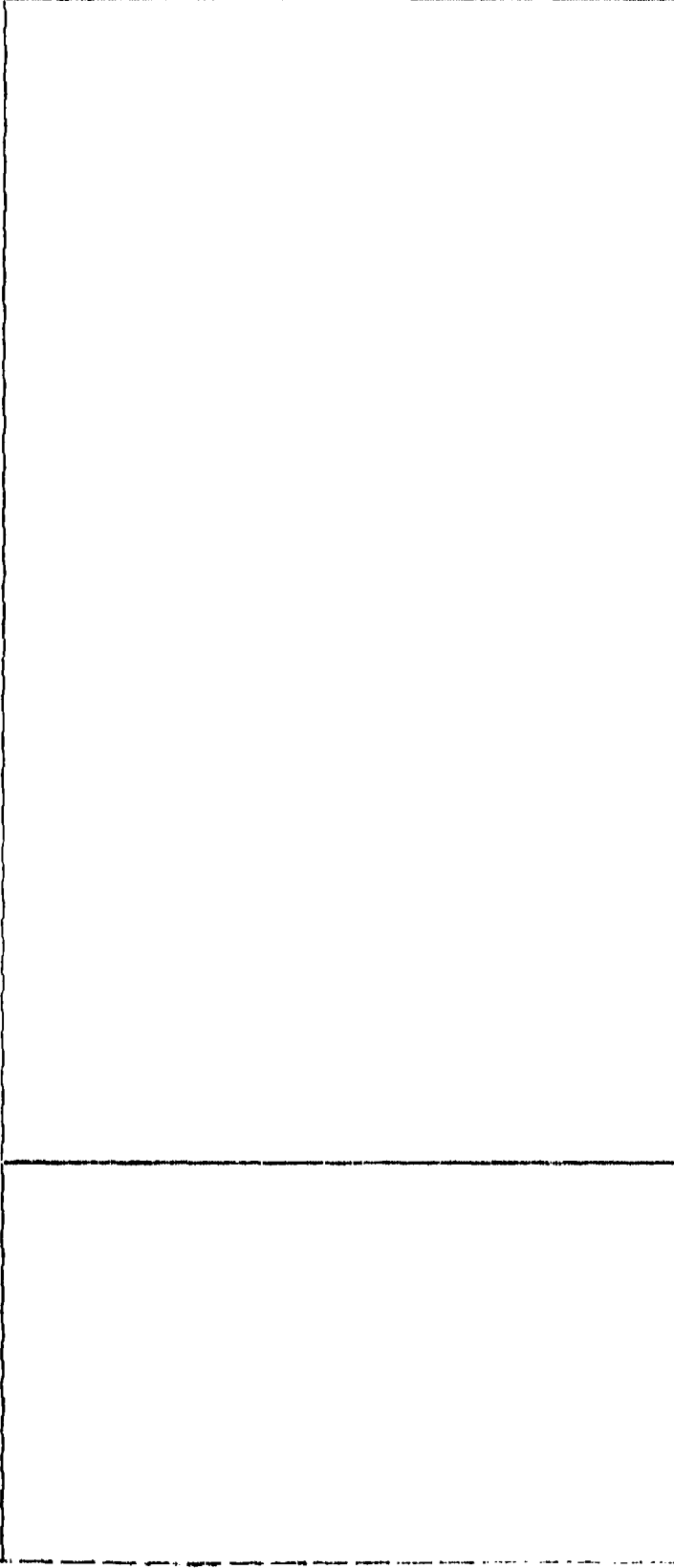
Projection view

Item IK3-S4C4.2

ction view

71.96 in 71.96 in

95.94 in



S4C4.3

Projection view

Item TK3-S4C4.4

T-SCAN IMAGE

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

0.00 in

23.99 in 23.9

Projection view

Item TK3-S4C5.1

Proj

9 in

47.97 in 47.97 in

ection view

Item IK3-S4C5.2

Projection view

Item IK3

71.96 in 71.96 in

95.94 in

S4C5.3

Projection view

Item TK3-S4C5.4

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Log 1 Off

Log 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S5C1.1

Proj

in 47.97 in 47.97 in

ection view

Item IK3-S5C1.2

Projection view

Item IK3

71.96 in 71.96 in

95.94 in

-S5Cl.3

Projection view

Item TK3-S5Cl.4

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item IX3-S5C2.1

Pro

9 in

47.97 in 47.97 in

ection view

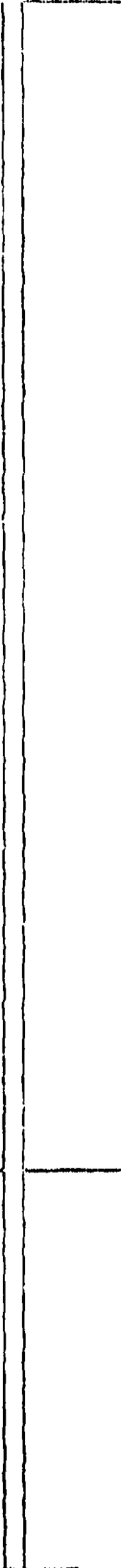
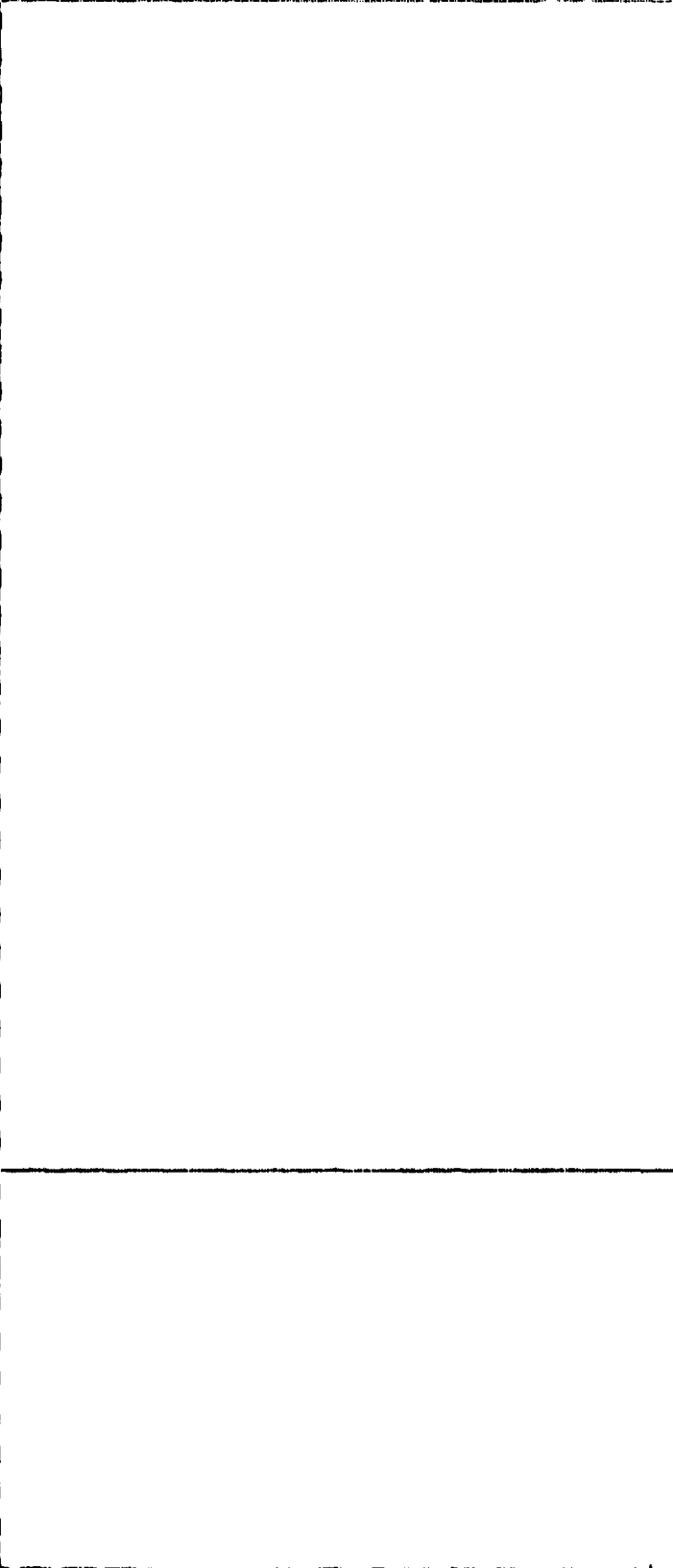
Item IK3-S5C2.2

Projection view

Item IK3

71.96 in 71.96 in

95.94 in



-S5C2.3

Projection view

Item TK3-S5C2.4

I-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.400 in

Le3 0.500 in

Le5 0.600 in

Le7 0.700 in

Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in

Level 0.750 in

Lower 1.000 in

Projection view

Item TK3-S5C3.1

Pro

in 47.97 in 47.97 in

Item TK3

Projection view

Item TK3-S5C3.2

ction view

Q

71.96 in	71.96 in	95.94 in

Item TK3-S5C3.4

Projection view

S5C3.3

I-SCAN IMAGE

TOP VIEW

Top 12.91 in

Img 1 Off

Img 2 On

Le1 0.495 in

Le3 0.595 in

Le5 0.695 in

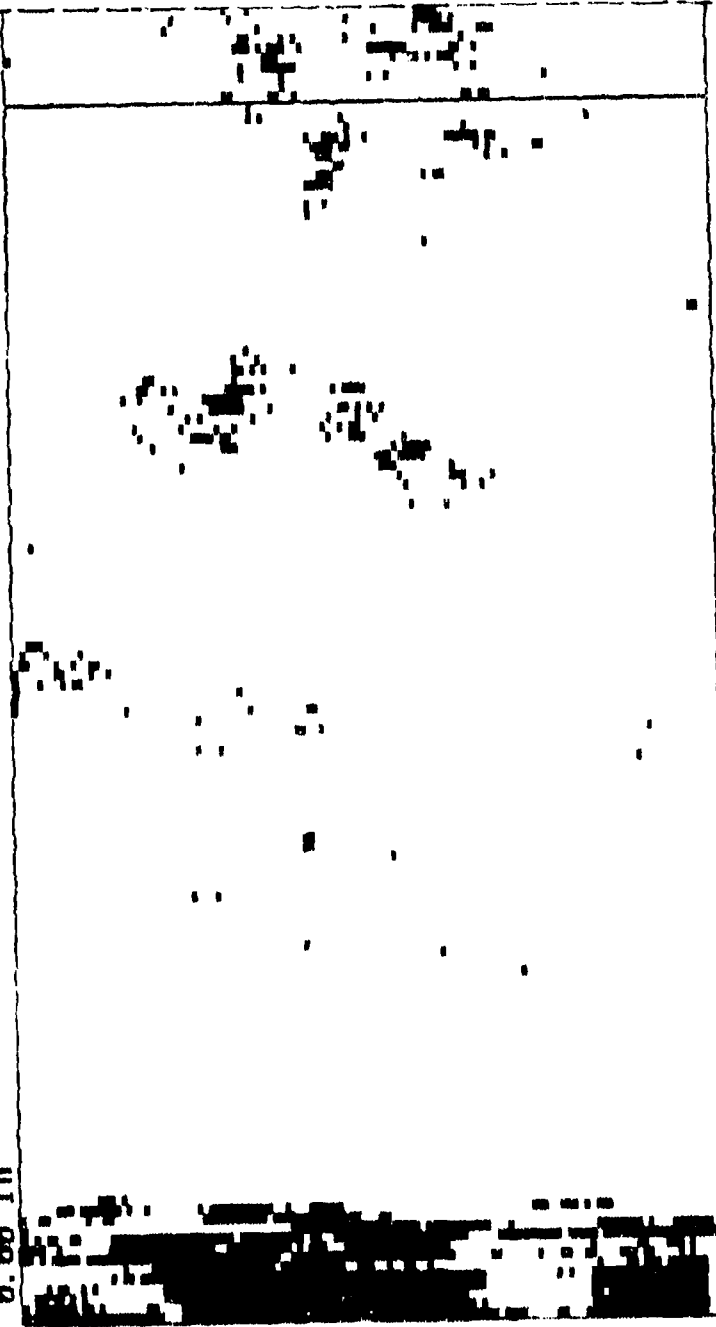
Le7 0.795 in

Basis 0.845 in

Side 1.000 in

0.00 in

23.99 in 23.9



SIDE VIEW

Upper 0.400 in

Level 0.845 in

Lower 1.000 in

Projection view

Item IK3-S5C4.1

Pro

47.97 in 47.97 in

in

Projection view

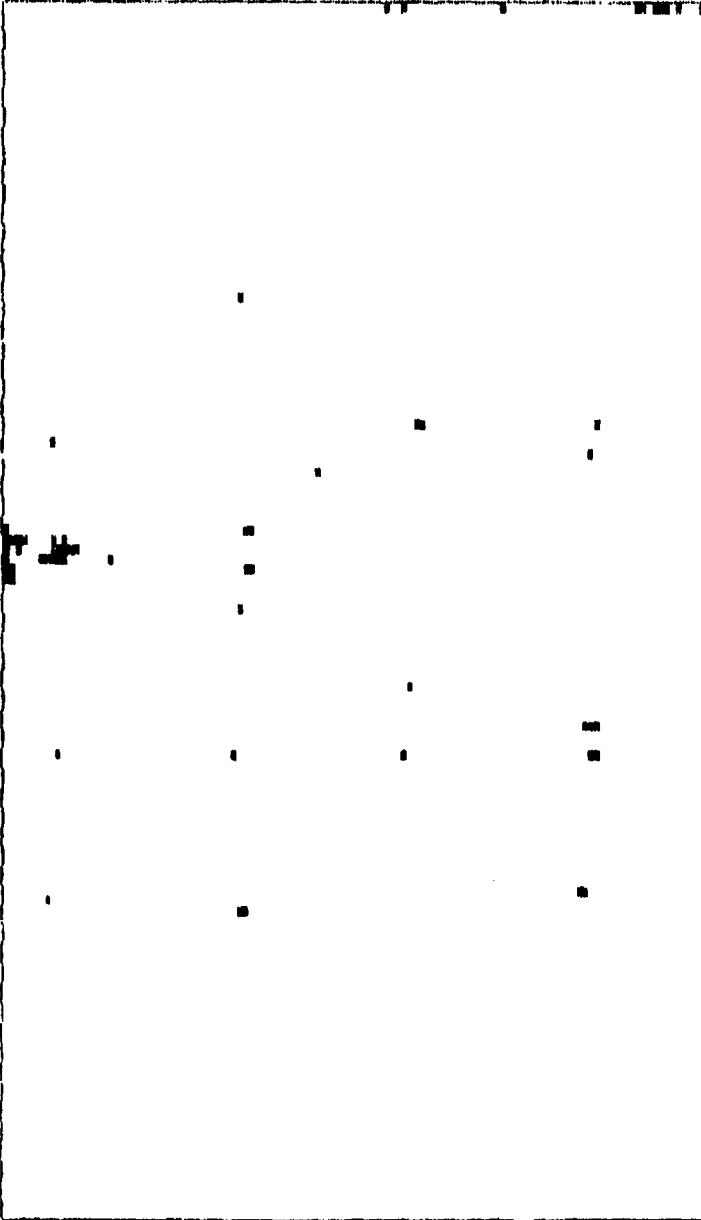
Item IK3-S5C4.2

Item IK3

ction view

71.96 in 71.96 in

95.94 in



-S5C4.3

Projection view

Item TK3-S5C4.4

T-SCAN IMAGE

8.88 in

23.99 in 23.9

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.688 in
 Le3 0.788 in
 Le5 0.888 in
 Le7 0.988 in
 Basis 0.958 in

Side 1.888 in

SIDE VIEW

Upper 0.488 in
 Level 0.958 in
 Lower 1.888 in

Projection view

Item TK3-S5C5.1

Proj

9 in

47.97 in 47.97 in

ection view

Item TK3-S5C5.2

Projection view

Item TK3

95.94 in

71.96 in 71.96 in



-S5C5.3

Projection view

Item TK3-S5C5.4

0.88 in 23.99 in 23.9

T-SCAN IMAGE

TOP VIEW

Top 12.81 in

Img 1 Off
Img 2 On

Le1 0.488 in
Le3 0.588 in
Le5 0.688 in
Le7 0.788 in
Basis 0.758 in

Side 1.888 in

SIDE VIEW

Upper 0.488 in
Level 0.758 in
Lower 1.888 in

Projection view

Item TK3-S6C1.1

Proj

9 in

47.97 in 47.97 in

ection view

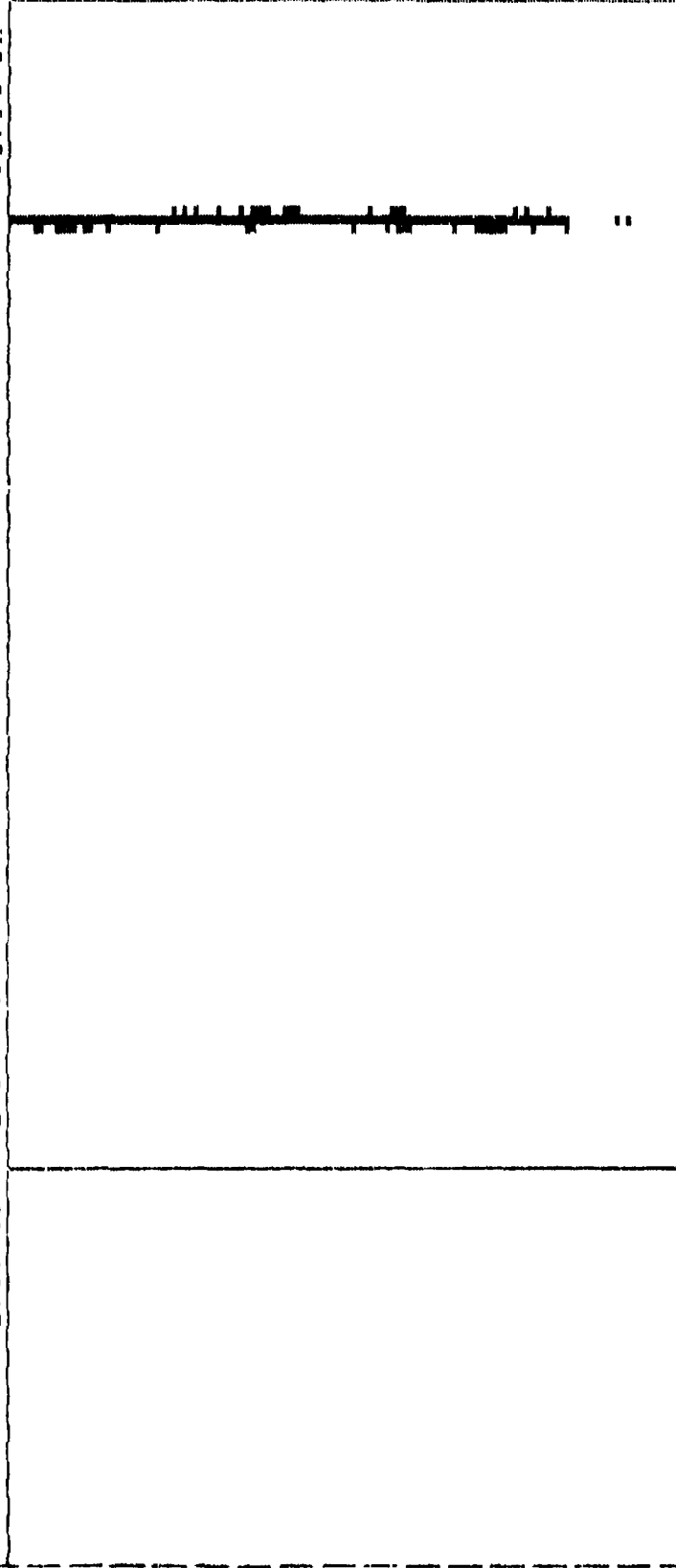
Item TK3-S6C1.2

Projection view

Item TK3

71.96 in 71.96 in

95.94 in



-S6C1.3

Projection view

Item TK3-S6C1.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Lag 1 Off
Lag 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item TK3-S6C2.1

Project

47.97 in 47.97 in

n view

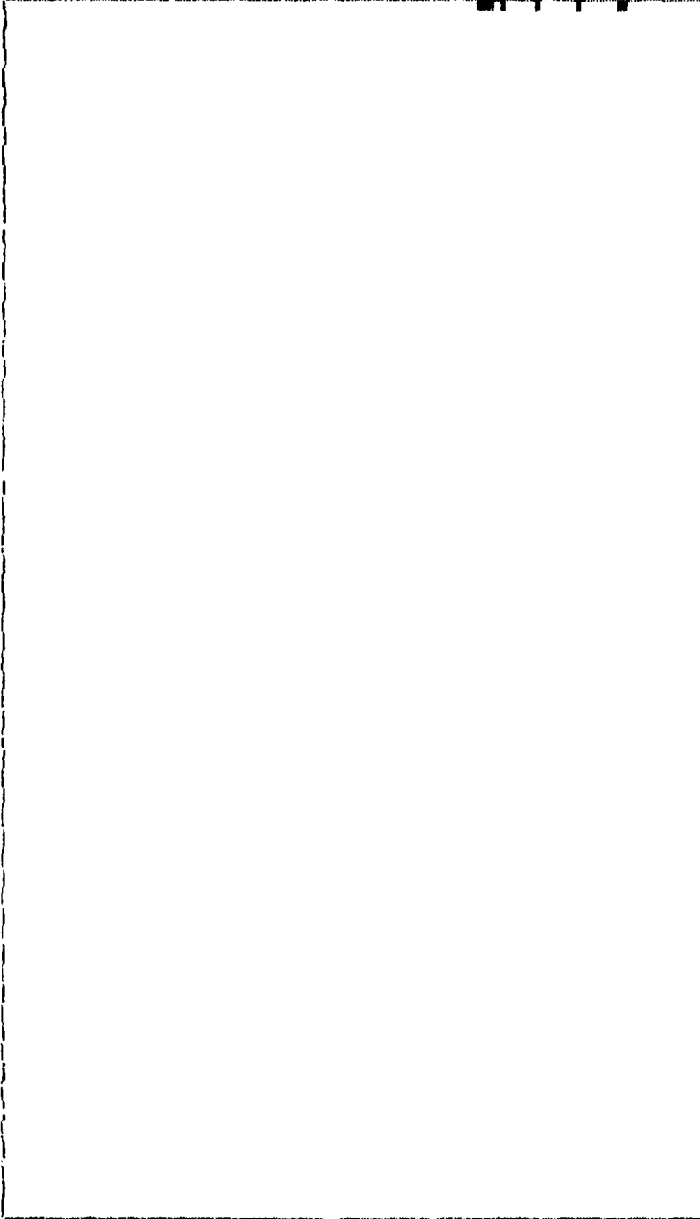
Item TK3-S602.2

Projection view

Item TK3-S60

71.96 in 71.96 in

95.94 in



Projection view

Item TK3-S6C2.4

2.3

I-SCAN IMAGE

0.00 in

23.99 in 23.9

IOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

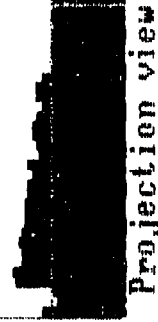
Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in



SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in



Projection view

Item TK3-S6C3.1

Proj

5

47.97 in 47.97 in

Item IK3

Projection view

Item IK3-S6C3.2

on view

95.94 in

71.96 in 71.96 in

Item TK3-S6C3.4

Projection view

-S6C3.3

23.99 in 23.9

0.00 in

T-SCAN IMAGE

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view

Item IX3-S6C4.1

Proj

47.97 in 47.97 in

5

tion view

Item IK3-S6C4.2

Projection view

Item IK3

71.96 in 71.96 in

95.94 in

S6C4.3

Projection view

Item IK3-S6C4.4

T-SCAN IMAGE

8.88 in

23.99 in 23.99 in

TOP VIEW

Top 12.81 in

Img 1 Off
 Img 2 On

Le1 0.680 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.800 in

SIDE VIEW

Upper 0.480 in
 Level 0.950 in
 Lower 1.800 in

Projection view

Item TK3-S6C5.1

Project

47.97 in 47.97 in

view

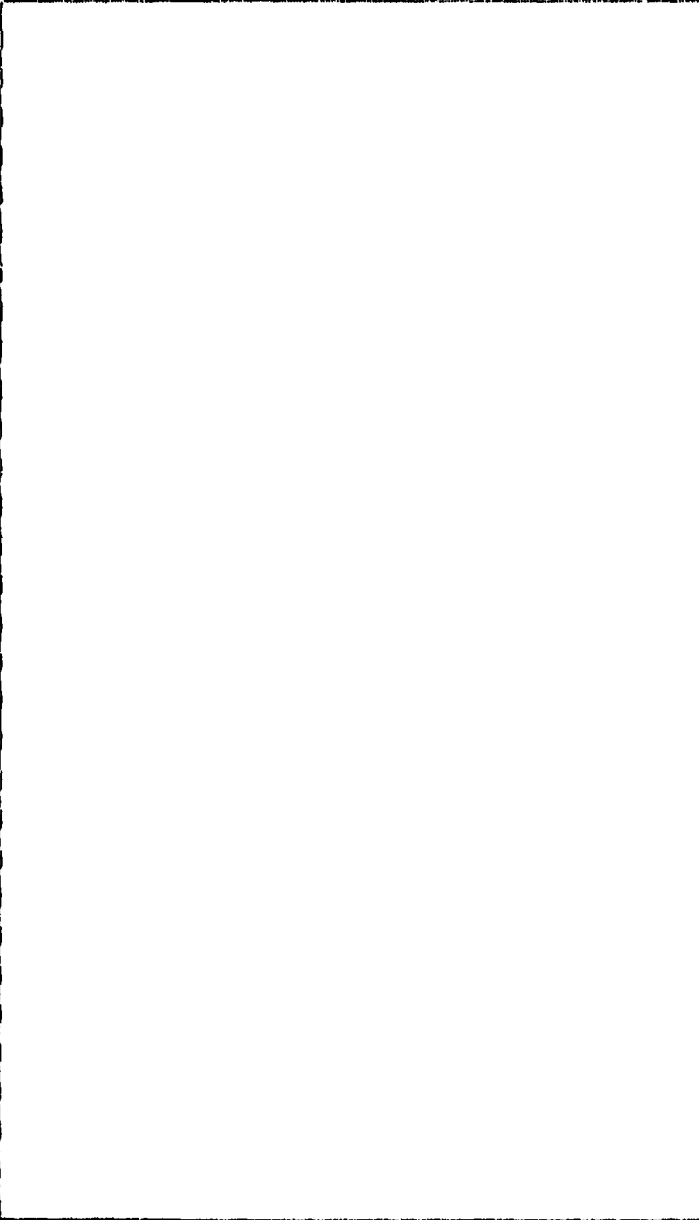
Item TK3-S6C5.2

Projection view

Item TK3-S6C

71.96 in 71.96 in

95.94 in



5.3

Projection view

Item TK3-S6C5.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S7C1.1

Project

47.97 in 47.97 in



on view

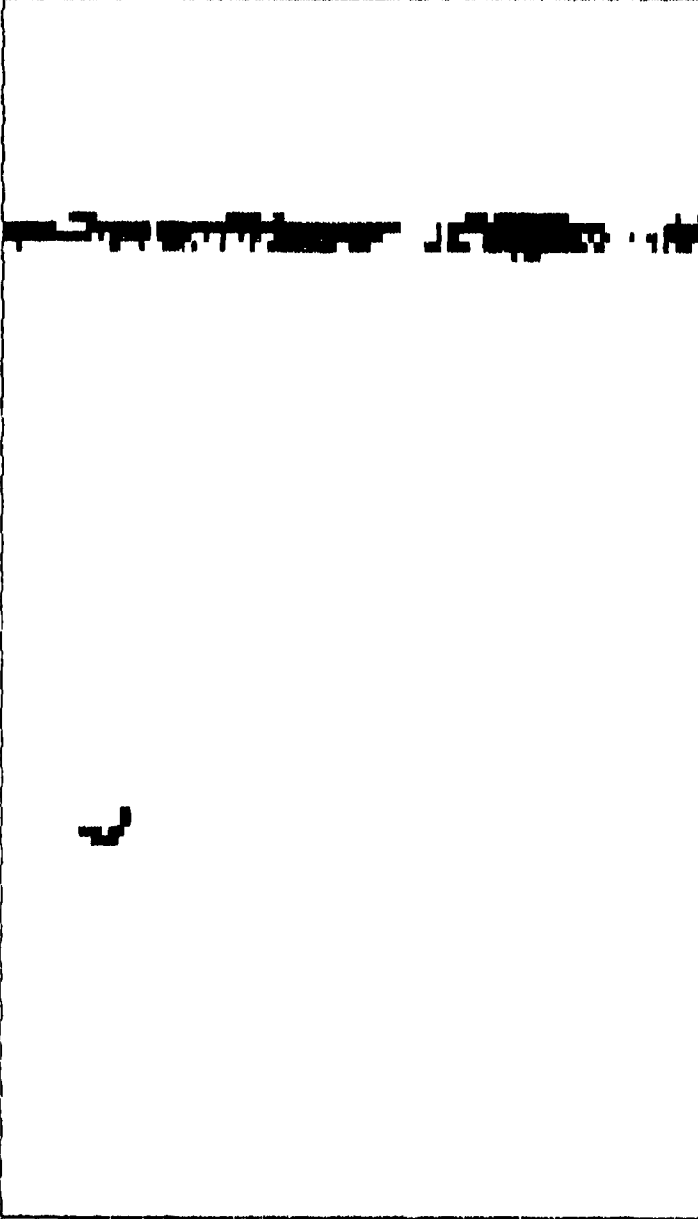
Item TK3-S7C1.2

Projection view

Item TK3-S7C

71.96 in 71.96 in

95.94 in



Projection view

Item TK3-S7C1.4

41.3

I-SCAN IMAGE

0.00 in

23.99 in 23.9

IOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S7C2.1

Proj

47.97 in 47.97 in

Item TK3

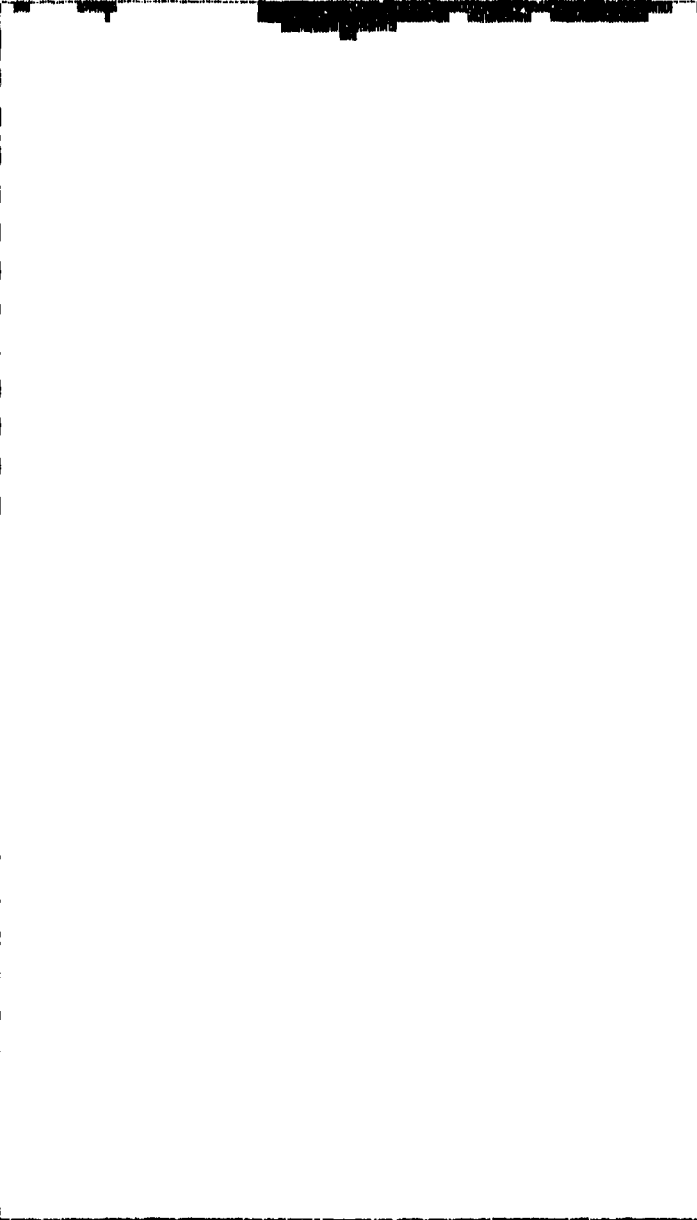
Projection view

Item IK3-S7C2.2

on view

71.96 in 71.96 in

95.94 in



S7C2.3

Projection view

Item TK3-S7C2.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.400 in

Le3 0.500 in

Le5 0.600 in

Le7 0.700 in

Basis 0.756 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in

Level 0.750 in

Lower 1.000 in

Projection view

Item IX3-S7C3.1

Project

47.97 in 47.97 in

Item TX3-S70

Projection view

Item TX3-S703.2

view

95.94 in

71.96 in 71.96 in

Item TK3-S7C3.4

Projection view

3.3

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.495 in
 Le3 0.595 in
 Le5 0.695 in
 Le7 0.795 in
 Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.480 in
 Level 0.845 in
 Lower 1.000 in

Projection view

Item IN3-S7C4.1

Project

47.97 in 47.97 in

Projection view

Item TK3-S79

Item TK3-S7C4.2

view

71.96 in 71.96 in

95.94 in

14.3

Projection view

Item TK3-S7C4.4

T-SCAN IMAGE

0.00 in

23.99 in 23.9

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item IK3-S7C5.1

Proj

in 47.97 in 47.97 in

Projection view

Item IX3-S7C5.2

Item IX3

ction view

71.96 in	71.96 in	95.94 in
----------	----------	----------

71.96 in

71.96 in

5.94
1000
1000
1000

£5025.3

Projection view

Item TXG-S705.4

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off

Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S8C1.1

Project

47.97 in 47.97 in

in view

Item TW3-S8C1.2

Projection view

Item TW3-S8C

71.96 in 71.96 in

95.94 in



71.3

Projection view

Item TK3-S8C1.4

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.400 in
 Le3 0.500 in
 Le5 0.600 in
 Le7 0.700 in
 Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.750 in
 Lower 1.000 in

Projection view

Item TK3-S8C2.1

Projecti

47.97 in 47.97 in

on view

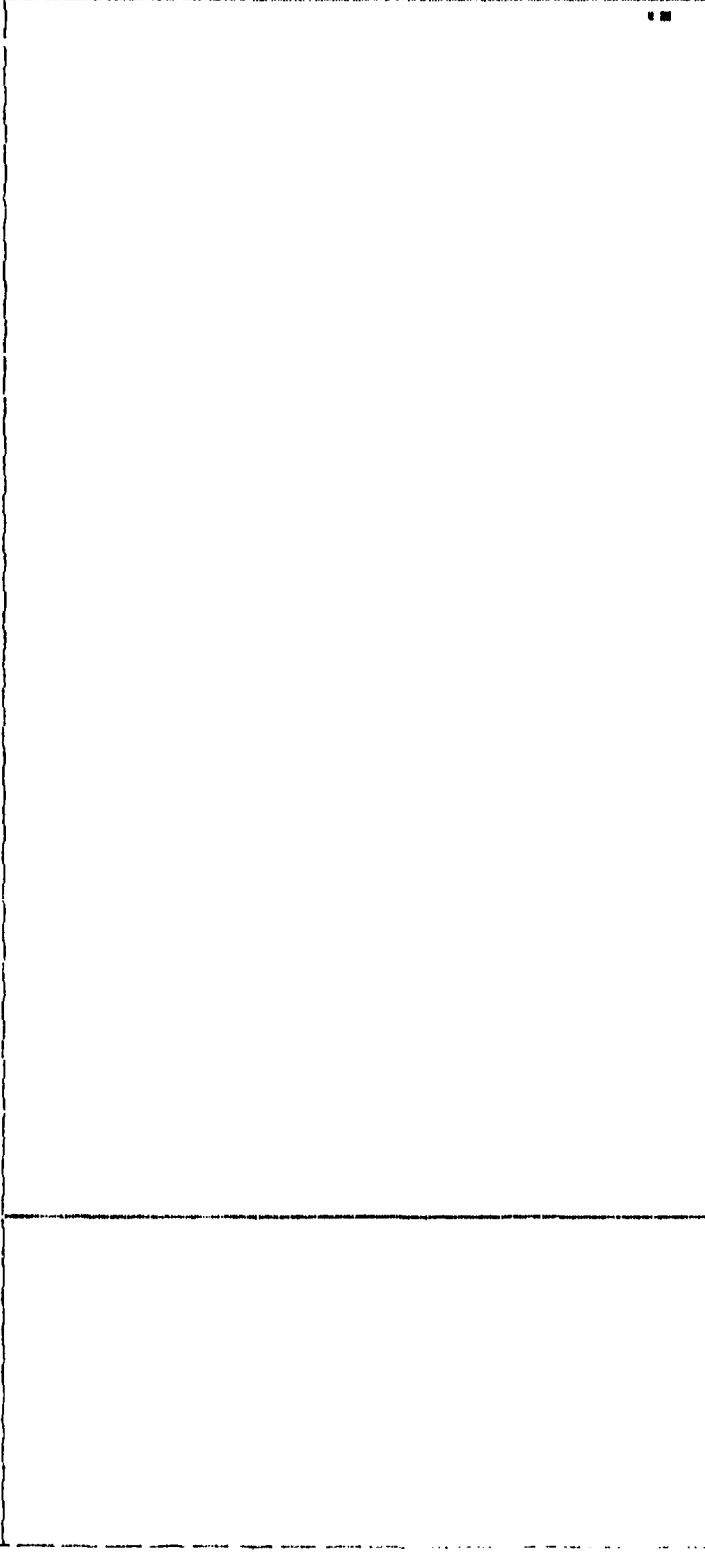
Item TK3-S8C2.2

Projection view

Item TK3-S8C

71.96 in 71.96 in

95.94 in



2.3

Projection view

Item TK3-S8C2.4

T-SCAN IMAGE

3.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.400 in
Le3 0.500 in
Le5 0.600 in
Le7 0.700 in
Basis 0.750 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.750 in
Lower 1.000 in

Projection view

Item IK3-S8C3.1

Projection

47.97 in 47.97 in

in view

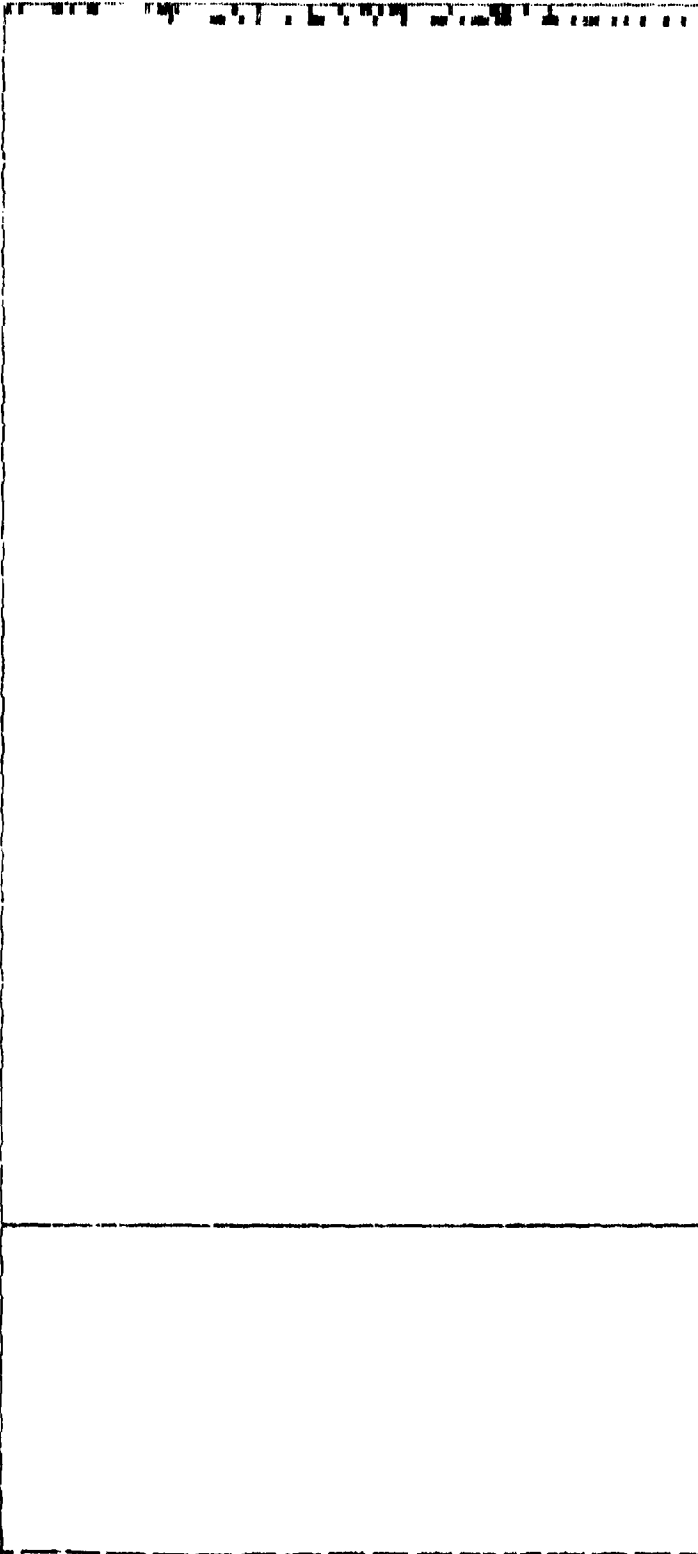
Item TK3-S8C3.2

Projection view

Item TK3-S8C

71.96 in

95.94 in



Projection view

Item TK3-S8C3.4

1.3

T-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 0.495 in
Le3 0.595 in
Le5 0.695 in
Le7 0.795 in
Basis 0.845 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
Level 0.845 in
Lower 1.000 in

Projection view

Item TK3-S8C4.1

Projecti

47.97 in 47.97 in

on view

Item IK3-S8C4.2

Projection view

Item IK3-S8C4

71.96 in 71.96 in

95.94 in



Projection view

Item TK3-S8C4.4

1.3

T-SCAN IMAGE

9.00 in

23.99 in 23.99 in

IOP VIEW

Top 12.01 in

Img 1 Off
 Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK3-S0C5.1

Project

4

47.97 in 47.97 in

on view

Item TK3-S8C5.2

Projection view

Item TK3-S8C5

71.96 in 71.96 in

95.94 in



1.3

Projection view

Item TK3-S8C5.4

I-SCAN IMAGE

0.00 in

23.99 in 23.99 in

TOP VIEW

Top 12.01 in

Img 1 Off
Img 2 On

Le1 8.600 in
Le3 8.700 in
Le5 8.800 in
Le7 8.900 in
Basis 8.950 in

Side 1.000 in

SIDE VIEW

Upper 8.400 in
Level 8.950 in
Lower 1.000 in

Projection view

Item IX3-H1C5.1

Projec

47.97 in 47.97 in

on view

Item IX3-H1C5.2

Projection view

Item IX3-H

71.96 in 71.96 in

95.94 in 95.94 in

.3

Projection view

Item IX3-H1C5.4

Projection view

119.93 in

Item TK3-H1C5.5

T-SCAN IMAGE

0.00 in

23.99 in 23.99

TOP VIEW

Top 12.81 in

Img 1 Off

Img 2 On

Le1 0.600 in
 Le3 0.700 in
 Le5 0.800 in
 Le7 0.900 in
 Basis 0.950 in

Side 1.000 in

SIDE VIEW

Upper 0.400 in
 Level 0.950 in
 Lower 1.000 in

Projection view

Item TK3-H2C5.1

Projec

47.97 in 47.97 in

in

tion view

Item TK3-H2C5.2

Projection view

Item TK3-

71.96 in 71.96 in

95.94 in 95.94 in

205.3

Projection view

Item TK3-H205.4

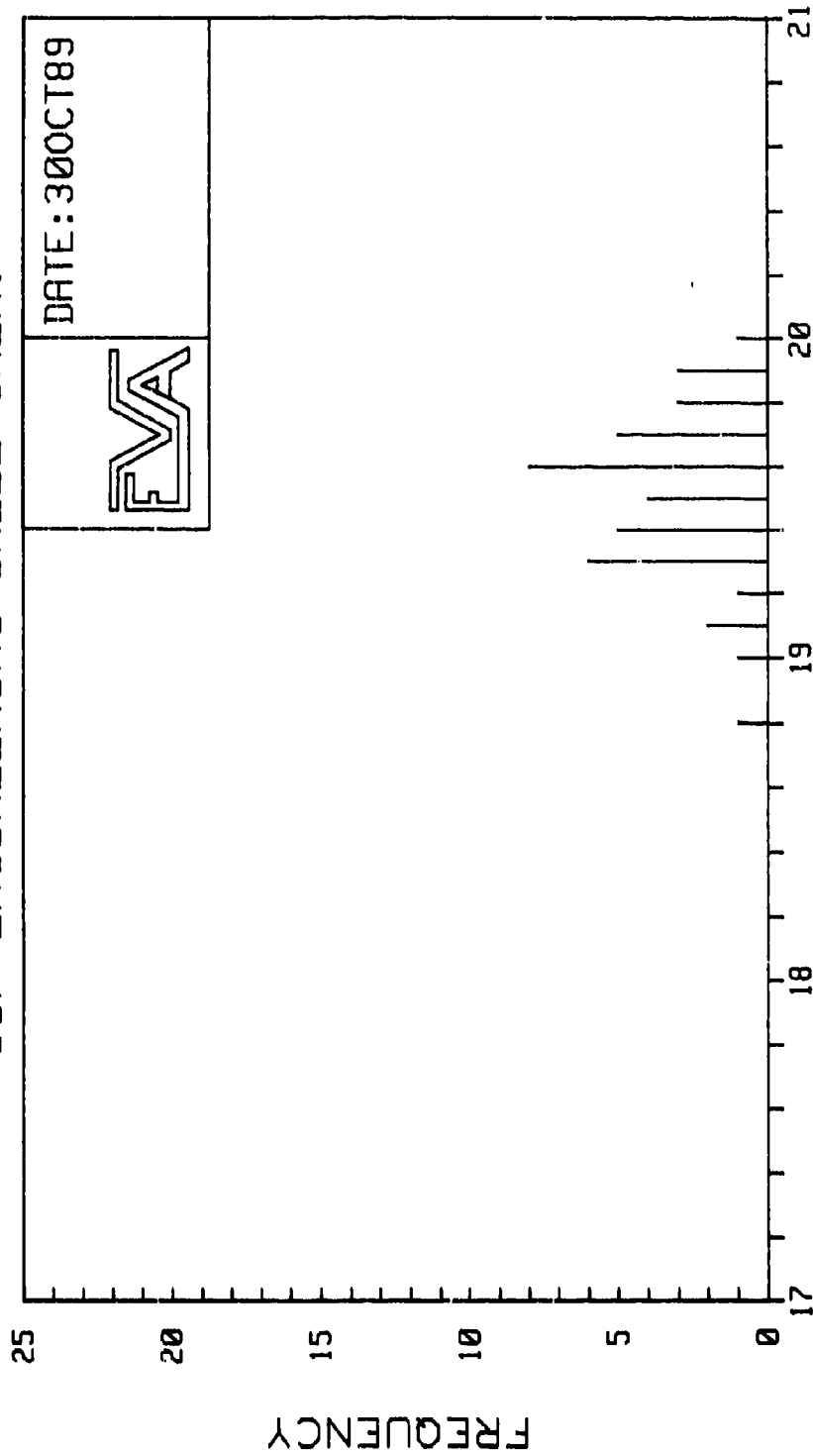
Projection view

119.93 in

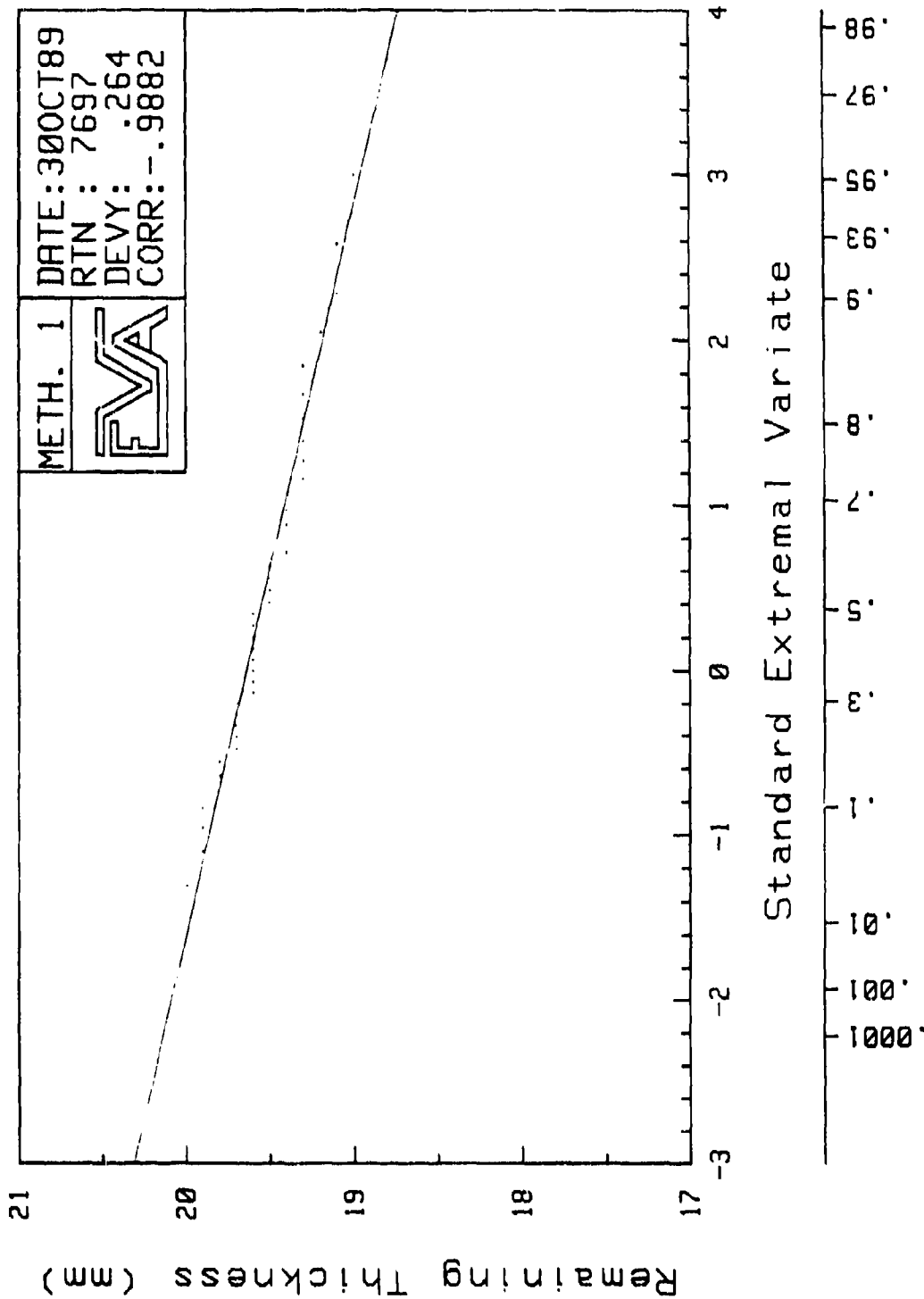
Item TK3-H2C5.5

APPENDIX 4
EVA Plots and Tables, All Tanks

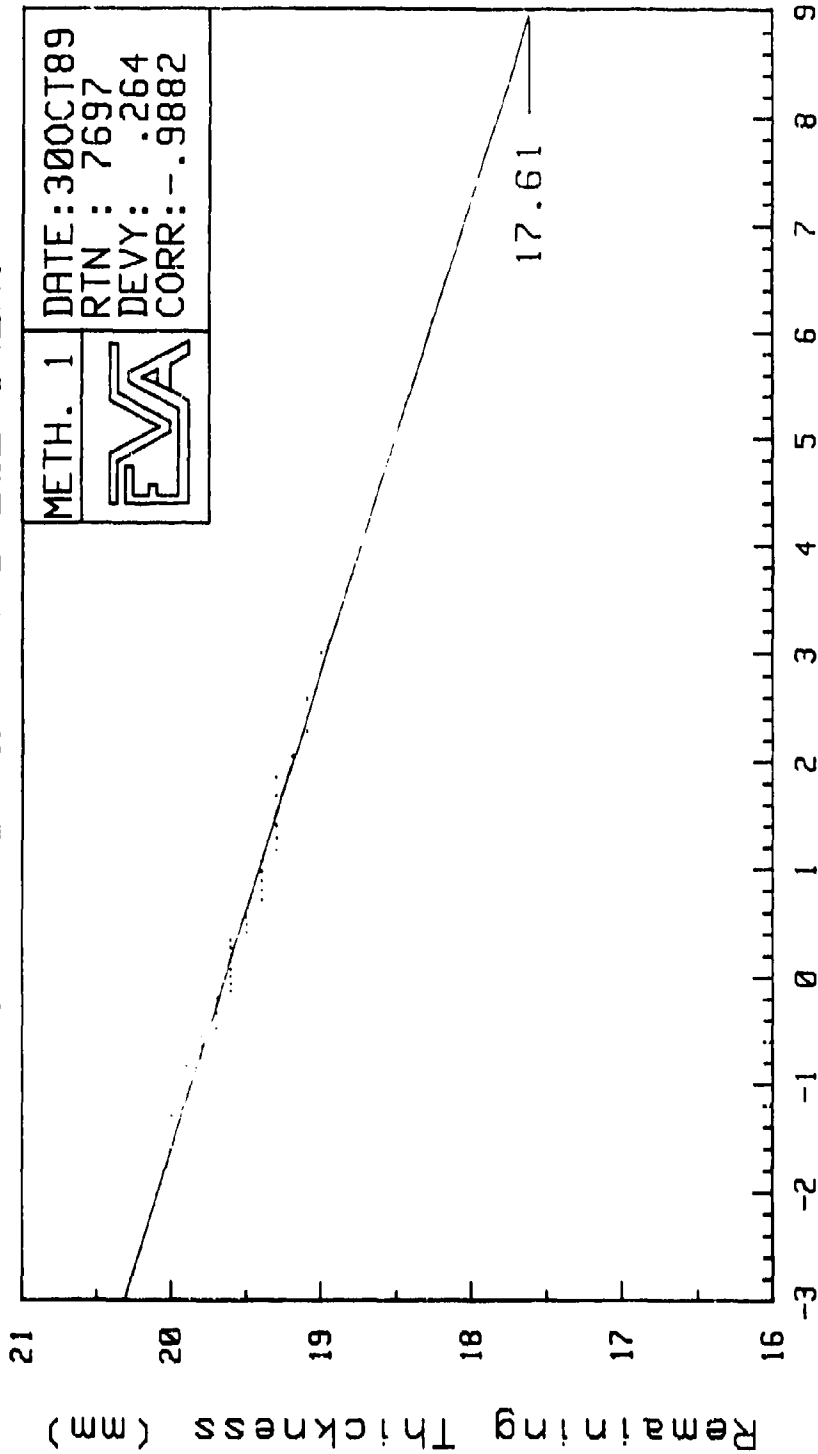
RMA, BASIN F, STG. TANK #1
SIP ENGINEERING/SHELL CHEM.



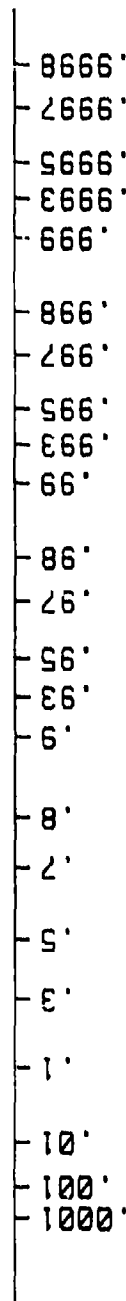
RMA, BASIN F, STG. TANK #1 SIP ENGINEERING/SHELL CHEM.



RMA, BASIN F, STG. TANK #1 SIP ENGINEERING/SHELL CHEM.

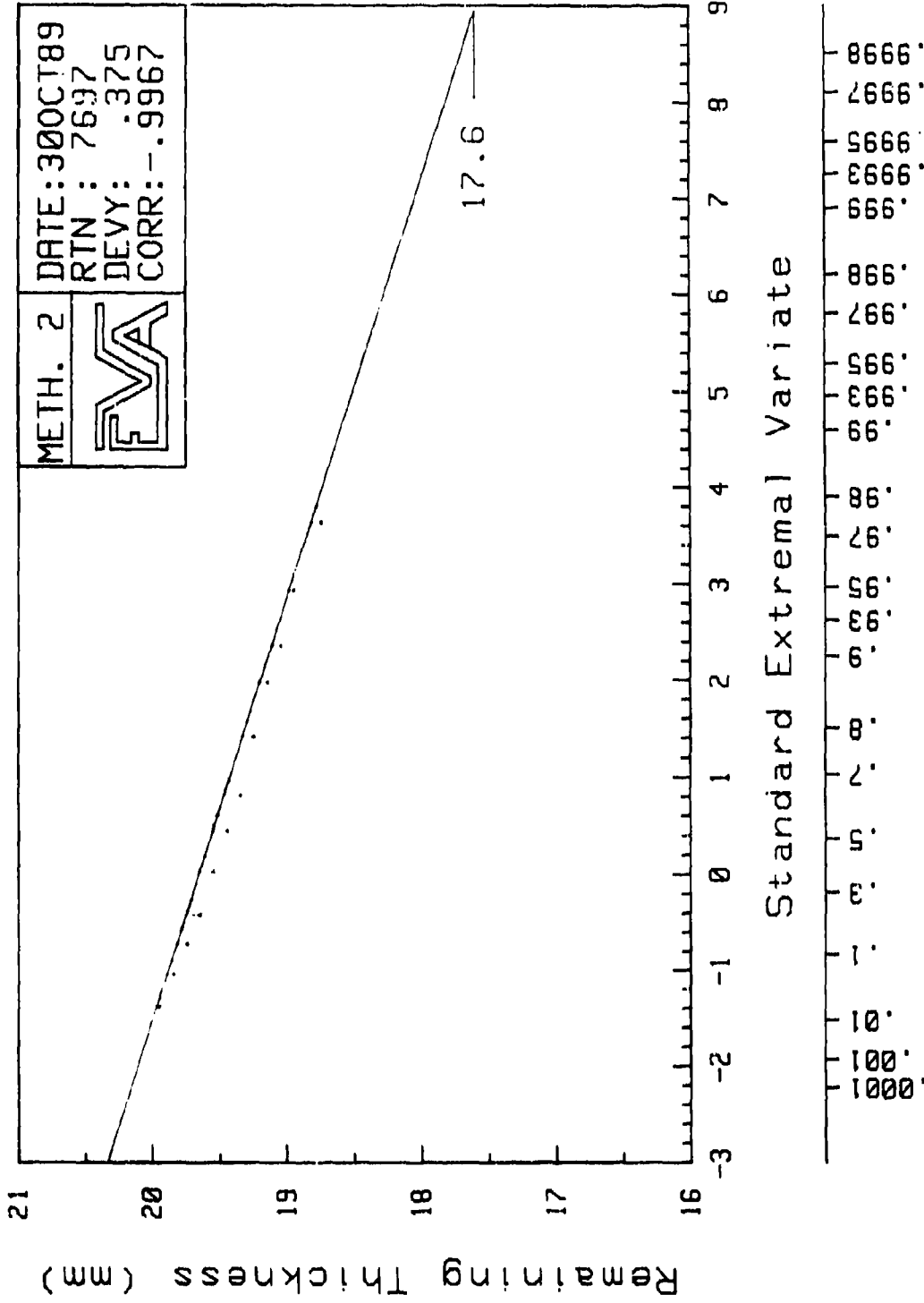


Standard Extremal Variate



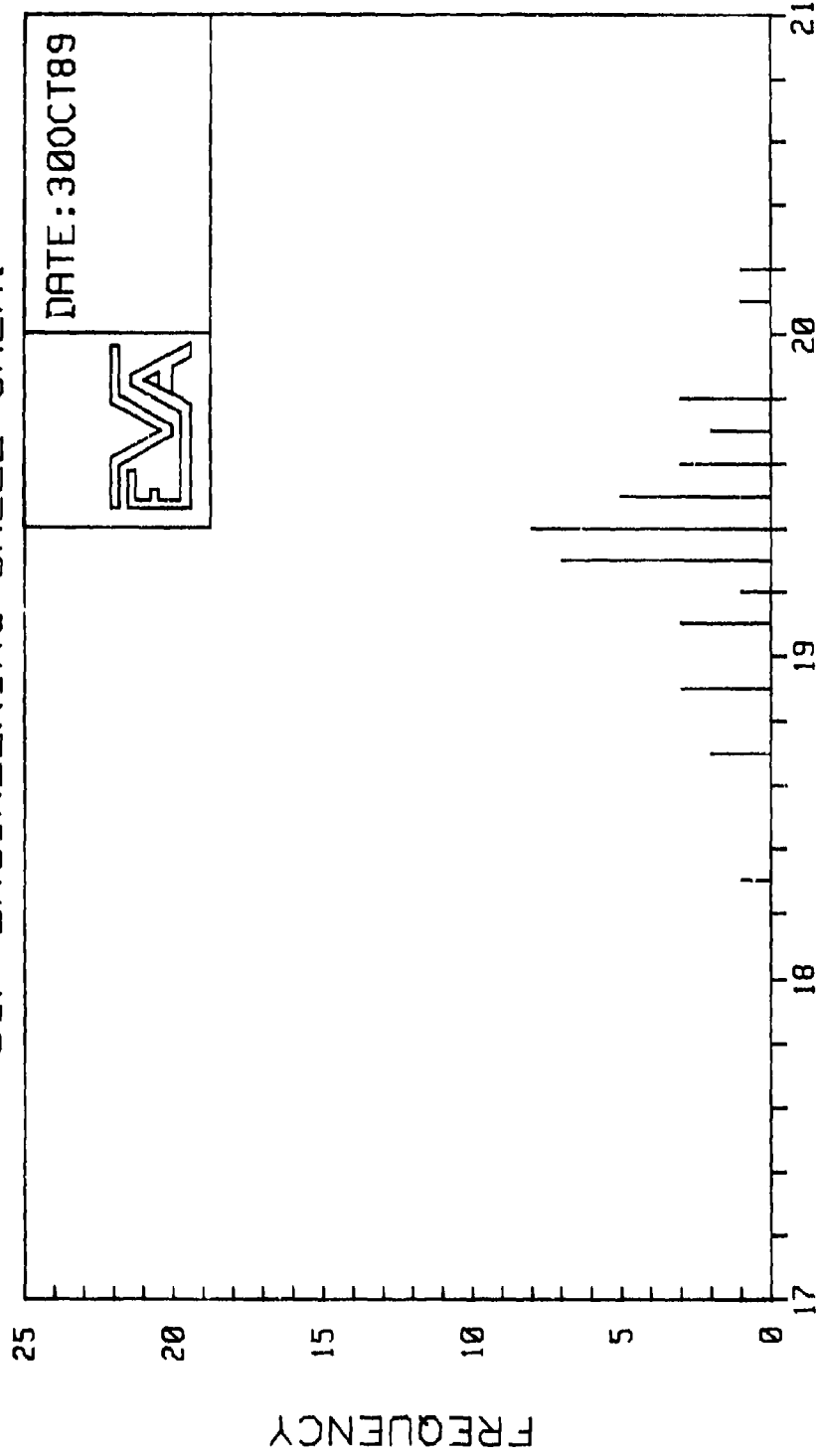
Probability

RMA, BASIN F, STG. TANK #1 SIP ENGINEERING/SHELL CHEM.



Probability

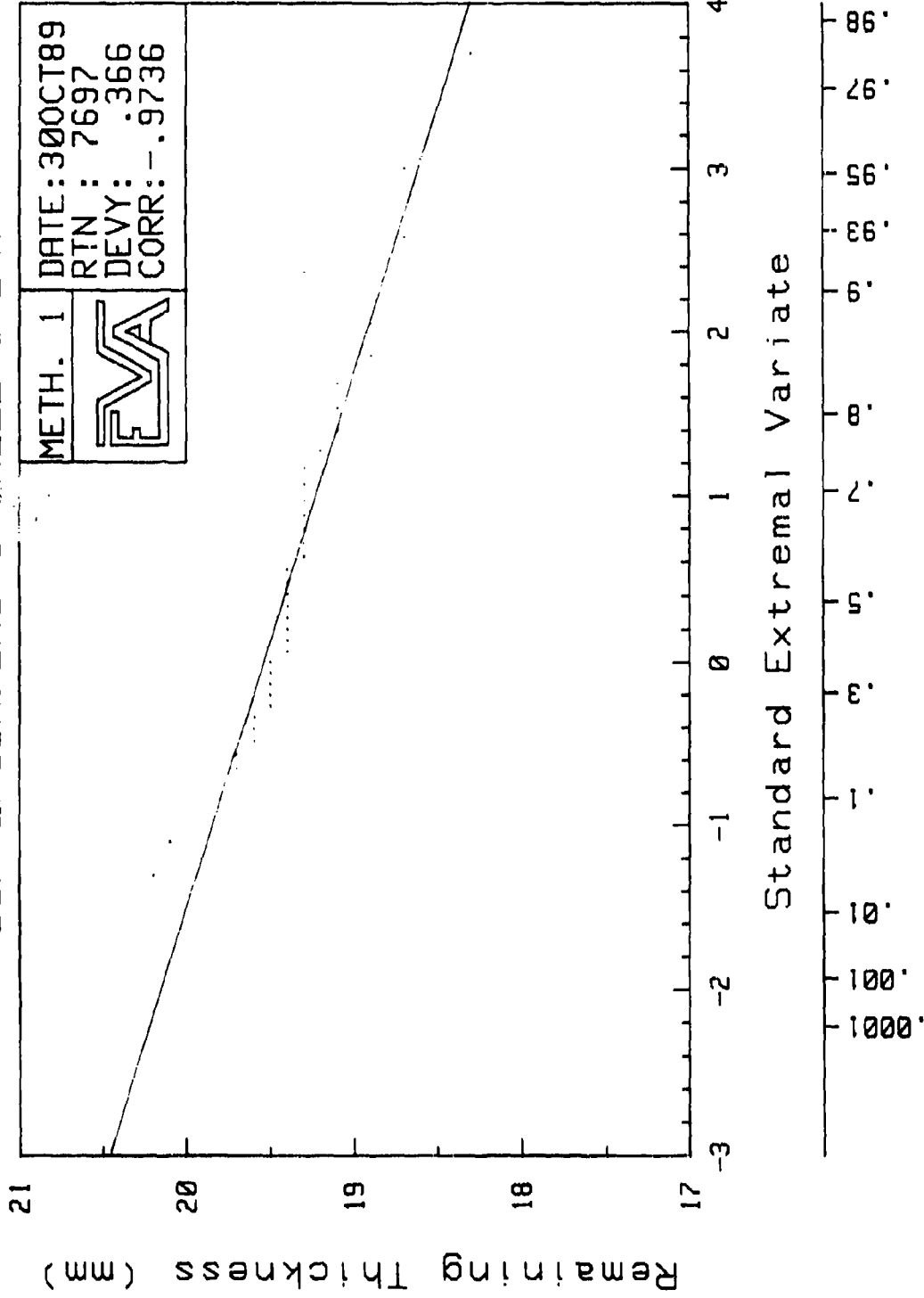
RMA, BASIN F, STG. TANK #2 SIP ENGINEERING/SHELL CHEM.



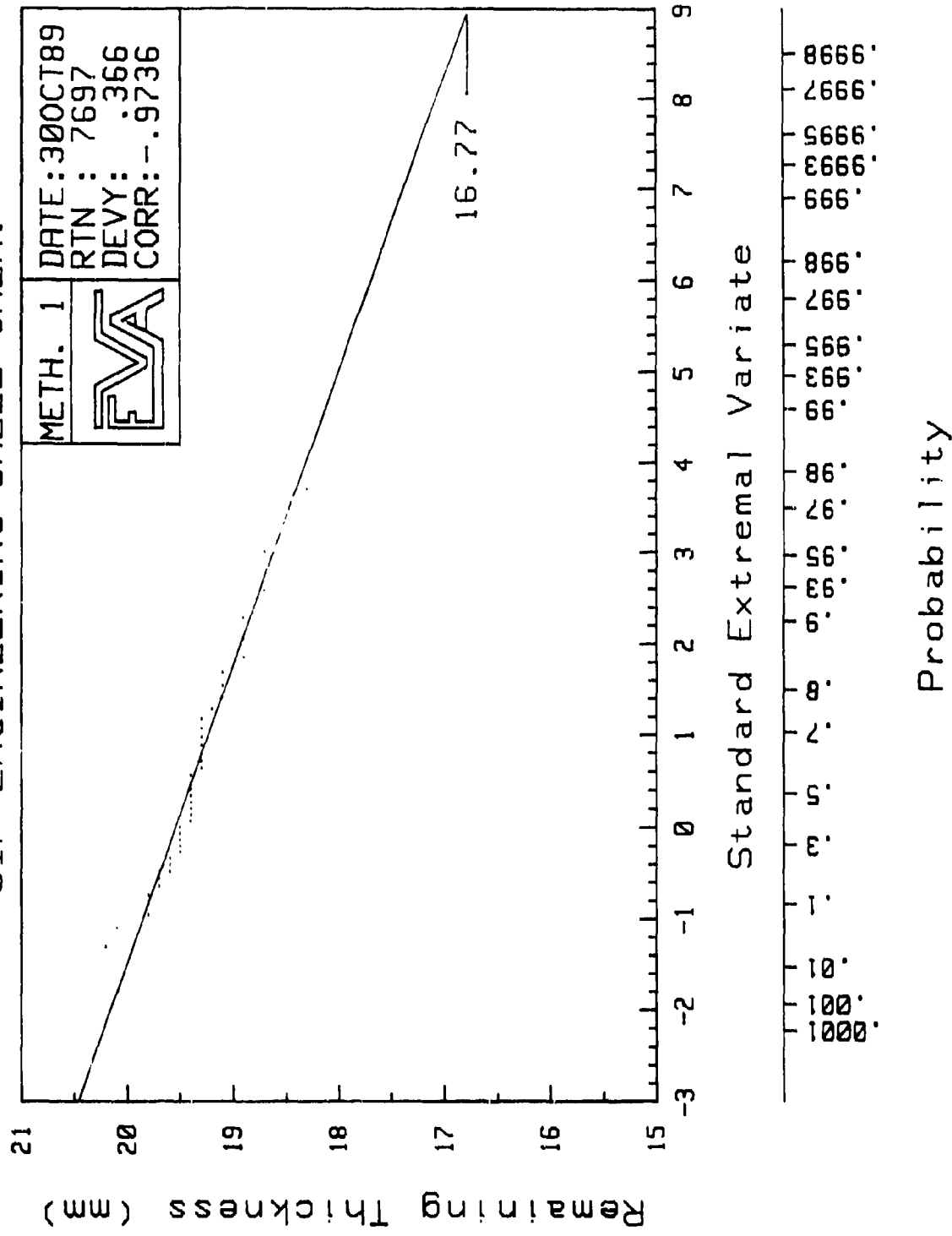
DATE: 30 OCT 89

EVA

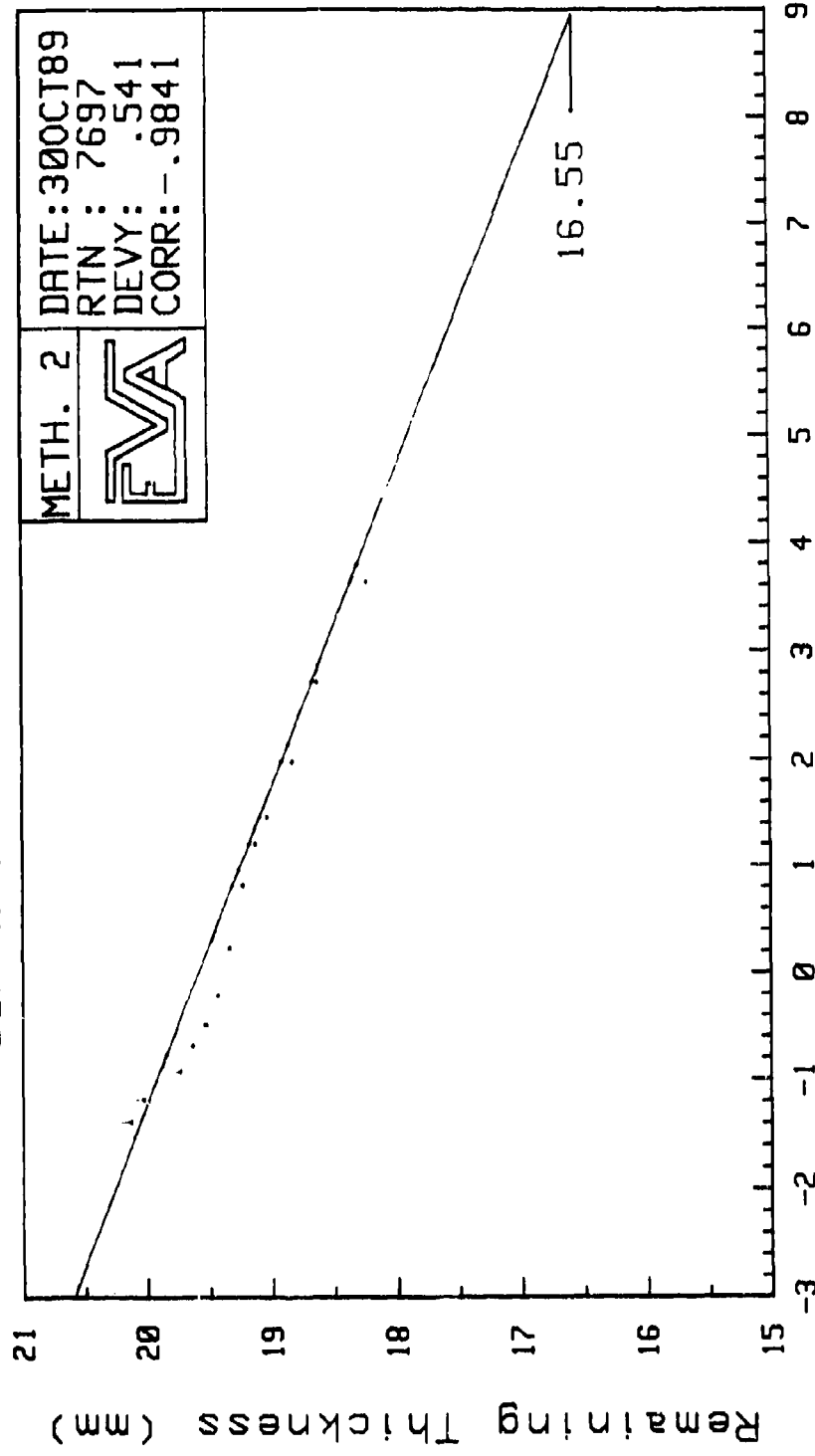
RMA, BASIN F, STG. TANK #2 SIP ENGINEERING/SHELL CHEM.



RMA, BASIN F, STG. TANK #2
SIP ENGINEERING/SHELL CHEM.

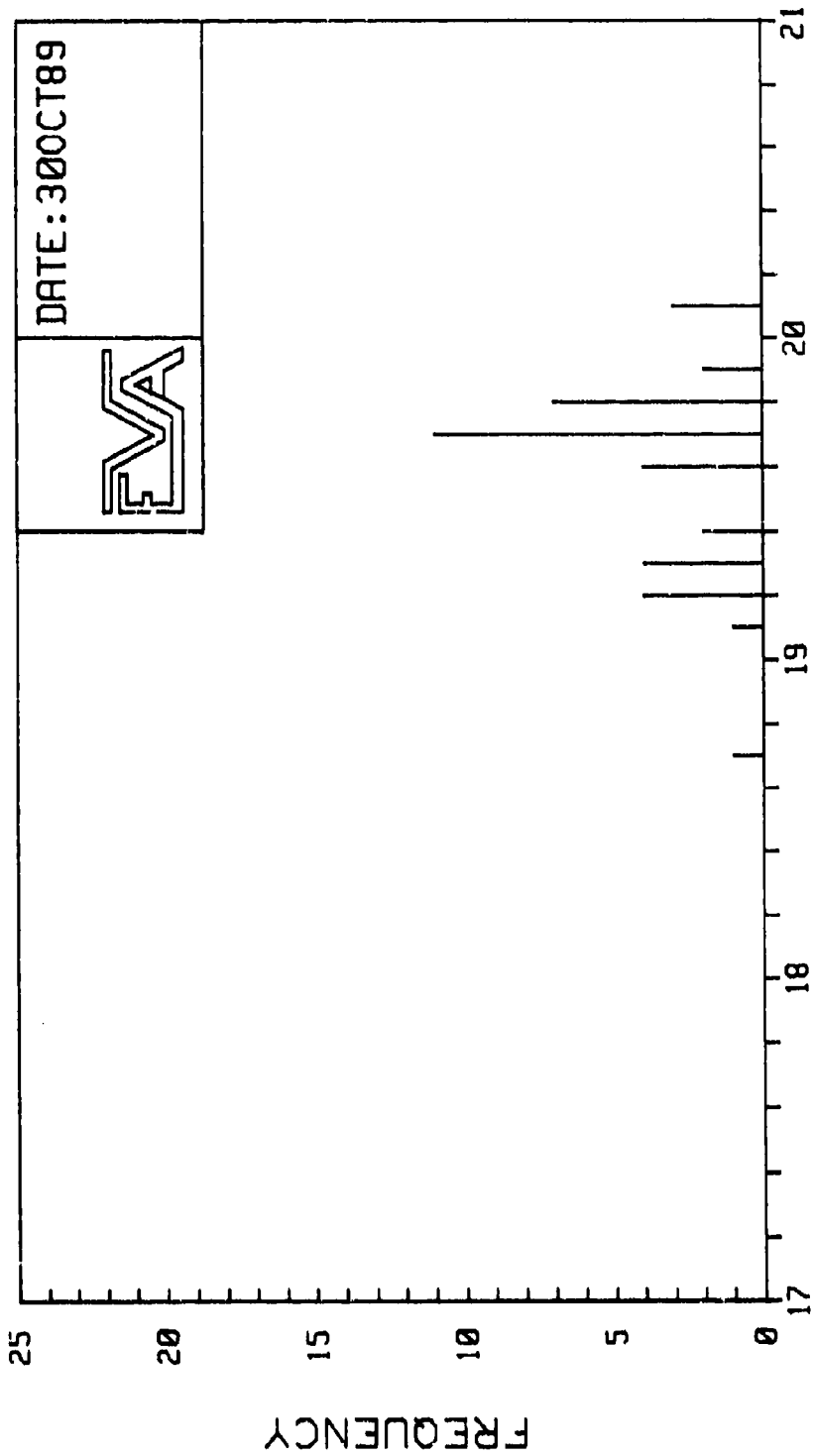


RMA, BASIN F, STG. TANK #2
SIP ENGINEERING/SHELL CHEM.

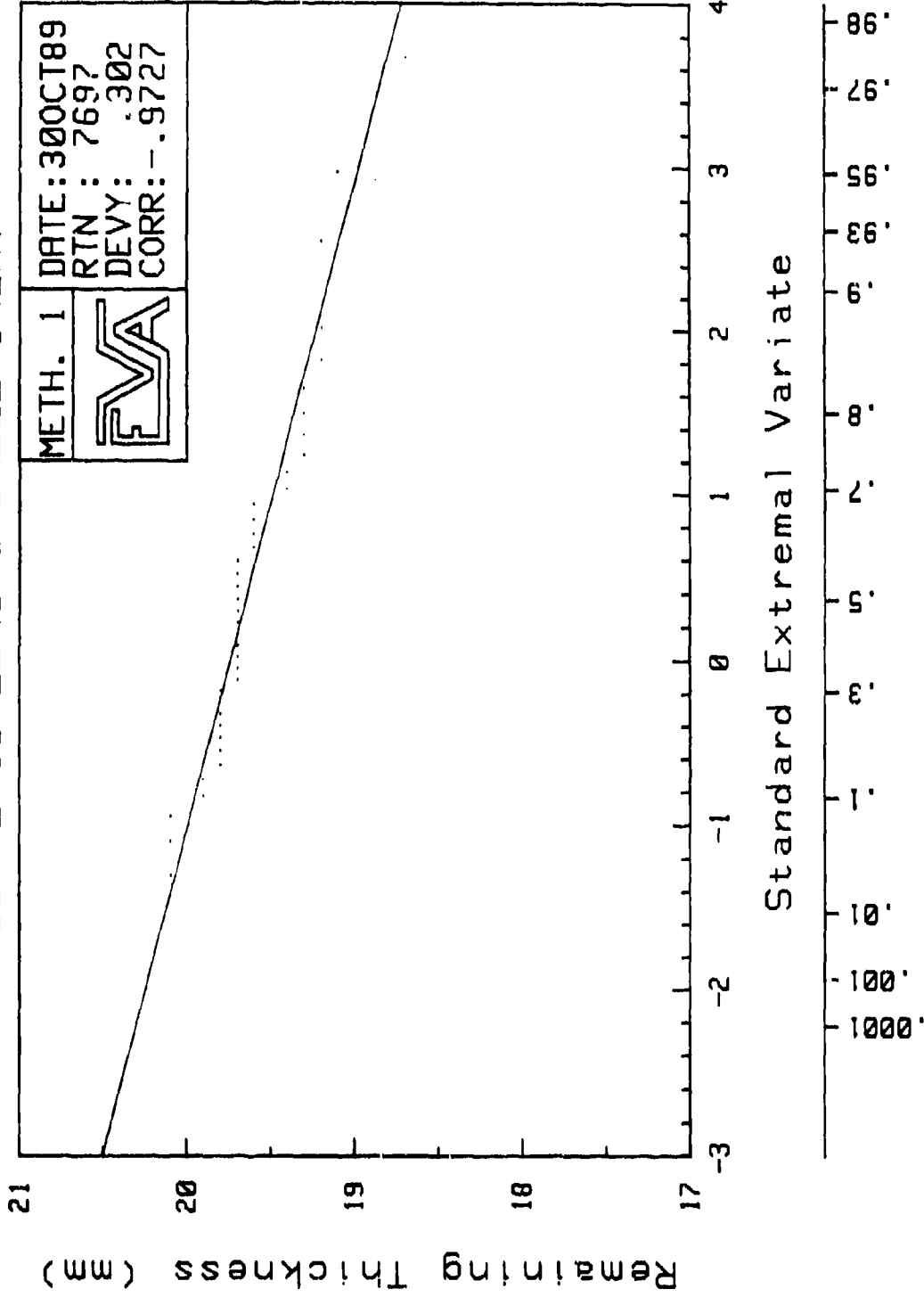


	1000
	100.
	10.
1.	
3.	
5.	
7.	
8.	
9.	
93.	
95.	
97.	
98.	
99.	
993.	
995.	
997.	
999.	
9996.	
9997.	
9998.	

RMA, BASIN F, STG. TANK #3
SIP ENGINEERING/SHELL CHEM.

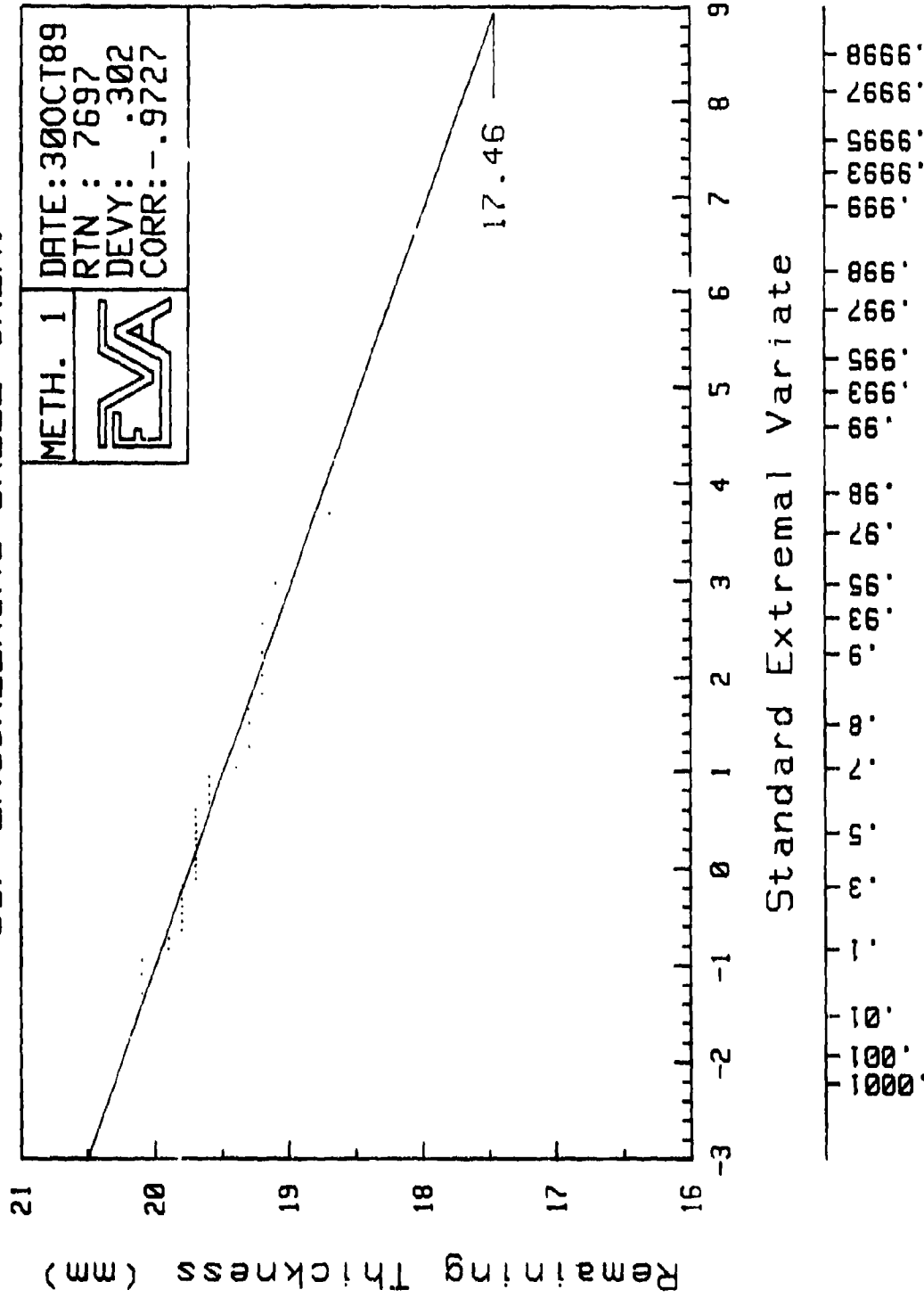


RMA, BASIN F, STG. TANK #3 SIP ENGINEERING/SHELL CHEM.

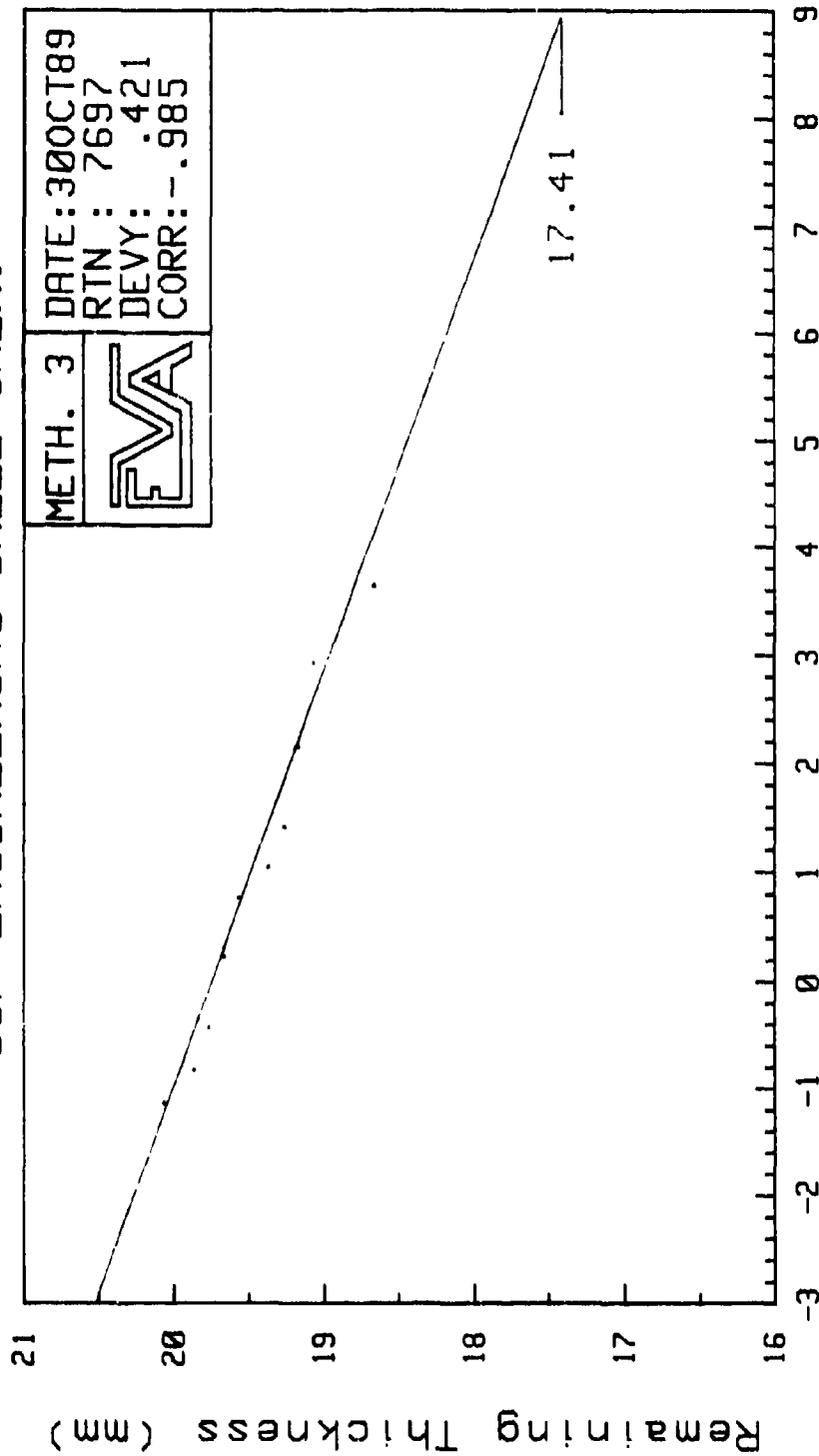


Probability

RMA, BASIN F, STG. TANK #3 SIP ENGINEERING/SHELL CHEM.



RMA, BASIN F, STG. TANK #3 SIP ENGINEERING/SHELL CHEM.



Standard Extremal Variate

1000.	8666.
100.	2666.
10.	5666.
1.	9666.
.1	666.
.01	866.
.001	266.
	566.
	966.
	66.
	86.
	26.
	56.
	96.
	6.
	8.
	2.
	5.
	9.

Probability

APPENDIX 5: RADIOGRAPHIC FILM REPRODUCTIONS AND RESULTS

Each 1.5" diameter valve V-1 through V-8 was subjected to two radiographic examinations. Exposures were taken vertically (0 Degree) and horizontally (90 Degrees) to detect wall loss and build-up of material. Minimum thicknesses for each valve were determined by means of a comparator. Thickness measurements by radiographic methods are considered to be accurate to within ± 0.020 ". The results of the radiographic film interpretation are summarized below:

<u>TANK NUMBER</u>	<u>VALVE NUMBER</u>	<u>MINIMUM THICKNESS</u>	<u>COMMENT</u>
1	V-1	0.540 "	
	V-2	0.535 "	
	V-3	0.535 "	
	V-4	0.535 "	Build-up
	V-5	0.547 "	Screw inside
	V-6	0.530 "	Build-up
	V-7	0.530 "	
	V-8	0.530 "	
2	V-1	0.530 "	
	V-2	0.530 "	
	V-3	0.530 "	
	V-4	0.530 "	
	V-5	0.530 "	Build-up
	V-6	0.540 "	
	V-7	0.535 "	Corrosion
	V-8	0.530 "	Corrosion
3	V-1	0.525 "	
	V-2	0.530 "	
	V-3	0.530 "	
	V-4	0.535 "	Build-up
	V-5	0.530 "	
	V-6	0.540 "	Build-up
	V-7	0.530 "	
	V-8	0.530 "	Build-up

The radiographic examination was conducted by MQS Inspection, Inc for DNV Industrial Services. DNV personnel supervised the inspections and assisted the MQS radiographer in obtaining exposures. The original MQS report is included for additional documentation.

The Radiographic Reproductions

All radiographs obtained during the inspections are reproduced and labelled. However, it is important to note that while every effort was made to retain the film detail, slight variations of film density resulted in occasional unsharpness in the reproduced prints. Additionally, it was not possible to reproduce the lead letters of the film identification without bleaching the valve image; hence, the identification is overlaid. Each page of reproductions includes the vertical and horizontal exposure for the valve.

MQS Inspection, Inc.

INVOICE &
CONTROL NO. Q1022

RADIOGRAPHIC TECHNIQUE & RESULTS

We do certify the above pieces were radiographically tested in accordance with

ASTM E 142 94 194

and that disposition was made within the prescribed limits of

CUSTOMER INFO

MOS INSPECTOR

CUSTOMER

"CLIENT SHALL HAVE THE FINAL AUTHORITY AND RESPONSIBILITY FOR INTERPRETATION AND ACCEPTANCE OF ALL EXAMINATION RESULTS AND REPORTS."

RADIOGRAPHIC INSPECTION REPORT

MQS

 Inspection, Inc.

 INVOICE &
CONTROL NO. 91022

75 PEORIA ST., BLDG. 1 UNIT A / DENVER, CO 80239

CLIENT <u>DNU / SIP</u>		JOBSITE <u>ROCKY MTN. ARSENAL</u>			
CONTACT <u>10.23.89</u>		BILLING ADDRESS			
DATE <u>10.23.89</u>	P.O. NUMBER	WELD PROCEDURE		PAGE <u>2</u> OF <u>3</u>	
HOURS WORKED	TOTAL HOURS	STANDBY HOURS	TRAVEL HOURS	EXCESS TRAVEL MILES	NO. OF MEN
FROM <u>SEE PG #1</u> TO	—	—	—	—	1

RADIOGRAPHIC TECHNIQUE & RESULTS

RADIATION SOURCE <u>IR192</u>		F.F.D. <u>20"</u>		SOURCE OR FOCAL SPOT SIZE <u>1X1</u>		PENETRATOR LOC <u>N/A</u>		FILM TYPE <u>DUPONT 65</u>	
K.V. CURIES <u>100</u>		M.A. <u>—</u>		PIPE-PLATE THICKNESS <u>.550</u>		SIZE FILM & NO. <u>5x7" (1ea)</u>		SCREENS <u>.005 x .010</u>	
EXPOSURE TIME (MIN) <u>1.45</u>		MATERIAL <u>1/2</u>		UNSHARPNESS <u>—</u>		PIPE DIA. (INCHES) <u>2 1/8"</u>		PENETRATOR SIZE <u>N/A</u>	

WELD OR PIECE NUMBER	RADIOGRAPH NO OR LOCATION	ACCEPT	REJECT	REPAIR NO.	LACK OF FUSION	INC. PENETRATION	CRACK	SLAG ELONGATED	SLAG SCATTERED	POROSITY (SPECIFY)	METALLIC INCLUSION	SURFACE CONDITION	OTHER (SPECIFY)	FOR OFFICE USE ONLY	
														REMARKS	FILM COUNT
TANK #2															
V1	0390														530
V2															530
V3															530
V4															530
V5															530 * weld up
V6															540
V7															535 (weld up)
V8	0390														530 (weld up)
* WELD UP: EVIDENCE OF DISASTERS BUILT UP TESTING FILE															
FILM COUNT															
16. 5x7"															

We do certify the above pieces were radiographically tested in accordance with

ASTM E 142

and that disposition was made within the prescribed limits of

CUSTOMER INFO.

MQS INSPECTOR

CUSTOMER

"CLIENT SHALL HAVE THE FINAL AUTHORITY AND RESPONSIBILITY FOR INTERPRETATION AND ACCEPTANCE OF ALL EXAMINATION RESULTS AND REPORTS."

MQS Inspection, Inc.

75 PEORIA ST., BLDG. 1 UNIT A / DENVER, CO.80239

* FILM INTERPRETATION 10/24 RADIOGRAPHIC TECHNIQUE & RESULTS

do certify the above pieces were radiographically tested in accordance with

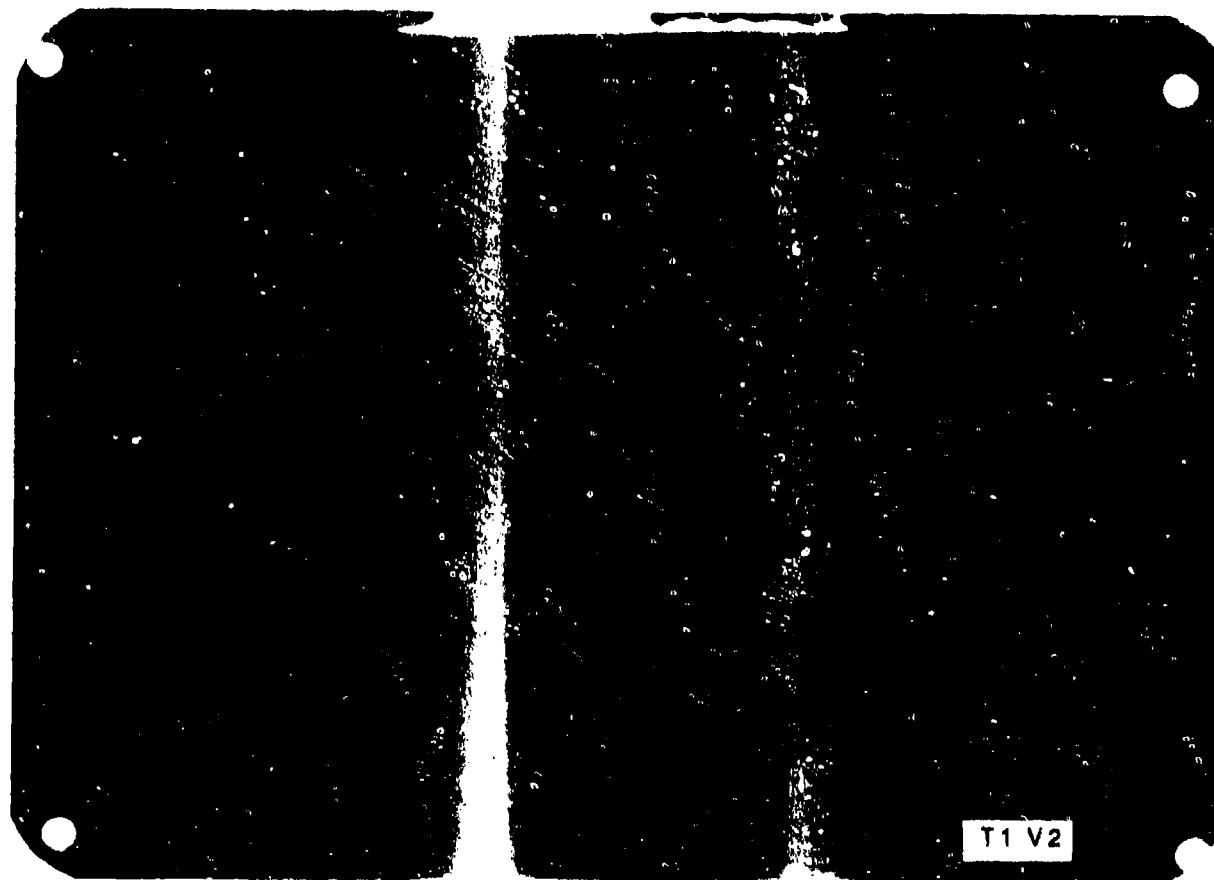
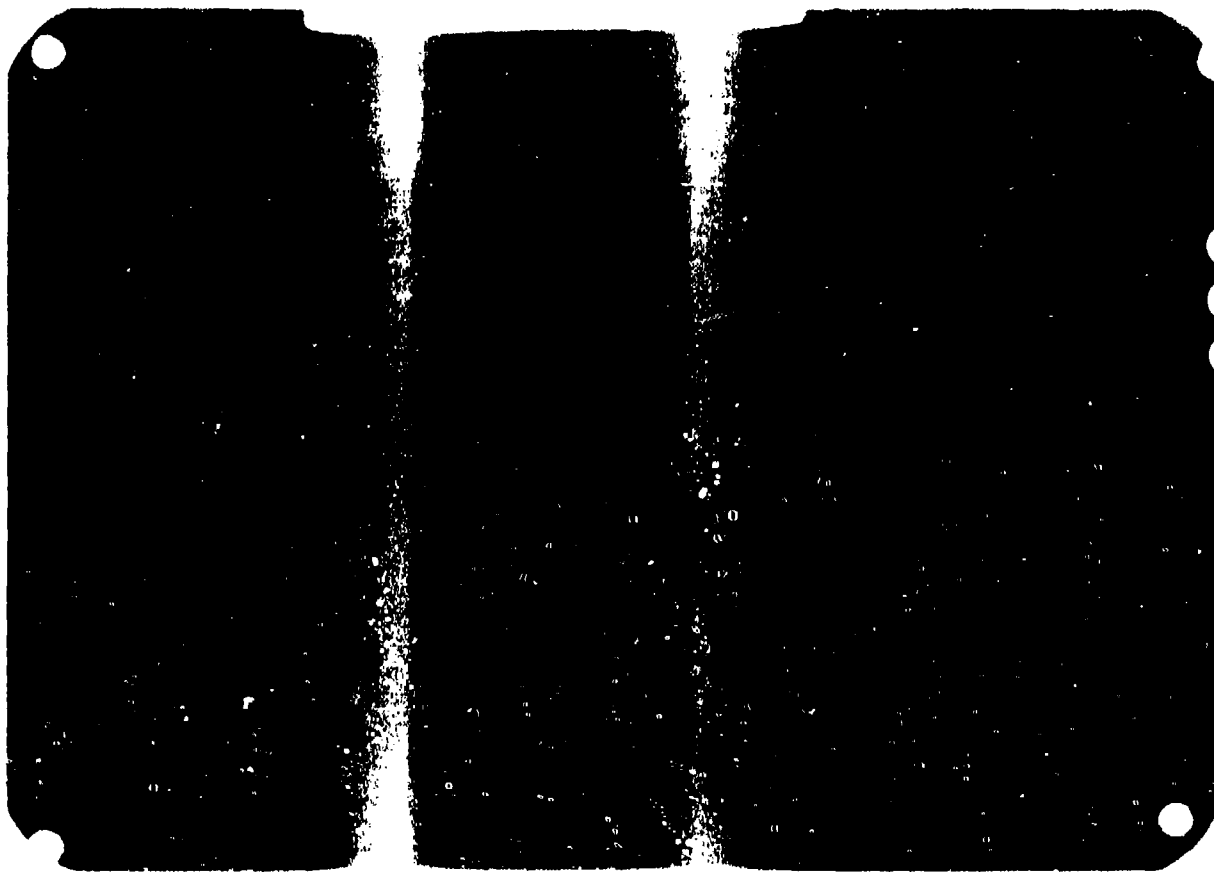
and that disposition was made within the prescribed limits of

MQS INSPECTOR

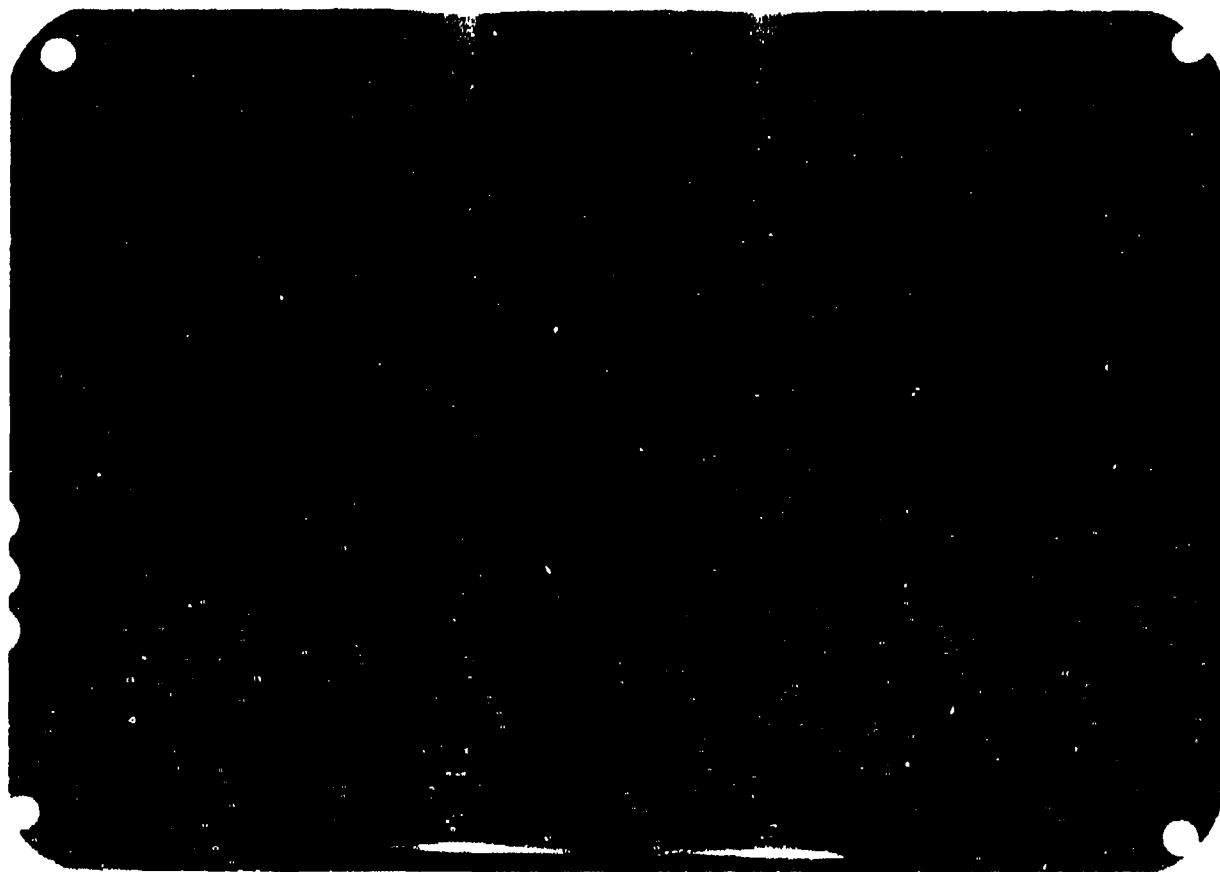
CUSTOMER

"CLIENT SHALL HAVE THE FINAL AUTHORITY AND RESPONSIBILITY FOR INTERPRETATION AND ACCEPTANCE OF ALL EXAMINATION RESULTS AND REPORTS."

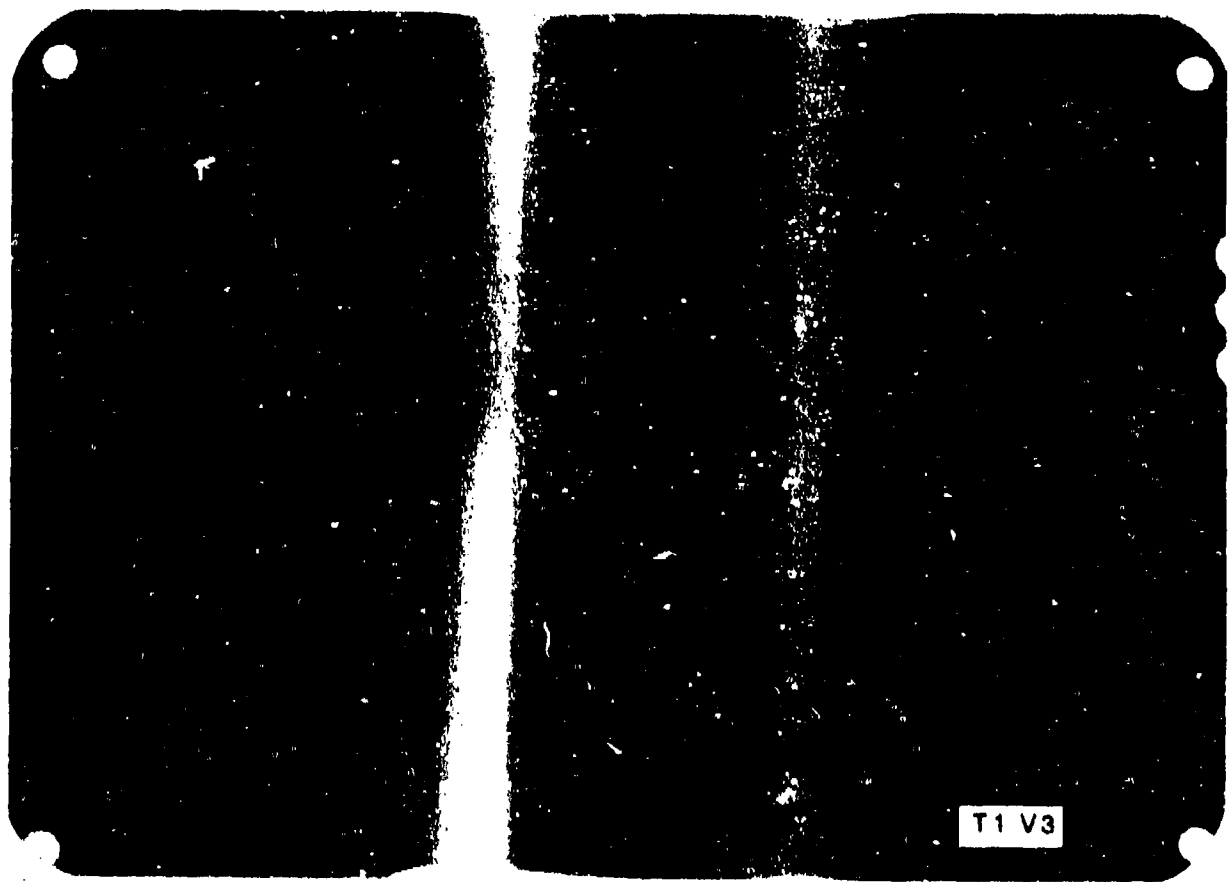
T1 V1

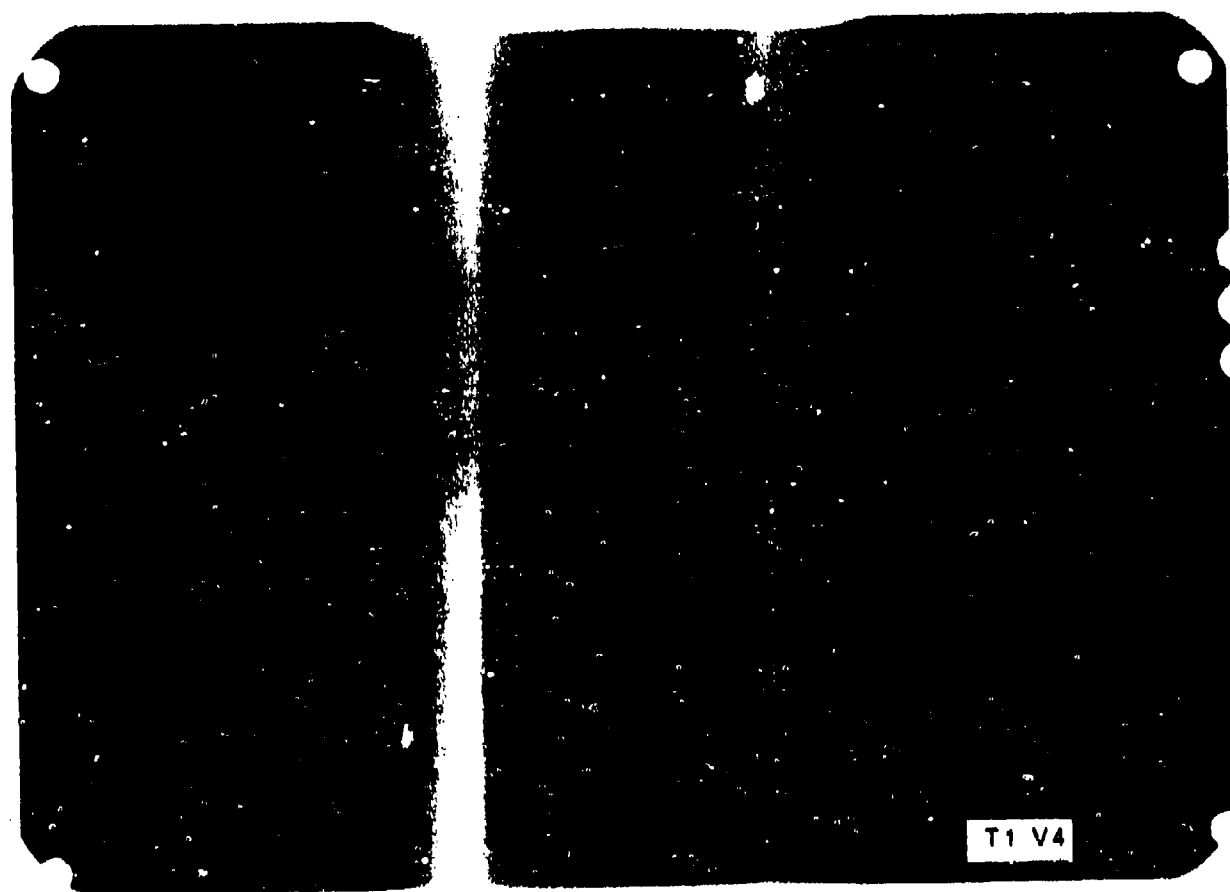


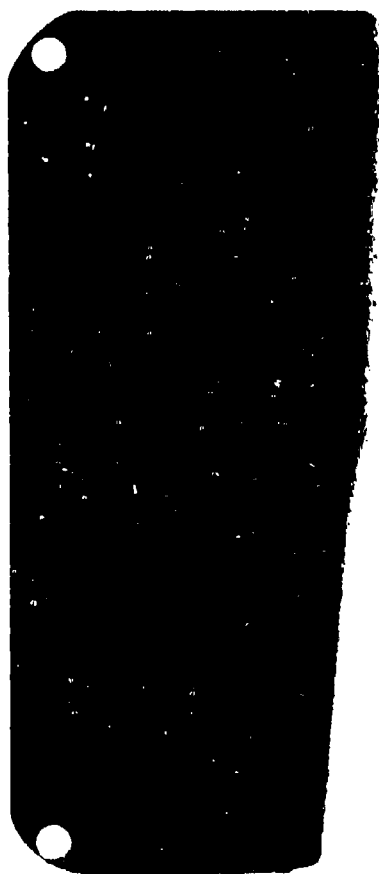
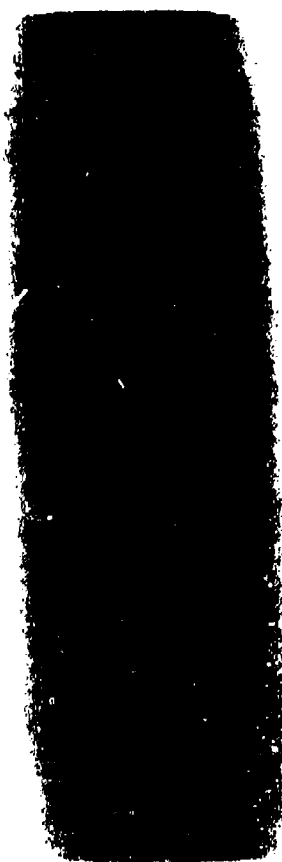
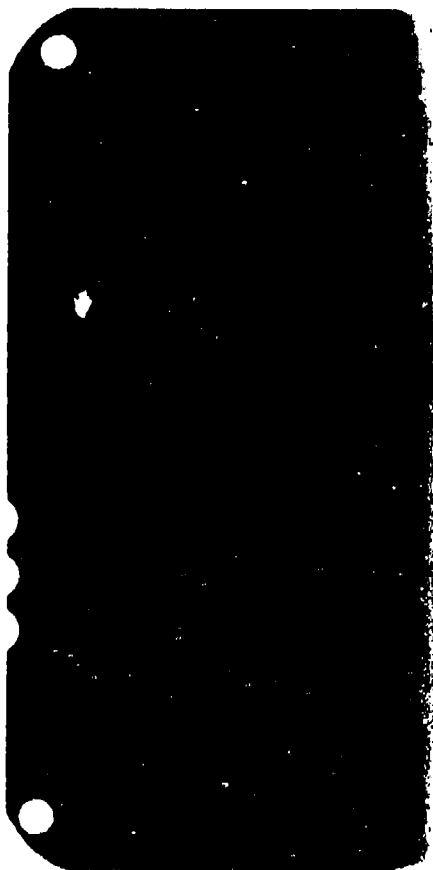
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C

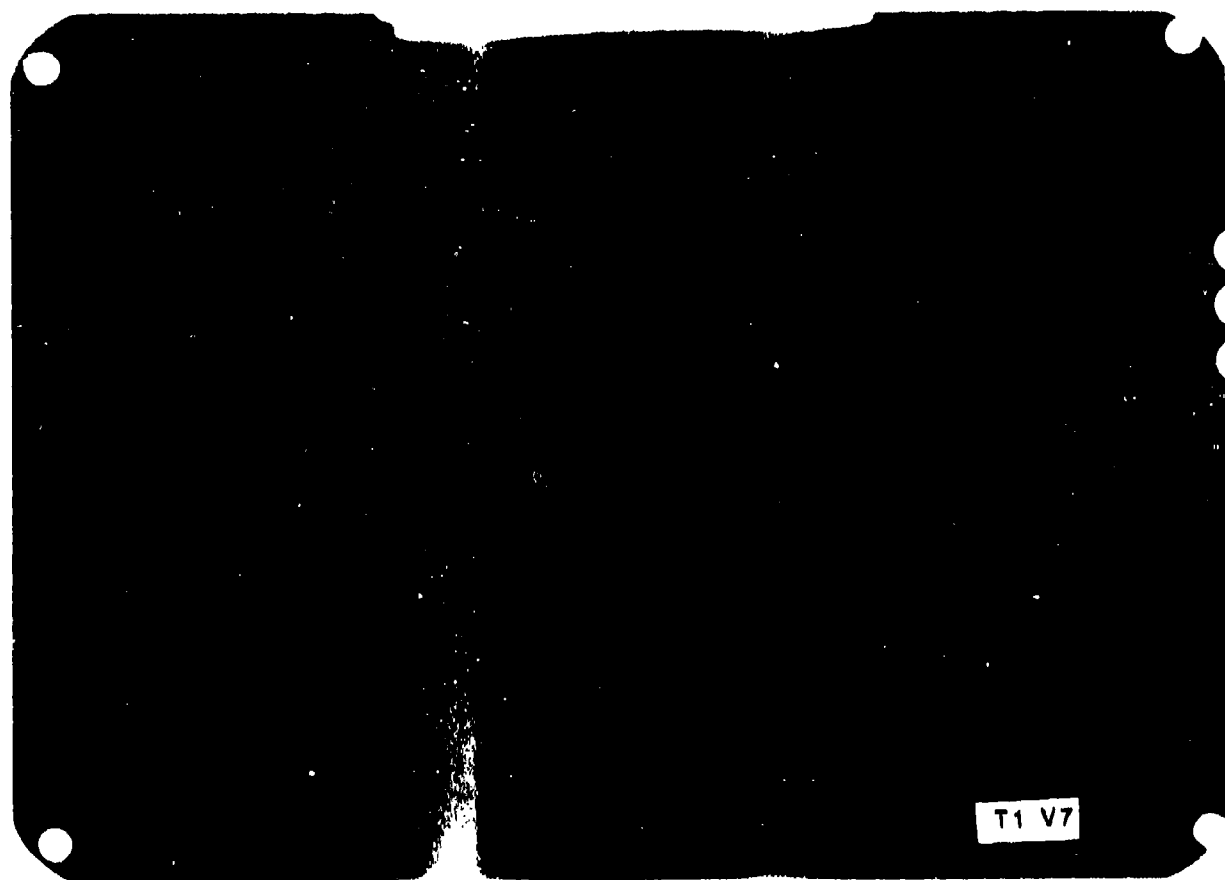
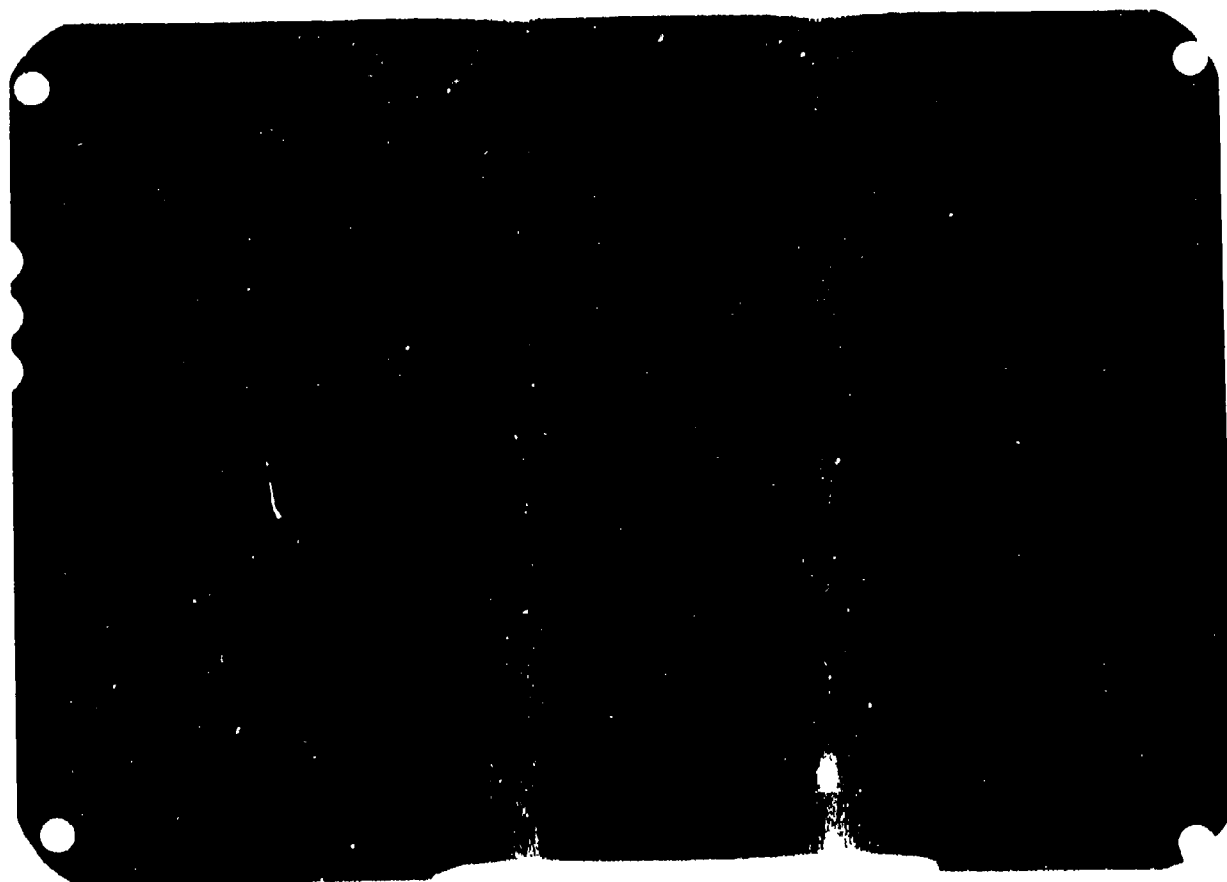






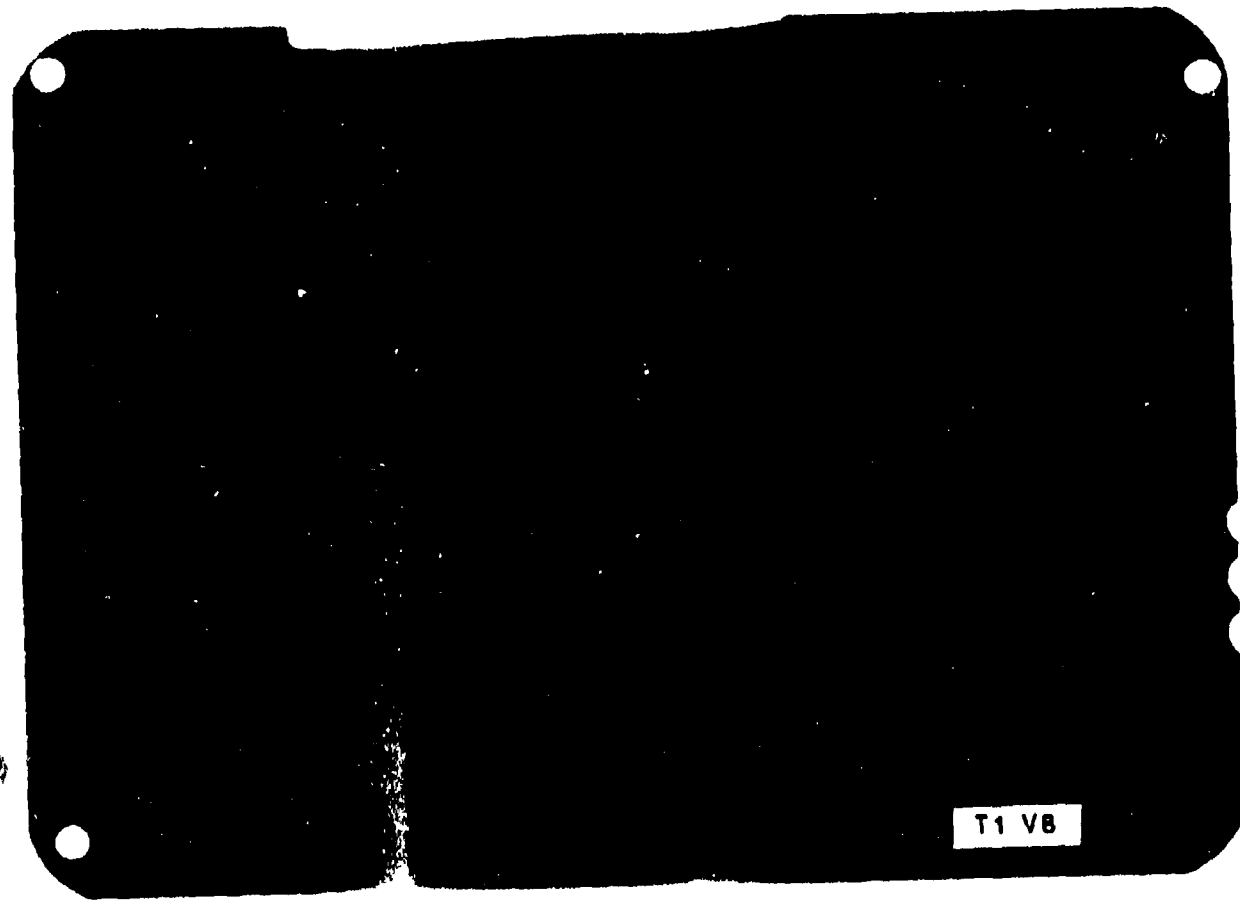
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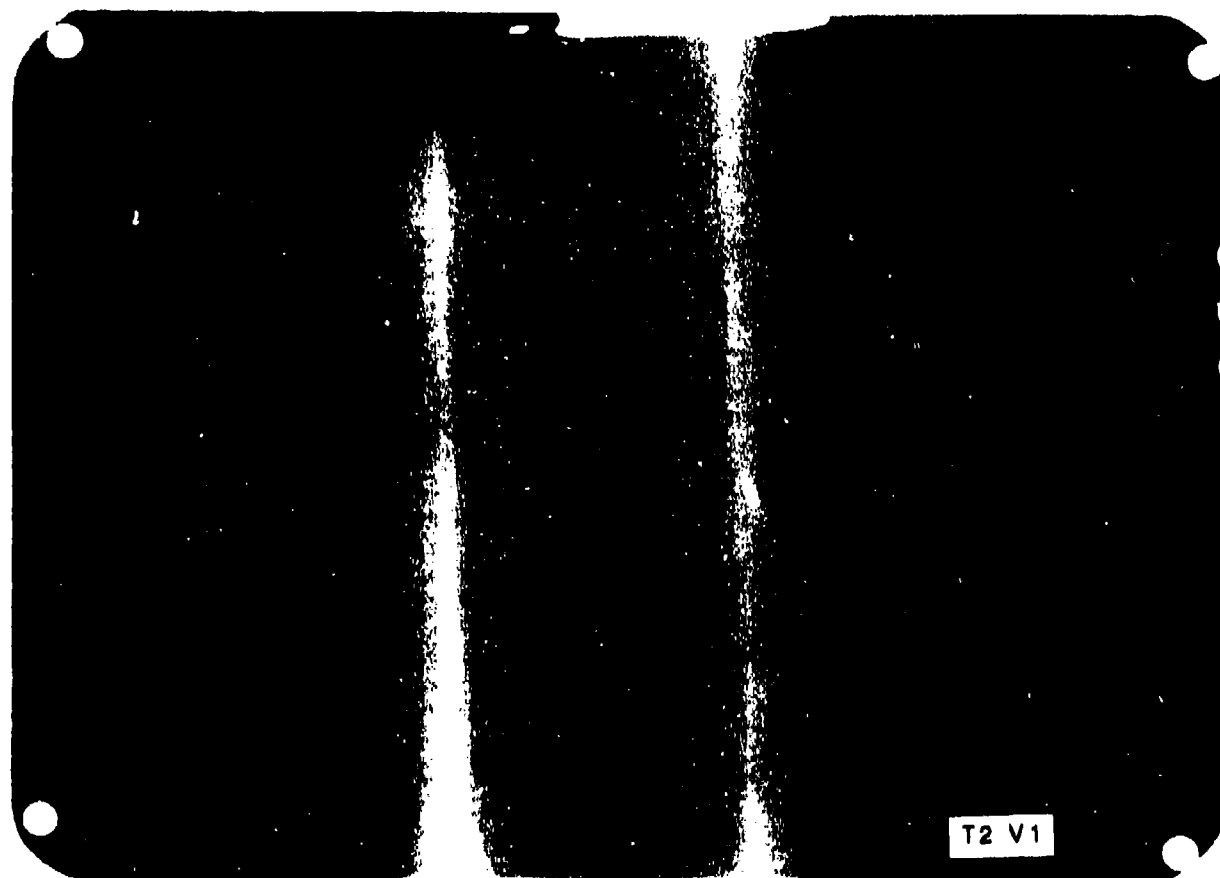
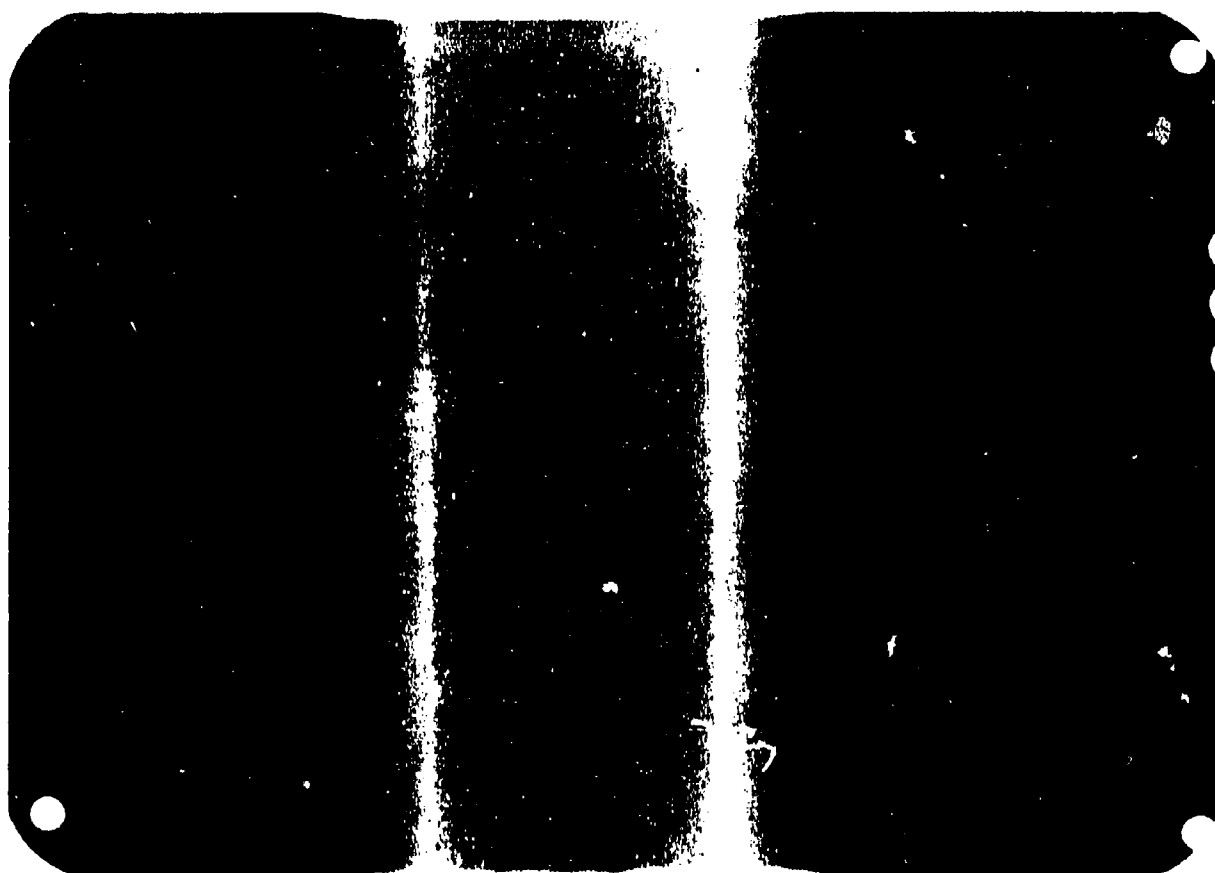
T1 V6

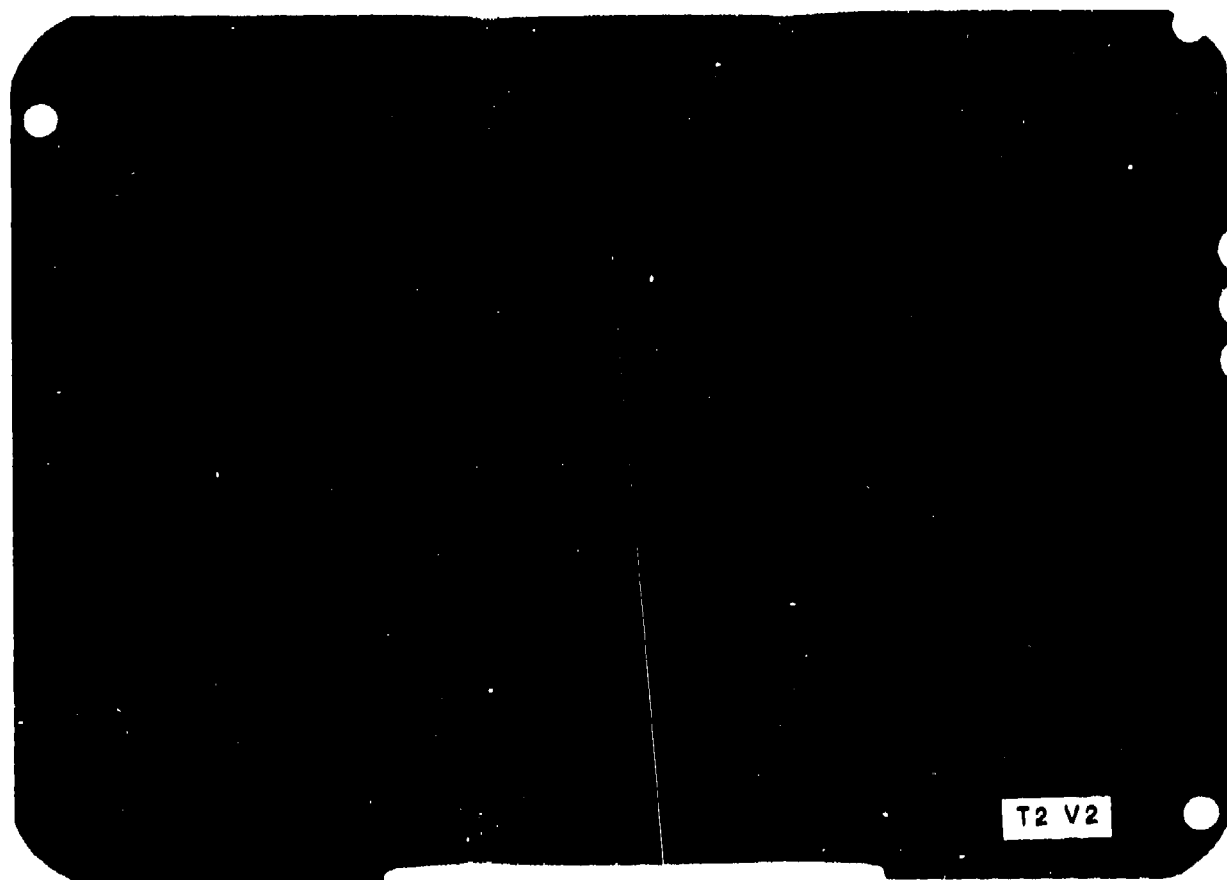
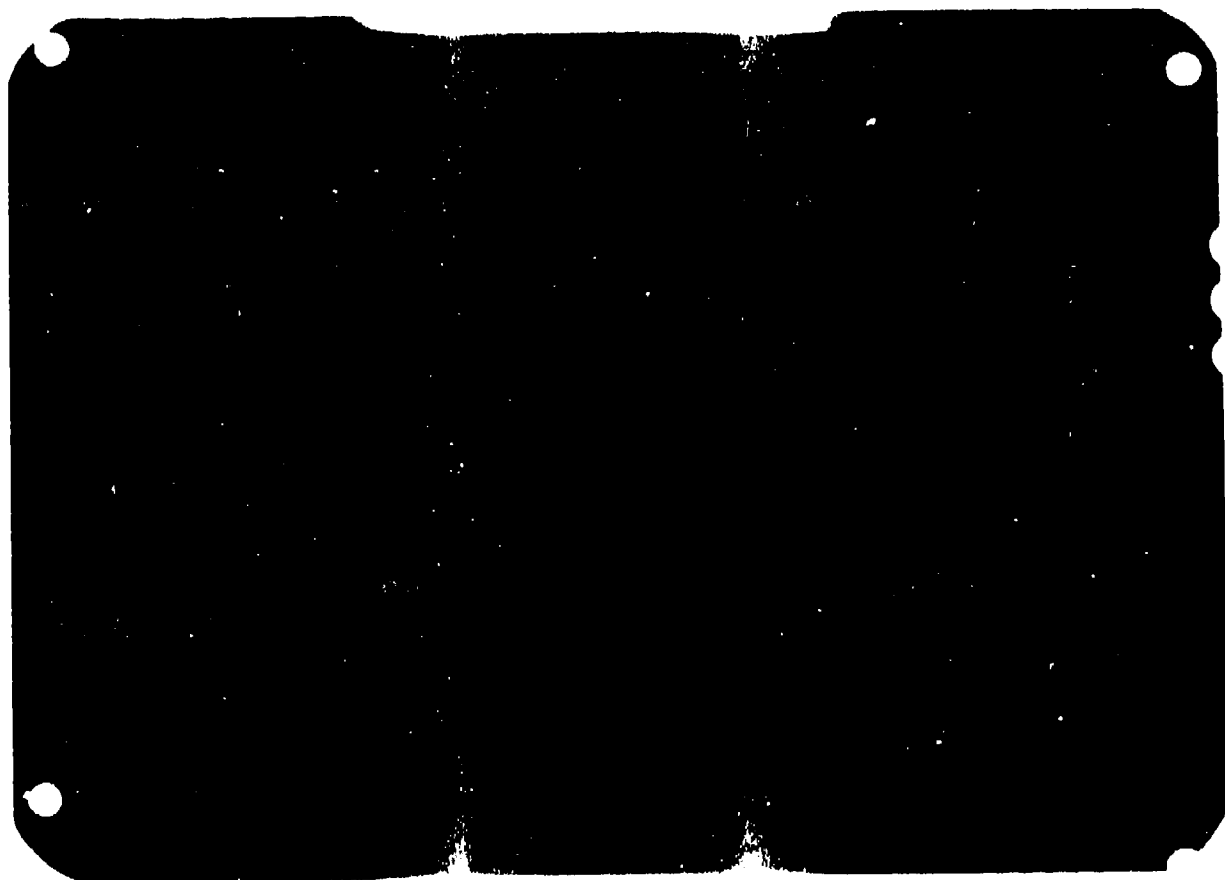


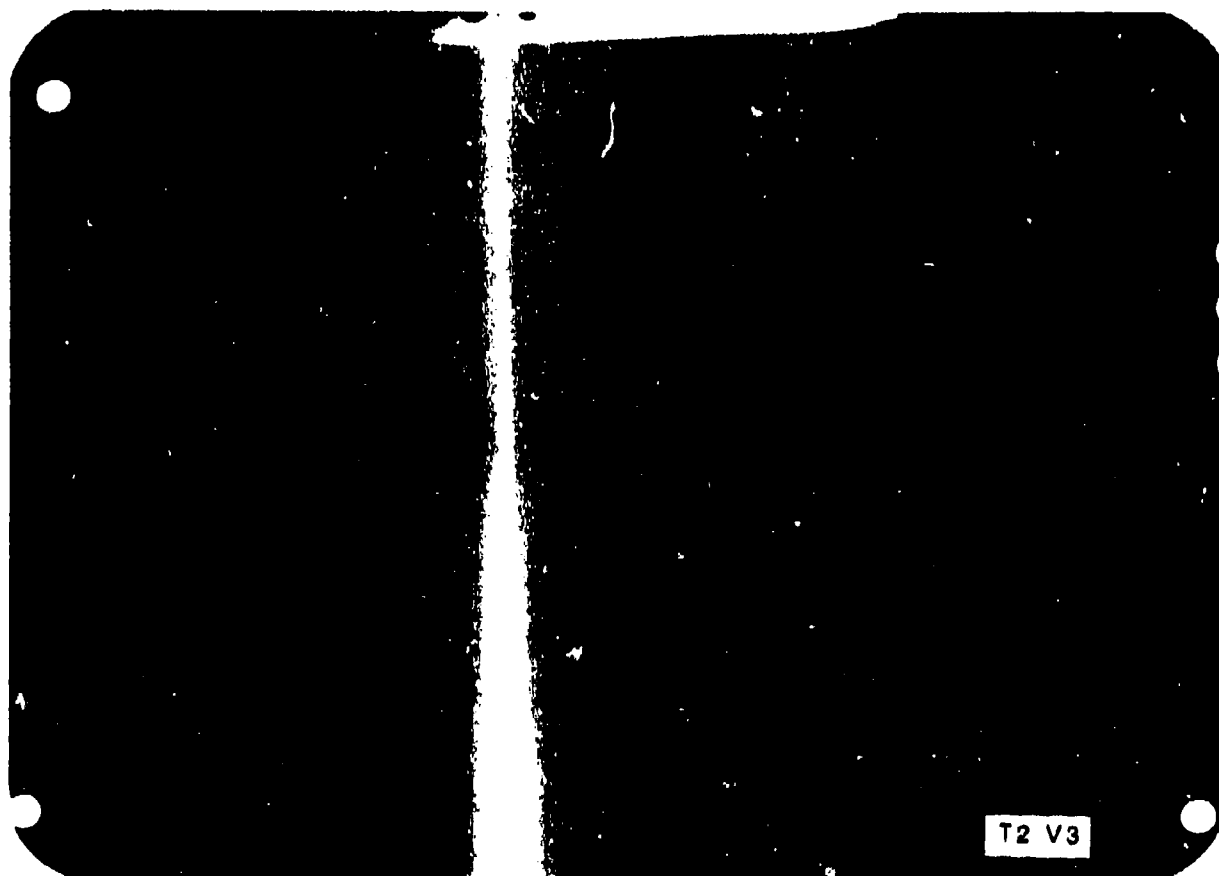


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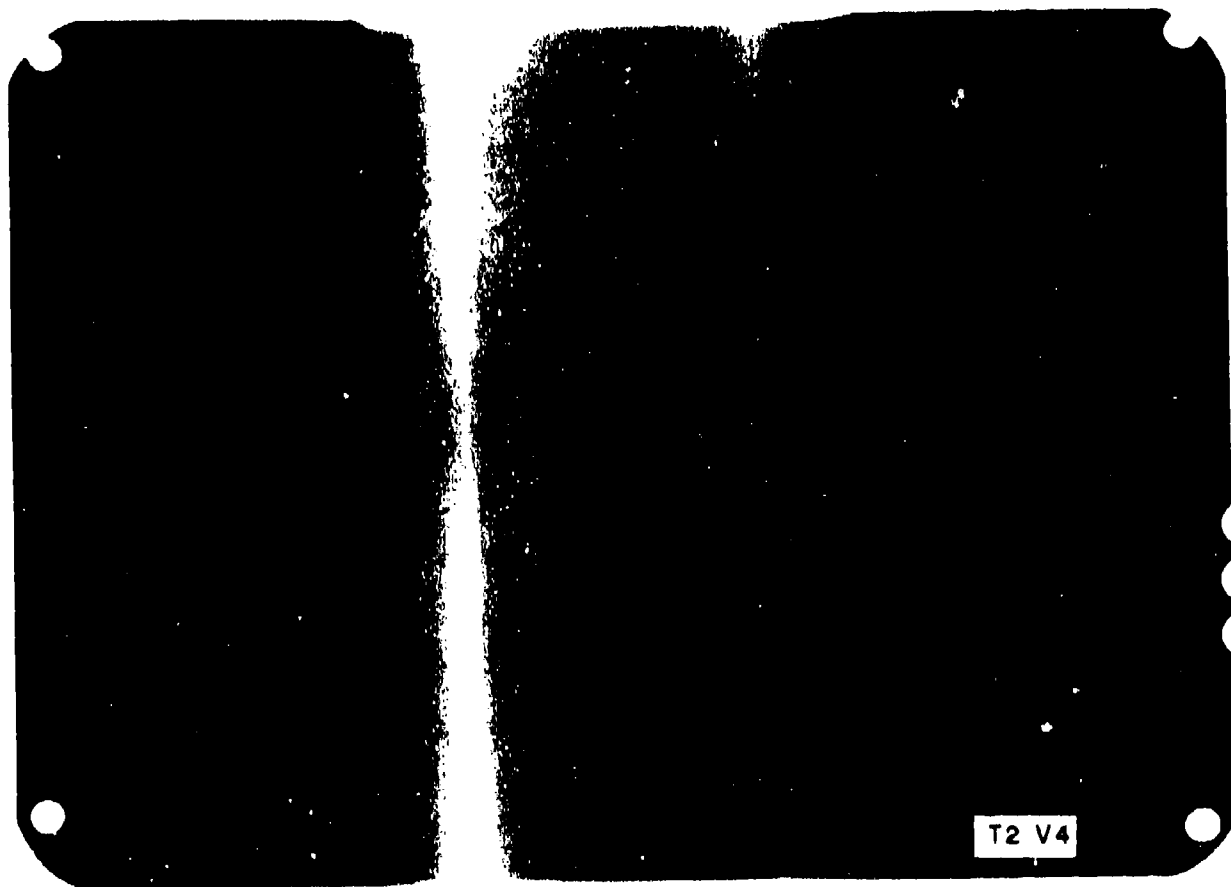


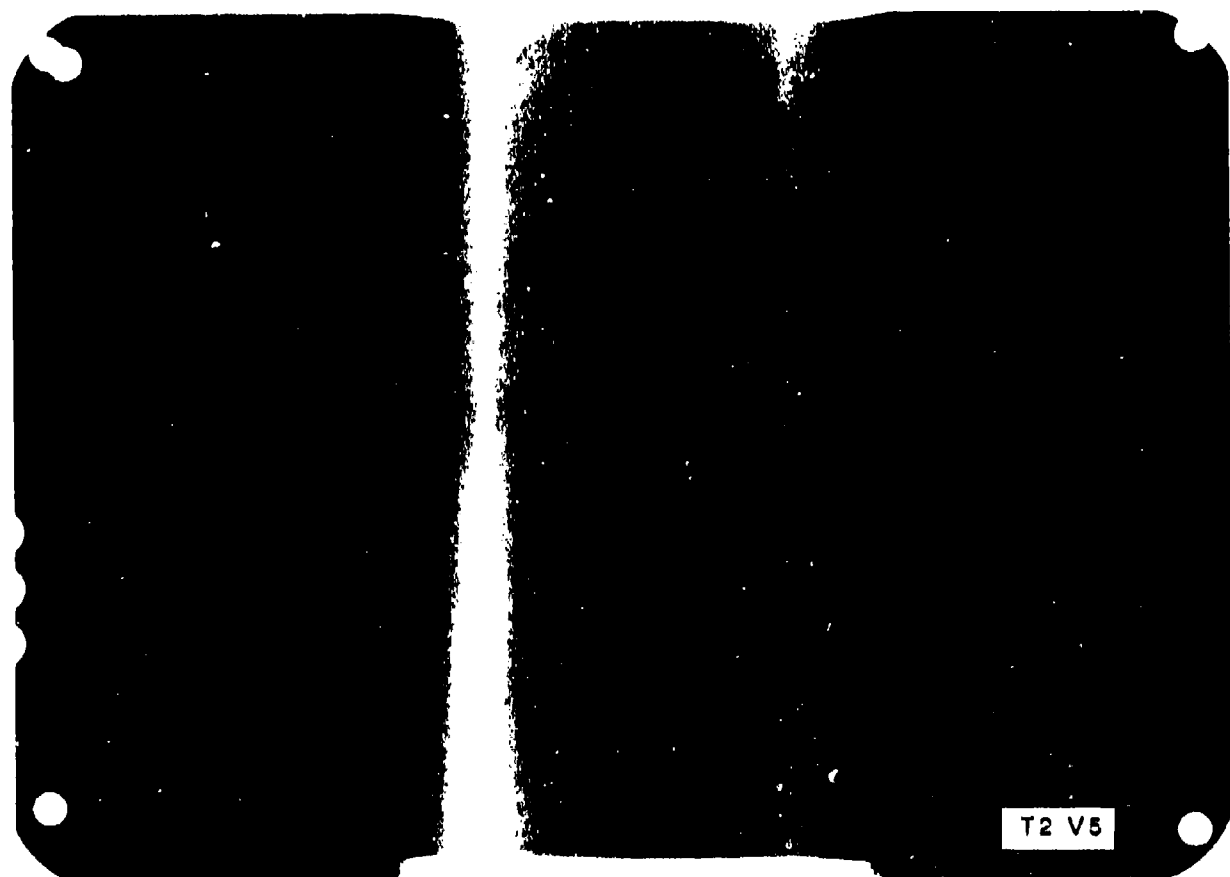
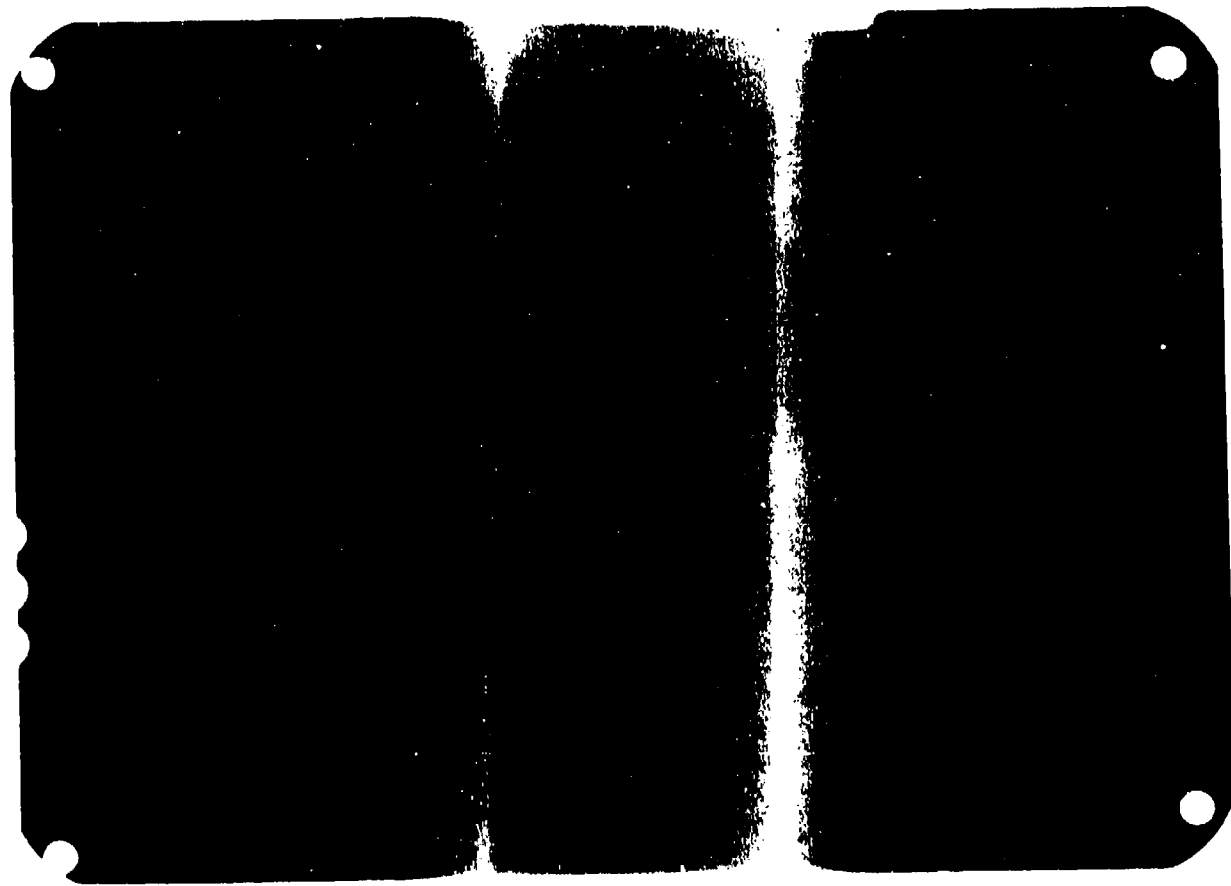




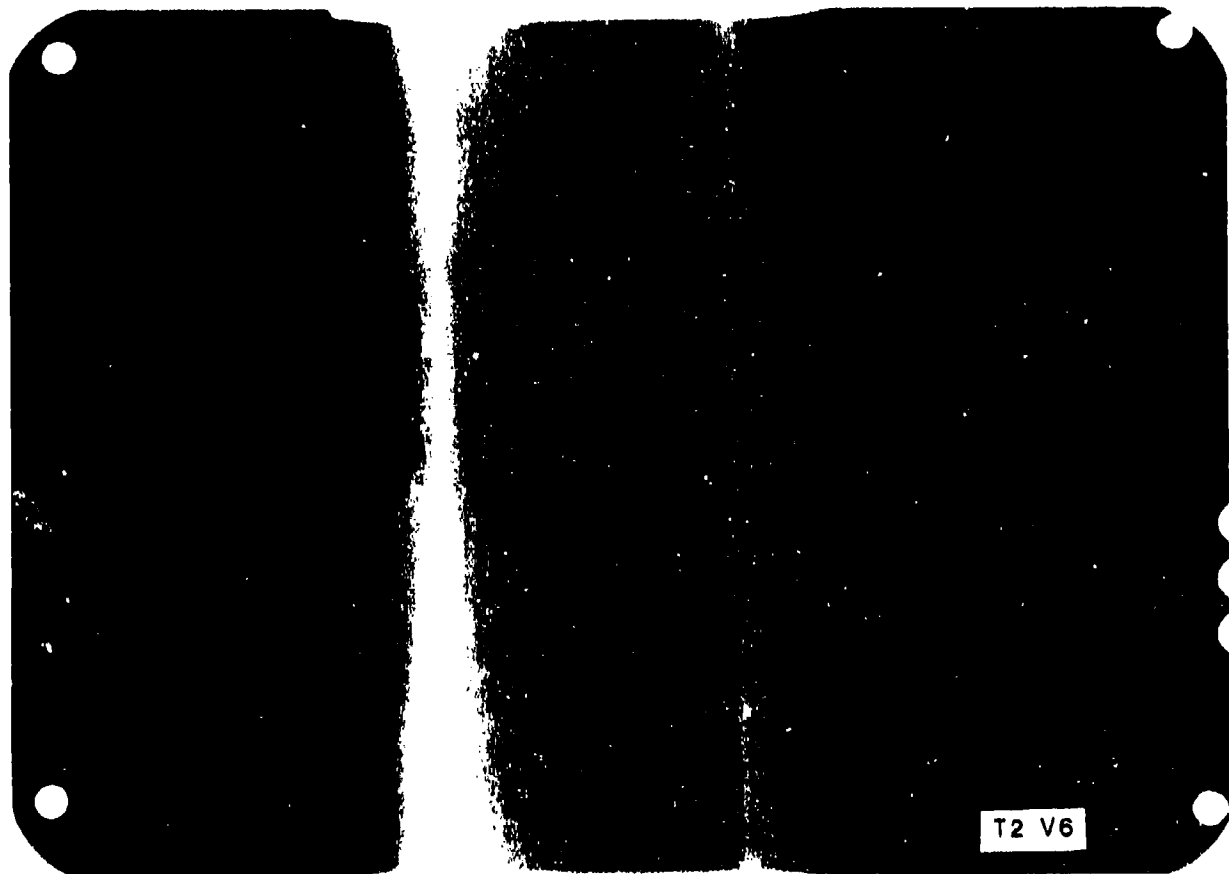
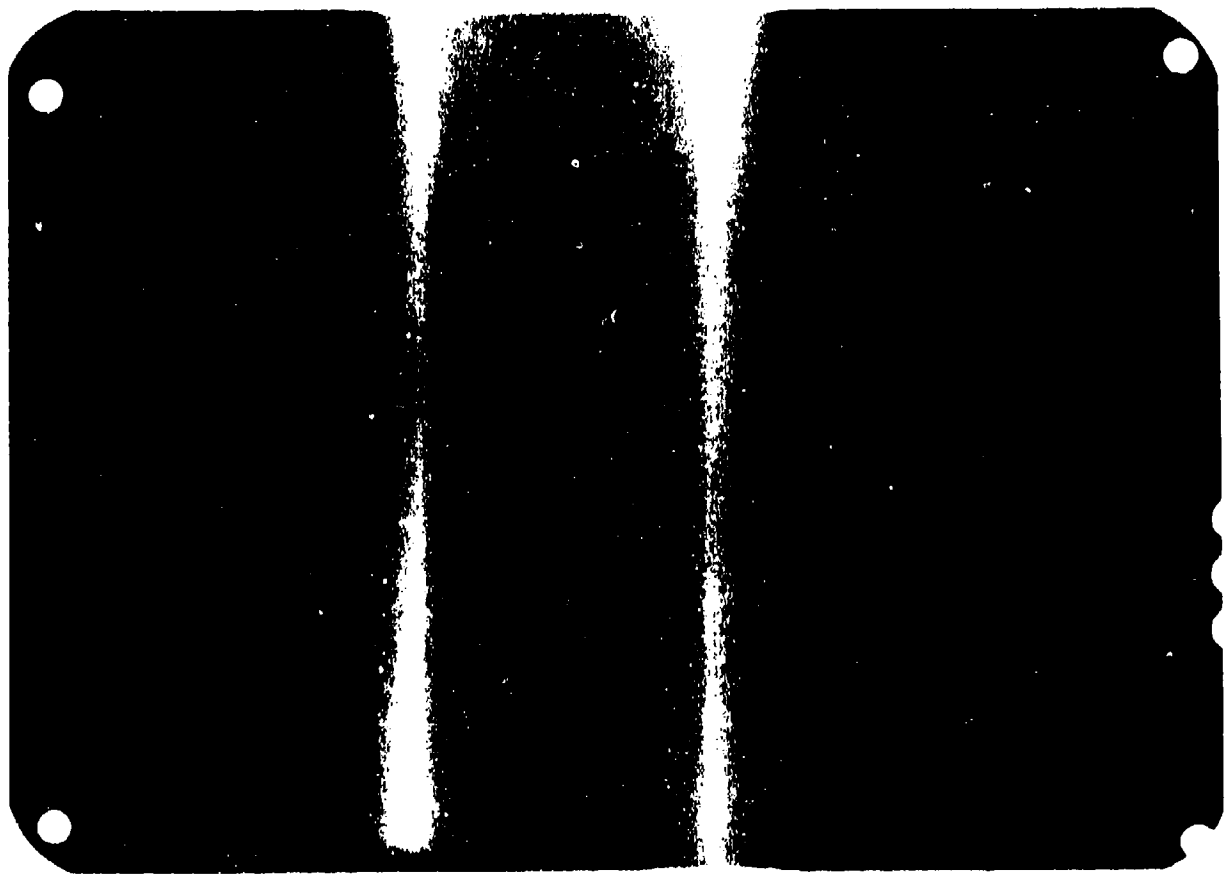


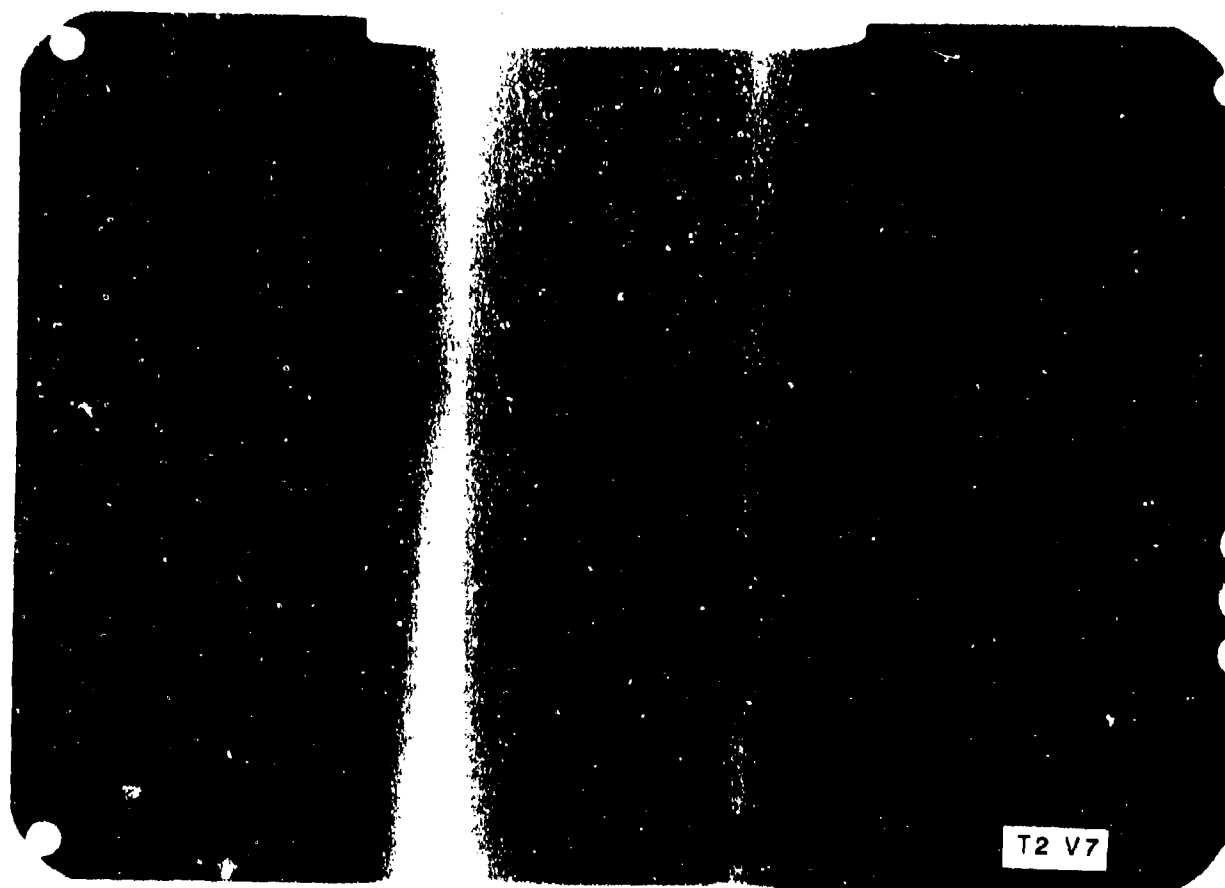
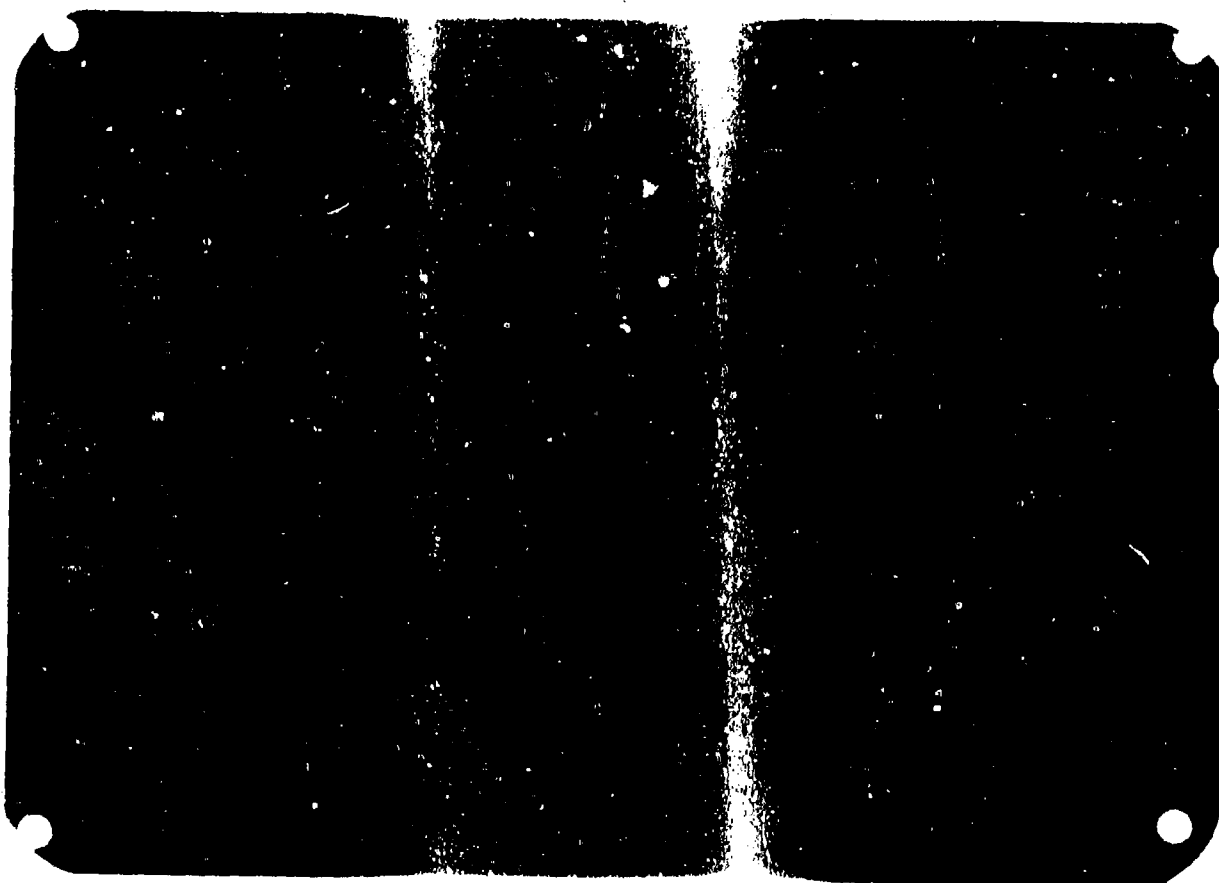
T2 V3

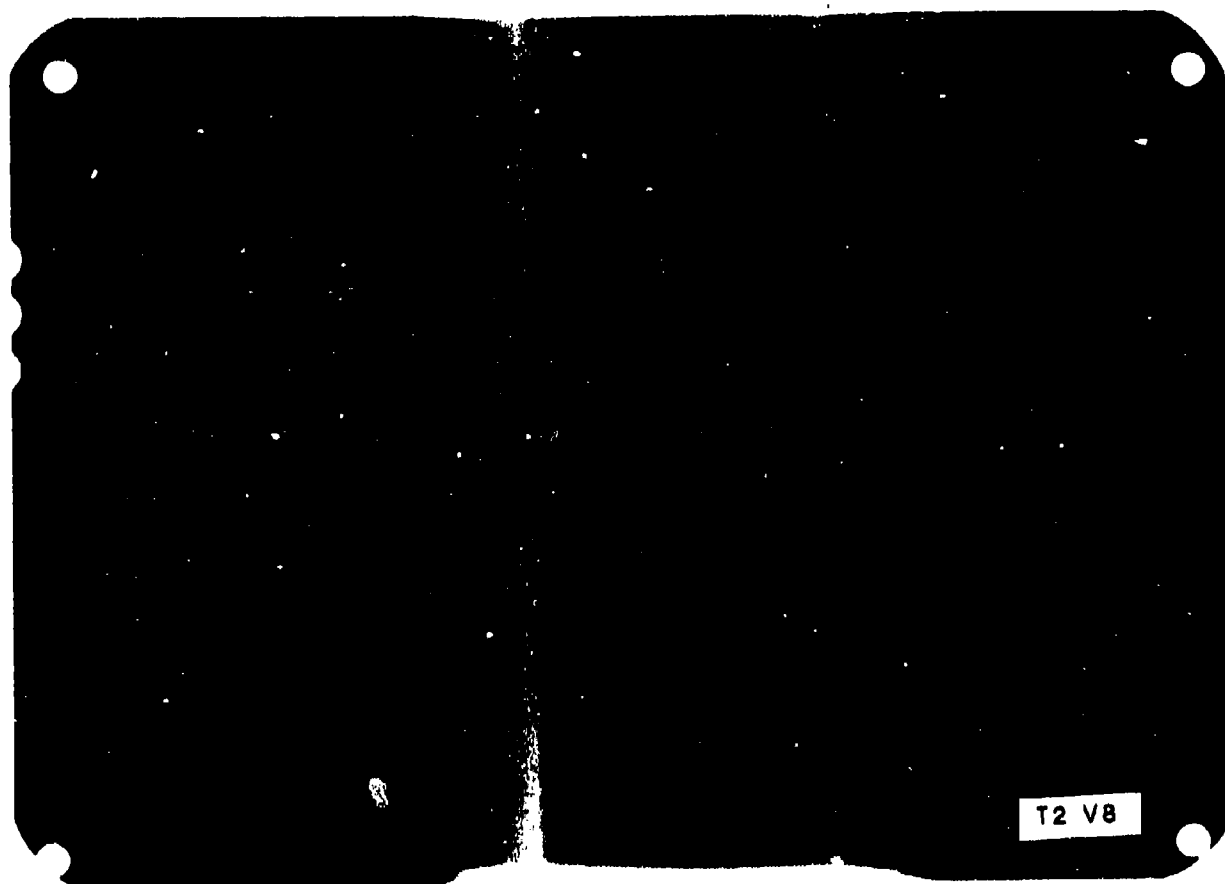
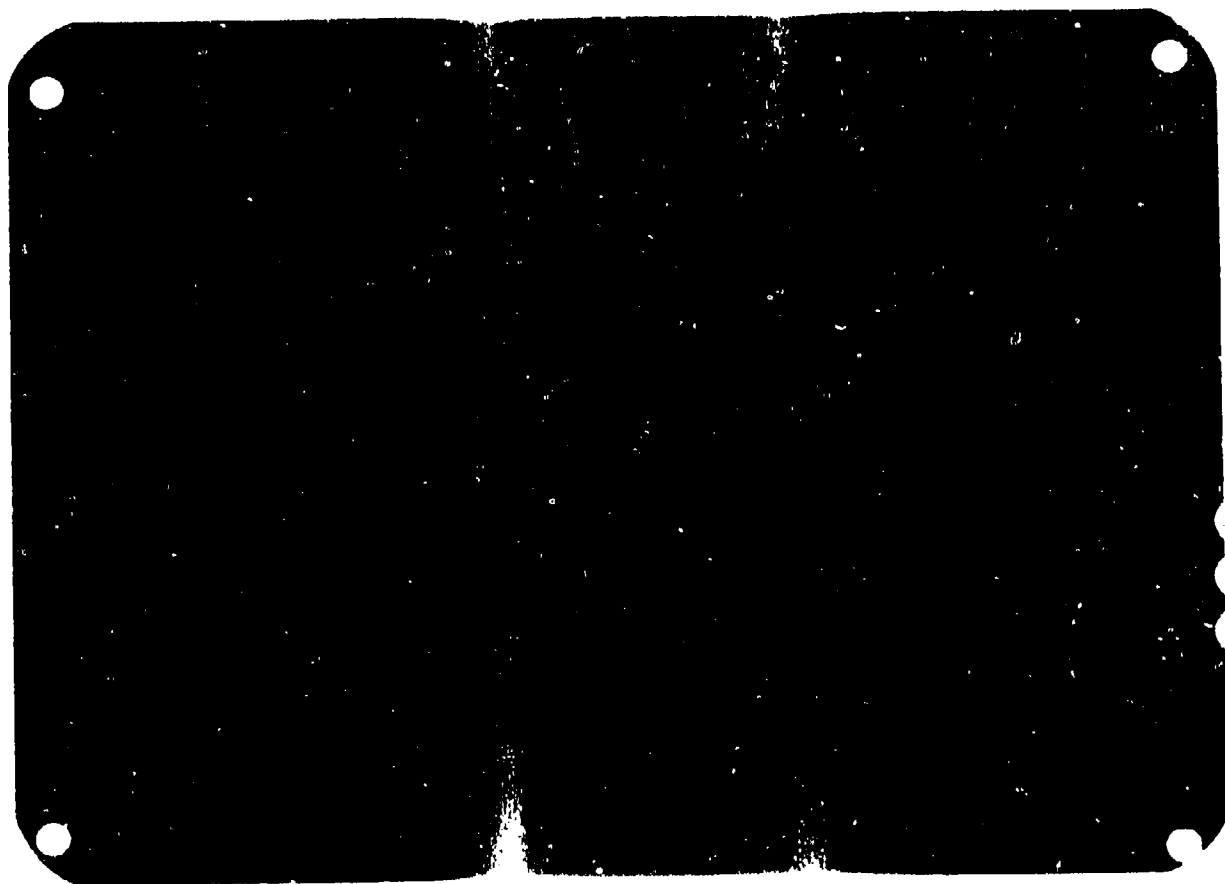


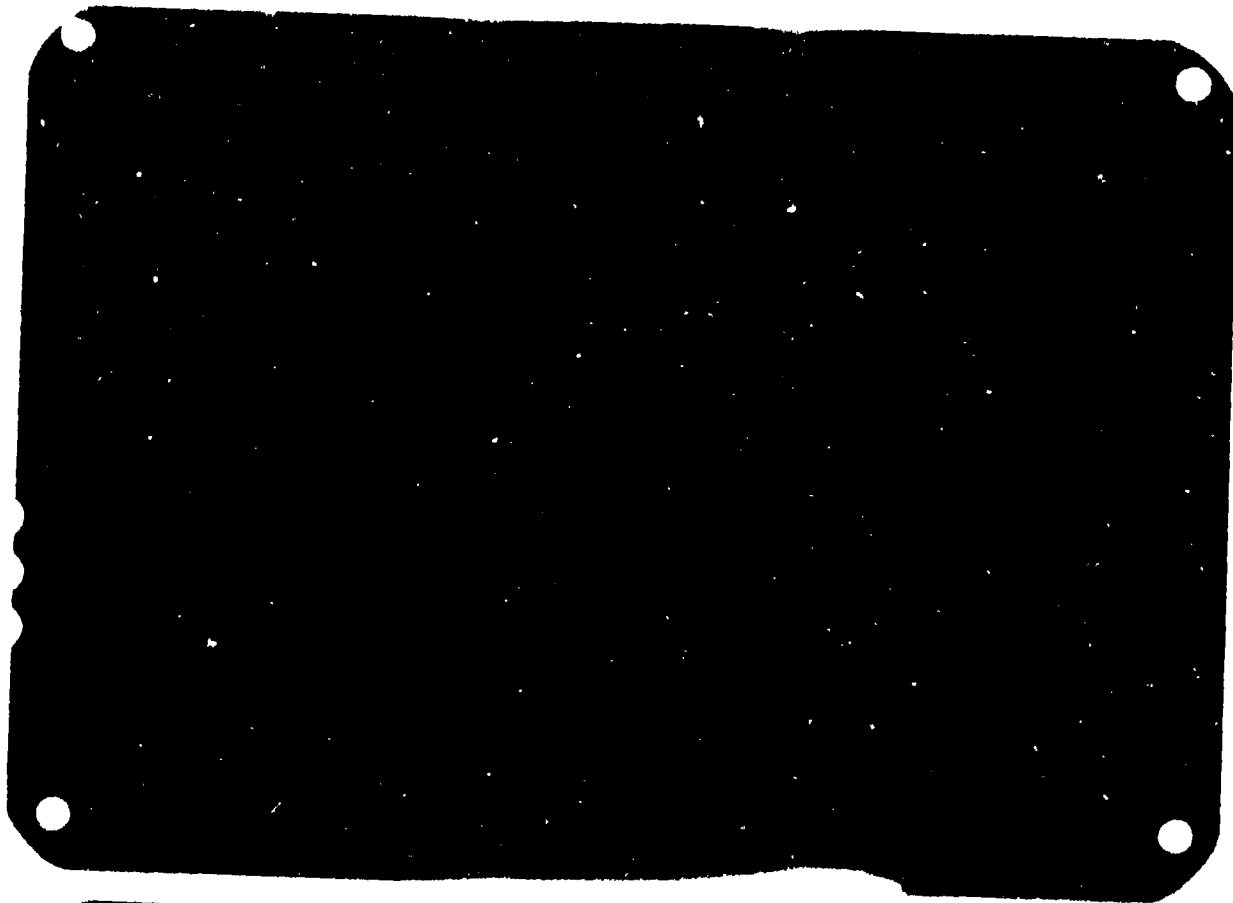


T2 V5

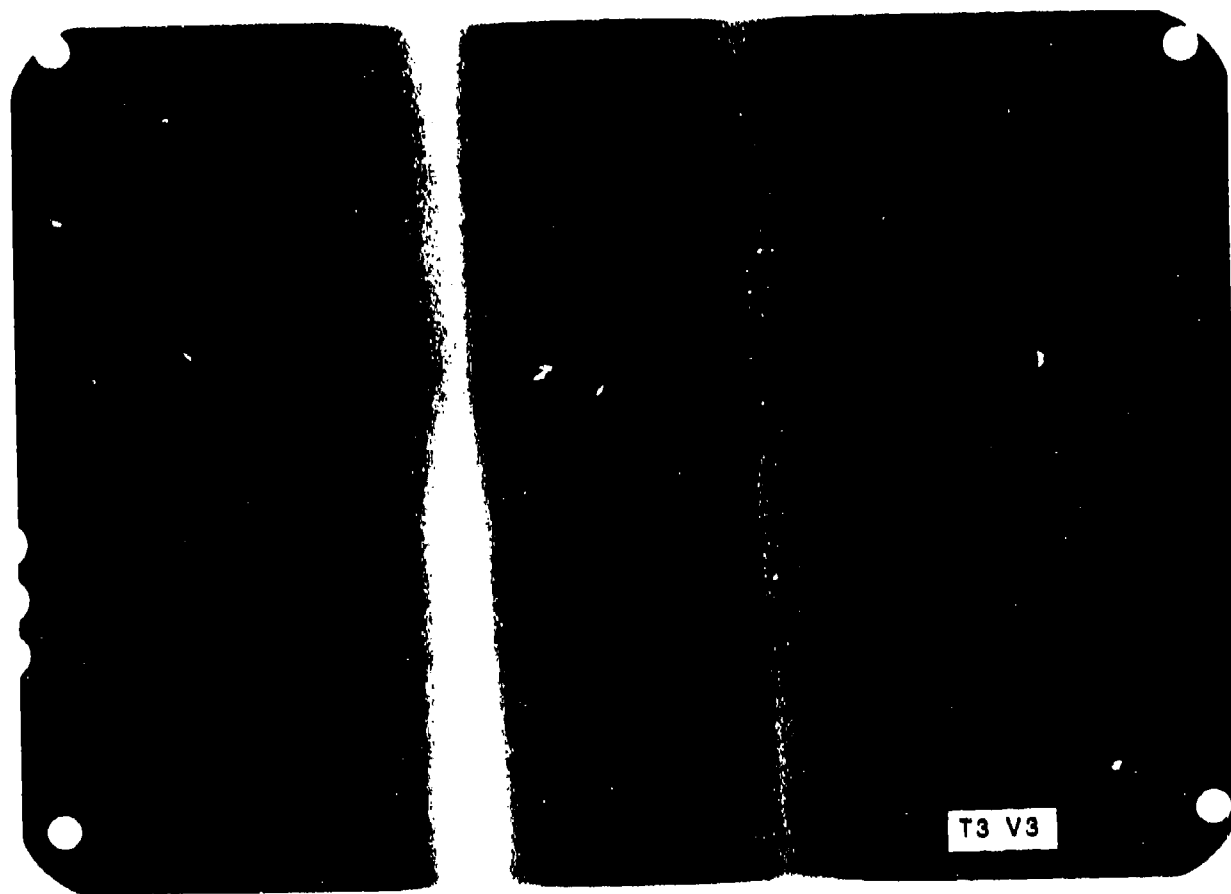
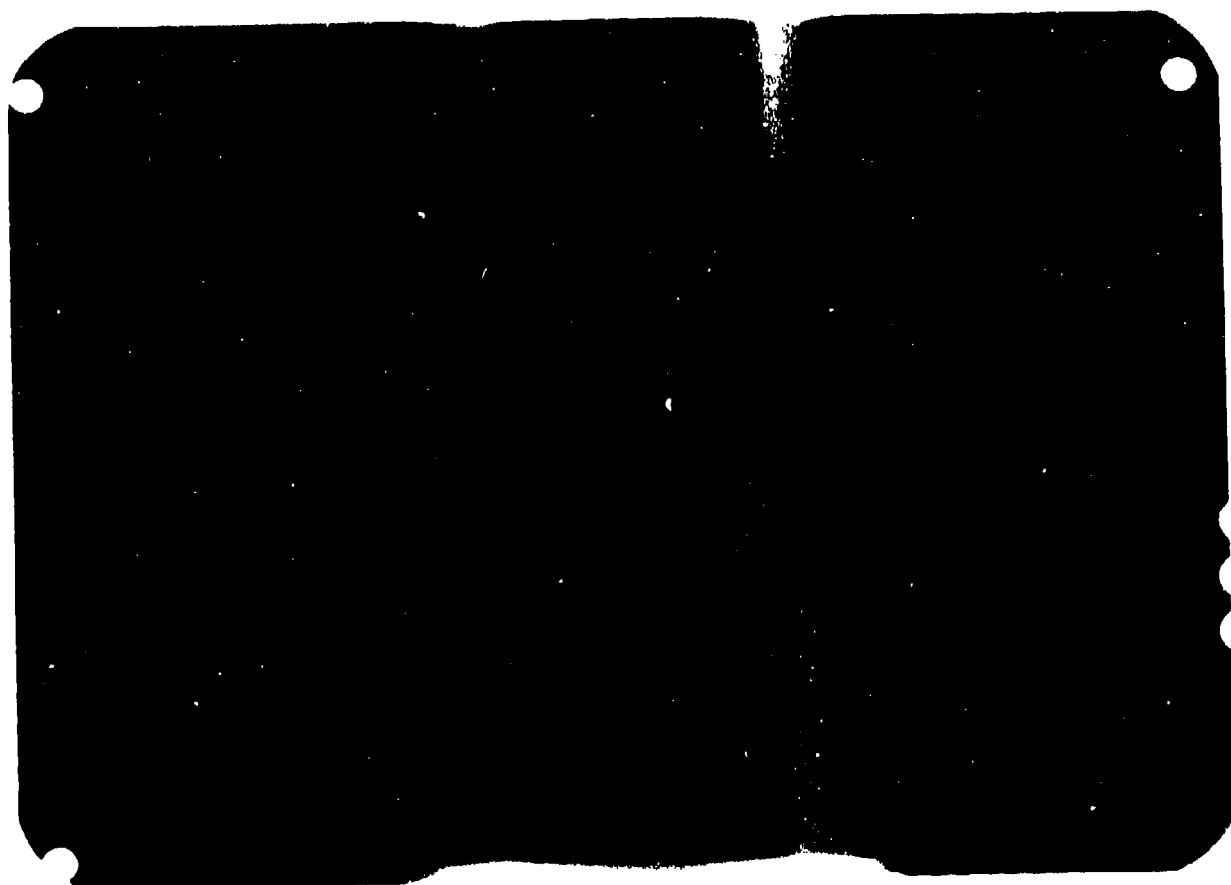








T3 V2



T3 V3

