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**Section 1 of 2**

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# Ultrasonic Inspection Results of Double-Shell Tank 241-AP-107

**C. E. Jensen**
CH2MHILL Hanford Group Inc.
Richland, WA 99352
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Abstract: This document presents the results and documentation of the non-destructive ultrasonic examination (NDE) of tank 241-AP-107. An NDE contractor was retained to provide and use an ultrasonic inspection system (equipment, procedures, and inspectors) to scan a limited area of the primary tank wall, welds, and lower knuckle of double-shell tank 241-AP-107. The exam found no reportable indications of wall thinning, pits, or crack in excess of the acceptance criteria

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COGEMA
ENGINEERING CORP.

# ULTRASONIC INSPECTION RESULTS OF DOUBLE-SHELL TANK 241-AP-107

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**Richland, Washington 99352**
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# ULTRASONIC INSPECTION RESULTS OF DOUBLE-SHELL TANK 241-AP-107


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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| CHG | CH2M HILL Hanford Group, Inc. |
| COGEMA Engineering | COGEMA Engineering Corporation |
| DST | double-shell tank |
| ENRAF | Enraf-Nonius Series 854 (liquid measurement instrument) |
| FIC | Food Instruments Corporation (liquid measurement instrument) |
| FY | fiscal year |
| JCS | Job Control System |
| NDE | Nondestructive Examination |
| PFP | Plutonium Finishing Plant |
| PNNL | Pacific Northwest National Laboratory |
| PUREX | Plutonium Uranium Extraction Facility |
| RL | U. S. Department of Energy, Richland Operations Office |
| TWRS | Tank Waste Remediation System |
| UT | Ultrasonic Testing |
| WDOE | Washington State Department of Ecology |

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# DOUBLE-SHELL TANK SYSTEM INTEGRITY ASSESSMENT: ULTRASONIC INSPECTION RESULTS OF DOUBLE-SHELL TANK 241-AP-107

## 1.0 INTRODUCTION

In May 1996 the Tank Waste Remediation System (TWRS) Decision Board recommended, and U.S. Department of Energy, Richland Operations Office (RL) agreed, that the condition of the double-shell tanks (DSTs) should be determined by ultrasonic (UT) inspection of a limited area in six of the 28 DSTs (see Figure 1). The Washington State Department of Ecology (WDOE) has agreed with the strategy of limited ultrasonic inspection of six DSTs. Data collected during the UT inspections will be used to assess the condition of the tank, judge the effects of past corrosion control practices, and satisfy a regulatory requirement to periodically assess the integrity of waste tanks.

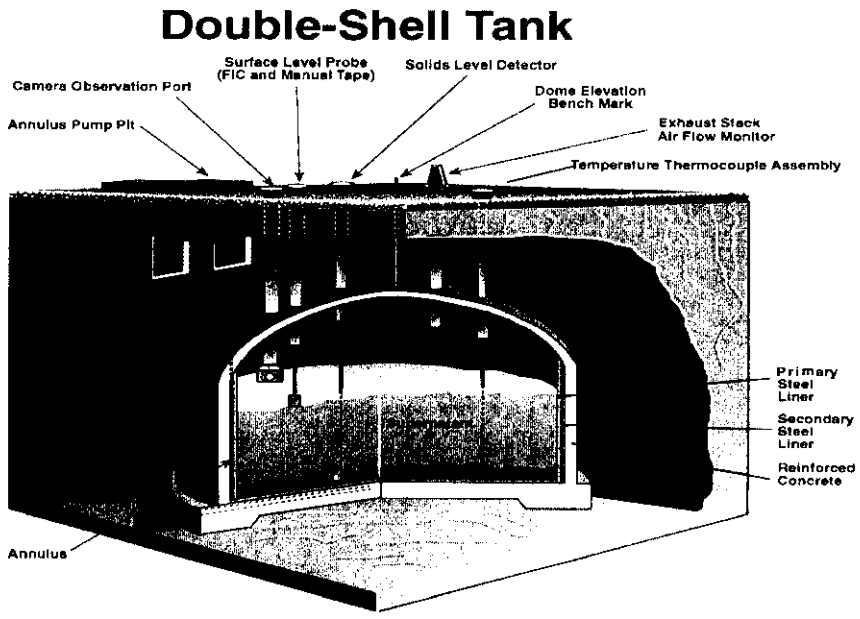


**FIGURE 1 TYPICAL DOUBLE-SHELL TANK CONFIGURATION**

In November 1996, DST 241-AW-103 was inspected to determine if Hanford DST walls could be inspected without removing the existing surface rust and scale. Equipment similar to that used to perform routine inspections of oil tanks and large pipelines was used. UT sensors were mounted on a remote-controlled crawler that used magnetic wheels to affix itself and move about on the tank walls. The crawler was deployed into the tank annulus and vertically traversed the primary and secondary containment walls to collect data on the wall thickness and the size of any pits or cracks. The successful completion of this inspection met the requirements of RL Milestone T21-97-455 and represented the first UT inspection of a Hanford DST (Leshikar 1997).

In fiscal year (FY) 1998 and FY 1999, similar inspections of 241-AN-107, 241-AN-106, 241-AN-105, 241-AY-102, and 241-AZ-101 were performed.

Based on the results of these initial inspections, an engineering task plan (Jensen 2000), was prepared for DST inspections scheduled for FY 2000 and beyond. The service of COGEMA Engineering Corporation (COGEMA Engineering) was retained to provide an UT examination system (equipment, procedures, and inspectors) and perform the inspection.

Tank 241-AP-107 was chosen because it's waste level fluctuated very little during its operational life, holding levels at 6 in. for more than four years and then increasing to 411 in. but slowly evaporating to 400 in. for more than four years, and finally holding at less than 15 in. for another four years (see Figure 2). Although the tanks are expected to have similar performance, the selection of tanks is purposely biased towards tanks whose primary walls may be more likely to be degraded by corrosion. The tank selection criteria (Schwenk and Scott 1996; Anantatmula, 1997) considered variables that may influence corrosion, such as waste physical characteristics, waste chemistry, temperature, and age.

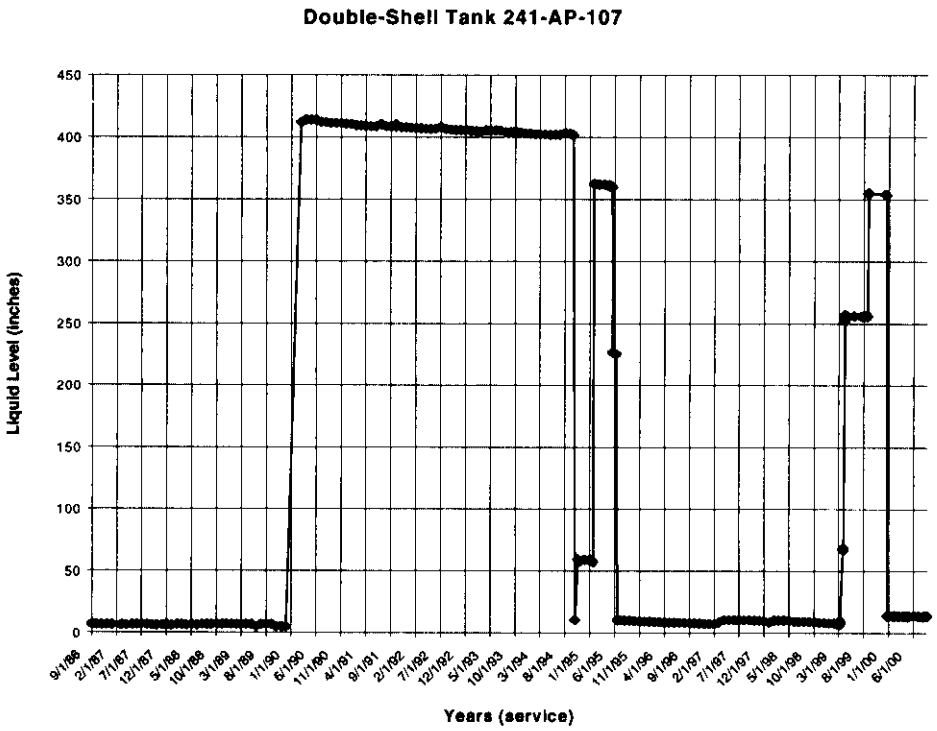


**Figure 2 Waste Level History of Double-Shell Tank 241-AP-107**

The 241-AP Tank Farm consists of eight DSTs and is located in the 200 East Area of the Hanford Site. These underground tanks were built under Project B-340 in 1983-1986 as storage for low-heat aging waste and evaporator condensate from the 242-A facility. These tanks have received various wastes beginning in mid-1986. Presently, only three tanks are active and they are dilute process feed tanks for the 242-A Evaporator.

Tank 241-AP-107 began receiving waste in 1986 and is currently a dilute, non-complexed waste receiver tank. The waste is of low activity originating from T and S Plants, the 300 and 400 Areas, Plutonium Uranium Extraction (PUREX) facility (decladding supernatant and miscellaneous wastes), 100 N Area (sulfate waste), B Plant, saltwells, and Plutonium Finishing Plant (PFP) (supernatant). The minimum waste level recorded was 6 in. and a recorded maximum waste level of 411.7 in. (Brevick 1997). The current tank level is 13.8 inches (Hanlon 2000). The maximum waste temperature recorded was 102°F with a minimum temperature of 48°F (Brevick 1997). Level history for the Manual FIC ended in January of 2000 and was replaced with an Automatic ENRAF instrument. Tank liquid was pumped down to 13.81 in. in mid December 1999. The liquid level during UT testing was a steady 13.81 in.

## 2.0 OBJECTIVE AND SCOPE

This report presents the results of the UT inspection of DST 241-AP-107 with attention focused on the primary tank wall base metal and welds. The criteria, deliverables, and responsibilities for the UT inspection are described in RPP-5583, *Engineering Task Plan for the Ultrasonic Inspection of Hanford Double-Shell Tanks-FY2000* (Jensen 2000).

## 3.0 INSPECTION EQUIPMENT DESCRIPTION

The UT inspection system components are described below.

**P-scan** – P-scan is the name of the computerized pulse-echo ultrasonic inspection system used by the inspection vendor. The P-scan system is manufactured by Force Institute in Denmark. It acquires data from zero and angle beam transducers mounted on the crawler, allows real-time analysis, and records the data in electronic memory for post inspection analysis. Force Institute has designated "P-scan mode" to represent the angle beam (flaw length) view and "T-scan mode" to represent the zero beam (thickness) view. T-scan mode is used for normal operation and, if crack-like indications are detected, then the P-scan mode is employed (see Attachment 1).

**Crawler (UT Scanner)** – The crawler is a remotely controlled device that delivers the ultrasonic sensors to the tank walls (Figure 3). The crawler weighs approximately 30 pounds and has dimensions of approximately 21 in. wide by 18 in. long by 6 in. high. The crawler attaches to the tank wall with two pairs of magnetic wheels. A traveling bridge on the crawler is outfitted with ultrasonic sensors. As the crawler moves slowly forward the sensors glide from side-to-side over the tank wall surface. Water couplant is continuously fed to each transducer at a rate needed to maintain an acceptable signal.

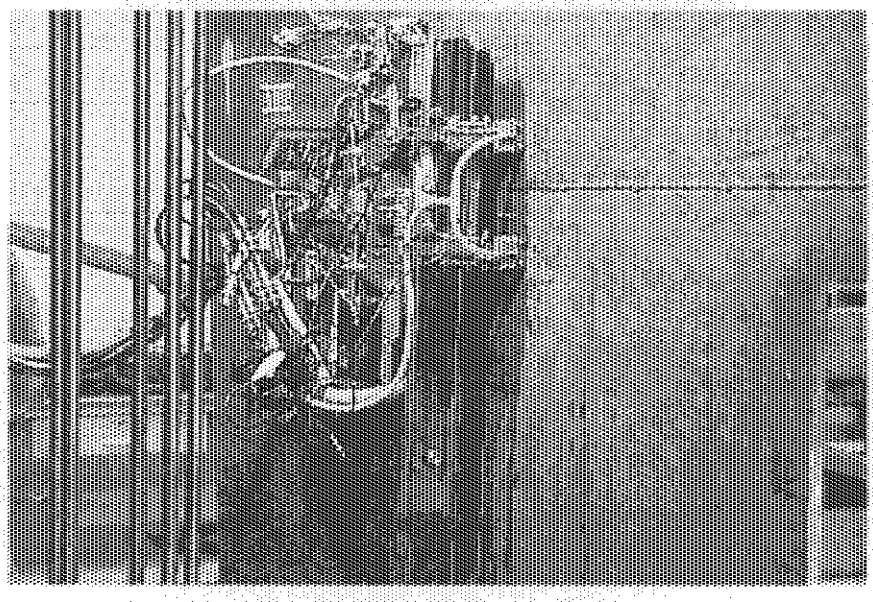

**FIGURE 3 CRAWLER SYSTEM ON TANK MOCK-UP**

**Overview Camera** – This camera was deployed to observe the area immediately around the inspection area and to aid crawler deployment in the annulus.

**Side-view Camera** – This camera and light system were installed in a riser adjacent to the inspection riser to provide an overall view of the inspection process.

**Data Acquisition Control Center** – A pull-type trailer was used to house the crawler controls, video monitors, and the data collection and evaluation hardware. The trailer was located inside the tank farm boundary fence.

**Deployment Tool** – This device was specifically designed to insert and retrieve the scanner from the DST annular space. The scanner sits on a platform that is manually lowered to the appropriate elevation. That platform has cables attached that can be controlled to move the scanner platform into contact with the examination surface. The scanner is then driven onto the surface. The deployment tool is retracted until the scanner needs to be removed from the annular space.

## 4.0 GENERAL REQUIREMENTS, INSPECTION CRITERIA, AND DATA COLLECTION

**FY 2000 Contract Number 4848, Release Number 0140** states (in part):
"The contractor shall perform an ultrasonic inspection of double-shell tank 241-AP-107 to the extent described in RPP-5583, *"Engineering Task Plan for the Ultrasonic Inspection of Hanford Double-Shell Tanks-FY2000,"* (Jensen 2000), and submit a report to CHG for approval and release."

The areas on the primary tank that were identified for inspection in the Engineering Task Plan (Jensen 2000) are described below.

Primary Tank Wall and Welds

- A vertical strip, approximately 30 in. wide by 35 ft long. The vertical strip may comprise one or more strips whose total width is approximately 30 in. (The distance from the tank upper-haunch-transition to the lower knuckle is approximately 35 ft.)
- 20 ft. of the cylinder-to-lower knuckle weld
- One vertical weld joining the lowest shell course plates (approximately 10 ft.)
- One vertical weld joining the next-to-the-lowest shell course plates (approximately 10 ft.)

Primary Tank Knuckle (lower)

- An area approximately 20 ft. long in the circumferential direction and in the meridional direction from the weld joining the transition plate with the knuckle to the farthest reach of the transducer assembly that was allowed by the tank geometry.

The following is the description of the data collection methodology:

The tank inspection was performed under Job Control System (JCS) work package 2E-00-00743/W during mid-calendar year 2000. All work steps, guidelines, procedures, personnel responsibilities, and protocol for the inspection (Jensen 2000) were included in the subject work package.

A remotely controlled, steerable crawler was used to deliver the UT sensors to the tank wall. The crawler was deployed through a 24 in. annulus Inspection Riser Number 031. The crawler attached to the tank wall with magnetic wheels (Attachment 2). A traveling bridge on the crawler was outfitted with UT sensors. As the crawler moved slowly forward, the

sensors glided from side-to-side over the inspection surface. Water couplant was continuously fed to each transducer at a rate required to attain an acceptable signal.

For inspection of the tank wall, one dual-element 0° transducer and two 45° shear-wave transducers were used. To detect cracks perpendicular to welds, two opposing 45° shear-wave transducers were directed parallel to the weld. To detect cracks parallel to the weld, a 60° shear-wave transducer was directed towards the weld and a dual-element 0° transducer was also included. Welds were examined from both sides of the weld crown.

Data and images from the system were returned to a control center located inside the AP Tank Farm fence. The control center contained the crawler controls, video monitors, and data collection and evaluation software and hardware. The UT inspector continuously monitored the signals for reportable indications. The entire inspection was viewed by a camera and lighting deployed in an adjacent riser.

## 5.0 INDICATION REPORTING CRITERIA

COGEMA Engineering was required to report to the customer the following anomalies (Jensen 2000):

- Wall thinning that exceeded 10 percent of the nominal plate thickness
- Pit depths that exceeded 25 percent of the nominal wall thickness
- Cracks that exceeded 0.18 in. in depth.

## 6.0 PERFORMANCE DEMONSTRATION TEST

Prior to field use, COGEMA Engineering's UT inspection system satisfactorily completed a performance demonstration test. The test was performed prior to inspection of Tank 241-AP-107 in FY 2000. The test was conducted to qualify personnel, test procedures, and ensure the equipment's ability to detect and size wall thinning, pits, and cracks in a series of test plates with artificial defects. The performance demonstration test was performed on a tank mock-up in the 306E Facility located in the Hanford Site 300 Area. This mock-up also demonstrated the successful deployment and retrieval of the equipment. The Pacific Northwest National Laboratory report "*Report on Performance Demonstration Test – PDT, May 2000*" provides the details of the complete inspection and includes an evaluation of the PDT (Attachment 3).

## 7.0 EQUIPMENT SET-UP AT AP TANK FARM

Prior to performing the actual inspection, the riser (24 in.) shield plug was removed, asbestos abatement performed, and a temporary cover was placed on the riser.

A temporary structure, constructed of scaffolding, was erected around the riser to provide the means for deploying the UT equipment (Figure 4). A central I-beam was secured to the top of the scaffolding and supported a single line sheave. A manual cable winch was secured to the base with the cable running up to the sheave in a single-line hoisting method for maneuvering the equipment into position.

**FIGURE 4 FIELD SET-UP AT RISER FOR DOUBLE-SHELL TANK 241-AP-107**

The weather during the entire inspection was moderate. A second temporary structure (tent) was erected near the inspection riser. This "tent" was constructed of round tubing and covered with shading and weather resistant-material. The control center trailer was setup inside the AP Tank Farm's boundary fence and the control cables were run along the ground to the equipment located at the riser.

## 8.0 INSPECTION RESULTS

The Inspection Data Sheets and an interpretation of the data by COGEMA Engineering's Level III qualified inspector are included in Attachment 4. Tank 241-AP-107 was fabricated from carbon steel plate. The location of plates as identified in the Pacific Northwest National Laboratory (PNNL) report is as follows (see Attachment 5):

**Primary knuckle (top)** – Connects dome of tank to side-wall
**Primary wall** – Consists of (from top to bottom)
Plate #1 – approximately 7 ft. 8 in. tall, 1/2 in. nominal thickness
Plate #2 – approximately 7 ft. 8 in. tall, 1/2 in. nominal thickness
Plate #3 – approximately 7 ft. 8 in. tall, 9/16 in. nominal thickness
Plate #4 – approximately 9 ft. tall, 3/4 in. nominal thickness
Plate #5 – approximately 2 ft. tall, 7/8 in. nominal thickness
**Primary knuckle (bottom)** – Approximately 15/16 in. nominal thickness. Connects sidewall of tank to primary tank bottom

The scan path for the crawler is shown in Figure 5 below.

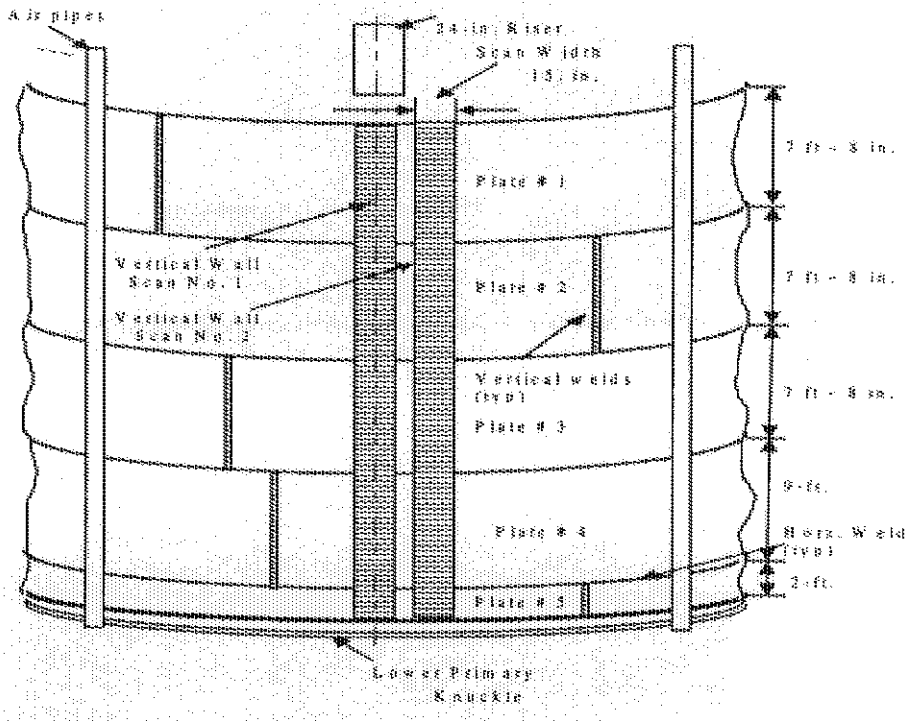


**FIGURE 5 SCHEMATIC OF UT SCAN PATH**

All tank welds are very close to "as-welded" condition. The primary tank's exterior surface varies from mill scale to a coating of rust caused by the normal weathering of carbon steel. The tank surface also contains miscellaneous chalk marks from construction. In some places, streaks from concrete pouring can be found (Walter 1993). The following pages contain tables that present the data as a percent of nominal wall thickness, which was derived from the COGEMA "Automated Ultrasonic Thickness Data Report Sheets" (Attachment 4).

Tables 1 through 3 contain evaluated data and are displayed in a summarized form by whole plate, plate welds and lower knuckle:

Table 1 Primary Tank Wall, Scan 1 (Attachment 4)

| Plate | Design Nominal (in.) | Measured Minimum (in.) | % of Nominal Wall |
|---|---|---|---|
| Plate #1 (upper) | 0.500 | 0.499 | 99.8 |
| Plate #2 | 0.500 | 0.496 | 99.2 |
| Plate #3 | 0.563 | 0.572 | N/A |
| Plate #4 | 0.750 | 0.761 | N/A |
| Plate #5 (lower) | 0.875 | 0.886 | N/A |

Table 2 Primary Tank Wall, Scan 2 (Attachment 4)

| Plate | Design Nominal (in.) | Measured Minimum (in.) | % of Nominal Wall |
|---|---|---|---|
| Plate #1 (upper) | 0.500 | 0.509 | N/A |
| Plate #2 | 0.500 | 0.500 | N/A |
| Plate #3 | 0.563 | 0.568 | N/A |
| Plate #4 | 0.750 | 0.735 | 98 |
| Plate #5 (lower) | 0.875 | 0.893 | N/A |

Table 3 Primary Tank Welds and Knuckle (Attachment 4)

| Weld | Design Nominal (in.) | Measured Minimum (in.) | % of Nominal Wall |
|---|---|---|---|
| Vertical Weld Plate #2 | 0.500 | 0.488 | 97.6 |
| Vertical Weld Plate #3 | 0.563 | 0.553 | 98.4 |
| Vertical Weld Plate #4 | 0.750 | 0.730 | 97.4 |
| Vertical Weld Plate #5 | 0.875 | 0.860 | 98.3 |
| Horizontal Weld Plate #5 to Knuckle (Plate Side) | 0.875 | 0.862 | 98.6 |
| Horizontal Weld Plate #5 to Knuckle (Knuckle Side) | 0.938 | 0.915 | 97.7 |
| Knuckle Weld Scan | 0.938 | 0.910 | 97.2 |

Note 1: PNNL evaluated the data and concluded no thinning, pitting or cracks are present. Refer to PNNL report "*Ultrasonic Examination of Double Shell Tank 241-AP-107*" (Attachment 5).

Note 2: Although the data is reported to three figures, the accuracy of the data, based on the results of the performance demonstration test is; ± 0.020 inch for wall thickness.

Tables 4 through 13 contain the detailed data for wall scans as presented in 12 in. long by 15 in. wide connecting scans. The detailed data for the horizontal weld, vertical weld, and primary knuckle, are in Attachment 7.

Table 4 Primary Tank Vertical Wall Scan 1 - Plate 1(Attachment 4 pg. 1 of data sheets)

| Location: 1 in. below first horiz. weld @ centerline of 24 in. riser. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.500 | 0.530 | 0.515 |
| 12 in. – 24 in. | 0.500 | 0.530 | 0.510 |
| 24 in. – 36 in. | 0.500 | 0.530 | 0.520 |
| 36 in. – 48 in. | 0.500 | 0.530 | 0.515 |
| 48 in. - 60 in. | 0.500 | 0.530 | 0.499 |
| 60 in. – 72 in. | 0.500 | 0.530 | 0.510 |
| 72 in. – 84 in. | 0.500 | 0.530 | 0.515 |
| 84 in. – 90.5 in. | 0.500 | 0.520 | 0.508 |

Table 5 Primary Tank Vertical Wall Scan 1 - Plate 2 (Attachment 4 pg. 19 of data sheets)

| Location: 1 in. below second horiz. weld @ centerline of 24 in. riser. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.500 | 0.520 | 0.496 |
| 12 in. – 16.4 in. | 0.500 | 0.520 | 0.518 |
| *0 in. – 12 in. | 0.500 | 0.520 | 0.515 |
| 12 in. – 14.1 in. | 0.500 | 0.520 | 0.518 |
| *0 in. – 12 in. | 0.500 | 0.520 | 0.516 |
| 12 in. – 24 in. | 0.500 | 0.520 | 0.515 |
| 24 in. – 36 in. | 0.500 | 0.518 | 0.508 |
| 36 in. – 48 in. | 0.500 | 0.517 | 0.511 |
| 48 in. – 60 in. | 0.500 | 0.513 | 0.501 |
| 60 in. – 61.8 in. | 0.500 | 0.512 | 0.505 |

* Restart of scan is continuation from end of previous scan.

Table 6 Primary Tank Vertical Wall Scan 1 - Plate 3 (Attachment 4 pg. 41 of data sheets)

| Location: 1 in. below third horiz. weld @ centerline of 24 in.riser. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.563 | 0.580 | 0.572 |
| 12 in. – 24 in. | 0.563 | 0.580 | 0.574 |
| 24 in. – 36 in. | 0.563 | 0.580 | 0.576 |
| 36 in. – 48 in. | 0.563 | 0.585 | 0.579 |
| 48 in. - 60 in. | 0.563 | 0.585 | 0.579 |
| 60 in. – 72 in. | 0.563 | 0.585 | 0.577 |
| 72 in. – 84 in. | 0.563 | 0.580 | 0.576 |
| 84 in. – 88.7 in. | 0.563 | 0.580 | 0.572 |

Table 7 Primary Tank Vertical Wall Scan 1 - Plate 4 (Attachment 4 pg. 60 of data sheets)

| Location: 1 in. below fourth horiz. weld @ centerline of 24 in.riser. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.750 | 0.775 | 0.766 |
| 12 in. – 24 in. | 0.750 | 0.780 | 0.763 |
| 24 in. – 36 in. | 0.750 | 0.780 | 0.770 |
| 36 in. – 48 in. | 0.750 | 0.780 | 0.774 |
| 48 in. - 60 in. | 0.750 | 0.780 | 0.774 |
| 60 in. – 72 in. | 0.750 | 0.780 | 0.765 |
| 72 in. – 84 in. | 0.750 | 0.780 | 0.772 |
| 84 in. – 96 in. | 0.750 | 0.776 | 0.768 |
| 96 in. – 105.4 in. | 0.750 | 0.773 | 0.761 |

Table 8 Primary Tank Vertical Wall Scan 1 - Plate 5 (Attachment 4 pg. 80 of data sheets)

| Location: 1 in. below fifth horiz. weld @ centerline of 24 in. riser. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.875 | 0.905 | 0.892 |
| 12 in. – 20.4 in. | 0.875 | 0.902 | 0.886 |

Table 9 Primary Tank Vertical Wall Scan 2 - Plate 1 (Attachment 4 pg. 86 of data sheets)

| Location: 1 in. below first horiz. weld @ 21 in. from centerline of first pass. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.500 | 0.530 | 0.513 |
| 12 in. – 17.1 in. | 0.500 | 0.530 | 0.512 |
| *0 in. – 12 in. | 0.500 | 0.531 | 0.522 |
| 12 in. – 24 in. | 0.500 | 0.535 | 0.520 |
| 24 in. – 36 in. | 0.500 | 0.533 | 0.511 |
| 36 in. – 48 in. | 0.500 | 0.535 | 0.510 |
| 48 in. – 60 in. | 0.500 | 0.535 | 0.520 |
| 60 in. – 72 in. | 0.500 | 0.530 | 0.515 |
| 72 in. – 73 in. | 0.500 | 0.520 | 0.509 |

* Restart of scan is continuation from end of previous scan.

Table 10 Primary Tank Vertical Wall Scan 2 - Plate 2 (Attachment 4 pg. 106 of data sheets)

| Location: 1 in. below second horiz. weld @ 21 in. from centerline of first pass. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.500 | 0.520 | 0.505 |
| 12 in. – 24 in. | 0.500 | 0.520 | 0.509 |
| 24 in. – 36 in. | 0.500 | 0.520 | 0.510 |
| 36 in. – 48 in. | 0.500 | 0.525 | 0.500 |
| 48 in. - 60 in. | 0.500 | 0.525 | 0.500 |
| 60 in. – 72 in. | 0.500 | 0.525 | 0.512 |
| 72 in. – 84 in. | 0.500 | 0.525 | 0.509 |
| 84 in. – 89.3 in. | 0.500 | 0.520 | 0.505 |

Table 11 Primary Tank Vertical Wall Scan 2 - Plate 3 (Attachment 4 pg. 124 of data sheets)

| Location: 1 in. below third horiz. weld @ 21 in. from centerline of first pass. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.563 | 0.574 | 0.568 |
| 12 in. – 24 in. | 0.563 | 0.576 | 0.571 |
| 24 in. – 36 in. | 0.563 | 0.580 | 0.573 |
| 36 in. – 48 in. | 0.563 | 0.582 | 0.577 |
| 48 in. - 60 in. | 0.563 | 0.582 | 0.578 |
| 60 in. – 72 in. | 0.563 | 0.581 | 0.577 |
| 72 in. – 84 in. | 0.563 | 0.581 | 0.573 |
| 84 in. – 89.5 in. | 0.563 | 0.578 | 0.572 |

Table 12 Primary Tank Vertical Wall Scan 2 - Plate 4 (Attachment 4 pg. 142 of data sheets)

| Location: 1 in. below fourth horiz. weld @ 21 in. from centerline of first pass. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.750 | 0.779 | 0.743 |
| 12 in. – 24 in. | 0.750 | 0.785 | 0.773 |
| 24 in. – 36 in. | 0.750 | 0.785 | 0.776 |
| 36 in. – 48 in. | 0.750 | 0.784 | 0.775 |
| 48 in. - 60 in. | 0.750 | 0.783 | 0.775 |
| 60 in. – 72 in. | 0.750 | 0.783 | 0.776 |
| 72 in. – 84 in. | 0.750 | 0.782 | 0.765 |
| 84 in. – 96 in. | 0.750 | 0.780 | 0.766 |
| 96 in. – 105.6 in. | 0.750 | 0.772 | 0.735 |

Table 13 Primary Tank Vertical Wall Scan 2 - Plate 5 (Attachment 4 pg. 162 of data sheets)

| Location: 1 in. below fifth horiz. weld @ 21 in. from centerline of first pass. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.875 | 0.900 | 0.893 |
| 12 in. – 20.3 in. | 0.875 | 0.900 | 0.897 |

## 10.0 EVALUATION OF INSPECTION RESULTS

The UT data was reviewed and certified by W. H. Nelson, COGEMA Engineering Level III qualified inspector (Attachment 4). Jim Elder, Level III certified NDE (nondestructive examination) Inspector from Swain Distributing Inc. independently evaluated the hard copy scan data and concurred with COGEMA Engineering interpretation (Attachment 4). Also, PNNL UT inspection experts independently evaluated the hard copy scans and Inspection Report Data and concurred with the COGEMA Engineering interpretation as well (Attachments 5). The UT data was also submitted to PNNL for review (Attachment 5)

The results of the Tank 241-AP-107 UT inspection indicated no reportable wall thinning, pitting, or cracks. Attachment 5 contains the report prepared by PNNL that analyzes the data gathered from Tank 241-AP-107. Figure 6 shows the "as-found" measurements of the primary tank vertical wall scan generated from the Inspection Data Sheets (Attachment 4). Each wall thickness measurement plotted on Figure 6 is the average of all data collected over a 12-in.-long by 15-in.-wide scan area. Areas of interest are the vapor space above the liquid waste, the liquid-vapor interface, the liquid region, the liquid-solids interface, and the solids region.

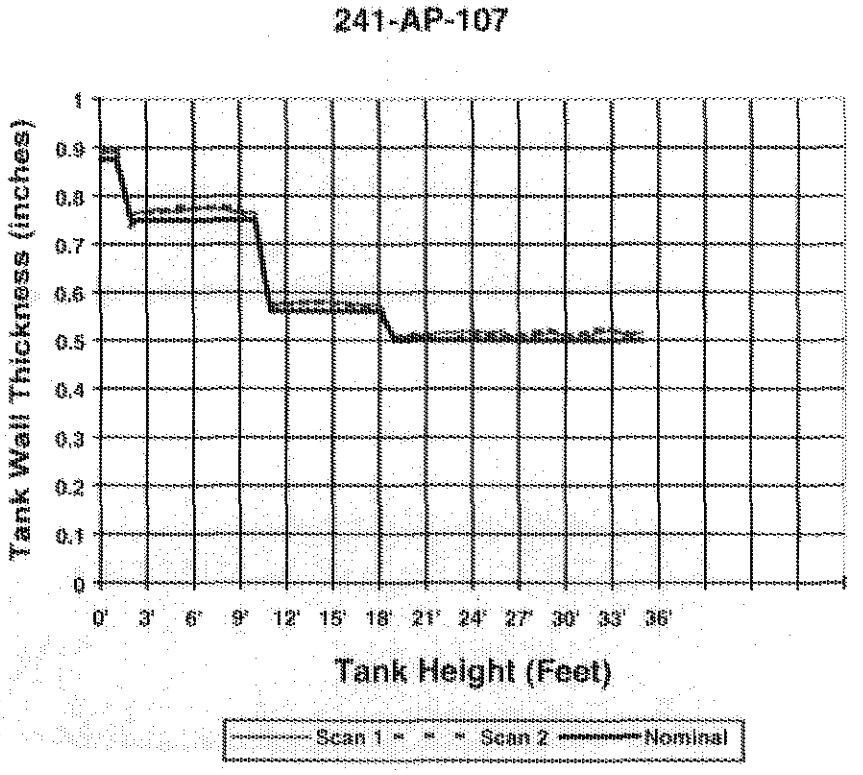


**FIGURE 6 NOMINAL PLATE THICKNESS VS. SCAN DATA**

The UT Data show that the primary tank wall thickness is comparable to that specified in the design documents and as reported in the integrity assessment report (Jensen 1999a). The UT data was compared to the construction specifications, drawings, standards and codes. The as-found condition of the tank plates, welds and knuckle show that these components are within the allowable design limits with the exception of two minute areas of one plate and a possible minor crack-like indication in another plate. These minor imperfections discovered could be due to construction damage fabrication defects or corrosion. A comparison of the mill tolerance (ASTM A20) with the variation in the reported wall thickness should not be expected to result in a match. A wider range of wall thickness data was recorded using the ultrasonic method for several possible reasons; the larger number of data points, in-service corrosion, construction damage, and the relative inaccuracy of remote inspection methods[a]

The average wall thickness of each 12 in. long by 15 in. scan is greater than the design wall thickness. This suggests that the tank wall plates are within the fabrication tolerances (ASTM A20). A summary of the results associated with the areas examined is presented below.

**Primary Tank Wall Thinning/Pitting/Cracking.** None of the areas scanned showed any reportable wall thinning, pitting or cracking. As would be expected, the wall thickness' varied from plate to plate and within the same plate.
**Primary Tank Welds.** One vertical weld, in each of the four lower plates was examined. No crack-like indications were found.
**Primary Tank Knuckle-to-Shell Weld.** No crack-like indications were detected in the 20 ft. of weld examined.
**Primary Tank Knuckle.** This region was inspected to the full extent of the mechanical scanning arm. No thinning, pits, or cracks were found.

## 11.0 FINDINGS AND CONCLUSIONS

The findings and conclusions from the UT inspection are listed below:

- No pitting or crack-like indications were detected in any of the plates.
- No crack-like indications were detected in the horizontal and vertical welds.
- The absence of cracks in the plate and weld-heat-affected zone indicates that the pre-service material quality control, weld-stress relief treatment, and waste chemistry controls have been effective in preventing cracks.

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a The accuracy of the UT data, based on the results of the performance demonstration test is $\pm$ 0.020 inch for wall thickness.

- Based on visual observations in the tank annulus, the secondary tank liner appears to be uniformly corroding. The tank condition is similar to that observed during earlier visual inspections of this tank (Walter 1993).

- No reportable wall thinning was detected. Furthermore, no detectable corrosion was observed at the 411 in. and 13.8 in. waste level interface and the 6 in. level interface is below the inspectable height (midway through knuckle radius).

- The rough outside tank surface (weld spatter) reduced the quality of the inspection data at the interface of the weld inspections. Wire brushing or otherwise cleaning the surface would improve the performance of the ultrasonic system.

## 12.0 DOUBLE-SHELL TANK SELECTION CRITERIA AND UT SCHEDULE FY 2001

Item 1.C. of Administrative Orders 00NWPKW-1250 and 00NWPKW-1251 (Silver 2000) require that this report include a schedule identifying each of four more DSTs, not previously examined by ultrasonic testing, that will be examined during FY 2001.

Tanks selected by CH2M Hill Hanford Group, Inc. for ultrasonic examination in FY 2001, and the scope of planned examinations, are indicated in Table 14.

Table 14. Ultrasonic Inspection Scope of DSTs in FY 2001

| DST | Primary tank, vertical strip | Primary tank, horiz. (20 ft.) and vert. (20 ft.) welds[b] | Liquid/Air interface region[c] | Primary tank knuckle[d] | Primary tank bottom |
|---|---|---|---|---|---|
| 241-AW-101 | X | X | X | X | |
| 241-AW-105 | X | X | | X | |
| 241-AN-102 | X | X | | X | X |
| 241-AY-101 | X | X | | X | X |

b) Welds and adjacent heat affected zones are to be examined for cracks. The horizontal weld to be examined is the circumferential weld joining the transition wall plate with the lower knuckle. The vertical welds to be examined are the welds joining the two lowest shell course plates, or 20 feet, whichever is greater. However, the length of vertical weld to be examined shall be extended, if necessary, to include at least 12 inches of the nominally thinnest wall plate.

c) Twenty (20) foot long by 12 inch wide horizontal scan centered on the estimated location of the liquid/air interface that existed for a minimum of five years in the designated DST

d) This includes only the portion of the lower knuckle that can be examined with current ultrasonic testing equipment, i.e., approximately the upper 3 inches of the lower knuckle. Approaches for examining the most highly-stressed region of the lower knuckle are being evaluated, but will not be available for deployment in FY 2001.

Tank 241-AY-101 is selected because it was originally scheduled to be included in the first six DSTs examined. However, examination was prevented due to corrosion product buildup on the exterior of the primary tank wall, as indicated in Table 3, note 4 of the integrity assessment report for AY tank farm (Jensen 1999b). A wall cleaning tool has been developed and demonstrated to prepare a vertical strip on the tank wall for ultrasonic examination. The wall cleaning tool is limited to movement along a vertical path on the tank wall aligned with the 24 inch riser through which it is deployed, and cannot traverse the tank horizontally. Consequently the welds and adjacent heat affected zones that can be examined in this tank may be limited to those that fall within the path of the wall cleaning tool, or are in areas that are otherwise relatively uncorroded. Tank 241-AN-102 was selected because it is designated as the first feed tank for low-activity waste processing, and will subsequently be used as a staging tank for waste feed delivery. An engineering study documenting the basis for selection of 241-AN-102 as a staging tank identified some programmatic risk associated with corrosion potential in this tank, and recommended early ultrasonic examination of the tank as a means of managing that risk (Blacker and Tulberg 2000). Tanks AW-101 and AW-105 were selected based on assessment of minimum interference with other planned activities in tank farms during FY01, and also rank in the top half of the prioritized order of examination of remaining double-shell tanks, as of the end of FY 2000 (Jensen 2000). Tanks 241-AN-101, 241-AW-102, 241-AW-104, and 241-AZ-102 were selected by CH2M Hill Hanford Group as backup tanks in the event one or more of the tanks listed in Table 14 could not be examined due to interference with other activities, tank conditions, or other reasons. The reason for selection of these tanks is to minimize tank farm to tank farm relocation of ultrasonic testing equipment, if tank substitutions are necessary.

## 13.0 REFERENCES

Anantatmula, R.P., 1997, *Prioritization of Double-Shell Tanks for Ultrasonic Examination*, (letter 74700-97-RPA-009 to K. V. Scott, March 17) Lockheed Martin Hanford Corporation, Richland, Washington.

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# ATTACHMENT 1

## ULTRASONIC INSPECTION OF DOUBLE SHELL TANKS

COGEMA-SVUT-INS-007.3, Rev. 0

COGEMA ENGINEERING CORP.

# AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

## 1.0 PURPOSE

This procedure establishes the method, equipment, and requirements for automated, direct contact ultrasonic (UT) straight-beam, thickness measurements, angle beam flaw detection, and sizing in carbon steel waste storage tanks utilizing the "P-scan" ultrasonic imaging system.

## 2.0 SCOPE

### 2.1 Requirements

The requirements herein are applicable to weld inspection, crack detection, sizing, wall thickness measurement, and the detection of wall thinning conditions, such as pitting, erosion, and corrosion in double shell tanks from 0.100 inches to 1.0 inches in thickness. At least one side must be accessible and the component surface to be measured must be parallel with the opposite surface. The requirements are also applicable to the automated UT detection and depth sizing of surface connected planar flaws.

### 2.2 Scanning

Scanning is performed using remotely controlled automatic scanners.

### 2.3 Examinations

Examinations shall be performed from inside the annulus of the double shell tanks.

### 2.4 Instructions

This procedure provides the instructions for the use of Tip Diffraction Techniques including the Absolute Arrival Time Technique (AATT), and the Relative Arrival Time Technique (RATT), for the sizing of planar flaws.

### 2.5 Methodology

The methodology in this procedure meets the requirements as addressed in Reference 4.1 as applicable to meet the requirements for inspection of double shell tanks.

## 3.0 RESPONSIBILITIES

Only certified Level II or Level III ultrasonic examiners shall interpret data to determine whether it represents relevant or non-relevant indication in accordance with the applicable specification.

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Level III ultrasonic examiners shall review all data collected prior to issuing a final report.

## 4.0 REFERENCES

4.1 ASME Boiler & Pressure Vessel Code, Section V, Article 4, 1995 Edition.

4.2 COGEMA SV-CP-PRC-014, Qualification and Certification OF NDE Personnel.

4.3 COGEMA SVAD-PRC-001, Nondestructive Examination Administrative Procedure.

4.4 COGEMA SVUT-PRC-007, Ultrasonic Examination Procedure.

4.5 FORCE Institutes, P-scan System 4 Instruction Manual

## 5.0 PERSONNEL REQUIREMENTS

5.1 Personnel Qualifications

Personnel performing or supervising data acquisition or performing data analysis to the requirements of this procedure shall be qualified and certified to at least level II in ultrasonics in accordance with reference 4.2 or equivalent. In addition, they shall be trained in techniques for sizing stress corrosion cracking/planar flaws.

5.2 Certification Level

Personnel performing review for final acceptance of examination data shall be certified to at least level II in ultrasonics in accordance with reference 4.2 or equivalent.

5.3 Support Personnel

Personnel, whose responsibilities are limited to set-up, tear down, and track or scanner operation need not be certified. Such personnel shall possess sufficient knowledge of the equipment to satisfy the Level III examiner.

## 6.0 EQUIPMENT

6.1 Ultrasonic Instrument/Examination System

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## AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

The P-scan computerized pulse-echo ultrasonic inspection system shall be used. The system shall be equipped with a stepped gain control in units of 1dB with a dynamic range of at least 115 dB, capable of generating and receiving frequencies in the range of 0.5 to 15 MHz. The following components may be used:

| | |
|---|---|
| PS-4 | P-scan processor |
| Analysis computer | Off-line data analysis with P-scan analysis software |
| Digital Controller, WSC-2S, or other approved scan controller | Automatic scanner controller |
| AWS-5, AWS5-D, RUTI* | Automatic P-scan scanner |
| Pump | Couplant pump for P-scan system |

*Remote Ultrasonic Inspection (RUTI) system

6.2 Transducers

Straight-beam and angle-beam transducers with single or dual elements, with or without delay tips, may be used, provided they can be attached to and manipulated by the scanner, and can be adequately coupled to the test item with a resultant backwall signal response of at least a 2 to 1 signal-to-noise ratio. Sizes and frequencies shall be as specified for the following applications:

6.2.1 For high sensitivity applications such as the detection of pitting, erosion or corrosion, transducer sizes in the range of 1/4 inch to 1/2 inch, with a frequency in the range of 4.0 to 10 MHz, shall be used.

6.2.2 For weld inspection, detection and sizing of planar flaws that are open to the surface, angle beam transducers with a nominal angle of 45 degrees with an element size in the range of 1/4 inch to 1/2 inch, with a frequency in the range of 4.0 to 10 MHz, shall be used. Where interference from weld geometry prevents examination of the required volume with a 45-degree a 60-degree angle may be substituted.

6.2.3 Transducers of other angles, element sizes, modes of propagation, or frequencies outside the above ranges may be used to suit other required examination techniques.

6.3 Cables

6.3.1 Cables of any compatible type and number of connectors may be used for examination. The length shall be limited to 400 feet, or less where signal

degradation occurs. The same cables shall be used for calibration and examination.

6.3.2 The scanner control cable for analog scanners shall be limited to 330 feet maximum. Digitally controlled scanners shall have a maximum cable length as stipulated by the manufacture's recommendation.

6.4 Couplant

6.4.1 Site approved water should be used as couplant for the examination.

6.4.2 Couplant application should be accomplished by means of an automatic couplant delivery system whenever possible. Care should be taken to use only as much water as required, as excess water in the annulus is undesirable.

6.5 User Calibration Blocks

6.5.1 For general thickness measurements, or the detection of pitting, erosion, or corrosion, user calibration blocks shall be made of an acoustically similar material as that being measured. A standard step block with 0.1 inch or greater increments encompassing the nominal thickness to be measured shall be used.

6.5.2 For weld inspection, crack detection and sizing measurements, user calibration blocks shall be made of an acoustically similar material as that being measured. A standard notched block with 0.1 inch or greater increments encompassing the nominal thickness to be measured shall be used.

6.6 Reference Blocks

Reference blocks (e.g., Rompas, IIW, DSC) utilized for beam angle exit point determination or screen width calibration shall be of similar material composition as the component under examination.

6.7 Pulse Repetition Rate

The repetition rates are set at rates such that signal wrap-around does not occur. In addition, the rates are sufficient to pulse the transducer at least six times within the time necessary to move one-half the transducer dimension parallel to the scan direction at maximum scanning speed.

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## 7.0 CALIBRATION

### 7.1 Verification of Instrument Linearity

Instrument alignment verification for screen height and amplitude control shall have been performed within three (3) months prior to use of the instrument or at the beginning and end of each outage period, whichever is less. Instrument linearity verification is independent of transducer or scanner characteristics. Verification with one transducer/scanner combination is valid for any other combination. The due date for alignment verification shall be recorded on the calibration sheet.

### 7.2 System Parameters

The system parameters used for calibration and examination should be established as outlined in Reference 4.5 as required. The system should be operated in the T-SCAN program for thickness mapping and zero degree inspection and in the P-SCAN program for crack detection, weld inspection and/or additional evaluation.

### 7.3 General Requirements

7.3.1 Calibration shall include the complete ultrasonic examination system. Any change in transducers, wedges, couplants, cables, instruments, recording devices, scanners, power source, or any other parts of the examination system shall be cause for system calibration check.

7.3.2 If a secondary ultrasonic system is to be used, it must be calibrated before the inspection is started and not removed from the examination system during the inspection or recalibration will be required.

7.3.3 System calibration checks and final calibration for instrument sensitivity and sweep range shall be performed on the same block used for initial calibration using at least one reflector. These checks shall be performed:

a) At the start and finish of each series of examinations.
b) At intervals not to exceed 12 hours.
c) When there is a change as described in 7.3.1.
d) If the examiner suspects a malfunction.

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7.3.4 If the horizontal sweep, thickness, or "Z" positions have changed more than 5 percent of the nominal thickness, void all examinations performed after the last valid calibration verification, and reexamine the voided areas.

7.3.5 Calibration checks may be performed on either a reference block or the basic calibration block, but must include a check of the entire examination system. Calibration checks may be accomplished by static or dynamic calibration.

7.3.6 Simulated calibration checks may be used in lieu of calibration checks where the spread of contamination or serious time constraints would result from performing a standard calibration check. Simulated calibration will use blocks, cables, or transducers of similar types and lengths as those used for testing and will be documented on the calibration data sheet. A baseline, simulated calibration shall be performed immediately after performing the initial calibration, or after a calibration check where the entire examination system is utilized. The initial simulated calibration check values are independent of the values obtained utilizing the entire examination system. The established tolerance applies to the subsequent simulated calibration checks.

7.3.7 During calibration, the temperature of the calibration block should be within 25 degrees of the ambient inspection temperature.

7.4 Calibration Process for Thickness Mapping / T-scan

The basic process for calibration is the same for thickness mapping (T-scan), weld inspection, flaw detection, and sizing. The calibration reflectors for straight beam are the backwall reflections from a step wedge. The reflectors for angle beam transducers are the notch base and tips from a notched block. The calibration process is as follows:

7.4.1 Select and connect the appropriate transducer(s), input the parameters, including thickness, frequency, index delay, gates, inspection method(s), and velocity. Apply the couplant to the applicable points on the calibration standard. (Select a sufficiently thin step for detection of unexpected low reading or pits and a step greater than the maximum thickness expected).

7.4.2 Place the transducer(s) on the calibration step nearest to the nominal thickness of the item to be examined. Adjust the gain control to produce a reflection of 80% full screen height (FSH). Input this gain level as the reference level. Obtain a response from the other calibration points, and verify that they produce an acceptable signal. Initial calibration accuracy

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will be within +/- 0.010". in T-scan. Perform steps 7.4.1 and 7.4.2 for each physical transducer being used.

7.4.3 Position the transducer to produce a response from the smaller of the two (2) steps to be used for calibration. Using the scan menu, collect a reading from that step. The transducer may be removed from the scanner and remain stationary "static" while the scanner is manipulated to make a larger indication on the screen.

7.4.4 Position the transducer on the thicker step and collect data from that step. Using the level control, measure the thickness from each step. Adjust the system to read the correct thickness with index delay and velocity if needed.

7.4.5 Repeat these steps as required until the system is accurately measuring the thickness over the entire inspection range with each transducer/active inspection. During initial calibration, all intermediate steps within the inspection range should be confirmed.

7.4.6 The vital parameters used for the calibration shall be identical to the inspection parameters with the exceptions of file name(s), X, Y and Z ranges, reference level compensations, thickness, gates or comment parameters which may be adjusted as required.

7.4.7 At a minimum, readings from the thinnest and thickest calibration reflectors shall be recorded for each applicable transducer on the Automated Ultrasonic Thickness Calibration Sheet (Attachment 4).

7.5 Calibration Process for Weld Inspection / Crack Detection / P-scan

7.5.1 Select and connect the appropriate transducer(s), input the parameters, including thickness, frequency, index delay, gates, inspection method(s), and velocity. Apply the couplant to the applicable points on the calibration standard. The 5%T notch on a 1" thick plate should be used to obtain the reference level.

7.5.2 Manipulate the transducer to receive the maximum response from the reference notch. Adjust the gain control to produce a reflection of 80% full screen height (FSH). Input this value as the reference level. Obtain a response from the calibration reflector and verify that the response is within +/- 2dB.

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7.5.3 Position the transducer to produce a response from the reference reflector. Using the scan menu, collect data from that notch. The transducer may be removed from the scanner and remain stationary "static" while the scanner is manipulated to make an indication on the screen.

7.5.4 Use the level control to determine the peak amplitude and the position of the indication at the peak amplitude. Use index delay and velocity (if required) to adjust the system to plot the reflectors in the appropriate positions. The ID notch should plot on the ID at or near the peak amplitude.

7.5.5 Repeat steps 7.5.2 through 7.5.3 as required for each transducer until the system is calibrated.

7.5.6 The vital parameters used for the calibration shall be identical to the inspection parameters with the exceptions of file name(s), X, Y and Z ranges, reference level compensations, thickness, gates or comment parameters which may be adjusted as required.

7.5.7 The calibration reflector(s) and response shall be recorded for each applicable transducer on the Automated Ultrasonic P-Scan Calibration Sheet (Attachment 7).

7.6 Sizing Calibration for Tip Diffraction Techniques (AATT, RATT)

a) Select an appropriate transducer.

b) Select a sizing calibration block of similar thickness and material containing at least two notches of known depths.

c) For the AATT technique, set at least two gates, to cover the entire area of interest. The first gate in the first leg, ending just before the ID. Position the transducer on the calibration block. Alternately peak the shallow and deep signals from the notch tips (see Attachment 6). Using the index delay and velocity controls, adjust the system until the system correctly reads the remaining ligament with the "Z" cursor.

d) For the RATT technique, the system mode should be set to A-SCAN. Manipulate the transducer until signals are obtained from the shallow notch tip and the notch base simultaneously (see Figure 2, Attachment 6). Using the index delay and velocity, adjust the distance between the two signals to read the actual reflector depth in inches. Repeat the same process on the deep

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notch. Alternate this procedure until the screen/system represents a desirable linear depth screen in inches.

e) Save the calibration, and record this data on the Automated Ultrasonic P-Scan Calibration Sheet (Attachment 7).

## 8.0 EXAMINATION

### 8.1 Surface Condition

8.1.1 The surface from which measurements are to be taken should be free of loose scale, unbonded coating, heavy oxidation, weld spatter, or other material which may interfere with movement of the transducer or the transmission of sound into the material.

8.1.2 A surface finish of 250 RMS or better should be provided. The requesting organization must approve the use of any base material preparation process, which may reduce the thickness below the allowable tolerance.

### 8.2 Extent of Examination

The location of the areas to be measured and/or the number of scans to be performed shall be designated by the applicable work instructions. The location, scan numbers, and reference points of all scans shall be recorded on the applicable data sheets. See attachment 1 for minimum examination volume and beam direction for weld inspection.

NOTE: Additional scan areas will not require revision to this procedure.

### 8.3 Flaw Location

When performing examinations to detect planar flaws, angle beam transducers shall be used. Calibration is performed as in Section 7.5. All angle beam examinations shall be performed in P-scan.

### 8.4 Ultrasonic Measurement

User calibration shall have been completed per the applicable requirements of Section 7.0 prior to performing any of the examinations.

8.4.1 The amplitude of the first back reflection obtained from the item to be examined shall be adjusted as necessary using the Transfer Correction to

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maintain approximately the same amplitude as that used for calibration. The dB value obtained with straight beam transducer should be recorded on the report. This value should be considered during analysis of P-scan angle beam data also.

8.4.2 Transducer overlap between passes shall be a minimum of 50% of the element size. Scanning speed shall not exceed 6 inches per second.

8.4.3 Should measurements be observed larger or smaller than the range calibrated for in Section 6.0, check the calibration for accuracy in the encountered thickness range. If the calibration is accurate in this range, amend the calibration sheet and continue the examination. If the calibration is not within the tolerance allowed in the spec, then recalibrate and rescan all areas where readings were encountered outside the originally calibrated range.

8.5 Limitations and Precautions

8.5.1 Care must be taken to ensure the transducer face is flush with the examination surface during scanning.

8.5.2 When it is necessary to determine the origin of mid-wall indications, a 4MHz shear wave transducer(s) may be used in the P-Scan program to detect pit openings or perpendicular connections between laminar indications.

8.6 Recording

Upon completion of each scan area, the data file(s) shall be recorded on a disk. All measurements within the predetermined gated area are stored, along with the text information with each file.

8.7 General Sizing Guidelines

8.7.1 It is recognized that, of the methods of sizing described in this procedure, no one technique is completely accurate in sizing all flaws in all thicknesses. By using complementary methods, however, a realistic approximation of the flaw depth can be obtained.

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8.7.2 The method of sizing pits is primarily utilizing a zero degree dual element transducer. The 45-degree shear wave transducers may be used to confirm qualitatively the depth of the pit.

8.7.3 When sizing crack-like indications, the entire flawed area shall be scanned with the imaging mode. The entire flaw length shall be evaluated. It is recommended that A-Scans be recorded at the deepest location of the flaw. The primary technique for sizing crack-like indications is the high frequency, 45 degree shear wave transducer utilizing the Absolute Arrival Time Technique (AATT). The dual element, straight beam may be used as a complimentary technique.

8.7.4 Additional sizing technique sequences may be utilized if the primary techniques identified prove to be indeterminable.

8.8 Sizing with Tip Diffraction Techniques (AATT, RATT)

8.8.1 The AATT technique uses shear waves to obtain a diffracted echo (satellite pulse) from the flaw tip (see Figure 1 Attachment 6). The RATT technique uses shear wave reflected signals from both the flaw tip and the flaw base (see Figure 2 Attachment 6). Both techniques can be utilized using the same transducer.

a) AATT Technique

Locate the deepest extremity of the flaw and maximize the signal from the flaw tip. The distance to the flaw tip represents the remaining material ligament from the outside surface. To determine the relative through wall flaw depth, subtract this dimension from the local material wall thickness.

b) RATT Technique

Locate the deepest extremity of the flaw, and obtain a signal from the flaw base. Manipulate the transducer until the doublet (flaw base and tip signal appearing simultaneously) is observed. These signals do not have to be peaked, as the doublet separation directly indicates the relative through wall depth. To determine remaining material ligament, subtract the relative through wall depth measurement from the local material wall thickness.

8.8.2 Other sizing techniques or variations to the techniques may be used with the approval of the UT Level III. Such approval, signature and a

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description of the technique shall be recorded in the "Remarks" column on the Ultrasonic Sizing Calibration Sheet (Attachment 7).

## 9.0 EVALUATION

### 9.1 Relevant Indications

including pitting, thinning and crack-like indications along with the minimum thickness reading in the area of interest shall be recorded and used for evaluation per Paragraph 9.2.

9.1.1 P-scan data shall be evaluated to a sensitivity of 20% reference level (-14dB). All crack-like indications are recordable regardless of amplitude.

9.1.2 T-scan data shall be evaluated utilizing all available images to detect and evaluate indications.

9.1.3 Reportable indications shall be evaluated by Level III personnel prior to final report submittal.

### 9.2 Reporting/Special Criteria

Reporting and special notification criteria are noted in Section 9.8.

### 9.3 Statistical Information

The statistical information (Minimum and Mean thickness) provided under "Setup" pages 1 & 2 of the post-processing software should be reported for each "Part" of a given scan location. Where data noise invalidates these values, the analyst should determine the values using the level control.

### 9.4 Printouts

Printouts should be made in accordance with the customer's request. In absence of further direction, both the merged set-up pages and the merged image, adjusted to show the minimum thickness, shall be printed at a level that best shows the wear patterns or at Nominal T - 12.5%, whichever provides the most useful information. P-scan data should be printed with the level control set at 20% reference level (-14dB).

### 9.5 Recording Crack Size

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9.5.1 All flaw sizing data acquired should be used to determine the flaw depth. This data shall be reported individually for each flaw and shall include all data necessary to achieve the best accuracy of flaw depth.

9.5.2 If, during sizing, a flaw length other than that reported during the detection examination is measured, or other discrepant conditions occur, record the corrected lengths, locations, or distances on the Ultrasonic P-scan Data Report (Attachment 8) in the spaces provided.

9.5.3 If, during sizing, the area is determined not to be flawed, and the resultant reflector(s) is due to component/weld geometry or metallurgical structure, the true origin (e.g., root, mismatch, etc.) shall be documented and substantiated on the Ultrasonic P-scan Data Report.

9.6 Scanning Limitations

Record all limitations due to weld configurations, obstructions, single side access restrictions, etc., in the remarks section on the applicable Ultrasonic Data Report. Details as to specific length or area in relation to L (X) and/or W (Y) reference points should be recorded.

9.7 Flaw Evaluation

Reportable indications shall be evaluated by Level III personnel prior to final report submittal.

9.8 Reporting Levels

All indications which meet or exceed the following conditions shall be reported to the project cognizant engineer.

a) Pit depth exceeds 25% of the wall thickness.

b) Wall thinning exceeds 10% of the wall thickness.

c) Surface crack depths exceeding 0.18 inches.

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## 10.0 REPORTS

### 10.1 Thickness Data Reports

An Automated Ultrasonic Thickness Data Report (Attachment 3) shall be prepared for each examination or series of examinations performed. This report shall include identity of equipment, the thickness measurements obtained, and should be referenced to the calibration sheet.

### 10.2 Calibration Reports

An Automated Ultrasonic Examination Calibration Sheet (Attachment 4) shall be prepared for each examination or series of examinations performed. This report shall include the materials and equipment used for examination.

### 10.3 Sketch Sheets

An Automated Ultrasonic Examination Sketch Sheet (Attachment 5) should be prepared for each examination or series of examinations performed. This report should include identity of scanning equipment and a sketch of the component or item examined, identifying scan locations, including dimensions, reference points, and grid locations, where applicable.

### 10.4 Sizing Data Reports

An Ultrasonic Sizing Data Report (Attachment 8) shall be completed only when cracking is detected. Each report shall be related to the applicable Automated Ultrasonic Examination Calibration Sheet(s).

### 10.5 Cover Sheets

Whenever several locations are being examined on the same conponent an Automated Ultrasonic Examination Report Cover Sheet (Attachment 1) and an Automated Ultrasonic Thickness Report Summary Sheet (Attachment 2) should be completed.

### 10.6 Final Reports

Final reports are to be distributed and maintained in accordance with the applicable contract.

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## 11.0 ATTACHMENTS

11.1 Attachment 1: Examination Volume, Minimum Beam Directions and Extent of Examination

11.2 Attachment 2: Sample Automated Ultrasonic Thickness Data Report

11.3 Attachment 3: Sample Automated Ultrasonic Thickness Calibration Sheet

11.4 Attachment 4: Figure 1: Absolute Arrival Time Technique (AATT)
Figure 2: Relative Arrival Time Technique (RATT).

11.5 Attachment 5: Sample P-scan Calibration Data Sheet

11.6 Attachment 6: Sample Ultrasonic P-scan Data Report

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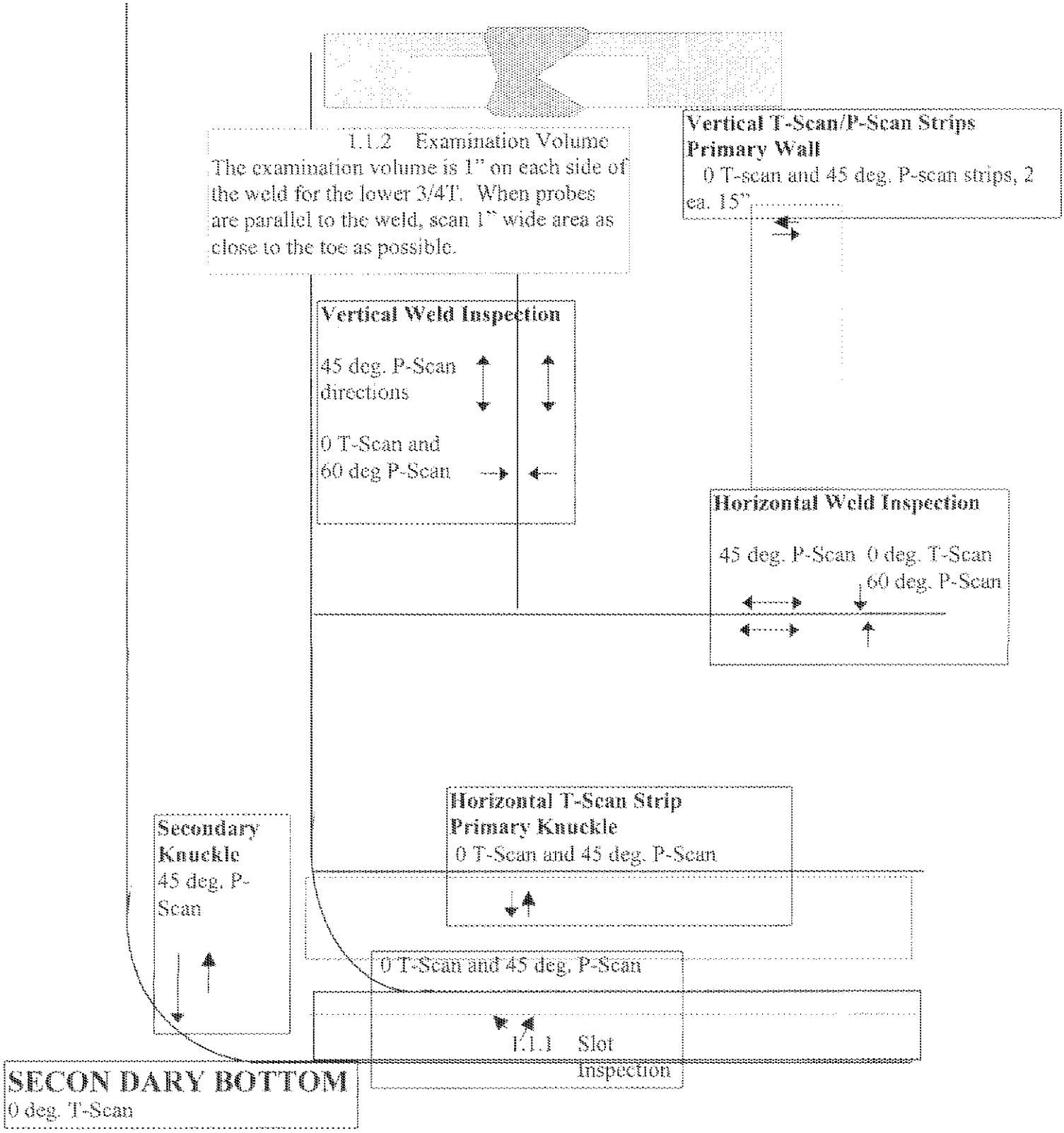
## AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

Attachment 1: Examination Volume, Minimum Beam Directions and Extent of Examination



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## AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

Attachment 1 (continued): Extent of Examination

**Primary Tank Wall**

Vertical Strips - Examine a vertical strip 30" x 35 feet long of the primary wall between the upper haunch transition and the lower knuckle for pits, cracks and wall thinning. Axial cracks on the tank inner wall surface shall be detected and sized. The vertical strip may be comprised of one or more strips whose total width is equal to 30 inches.

Weld Areas - Examine 20 feet of horizontal weld area (heat affected zone), at tank to knuckle weld. Examine one ~10 foot section of vertical weld joining the lowest shell course plates and one ~10 foot section of vertical weld joining the next to lowest shell course plates. Axial and circumferential cracks on the tank inner surface shall be detected and sized.

**Primary Tank Knuckle**

Examine 20 feet of the primary tank lower knuckle in the circumferential direction to detect and size cracking in the circumferential direction and to detect pits and wall thinning. The area to be examined is from the weld joining the transition plate with the knuckle to the furthest reach of the transducer assembly that is allowed by geometric constraints.

**Secondary Tank**

Secondary Tank Lower Knuckle – Examine a 20 foot length of the secondary tank knuckle over the entire area of the knuckle for the presence of circumferential cracks.

Secondary Tank Bottom – Examine the secondary tank bottom over an area of 10 $ft^2$ to detect and measure thickness and pits.

**Primary Tank Bottom**

Examine the primary tank bottom for pits, wall thinning and cracks oriented in the circumferential direction (perpendicular to the air channels) in 16 air channels. The tank bottom is to be examined for a distance of 12 feet towards the tank center, starting seven inches inboard of the outside radius of the tank cylindrical section. The primary tank bottom scan head is designed to examine the accessible area in the air channel in one pass through the channel.

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## AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

Attachment 2: Sample Automated Ultrasonic Thickness Data Report

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### AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION | SYSTEM | EXAM START | EXAM END | JOB # |
| COMPONENT ID | | EXAMINATION SURFACE ☐ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS |
| CONFIGURATION TO | | CALIBRATED RANGE | | TEMP °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED | | REF. LEVEL CORRECTION (TRANS. CORR) DB | | |
| PROCEDURE | REV | MATERIAL TYPE ☐ SS ☐ CS OTHER | | CONDITION |
| FILE NAME/ITEM# | | TRANSDUCER ☐ DUAL ☐ SGL ☐ 0DEG ☐ ANGLE | | |
| $X_0$ REF. POINT ($L_0$) | $Y_0$ REF. POINT ($W_0$) | SCAN WIDTH | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE. THK. | MIN. THK. R. LIG. | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
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## AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

Attachment 3: Sample Automated Ultrasonic Thickness Calibration Sheet

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### AUTOMATED ULTRASONIC THICKNESS CALIBRATION SHEET

| | | | |
|---|---|---|---|
| LOCATION | SYSTEM | CALIBRATION BLOCK | |
| PROCEDURE | | THICKNESS | MATERIAL |
| UT SYSTEM | SERIAL # | REFERENCE BLOCK | |
| SOFTWARE VERSION | REV. | THICKNESS | MATERIAL |
| LINEARITY DUE DATE | | REFERENCE BLOCK TEMP °F | PYRO SN. |
| SCANNER TYPE | SERIAL # | COUPLANT | BATCH # |
| SCANNER CABLE | | CABLE LENGTH | CABLE # |
| SIGNAL CABLE | | CABLE LENGTH | CABLE # |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ. | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |

| INITIAL CALIBRATION | | CALIBRATION CHECKS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | | | | | | | | |
| TIME | | | | | | | | | |
| REFLECTOR | | | | | | | | | |
| CH. 1 | THK. 1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 2 | THK. 1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 3 | THK. 1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 4 | THK. 1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

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## AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

Attachment 4: Absolute Arrival Time Technique (AATT) & Relative Arrival Time Technique (RATT)

**Figure 1.** Absolute Arrival Time Technique

**Figure 2.** Relative Arrival Time Technique

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## AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

Attachment 5: Sample P-scan Calibration Sheet

| 4/00 | AUTOMATED ULTRASONIC P-SCAN CALIBRATION SHEET | |
|---|---|---|

| | | | |
|---|---|---|---|
| LOCATION | SYSTEM | CALIBRATION BLOCK | |
| PROCEDURE | | THICKNESS | MATERIAL |
| UT SYSTEM | SERIAL # | REFERENCE BLOCK | |
| SOFTWARE VERSION | REV. | THICKNESS | MATERIAL |
| LINEARITY DUE DATE | | REFERENCE BLOCK TEMP °F | PYRO SN. |
| SCANNER TYPE | SERIAL # | COUPLANT | BATCH # |
| SCANNER CABLE | | CABLE LENGTH | CABLE # |
| SIGNAL CABLE | | CABLE LENGTH | CABLE # |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ. | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE NOM./ACT | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |

| INITIAL CALIBRATION | | CALIBRATION CHECKS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | | | | | | | | |
| TIME | | | | | | | | | |
| REFLECTOR / ORRIENTATION | | | | | | | | | |
| CH. 1 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| CH. 2 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| CH. 3 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| CH. 4 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| FILE # | | | | | | | | | |
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## AUTOMATED ULTRASONIC EXAMINATION FOR CORROSION AND CRACKING

Attachment 6: Sample P-scan Data Report

| 4/00 | ULTRASONIC P-SCAN DATA REPORT | | | |
|---|---|---|---|---|
| LOCATION | SYSTEM | EXAM START | EXAM END | JOB # |
| COMPONENT ID | | EXAMINATION SURFACE ☐ OD ☐ ID ☐ PAINTED | CONDITION | |
| CONFIGURATION | TO | CALIBRATED RANGE | TEMP °F | |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED | | REF. LEVEL CORRECTION (TRANS. CORR) _____ DB | | |
| PROCEDURE | REV | MATERIAL TYPE ☐ SS ☐ CS OTHER _____ | | |
| FILE NAME/ITEM# | | TRANSDUCER ☐ DUAL ☐ SGL ☐ 60DEG ☐ ANGLE _____ | | |
| $X_1$ REF. POINT ($L_0$) | $Y_1$ REF. POINT ($W_0$) | SCAN WIDTH | | |

| SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|
| 1 45/60 DEGREE SHEAR | | | |
| 2 AATT | | | |
| 3 RATT | | | |
| 4 DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
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# ATTACHMENT 2

## FIELD GUIDE FOR THE DEPLOYMENT, OPERATION, AND RETRIEVAL OF AWS 5D SCANNER AND SLOT INSPECTION SYSTEM FOR DOUBLE-SHELL TANKS

COGEMA-SVUT-INS-007.1, Rev. 0

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# FIELD-GUIDE FOR DEPLOYMENT, OPERATION AND RETRIEVAL OF ULTRASONIC AWS-5d SCANNER AND SLOT INSPECTION SYSTEM FOR DOUBLE SHELL TANK

## 1.0 PURPOSE

This procedure establishes the guidelines for qualified COGEMA NDE staff to safely deploy, operate and retrieve the AWS-5d crawler and Remote Ultrasonic Inspection (RUTI).

## 2.0 SCOPE

This procedure covers the pre and post checks and operational requirements for the deployment of the AWS-5d crawler and RUTI into the double shell tank annulus.

## 3.0 PROCEDURE

Personnel performing work to this procedure must posses familiarity with the equipment and have had hands-on training under the guidance of the NDE engineer/Level III.

3.1 Deployment and Operation of Slot Inspection System

3.1.1 Initial Setup

Ensure an overview camera and lights are installed in an adjacent 4" riser located in the direction of intended motion (CW or CCW from the 24" riser). Ensure the video signal from the overview camera is available at the control center.

**NOTE : The lifting device must be capable of raising the hook 10' above the riser cover and lifting 350 lbs.**

**NOTE : The lifting device must be equipped with a 4' long sling, for use between the hook and deployment pan clevis.**

3.1.2 Ensure an approved lifting device and sling is staged over the riser.

3.1.3 Ensure the temporary riser cover is installed on the riser.

3.1.4 Route control or UT ethernet cables to control point.

3.1.5 Stage both crawlers system at the riser.

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**FIELD-GUIDE FOR DEPLOYMENT, OPERATION AND RETRIEVAL OF ULTRASONIC AWS-5d SCANNER AND SLOT INSPECTION SYSTEM FOR DOUBLE SHELL TANK**

3.2 Prestart Checklist

3.2.1 Ensure the Crawler 1 and 2 bolts and screws are tight. Pay special attention to the fasteners which retain the latch rod, slide rod, and slide rod brackets.

3.2.2 Ensure the deployment arm is oriented correctly for the intended direction of travel around the annulus (CW or CCW). Reverse deployment arm if necessary.

3.2.3 Ensure all wiring connections are made and the crawler, deployment, and camera systems are powered.

3.2.4 Check Crawler 1 operation by confirming proper operation in all directions.

3.2.5 Check Crawler 2 operation by confirming proper operation in all directions.

**CAUTION: Do not fully traverse the deployment arm with the rotator in the "travel" position. Doing so will cause binding between the probe conduit and the traverse actuator, possibly causing damage.**

3.2.6 Check deployment traverse function by traversing arm in both directions. Return arm to center of travel.

3.2.7 Check deployment rotation function by rotating deployment arm in both direction. Fully return the arm to "travel" position.

3.2.8 Ensure the camera system is operating correctly.

3.2.9 Deploy the UT sensor cart or camera probe out of the deployment housing using the probe pusher. Inspect sensor cart or camera probe for loose parts, broken springs, excessive mill scale buildup, etc.

3.2.10 If performing a visual inspection, ensure the lights and camera work properly.

3.2.11 Return the UT sensor cart or camera probe to the deployment housing using the probe pusher. Ensure proper encoder operation.

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3.3 Load Crawlers Onto Deployment Pan

3.3.1 Position deployment pan near riser.

3.3.2 Rotate the deployment arm until sensor cart housing is approximately horizontal. Center the traverse actuator.

3.3.3 Connect lifting device to the deployment pan attachment point.

3.3.3.1 Use duct tape to prevent safety bail releasing sling from hook.

3.3.4 Assure that Crawler 2 has engaged the deployment pan latch by driving both crawlers forward.

3.3.5 Raise the deployment pan with the lifting device slowly and check to ensure crawlers are correctly latched onto the deployment pan and the tether cable is not tangled.

3.4 Lower Crawlers into Annulus

3.4.1 Slowly lower deployment pan into riser using lifting device. Ensure deployment pan bottom is against inside of riser.

**CAUTION - Do not tie off tether cables or apply excessive resistance to the cable when lowering deployment pan into annulus. Doing so could damage the tether cables or result in the crawlers becoming disengaged from the deployment pan.**

3.4.2 Feed tether cable into riser as deployment tool is lowered into annulus. Continue to lower deployment pan until front edge is slightly above the secondary tank bottom.

3.4.3 Use lifting cable to rotate pan until oriented correctly.

3.4.4 Lower pan until back edge touches the annulus bottom.

3.4.5 Back up crawlers until stopped by the latch arm. Raise lifting device until you hear latch arm click on deployment pan.

3.4.6 Rotate the deployment arm until sensor cart housing is approximately horizontal.

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3.4.7 Drive both crawlers in the forward direction until free of deployment pan. Deployment pan may be removed from annulus at this time if required.

3.4.8 Rotate the deployment arm away from the tank until the limit switch is activated ("travel" mode).

3.5 Cable Management Guidelines

During movement of the crawler system around the tank annulus, continuous tether cable management will be required at the riser. The NDE person assigned this responsibility will need to have open communication to the crawler Operator.

**WARNING: Do not move a crawler without maintaining visual contact with BOTH crawlers via the overview camera.**

3.5.1 Using the overview camera, feed tether cable as necessary to limit the amount of cable laying on the annulus floor.

3.5.2 Use caution when navigating around the 4" airpipes located in the annulus. Their height off the floor and shape are ideal for causing the tether cable to become wedged underneath. Apply extra tension to the cable to maintain the cable off the floor.

3.5.3 If the tether cable becomes caught in an annulus obstruction, stop crawler movement, analyze the situation, and take appropriate action. In many cases it may be possible to reverse direction and use the crawlers to pull the cable free, assuming the cable is caught relatively close to the crawlers.

3.6 Perform Visual Exam of Airslot

**NOTE: Steps may be performed in any sequence.**

3.6.1 Position Crawler 1 and 2 in close proximity of the specified airslot.

3.6.2 Traverse the deployment arm away from the tank until the end of travel limit switch is activated.

3.6.3 Rotate the deployment arm towards the tank to use as a guide for aligning the crawlers with the airslot.

3.6.4 Position Crawler 1 approximately ½" - 1 ½" (as measured from the outside edge of the near track) away from and tangent to the insulating concrete.

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3.6.5 Rotate the deployment arm toward the tank until the camera probe is angled slightly downward.

3.6.6 Check for proper position and alignment of the sensor cart housing with the airslot using the onboard and overview cameras. Reposition the crawlers as necessary.

3.6.7 Traverse and rotate the deployment arm toward the tank until the camera probe is almost fully enclosed by the sides of the air slot.

3.6.8 If the end of travel limit switch is activated before the slot camera probe is sufficiently enclosed by the sides of the slot, repeat steps 3.6.1 through 3.6.10 with the crawlers positioned closer to the insulating concrete.

3.6.9 Position Crawler 2 as needed to minimize the bend angles in the probe pusher-intercomecting conduit.

3.6.10 Zero encoder reading.

**CAUTION - During deployment and retrieval of the camera probe, the probe must be enclosed by the air slot walls to provide alignment with the deployment arm. Attempting to deploy the camera probe when outside the airslot will cause misalignment with the deployment arm and make it impossible to fully retract the camera probe which could result in damage to the equipment.**

**CAUTION - Great care must be exercised during deployment of the camera probe if the tank brush is in place. The operator deploying the camera probe must watch for objects that project down into the airslot or up from the bottom to ensure that the brush does not become compressed too far and wedge the camera probe in the airslot.**

3.6.11 Advance the camera probe into the airslot until the desired distance is indicated on the encoder readout. If camera probe motion becomes inhibited retrieve the probe and move to another slot. **DO NOT ATTEMPT TO FORCE THE PROBE.**

3.6.12 Traverse the deployment arm away from the tank until the end of travel limit switch is activated.

3.6.13 Rotate the deployment arm away from the tank until the end of travel limit switch is activated ("travel" mode).

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3.6.14 Proceed to the next designated airslot and repeat Section 3.6.1.

3.7 Perform UT Exam of Airslot

**NOTE: Steps may be performed out of sequence.**

3.7.1 Position Crawler 1 and 2 in close proximity of the specified airslot.

3.7.2 Traverse the deployment arm away from the tank until the end of travel limit switch is activated.

3.7.3 Rotate the deployment arm towards the tank to use as a guide for aligning the crawlers with the airslot.

3.7.4 Position Crawler 1 approximately ½" - 1 ½" (as measured from the outside edge of the near track) away from and tangent to the insulating concrete.

**NOTE: Crawlers 1 and 2 may be repositioned as needed during the performance of the following steps.**

3.7.5 Rotate and traverse the deployment arm toward the tank until contact is made with the bottom of the airslot.

3.7.6 Check for proper position and alignment of the sensor cart housing with the airslot using the onboard and overview cameras. Reposition the crawlers as necessary.

3.7.7 Traverse the deployment arm away from the tank until the end of travel limit switch is activated.

3.7.8 Rotate the deployment arm until the top of the sensor cart housing is angled slightly down (5 - 10 deg. from horizontal).

3.7.9 Traverse the deployment arm towards the tank until the front edge of the deployment housing contacts the tank knuckle.

3.7.10 If the end of travel limit switch is activated before contact with the tank knuckle occurs, perform one of the following:

3.7.10.1 Slightly rotate the deployment arm away from tank until contact is made or the sensor cart housing reaches horizontal.

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**OR**

3.7.10.2 Repeat steps 3.7.1 through 3.7.10 with the crawlers positioned closer to the insulating concrete.

3.7.11 Position Crawler 2 as needed to minimize the bend angles in the probe pusher-interconnecting conduit.

3.7.12 Zero encoder reading.

3.7.13 Rotate and traverse the deployment arm until contact is made with the bottom of the airslot.

**CAUTION: If during the performance of the following step, excessive resistance is encountered, as indicated by Crawler 1 being moved by the deployment arm, carefully reposition Crawler 1 until acceptable. Attempting to deploy the sensor housing when misaligned with the airslot could result in damage to the equipment.**

3.7.14 Simultaneously traverse the arm away from the tank while rotating the arm towards the tank until the sensor cart housing is approximately horizontal.

3.7.15 Continue to advance the sensor cart into the airslot until the desired distance is indicated on the encoder readout. If sensor cart motion becomes inhibited, pull cart back 2 ft - 3 ft and retry.

3.7.16 After sensor cart is at the desired position, rotate the deployment arm away from the tank until the top of the sensor cart housing is approximately horizontal.

3.7.17 Traverse the deployment arm towards the tank until the front edge of the deployment housing contacts the tank knuckle.

3.7.18 Pull probe tube back until motion of the sensor cart is detected by the UT system.

3.7.19 Zero encoder reading.

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3.7.20 Perform the UT examination of the airslot in accordance with UT Procedure. Minimize water addition to tank by turning off couplant flow when not performing scanning operations.

3.7.21 When UT scan is complete, ensure sensor cart is fully retracted into the deployment housing.

3.7.22 Traverse the deployment arm away from the tank until the end of travel limit switch is activated.

3.7.23 Rotate the deployment arm away from the tank until the end of travel limit switch is activated ("travel" mode).

3.7.24 Proceed to the next designated airslot and repeat Section 3.7.1.

3.8 Remove Crawlers From Annulus

3.8.1 If previously removed, lower deployment pan into annulus and orient pan correctly by rotating the lifting device hook.

3.8.2 Feed cable from the lifting device until cable is completely slack at the deployment pan attachment clevis. Latch arm should be horizontal.

3.8.3 Rotate the deployment arm until sensor cart housing is approximately horizontal. Center the traverse actuator.

3.8.4 Align crawlers with deployment pan and drive in reverse until motion is stopped by the latch arm.

3.8.5 Drive crawlers in the forward direction until motion is stopped by the latch arm. This indicates the latch arm is engaged.

3.8.6 If the latch arm does not engage, ensure lifting device cable is slack. Repeat steps 3.8.2 and 3.8.5.

3.8.7 Rotate the deployment arm away from the tank until the limit switch is activated ("travel" mode).

3.8.8 Slowly raise deployment pan to the vertical position.

**CAUTION: Do not apply excessive upforce to the tether cable when raising the deployment pan out of the annulus. Doing so could damage the tether cable or**

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**result in the crawlers becoming disengaged from the deployment pan. Maintain a slightly noticeable amount of slack in the tether cable at all times.**

3.8.9 Ensure the lifting cable is centered in the riser.

3.8.10 Continue to raise the deployment pan until just below the annulus dome.

3.8.11 Allow deployment pan swinging to subside prior to raising the deployment pan into the riser.

3.8.12 Use the overview camera, installed in an adjacent riser, to ensure the deployment pan starts into the riser entrance without binding.

3.8.13 Slowly raise the deployment pan until suspended above the riser.

3.8.14 Install the temporary cover.

3.8.15 Position deployment pan to side of riser and lower to ground.

3.8.16 If system will not be re-deployed for an extended period of time, or severe weather conditions are expected, bag up crawler system and deployment pan or move to a protected location to prevent damage from rain or excessive dust.

3.9 End of Day Configuration

The UT system will require reverification of calibration at the beginning of each day, therefore the crawler system should be removed from the annulus at the end of the day per Section 3.8 and the following items checked:

3.9.1 Check for any loose bolts or screws.

3.9.2 Check slide and slide rod brackets for damage.

3.9.3 Check all cables for cuts and damaged connectors.

3.9.4 Clean and remove dust and scale from magnets and crawler wheels.

3.9.5 Examine ZETEC Probe pusher drive wheels for damage and replace if required.

3.9.6 Examine crawler wheels for oil leaks.

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# FIELD-GUIDE FOR DEPLOYMENT, OPERATION AND RETRIEVAL OF ULTRASONIC AWS-5d SCANNER AND SLOT INSPECTION SYSTEM FOR DOUBLE SHELL TANK

## 4.0 DEPLOYMENT AND OPERATION OF AWS-5d SCANNER

4.1 Perform Primary and Secondary Tank Wall Inspection

**NOTE: During deployment/retrieval operations communication will be maintained between the riser personnel in the tank farms, and inspection personnel.**

4.1.1 Perform a pre-deployment operational inspection of the scanner, deployment tool and water system.

4.1.2 Prior to deployment position overview camera in four-inch riser to guide in deployment and inspection. Record during the entire deployment and UT inspection of the double shell tank. The videotape shall identify day, time and location.

4.1.3 Connect hoist to deployment tool; secure safety line to the scanner and deployment tool. Secure the safety line to the safety handrail. Place the deployment crank assembly on the twenty-four inch flange. Lower deployment tool into the tank annulus and position on either primary or secondary tank wall.

4.1.4 Once positioned use the deployment crank to position the deployment tool securely against the tank wall.

4.1.5 Drive the AWS-5d scanner off deployment tool platform and position scanner approximately two-feet to the side of the deployment tool.

4.1.6 To retract the deployment tool, release the tension on deployment crank. When deployment tool is in the vertical position remove from tank annulus. Remove the deployment crank from twenty-four inch riser flange.

4.1.7 Place second over view camera system in the twenty-four inch riser and start the UT inspection. Personnel at riser will manage cable as the scanner moves about in annulus of tank.

4.1.8 For removal or re-positioning of the AWS-5d scanner, first remove camera system from twenty-four inch riser. Replace deployment crank onto the twenty-four inch riser flange and lower deployment tool into tank annulus. Position deployment tool on the primary or secondary tank wall. Use the deployment crank to position the deployment tool securely to the tank wall. Drive AWS-5d scanner onto the deployment platform and

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release the tension on the deployment crank until deployment tool is vertical. The scanner can then be removed or re-positioned.

4.1.9 To re-position, follow steps 4.1.4, 4.1.5, 4.1.6, and 4.1.7.

## 5.0 PERFORM SECONDARY TANK BOTTOM INSPECTION

5.1 Lower deployment tool to the bottom of the tank annulus until deployment platform is positioned flat on the secondary tank bottom. Drive AWS-5d off platform.

5.2 Remove deployment tool from tank annulus.

5.3 Place secondary camera system back into twenty-four inch riser and start UT inspection.

5.4 To remove the AWS-5d scanner from secondary tank bottom, first remove the secondary camera system.

5.5 Lower the deployment tool to the secondary tank bottom until deployment platform is positioned flat on the secondary tank bottom.

5.6 Drive the AWS-5d scanner onto deployment platform and retrieve from tank annulus.

## 6.0 END OF DAY CHECKLIST

6.1 Examine all belts for wear and damage, replace as required.

6.2 Remove all scale and dust from magnets and crawler wheels.

6.3 Examine all electrical connections for damage, repair as required.

6.4 Check all screws and nuts for tightness.

# ATTACHMENT 3

## PACIFIC NORTHWEST NATIONAL LABORATORY REPORT ON PERFORMANCE DEMONSTRATION TEST – PDT, MAY 2000

Pacific Northwest
National Laboratory
Operated by Battelle for the
U.S. Department of Energy

August 22, 2000

Mr. Chris E. Jensen
CH2M Hill Hanford Group, Inc.
P.O. Box 1500 – MS R1-04
Richland, WA 99352-1505

Dear Mr. Jensen,

Attached is a copy of the PNNL report describing the results of its evaluation of the Performance Demonstration Test that was given by PNNL to COGEMA Engineering Corporation in May 2000.

If there are questions or if additional information is needed, please contact me.

Sincerely,

Allan F. Pardini

Allan F. Pardini

Attachment: "Report on Performance Demonstration Test – PDT, May 2000"

cc: G.J. Posakony – PNNL
T.T. Taylor - PNNL

902 Battelle Boulevard • P.O. Box 999 • Richland, WA 99352

# Report On Performance Demonstration Test PDT, May 2000

August 2000

Allan F. Pardini and Gerald J. Posakony
Pacific Northwest National Laboratory

## Summary

CH2M HILL HANFORD GROUP, INC. (CHG) has contracted with COGEMA Engineering Corporation (COGEMA) to provide examination of portions of selected double-shell tanks located in the 200E Area of the Hanford Complex during fiscal year 2000. The requirement was to examine portions of the primary tank wall, vertical and circumferential welds in the primary tank wall, primary tank knuckle, secondary tank knuckle, secondary tank bottom or floor that lies between the secondary and primary tanks, and air slots under the primary tank bottom. The requisite was to detect and characterize wall thinning, pit corrosion, cracks or other anomalies that might be present in the primary tank.

As part of the contract, COGEMA was required to satisfactorily complete a performance demonstration test (PDT) on a mock-up of the double shell tank to qualify their ultrasonic system prior to initiating the field examination of selected double-shell tanks. The Pacific Northwest National Laboratory (PNNL) was contracted by CHG to develop and implement the PDT and to evaluate and verify that the system met the requirements defined in RPP-5583, *Engineering Task Plan for the Ultrasonic Inspection of Hanford Double-Shell Tanks – FY2000* (ETP). Meeting the ETP requirements was the basis for qualifying the personnel, ultrasonic equipment and test procedure used by COGEMA.

The following summarizes the activities relating to the qualification of the personnel, procedure and ultrasonic test equipment for the examination of portions of selected double-shell tanks. Examination of the underneath portion of the primary tank utilizing existing air slots (vents) was not anticipated during FY2000. Therefore, the PDT did not cover the air slot examination. When an examination of the underneath portion of the primary tank is anticipated an additional PDT will be performed to qualify personnel, procedure and ultrasonic test equipment for air slot examinations.

- Personnel associated with the ultrasonic examination provided documentation that established they met all requirements set forth in the ETP.
- An ultrasonic test procedure for the examination of the double shell tank was developed by COGEMA.
- PNNL fabricated the special test plates and designed the experiments for the PDT. In designing the experiment, PNNL followed guidelines established by American Society of Mechanical Engineers (ASME) Section XI, Appendix VIII.
- The PDT was carried out in the 306E building in the 300 Area. The special test plates were mounted on a fixture for the PDT.
- The PDT consisted of examination of these special test plates that contained actual or simulated types of defects (stress-corrosion cracks, pitting and wall thinning) that might be present in the double shell tanks. These plates were installed on the fixture and were scanned with the ultrasonic system.
- Results showed that all of the defects in the PDT test plates were detected and correctly characterized. Defects were sized within requirements defined in the ETP for the various types of defects.

- The analysis of the data showed that the system (including personnel, procedure and equipment) met the requirements stated in the ETP and the system was judged to be qualified to perform the tank examinations.

This report is divided into four parts: 1) general information, 2) development and implementation of the PDT, 3) independent evaluation of the results of the PDT, and 4) references.

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2.0 Performance Demonstration Tests ..... 3

2.1 Developing the PDT ..... 3

2.2 Implementation of the PDT ..... 7

3.0 Results of the Performance Demonstration Tests ..... 8

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## 1.0 General Information

The contract initiated between CH2M HILL HANFORD GROUP, INC. (CHG) and COGEMA Engineering Corporation (COGEMA) required qualification of personnel participating in the program, the ultrasonic nondestructive test equipment (instrument and mechanical scanning fixture) and the ultrasonic test procedure that was to be used in the examination of the tank. Personnel participating in the examinations were to be certified in accordance with American Society for Nondestructive Testing (ASNT) Guideline SNT -TC-1A-92 and appropriate documentation was to be provided. The capability of the ultrasonic system was to be validated through the performance demonstration test (PDT) on test plates. The procedure for the ultrasonic examination was to be based on Section V, Article 4 of the ASME Boiler and Pressure Vessel.

The ultrasonic examination was to detect, characterize (identify, size and locate) and record all measurements made in the tank and to report specifically on:

- Wall thinning that exceeded 10% of the plate thickness
- Pits with depths that exceeded 25% of the wall thickness
- Stress-corrosion cracks located in the wall of the primary tank that exceeded a depth of 0.187 in.[1]

The accuracy for depth measurements for the different types of defects was defined as follows:

a. Wall thinning - - measure thickness within +/- 0.02 in.
b. Pits - - size depths within +/- 0.05 in.
c. Cracks - - size the depths of cracks on the inner wall surfaces within +/- 0.10 in.
d. Location - - locate all reportable indications within +/- 1.0 in.

All examinations in the tank were to be performed remotely using magnetic-wheel crawlers that could attach to the tank wall or special robotic manipulators that could be deployed into the air slots under the tank. Data were to be recorded on disk and hard copies of all records were to be provided to CHG.

## 2.0 Performance Demonstration Tests

### 2.1 Developing the PDT

Overview - - As its guideline for developing the PDT, PNNL used the procedure described in ASME Section XI, Appendix VIII. While this appendix does not specifically pertain to the examination of radioactive waste tanks, it does provide an excellent base for developing a PDT. It describes the requirements for qualifying personnel, outlines a means for verifying the capability of the ultrasonic equipment, and provides a means for establishing that the ultrasonic test procedure can provide measurements to a defined accuracy.

The PDT given to COGEMA in FY2000 included testing for examination of portions of the primary tank wall, vertical and circumferential welds in the primary tank wall, primary tank knuckle, secondary tank knuckle, secondary tank bottom or floor that lies between the secondary and primary tanks. The FY2000

[1] All historical dimensioning for the design, development and construction of this tank is in English units; consequently, English units are the primary units used in this report. To convert to metric, use 1.0 in. equals 25.4 mm.

PDT did not include testing for the examination of the under tank portion of the primary tank that is accessed through the air slots.

One of the criteria for developing a PDT is to acquire a sufficient number of test specimens that contain defects typical of those that might be found during an actual examination so as to establish a statistical base for qualifying the system. A second criterion is to establish a test site or mock-up that simulates constraints and conditions (excluding radiation) that are anticipated during a field examination. Appendix VIII outlines a process for using the data recorded by the analyst and comparing it with data from PDT test specimens to establish the probability that the ultrasonic system (including personnel, equipment and test procedure) can meet the requirements. It also provides the basis for determining the sizing accuracy of the ultrasonic system and the probability that this system can find defects in the tanks.

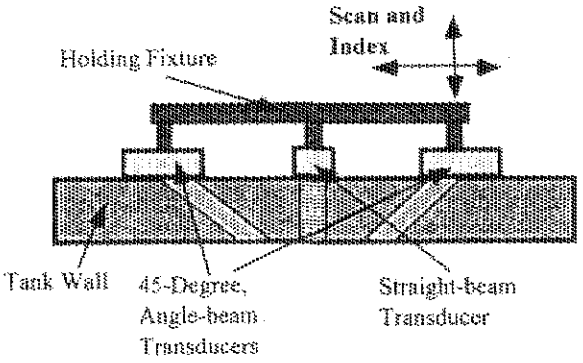
**Personnel Qualifications** - - Mr. Wesley Nelson, ASNT Certified Level III in ultrasonics, was identified as COGEMA's UT Level III authority for this project. Documentation was provided to establish his qualifications. COGEMA also provided two ultrasonic Level II's to work with Mr. Nelson. The first was Mr. Jon Elliott who is ASNT Certified Level III in ultrasonics. The second is Albert Smith who is a COGEMA certified Level II in ultrasonics. COGEMA requested a peer review of all tank data from Mr. James Elder of Swain Distribution Inc. (ASNT Certified Level III in ultrasonics). Mr. Elder performed much of the data analysis on previous examined tanks (see PNNL report number 11971 on tank 241-AN-107 as an example). All of these men had special training in detection and sizing of stress corrosion cracks that is one of the requirements established in the ultrasonic test procedure.

**Ultrasonic Test Equipment** - - CHG provided the ultrasonic equipment for the PDT. This equipment consisted of a FORCE Institutes P-Scan ultrasonic test instrument and their AWS-5 remote-controlled, magnetic-wheel crawler for examining the waste tanks. Ultrasonic transducers used for the examinations were provided by COGEMA. Ultrasonic transducers used in the PDT were commercial units purchased for the examinations.

**Ultrasonic Examination Test Procedure** - - COGEMA provided the ultrasonic test procedure for the examination of the double shell tanks. This procedure, dated May 24, 2000 -- Revision 0, outlined the type of ultrasonic and mechanical equipment that was to be used as well as the types of transducers. Both straight-beam and angle-beam transducers were proposed for the examination of the various sections of the waste tank. The test procedures included full documentation on methods for calibration, examination and reporting. Hard copies of the T-Scan (thickness) and P-Scan (projection or angle beam) views of all areas scanned were made available to PNNL for interpretation and analysis. The ultrasonic test procedure required use of specific ultrasonic transducers for the different examinations. A calibration performed before and after the examinations verified that the equipment performed correctly throughout the examination.

**Characteristics of Ultrasonic Transducers** - - The ultrasonic procedure described the general type and operating frequency of the ultrasonic transducers. In addition, the transducers that were to be used for the various inspections were identified and characteristics of these units were recorded. Characterization records are available in the project file. Figures 2.1 and 2.2 provide details on the actual configurations for the various examinations.

The functional diagram in the Figure 2.1 sketch shows one straight-beam and two angle-beam transducers ganged together. The straight beam is designed to detect and record wall thinning and pits, and the angle-beams are designed to detect and record any cracking that may be present. These transducers are attached to the scanning bridge and they all move together. Information is captured every 0.01 in. as the assembly is scanned across a line. At the end of each scan the fixture is indexed 0.10 in. and the scan is repeated. The mechanical scanning fixture is designed to scan a maximum of 15 in. and then index for the next scan. The hard copy provides a permanent record that is used for the subsequent analysis.

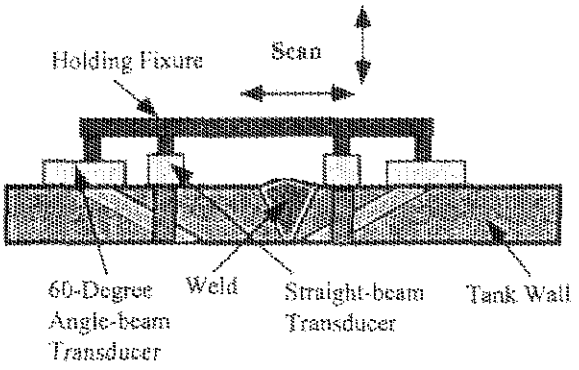



*Transducer Specifications:*

**Angle-beam**
Type: MWB-45 04E
Frequency : 4 MHz
Size: 8 X 9 mm.
Manufacturer: Krautkramer

**Straight-beam**
Type: MSEB 5B
Frequency: 5 MHz
Size: Dual - 8 X 2 mm
Manufacturer: Krautkramer

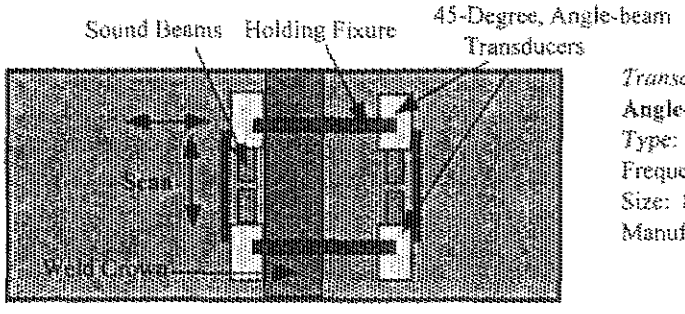
**Figure 2.1 Transducer Configuration for Examining the Primary Tank Wall, Primary Tank Knuckle and the Floor between the Primary and Secondary Tanks**




*Transducer Specifications:*
**Angle-Beam**
Type: MWB-60 04E
Frequency: 4 MHz
Size: 8 X 9 mm
Manufacturer: Krautkramer

**Straight-beam**
Type: MSEB 5B
Frequency: 5MHz
Size: Dual - 2 X 8 mm
Manufacturer: Krautkramer

**A. Configuration for pitting and cracks parallel to weld**




*Transducer Specifications:*
**Angle-beam**
*Type:* MWB-45 04E
Frequency: 4 MHz
Size: 8 X 9 mm
Manufacturer: Krautkramer

**B. Configuration for cracks perpendicular to weld**

**Figure 2.2 Transducer Configurations for Examination of Welds in the Primary Tank Wall**

Figure 2.2 is a functional sketch that shows the configurations for examination of the weld zone. The area of interest (heat-affected zone of the weld) is shown as lying adjacent to the weld. Cracks, corrosion, and pitting may occur in this region. The "A" portion of this sketch shows the 60-degree, angle-beam transducers used for detecting cracks parallel to the weld. The straight-beam transducers in this sketch are used for detecting and recording any pitting or wall thinning that may be present. All transducers are ganged together. The scanning distance traveled is limited to a total of 5.0 in. The sketch titled "B" shows the arrangement for detecting cracks that may lie perpendicular to the weld. Four 45-degree, angle-beam transducers are used for this inspection. Again the transducers are ganged together but the scan is limited to a total of 4.0 in. The scan protocol, data capture and index is the same for examining other welds in the tank. The mechanical fixture used for the examination of the tank wall was also used for inspecting the weld zone. It is shown in Figure 2.3.

<u>Test Plates</u> - - Performance demonstration tests are designed as blind tests. The number, type, location and size of natural or artificial flaws or blanks (no flaw regions) are unknown to the inspectors. The tests are designed to provide statistical information on accuracy, repeatability and location. For the PDT, PNNL developed a series of test plates for the performance demonstration tests (PDT test plates) that contained laboratory-grown stress-corrosion cracks, simulated pitting (round-bottom holes), and wall

thinning. A total of 11 plates and approximately 35 defects of different types and sizes were configured for the PDT. The wall thinning and pit depth values were established by micrometer measurements. The crack depths were established by averaging estimates provided separately by five individuals. The PNNL values for flaw size are described as "measured values" and are shown on the curves as ideal performance.

To evaluate the data provided by the analyst, each plate was marked with a grid pattern and each square of the grid was identified as a "flaw-grading unit" or "blank-grading unit" following the procedure described in Appendix VIII. Defects at the various grid locations were of known size and depth. Use of the grid patterns provided the means for determining the location accuracy of the recorded data. By comparing the "measured values" with the data recorded by the COGEMA team on the log sheets and hard-copy printouts from the PDT, an evaluation of the capability of the ultrasonic equipment, competence of persons analyzing the data and effectiveness of the test procedure could be established. These analyses were used as the basis for acceptance/rejection of the ultrasonic system. They provided data on "false calls", root-mean square (RMS) accuracy of the test results as compared to known flaw types and sizes, and the probability that the ultrasonic system could meet requirements for examining portions of selected double-shell tanks.

### 2.2 Implementation of the PDT

COGEMA provided a mock-up that simulated the double shell primary tank wall, primary and secondary knuckle and secondary tank bottom. In addition, they fabricated as a special mock-up to simulate the air slots under the primary tank. These were installed in the 306E Building in the 300 Area. Since the basic P-Scan crawler system had already been evaluated in the 1998 PDT it was not necessary to demonstrate the crawler scanning the test plates on the mock-up. To perform the PDT, the magnetic-wheel crawler and scanner containing the ultrasonic transducers was placed on the floor on an adjacent carbon steel plate and maneuvered over the test plate to be examined. Data was recorded from each of the plate specimens.

Figure 2.3 is a photo of the magnetic wheel scanner. This crawler can be programmed to scan a width up to 15-in. wide for inspection of the primary tank wall and the secondary tank bottom. The crawler can be programmed to cover shorter distances for scanning tank knuckles or welds as required.

To examine the tank wall, knuckle regions of the primary and secondary tanks and the secondary to primary tank bottom, the set of transducers shown in Figure 2.1 were used. The straight-beam transducers were used for examination of the primary tank wall, knuckle regions of the primary and secondary tanks and the primary to secondary tank bottom to detect and characterize wall thinning and pitting. The pair of 45-degree, angle-beam transducers was used to characterize cracks.

Two transducer sets were used to perform weld examinations. One pair of 45 degree, angle-beam transducers was used to characterize cracks in the primary tank wall lying perpendicular to the weld. The second set was used with straight-beam and angle-beam transducers to detect and characterize wall thinning, corrosion, and cracks lying parallel to the weld.

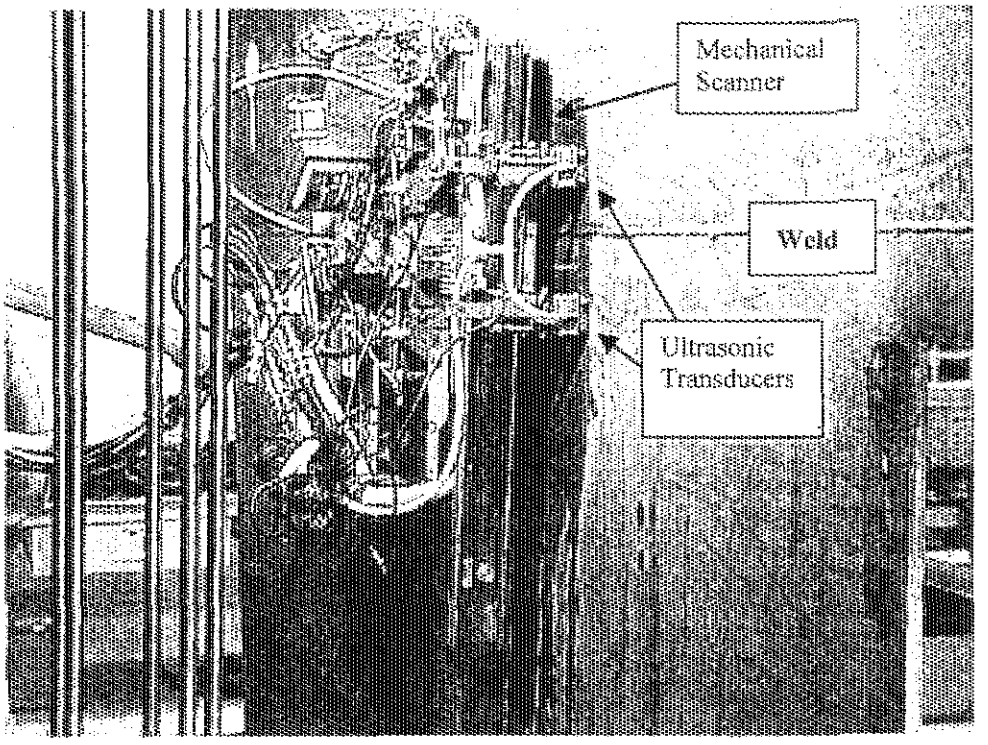



**Figure 2.3 Magnetic Wheel Mechanical Scanning Bridge and Transducer Assembly**

## 3.0 Results of the Performance Demonstration Tests

This section describes the results of the examinations performed on the performance demonstration test plates located in the 306E Building in the 300 Area of the Hanford Complex. In all cases, a pressurized water-couplant technique was used to assure good coupling between the transducer and the test plates. An ultrasonic calibration reference block was used to adjust the system sensitivity of the ultrasonic instrument and its time-base response. Differences between the calibration block response and the response received from the plate under test were noted in the reports. Each of the defect categories such as wall thinning, pitting and stress corrosion cracks is discussed separately. A comparison is made between the accuracy requirements as stated in the ETP and the results obtained by COGEMA.

**Wall Thinning in the Tank Wall** - - Figure 3.1 describes the PDT results reported for wall thinning. The dotted line is based on the PNNL measurements and is identified as ideal performance. The solid line plot is the straight-line interpolation of the data provided by the COGEMA team. Comparing the two plots shows the relationship between ideal and actual performance. The specification defined an accuracy requirement of +/- 0.020 in. The analysis of test results established a wall thinning measurement accuracy within a RMS value of 0.012 in. This is within the required measurement accuracy.

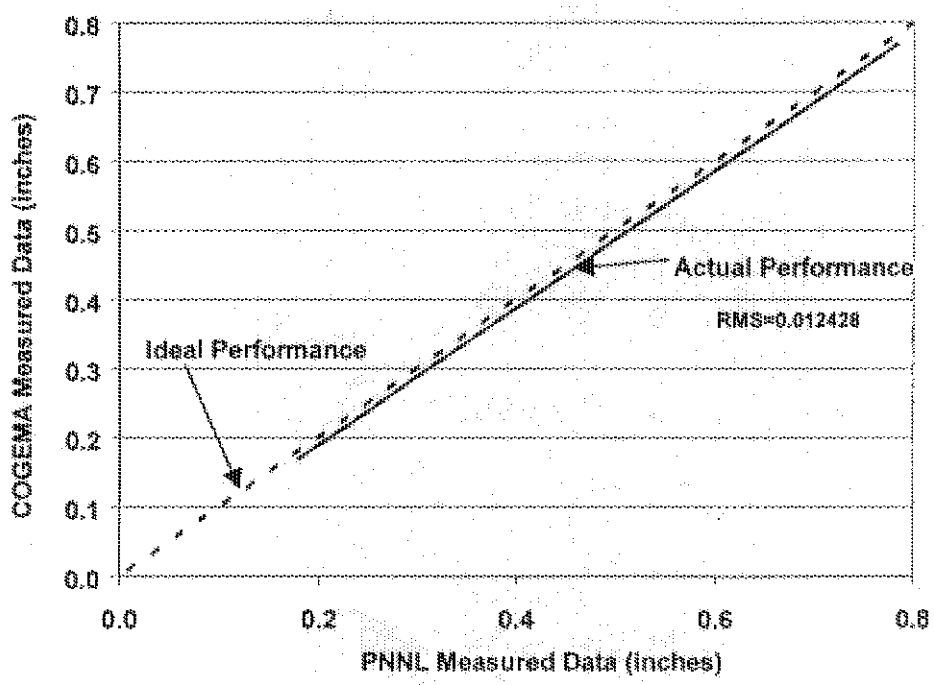



**Figure 3.1 Measurement of Tank Wall Thinning using the PDT Test Plates**

<u>Pitting in the Tank Wall</u> - - Figure 3.2 describes the PDT results for characterizing pitting. The pits in the test plates were fabricated with a round bottom drill of different diameters. The pits were located on a grid pattern on the test plates and were machined to different depths. With one exception, all pits in the test plates were detected and properly classified. The exception was detected with the angle beam but was not recorded as a pit. This pit was a very shallow pit.

The specification defined the accuracy requirements for measurement of pits as +/- 0.05 in. The evaluation of the results provided by the COGEMA team established their pit depth measurement accuracy at an RMS value of 0.014 in. This is within the required measurement accuracy.

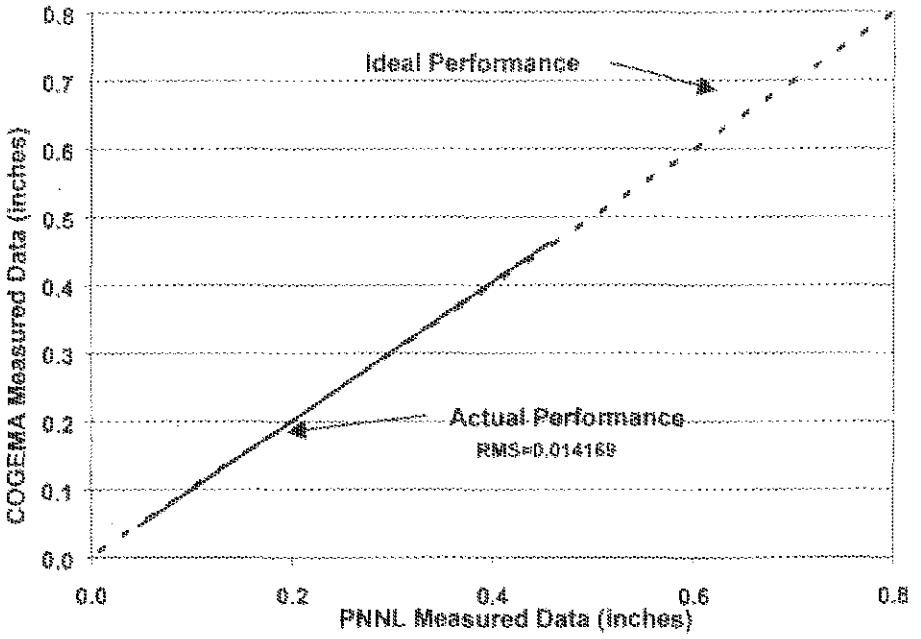



**Figure 3.2 Measurement of Depth of Simulated Pits using the PDT Test Plates**

<u>Cracks in Primary Tank Wall</u> - - Figure 3.3 describes the PDT results reported for cracks in the PDT test plates. All cracks in the test series were detected and accurately classified as cracks. The specification defined the accuracy requirements for through wall measurement of stress corrosion cracks at +/- 0.10 in. The analysis of the hard copy and data reports established the RMS value for crack depth measurement at 0.058 in. This is within the required measurement accuracy.

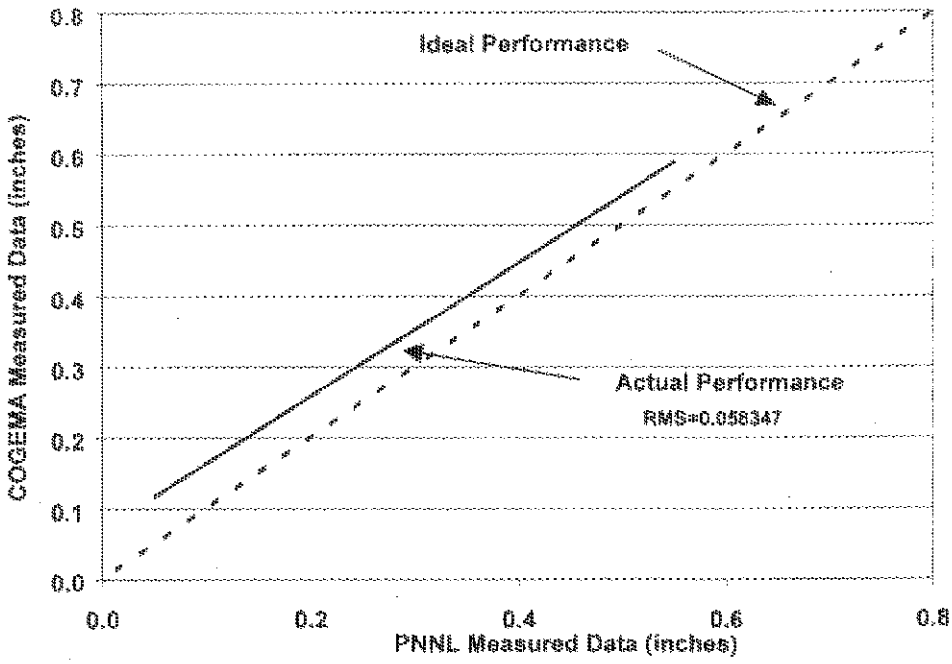
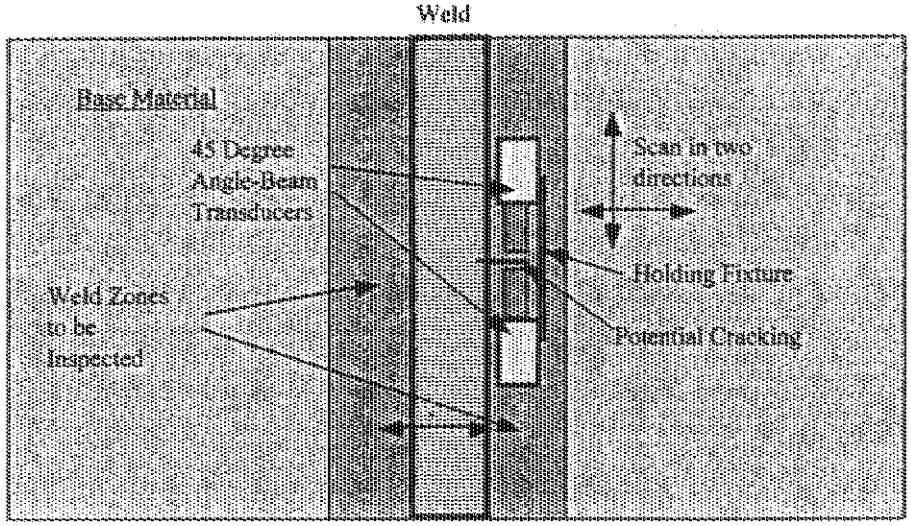
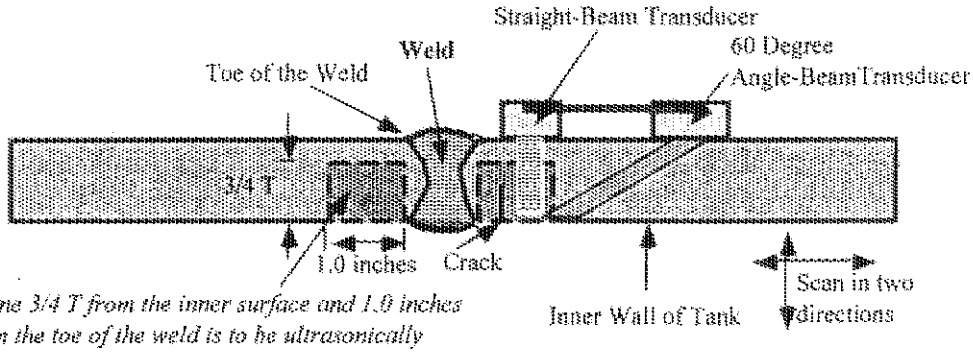



**Figure 3.3 Measurement of Crack Depths in the Primary Tank Wall using the PDT Test Plates**

<u>**Cracks in the Heat-Affected Zone of Vertical and Horizontal welds**</u> - - In the heat-affected zone, the requirement for characterizing cracks that lie perpendicular or parallel to welds in the primary tank wall is described in Figure 3.4. The weld zones are located on either side of the weld and defined as being within 1.0 in. of the weld and on the inner three-quarters of the thickness (3/4T) of the plate. These zones are considered most likely to experience stress-corrosion cracking.




Top View - - - Cracks Perpendicular to Weld




*A zone 3/4 T from the inner surface and 1.0 inches from the toe of the weld is to be ultrasonically examined for cracking, corrosion or pitting. Examinations to be made on both sides of the weld.*

End View - - - Cracks Parallel to Weld

**Figure 3.4 Views of the Weld Zones to be Ultrasonically Examined in the Primary Tank Wall**

Two ultrasonic test techniques were used to detect the cracks. The first used two sets of 45-degree, angle-beam transducers to detect and size cracks perpendicular to the weld. The second used 60-degree, angle-beam transducers to detect and size cracks parallel to the weld and dual-element, straight-beam transducers to detect and measure the depth of any pitting or corrosion in the weld zone. Simultaneous examinations were performed on either side of the weld by using identical transducer pairs.

It should be noted that there is an area adjacent to the toe (weld edge) of the weld that could not be examined. The upper sketch in Figure 3.4 shows the position of the 45-degree, angle-beam transducer configurations used in the technique for detecting cracks perpendicular to the weld. Because of the transducer housing and holding fixture size, the ultrasonic beam was not able to detect cracks perpendicular to the weld that did not extend at least 0.5 in. beyond the toe of the weld. A similar situation exists for the straight-beam transducer shown in the lower sketch of Figure 3.4. The area within 0.6 in. of the toe of the weld could not be examined for pits or corrosion. The 60-degree, angle-beam

examination, the system is considered qualified to perform in portions of selected double-shell tanks. PNNL's analyses of the PDT results established that all defects in the PDT test plates were detected and all but one were correctly classified. As outlined in ASME Section XI, Appendix VIII, the probability that the system can meet the requirements for characterizing defects that might be present in the tank was calculated to have a probability of detection (POD) of 95% with a confidence of 95%.

## 4.0 References

1. Heasler, P. G., D. J. Bates, T. T. Taylor and S. F. Doctor, "Performance Demonstration Tests for Detecting Inter-granular Stress Corrosion Cracking," NUREG/CR-4464
2. ASME Boiler and Pressure Vessel Code, Section V, Article 4, 1992
3. ASME Boiler and Pressure Vessel Code, Section XI, Appendix VIII, 1995
4. Simonen, F. A., R. E. Graves, K. I. Johnson, "Acceptance Criteria for Ultrasonic Flaw Indications in the Inner Liner of Double-Shell Waste Storage Tanks," PNL-10578, 1995
5. Jensen, C. E., "Engineering Task Plan for the Ultrasonic Inspection of Hanford Double-Shell Tanks – FY 2000, RPP-5583, 2000

transducer does project a beam that inspects the full volume of the weld zone for cracks that are parallel to the weld.

**Cracks Parallel and Perpendicular to Welds** - - Figure 3.5 describes the PDT results reported for detecting and sizing of cracks located both parallel and perpendicular to welds in the wall of the primary tank. Since the PDT test plates developed by PNNL did not contain welds, a simulated weld crown strip, that oriented cracks in either a parallel or perpendicular position with respect to the weld, was attached to the plates. Cracks of different sizes and lengths in the PDT test plates were positioned at various locations from the simulated weld crown. For crack characterization the specification defined an accuracy requirement of +/- 0.10 in. Analysis of the data provided by the hard copy and report data established the RMS value for depth measurements for cracks parallel and perpendicular to the welds was 0.051 in. This is within the required accuracy.

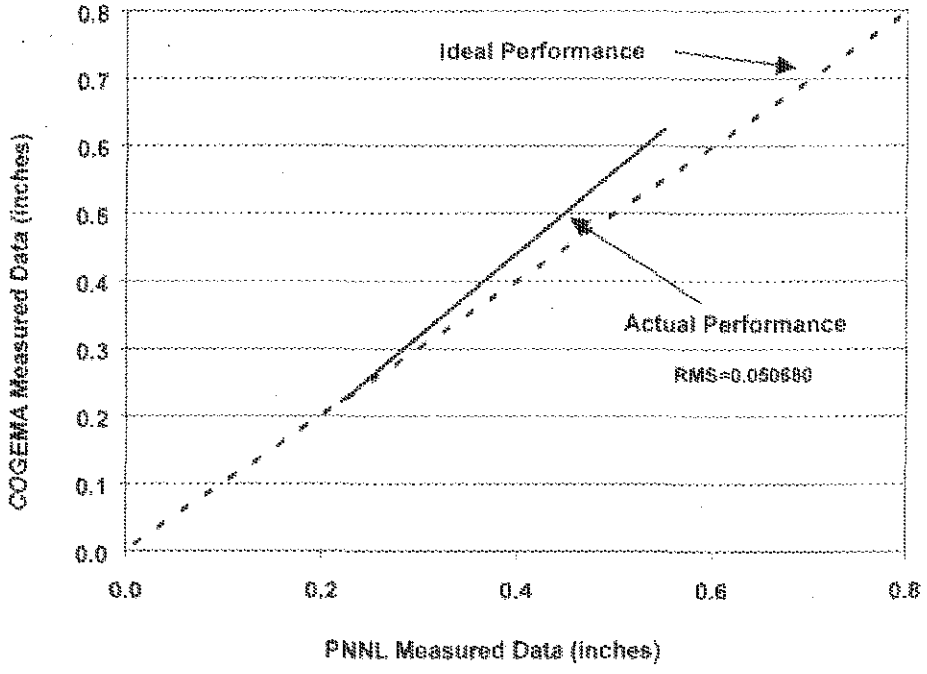



**Figure 3.5 Measurement of Cracks Parallel and Perpendicular to Welds Using the PDT Test Plates**

**Conclusions Reached from Performance Demonstration Tests** - - PNNL's evaluation of the results of the PDT established that the ultrasonic system, procedure, and personnel participating in the examinations met the criteria established in the contract for the examining portions of selected double-shell tanks. Requirements were met for detecting and characterizing wall thinning, pitting and stress corrosion cracking in the primary tank wall, weld zones in the wall of the primary tank, sections of the primary and secondary knuckles, and the secondary tank bottom. Requirements for detecting wall thinning and pitting in air slots on the primary tank bottom were not included in PDT 2000. With the exception of the air slot

# ATTACHMENT 4

## COGEMA "AUTOMATED ULTRASONIC THICKNESS DATA REPORT SHEETS

4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

Page 1 of 449

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/7/00 12:23 | EXAM END: 22:37 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM THICKNESS: .500" |
| CONFIGURATION: 1st Vert. Wall Plate TO Plate (Plate 1) | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 90.5" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER | | CONDITION |
| FILE NAME/ITEM#: Wall Scan 1/107AP/1 | | TRANSDUCER: ☒ DUAL ☐ SGL ☐ 0DEG ☐ ANGLE 0° | | |
| $X_0$ REF POINT (Lo): 1" Below Horz weld | $Y_0$ REF POINT (Wc): ℄ of 24" Riser | SCAN WIDTH: 15" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .530" | .515" | | |
| | 12" | 24" | | | .530" | .510" | | |
| | 24" | 36" | | | .530" | .520" | | |
| | 36" | 48" | | | .530" | .515" | | |
| | 48" | 60" | | | .530" | .499" | | |
| | 60" | 72" | | | .530" | .510" | | |
| | 72" | 84" | | | .530" | .515" | | |
| | 84" | 90.5" | | | .520" | .508" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Level III Date 6/7/00 | Level III Date 6/6/00 | (N1) Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter from J. B. Elder

Page 2 of 4

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, p-scan data1, 6/7/00 15:10
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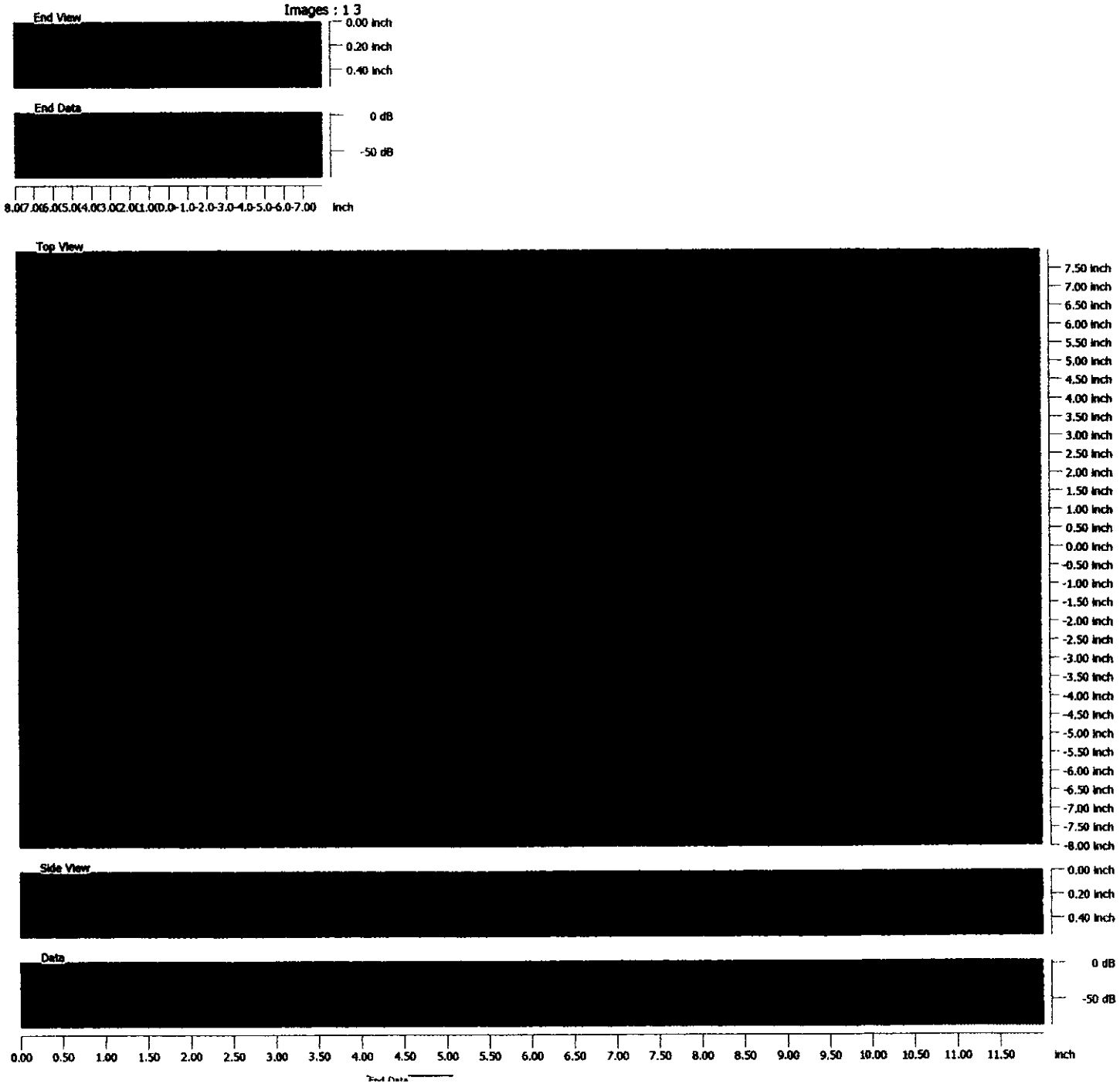
Images : 1 3



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WALL SCAN 1/107AP/1
WHN
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PLATE 1/1

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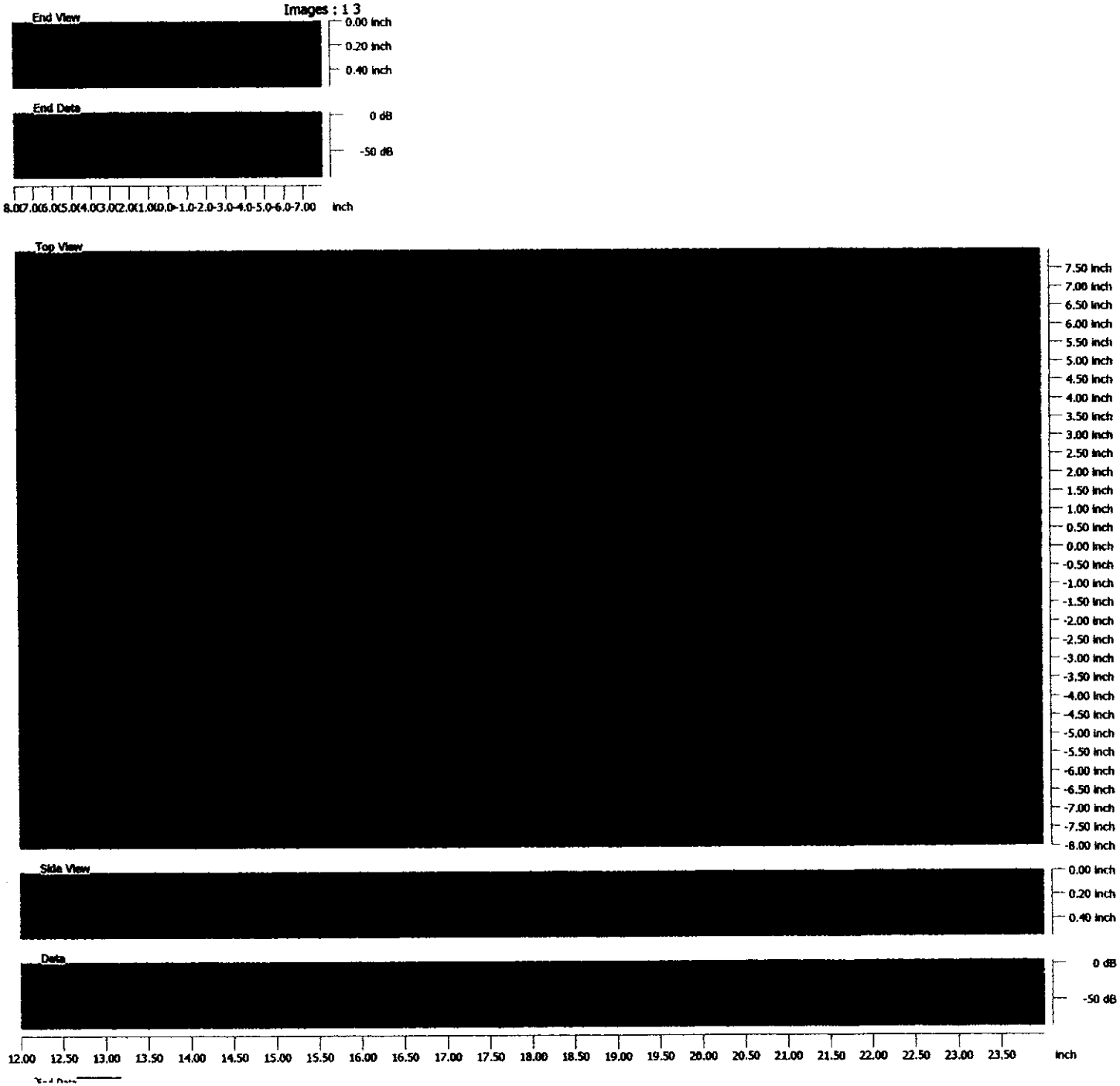

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WHN
AP / 200E TANK FARM
PLATE 1/1

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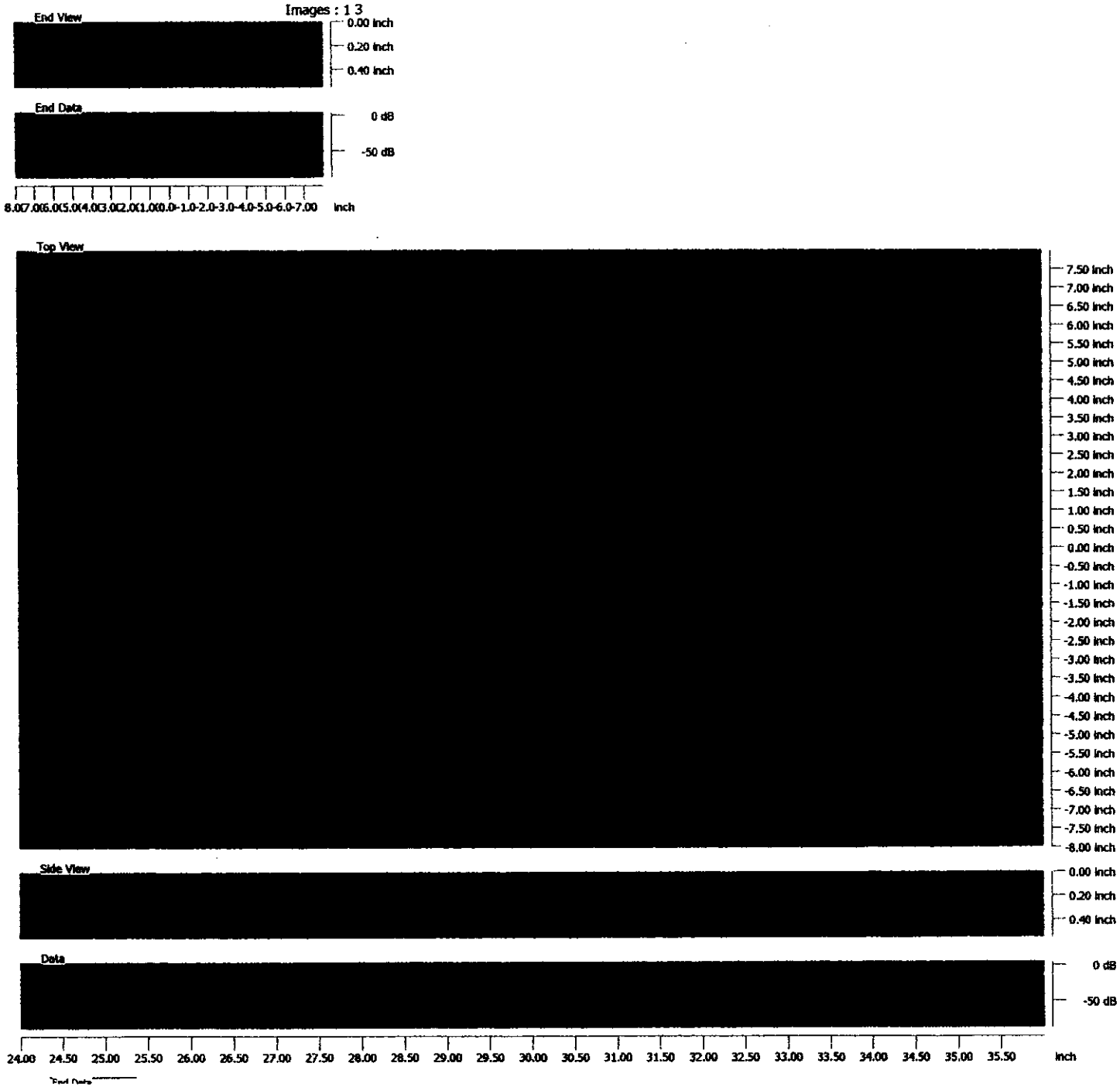

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WHN
AP / 200E TANK FARM
PLATE 1/1

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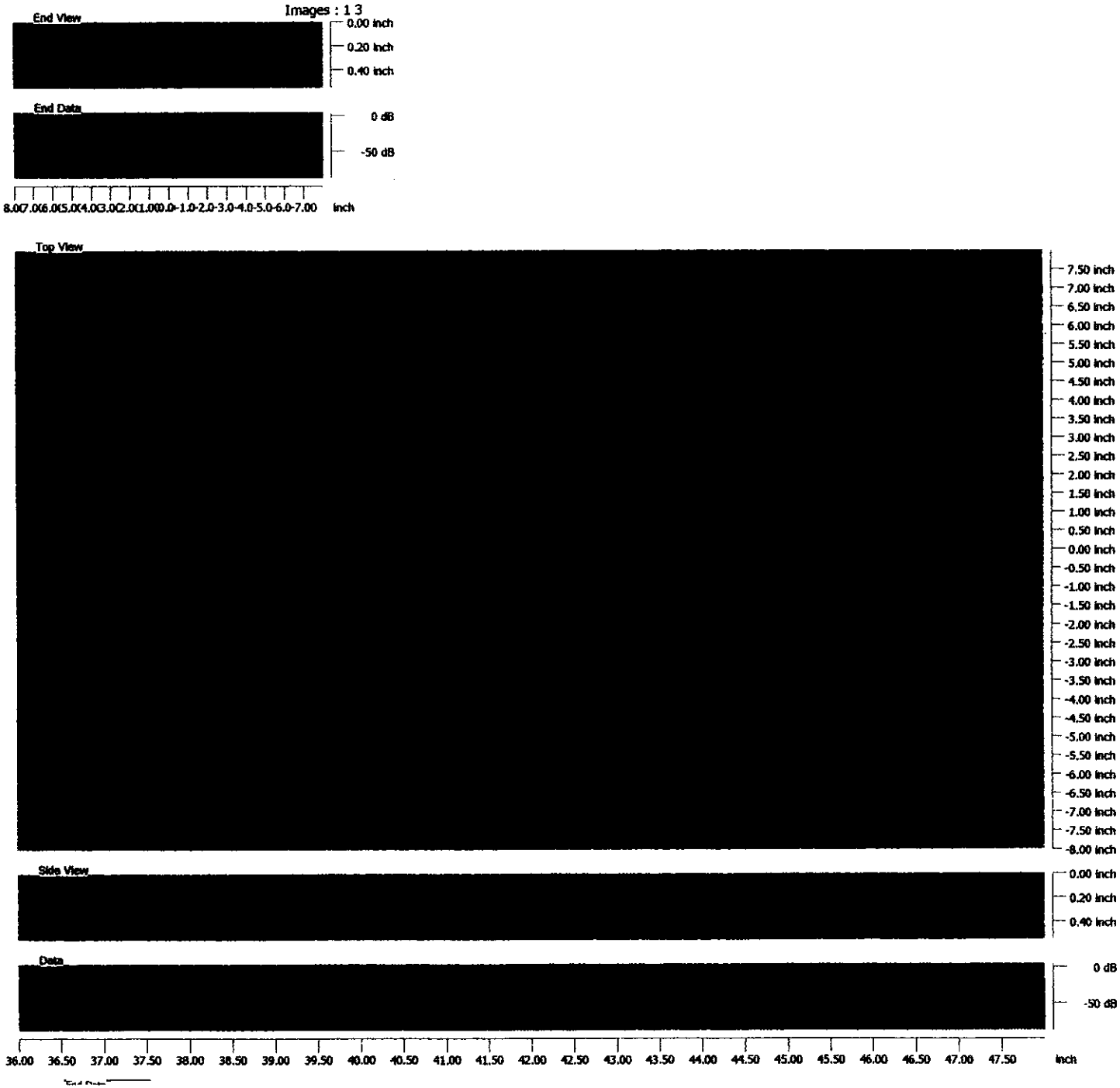

Page 4 of 4

WALL SCAN 1/107AP/1
WHN
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PLATE 1/1

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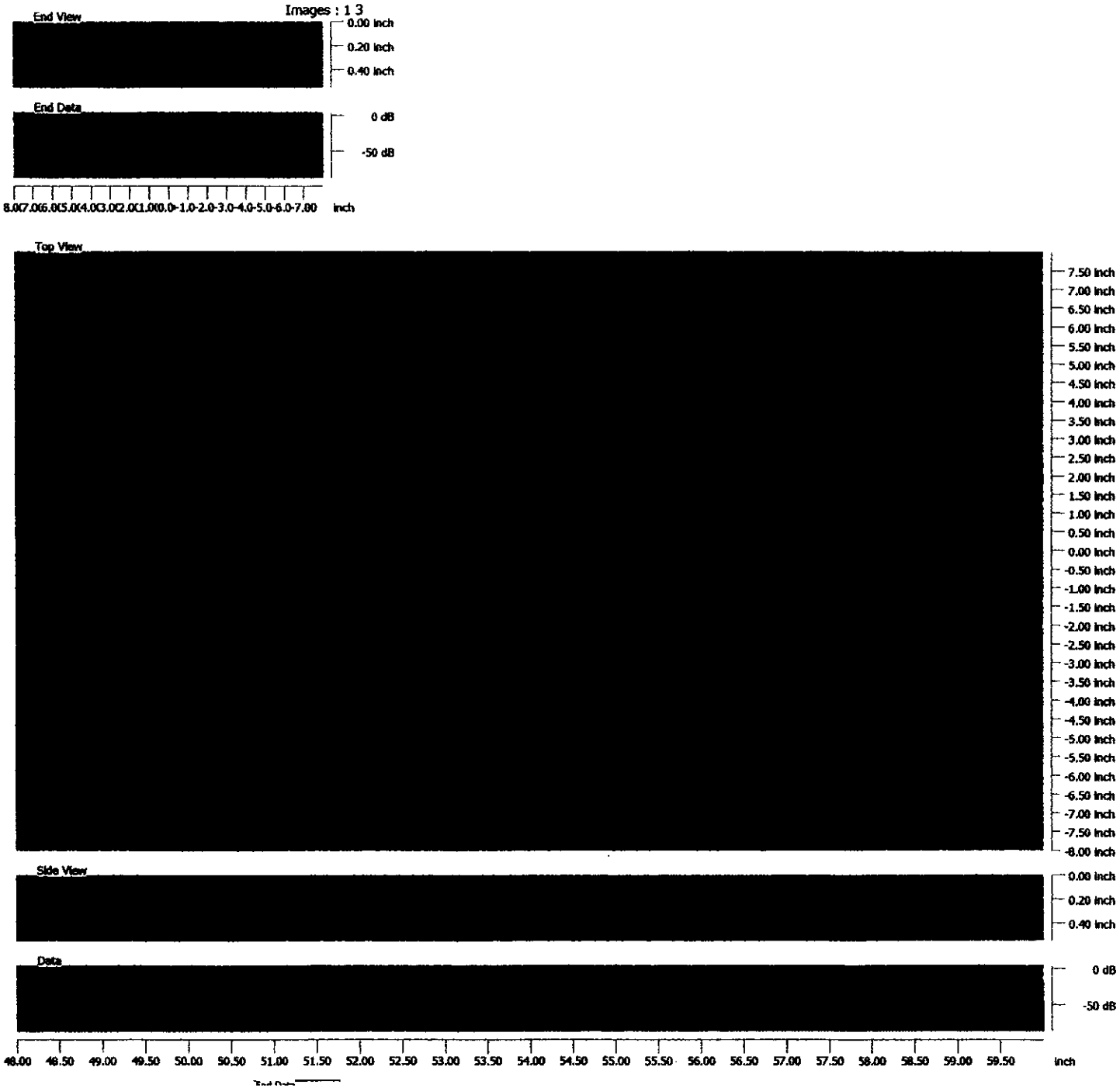

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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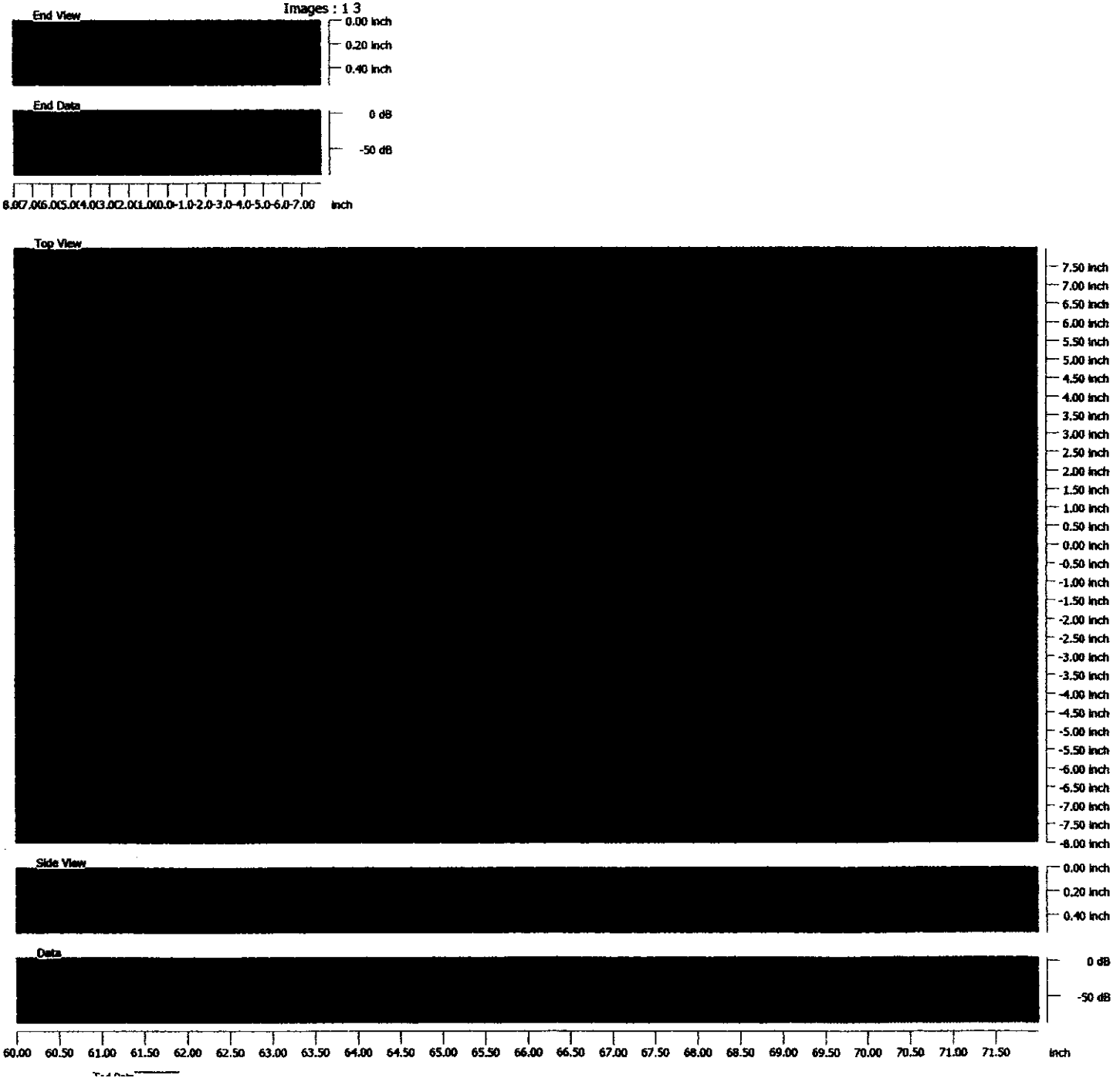
Images : 1 3



WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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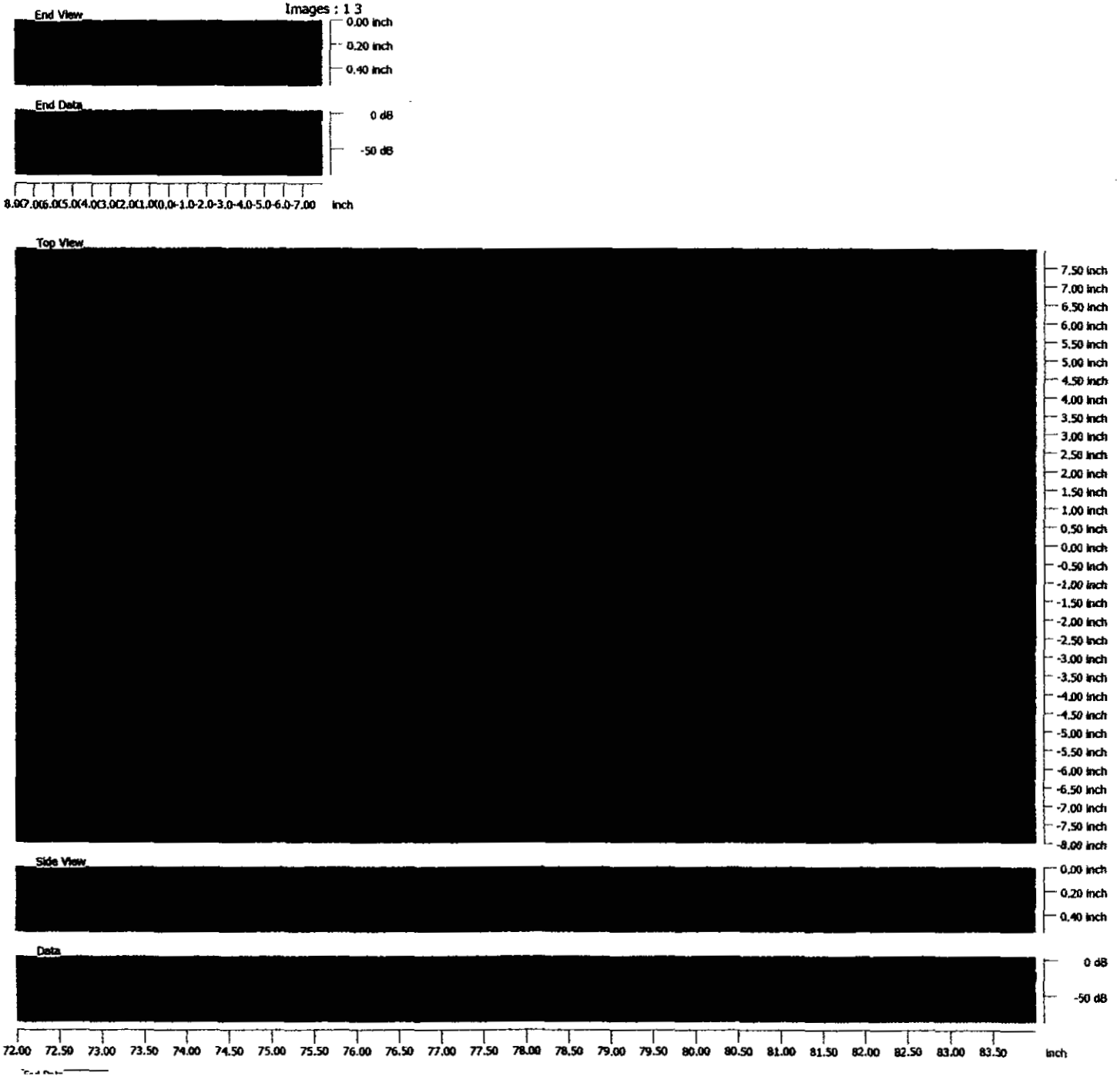

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WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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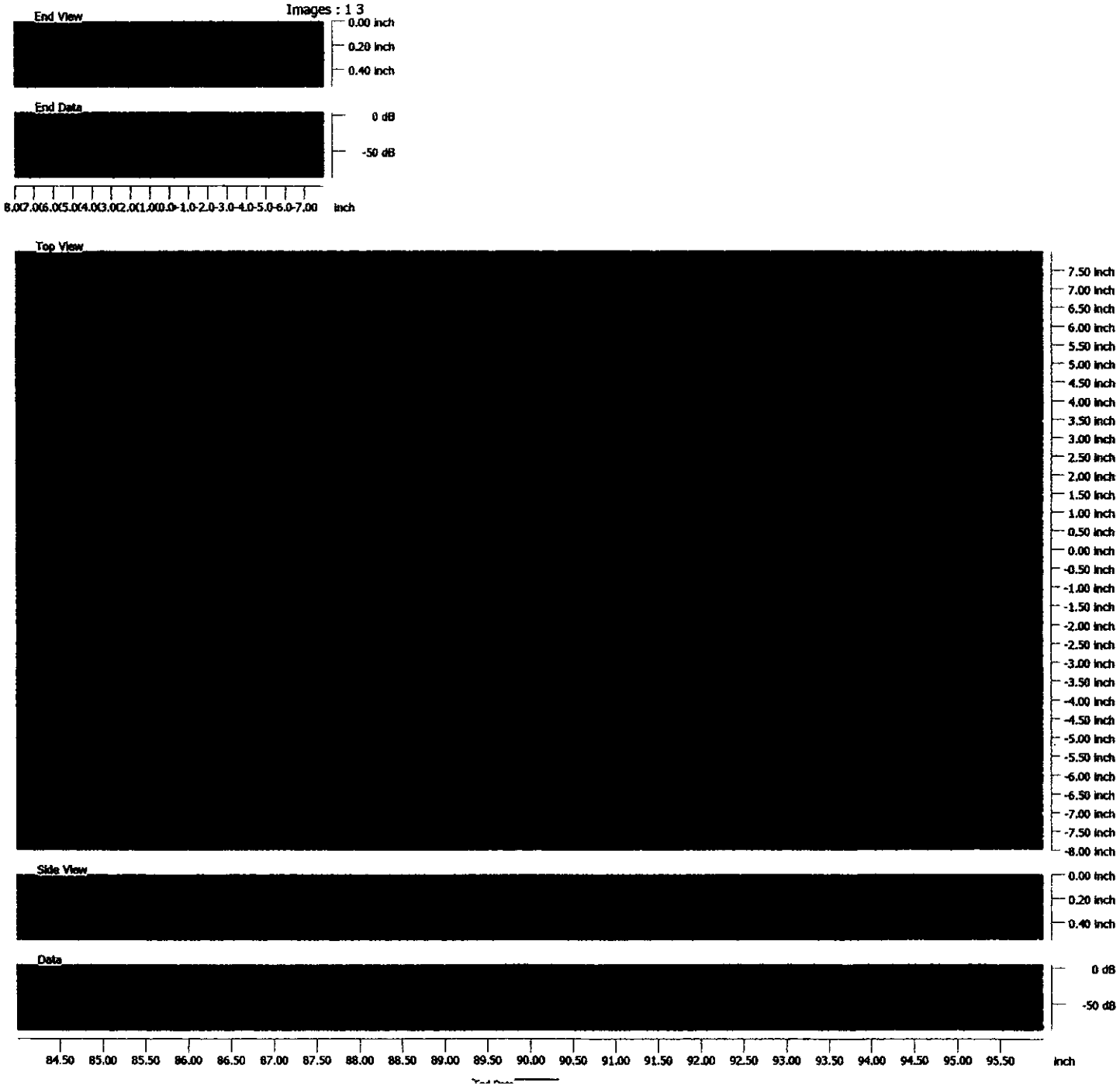

4/00

# ULTRASONIC P-SCAN DATA REPORT

Page 10 of 449

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| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 1st Vert. Wall Plate TO Plate (Plate 1) | | CALIBRATED RANGE: 0" TO 1.414" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 90.5" | | REF LEVEL CORRECTION (TRANS CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .500" Nom. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 1107AP/1 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☐ ANGLE 45° | | |
| $X_0$ REF POINT ($L_0$): 1" Below Horz weld | $Y_0$ REF POINT ($W_0$): c/L of 24" Riser | SCAN WIDTH: 15" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO Crack-Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/7/00 | [signature] Level III Date 8/6/00 | (N1) Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter from J. B. Elder

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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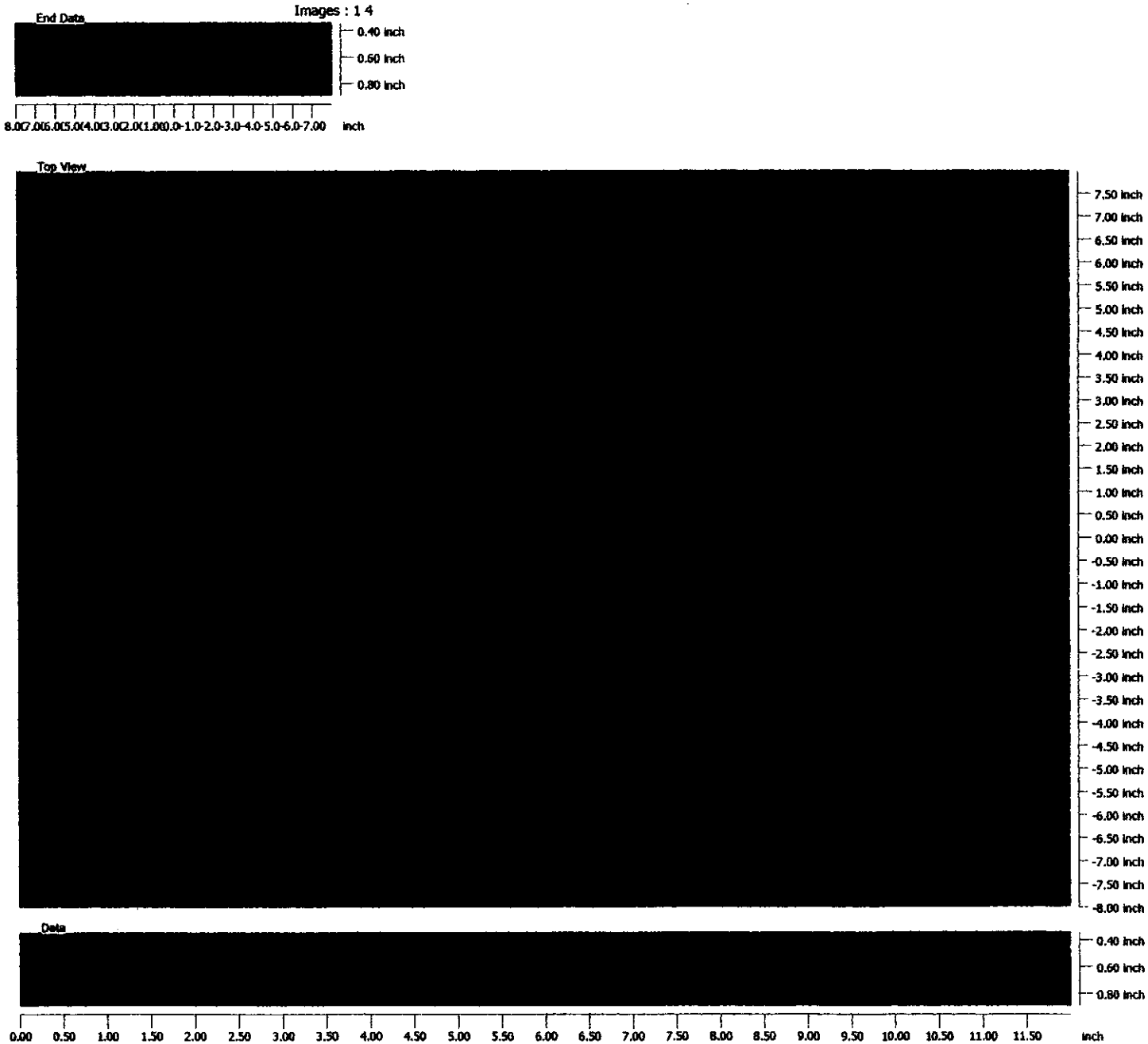

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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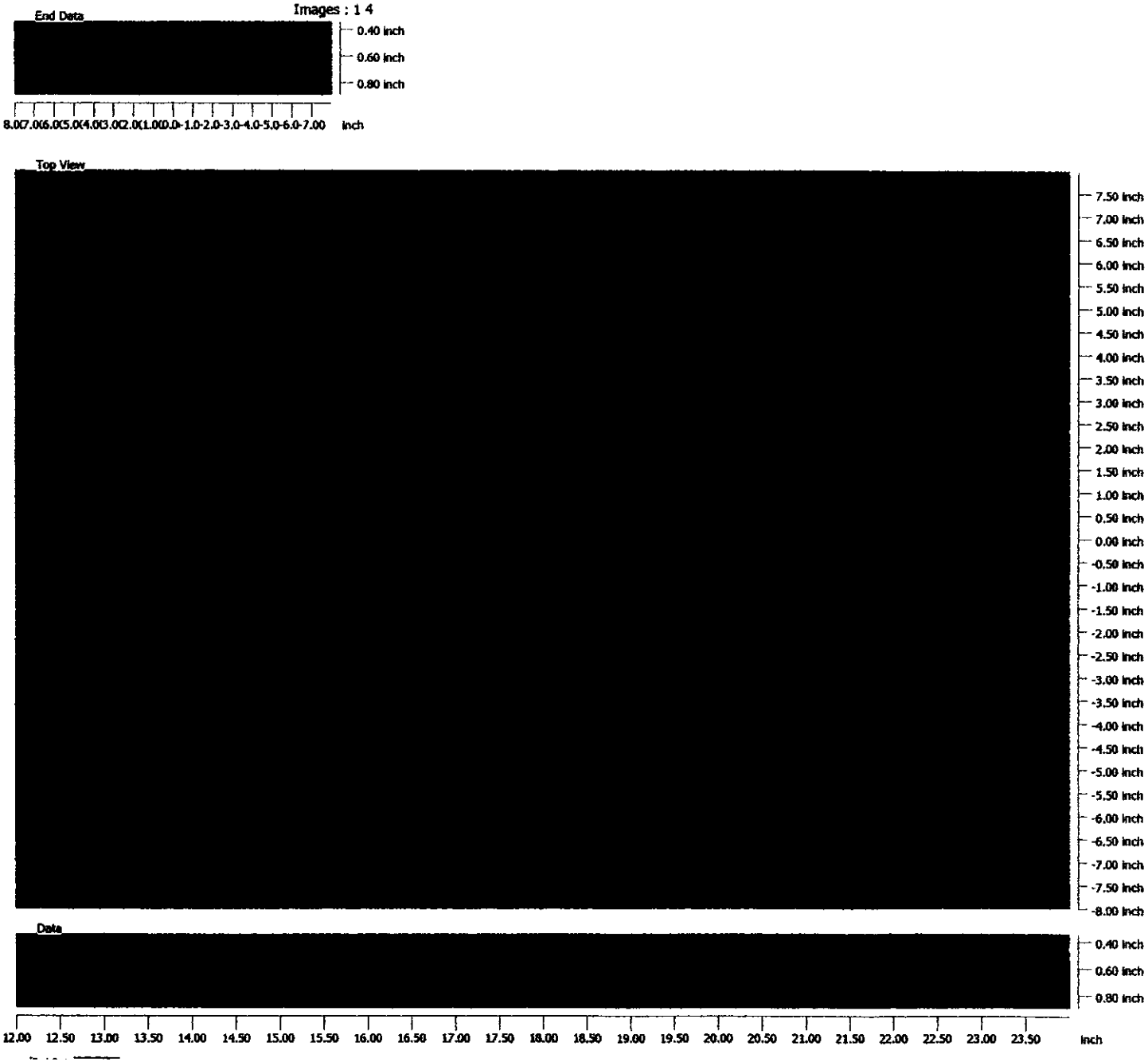

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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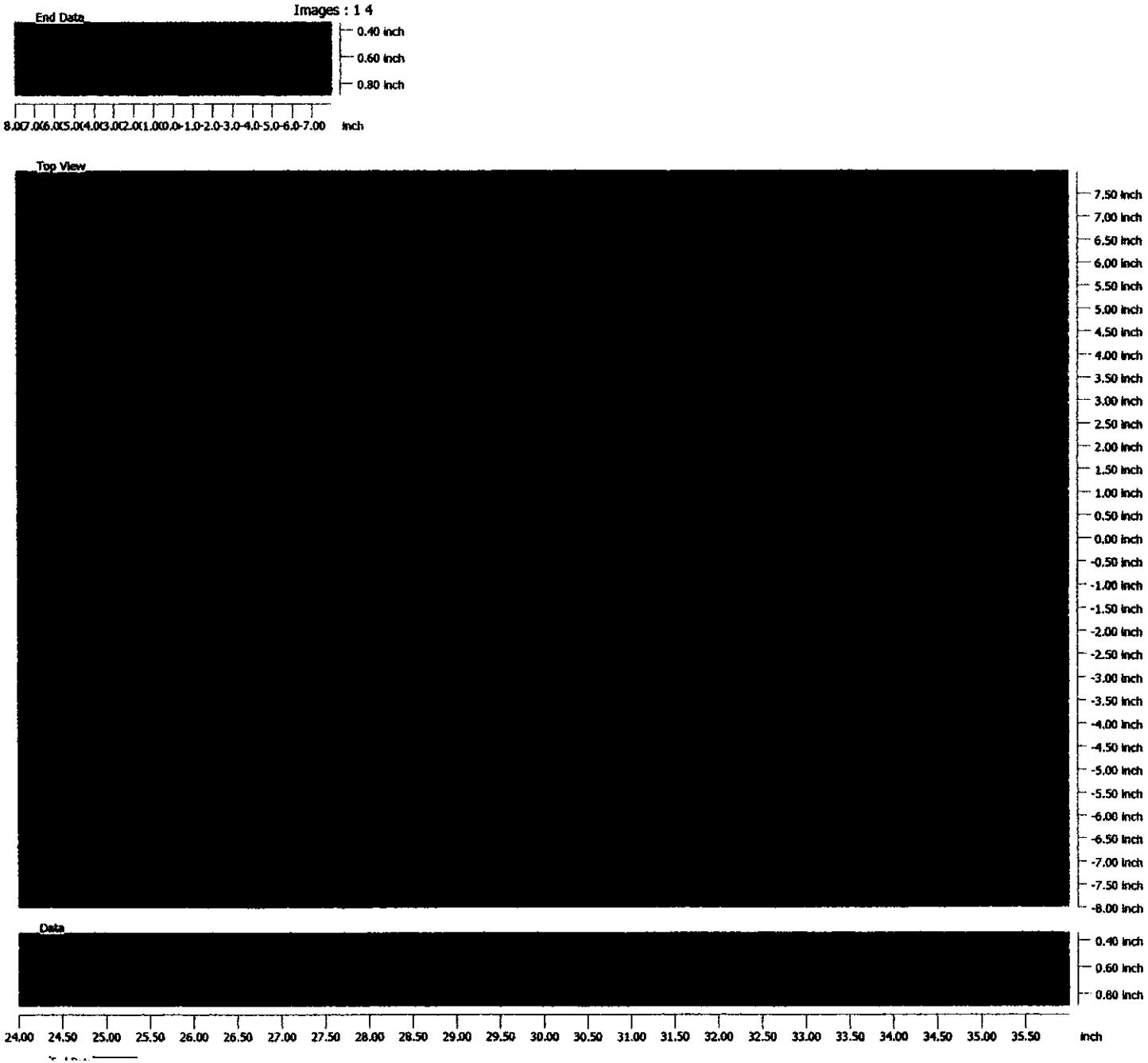

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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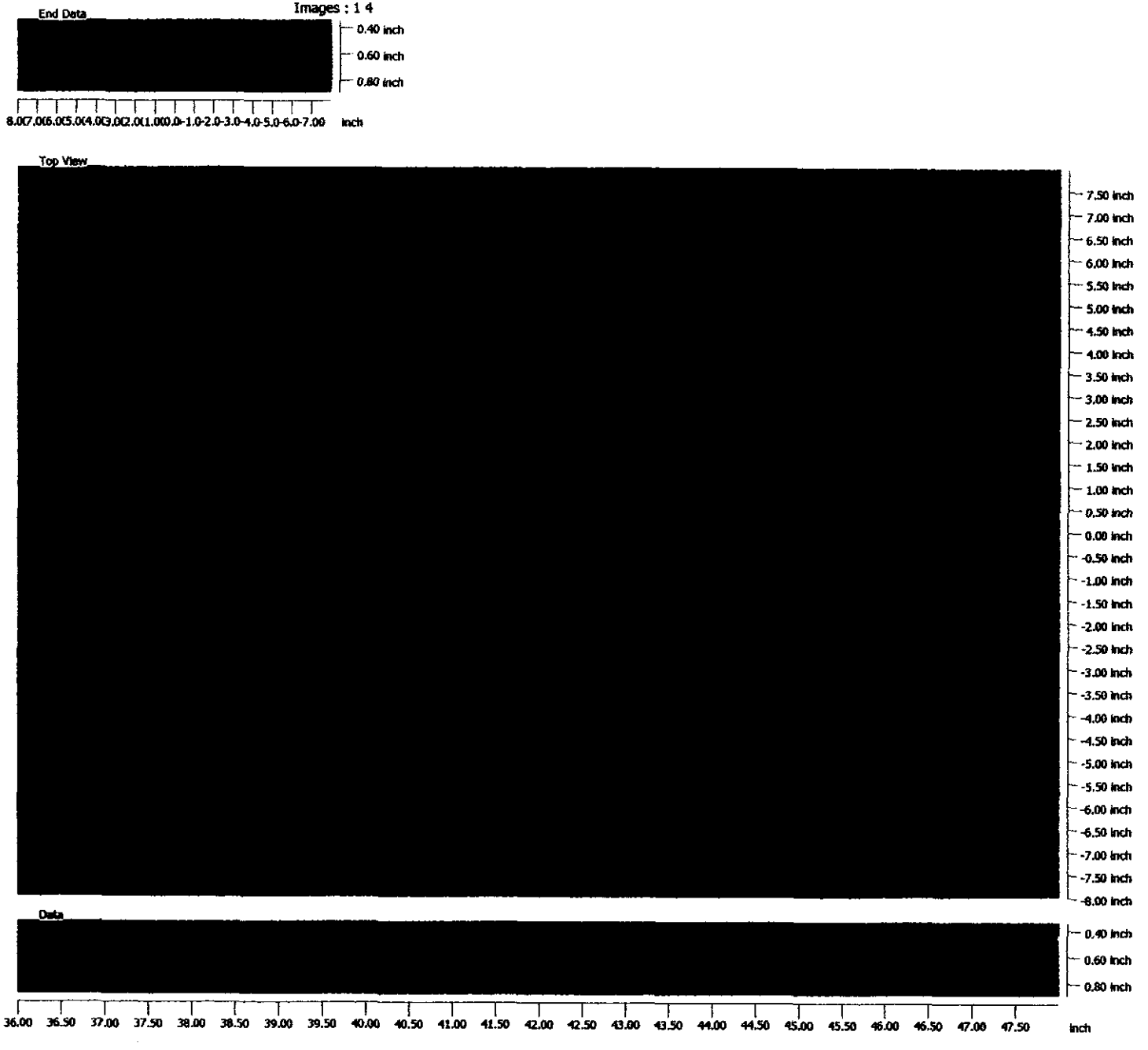

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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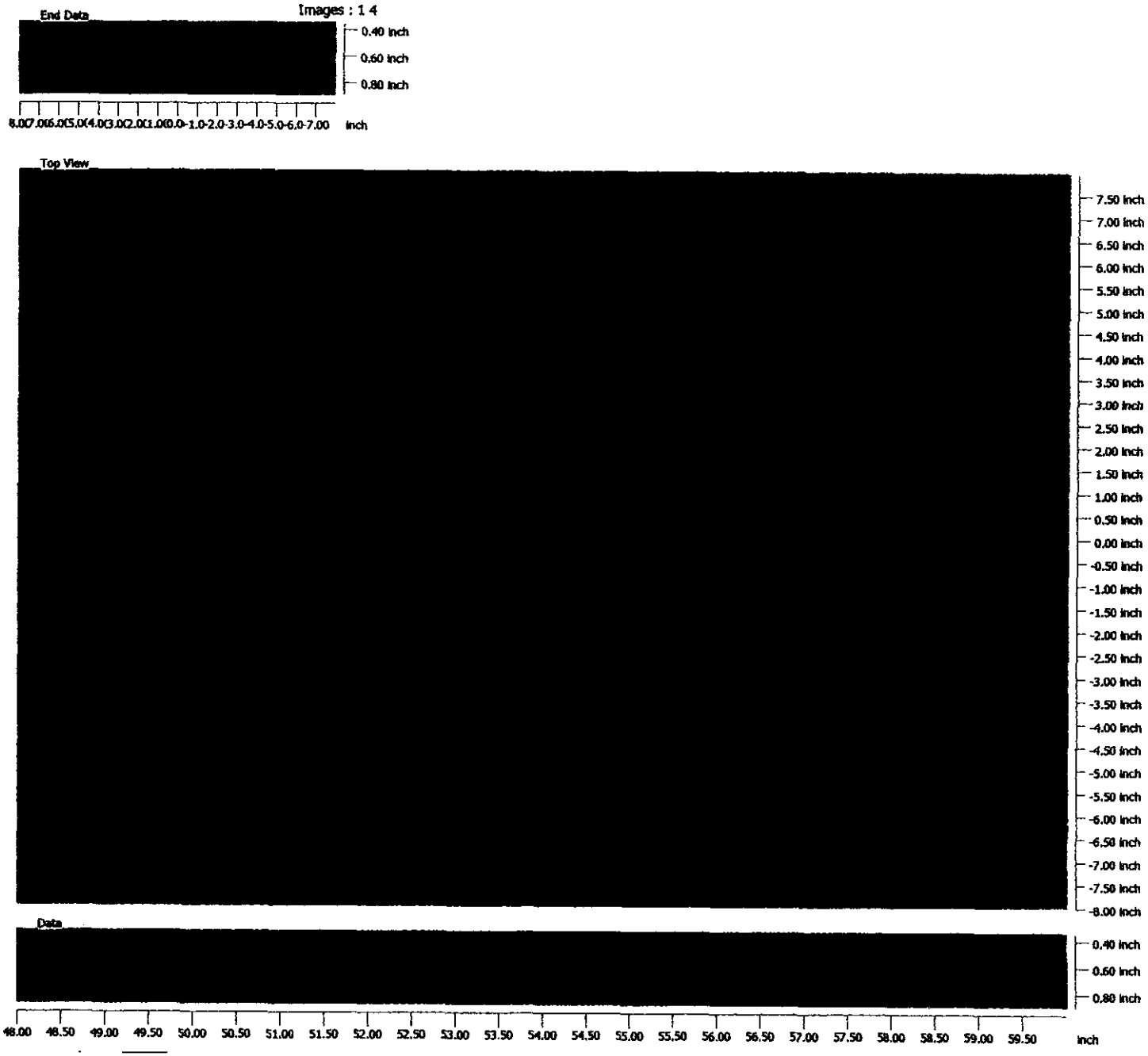

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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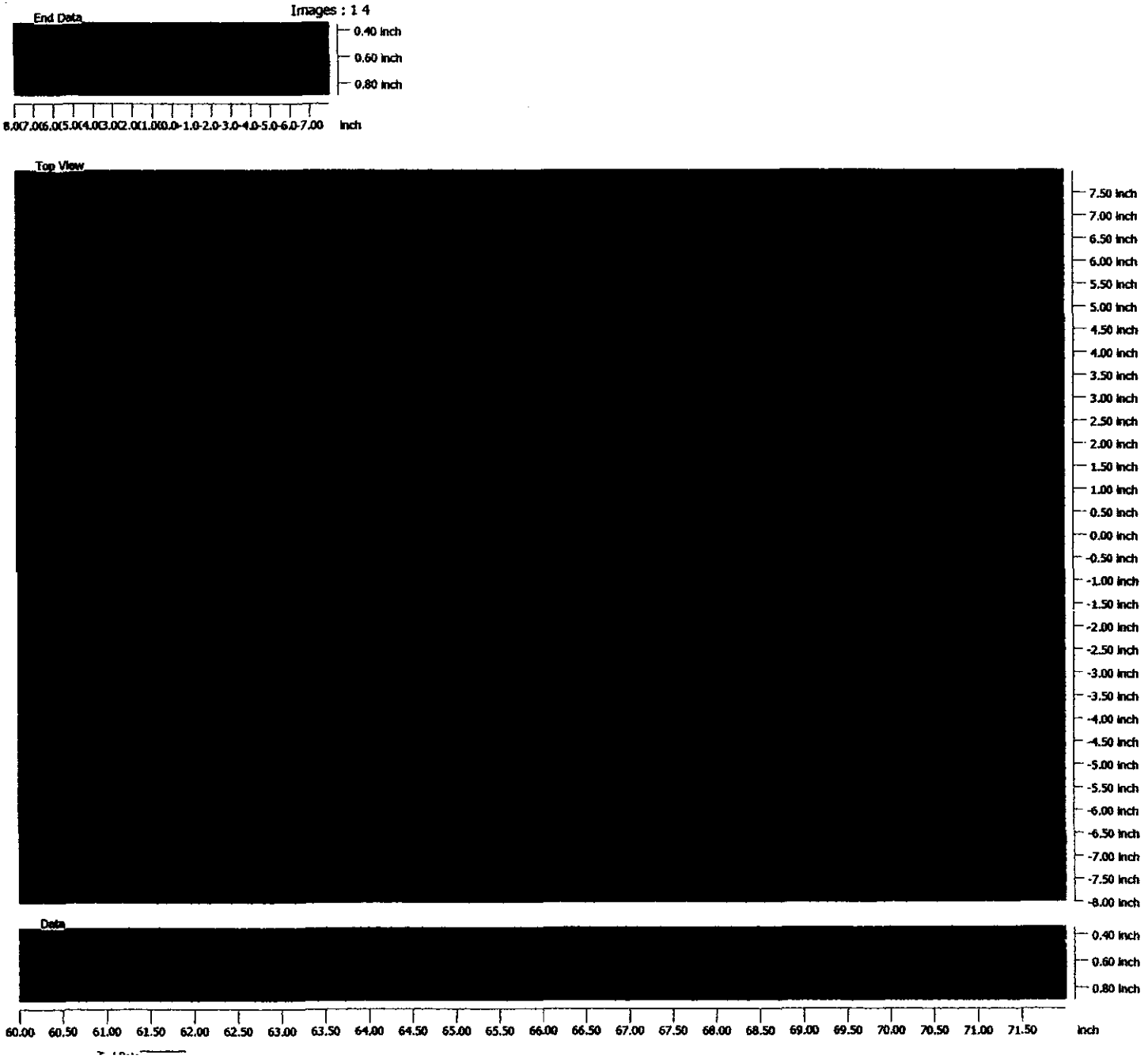

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WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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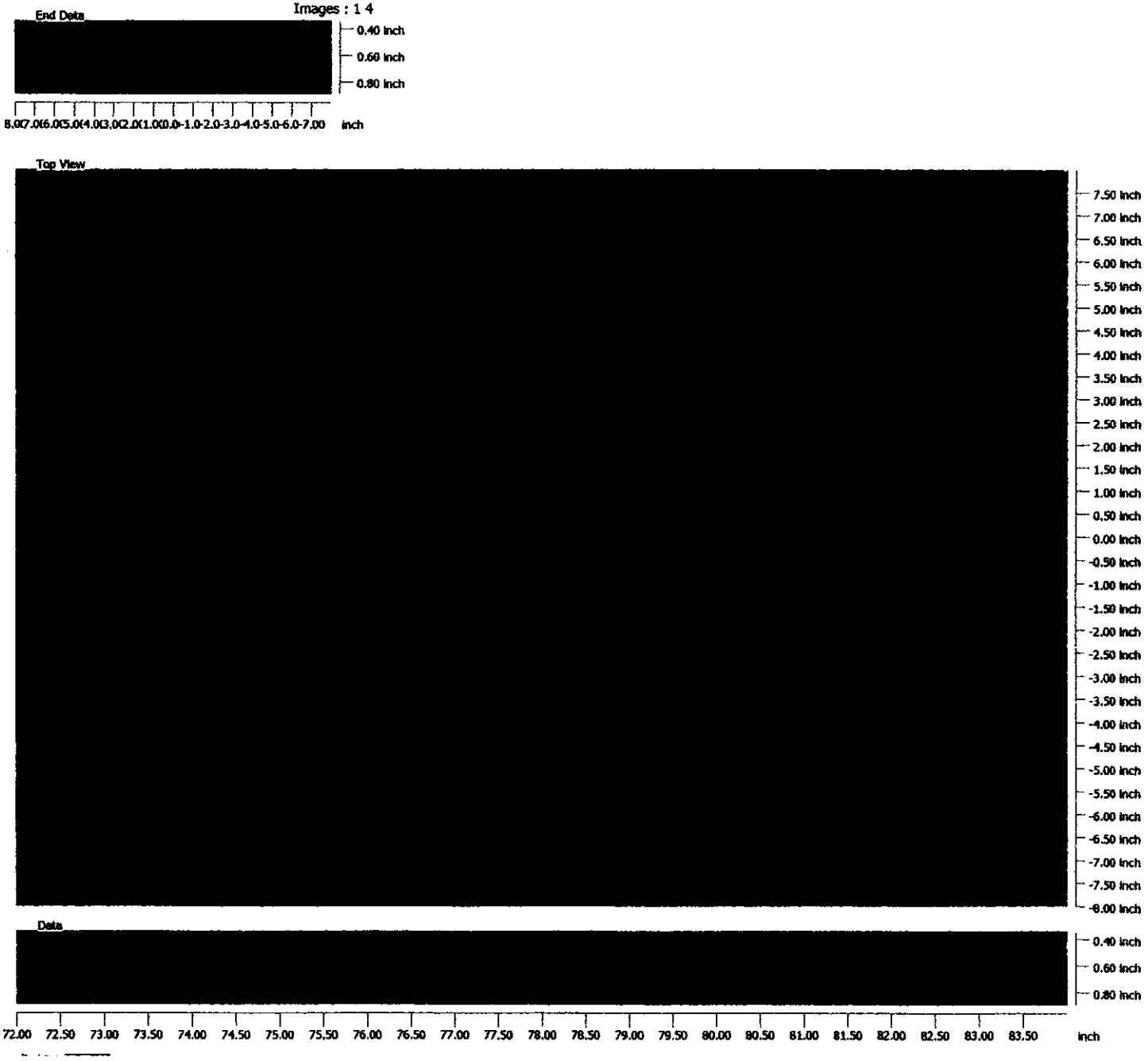

WALL SCAN 1/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

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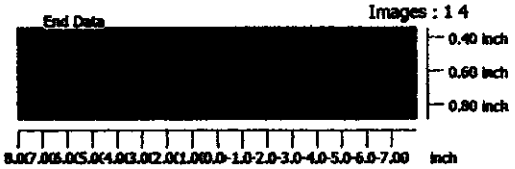
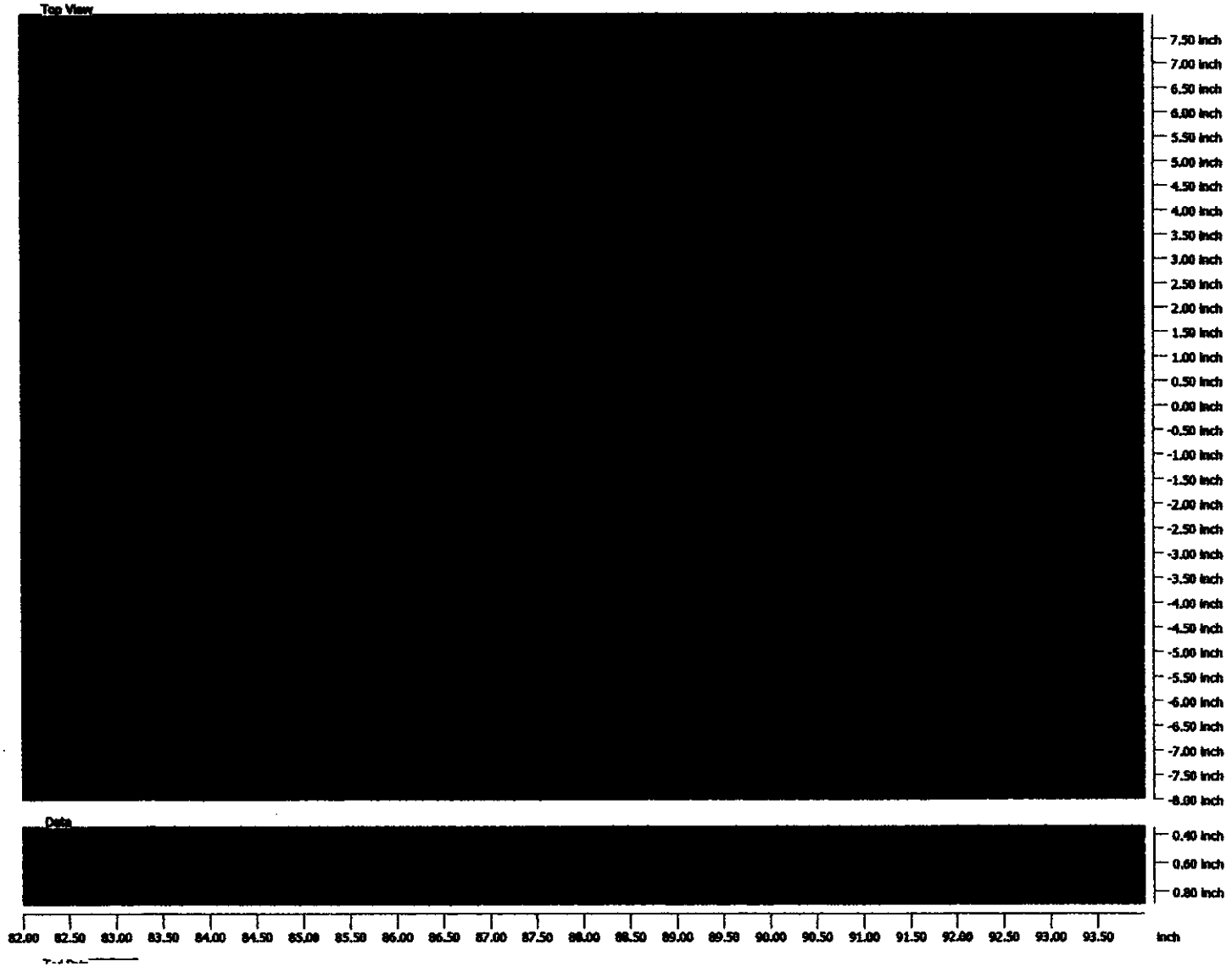
Images : 1 4



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT



| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/21/00 13:39 | EXAM END: 19:33 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .500" |
| CONFIGURATION: 1st Vert Wall Plate TO Plate (Plate 2) | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 88.6" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: Wall Scan 1/107AP/2, 2A & 2B | | TRANSDUCER: ☒ DUAL ☐ SGL ☐ 0DEG ☐ ANGLE 0° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz Weld | $Y_0$ REF. POINT ($W_0$): C/L of 24" Riser | SCAN WIDTH: 15" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK. R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .520" | .496" | | |
| | 12" | 16.4" | | | .520" | .518" | | |
| | 0" | 12" | | | .520" | .515" | | |
| | 12" | 14.1" | | | .520" | .518" | | |
| | 0" | 12" | | | .520" | .516" | | |
| | 12" | 24" | | | .520" | .515" | | |
| | 24" | 36" | | | .518" | .508" | | |
| | 36" | 48" | | | .517" | .511" | | |
| | 48" | 60" | | | .513" | .501" | | |
| | 60" | 61.8" | | | .512" | .505" | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/21/00 | [signature] Level III Date 8/4/00 | (NI) ____ Level ___ Date ____ | ___ of ___ |

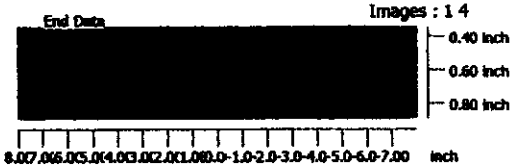
(NI) See Attached Letter From J. B. Elder

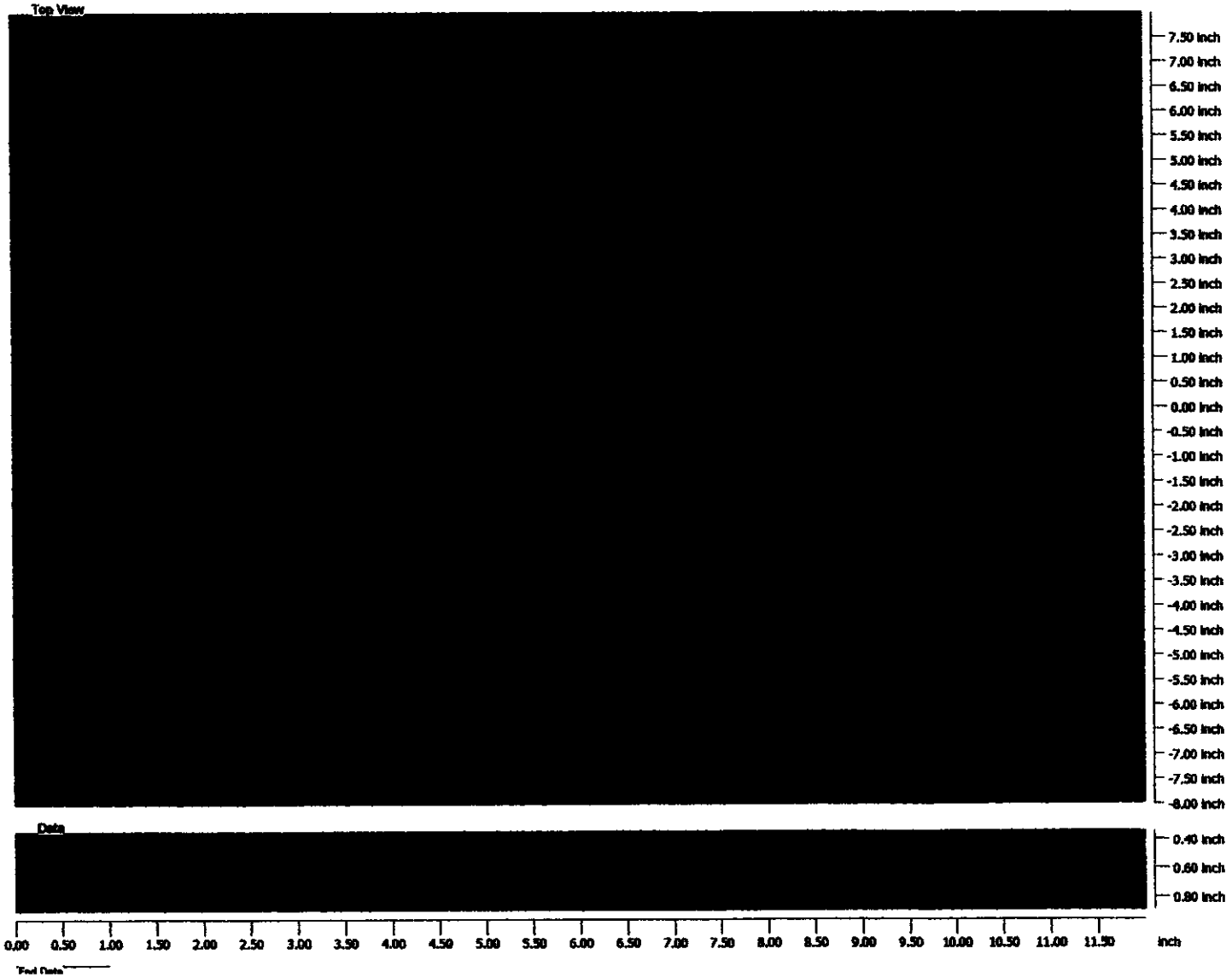
WALL SCAN 1/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 14:33
2: P-scan, Images, t-scan data1, 6/21/00 14:33
3: T-scan, Images, t-scan data1, 6/21/00 14:33

Printed on 2000-8-6 at 16:55 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2.

Images : 1 4



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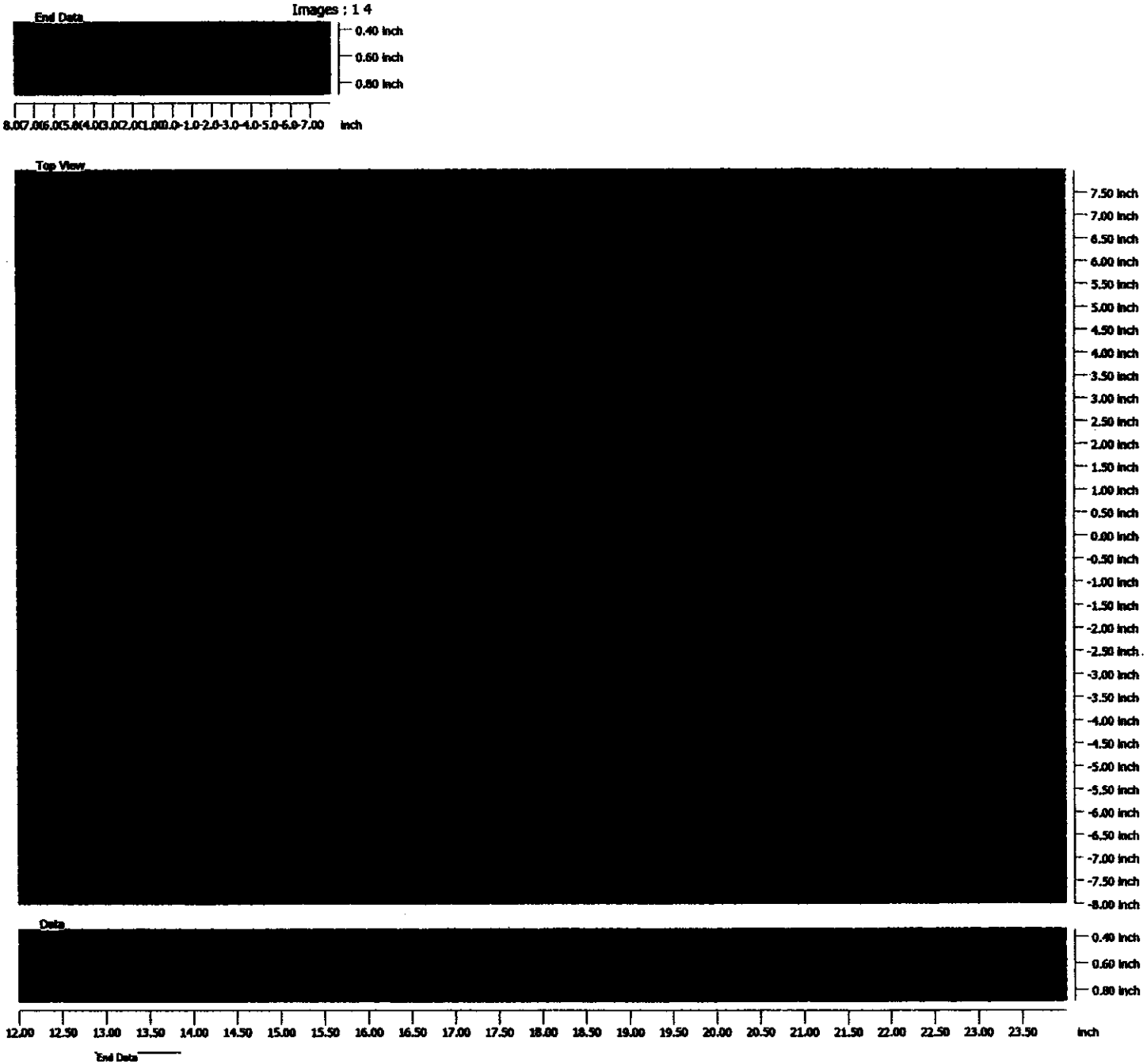
WALL SCAN 1/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 14:33
2: P-scan, Images, t-scan data1, 6/21/00 14:33
3: T-scan, Images, t-scan data1, 6/21/00 14:33

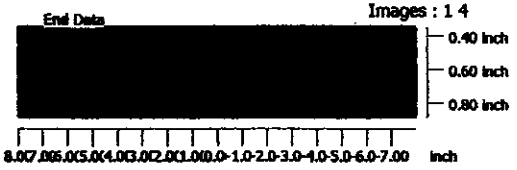
Printed on 2000-8-6 at 16:56 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2.

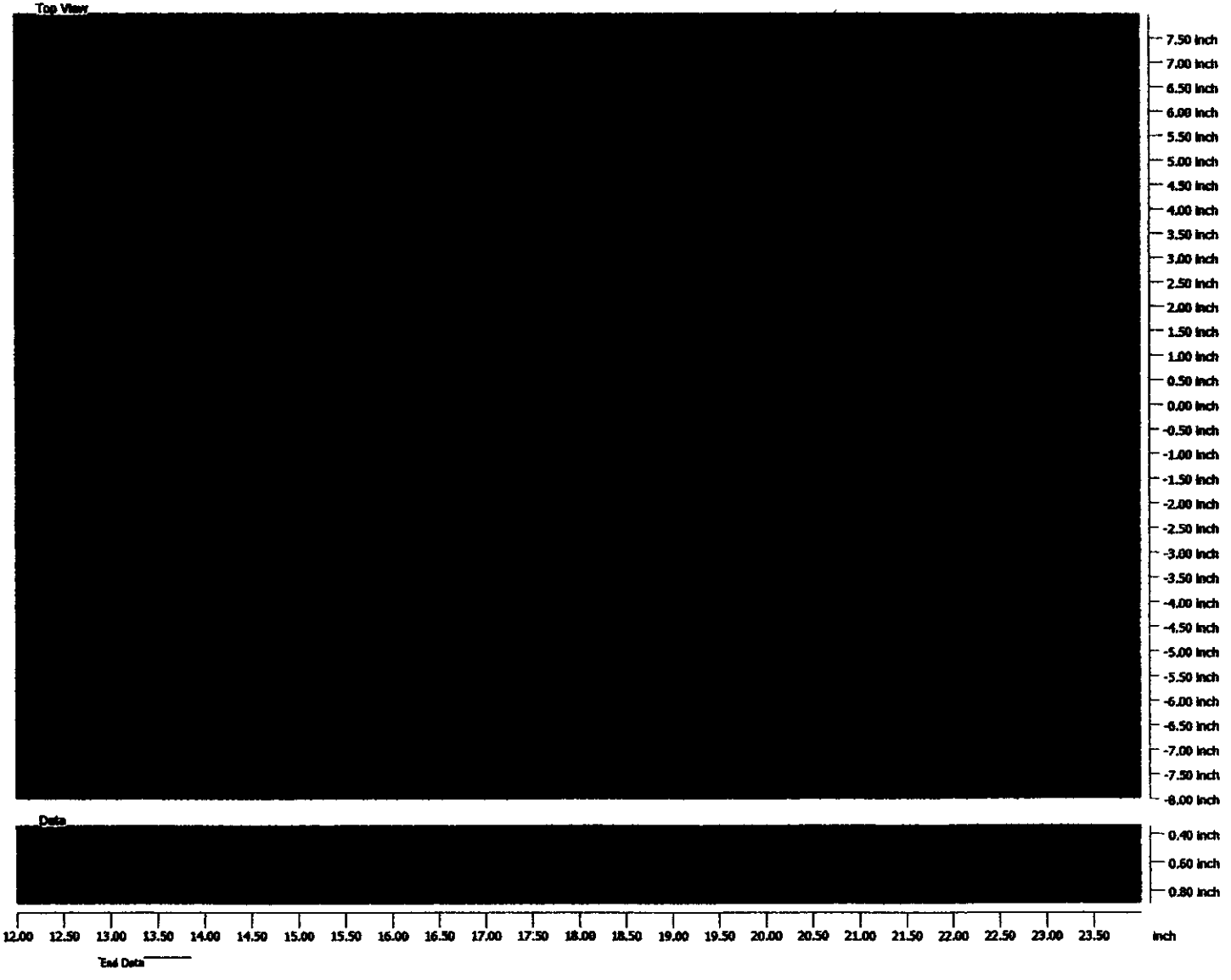


WALL SCAN 1/107AP/2A
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 16:06
2: P-scan, Images, t-scan data1, 6/21/00 16:06
3: T-scan, Images, t-scan data1, 6/21/00 16:06

Printed on 2000-8-24 at 7:45 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2A.



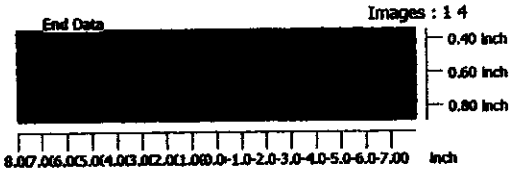



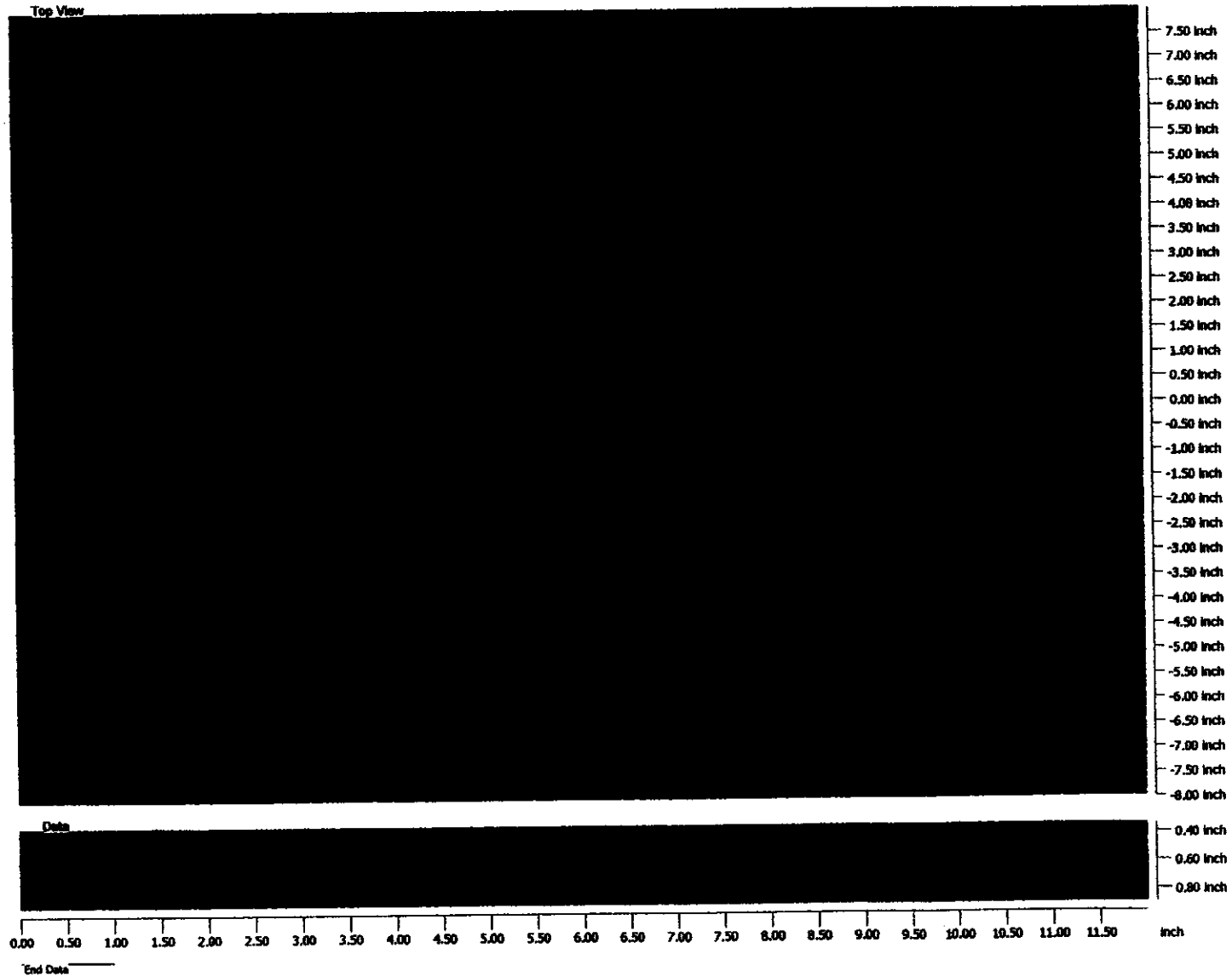
WALL SCAN 1/107AP/2A
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 16:06
2: P-scan, Images, t-scan data1, 6/21/00 16:06
3: T-scan, Images, t-scan data1, 6/21/00 16:06

Printed on 2000-8-24 at 7:45 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2A.

Images : 1 4



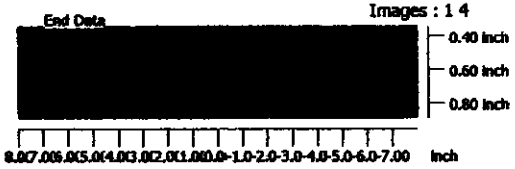



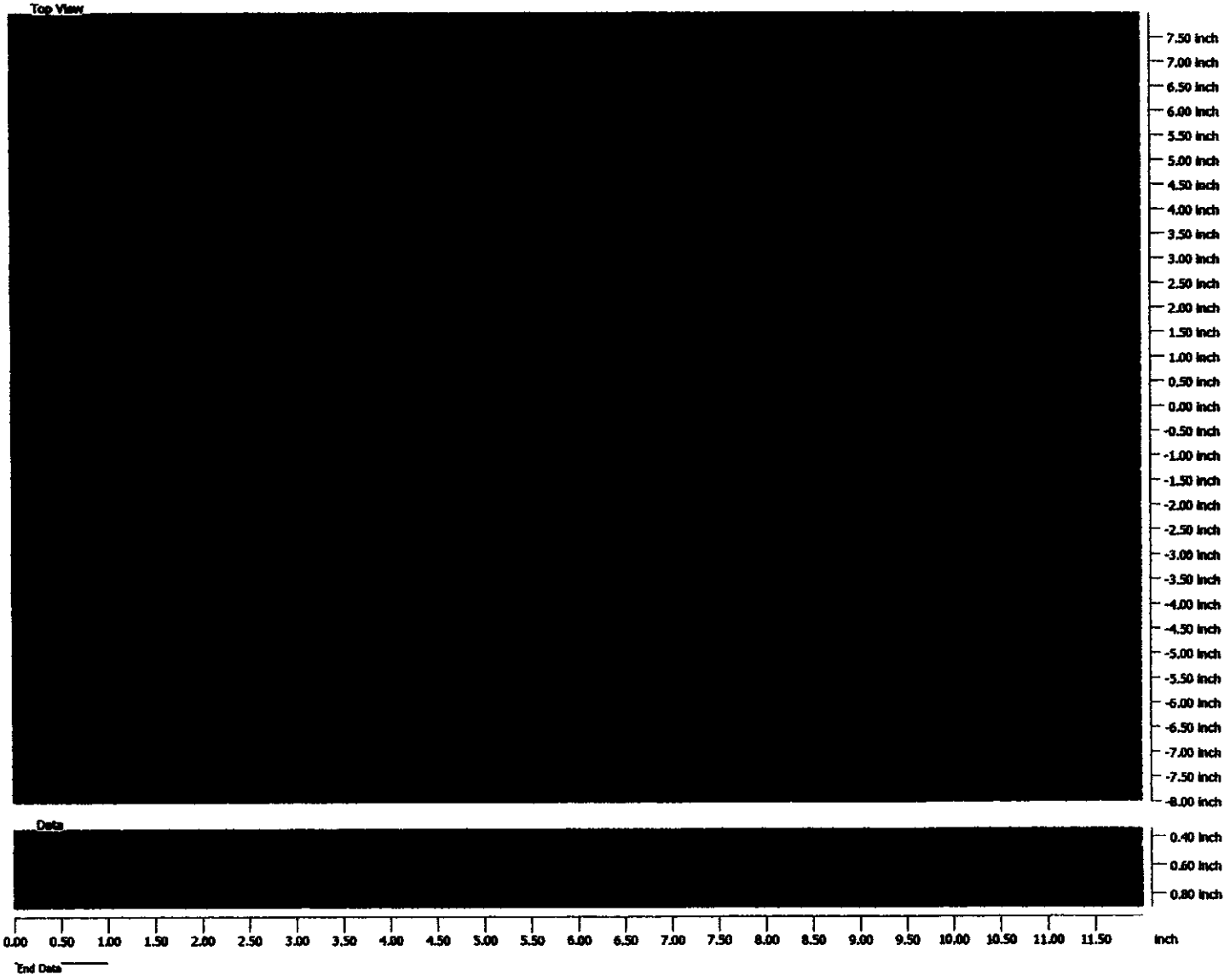
WALL SCAN 1/107AP/2B
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 17:08
2: P-scan, Images, t-scan data1, 6/21/00 17:08
3: T-scan, Images, t-scan data1, 6/21/00 17:08

Printed on 2000-8-24 at 7:53 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2B.

Images : 1 4

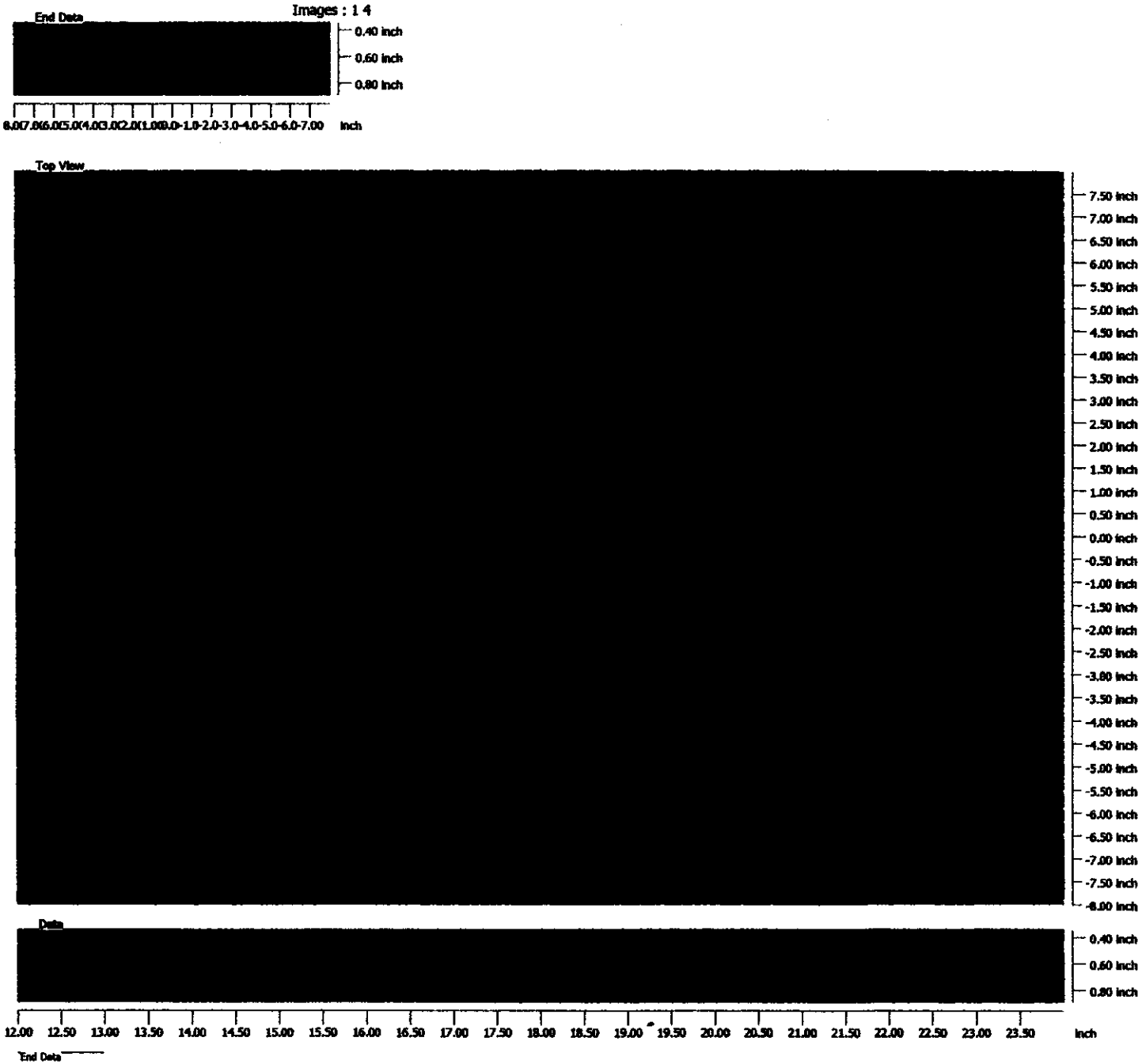


WALL SCAN 1/107AP/2B
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 17:08
2: P-scan, Images, t-scan data1, 6/21/00 17:08
3: T-scan, Images, t-scan data1, 6/21/00 17:08

Printed on 2000-8-24 at 7:53 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2B.

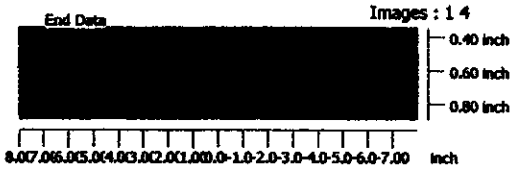


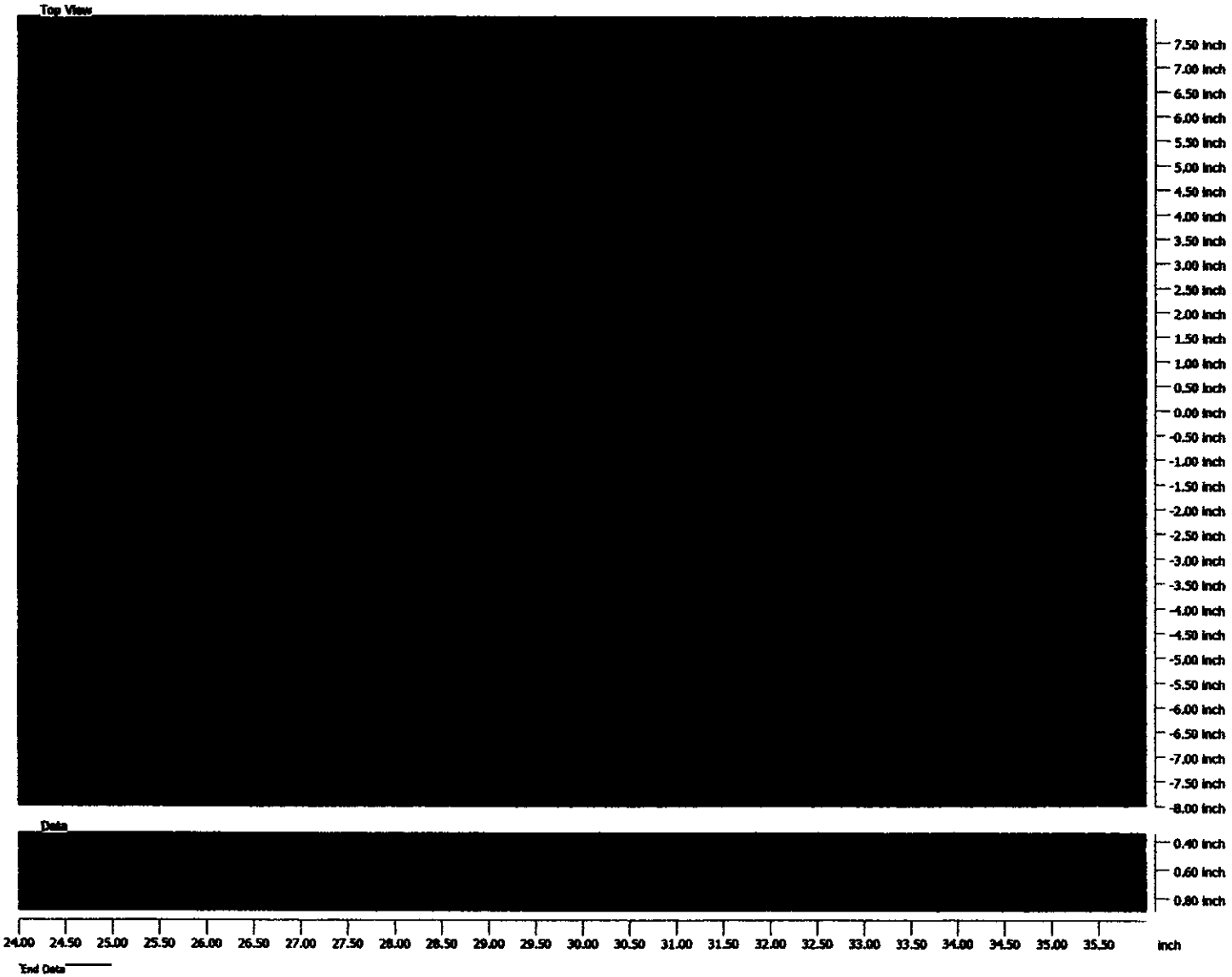
WALL SCAN 1/107AP/2B
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 17:08
2: P-scan, Images, t-scan data1, 6/21/00 17:08
3: T-scan, Images, t-scan data1, 6/21/00 17:08

Printed on 2000-8-24 at 7:54 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2B.

Images : 1 4

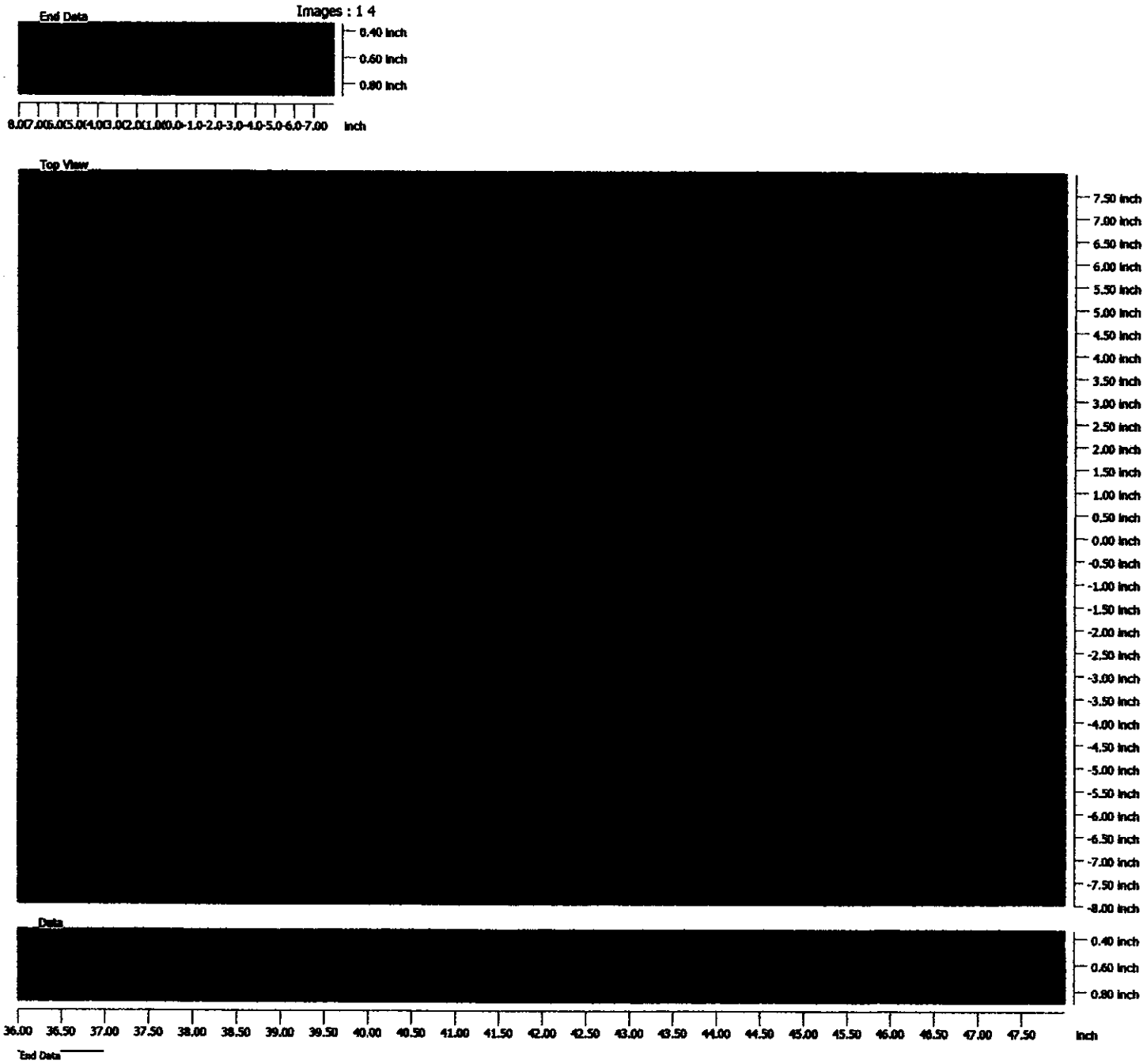


WALL SCAN 1/107AP/2B
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 17:08
2: P-scan, Images, t-scan data1, 6/21/00 17:08
3: T-scan, Images, t-scan data1, 6/21/00 17:08

Printed on 2000-8-24 at 7:54 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2B.

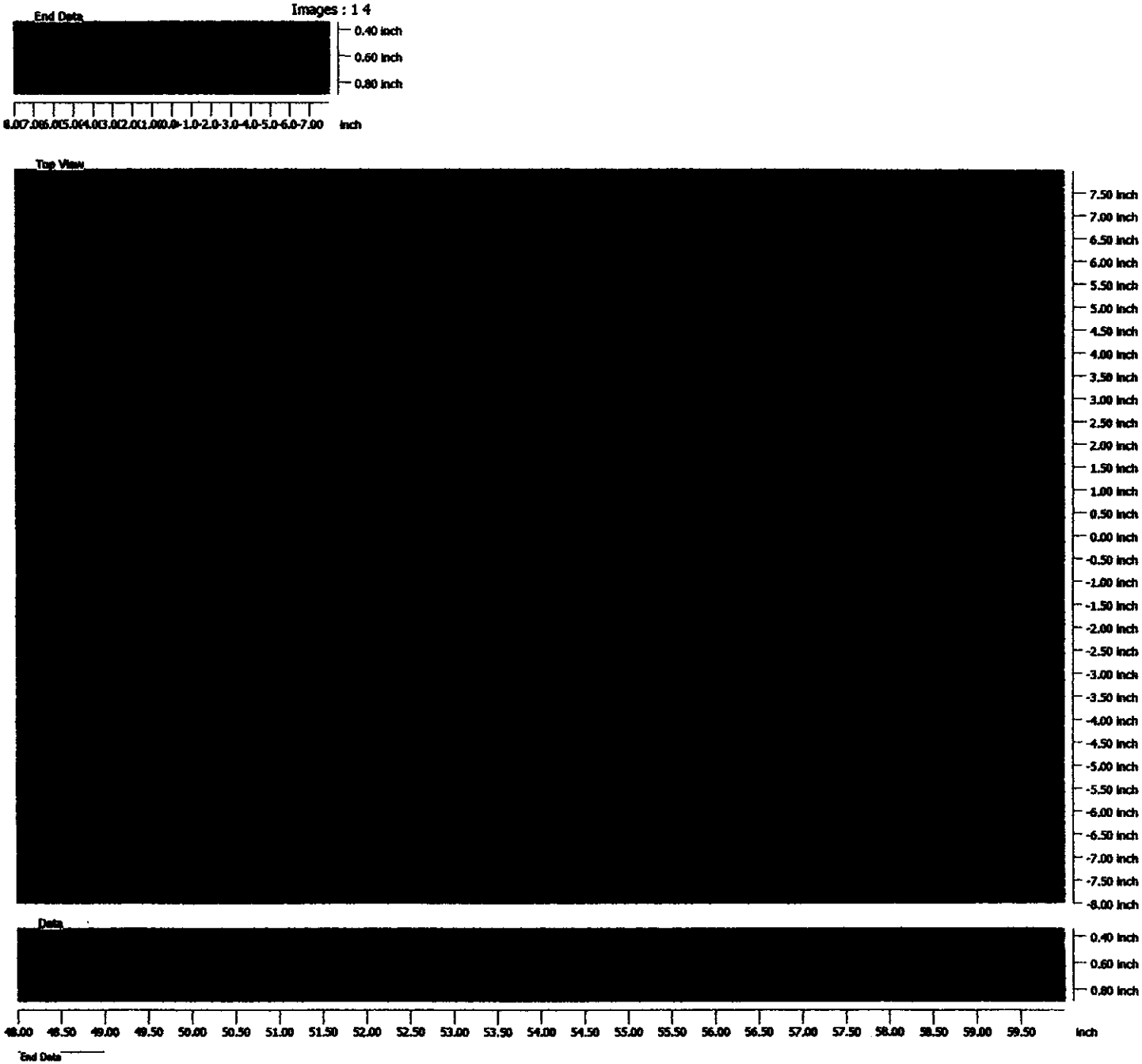


WALL SCAN 1/107AP/2B
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 17:08
2: P-scan, Images, t-scan data1, 6/21/00 17:08
3: T-scan, Images, t-scan data1, 6/21/00 17:08

Printed on 2000-8-24 at 7:54 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2B.

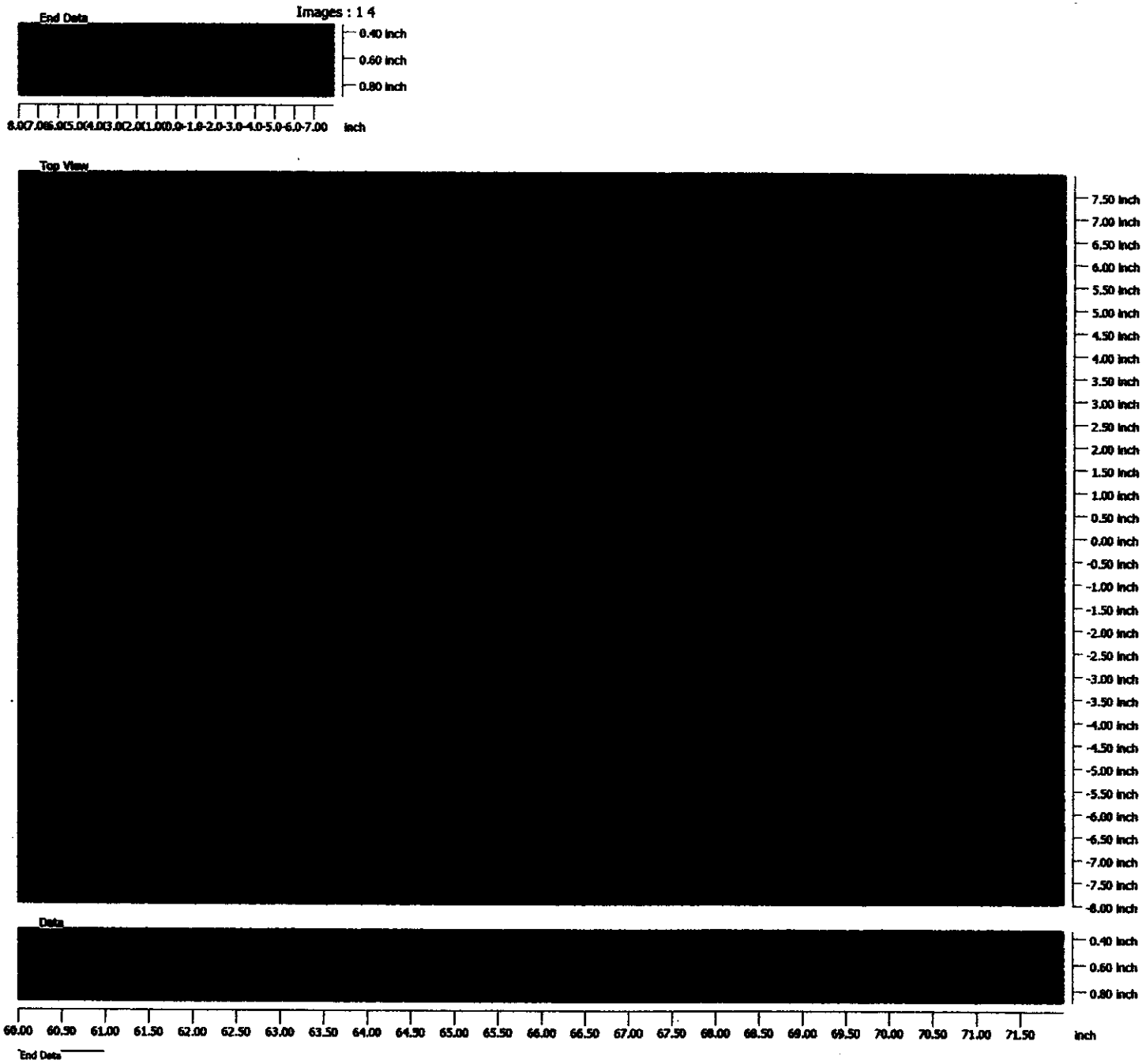
Images : 1 4



WALL SCAN 1/107AP/2B
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, t-scan data1, 6/21/00 17:08
2: P-scan, Images, t-scan data1, 6/21/00 17:08
3: T-scan, Images, t-scan data1, 6/21/00 17:08

Printed on 2000-8-24 at 7:54 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/2B.



4/00

# ULTRASONIC P-SCAN DATA REPORT

Page 30 of 449

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/21/00 13:39 | EXAM END: 19:23 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 1st Vert. WAll Plate TO Plate (Plate 2) | | CALIBRATED RANGE: 0" TO 1.414" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 88.6" | | REF. LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .500 Nom. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 1/107AP/2, 2A & 2B | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 45° | | |
| $X_0$ REF. POINT (Lo): 1" Below Horz weld | $Y_0$ REF. POINT (Wo): C/L of 24" Riser | SCAN WIDTH: 15" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
No Crack-Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Level III Date 6/21/00 | Level III Date 8/4/00 | (N1) Level ___ Date ___ | ___ of ___ |

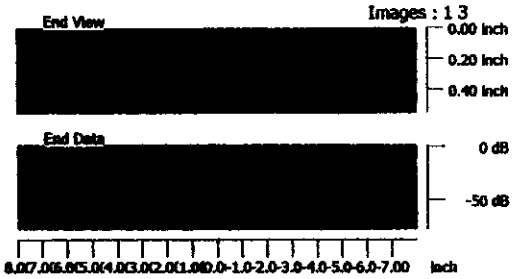
(N1) See Attached Letter from J. B. ELDER

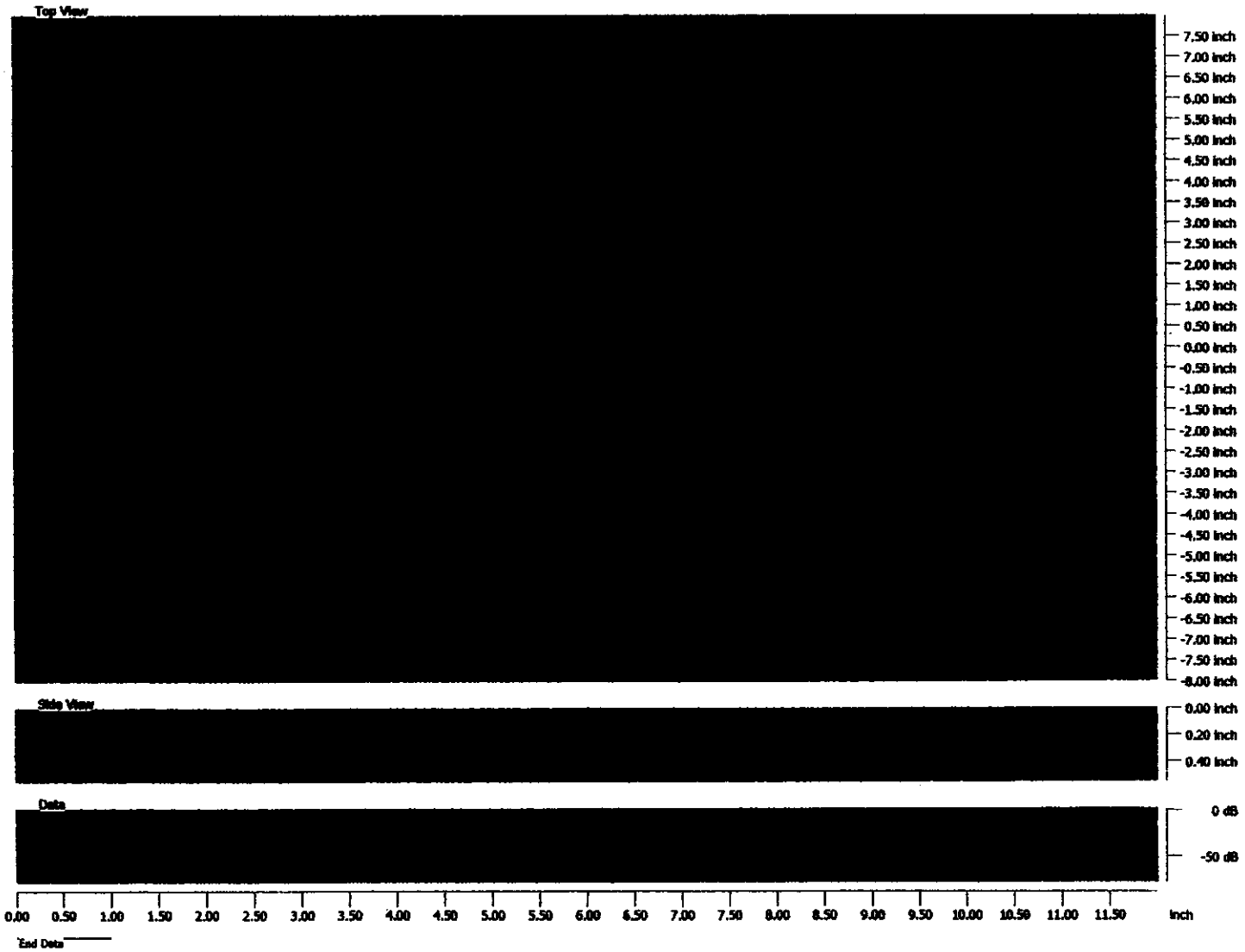
WALL SCAN 1/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, p-scan data1, 6/21/00 14:33
2: P-scan, Images, p-scan data1, 6/21/00 14:33
3: T-scan, Images, p-scan data1, 6/21/00 14:33

Printed on 2000-8-6 at 16:58 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2.

Images : 1 3



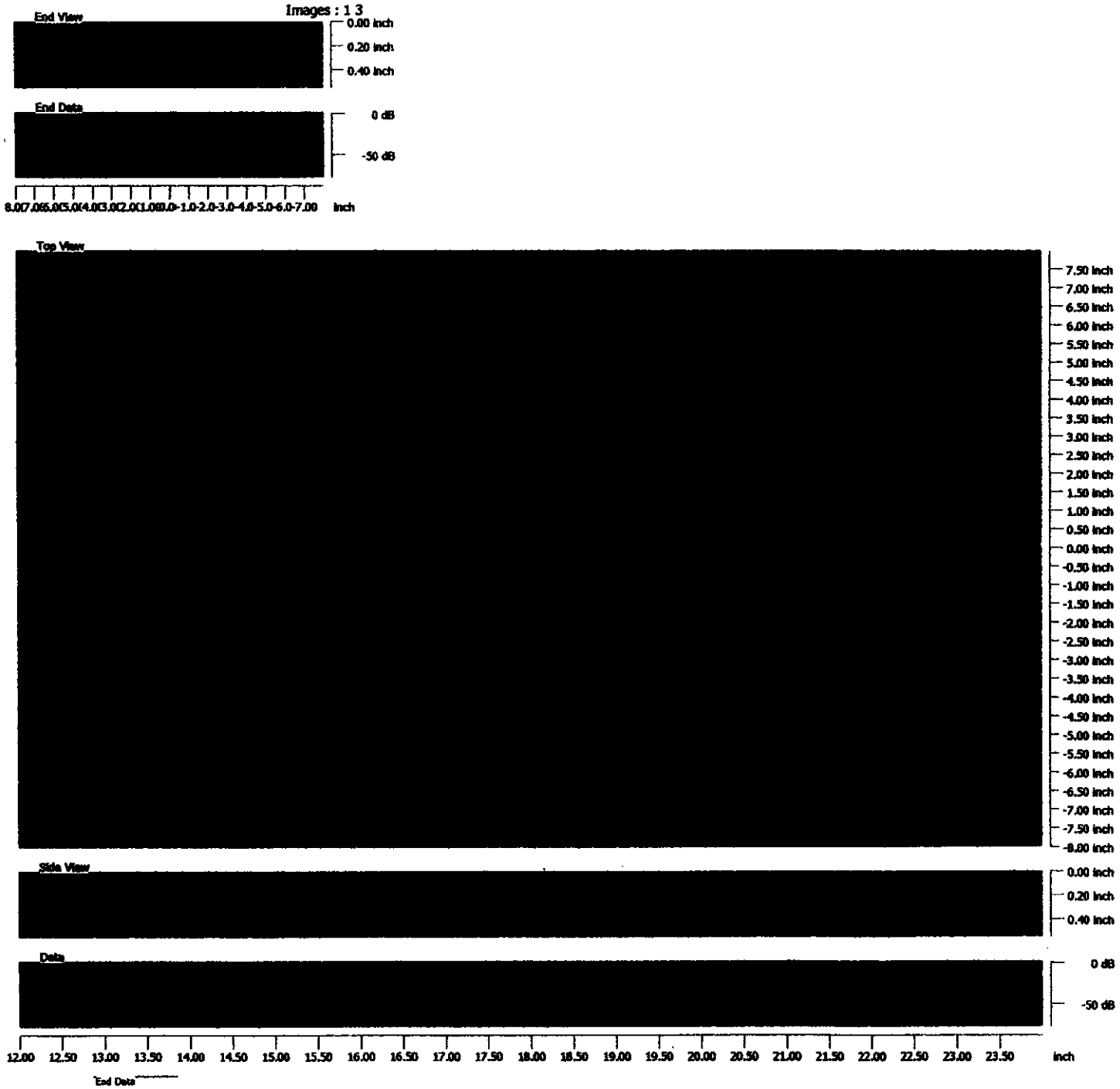



WALL SCAN 1/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, p-scan data1, 6/21/00 14:33
2: P-scan, Images, p-scan data1, 6/21/00 14:33
3: T-scan, Images, p-scan data1, 6/21/00 14:33

Printed on 2000-8-6 at 16:59 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2.

Images : 1 3



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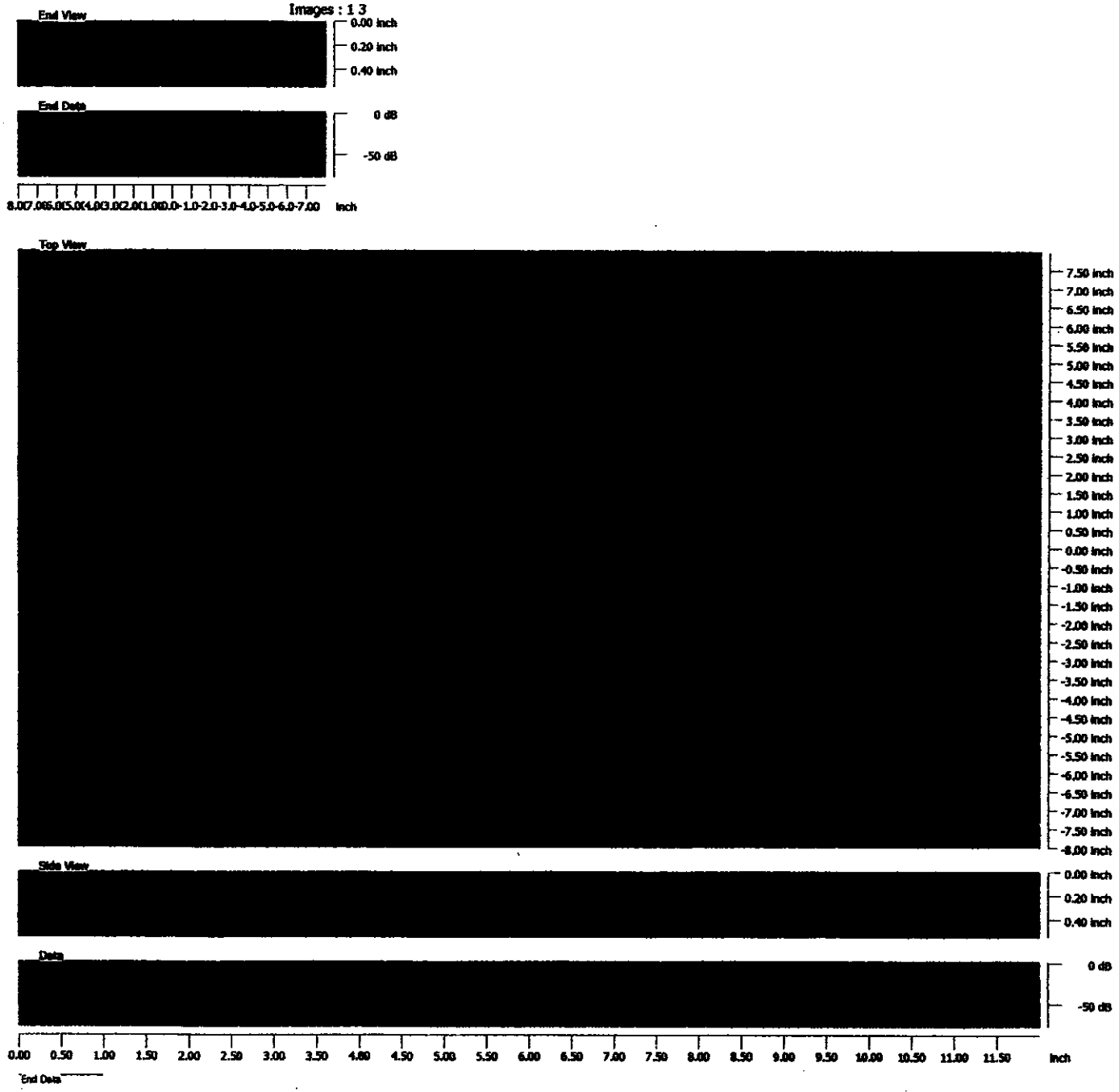
WALL SCAN 1/107AP/2A
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, p-scan data1, 6/21/00 16:06
2: P-scan, Images, p-scan data1, 6/21/00 16:06
3: T-scan, Images, p-scan data1, 6/21/00 16:06

Printed on 2000-8-24 at 7:49 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2A.

Images : 1 3



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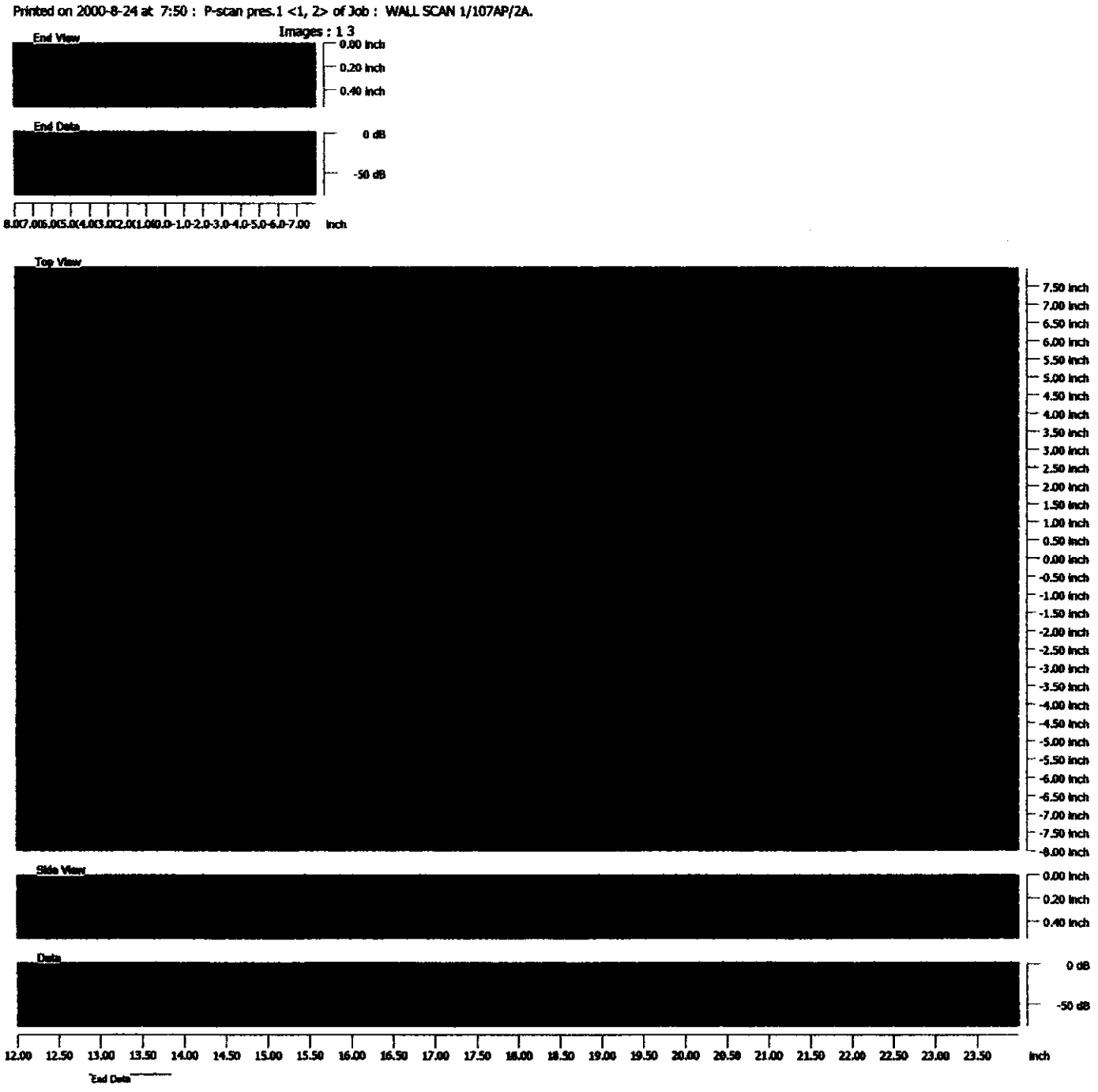
WALL SCAN 1/107AP/2A
WHN
AP / 200E TANK FARM
PLATE 2/1

1: P-scan, Images, p-scan data1, 6/21/00 16:06
2: P-scan, Images, p-scan data1, 6/21/00 16:06
3: T-scan, Images, p-scan data1, 6/21/00 16:06

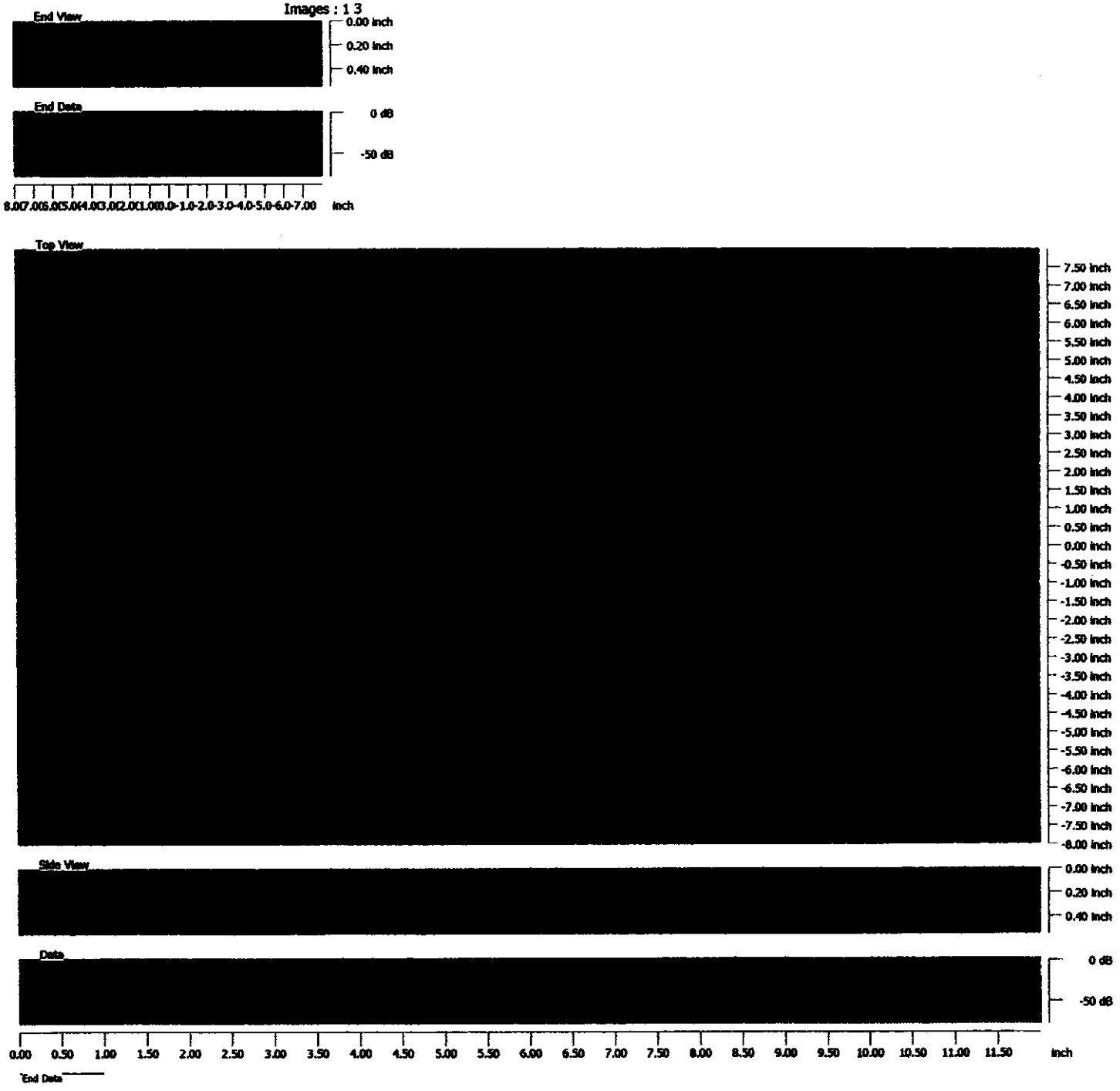
Printed on 2000-8-24 at 7:50 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2A.



WHN
AP / 200E TANK FARM
PLATE 2/1
Printed on 2000-8-24 at 7:57 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2B.

2: P-scan, Images, p-scan data1, 6/21/00 17:08
3: T-scan, Images, p-scan data1, 6/21/00 17:08

Images : 1 3



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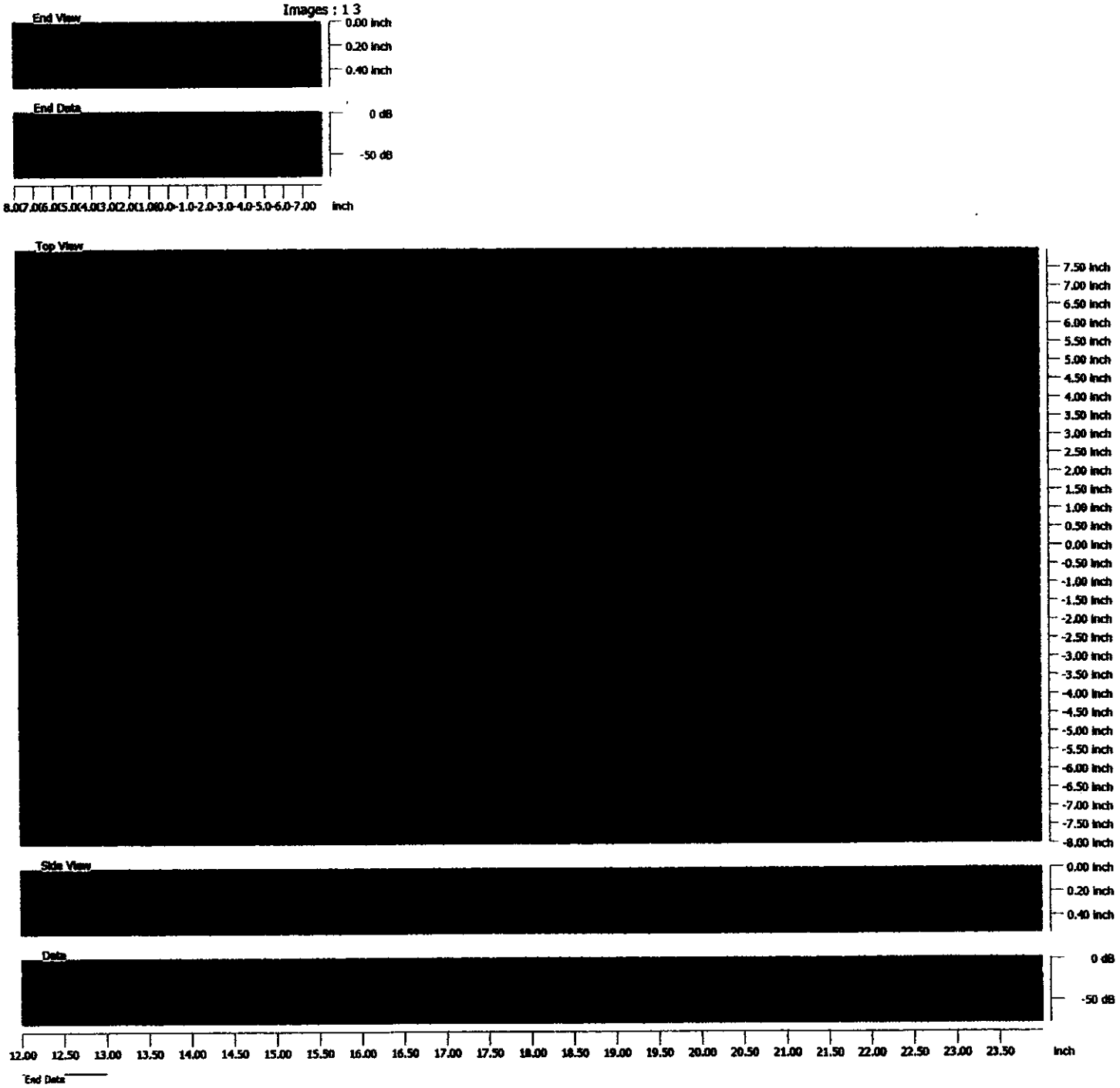
WHN
AP / 200E TANK FARM
PLATE 2/1
Printed on 2000-8-24 at 7:58 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2B.

2: P-scan, Images, p-scan data1, 6/21/00 17:08
3: T-scan, Images, p-scan data1, 6/21/00 17:08

Images : 1 3



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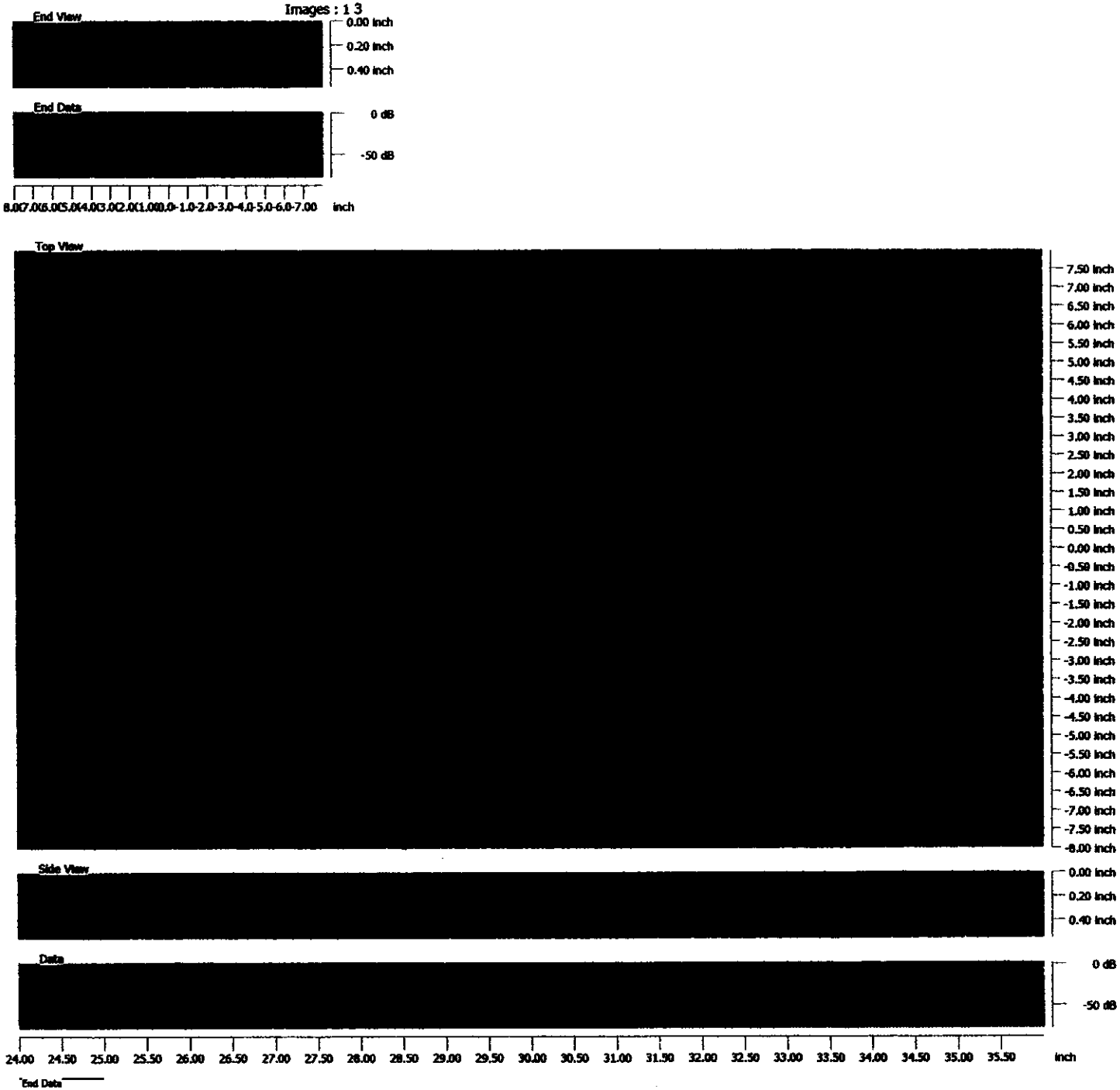
WHN
AP / 200E TANK FARM
PLATE 2/1
Printed on 2000-8-24 at 7:58 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2B.

2: P-scan, Images, p-scan data1, 6/21/00 17:08
3: T-scan, Images, p-scan data1, 6/21/00 17:08

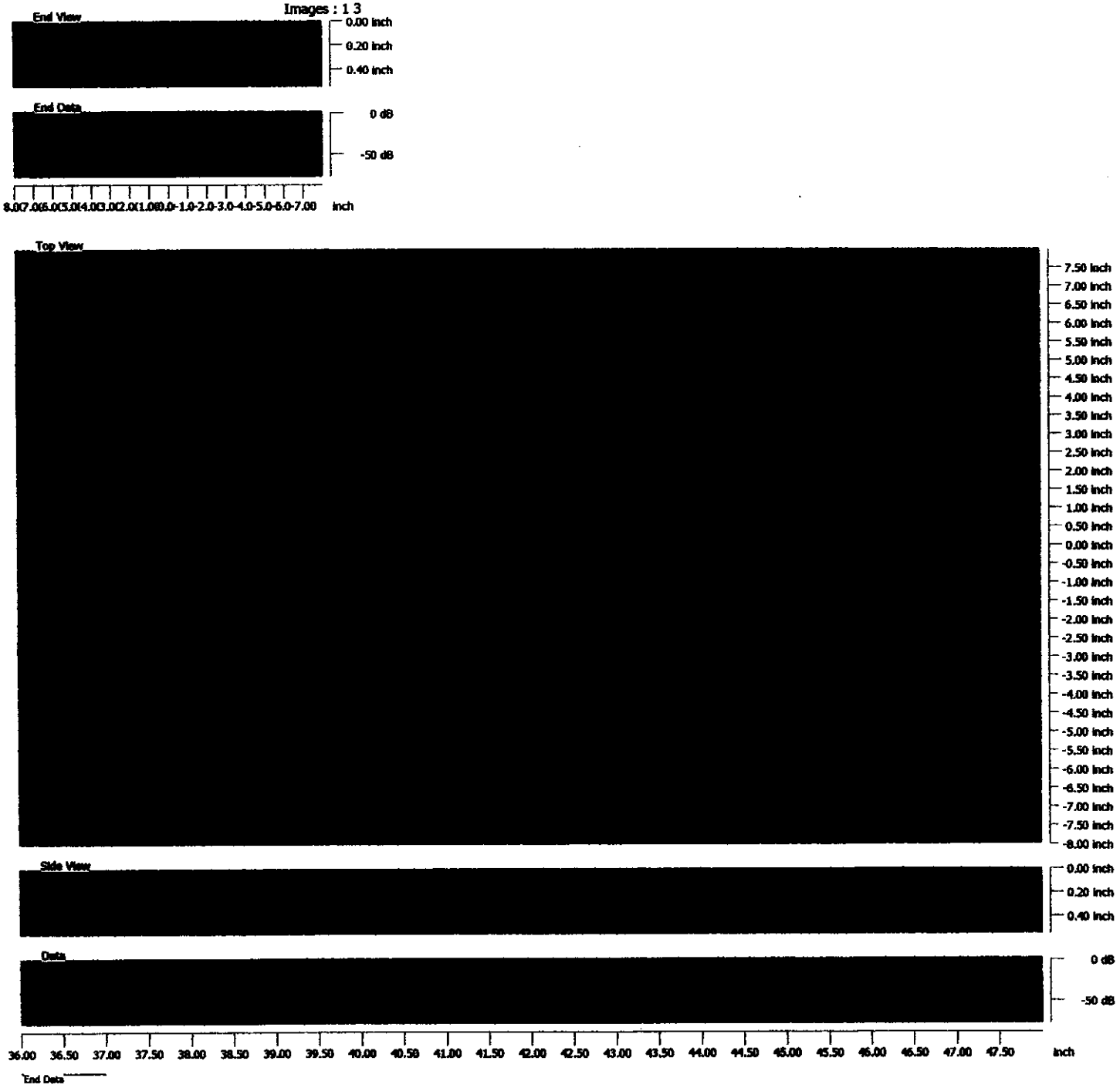
Images : 1 3



WHN
AP / 200E TANK FARM
PLATE 2/1
Printed on 2000-8-24 at 7:58 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2B.

2: P-scan, Images, p-scan data1, 6/21/00 17:08
3: T-scan, Images, p-scan data1, 6/21/00 17:08

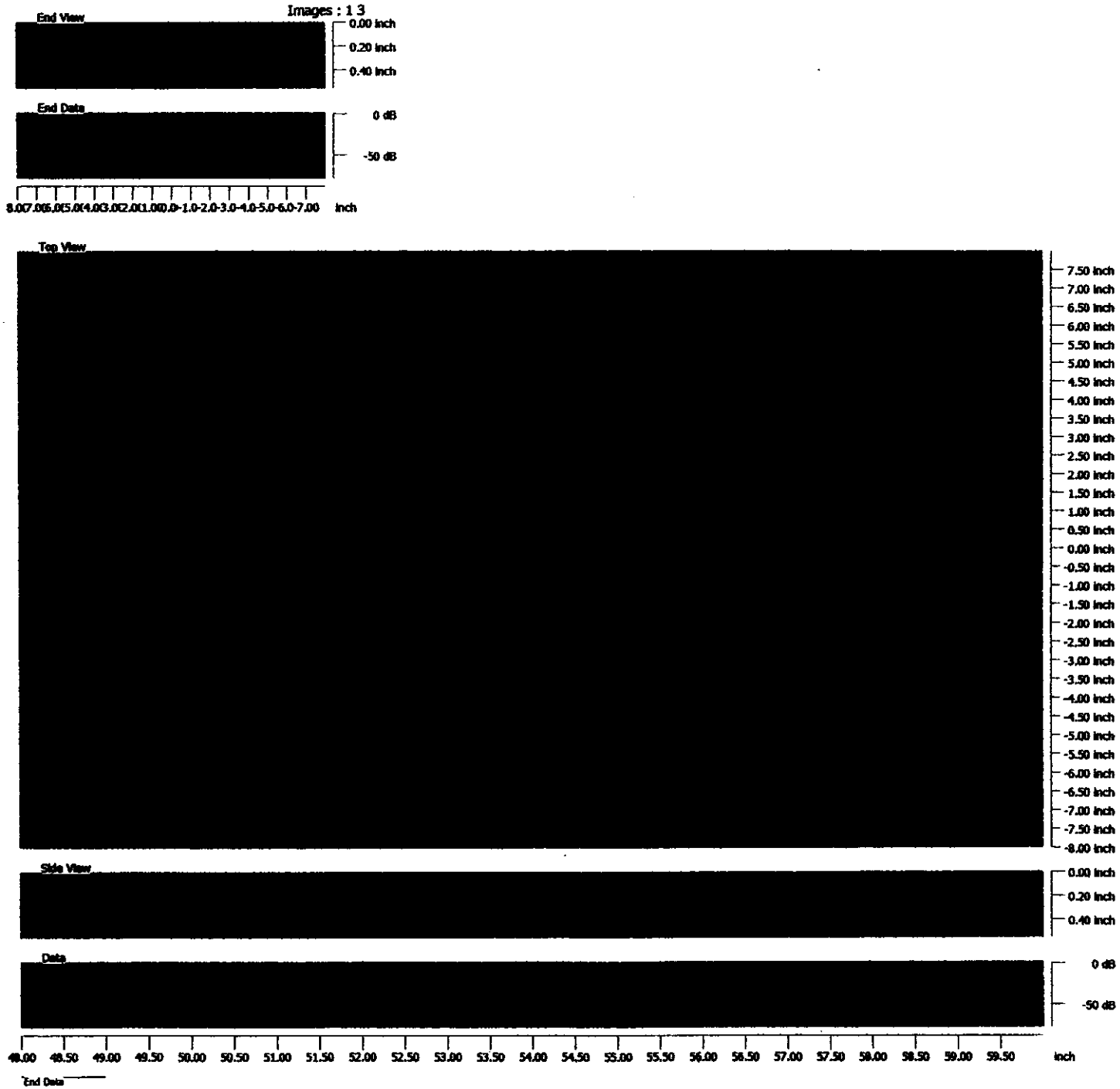
Images : 1 3



WHN
AP / 200E TANK FARM
PLATE 2/1
Printed on 2000-8-24 at 7:59 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2B.

2: P-scan, Images, p-scan data1, 6/21/00 17:08
3: T-scan, Images, p-scan data1, 6/21/00 17:08

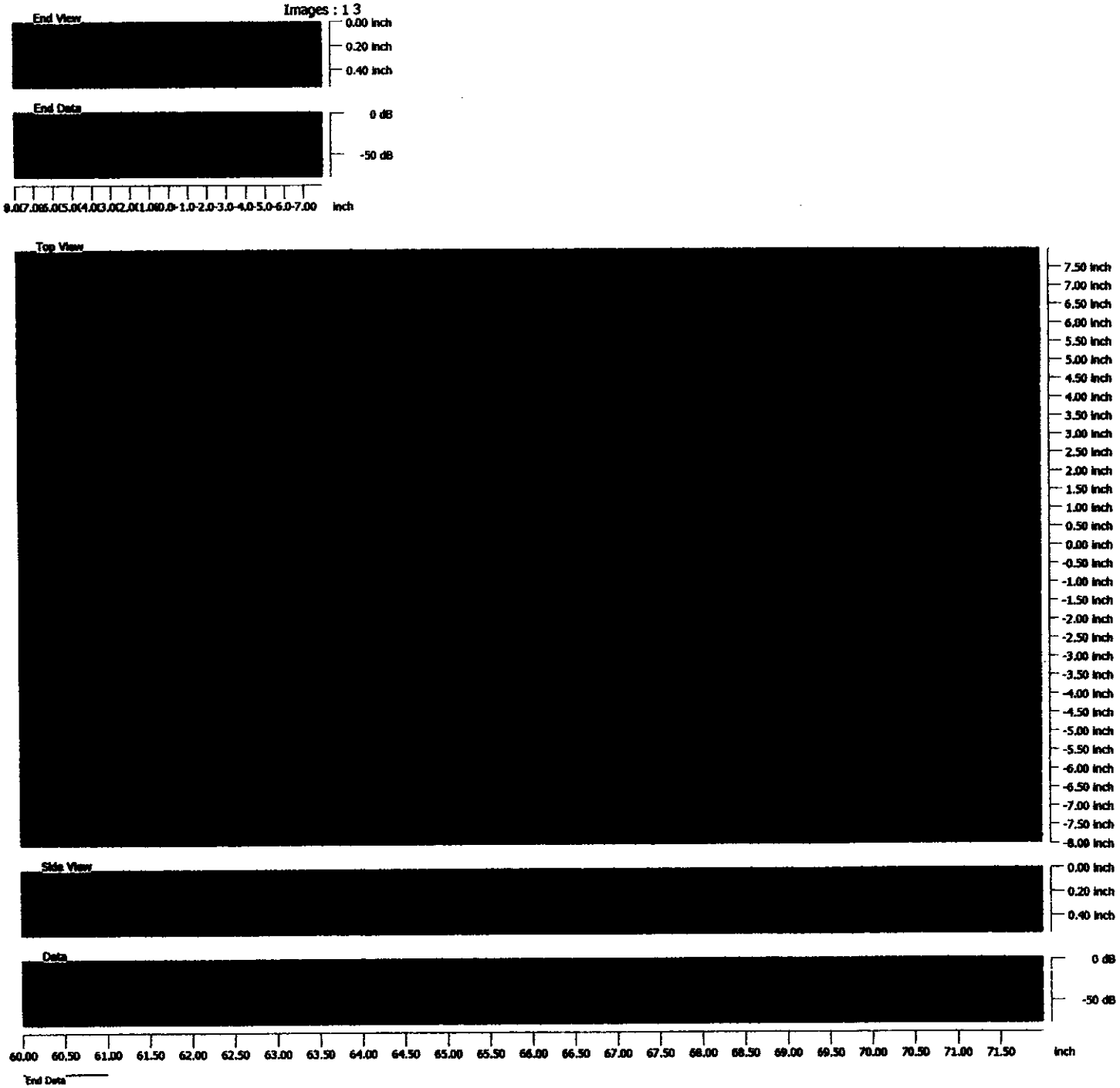
Images : 1 3



WHN
AP / 200E TANK FARM
PLATE 2/1
Printed on 2000-8-24 at 7:59 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/2B.

2: P-scan, Images, p-scan data1, 6/21/00 17:08
3: T-scan, Images, p-scan data1, 6/21/00 17:08

Images : 1 3



4/00

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# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/8/00 9:41 | EXAM END: 21:50 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM THICKNESS: .5625" |
| CONFIGURATION: 1st Vert. Wall Plate TO Plate (Plate 3) | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 88.7" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER | | CONDITION |
| FILE NAME/ITEM#: Wall Scan 1/107AP/3 | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE 0° | | |
| $X_0$ REF POINT ($L_0$): 1" Below Horz Weld | $Y_0$ REF POINT ($W_0$): C/L of 24" Riser | SCAN WIDTH: 15" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK R LIC | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .580" | .572" | | |
| | 12" | 24" | | | .580" | .574" | | |
| | 24" | 36" | | | .580" | .576" | | |
| | 36" | 48" | | | .585" | .579" | | |
| | 48" | 60" | | | .585" | .579" | | |
| | 60" | 72" | | | .585" | .577" | | |
| | 72" | 84" | | | .580" | .576" | | |
| | 84" | 88.7" | | | .580" | .572" | | |
| SUMMARY | | | | | | | | |

REMARKS

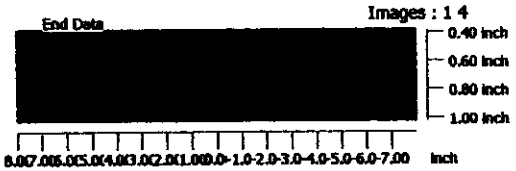
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/8/00 | [signature] Level III Date 6/8/00 | (N1) Level ___ Date ___ | ___ of ___ |

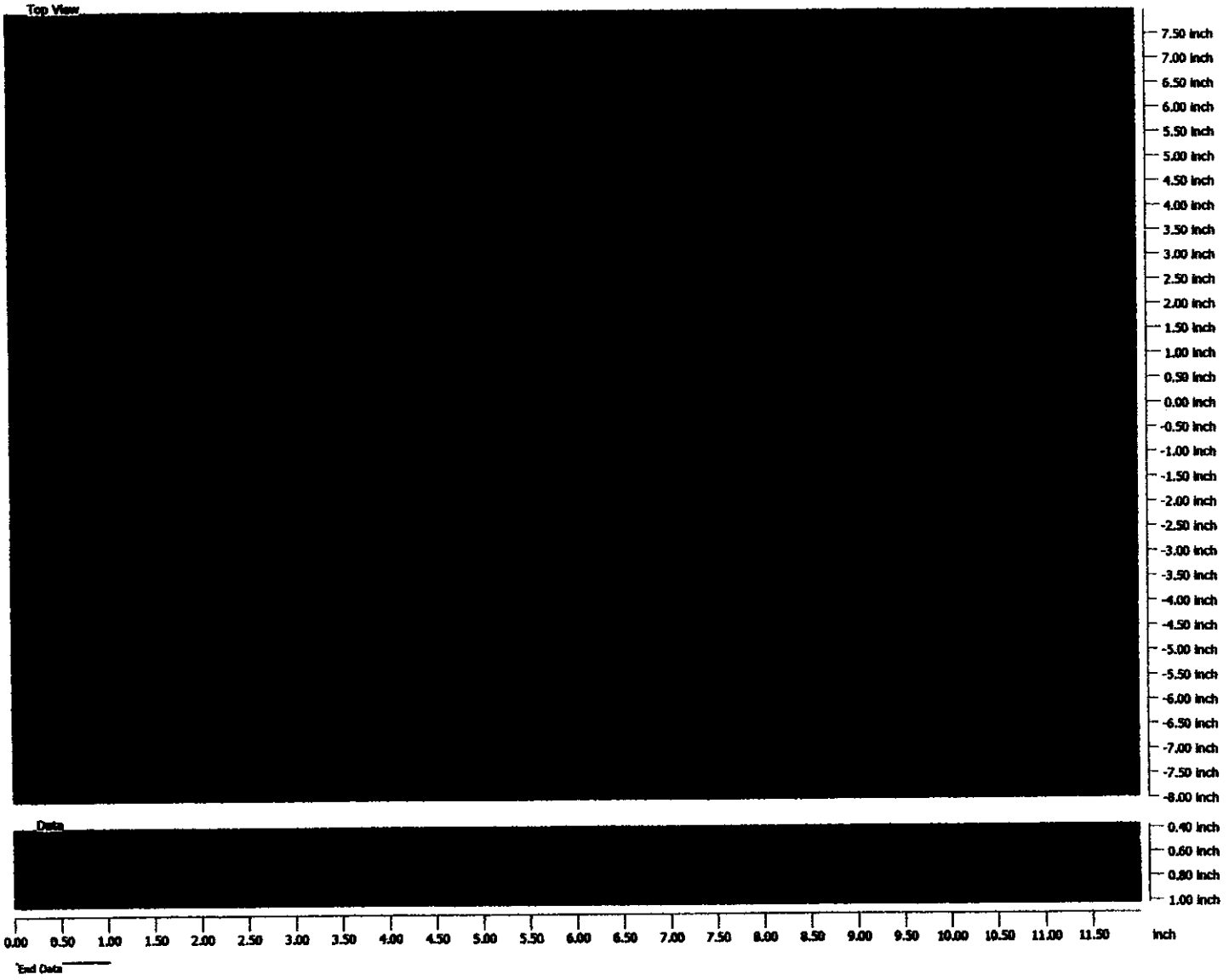
(N1) See Attached Letter from J. B. Elder

WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:46 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.



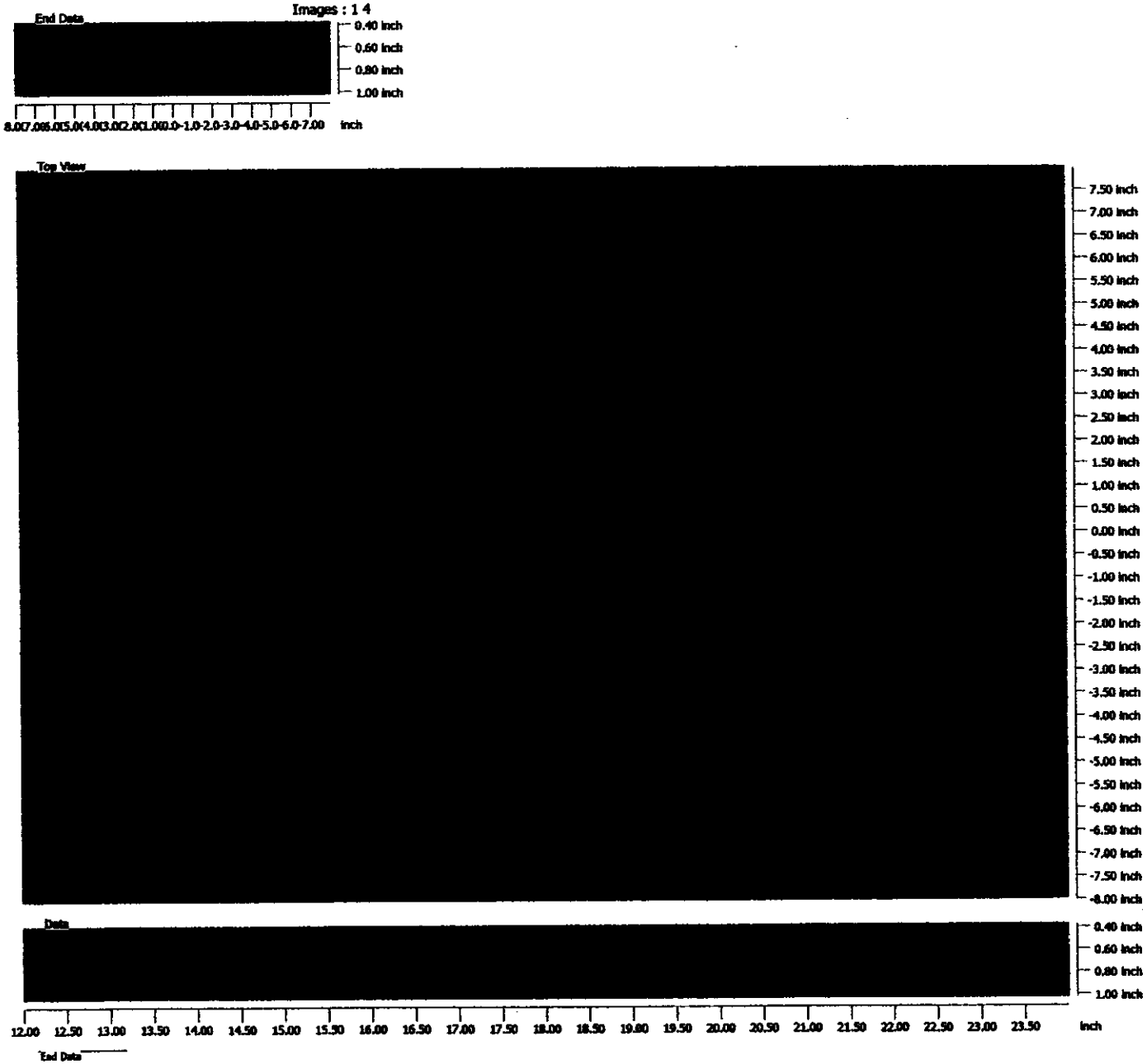



WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:46 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.

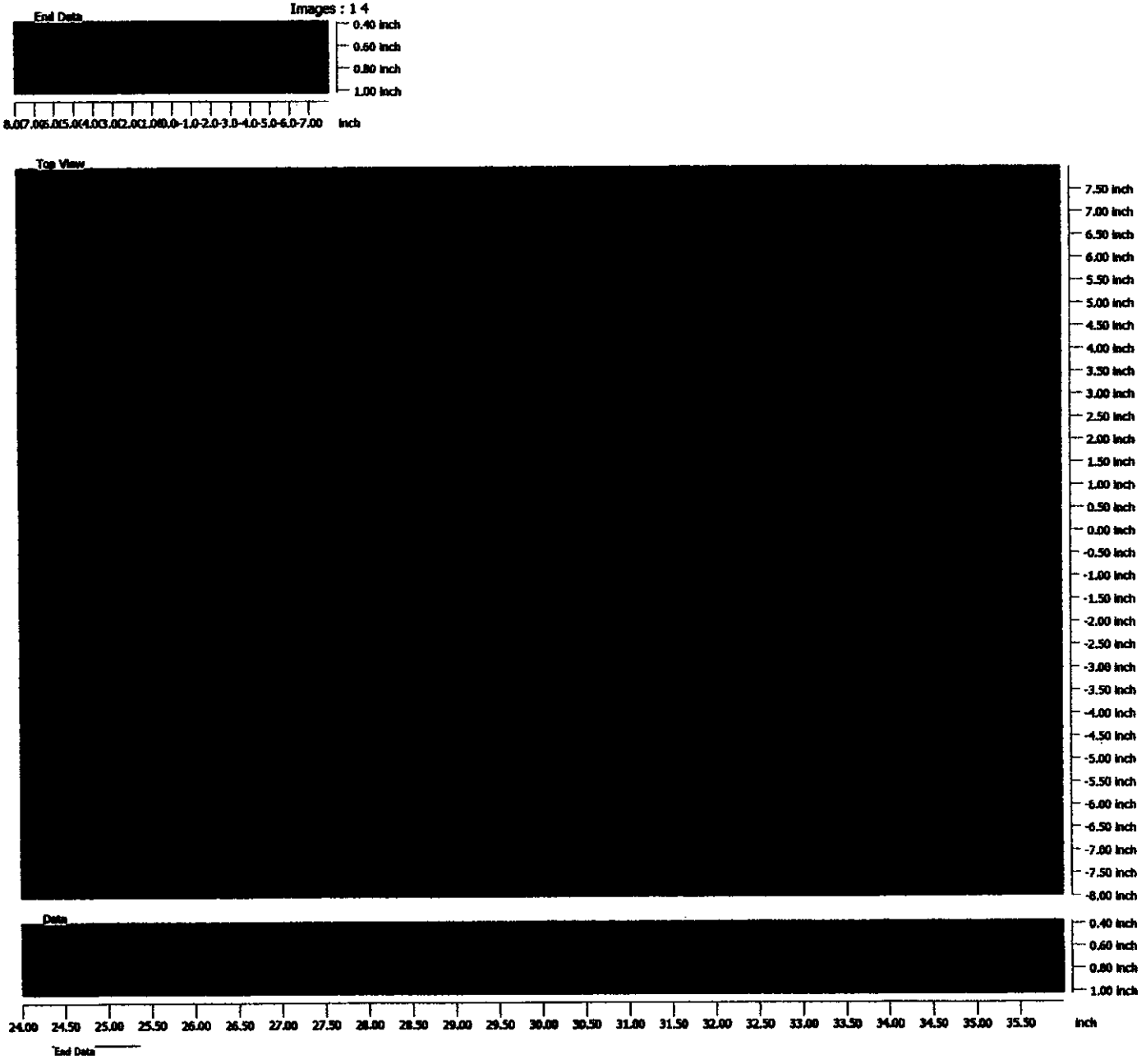
Images : 1 4



WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

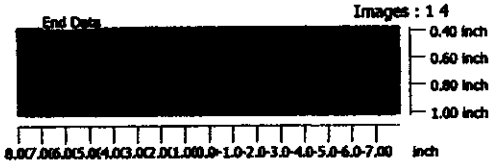
Printed on 2000-8-6 at 17:48 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.

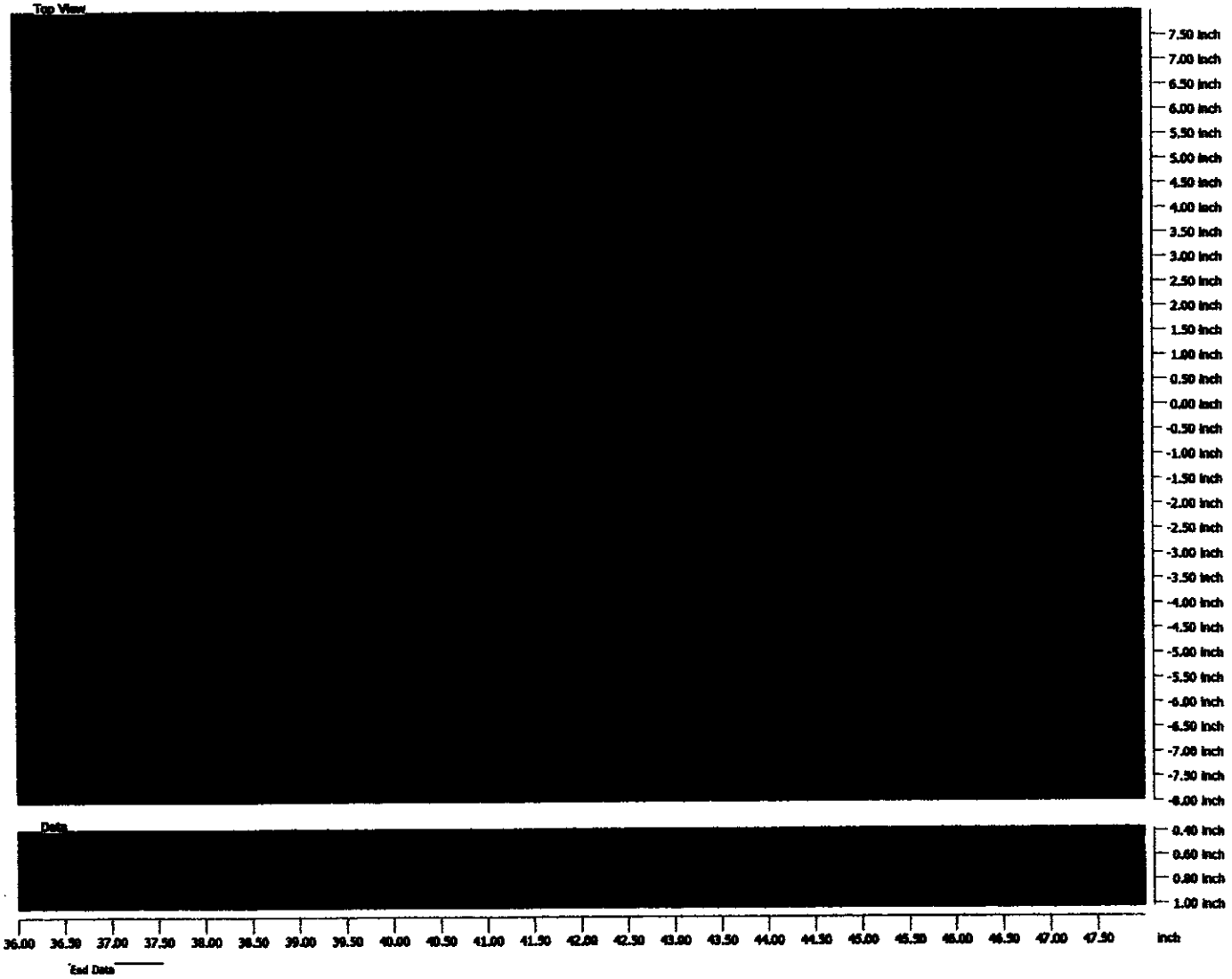


WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1
Printed on 2000-8-6 at 17:48 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

Images : 1 4



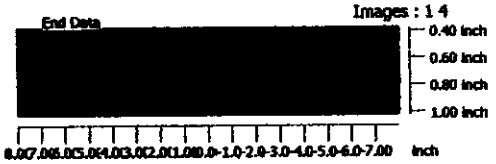



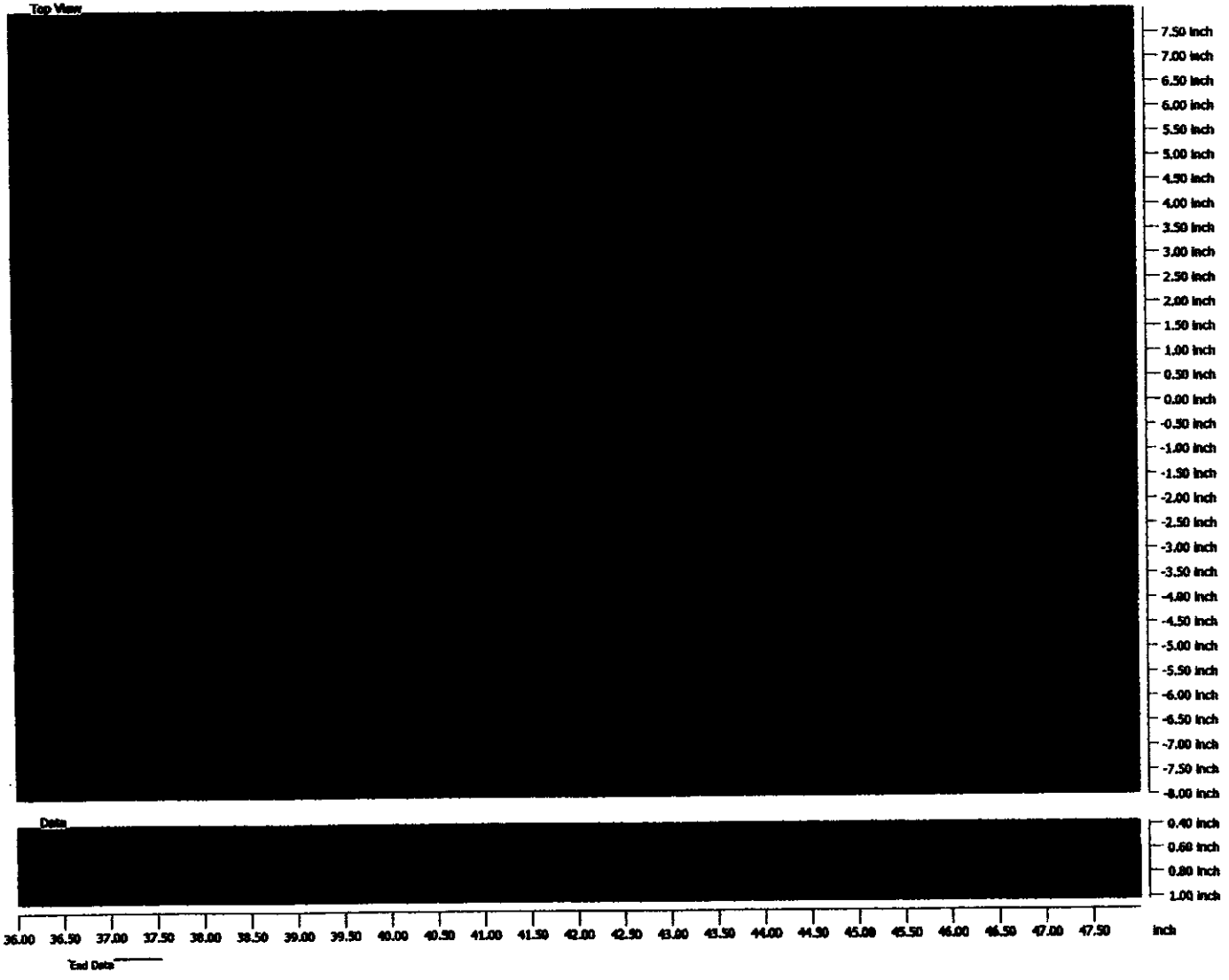
WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:50 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.

Images : 1 4

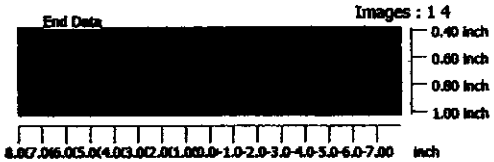


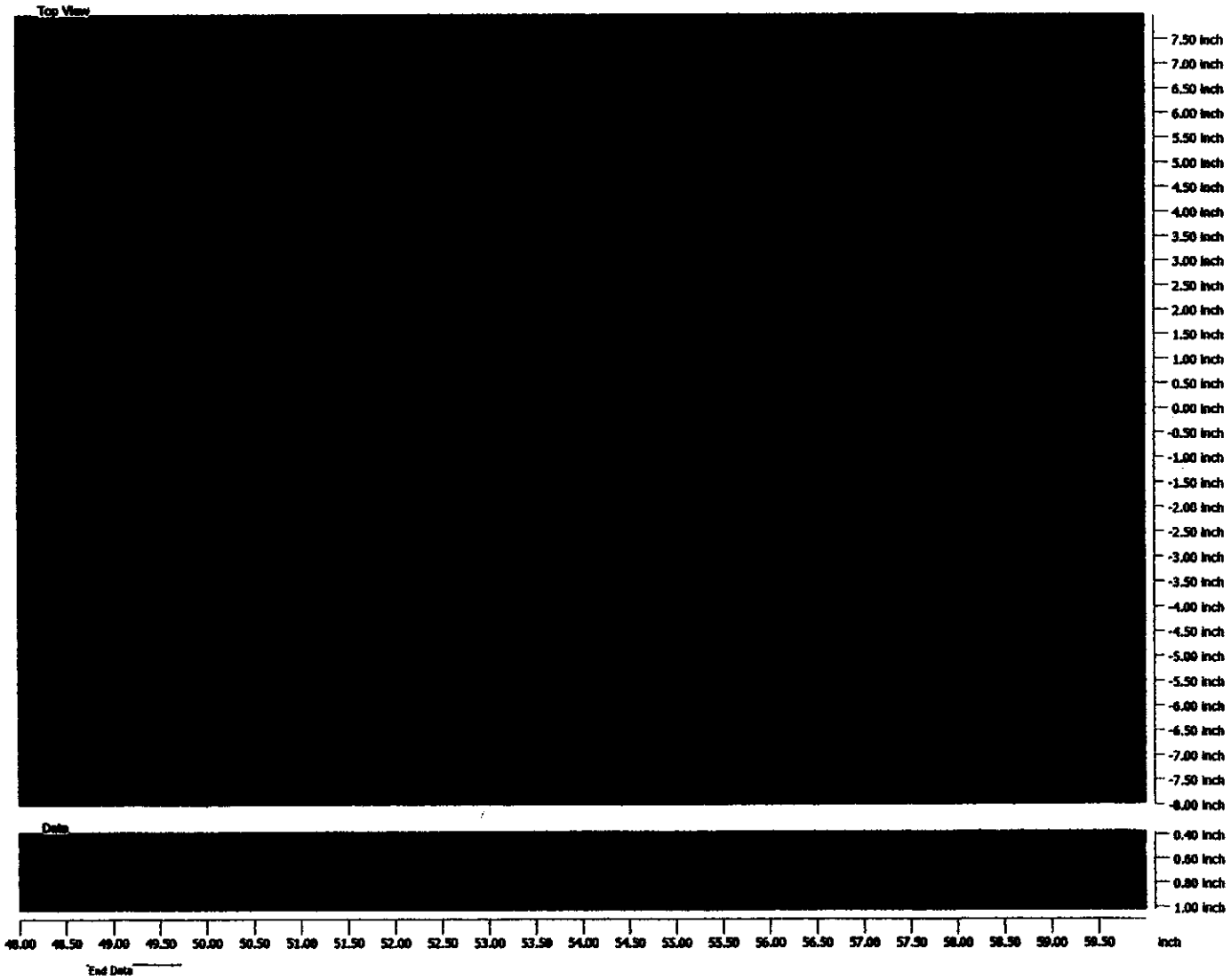



WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:50 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.

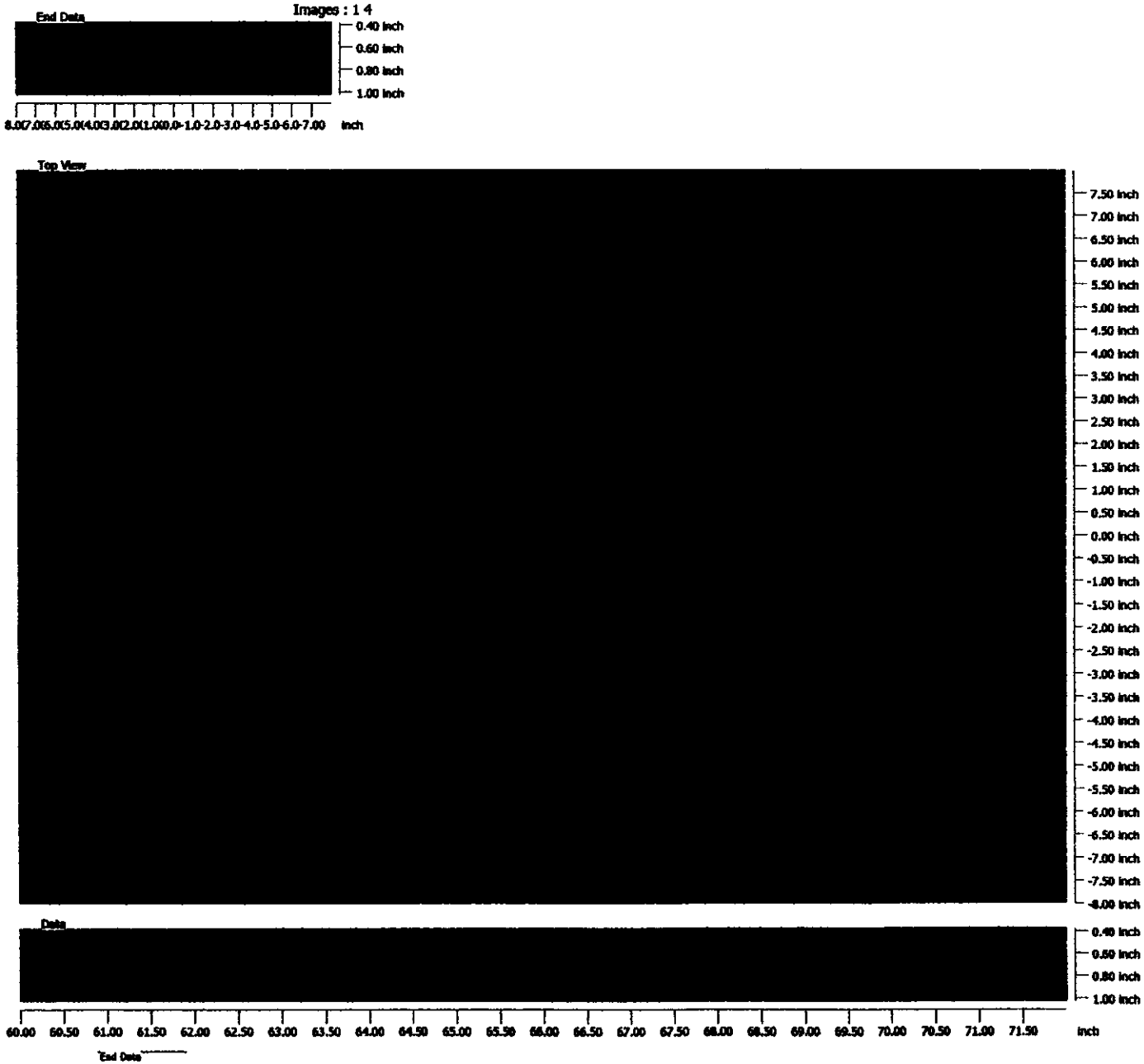


WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

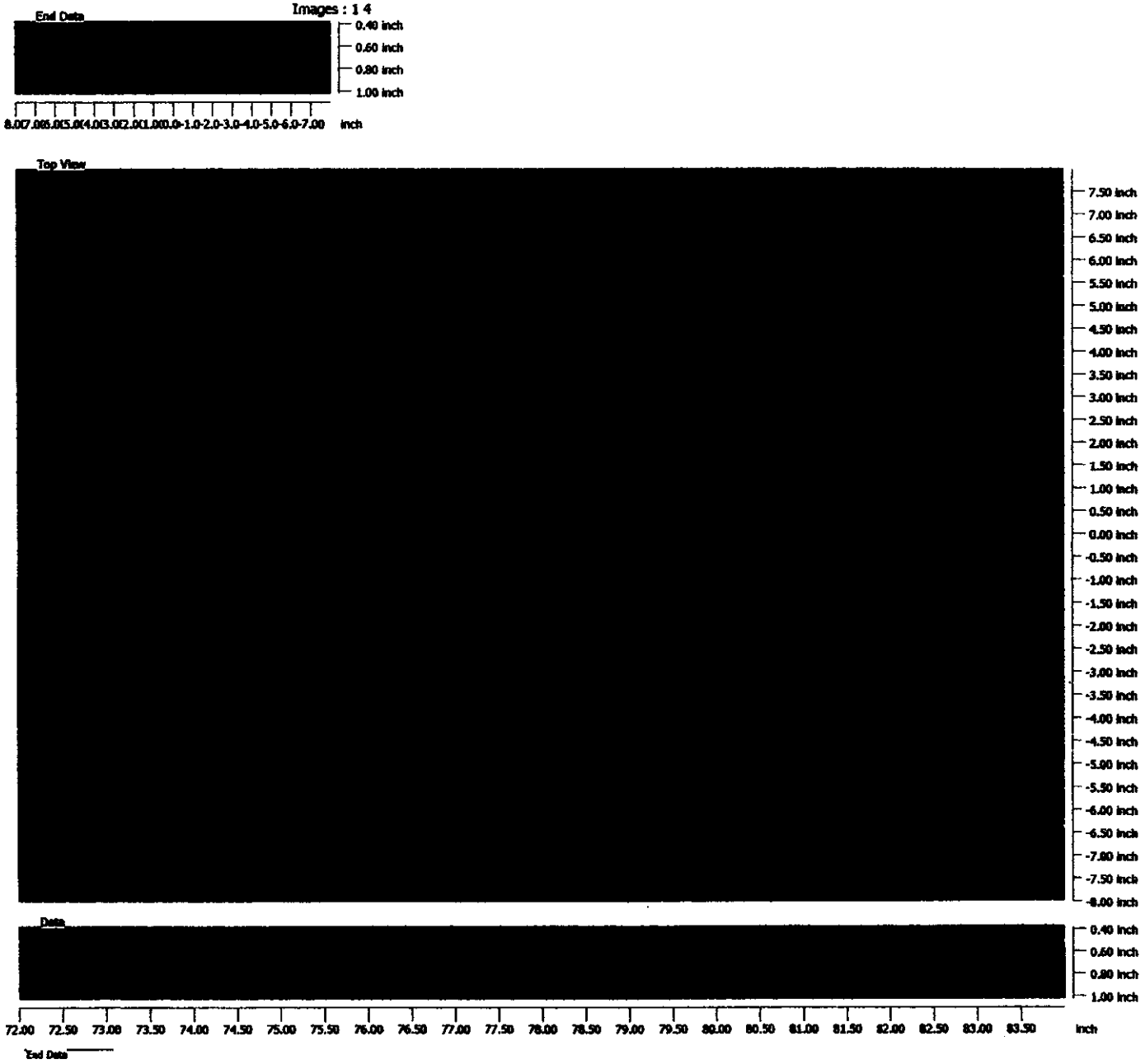
Printed on 2000-8-6 at 17:51 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.



WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

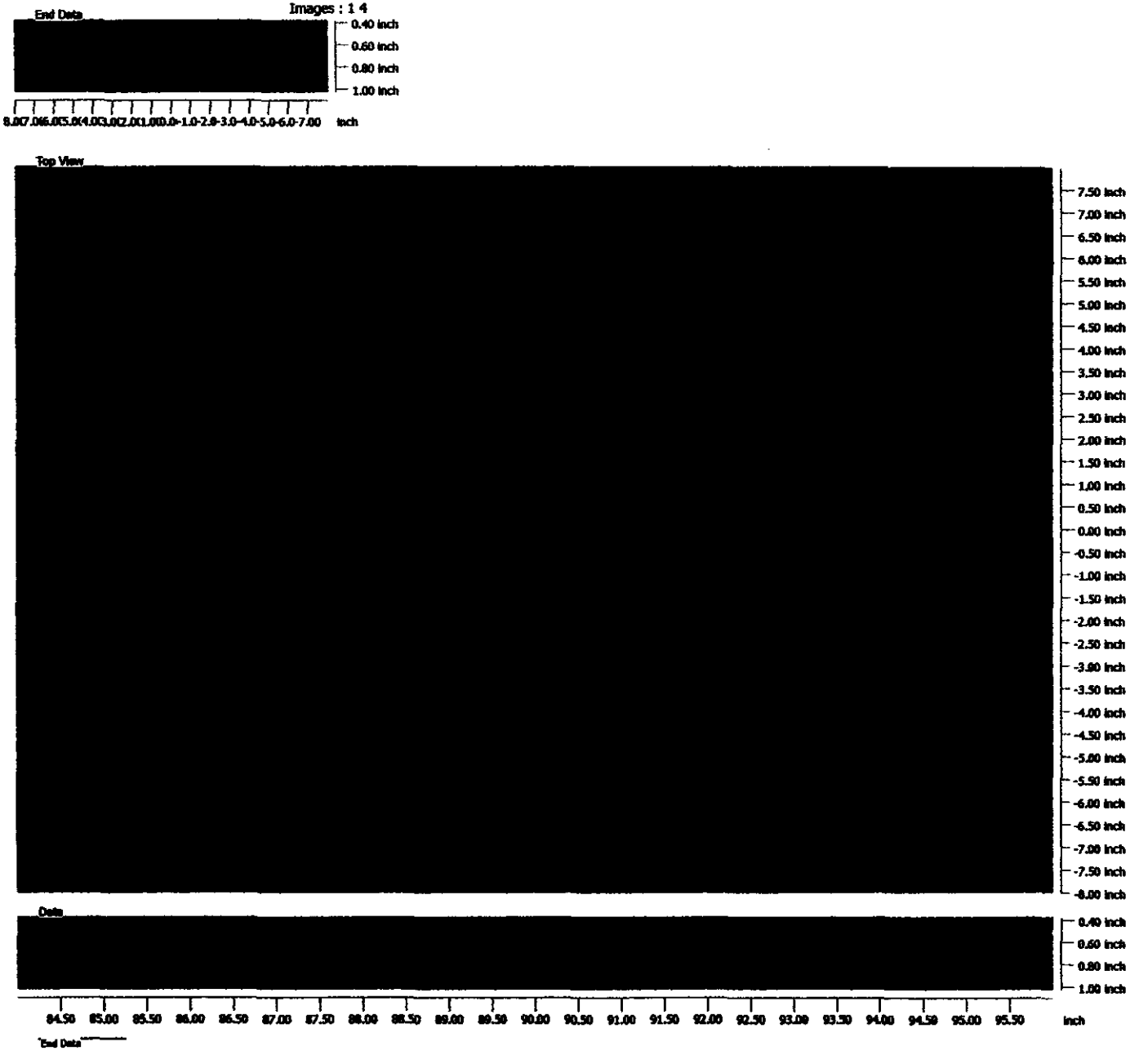
Printed on 2000-8-6 at 17:52 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.



WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, t-scan data1, 6/8/00 10:56
2: P-scan, Images, t-scan data1, 6/8/00 10:56
3: T-scan, Images, t-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:53 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/3.



4/00

# ULTRASONIC P-SCAN DATA REPORT

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| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/4/00 9:43 | EXAM END: 21:50 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 1st Vert. Wall Plate TO Plate (Plate 3) | | CALIBRATED RANGE: 0" TO 1.59" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 88.7" | | REF. LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .5625" Nom. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 1/107AP/3 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz weld | $Y_0$ REF. POINT ($W_0$): ℄ of 24" Riser | SCAN WIDTH: 15" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS: NO Crack-Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D. Dehn | Wesley D. Dehn | (N1) | |
| Level III Date 6/8/00 | Level III Date 8/6/00 | Level ___ Date ___ | ___ of ___ |

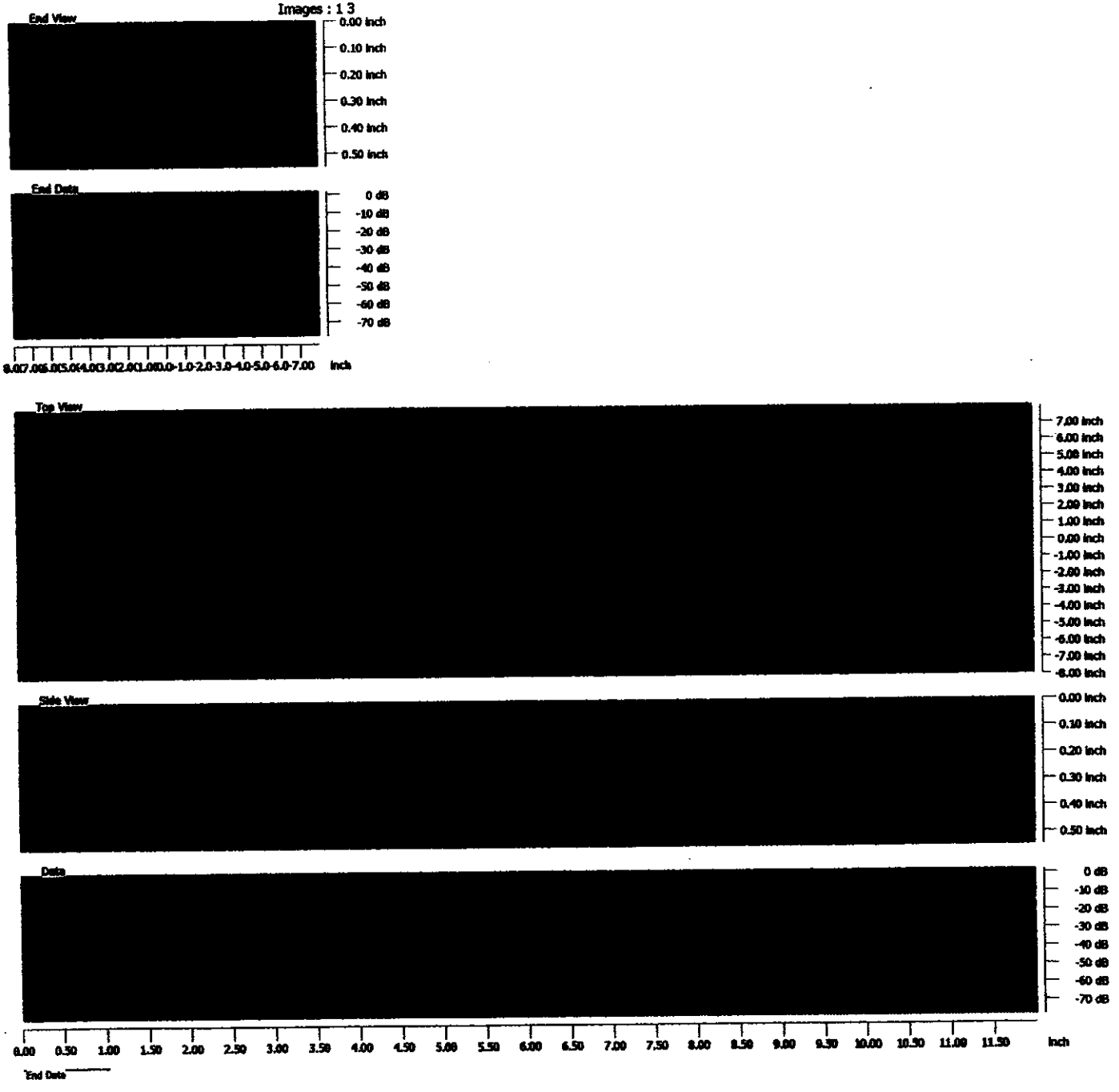
(N1) See Attached Letter from J. B. Elder

WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, p-scan data1, 6/8/00 10:56
2: P-scan, Images, p-scan data1, 6/8/00 10:56
3: T-scan, Images, p-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:55 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/3.

Images : 1 3



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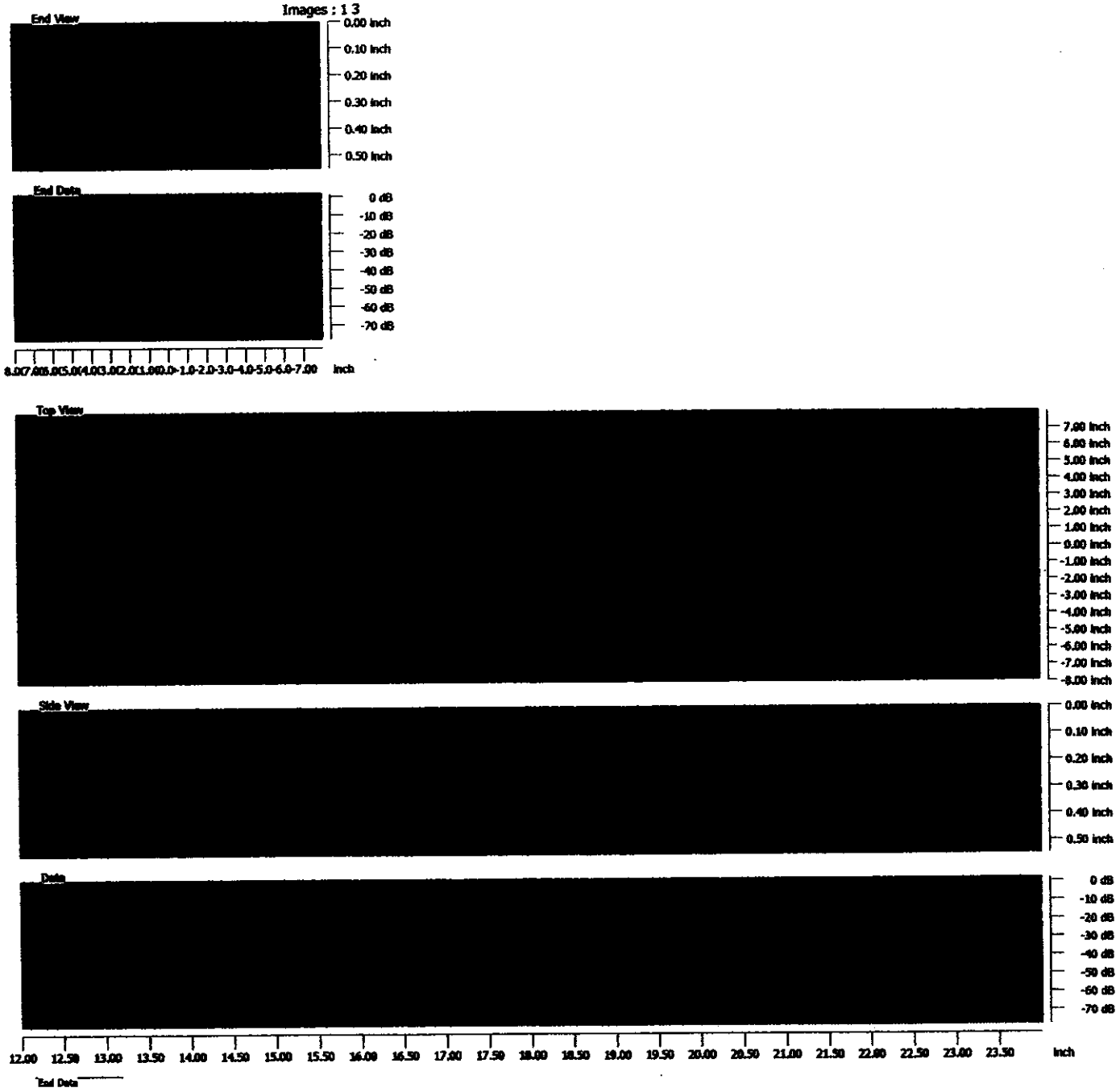
WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, p-scan data1, 6/8/00 10:56
2: P-scan, Images, p-scan data1, 6/8/00 10:56
3: T-scan, Images, p-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:55 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/3.

Images : 1 3

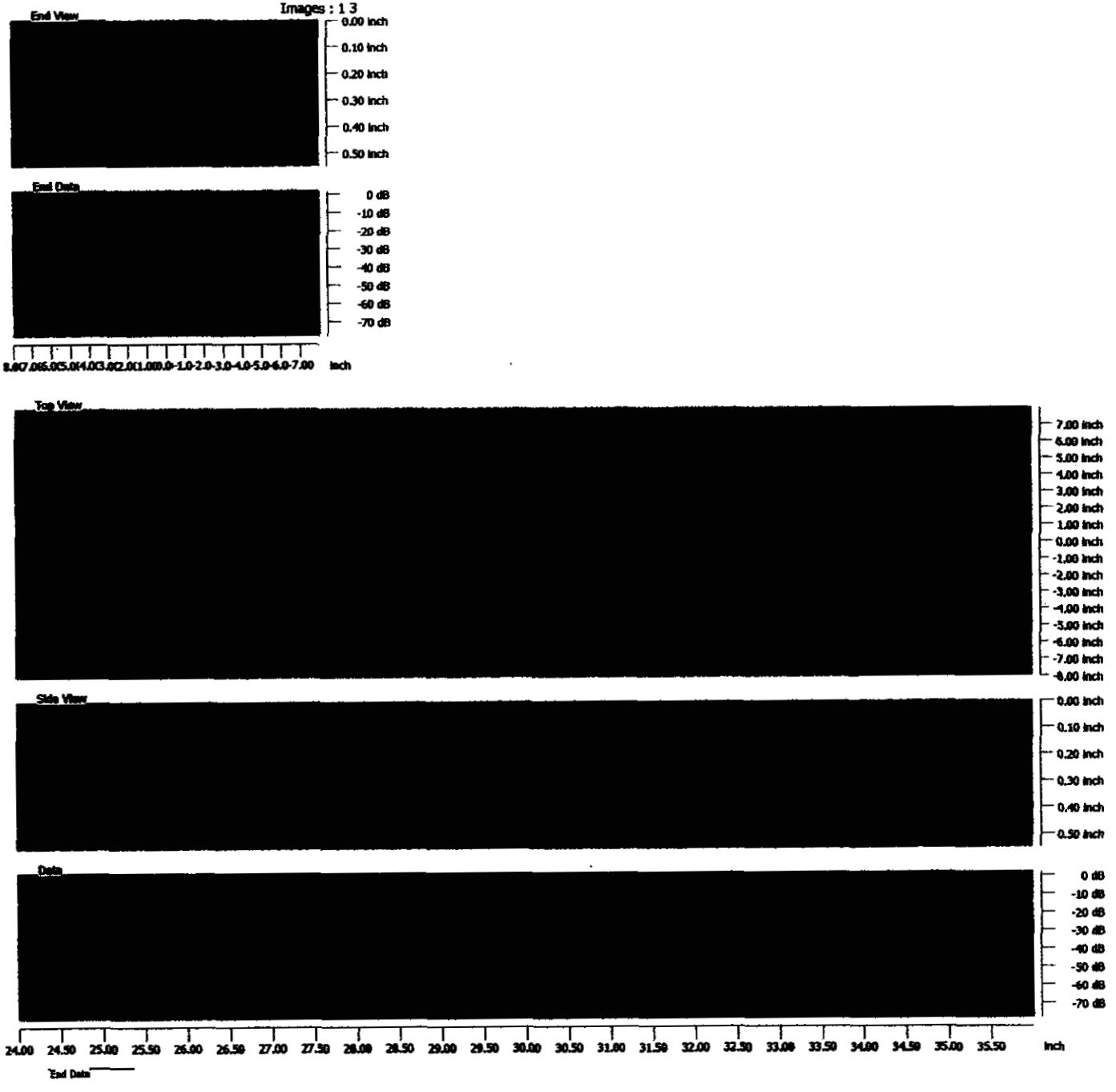


WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, p-scan data1, 6/8/00 10:56
2: P-scan, Images, p-scan data1, 6/8/00 10:56
3: T-scan, Images, p-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:56 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/3.

Images : 1 3



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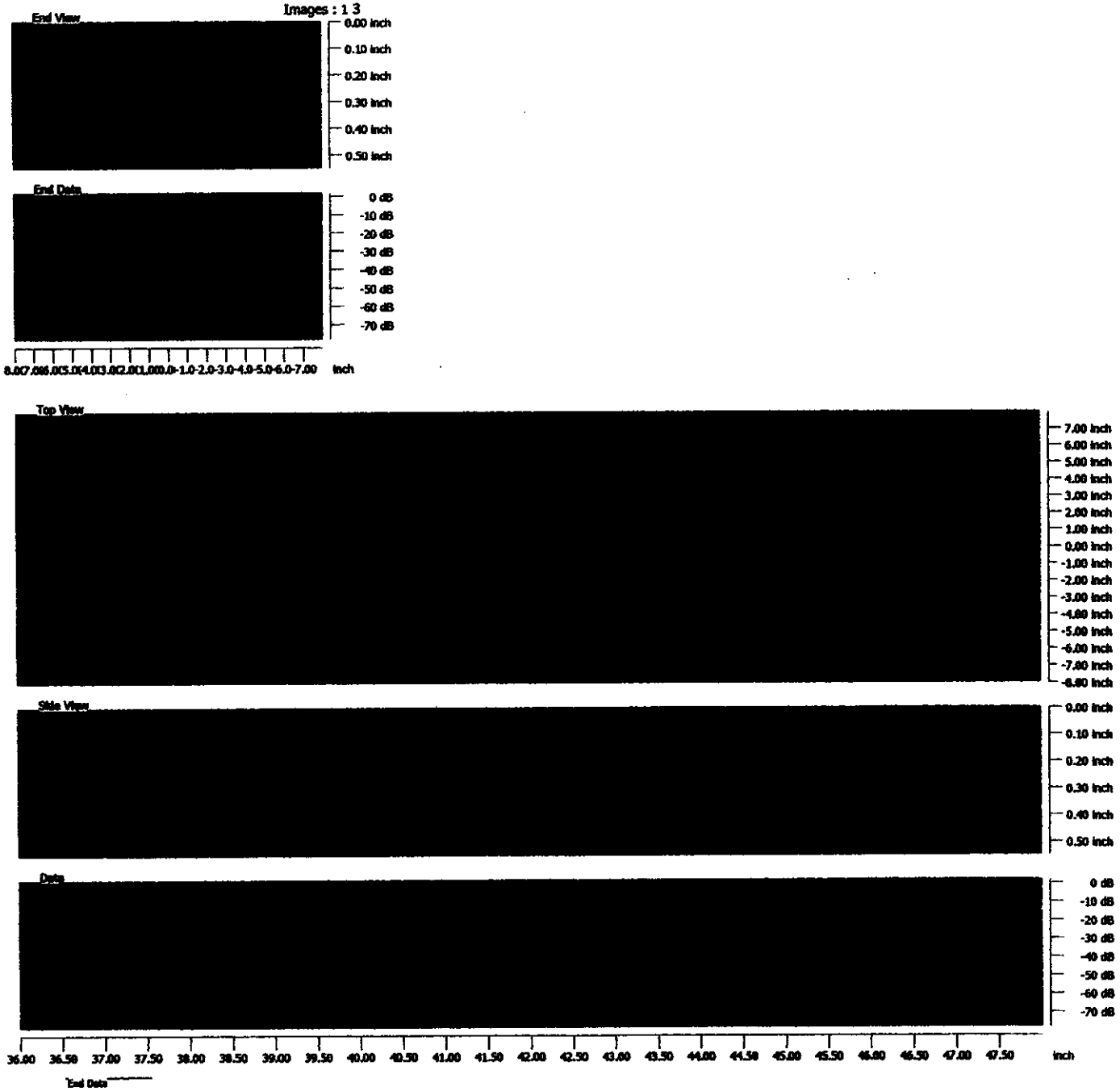
WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, p-scan data1, 6/8/00 10:56
2: P-scan, Images, p-scan data1, 6/8/00 10:56
3: T-scan, Images, p-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:56 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/3.

Images : 1 3



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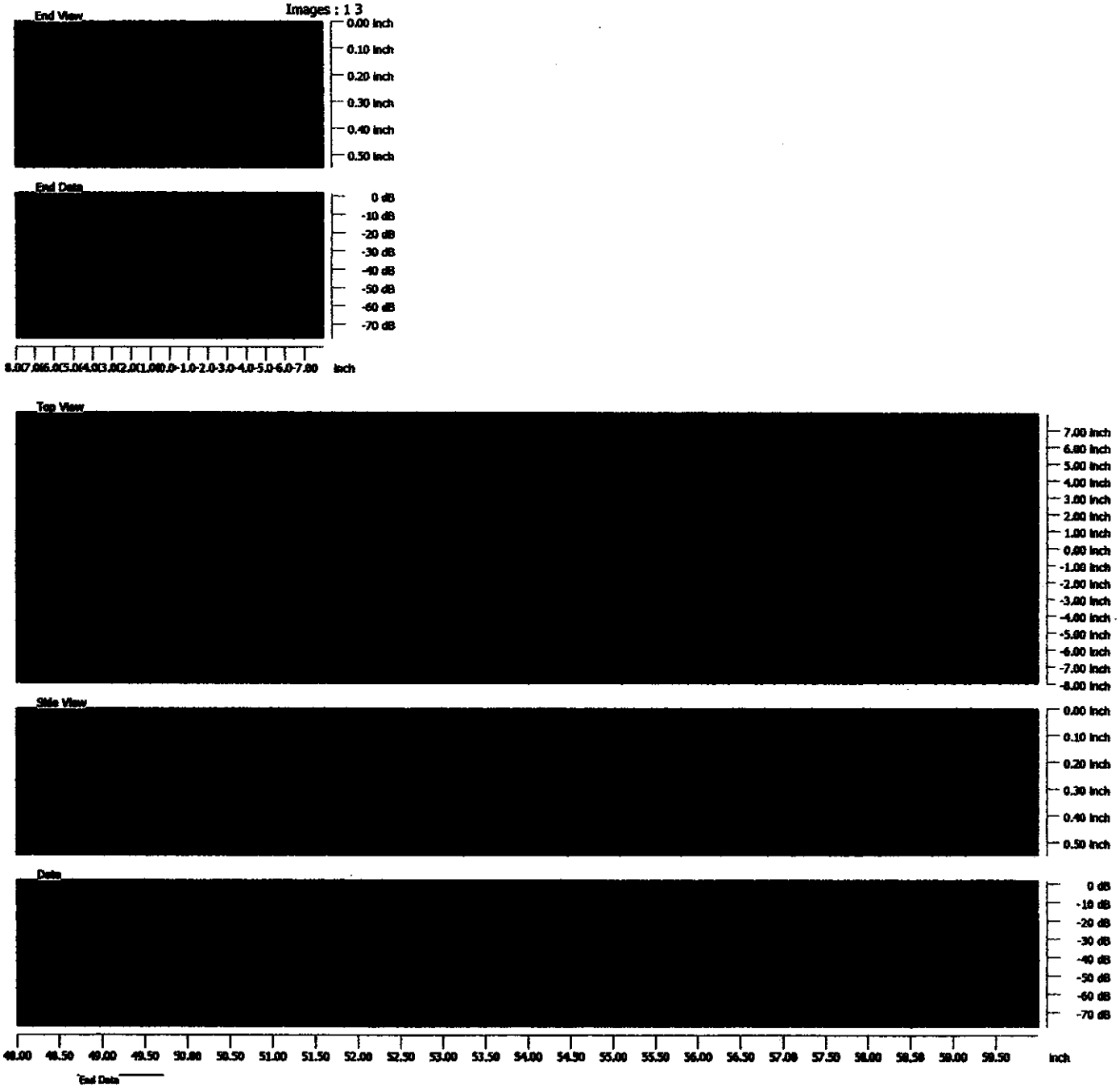
WALL SCAN 1/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, p-scan data1, 6/8/00 10:56
2: P-scan, Images, p-scan data1, 6/8/00 10:56
3: T-scan, Images, p-scan data1, 6/8/00 10:56

Printed on 2000-8-6 at 17:56 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/3.

Images : 1 3

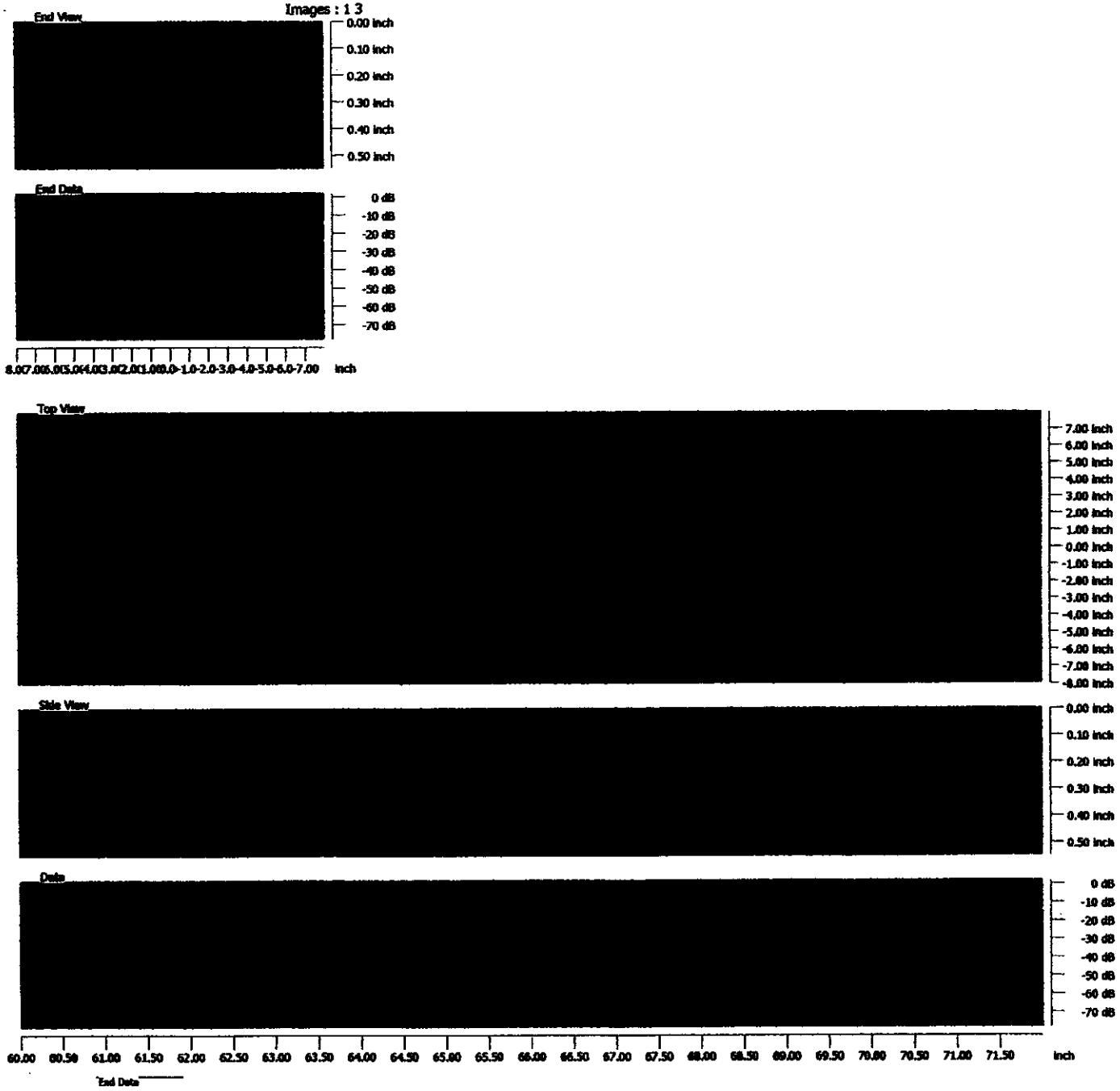


WALL SCAN 1/107AP/3
WHIN
AP / 200E TANK FARM
PLATE 3/1

1: P-scan, Images, p-scan data1, 6/8/00 10:56
2: P-scan, Images, p-scan data1, 6/8/00 10:56
3: T-scan, Images, p-scan data1, 6/8/00 10:56

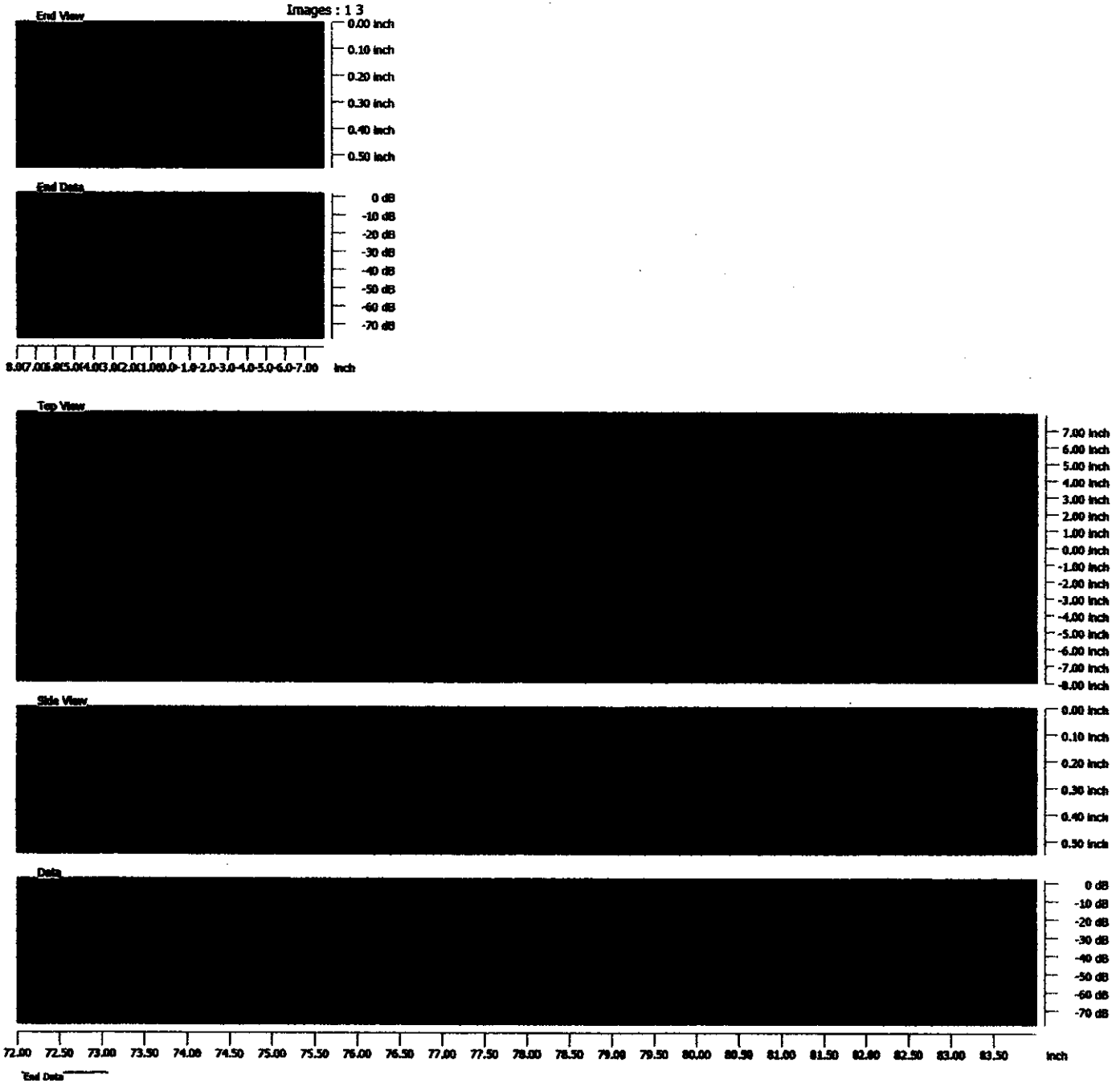
Printed on 2000-8-6 at 17:56 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/3.

Images : 1 3



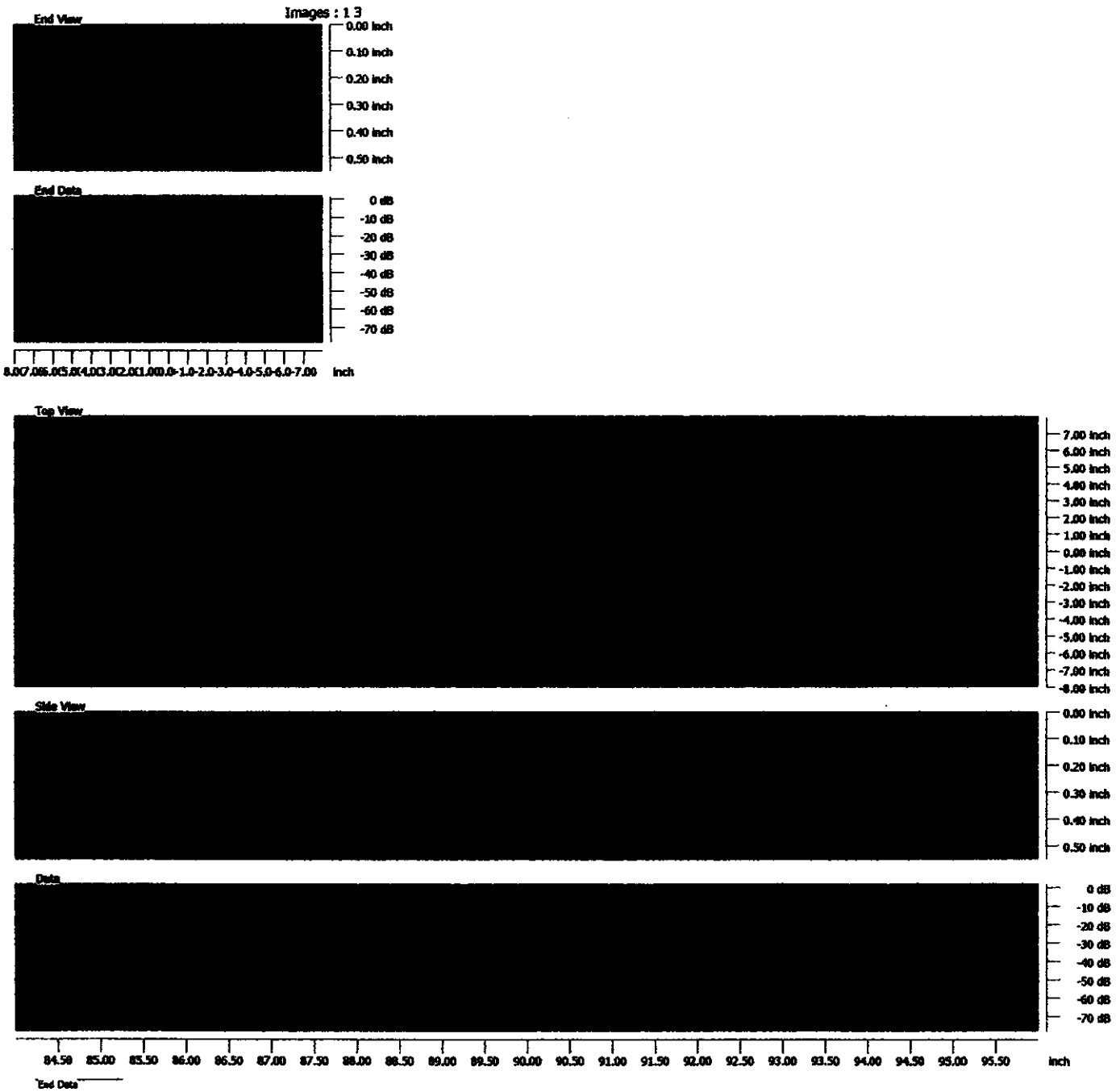
WALL SCAN 1/107AP/3 — 1: P-scan, Images, p-scan data1, 6/8/00 10:56
WHN — 2: P-scan, Images, p-scan data1, 6/8/00 10:56
AP / 200E TANK FARM — 3: T-scan, Images, p-scan data1, 6/8/00 10:56
PLATE 3/1
Printed on 2000-8-6 at 17:59 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/3.

Images : 1 3



Page 59 of 449

WALL SCAN 1/107AP/3 — 1: P-scan, Images, p-scan data1, 6/8/00 10:56
WHN — 2: P-scan, Images, p-scan data1, 6/8/00 10:56
AP / 200E TANK FARM — 3: T-scan, Images, p-scan data1, 6/8/00 10:56
PLATE 3/1
Printed on 2000-8-6 at 17:59 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/3.



4/00

Page 60 of 449

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/6/00 9:41 | EXAM END: 21:50 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM THICKNESS: .750" |
| CONFIGURATION: 1st Vert Wall Plate TO Plate (Plate 4) | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 105.4" | | REF LEVEL CORRECTION (TRANS CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: Wall Scan 1/107AP/4 | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE 0° | | |
| $X_0$ REF POINT ($L_0$): 1" Below Horz Weld | $Y_0$ REF POINT ($W_0$): C/L of 24" Riser | SCAN WIDTH: 15" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK, R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .775" | .766" | | |
| | 12" | 24" | | | .780" | .763" | | |
| | 24" | 36" | | | .780" | .770" | | |
| | 36" | 48" | | | .780" | .774" | | |
| | 48" | 60" | | | .780" | .774" | | |
| | 60" | 72" | | | .780" | .765" | | |
| | 72" | 84" | | | .780" | .772" | | |
| | 84" | 96" | | | .776" | .768" | | |
| | 96" | 105.4" | | | .773" | .761" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley H Nelson | Wesley H Nelson | (N1) | |
| Level III Date 6/6/00 | Level III Date 6/6/00 | Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B Elder

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WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:04 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.

Images : 1 4

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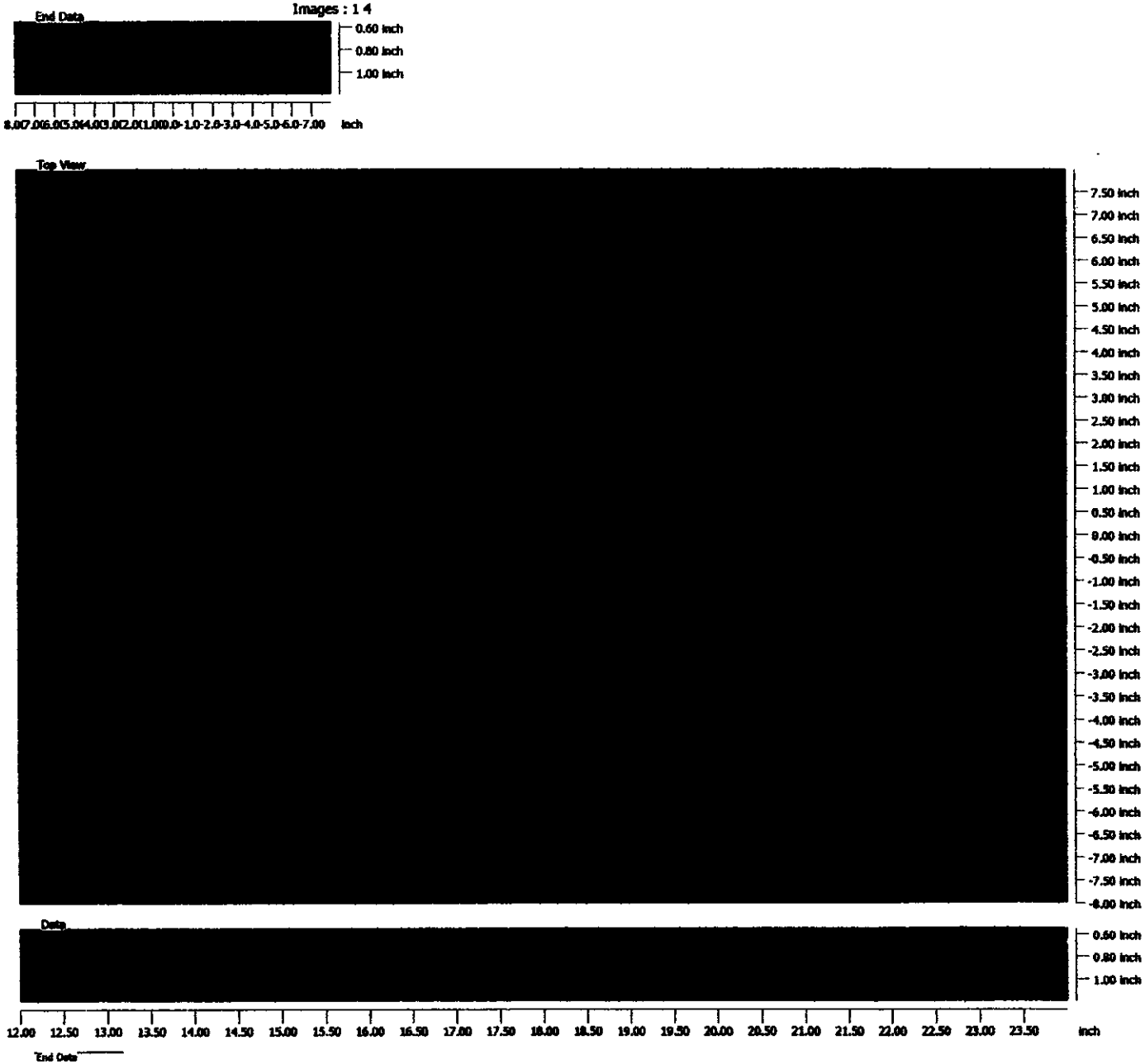
WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

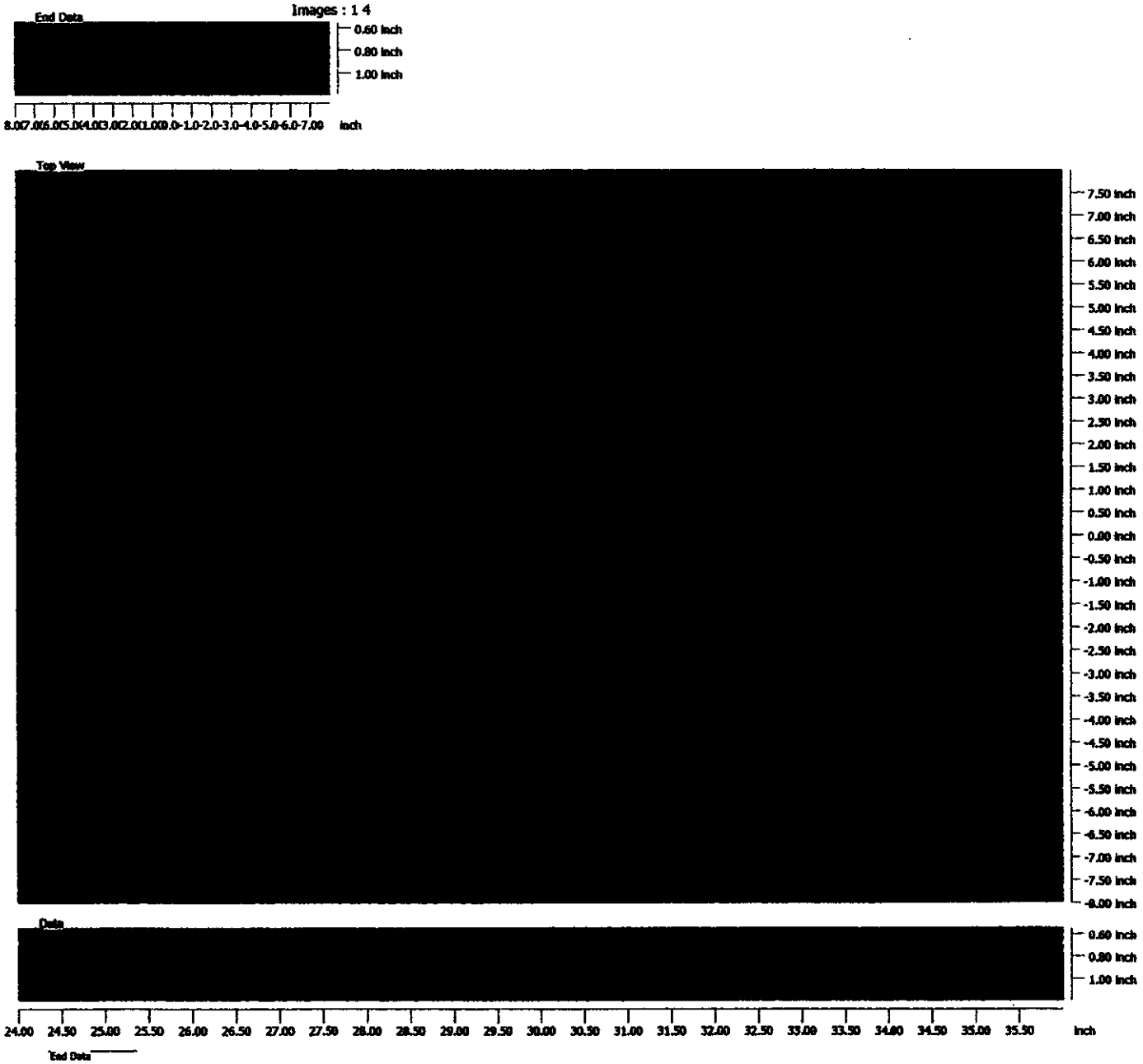
Printed on 2000-8-6 at 18:05 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.



WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

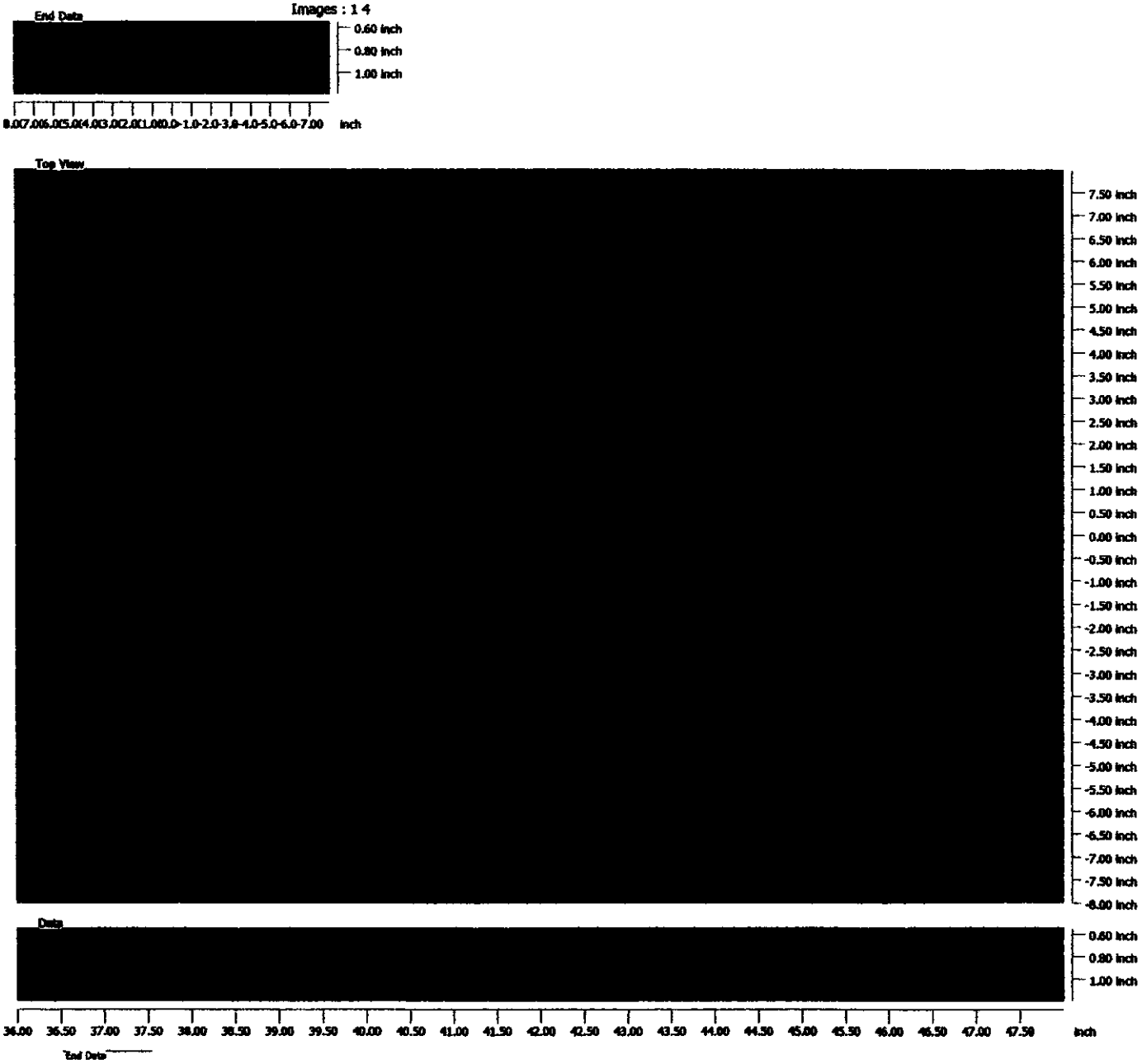
Printed on 2000-8-6 at 18:12 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.



WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:12 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.



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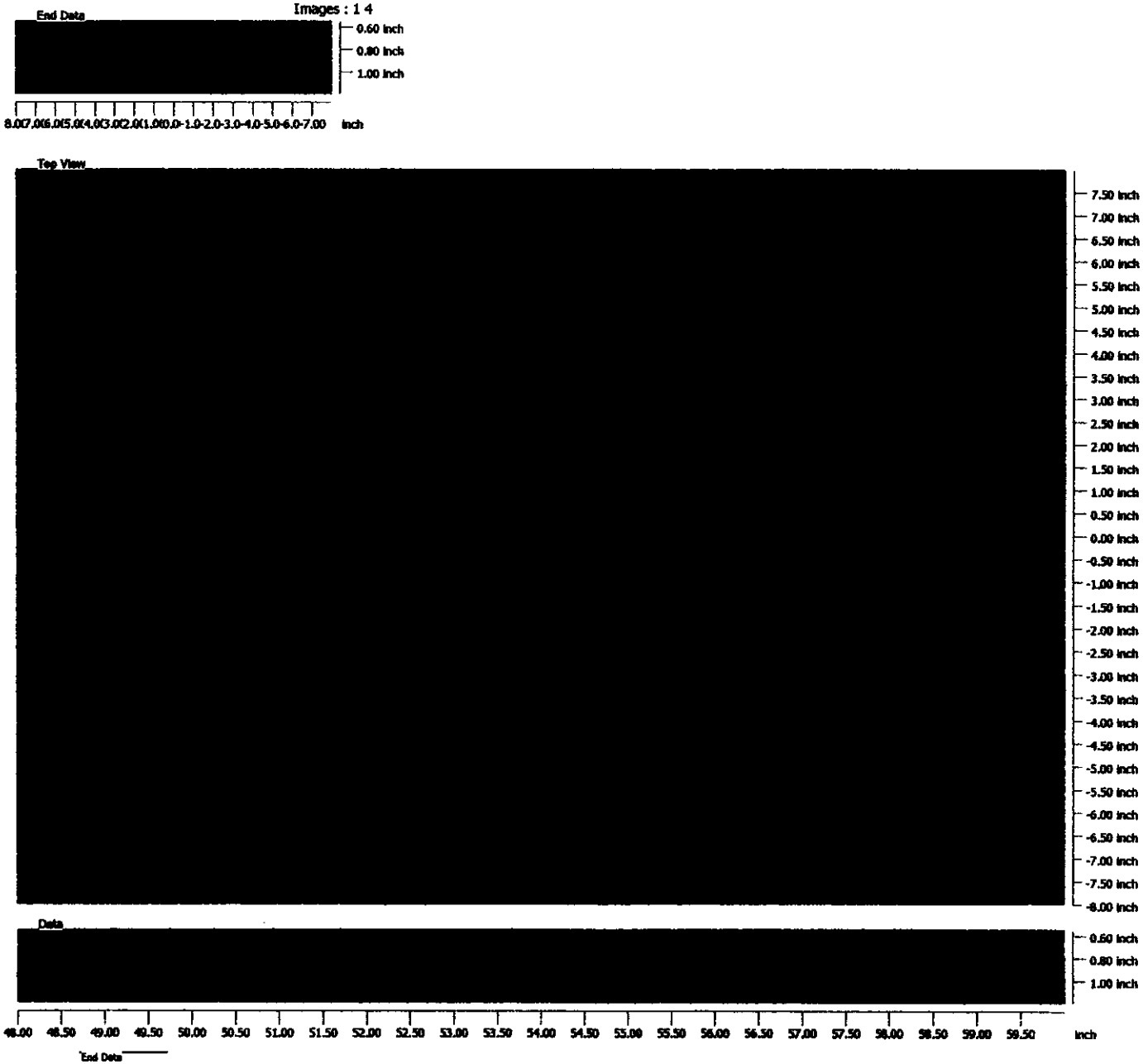
WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

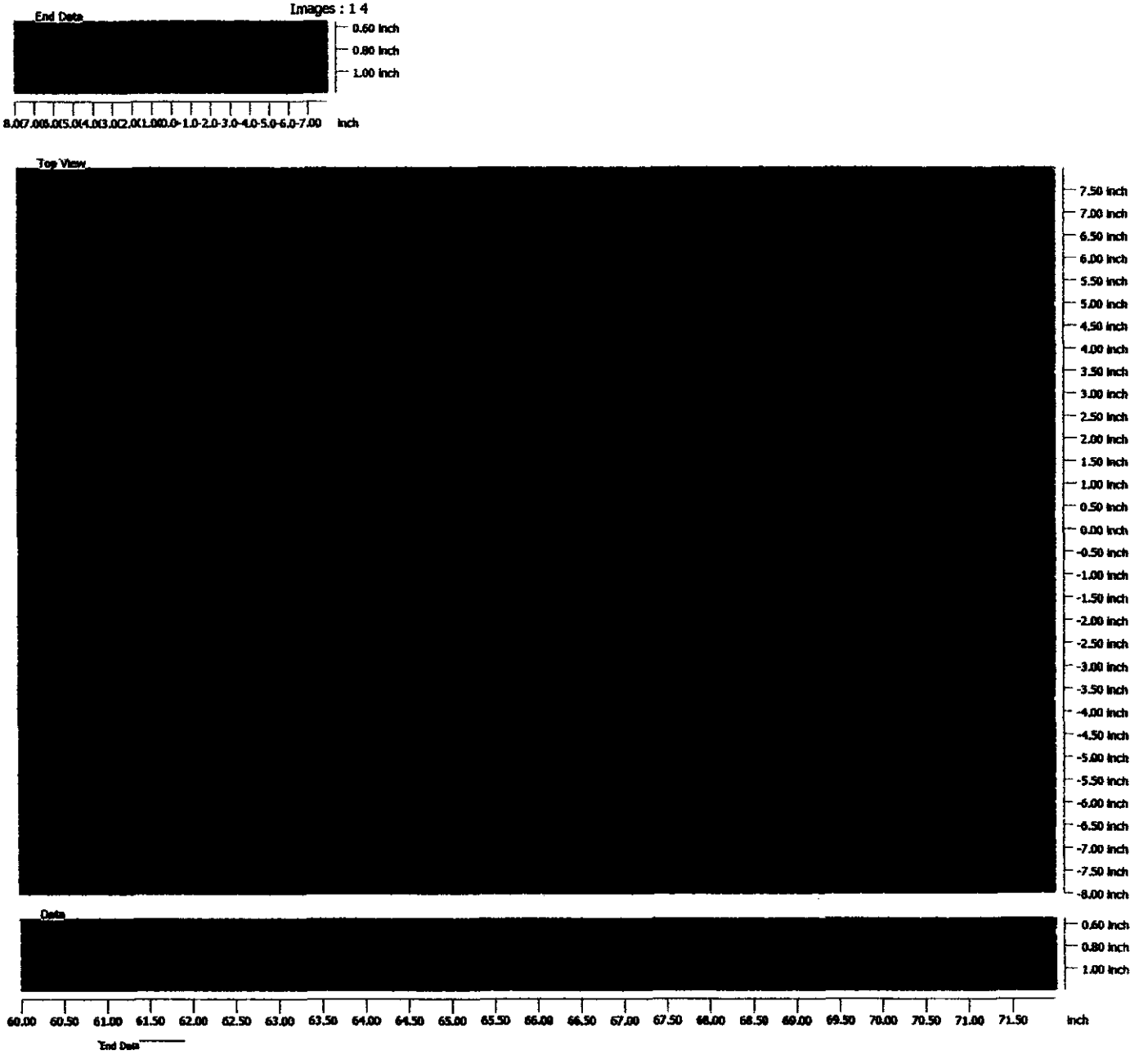
Printed on 2000-8-6 at 18:13 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.



WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

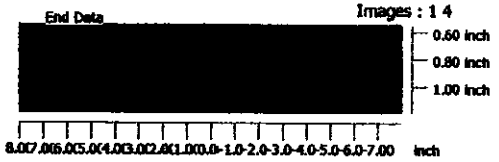
Printed on 2000-8-6 at 18:15 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.

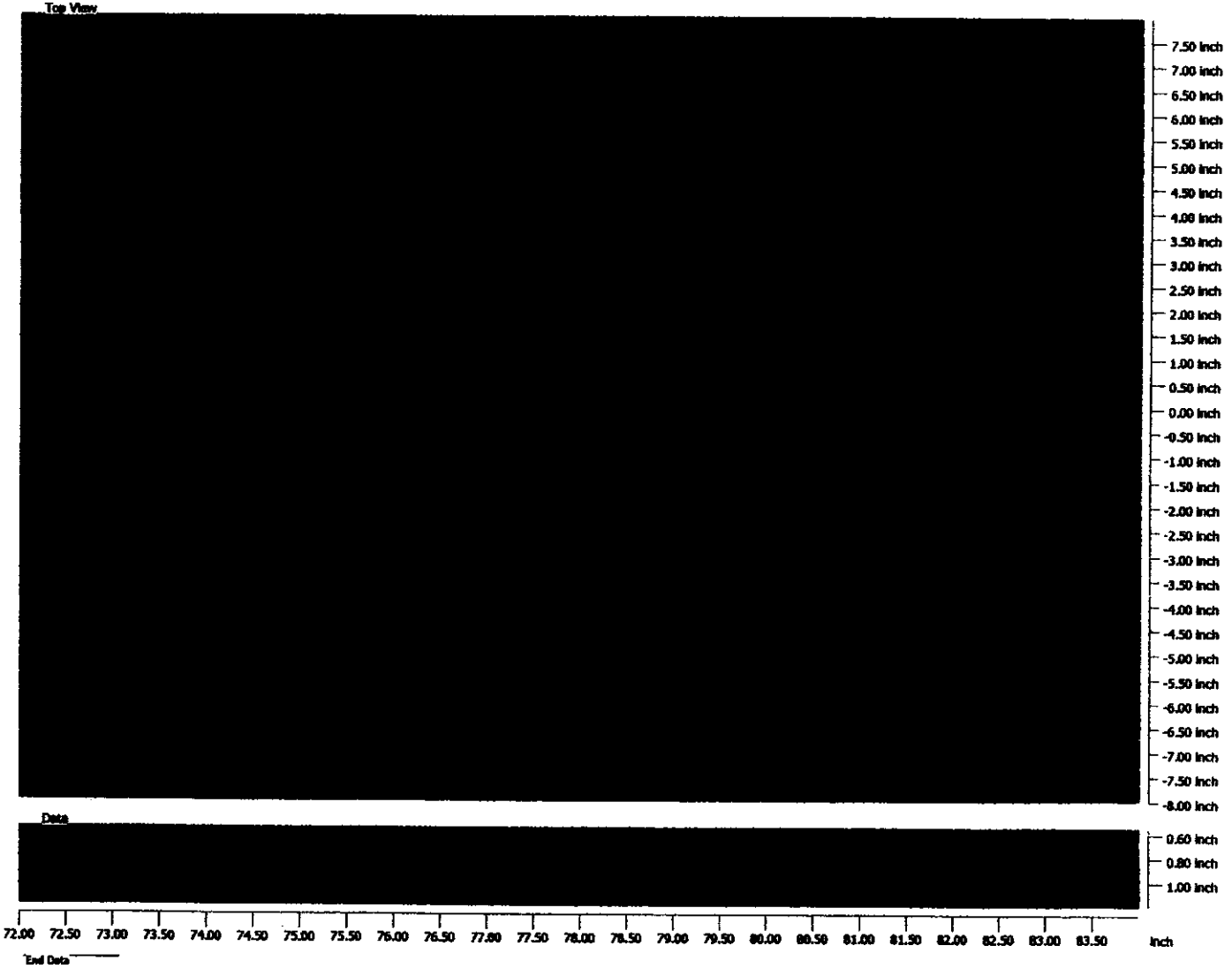


WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:17 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.



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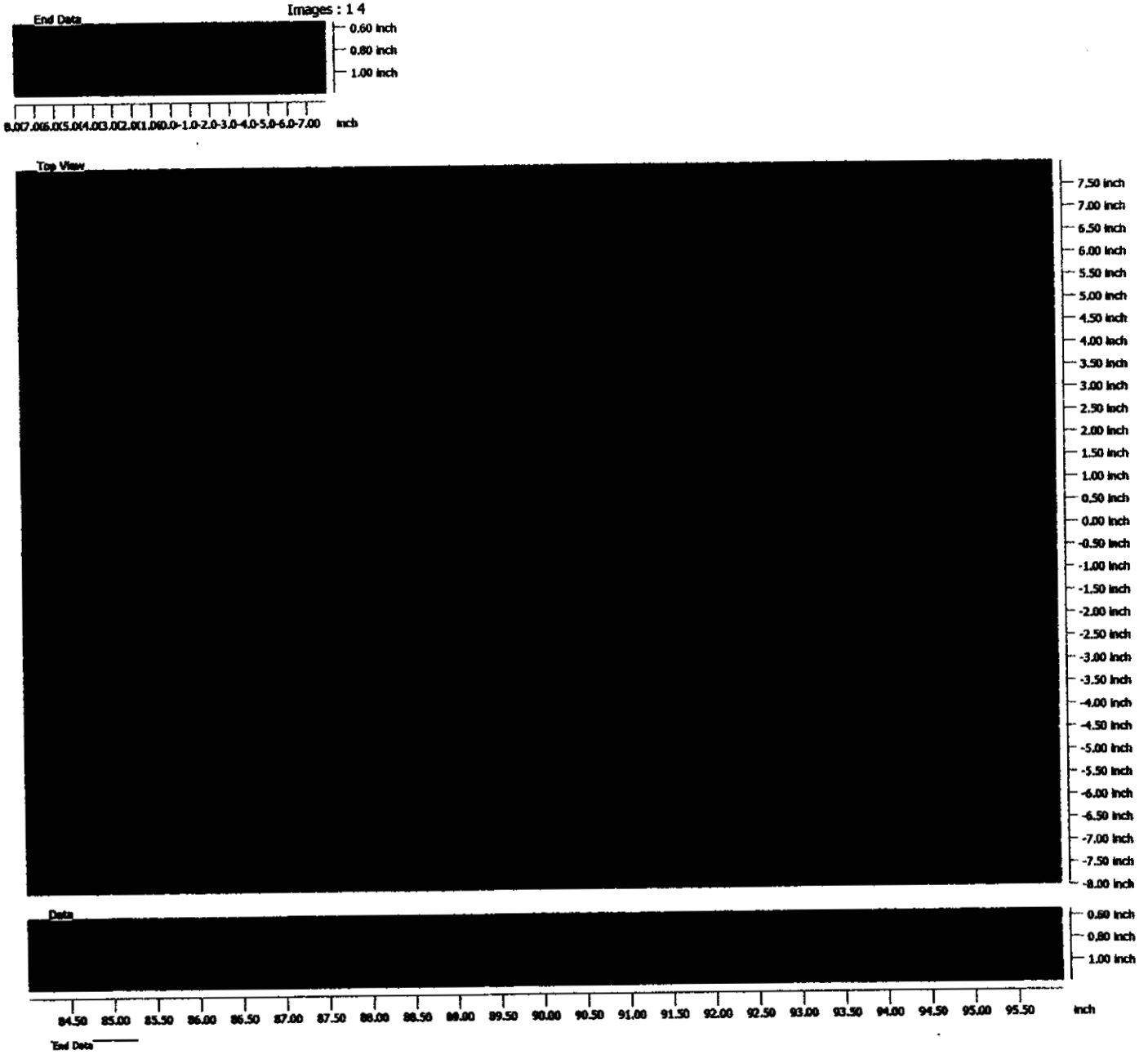
WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:18 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.

Images : 1 4



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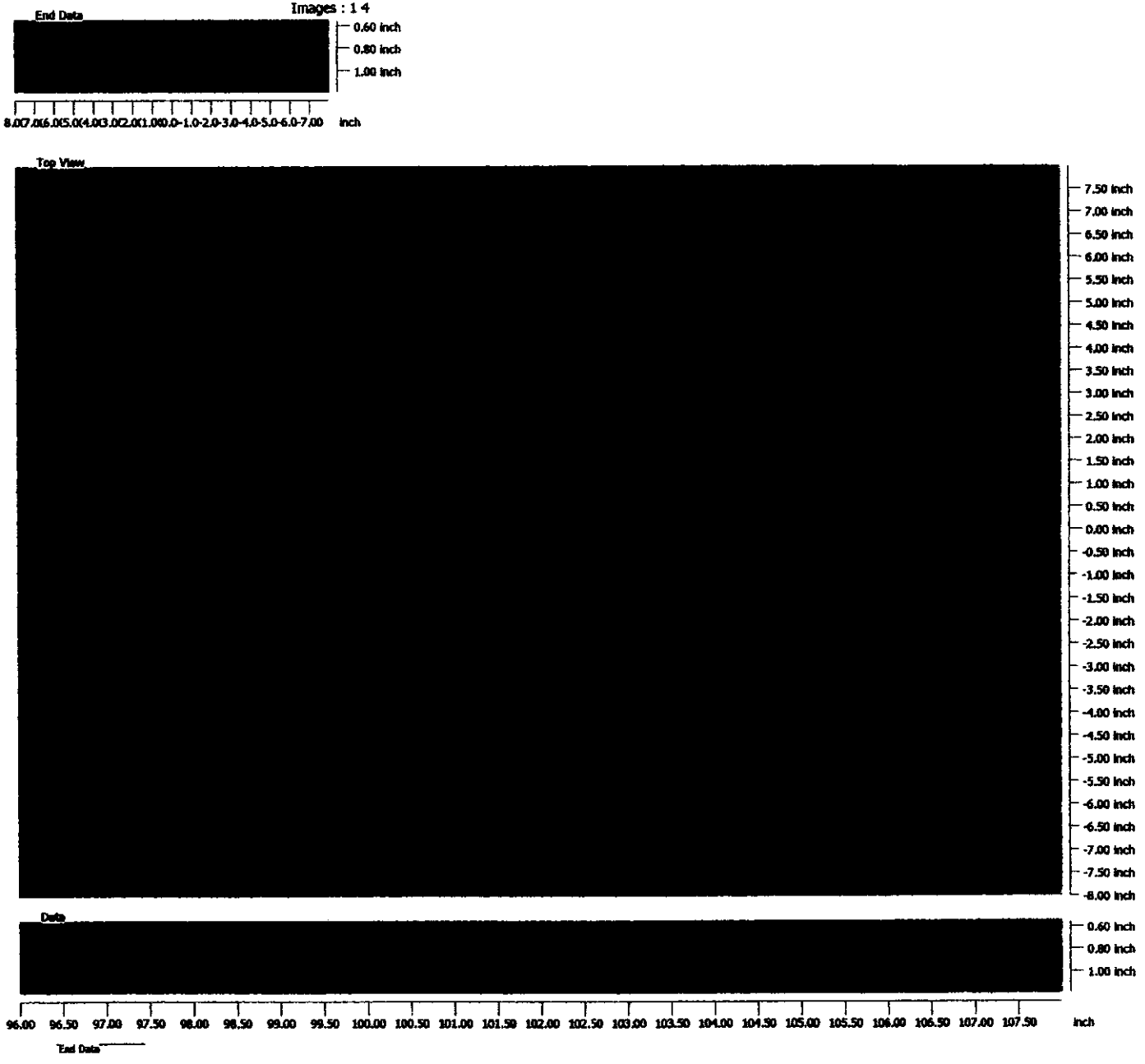
WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, t-scan data1, 6/8/00 16:05
2: P-scan, Images, t-scan data1, 6/8/00 16:05
3: T-scan, Images, t-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:21 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/4.

Images : 1 4



4/00

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# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/8/00 9:43 | EXAM END: 21:50 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 1st Vert. Wall Plate TO Plate (Plate 4) | | CALIBRATED RANGE: 0" TO 2.12" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 105.4" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .750" nom. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 1/107AP/4 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz Weld | $Y_0$ REF. POINT ($W_0$): ℄ of 24" Riser | SCAN WIDTH: 15" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS: NO Crack-Like Indications.

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level II Date 6/8/00 | [signature] Level III Date 8/6/00 | (NI) Level ___ Date ___ | ___ of ___ |

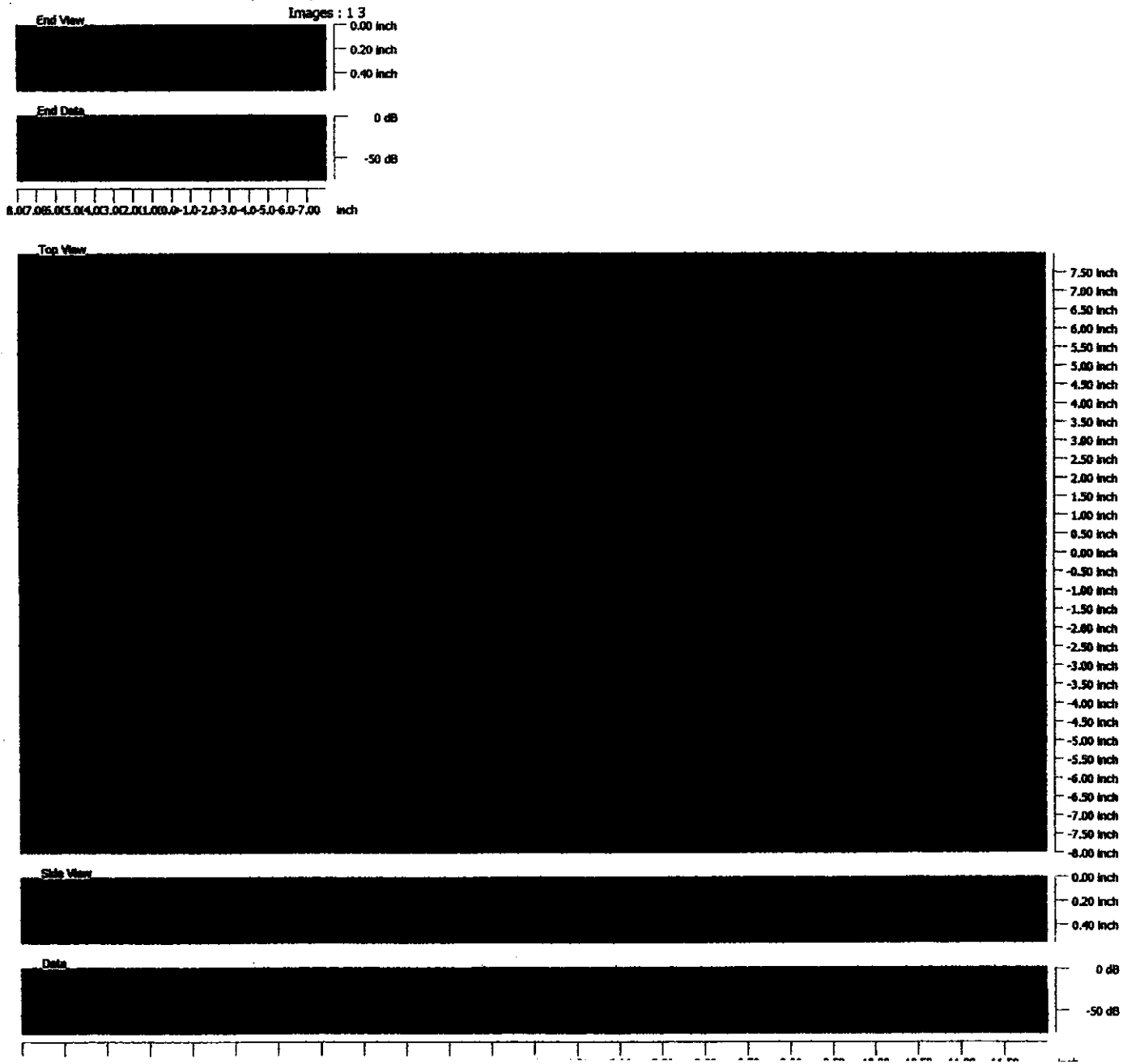
(NI) See Attached Letter From J. B. Elder

WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, p-scan data1, 6/8/00 16:05
2: P-scan, Images, p-scan data1, 6/8/00 16:05
3: T-scan, Images, p-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:22 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.

Images : 1 3

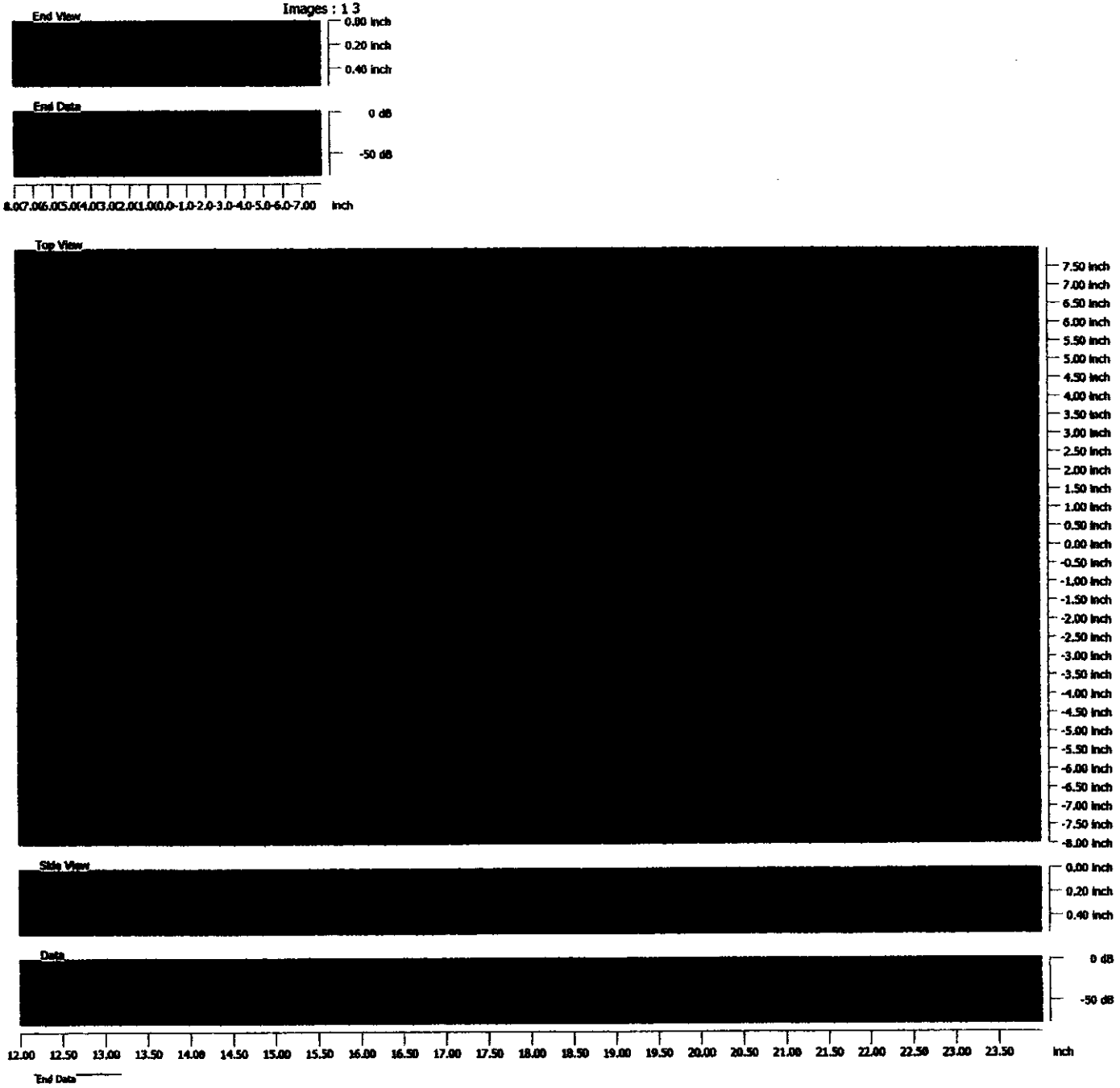


WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, p-scan data1, 6/8/00 16:05
2: P-scan, Images, p-scan data1, 6/8/00 16:05
3: T-scan, Images, p-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:23 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.

Images : 1 3



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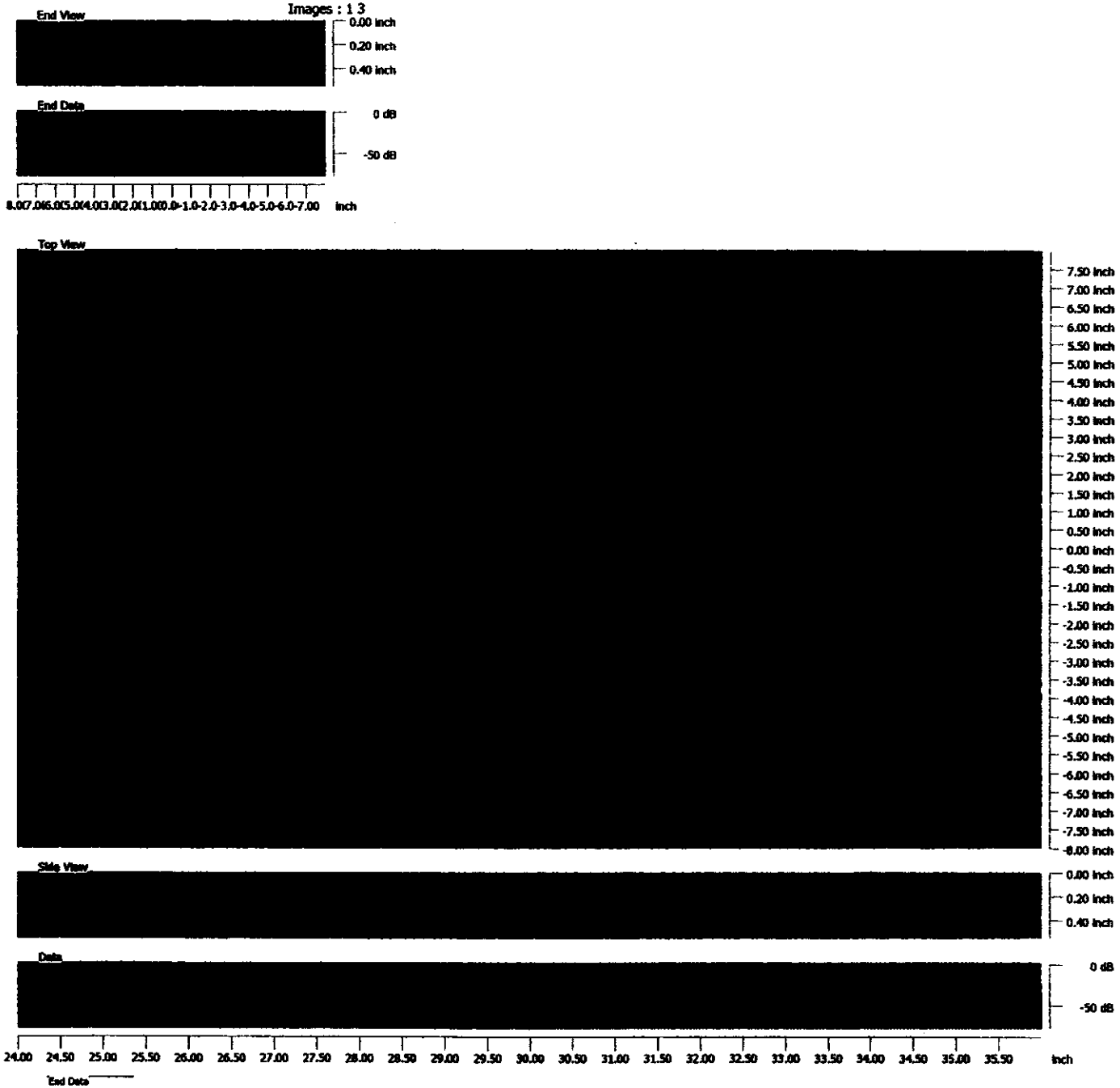
WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, p-scan data1, 6/8/00 16:05
2: P-scan, Images, p-scan data1, 6/8/00 16:05
3: T-scan, Images, p-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:23 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.

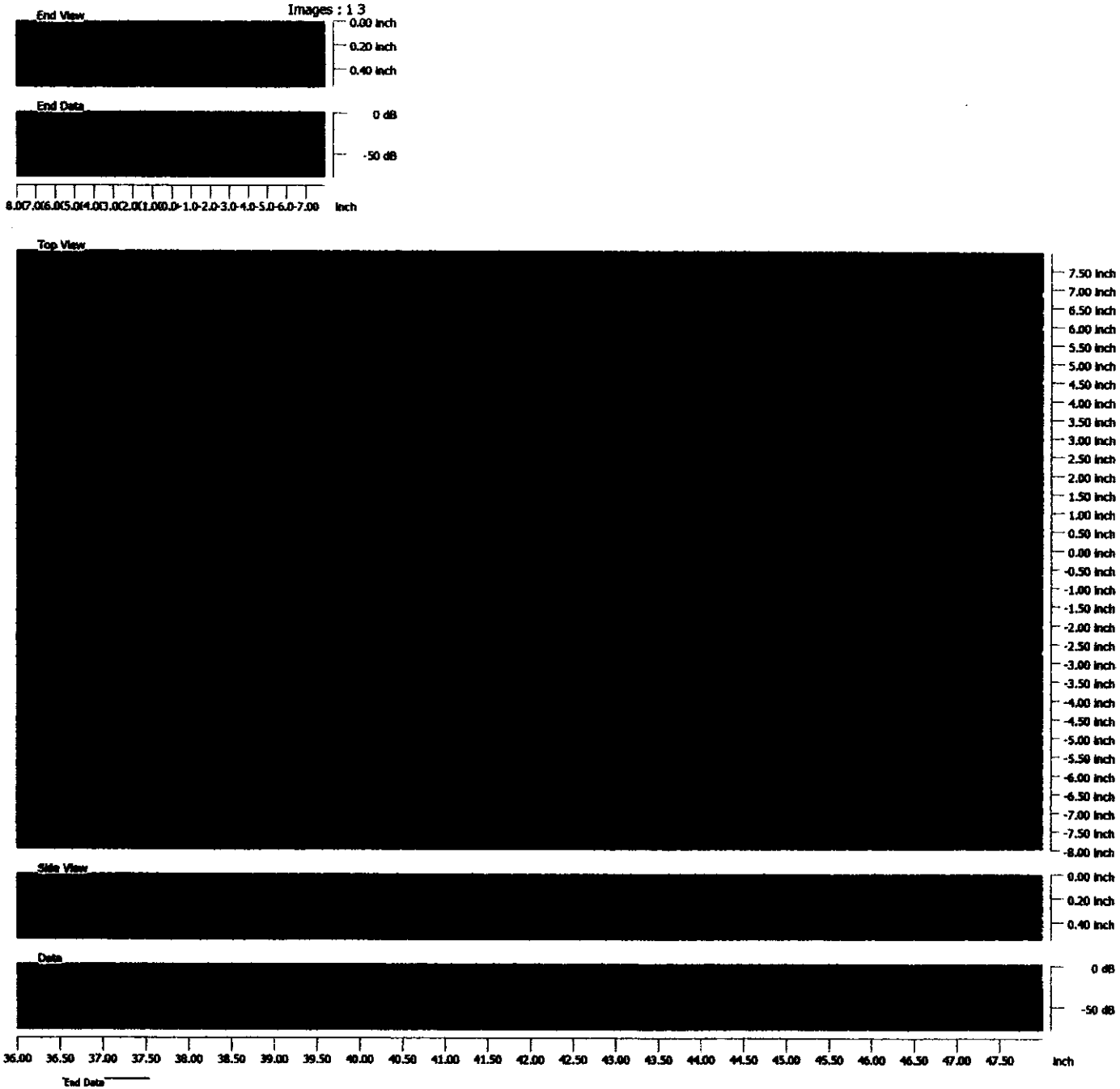
Images : 1 3



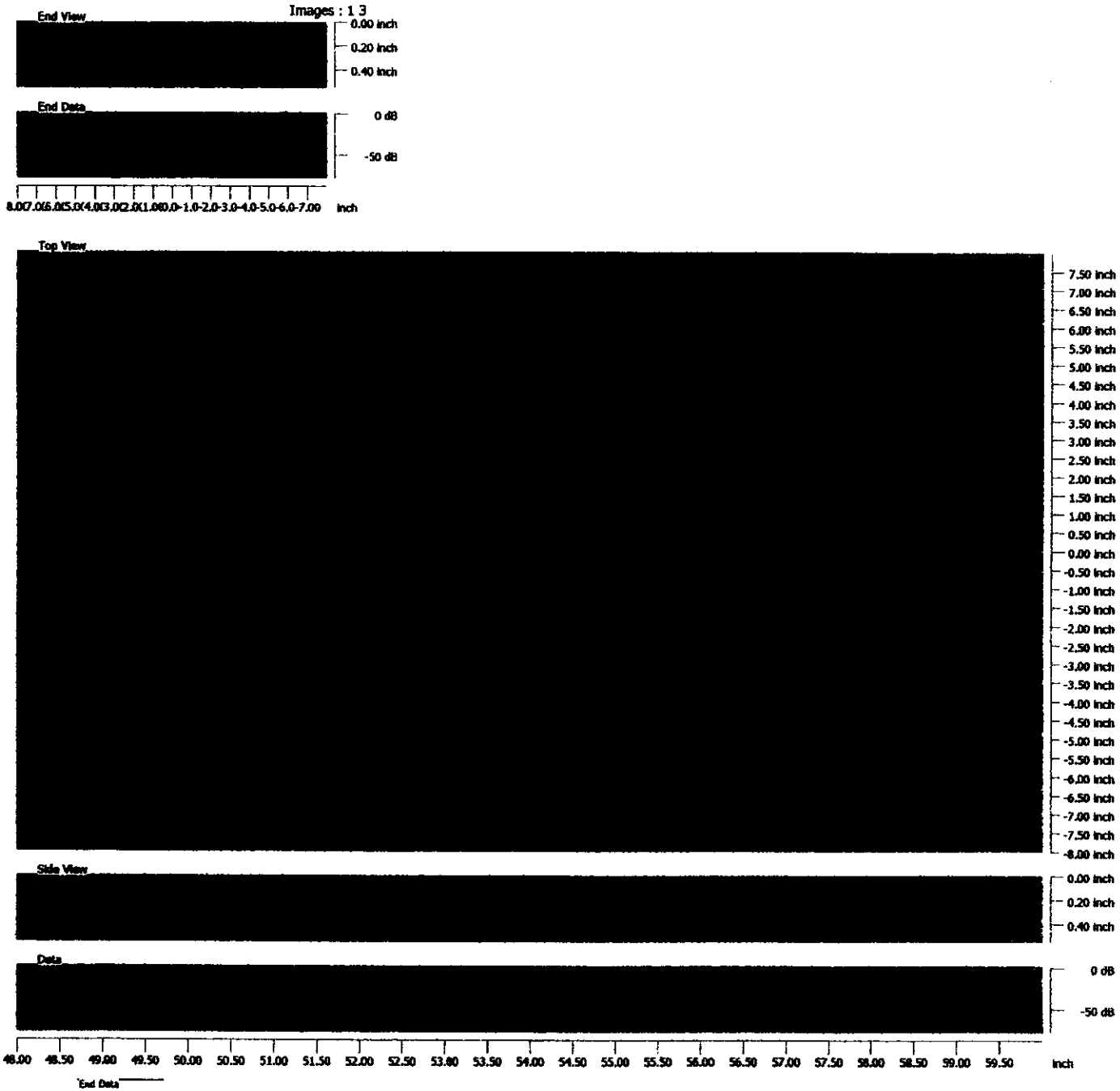
WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, p-scan data1, 6/8/00 16:05
2: P-scan, Images, p-scan data1, 6/8/00 16:05
3: T-scan, Images, p-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:23 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.



WALL SCAN 1/107AP/4 — 1: P-scan, Images, p-scan data1, 6/8/00 16:05
WHN — 2: P-scan, Images, p-scan data1, 6/8/00 16:05
AP / 200E TANK FARM — 3: T-scan, Images, p-scan data1, 6/8/00 16:05
PLATE 4/1
Printed on 2000-8-6 at 18:23 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.



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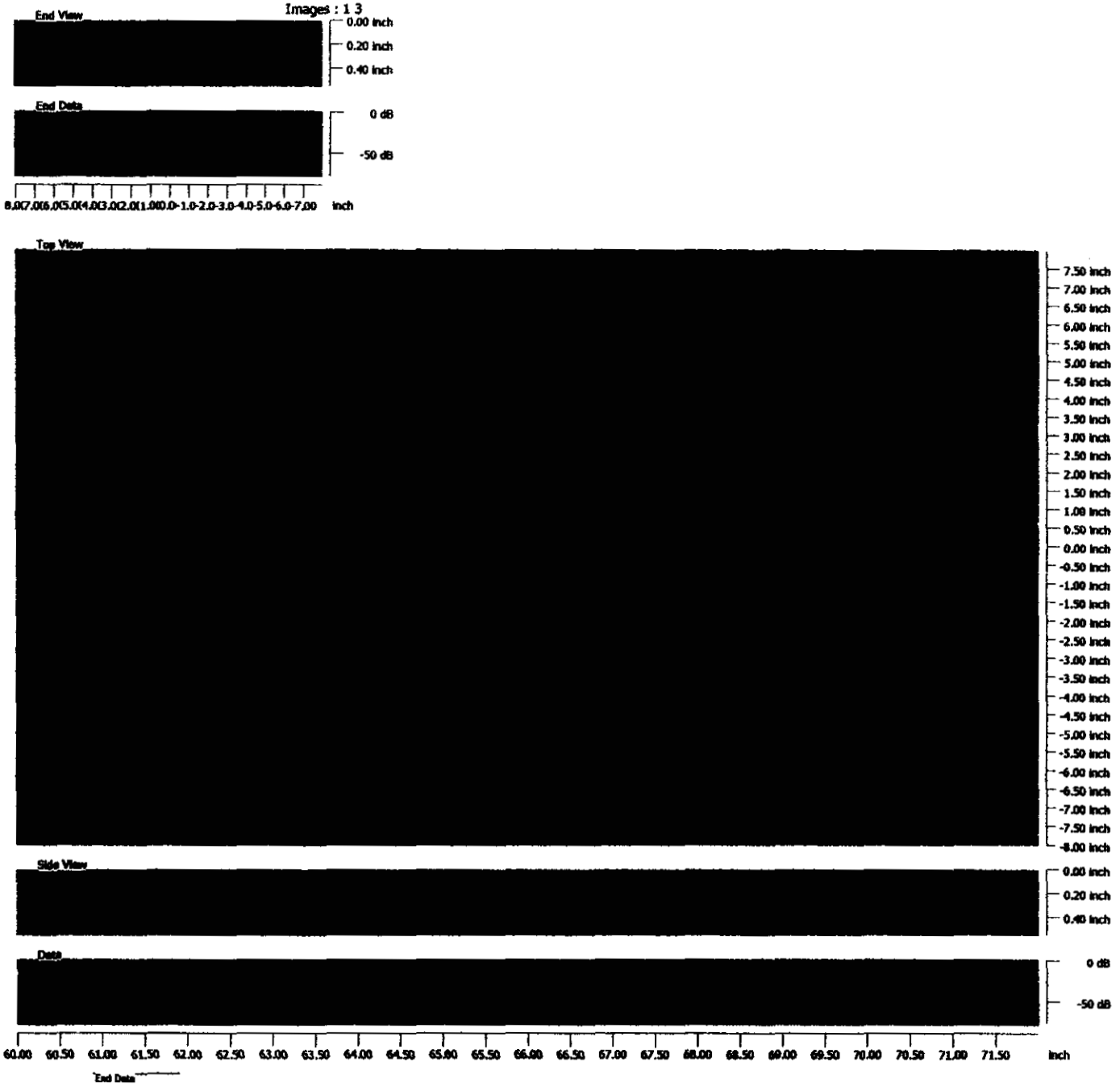
WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, p-scan data1, 6/8/00 16:05
2: P-scan, Images, p-scan data1, 6/8/00 16:05
3: T-scan, Images, p-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:23 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.



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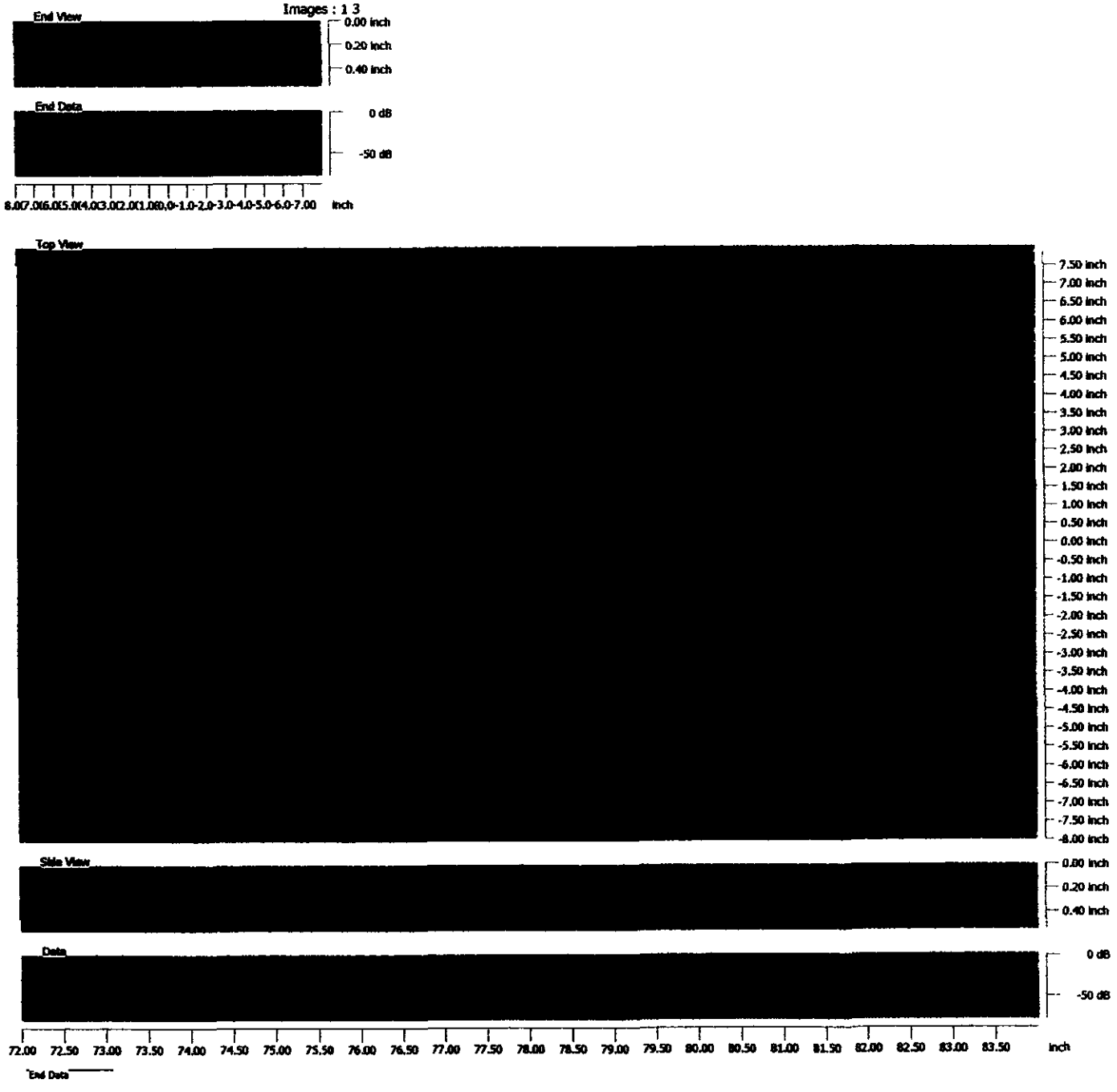
WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, p-scan data1, 6/8/00 16:05
2: P-scan, Images, p-scan data1, 6/8/00 16:05
3: T-scan, Images, p-scan data1, 6/8/00 16:05

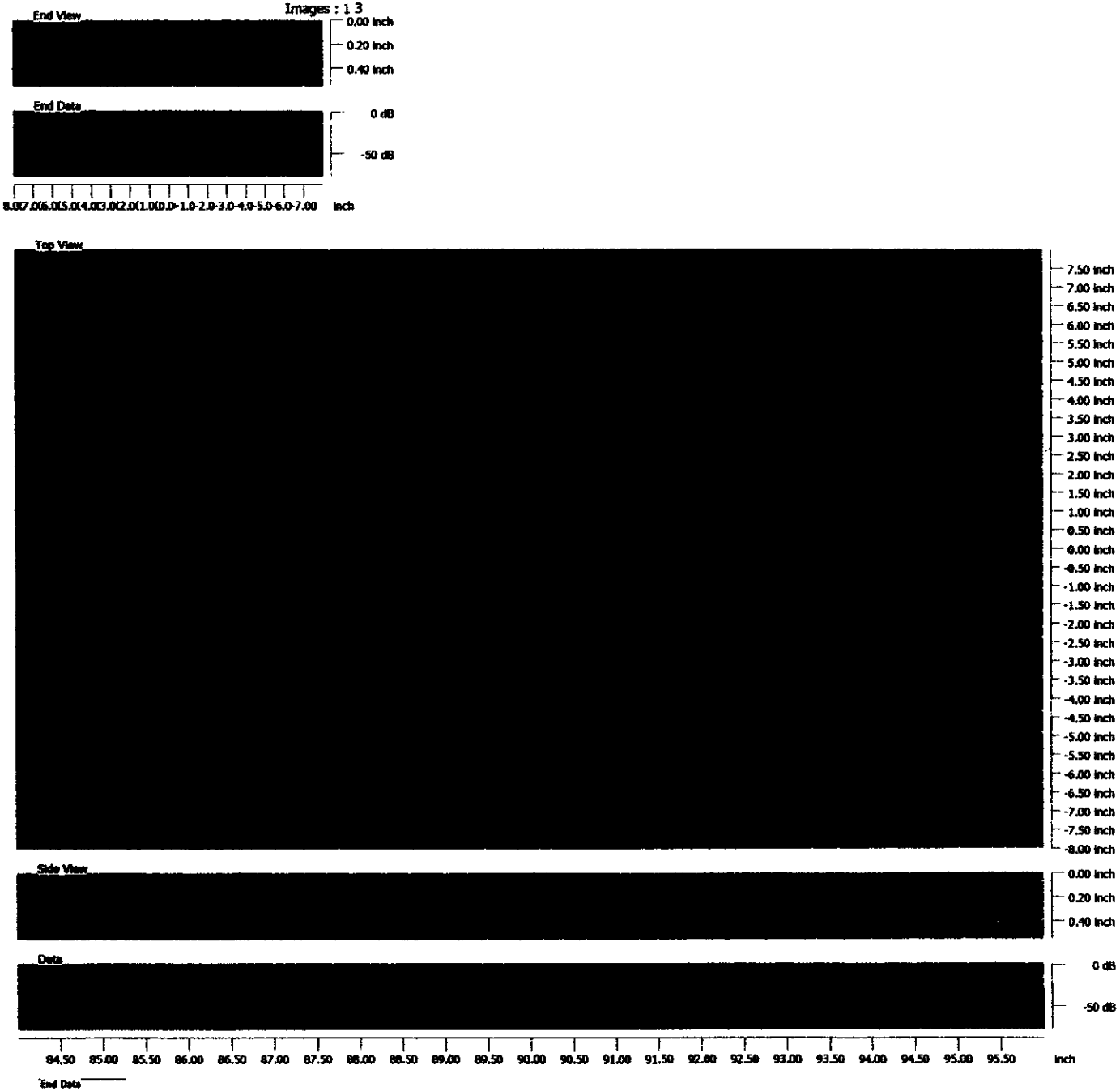
Printed on 2000-8-6 at 18:24 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.

Images : 1 3



WALL SCAN 1/107AP/4 — 1: P-scan, Images, p-scan data1, 6/8/00 16:05
WHN — 2: P-scan, Images, p-scan data1, 6/8/00 16:05
AP / 200E TANK FARM — 3: T-scan, Images, p-scan data1, 6/8/00 16:05
PLATE 4/1
Printed on 2000-8-6 at 18:24 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.

Images : 1 3

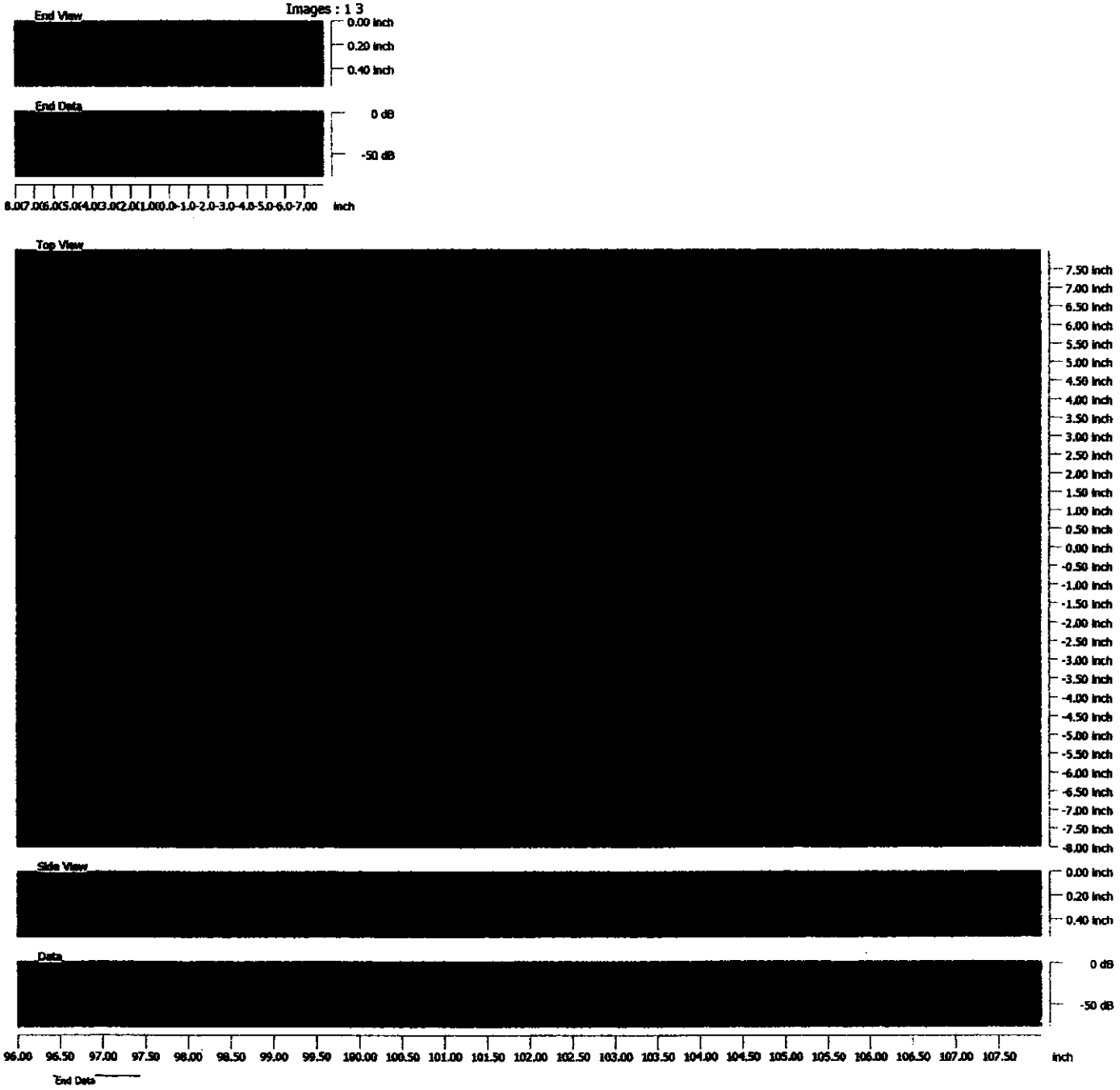


WALL SCAN 1/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/1

1: P-scan, Images, p-scan data1, 6/8/00 16:05
2: P-scan, Images, p-scan data1, 6/8/00 16:05
3: T-scan, Images, p-scan data1, 6/8/00 16:05

Printed on 2000-8-6 at 18:24 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/4.

Images : 1 3



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4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK Farm | SYSTEM: PSP-4 | EXAM START: 6/13/00 0927 | EXAM END: 20:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .875" |
| CONFIGURATION: 1st Vert. Wall Plate TO Plate (Plates) | | CALIBRATED RANGE: .3" To 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 20.4" | | REF. LEVEL CORRECTION (TRANS. CORR): ∅ DB | | |
| PROCEDURE: CDGEMA-SVUT-INS-007.3 | REV: ∅ | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: WALL SCAN 1/107AP/5 | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$): 1" Below HORZ. Weld | $Y_0$ REF. POINT ($W_0$): 9/L of 24" Riser | SCAN WIDTH | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE. THK. | MIN. THK, R. LIG. | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .905" | .892" | | |
| | 12" | 20.4" | | | .902" | .886" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley H Nelson | Wesley H Nelson | (NI) | |
| Level III Date 6/13/00 | Level III Date 8/6/00 | Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J.B. Elder

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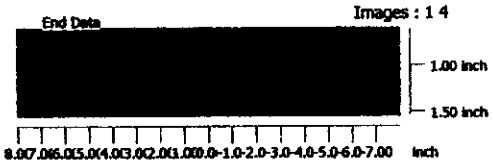
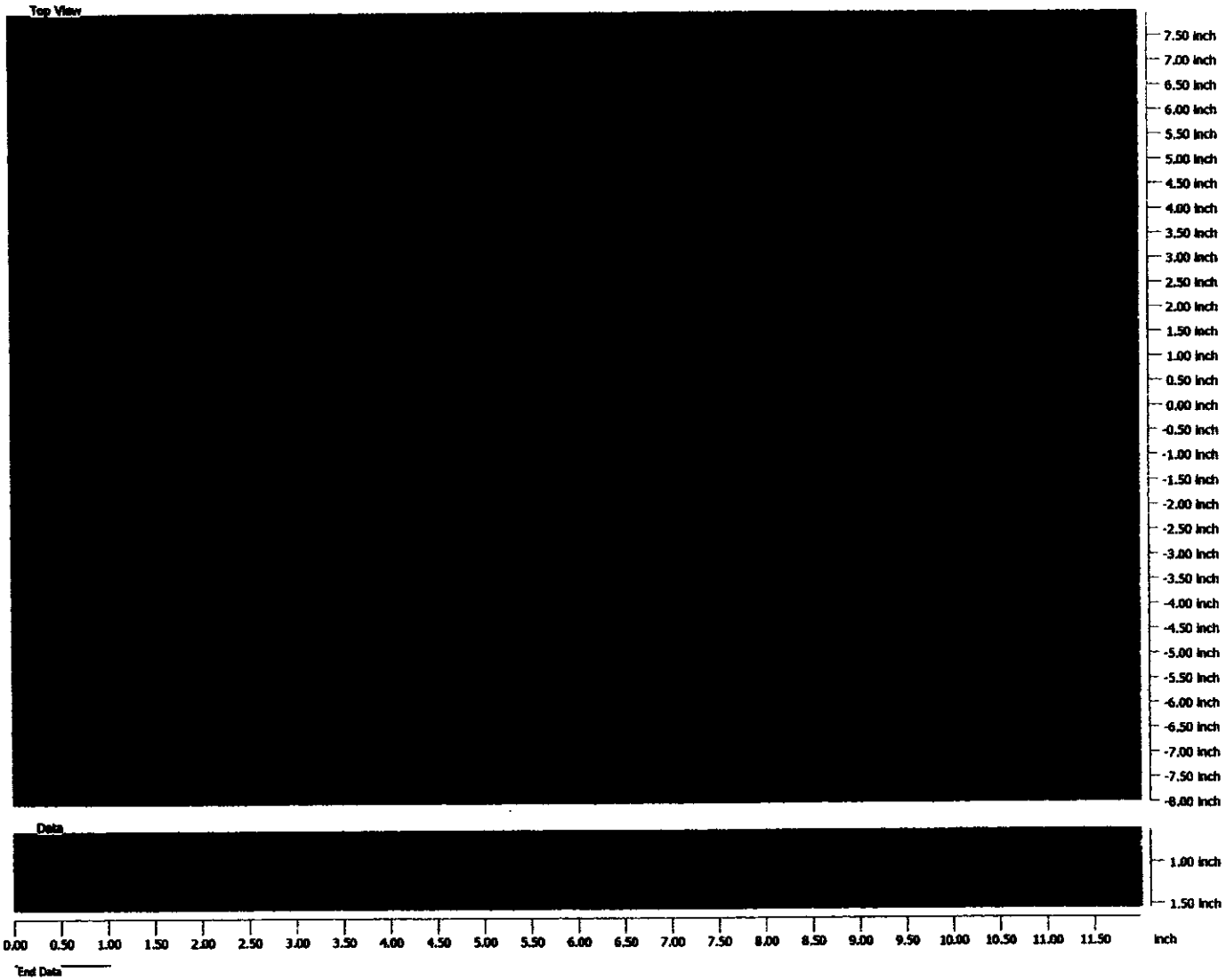
WALL SCAN 1/107AP/5
WHN
AP / 200E TANK FARM
PLATE 5/1

1: P-scan, Images, t-scan data1, 6/13/00 18:40
2: P-scan, Images, t-scan data1, 6/13/00 18:40
3: T-scan, Images, t-scan data1, 6/13/00 18:40

Printed on 2000-8-6 at 18:32 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/5.

Images : 1 4

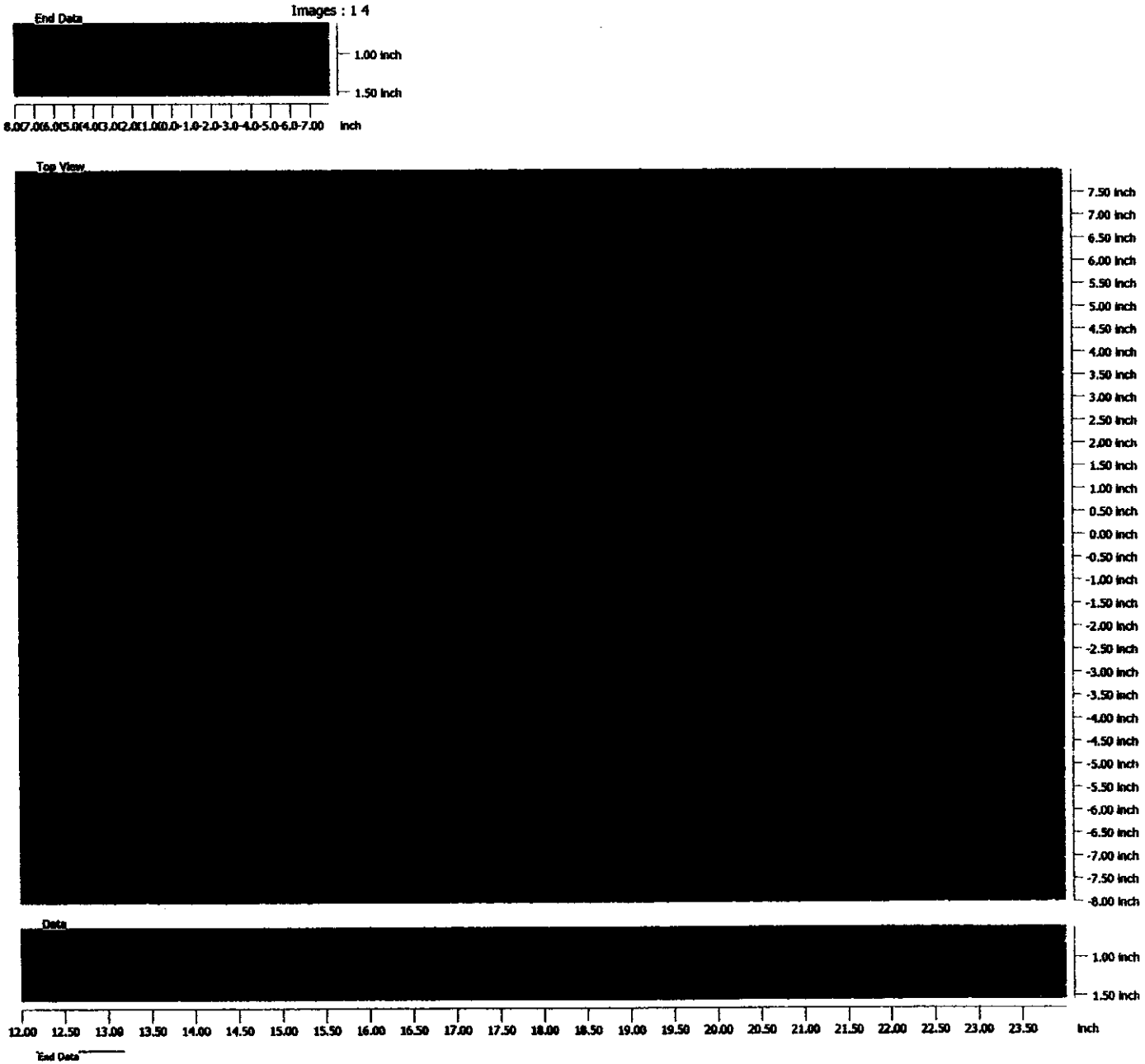


WALL SCAN 1/107AP/5
WHN
AP / 200E TANK FARM
PLATE 5/1

1: P-scan, Images, t-scan data1, 6/13/00 18:40
2: P-scan, Images, t-scan data1, 6/13/00 18:40
3: T-scan, Images, t-scan data1, 6/13/00 18:40

Printed on 2000-8-6 at 18:33 : T-scan pres.1 <3> of Job : WALL SCAN 1/107AP/5.



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/13/00 9:25 | EXAM END: 20:24 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 1st Vert Wall Plate TO Plate (Plate 5) | | CALIBRATED RANGE: 0" To 2.47" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 20.4" | | REF LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .875" Nom. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 1/107AP/5 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz weld | $Y_0$ REF. POINT ($W_0$): ℄ of 24" Riser | SCAN WIDTH: 15" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS: NO Crack-Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/13/00 | [signature] Level III Date 8/6/00 | (NI) Level ___ Date ___ | ___ of ___ |

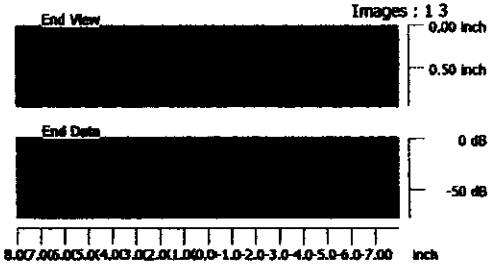
(NI) See Attached Letter From J. B. Elder

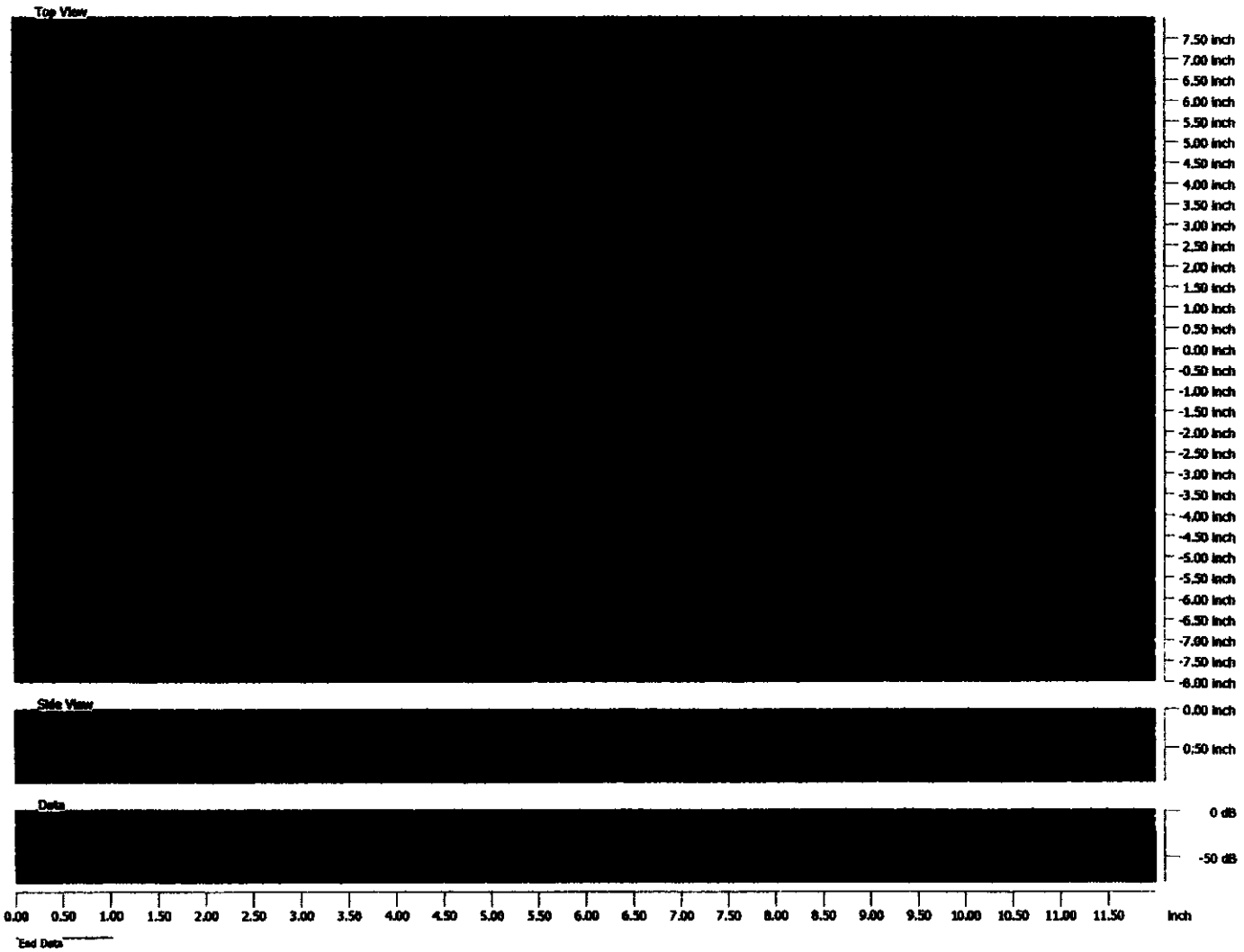
WALL SCAN 1/107AP/5
WHN
AP / 200E TANK FARM
PLATE 5/1

1: P-scan, Images, p-scan data1, 6/13/00 18:40
2: P-scan, Images, p-scan data1, 6/13/00 18:40
3: T-scan, Images, p-scan data1, 6/13/00 18:40

Printed on 2000-8-6 at 18:35 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/5.

Images : 1 3



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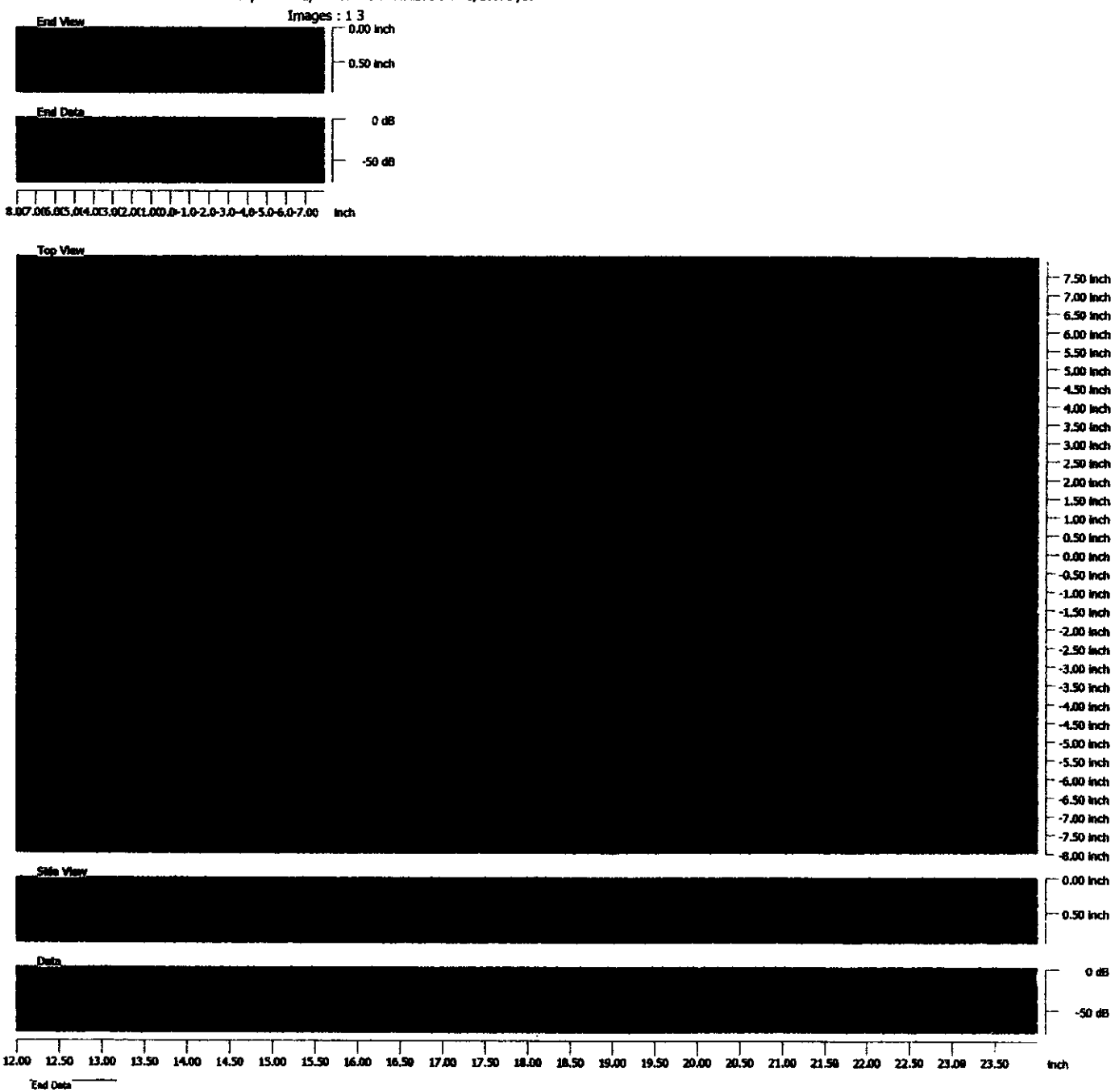
WALL SCAN 1/107AP/5
WHN
AP / 200E TANK FARM
PLATE 5/1

1: P-scan, Images, p-scan data1, 6/13/00 18:40
2: P-scan, Images, p-scan data1, 6/13/00 18:40
3: T-scan, Images, p-scan data1, 6/13/00 18:40

Printed on 2000-8-6 at 18:36 : P-scan pres.1 <1, 2> of Job : WALL SCAN 1/107AP/5.



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4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK Farm | SYSTEM: PSP-4 | EXAM START: 6/12/00 13:35 | EXAM END: 21:00 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .500" |
| CONFIGURATION: 2nd Vert. Wall Plate TO Plate (Plate1) | | CALIBRATED RANGE: .3" To 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 90" | | REF. LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION: |
| FILE NAME/ITEM#: Wall Scan 2/107AP/1+1A | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_o$ REF. POINT ($L_o$): 1" Below Horz. Weld | $Y_o$ REF. POINT ($W_o$): 21" From ℄ of 1st Pass | SCAN WIDTH: 15" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE. THK. | MIN. THK, R. LIG. | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .530" | .513" | | |
| | 12" | 17.1 | | | .530" | .512" | | |
| | 0" | 12" | | | .531" | .522" | | |
| | 12" | 24" | | | .535" | .520" | | |
| | 24" | 36" | | | .533" | .511" | | |
| | 36" | 48" | | | .535" | .510" | | |
| | 48" | 60" | | | .535" | .520" | | |
| | 60" | 72" | | | .530" | .515" | | |
| | 72" | 73" | | | .520" | .509" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/12/00 | [signature] Level III Date 6/12/00 | (NI) ____ Level ___ Date ____ | ___ of ___ |

(NI) See Attached Letter From J. B. Elder

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WALL SCAN 2/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, t-scan data1, 6/12/00 14:01
2: P-scan, Images, t-scan data1, 6/12/00 14:01
3: T-scan, Images, t-scan data1, 6/12/00 14:01

Printed on 2000-8-6 at 20:36 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1.

Images : 1 4

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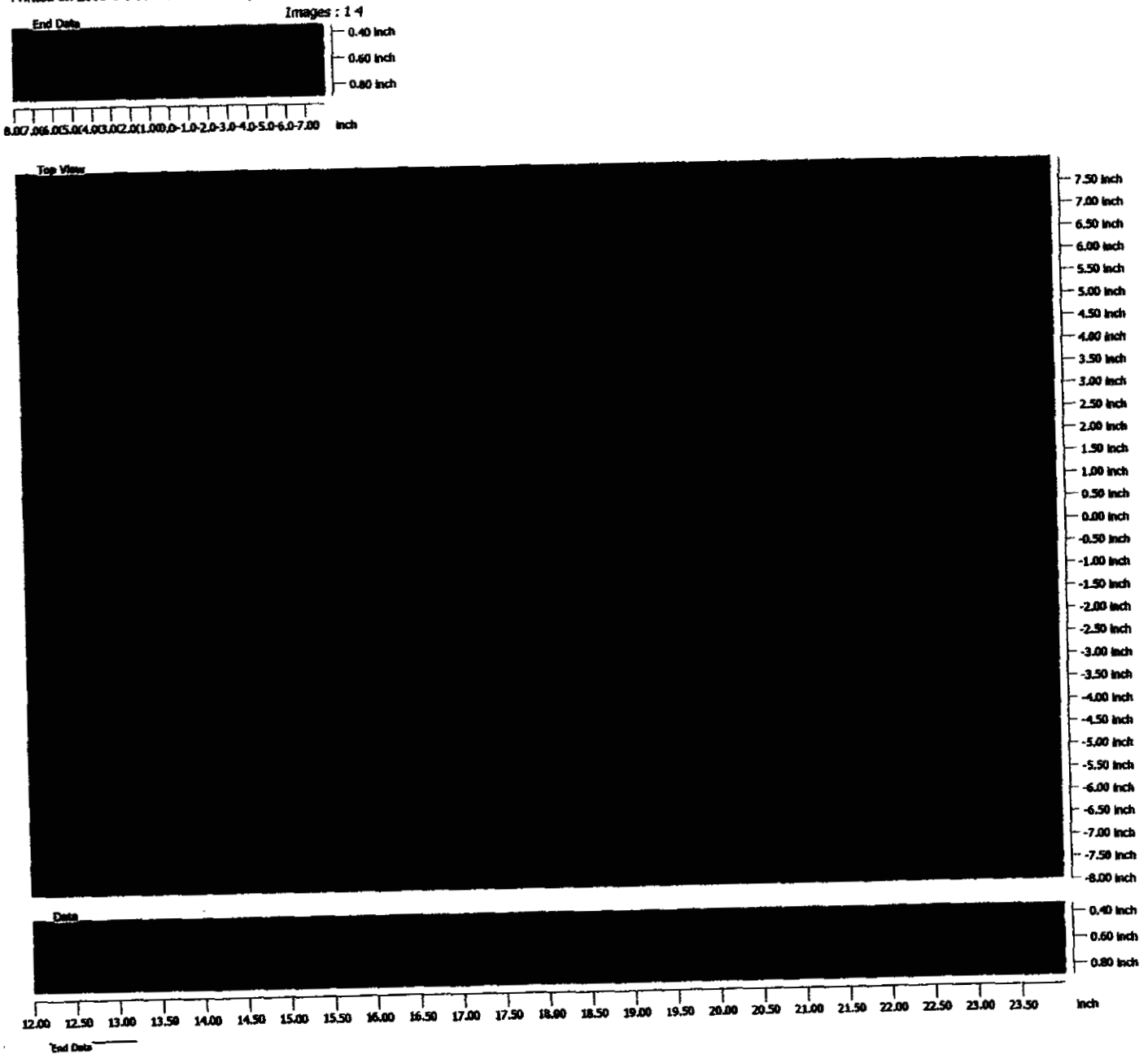
WALL SCAN 2/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1
Printed on 2000-8-6 at 20:37 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1.

1: P-scan, Images, t-scan data1, 6/12/00 14:01
2: P-scan, Images, t-scan data1, 6/12/00 14:01
3: T-scan, Images, t-scan data1, 6/12/00 14:01

Images : 1 4

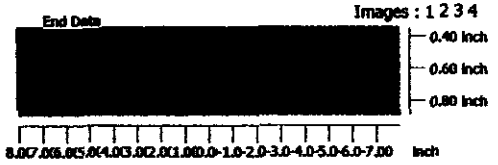


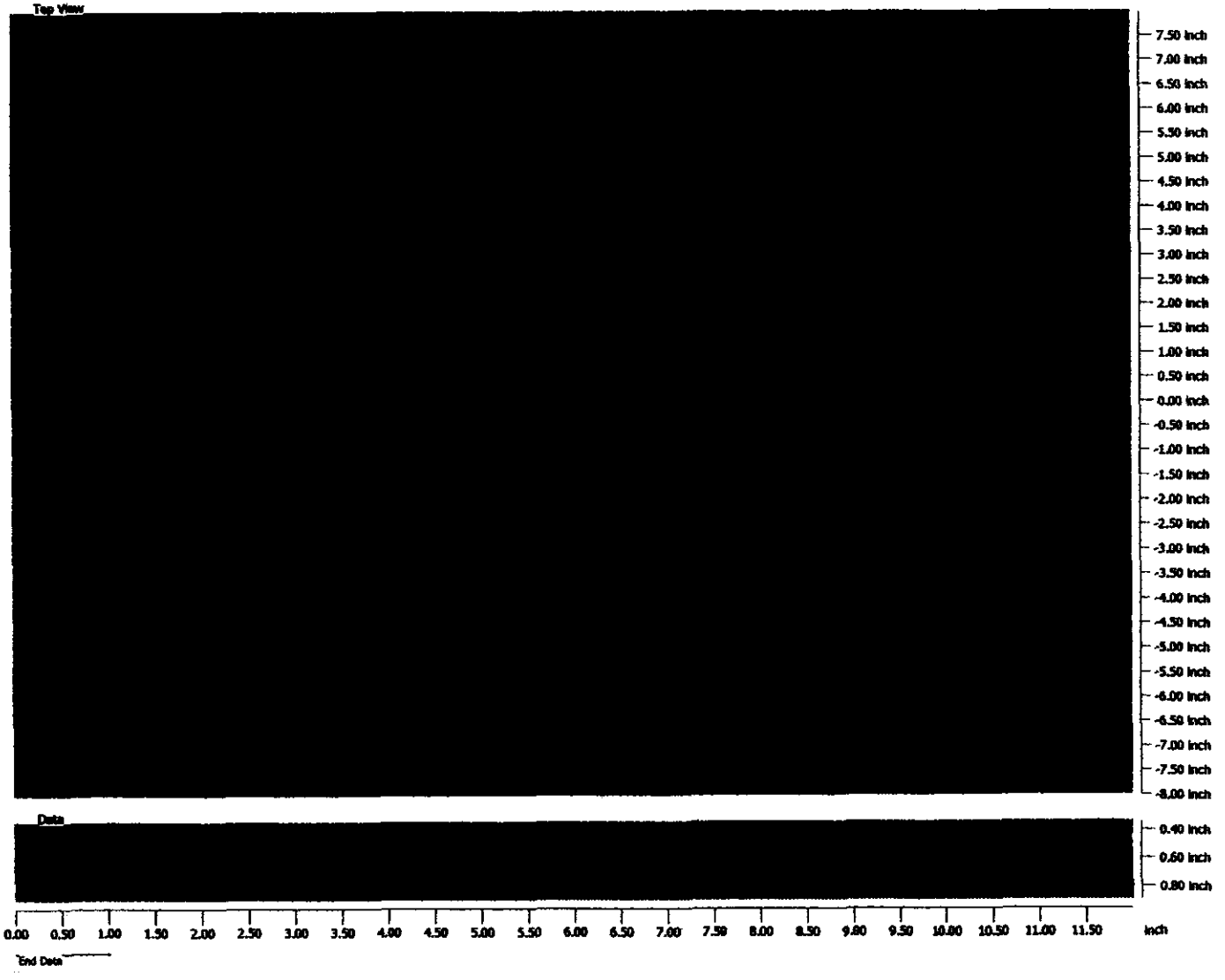
WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, t-scan data1, 6/12/00 15:04
2: P-scan, Images, t-scan data1, 6/12/00 15:04
3: T-scan, Images, t-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:02 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1A.

Images : 1 2 3 4



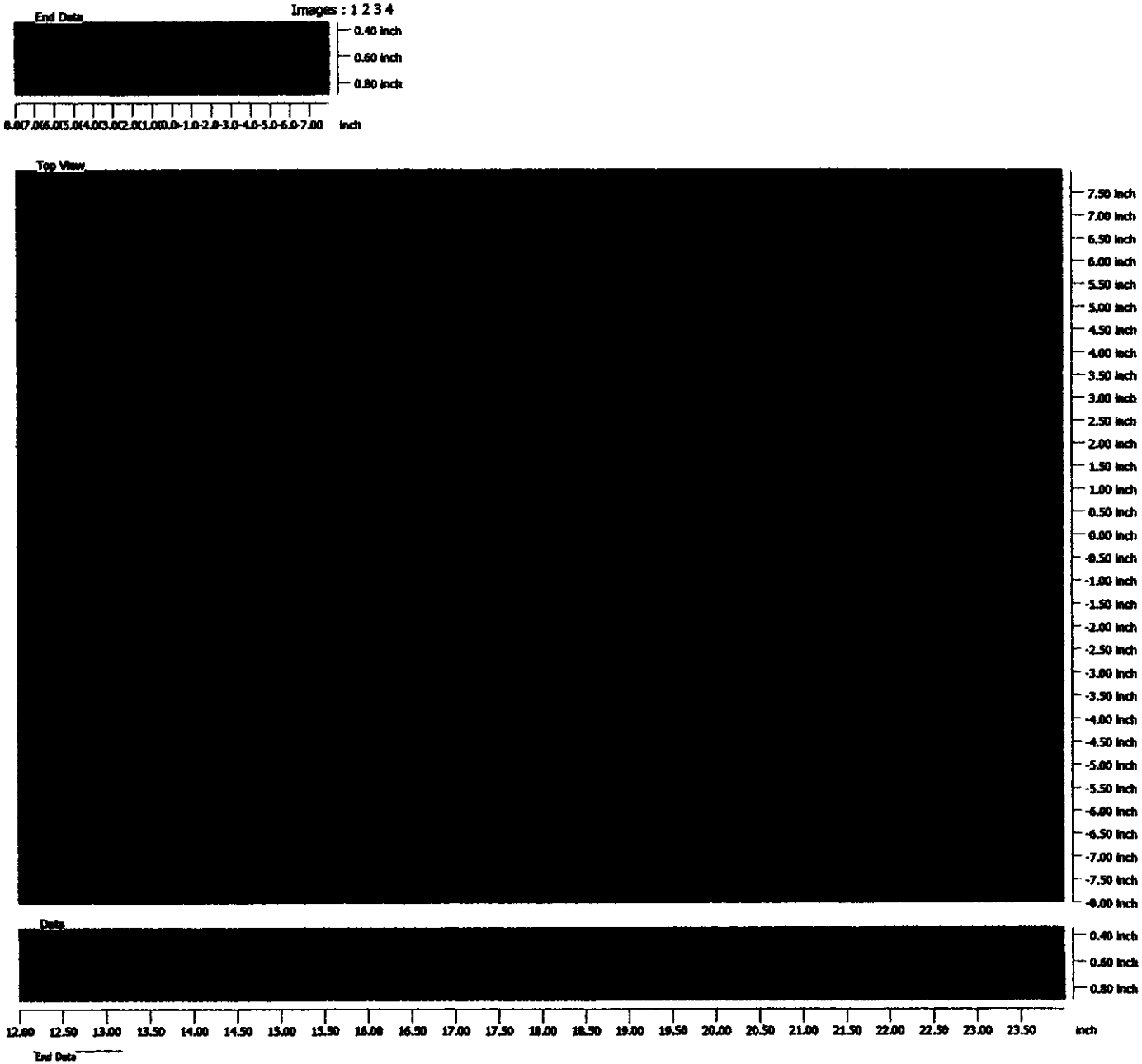



WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, t-scan data1, 6/12/00 15:04
2: P-scan, Images, t-scan data1, 6/12/00 15:04
3: T-scan, Images, t-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:03 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1A.

Images : 1 2 3 4



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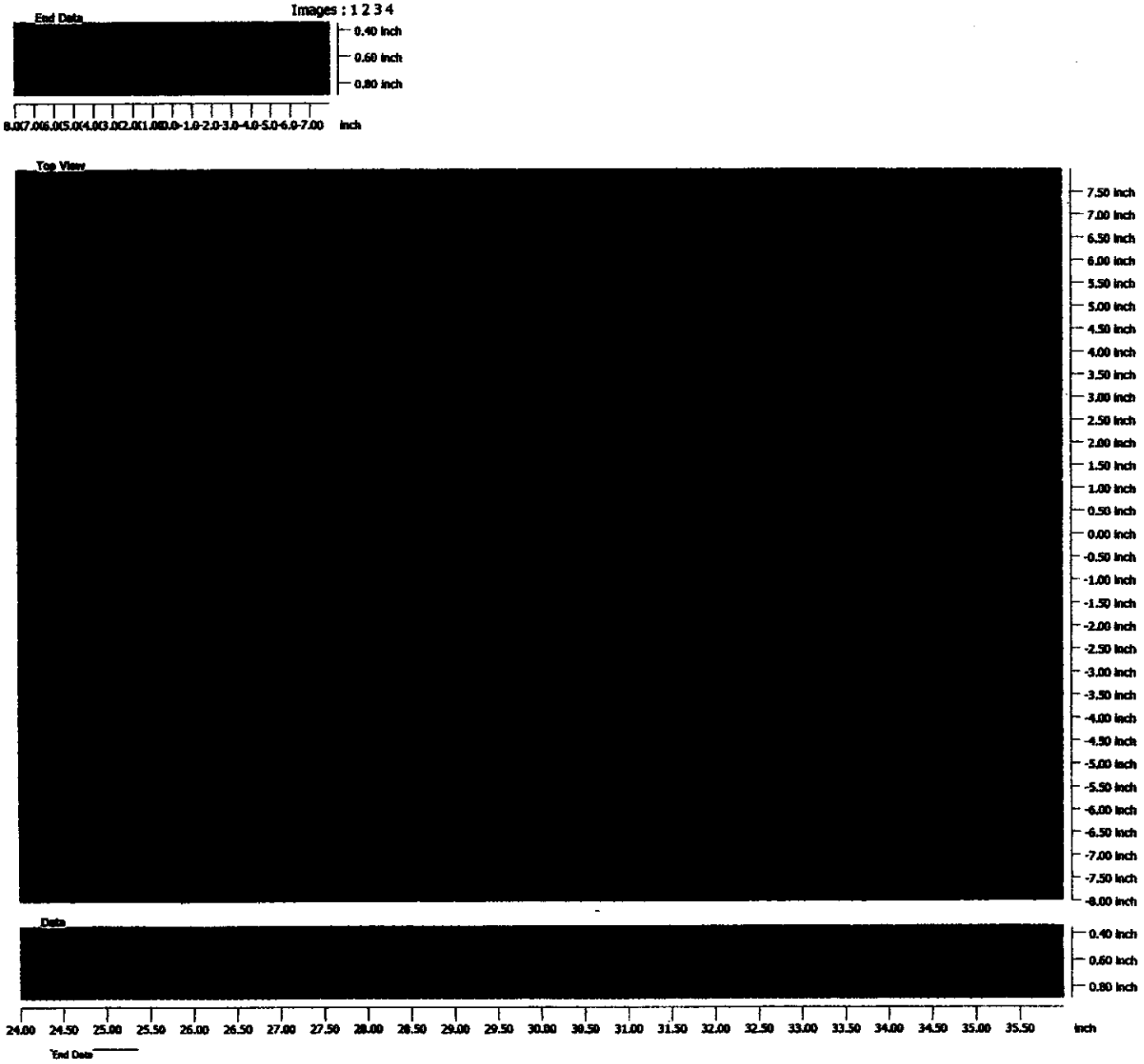
WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, t-scan data1, 6/12/00 15:04
2: P-scan, Images, t-scan data1, 6/12/00 15:04
3: T-scan, Images, t-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:03 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1A.

Images : 1 2 3 4

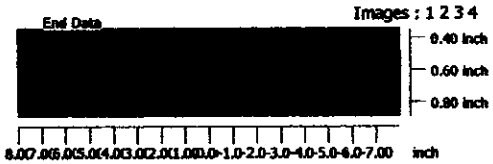


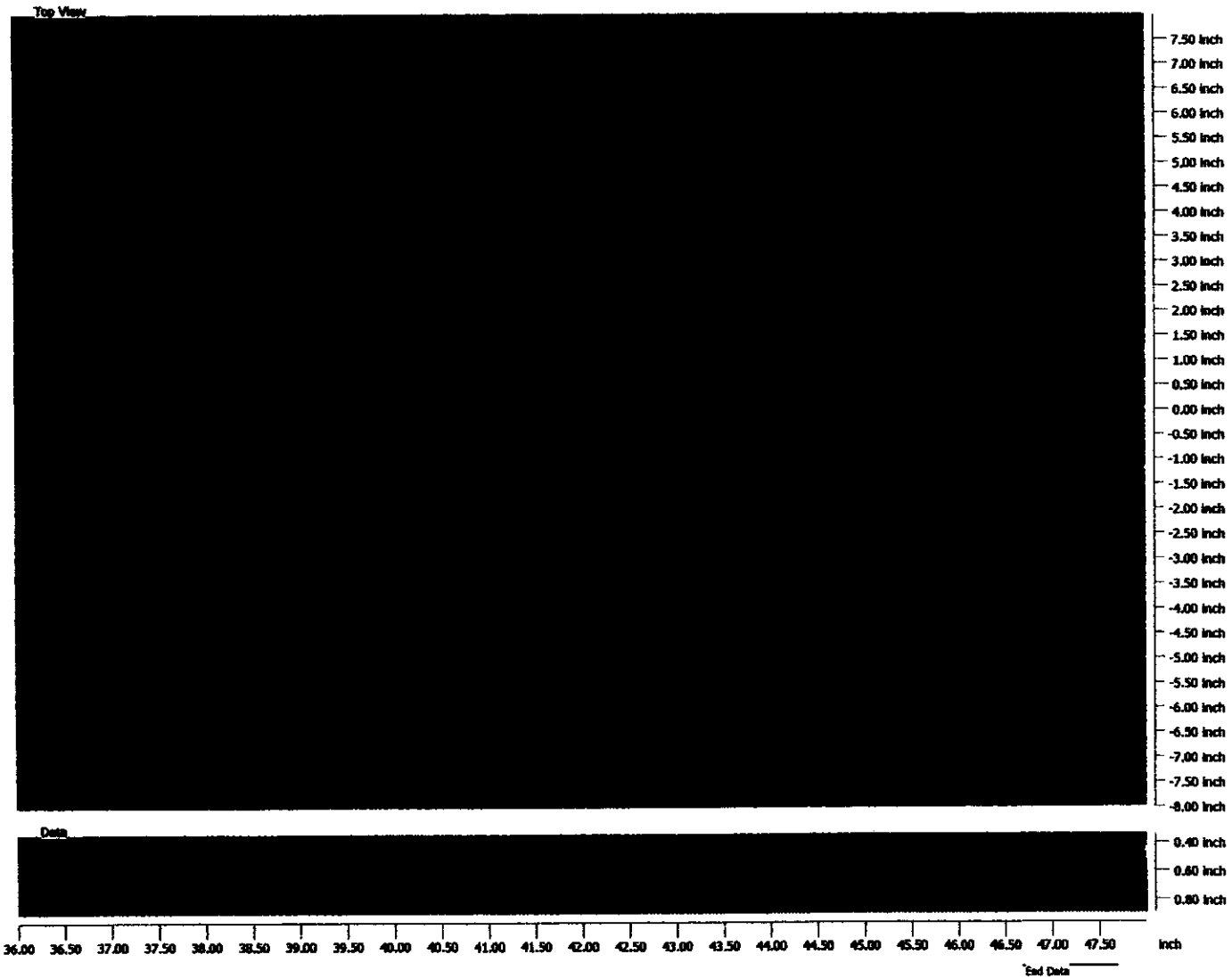
WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, t-scan data1, 6/12/00 15:04
2: P-scan, Images, t-scan data1, 6/12/00 15:04
3: T-scan, Images, t-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:29 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1A.

Images : 1 2 3 4



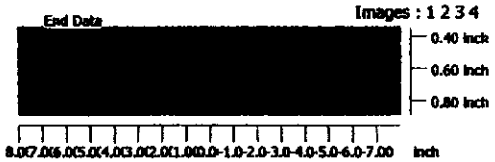



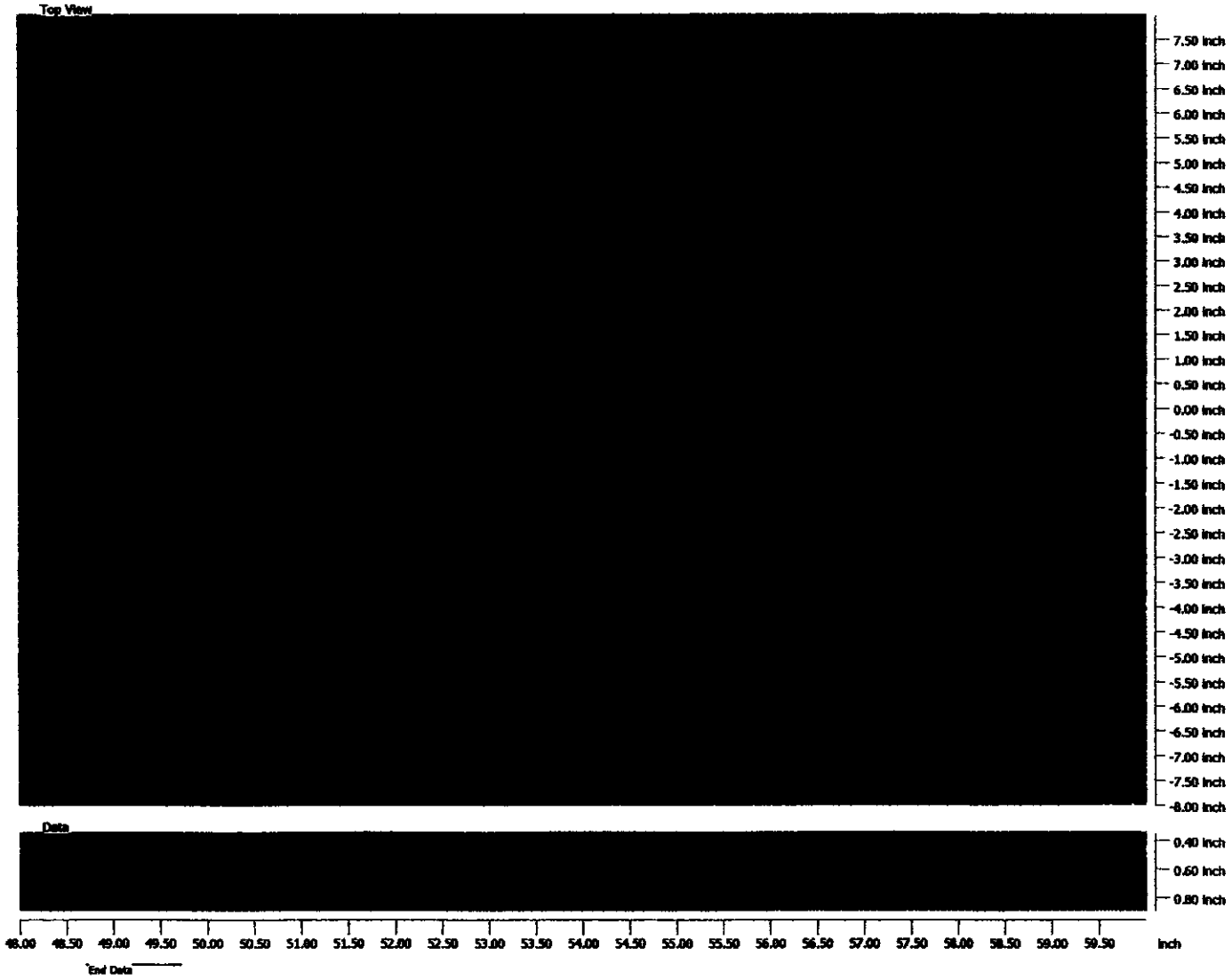
WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, t-scan data1, 6/12/00 15:04
2: P-scan, Images, t-scan data1, 6/12/00 15:04
3: T-scan, Images, t-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:30 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1A.

Images : 1 2 3 4



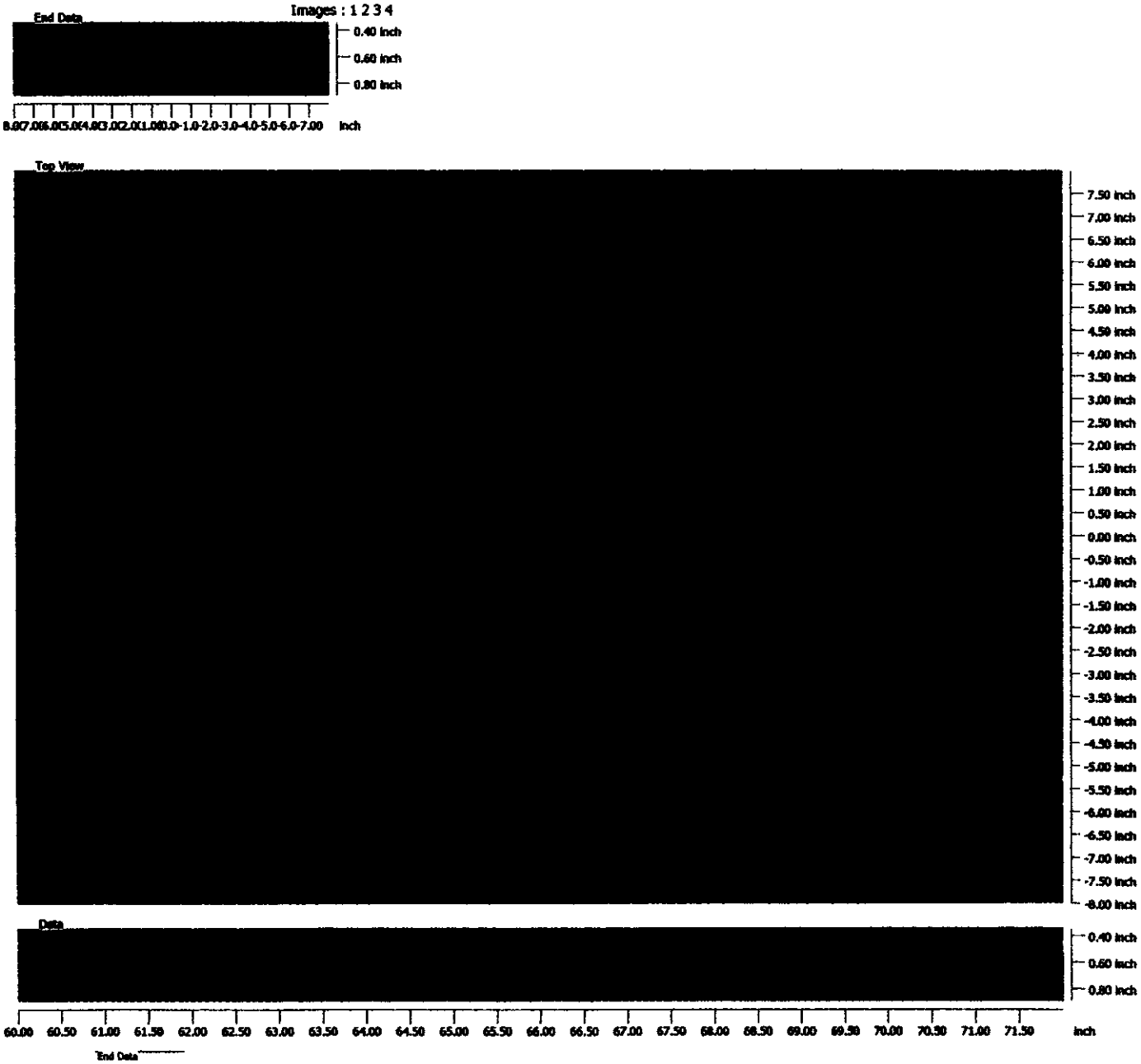



WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, t-scan data1, 6/12/00 15:04
2: P-scan, Images, t-scan data1, 6/12/00 15:04
3: T-scan, Images, t-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:31 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1A.

Images : 1 2 3 4

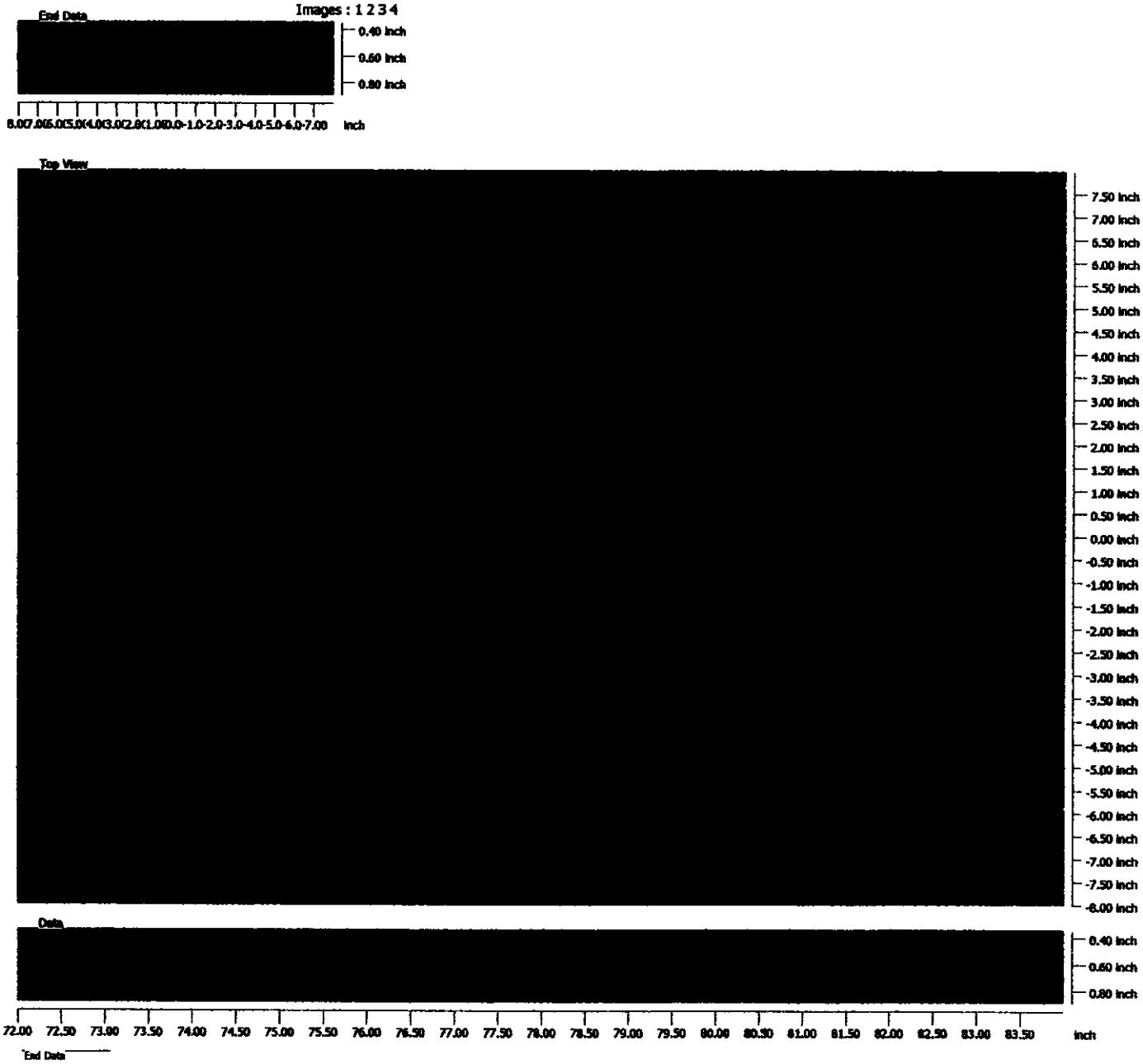


WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, t-scan data1, 6/12/00 15:04
2: P-scan, Images, t-scan data1, 6/12/00 15:04
3: T-scan, Images, t-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:31 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/1A.

Images : 1 2 3 4



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/12/00 13:35 | EXAM END: 21:00 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 2nd Vert WALL Plate TO Plate (Plate 1) | | CALIBRATED RANGE: 0" TO 1.414" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 90" | | REF LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .500" NOM. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 2/107AP/1 + 1A | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☐ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz weld | $Y_0$ REF. POINT ($W_0$): 21" from ℄ of 1st PASS | SCAN WIDTH: 15" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS: NO Crack-Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Nelson | Wesley D Nelson | (N1) | |
| Level III Date 6/12/00 | Level III Date 8/6/00 | Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B. Elder

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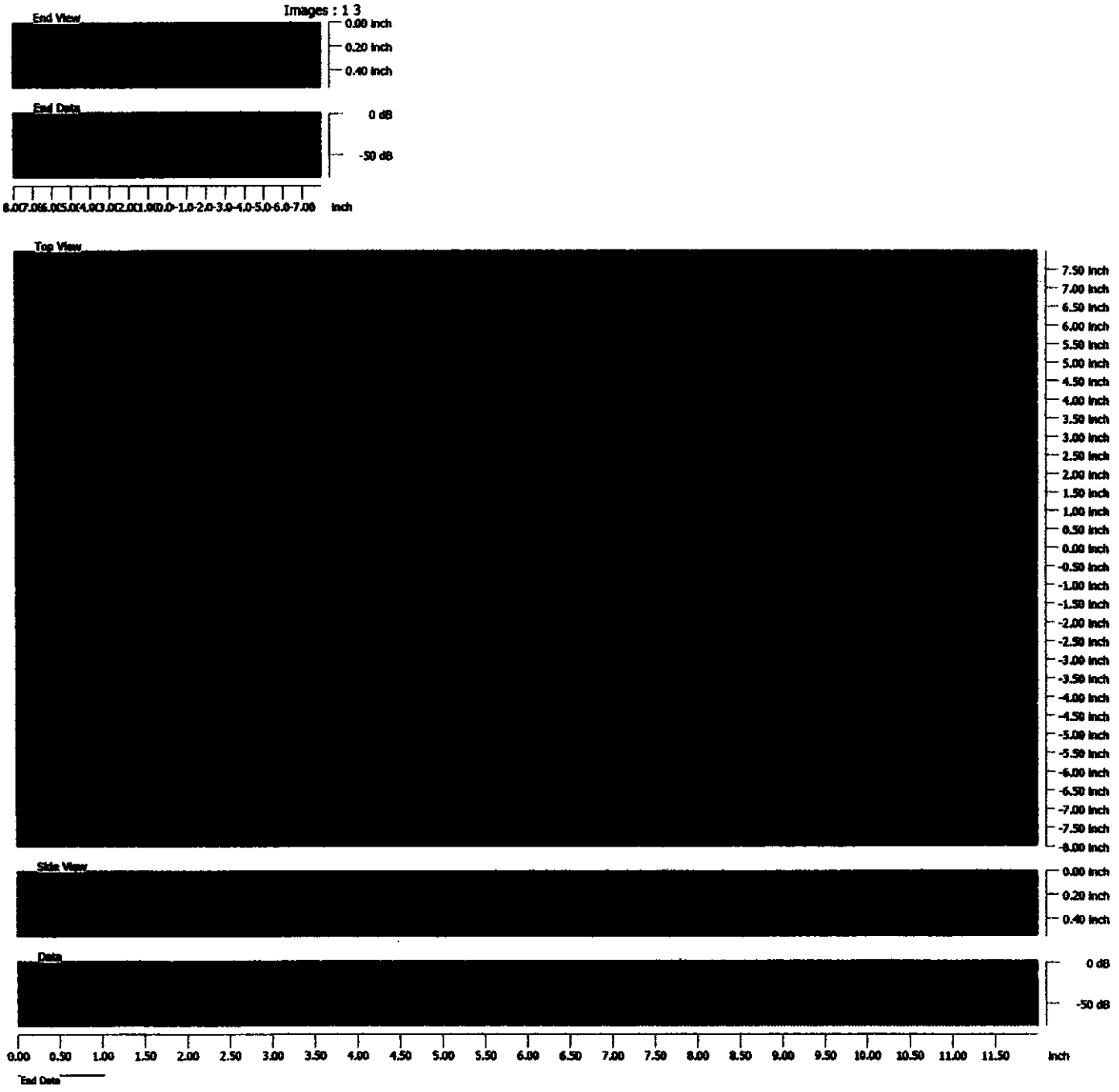
WALL SCAN 2/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, p-scan data1, 6/12/00 14:01
2: P-scan, Images, p-scan data1, 6/12/00 14:01
3: T-scan, Images, p-scan data1, 6/12/00 14:01

Printed on 2000-8-6 at 20:38 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/1.

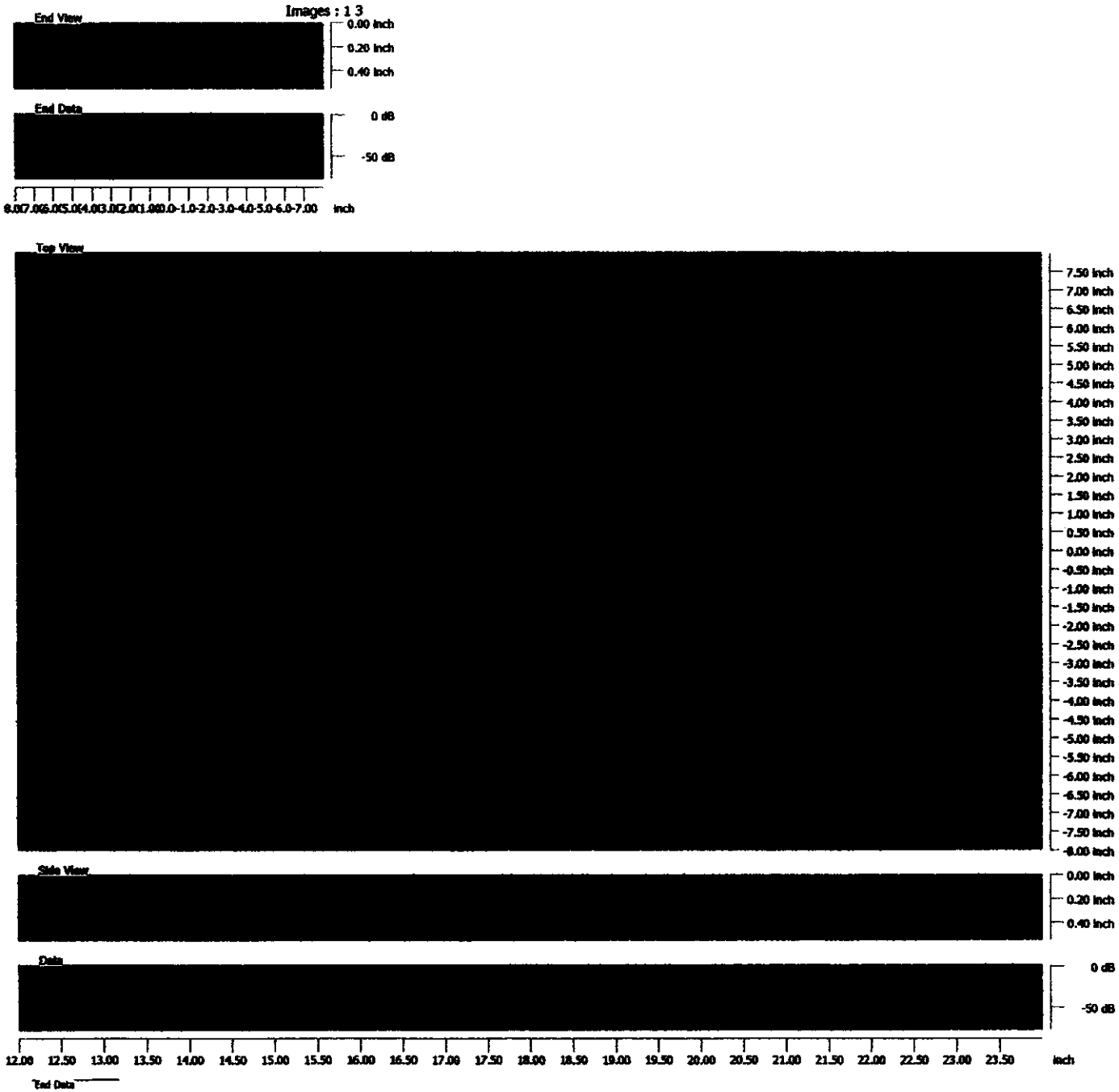
Images : 1 3



WALL SCAN 2/107AP/1
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, p-scan data1, 6/12/00 14:01
2: P-scan, Images, p-scan data1, 6/12/00 14:01
3: T-scan, Images, p-scan data1, 6/12/00 14:01

Printed on 2000-8-6 at 20:38 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/1.



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WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, p-scan data1, 6/12/00 15:04
2: P-scan, Images, p-scan data1, 6/12/00 15:04
3: T-scan, Images, p-scan data1, 6/12/00 15:04

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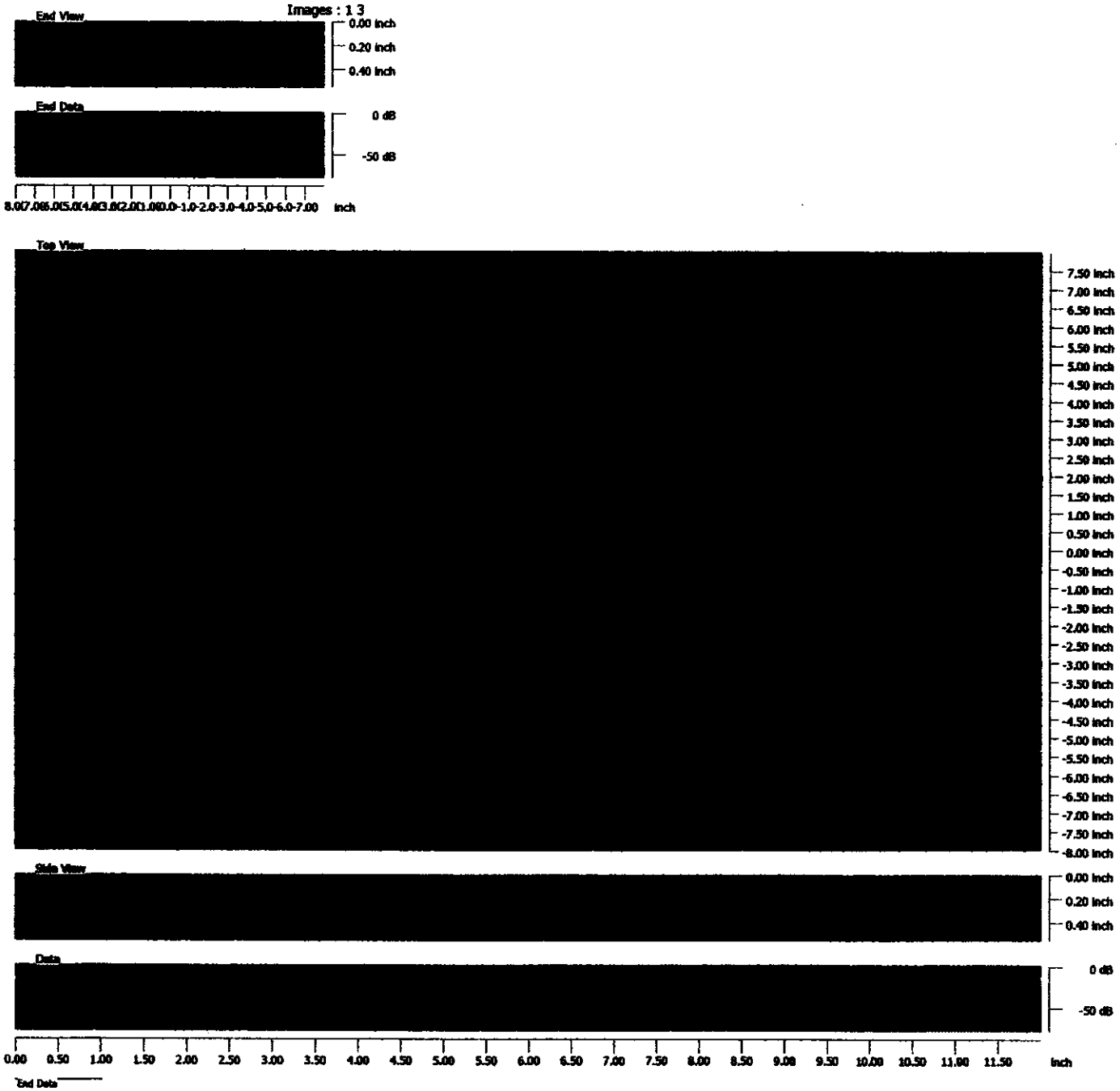
Images : 1 3



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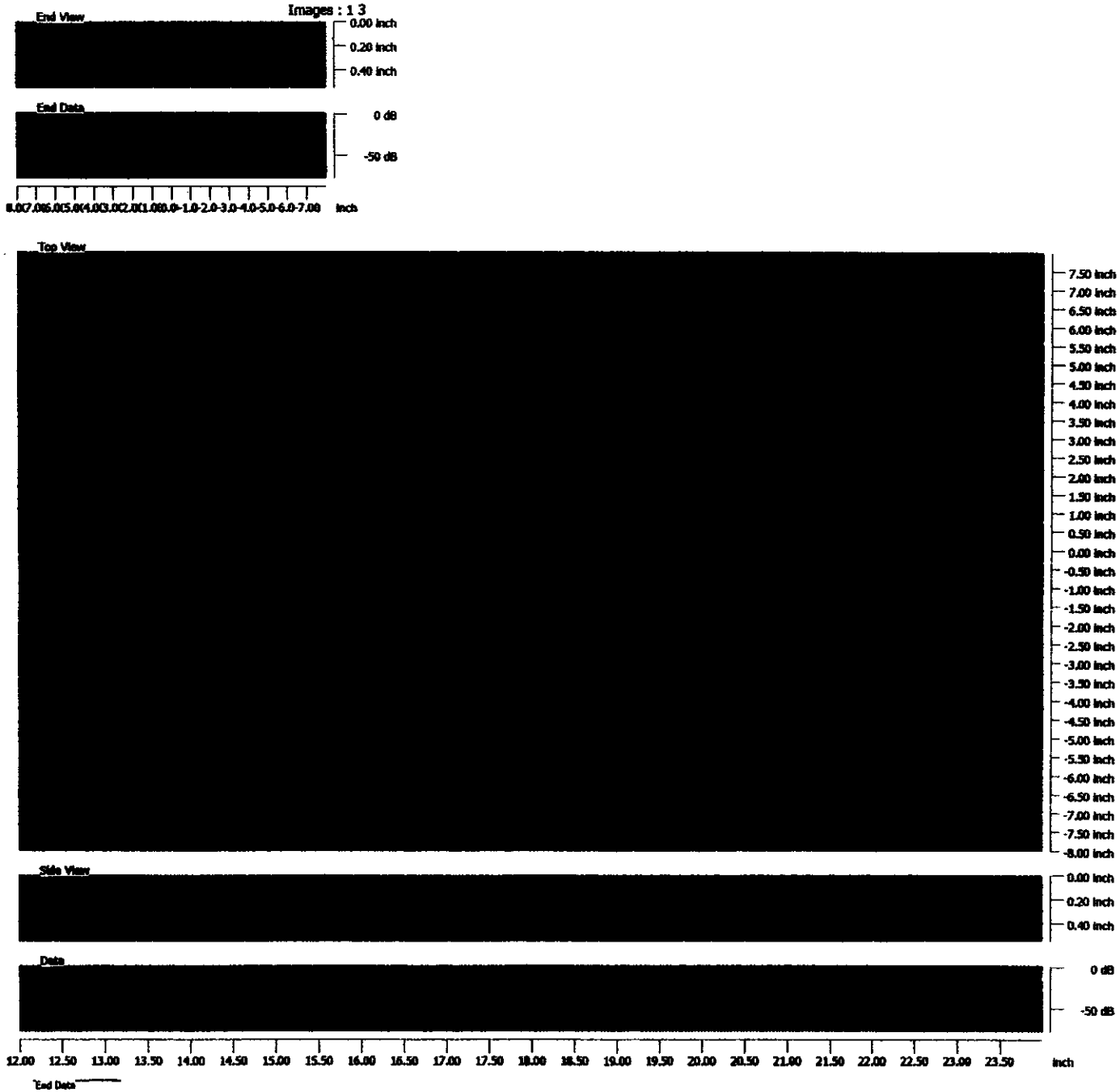
WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, p-scan data1, 6/12/00 15:04
2: P-scan, Images, p-scan data1, 6/12/00 15:04
3: T-scan, Images, p-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:34 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/1A.

Images : 1 3

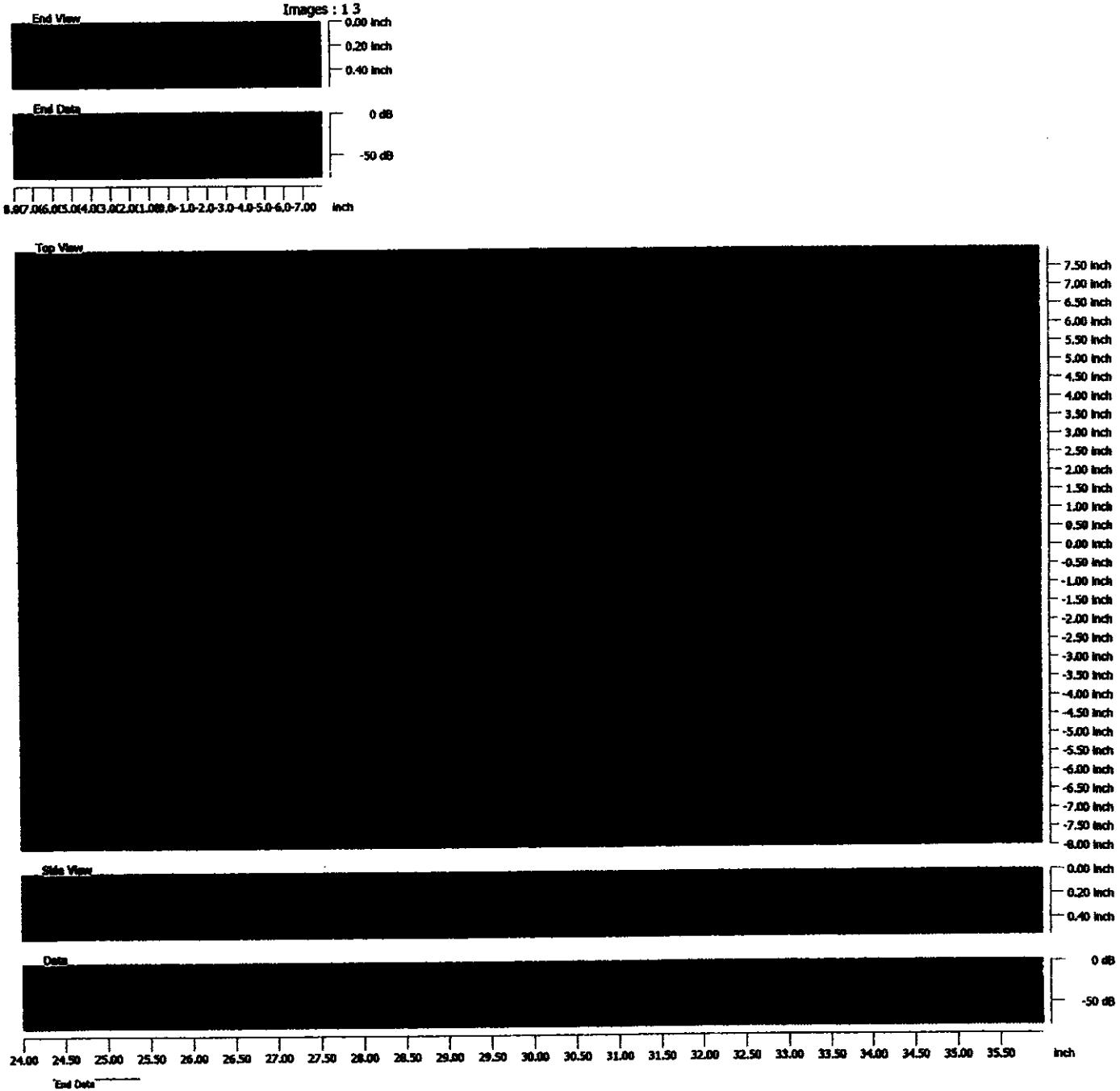


WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, p-scan data1, 6/12/00 15:04
2: P-scan, Images, p-scan data1, 6/12/00 15:04
3: T-scan, Images, p-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:34 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/1A.

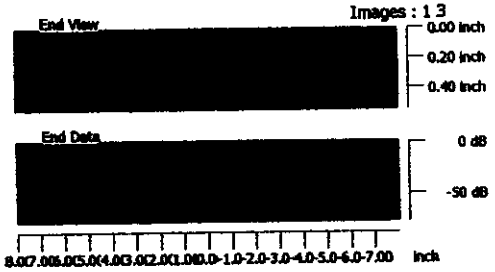
Images : 1 3

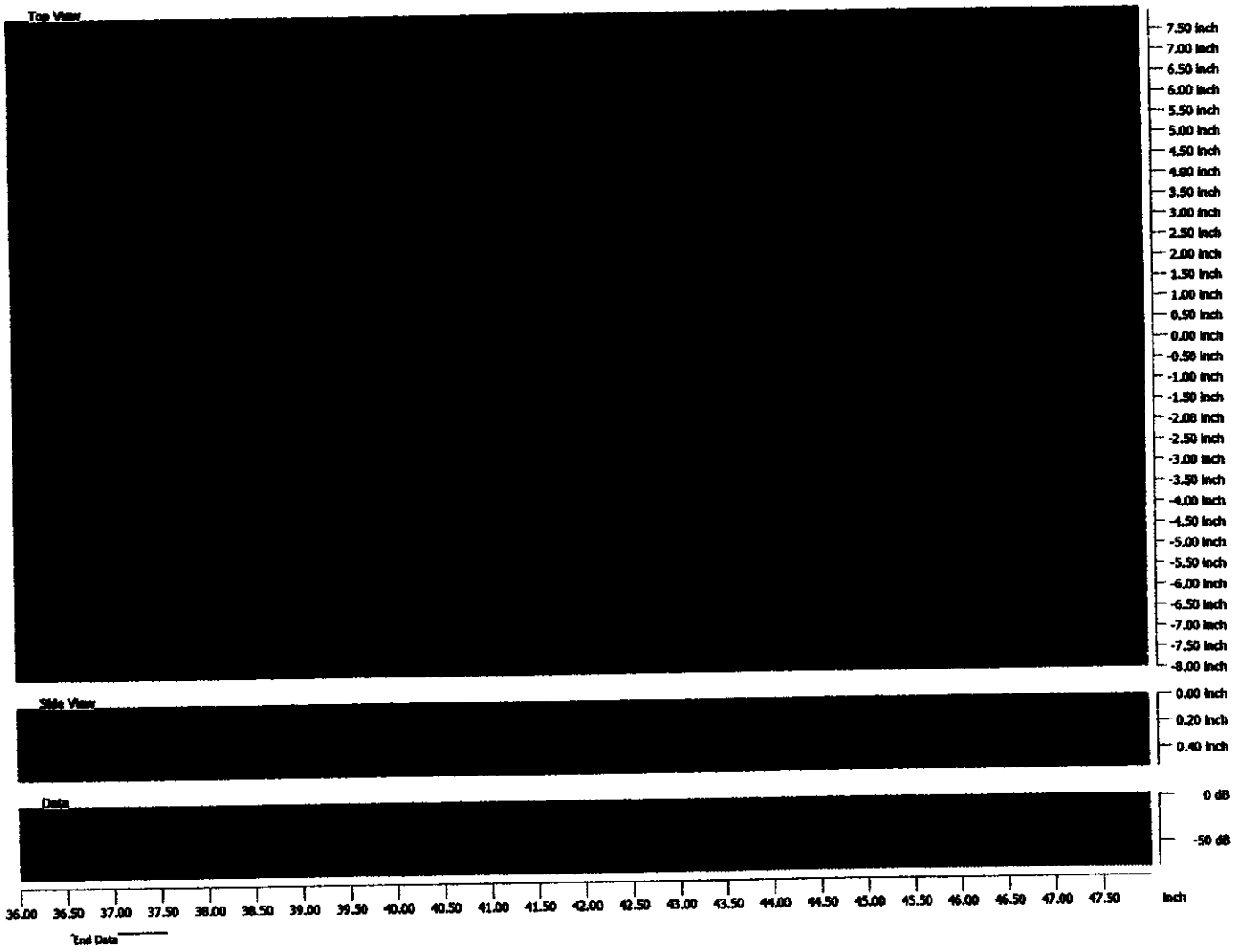


WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1
Printed on 2000-8-6 at 20:34 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/1A.

1: P-scan, Images, p-scan data1, 6/12/00 15:04
2: P-scan, Images, p-scan data1, 6/12/00 15:04
3: T-scan, Images, p-scan data1, 6/12/00 15:04

Images : 1 3



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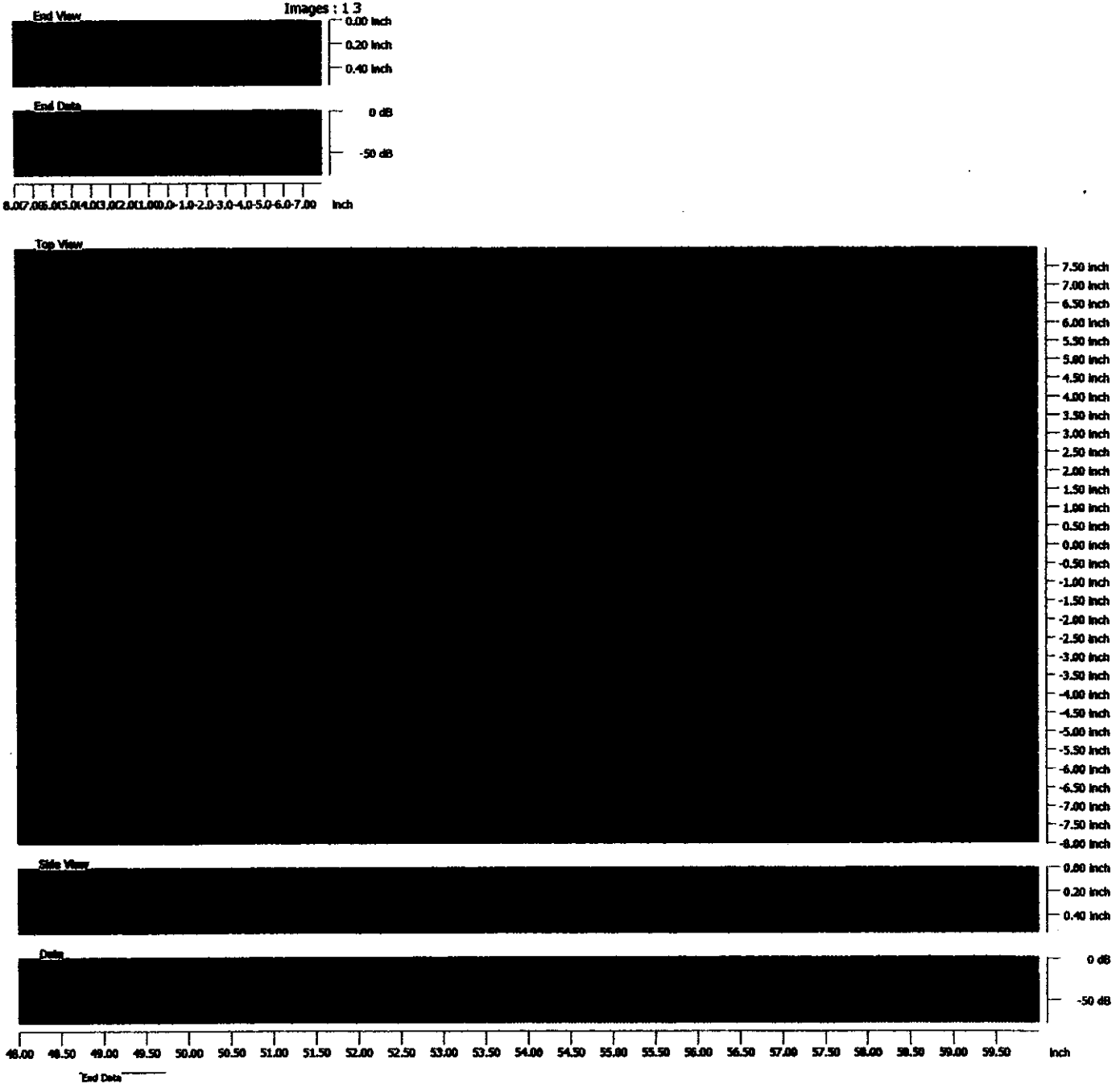
WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1
Printed on 2000-8-6 at 20:34 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/1A.

1: P-scan, Images, p-scan data1, 6/12/00 15:04
2: P-scan, Images, p-scan data1, 6/12/00 15:04
3: T-scan, Images, p-scan data1, 6/12/00 15:04

Images : 1 3

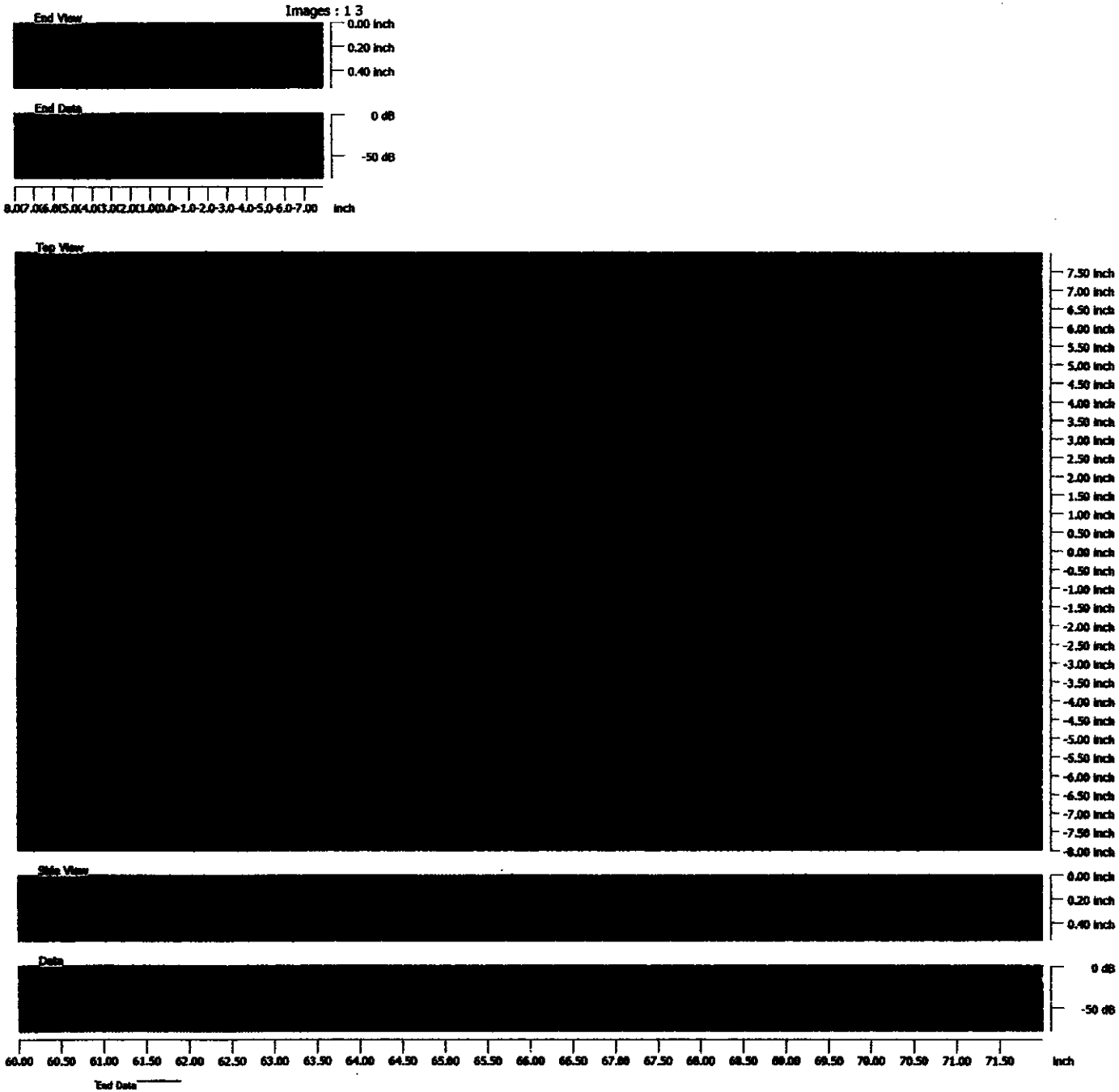


WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, p-scan data1, 6/12/00 15:04
2: P-scan, Images, p-scan data1, 6/12/00 15:04
3: T-scan, Images, p-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:35 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/1A.

Images : 1 3



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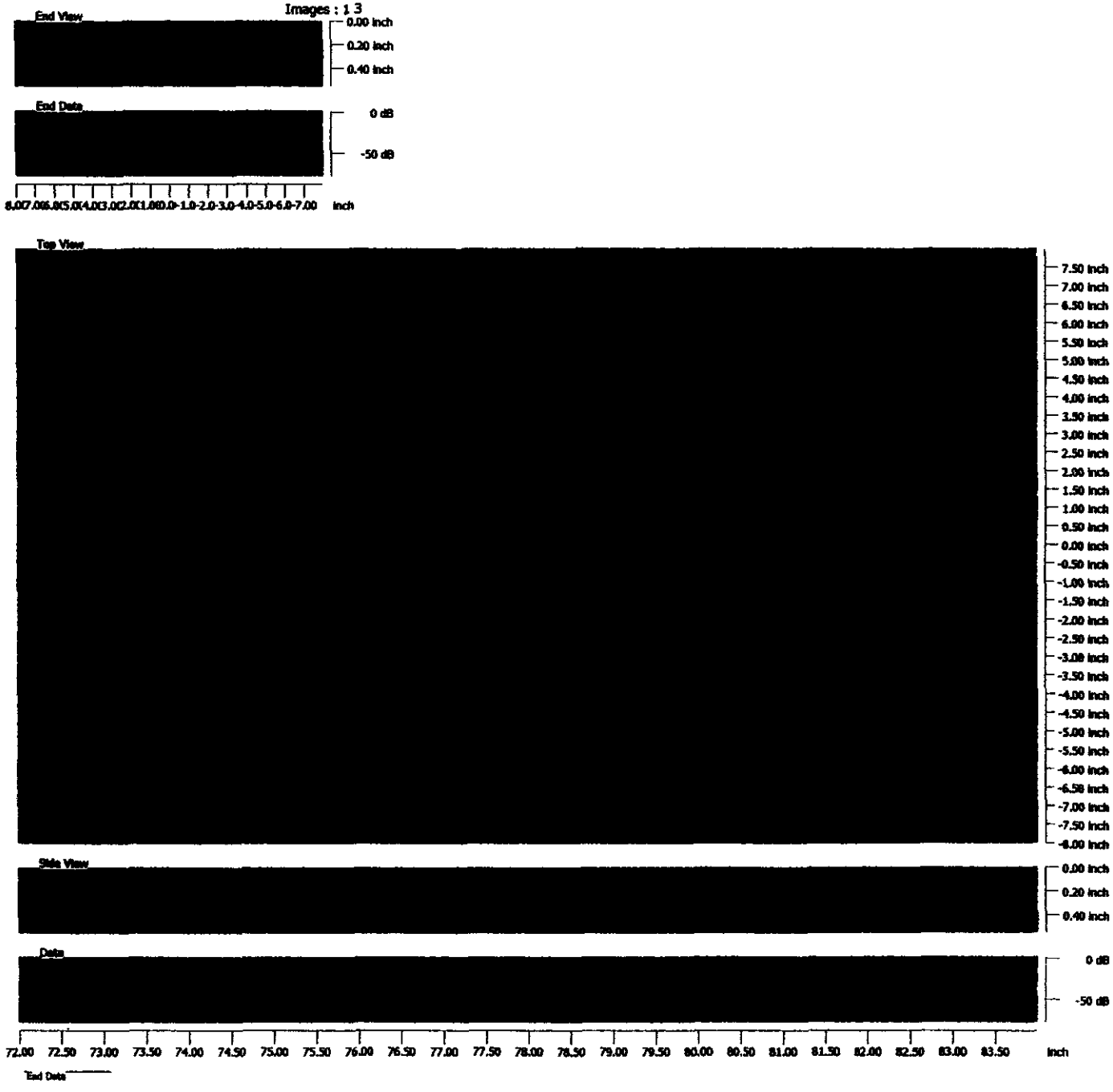
WALL SCAN 2/107AP/1A
WHN
AP / 200E TANK FARM
PLATE 1/1

1: P-scan, Images, p-scan data1, 6/12/00 15:04
2: P-scan, Images, p-scan data1, 6/12/00 15:04
3: T-scan, Images, p-scan data1, 6/12/00 15:04

Printed on 2000-8-6 at 20:35 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/1A.

Images : 1 3



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4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

9:27 20:30

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/13/00 ~~13:35 8/1/00~~ | EXAM END: | JOB #: 00-47 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED Wbn 8/7/00 | NOM. THICKNESS: .500" |
| CONFIGURATION: 2nd Vert. Wall Plate TO Plate (Plate 2) | | CALIBRATED RANGE: .3" To 1.0" | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 89.3" | | REF. LEVEL CORRECTION (TRANS. CORR): 0 DB | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | CONDITION: |
| FILE NAME/ITEM#: Wall Scan 2/107AP/2 | | TRANSDUCER: ☒ DUAL ☐ SGL ☐ 0DEG ☐ ANGLE 0° | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz weld | $Y_0$ REF. POINT ($W_0$): 21" from CL of 1st Pass | SCAN WIDTH: 15" | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK, R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .520" | .505" | | |
| | 12" | 24" | | | .520" | .509" | | |
| | 24" | 36" | | | .520" | .510" | | |
| | 36" | 48" | | | .525" | .500" | | |
| | 48" | 60" | | | .525" | .500" | | |
| | 60" | 72" | | | .525" | .512" | | |
| | 72" | 84" | | | .525" | .509" | | |
| | 84" | 89.3" | | | .520" | .505" | | |
| SUMMARY | | | | | | | | |

REMARKS

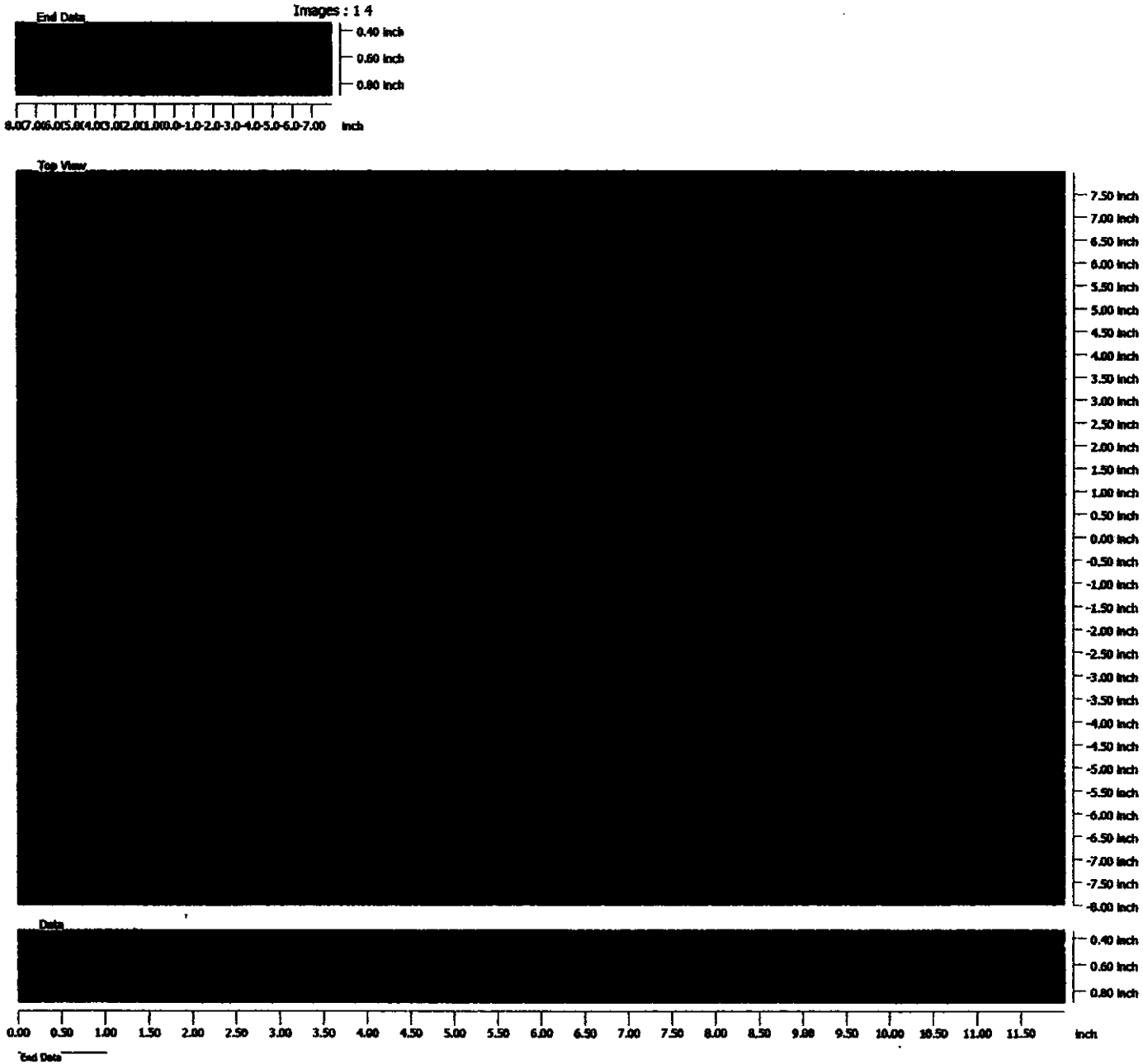
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/13/00 | [signature] Level III Date 8/4/00 | (NI) Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J. B. Elder

WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 20:50 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.



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WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

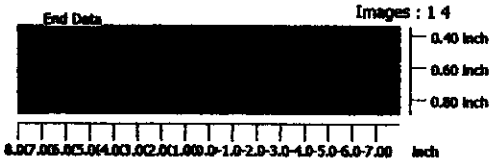
1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

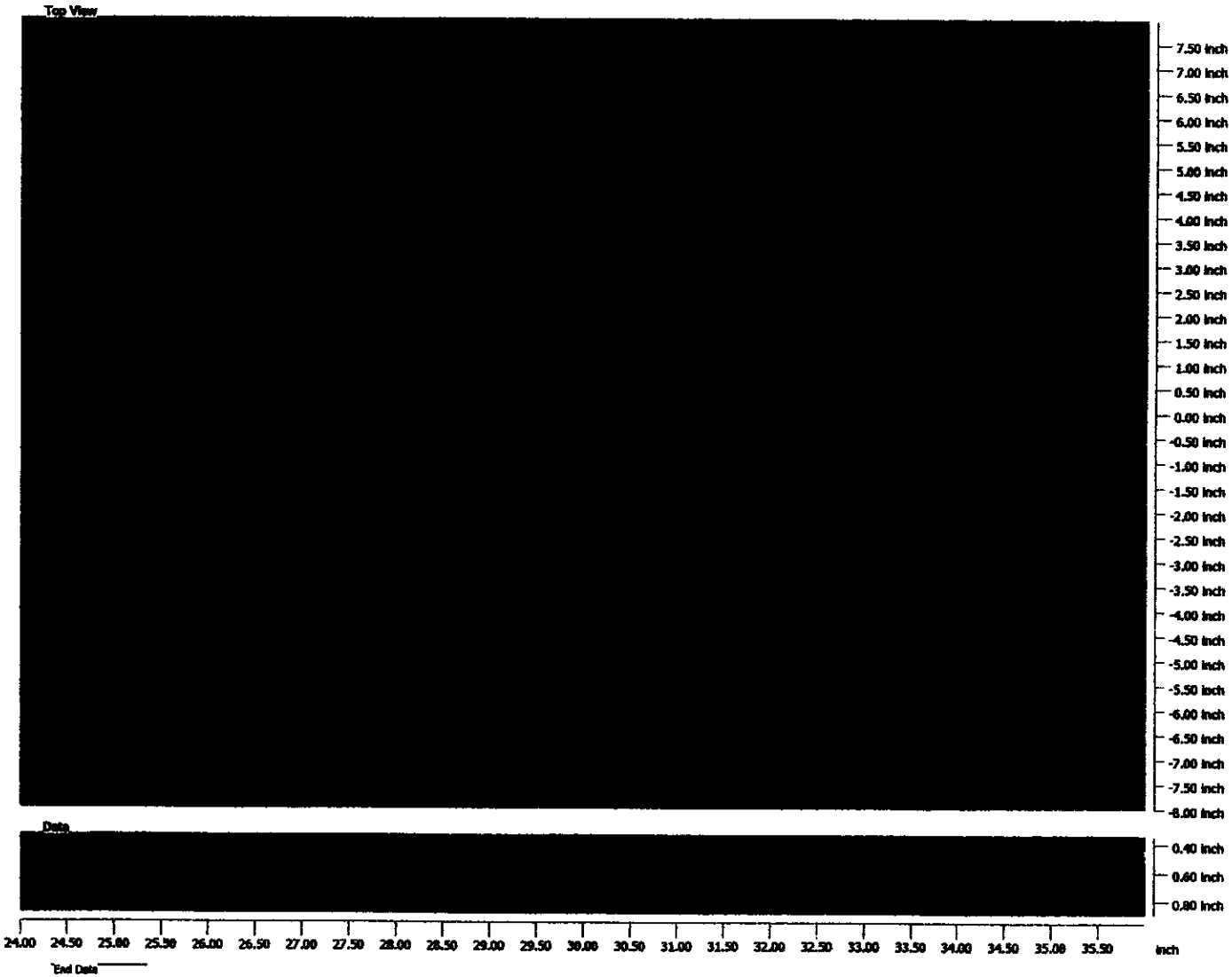
Printed on 2000-8-6 at 20:51 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.

WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 20:52 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.



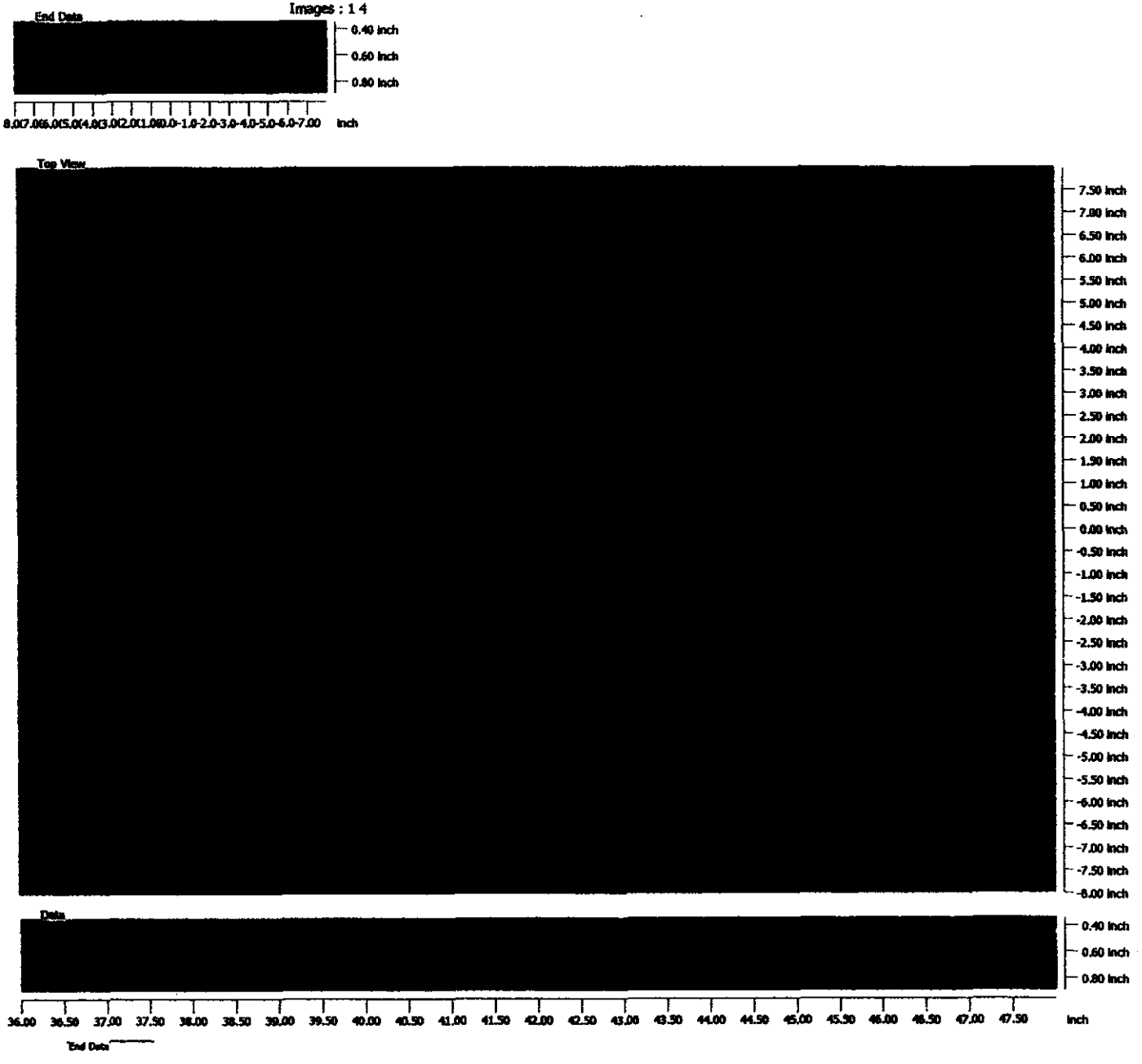



WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 20:52 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.

Images : 1 4



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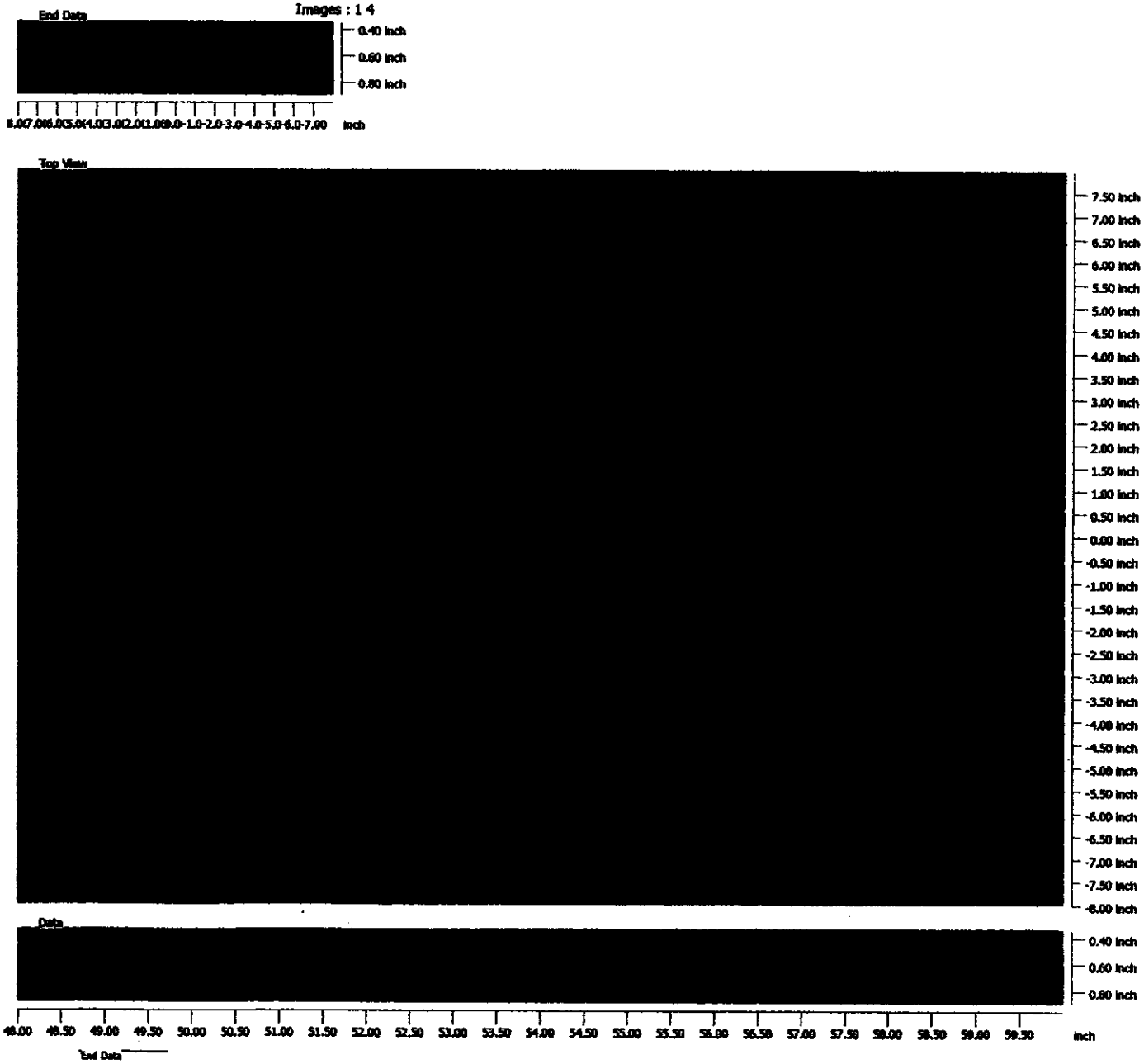
WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

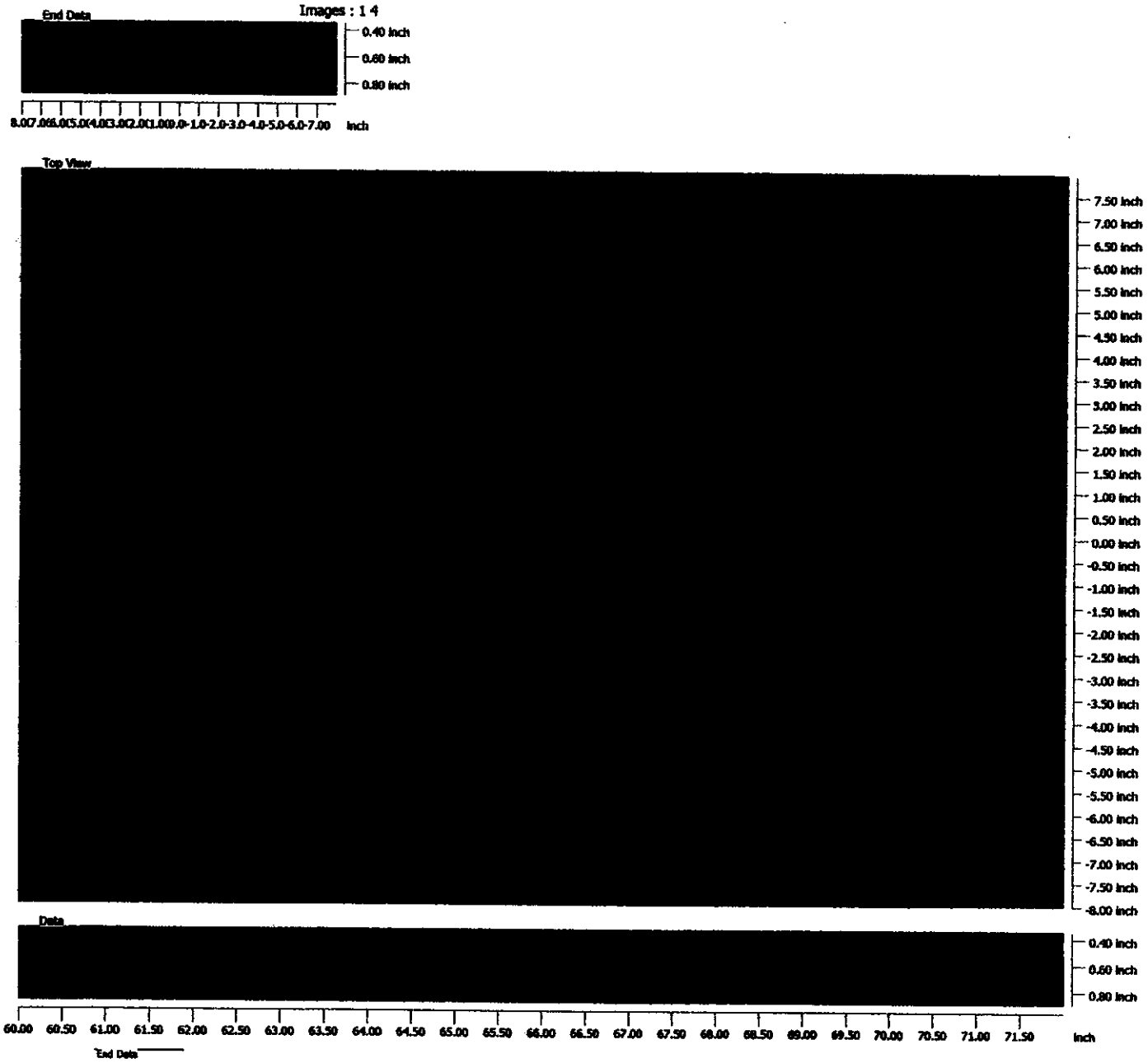
Printed on 2000-8-6 at 20:54 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.



WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 20:56 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.

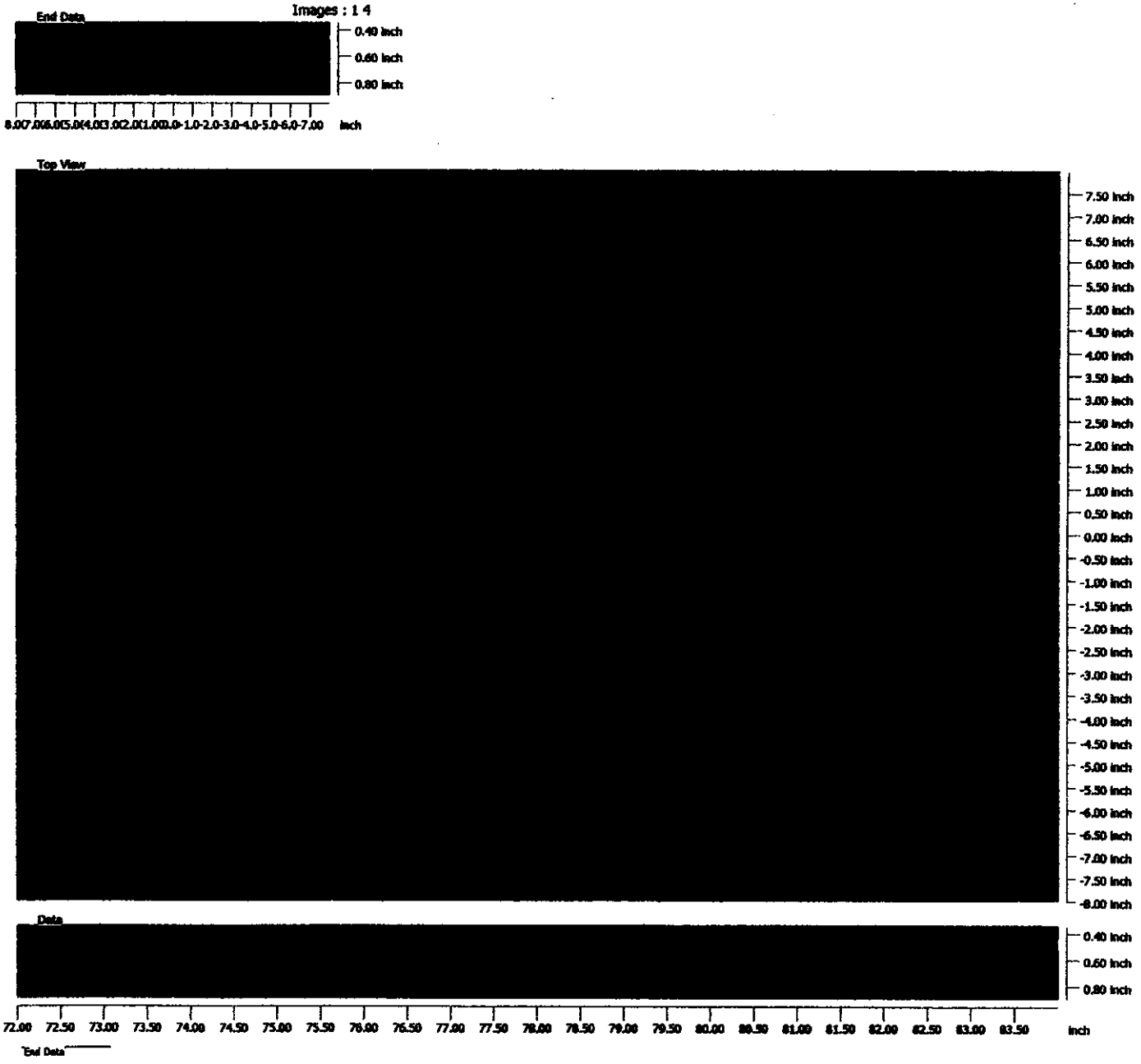


WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 20:56 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.

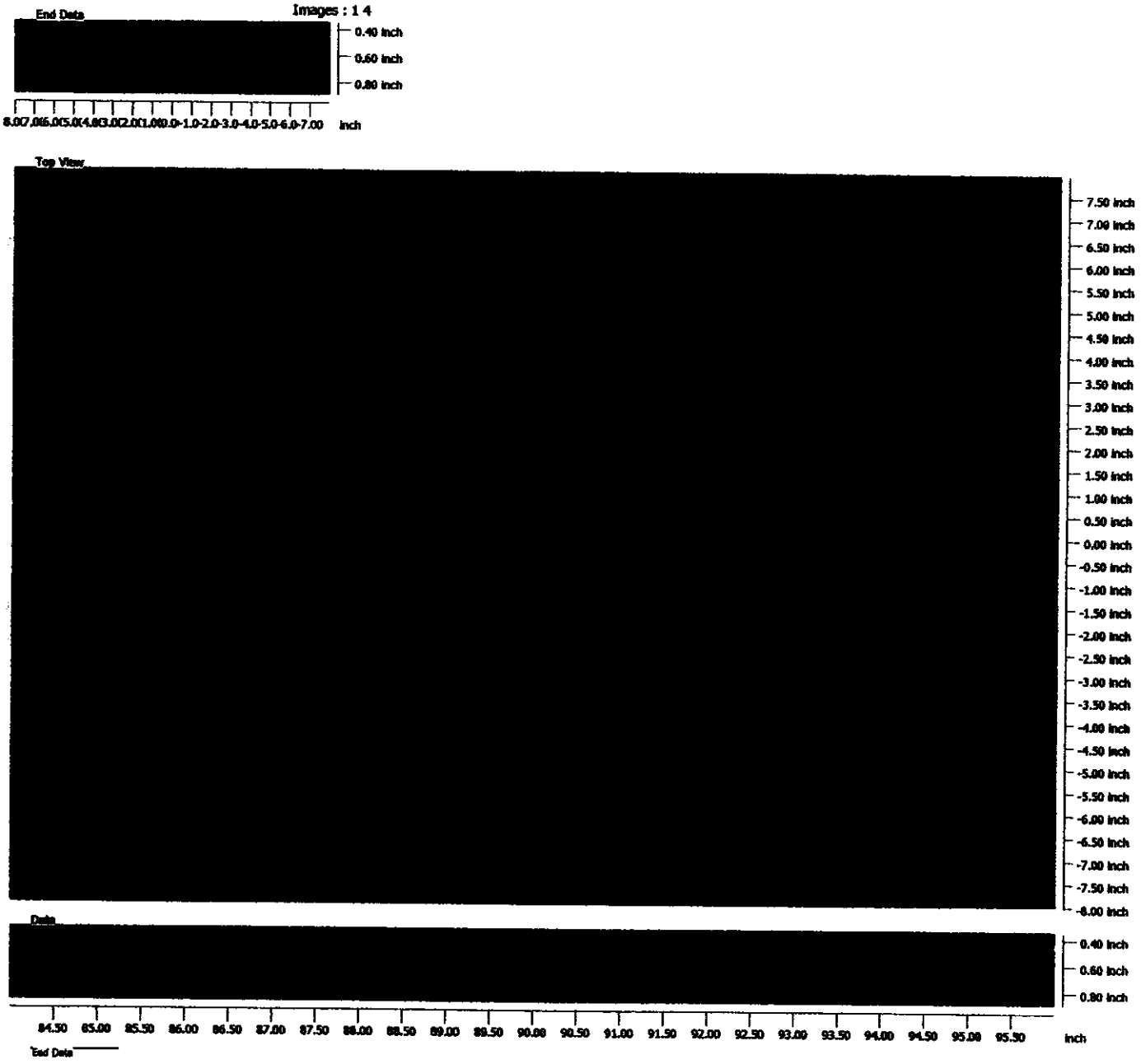
Images : 1 4



WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 20:59 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.



4/00

# ULTRASONIC P-SCAN DATA REPORT

9:27 20:30

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/13/00 ~~13:35~~ ~~21:00~~ | EXAM END: | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED 8/7/00 | | CONDITION: |
| CONFIGURATION: 2nd Vert. Wall Plate TO Plate (Plate 2) | | CALIBRATED RANGE: 0" TO 1.414" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 89.3" | | REF. LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .500" NOM. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 2/107AP/2 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☐ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz. weld | $Y_0$ REF. POINT ($W_0$): 21" from ℄ of 1st Pass | SCAN WIDTH: 15" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS: NO Crack Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/13/00 | [signature] Level III Date 8/4/00 | (N1) Level ___ Date ___ | ___ of ___ |

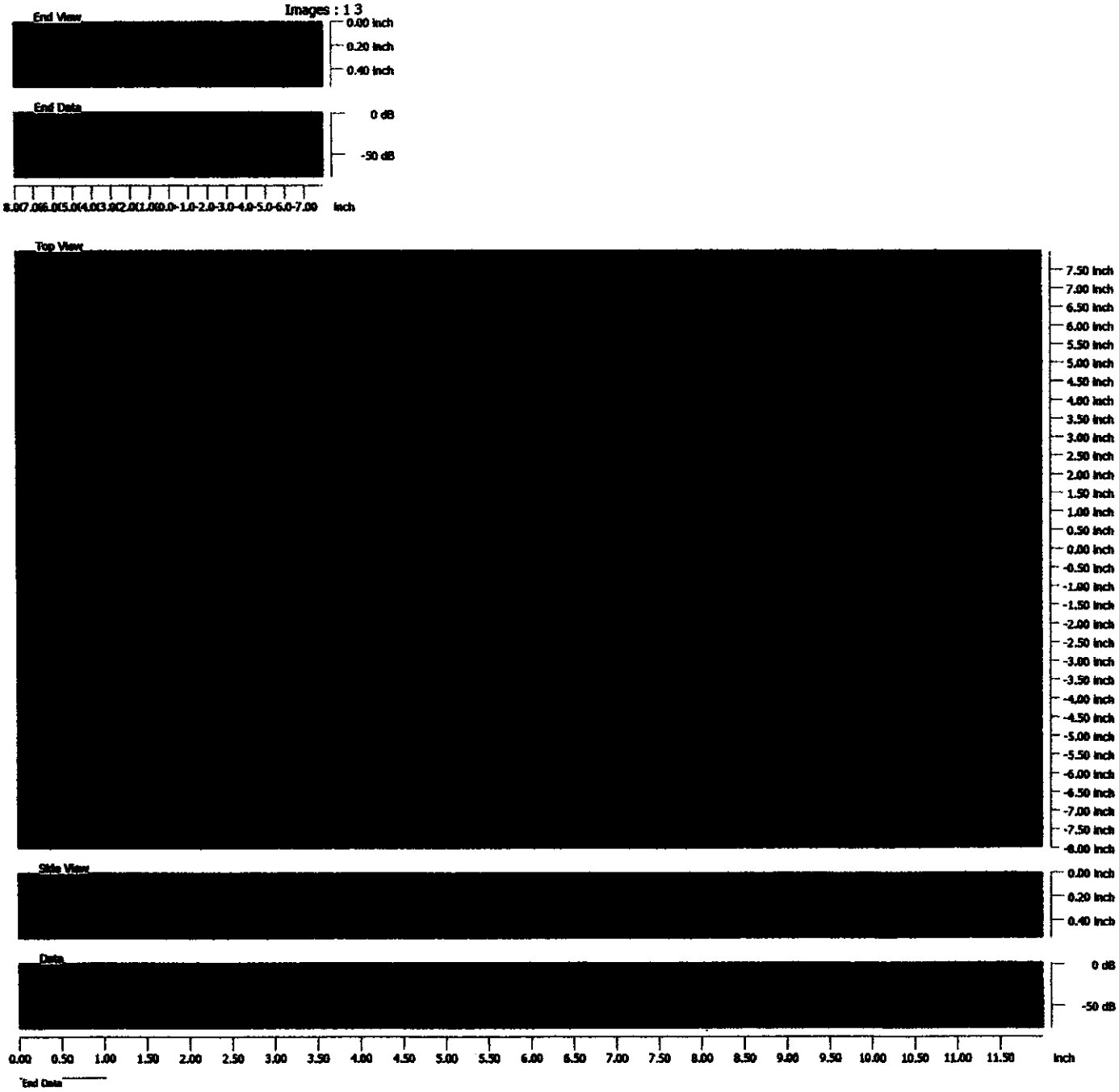
(N1) See Attached Letter From J. B. Elder

WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, p-scan data1, 6/13/00 09:49
2: P-scan, Images, p-scan data1, 6/13/00 09:49
3: T-scan, Images, p-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 21:02 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/2.

Images : 1 3



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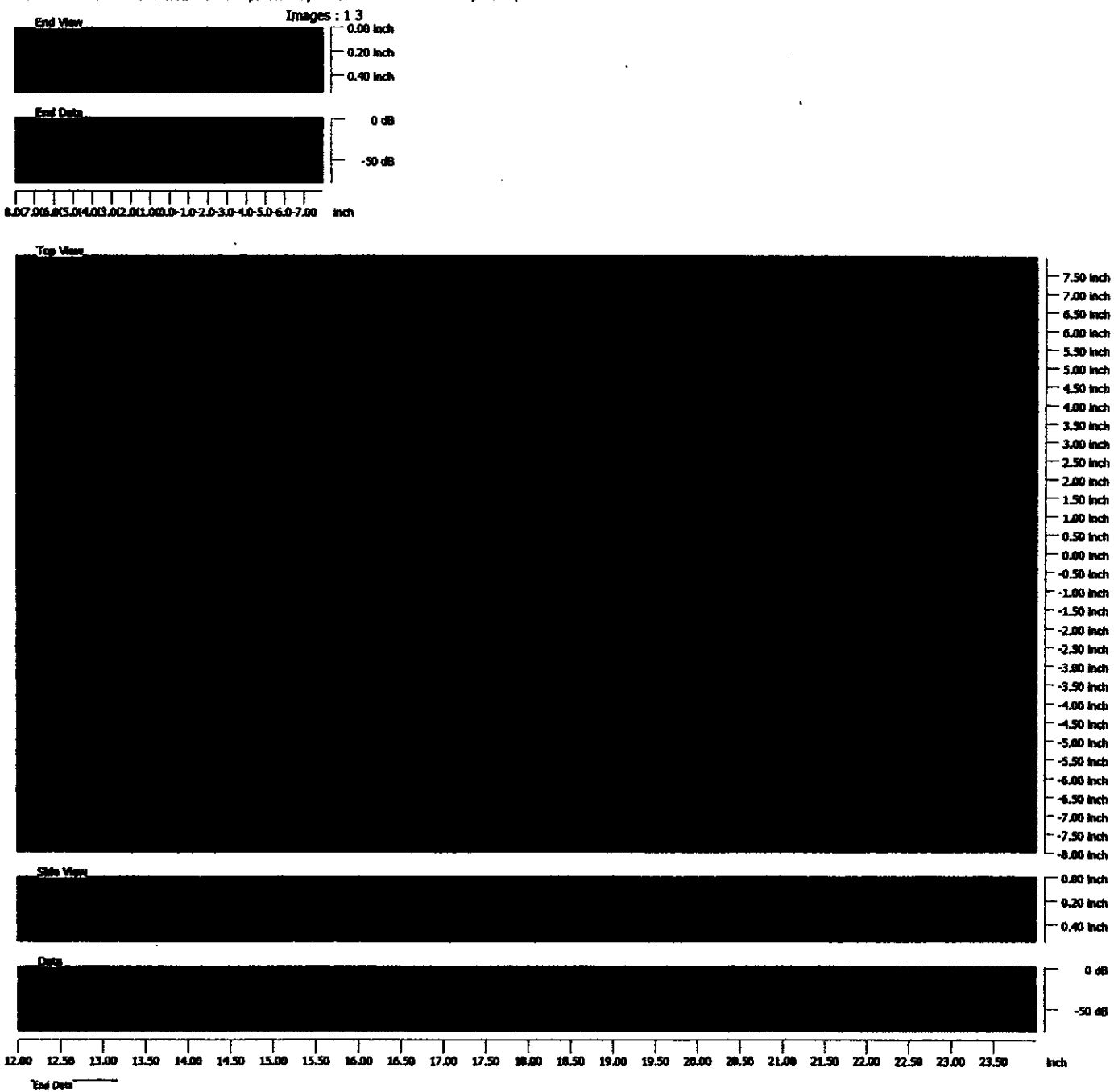
WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, p-scan data1, 6/13/00 09:49
2: P-scan, Images, p-scan data1, 6/13/00 09:49
3: T-scan, Images, p-scan data1, 6/13/00 09:49

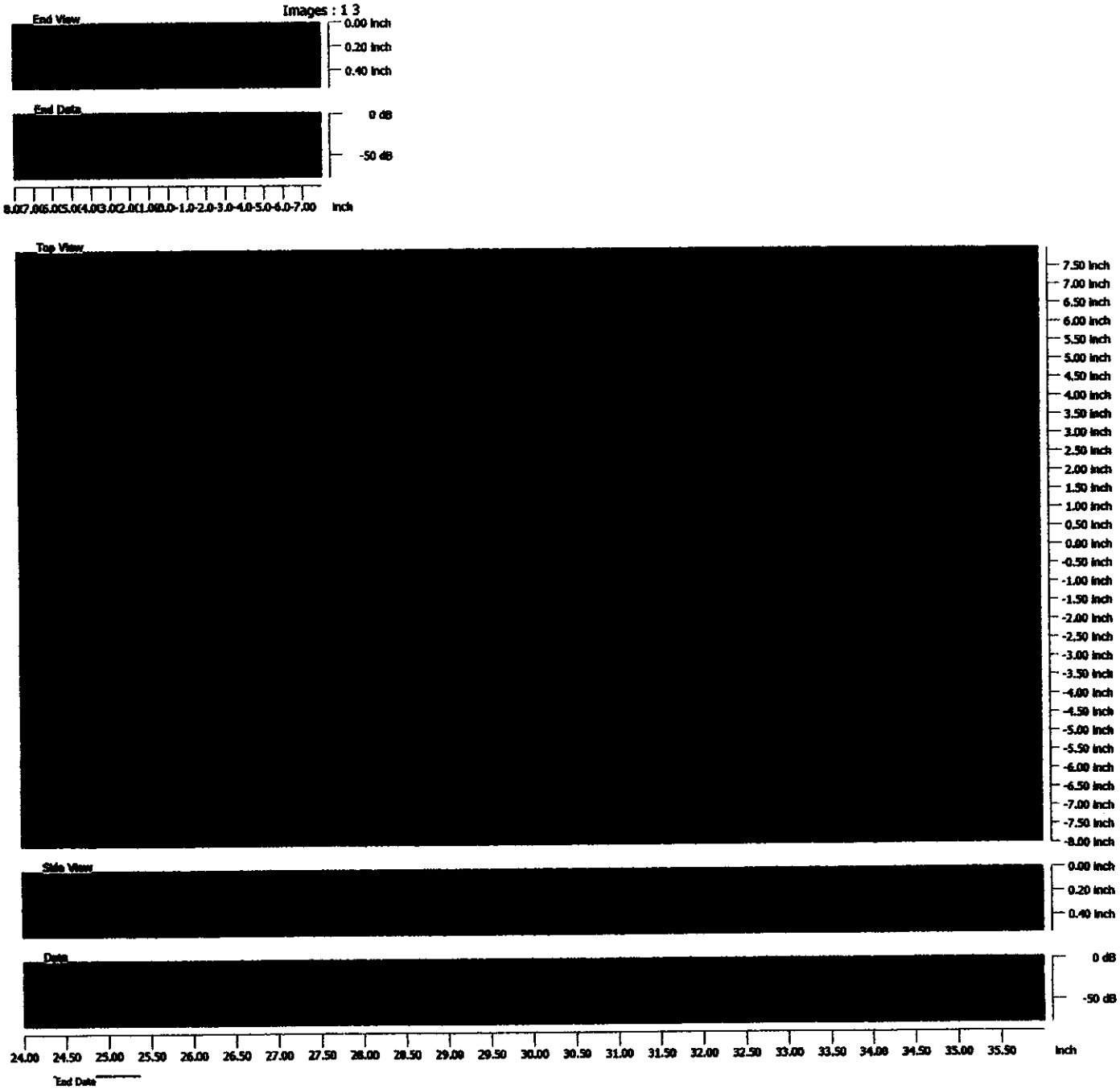
Printed on 2000-8-6 at 21:02 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/2.



WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2
Printed on 2000-8-6 at 21:03 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/2.

1: P-scan, Images, p-scan data1, 6/13/00 09:49
2: P-scan, Images, p-scan data1, 6/13/00 09:49
3: T-scan, Images, p-scan data1, 6/13/00 09:49

Images : 1 3



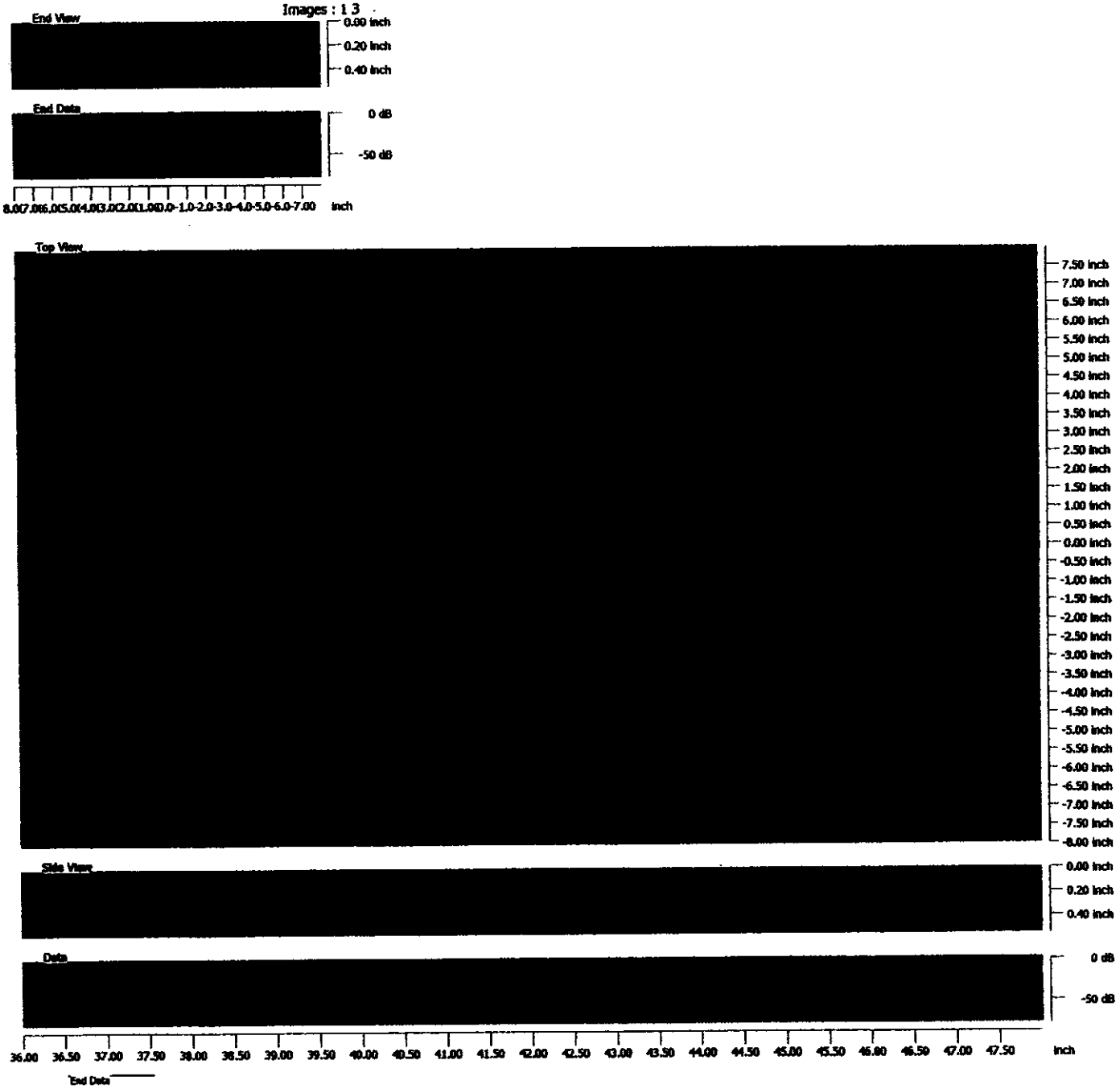
Page 119 of 449

WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, p-scan data1, 6/13/00 09:49
2: P-scan, Images, p-scan data1, 6/13/00 09:49
3: T-scan, Images, p-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 21:03 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/2.

Images : 1 3



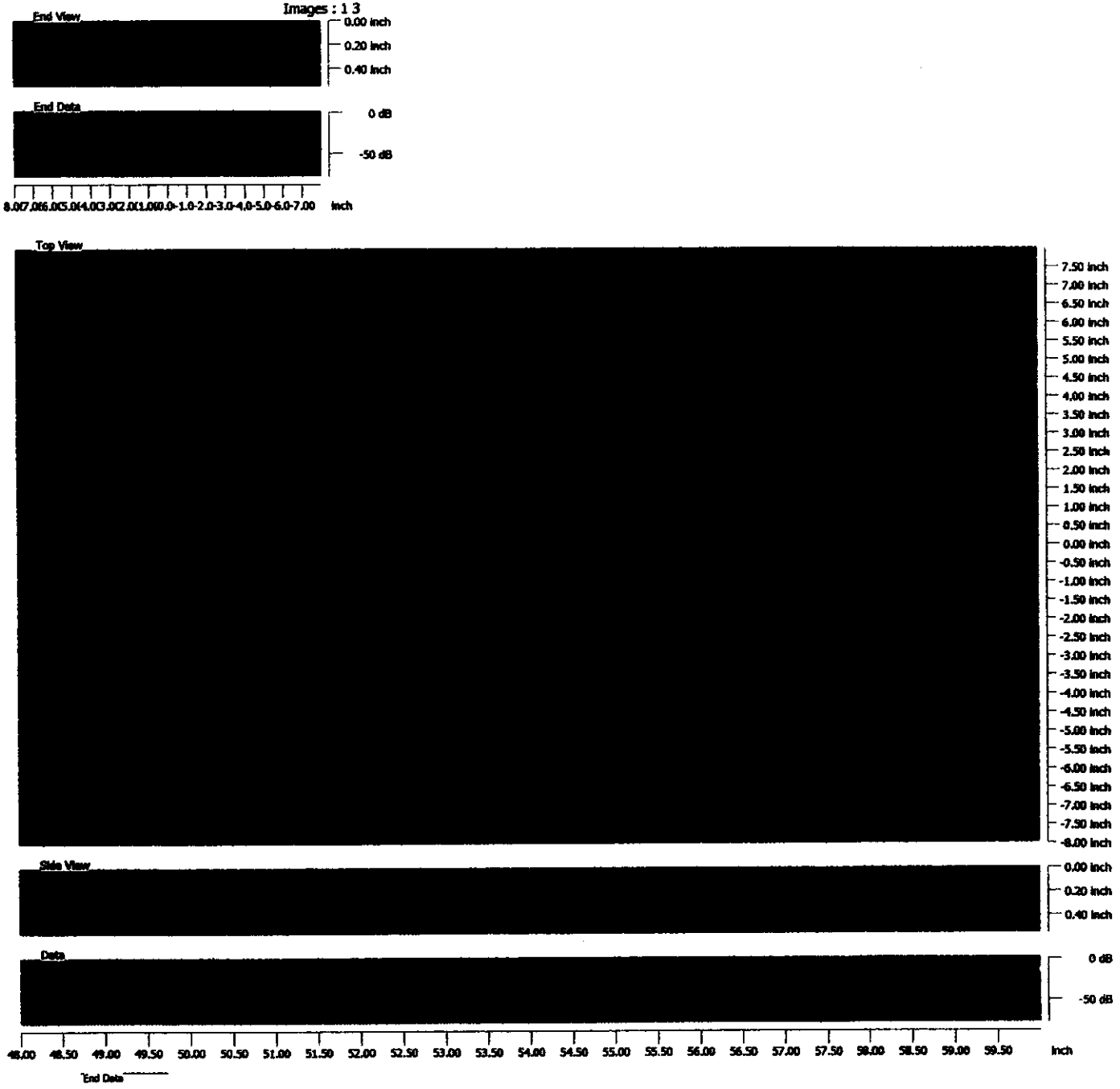
Page 120 of 449

WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, p-scan data1, 6/13/00 09:49
2: P-scan, Images, p-scan data1, 6/13/00 09:49
3: T-scan, Images, p-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 21:03 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/2.

Images : 1 3

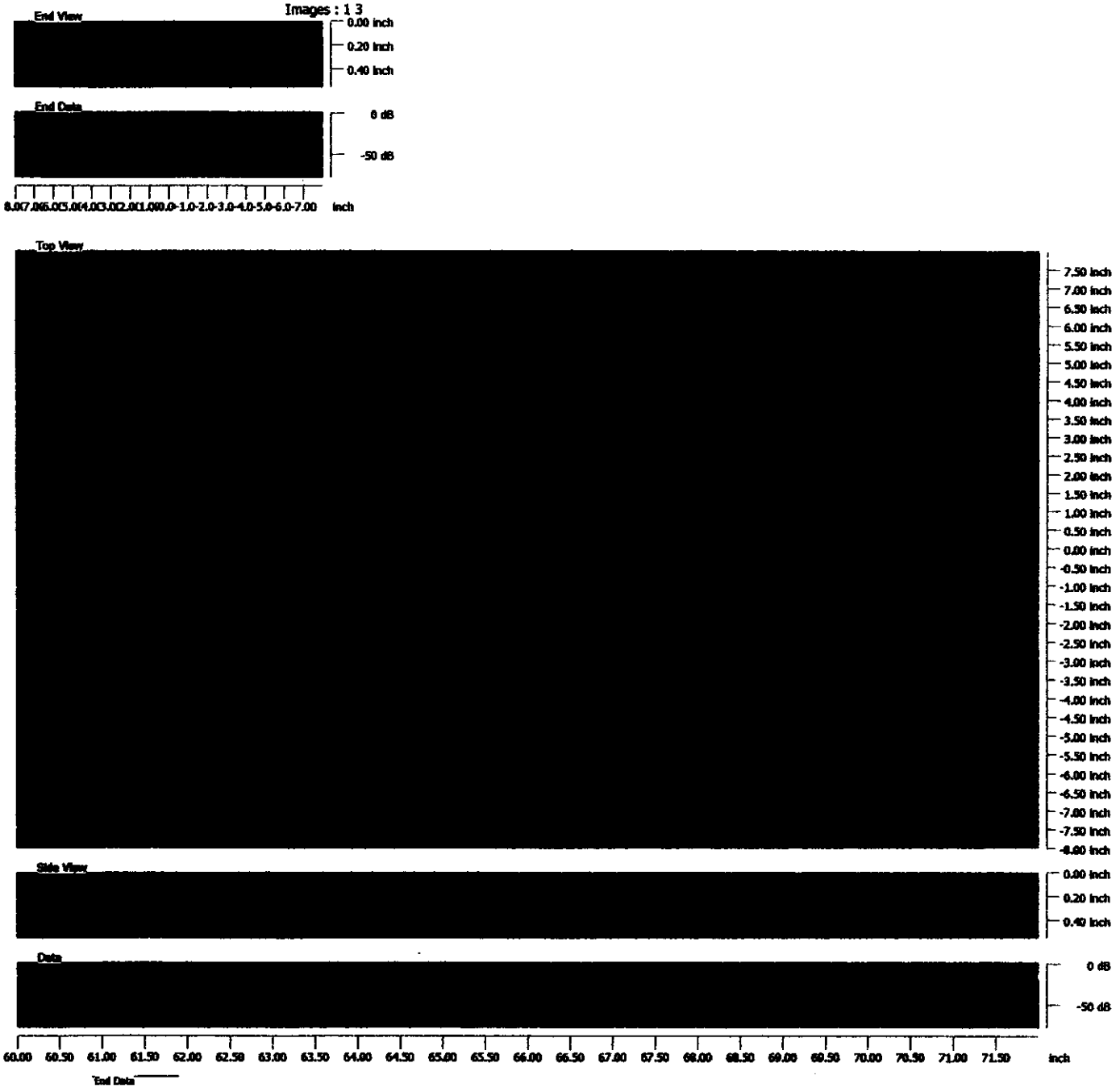


WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, p-scan data1, 6/13/00 09:49
2: P-scan, Images, p-scan data1, 6/13/00 09:49
3: T-scan, Images, p-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 21:03 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/2.

Images : 1 3

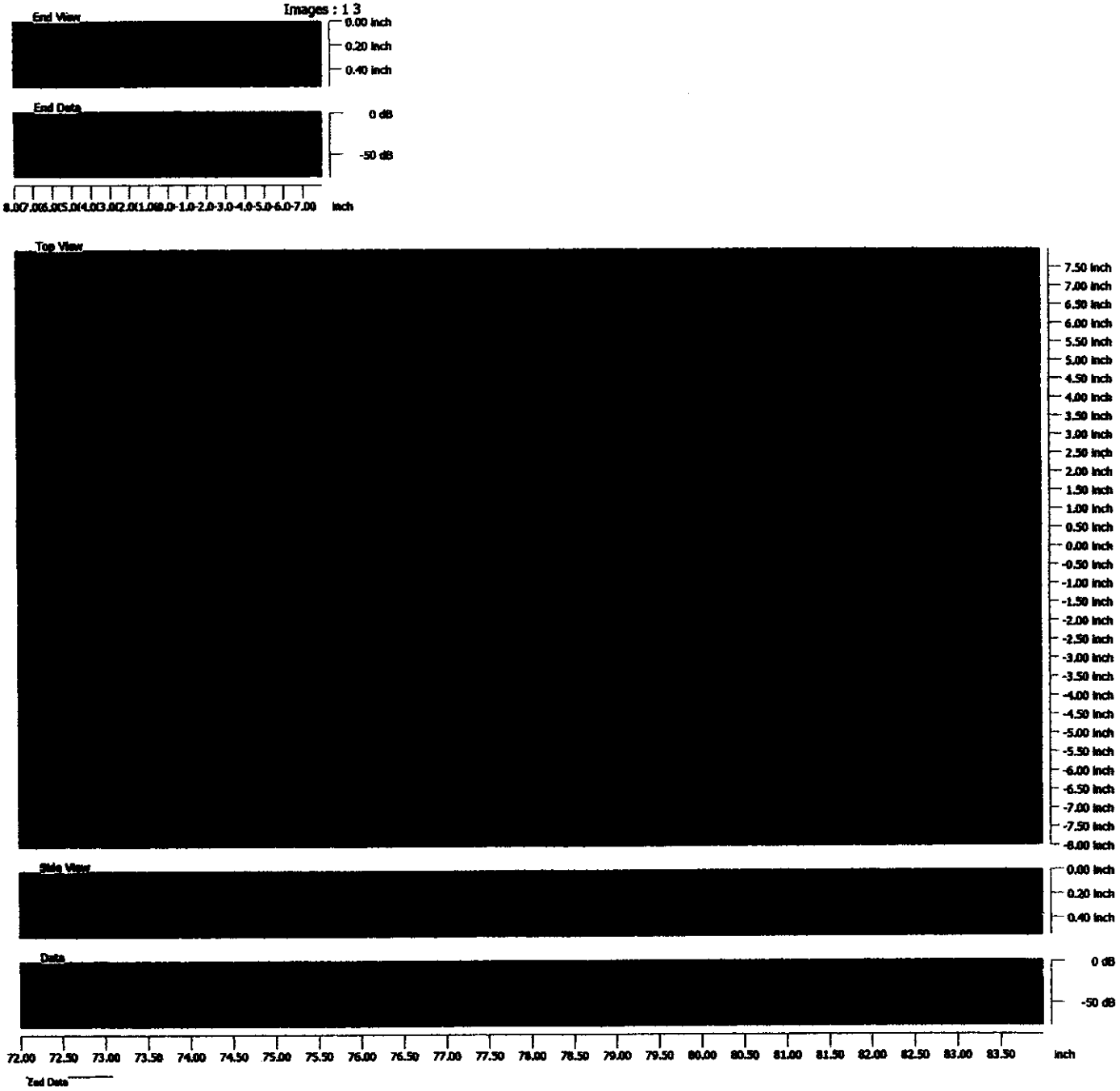


WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, p-scan data1, 6/13/00 09:49
2: P-scan, Images, p-scan data1, 6/13/00 09:49
3: T-scan, Images, p-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 21:04 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/2.

Images : 1 3

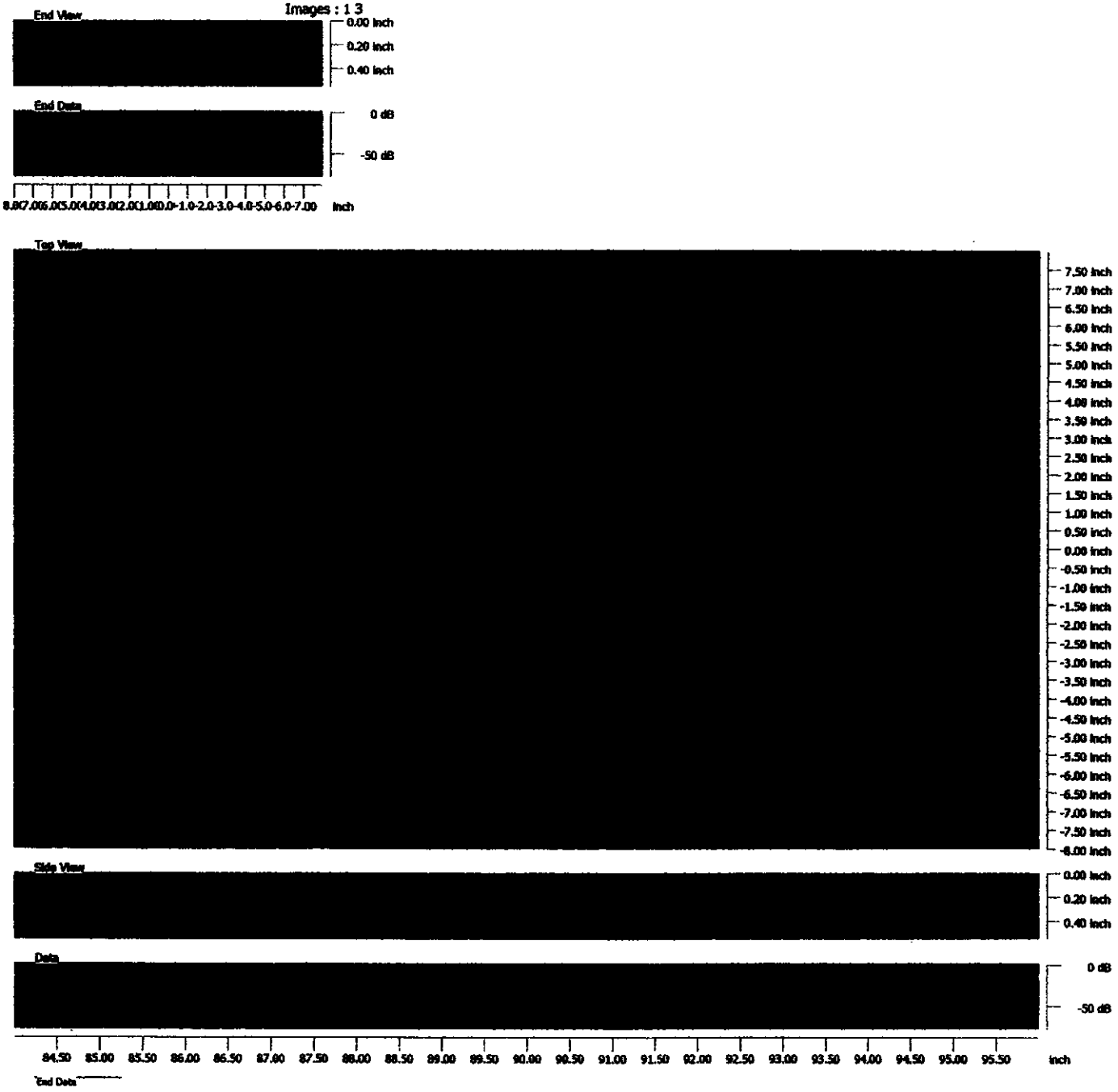


WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, p-scan data1, 6/13/00 09:49
2: P-scan, Images, p-scan data1, 6/13/00 09:49
3: T-scan, Images, p-scan data1, 6/13/00 09:49

Printed on 2000-8-6 at 21:04 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/2.

Images : 1 3



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/22/00 9:45 | EXAM END: 15:44 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM THICKNESS: .5625" |
| CONFIGURATION: 2nd Vert Wall Plate TO Plate (Plate 3) | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 89.5" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: Wall Scan 2/107AP/3 | | TRANSDUCER: ☒ DUAL ☐ SGL ☐ 0DEG ☐ ANGLE 0° | | |
| $X_0$ REF POINT ($L_0$): 1" Below Horz. Weld | $Y_0$ REF POINT ($W_0$): 21" from C/L of 1st PASS | SCAN WIDTH: 15" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK, R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .574" | .568" | | |
| | 12" | 24" | | | .576" | .571" | | |
| | 24" | 36" | | | .580" | .573" | | |
| | 36" | 48" | | | .582" | .577" | | |
| | 48" | 60" | | | .582" | .578" | | |
| | 60" | 72" | | | .581" | .577" | | |
| | 72" | 84" | | | .581" | .573" | | |
| | 84" | 89.5" | | | .578" | .572" | | |
| SUMMARY | | | | | | | | |

REMARKS

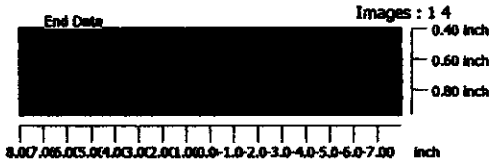
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D. Nel | Wesley D. Nel | (N1) | |
| Level III Date 6/22/00 | Level III Date 8/6/00 | Level ___ Date ___ | ___ of ___ |

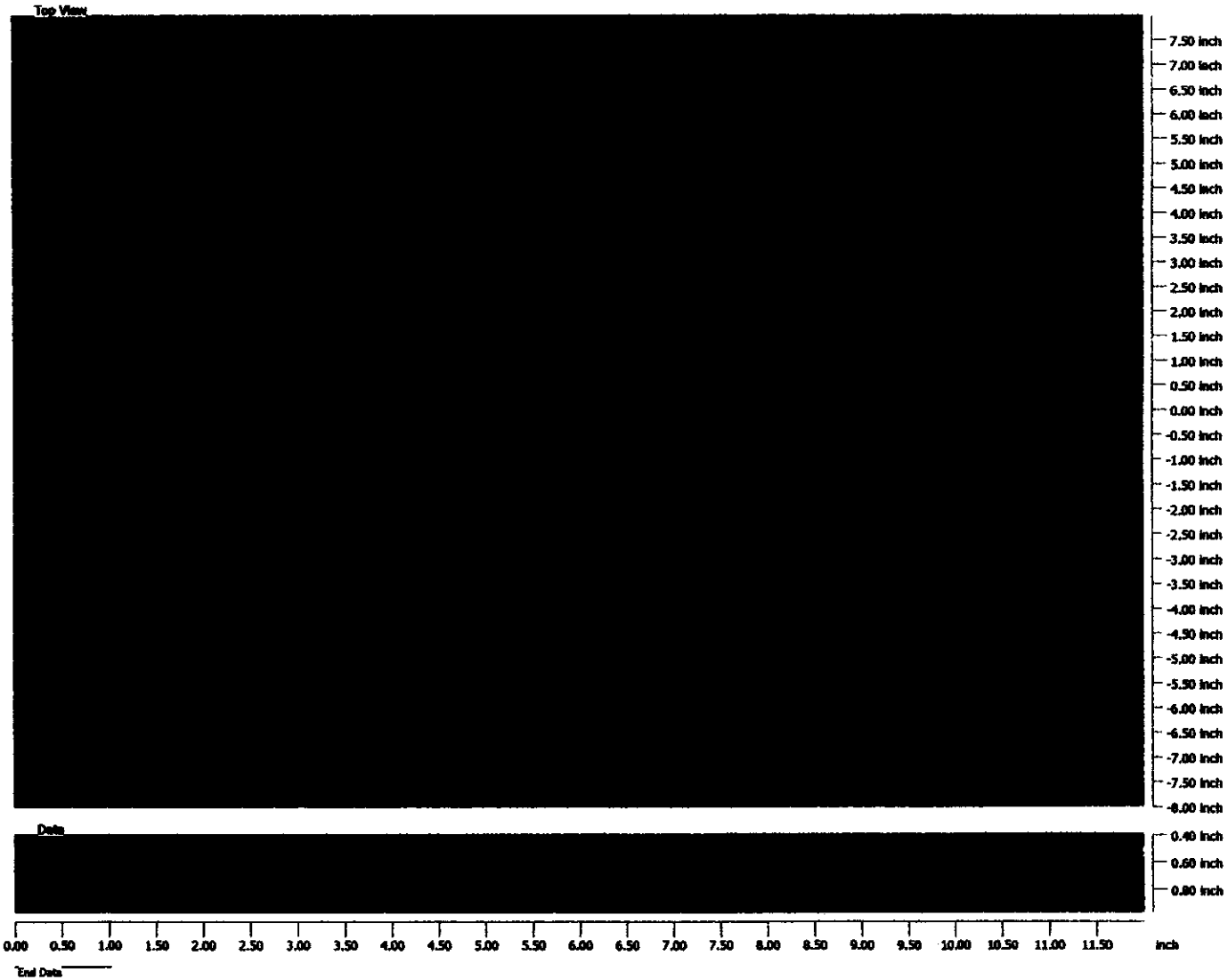
(N1) See Attached letter From J. B. Elder

WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, t-scan data1, 6/22/00 10:34
2: P-scan, Images, t-scan data1, 6/22/00 10:34
3: T-scan, Images, t-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:13 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/3.



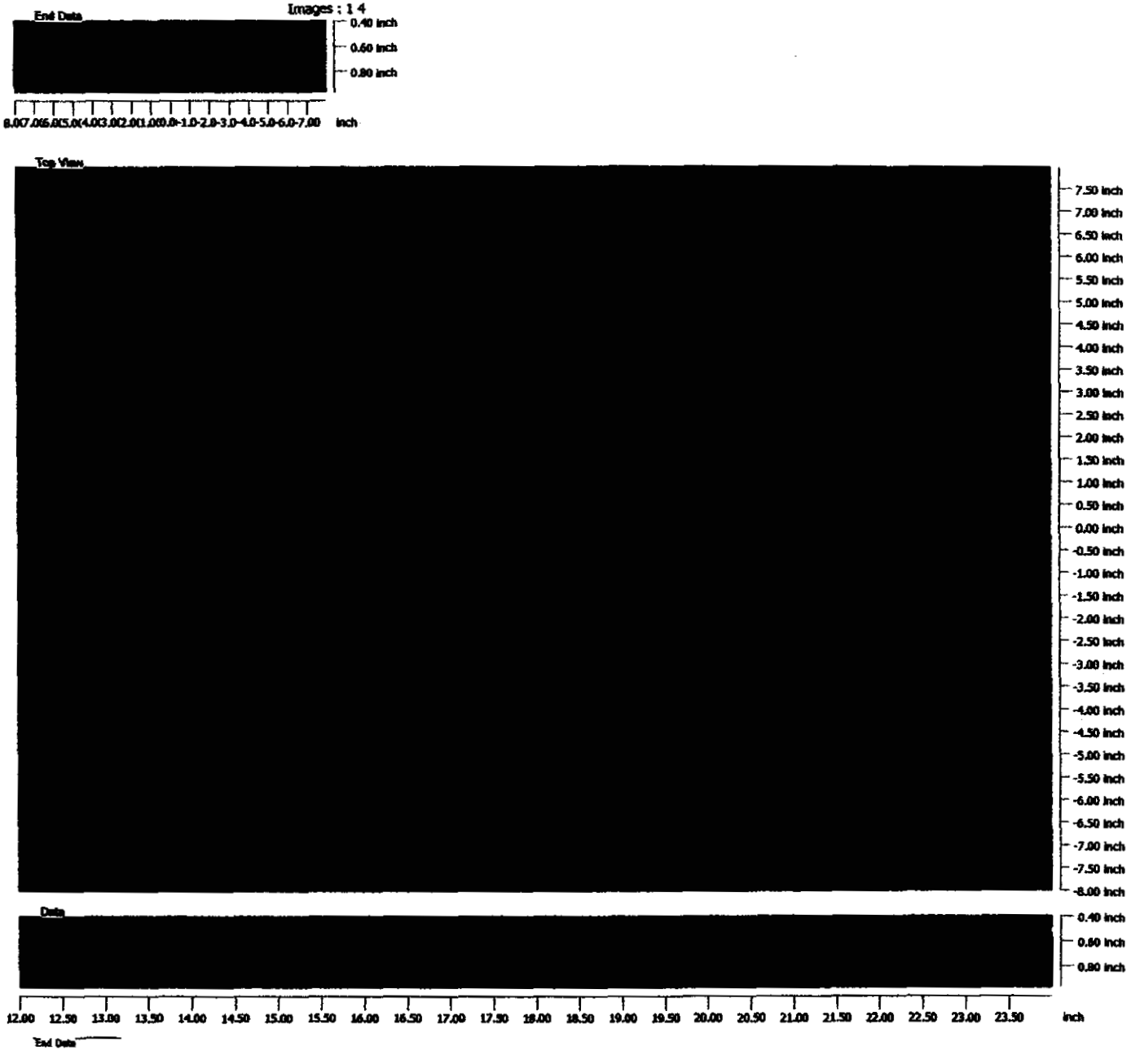



WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, t-scan data1, 6/22/00 10:34
2: P-scan, Images, t-scan data1, 6/22/00 10:34
3: T-scan, Images, t-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:13 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/3.

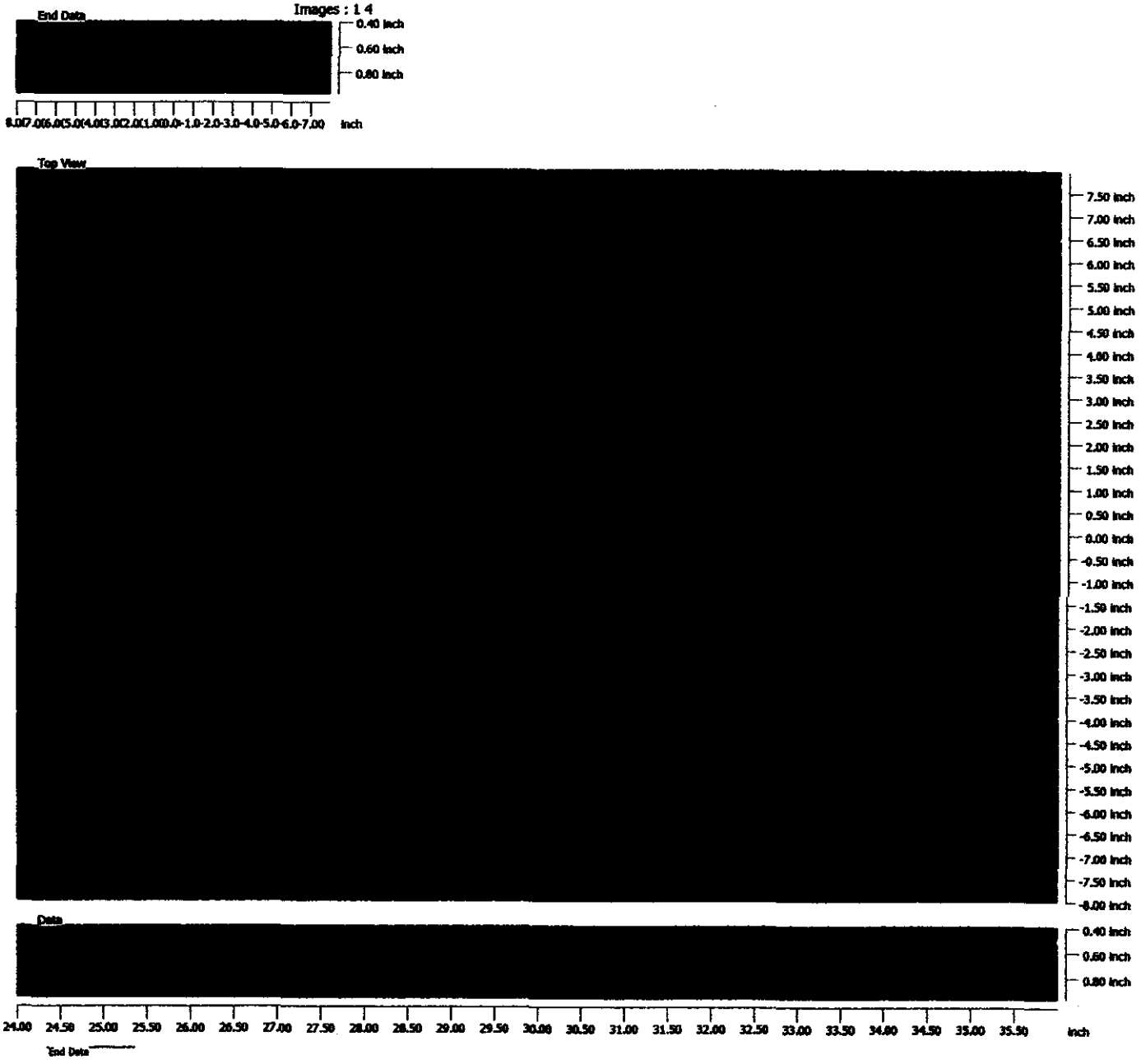
Images : 1 4



WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, t-scan data1, 6/22/00 10:34
2: P-scan, Images, t-scan data1, 6/22/00 10:34
3: T-scan, Images, t-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:15 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/3.

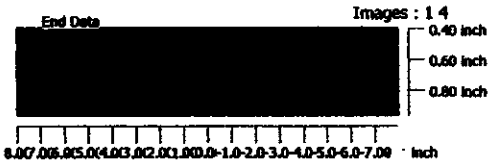


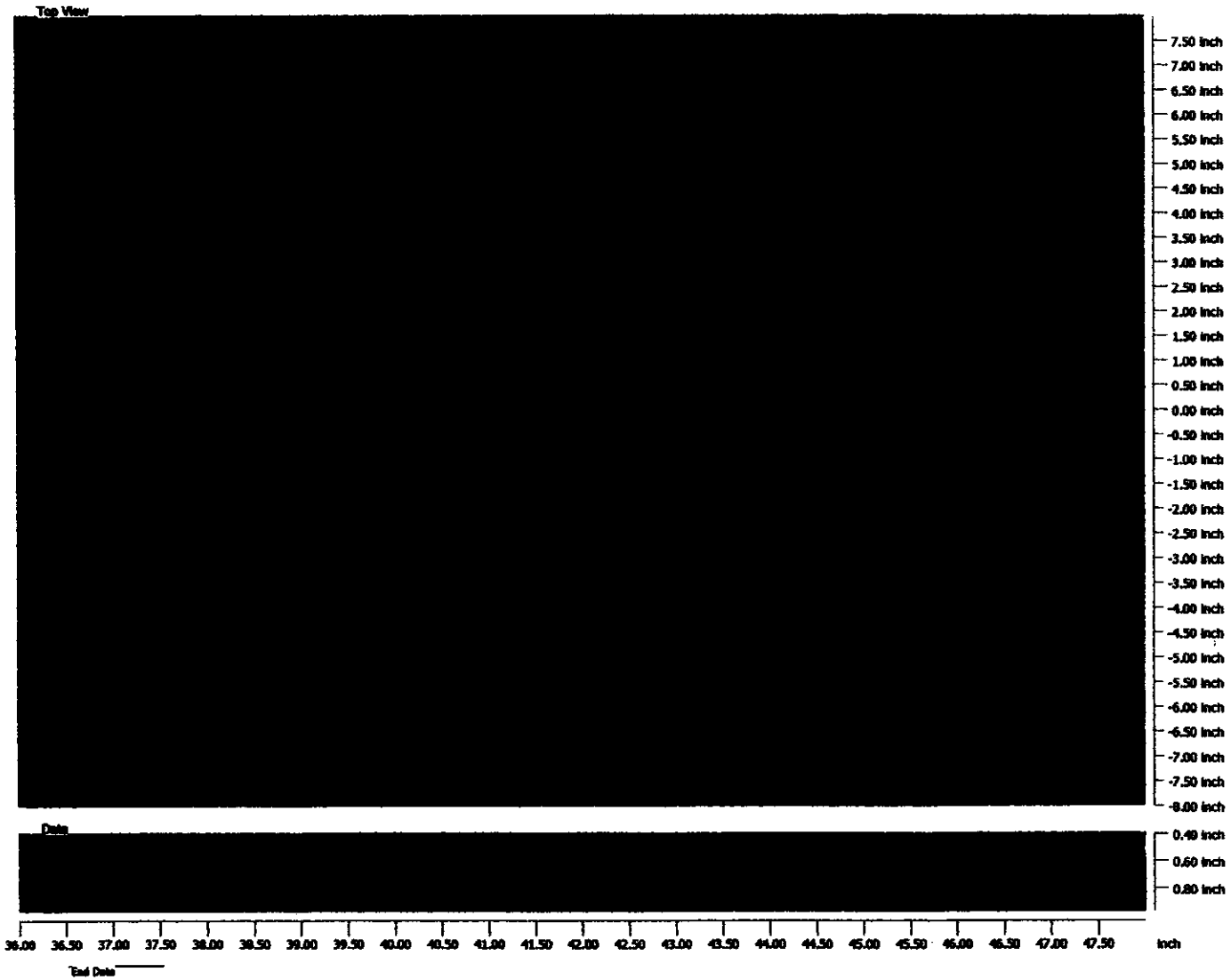
WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, t-scan data1, 6/22/00 10:34
2: P-scan, Images, t-scan data1, 6/22/00 10:34
3: T-scan, Images, t-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:15 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/3.

Images : 1 4

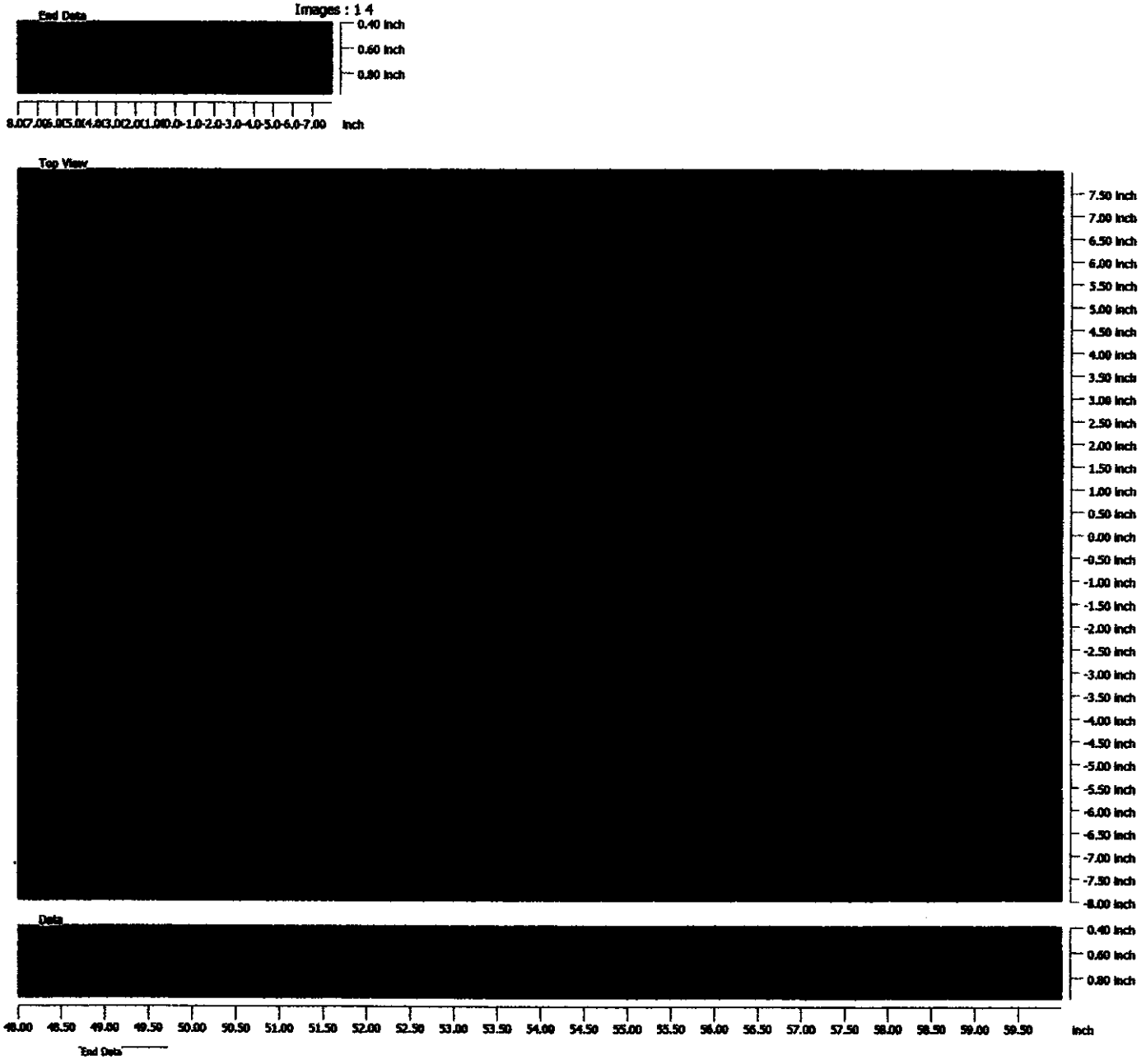


WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

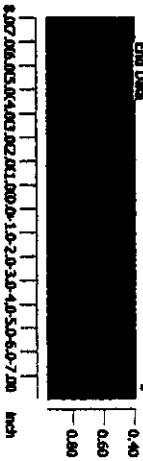
1: P-scan, Images, t-scan data1, 6/22/00 10:34
2: P-scan, Images, t-scan data1, 6/22/00 10:34
3: T-scan, Images, t-scan data1, 6/22/00 10:34

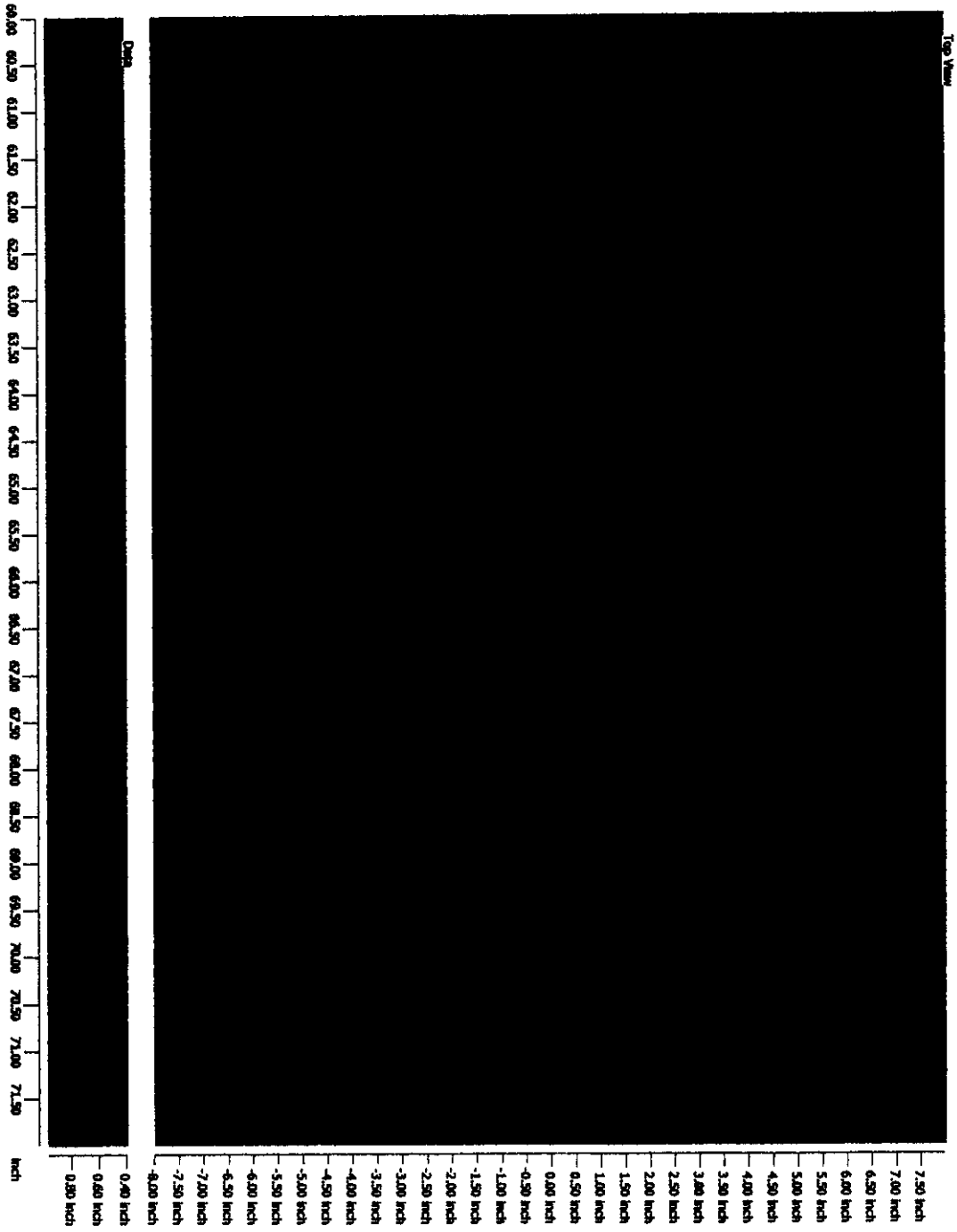
Printed on 2000-8-6 at 21:18 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/3.



WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2
Printed on 2000-8-6 at 21:19 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/3.

1: P-scan, Images, t-scan data1, 6/22/00 10:34
2: P-scan, Images, t-scan data1, 6/22/00 10:34
3: T-scan, Images, t-scan data1, 6/22/00 10:34

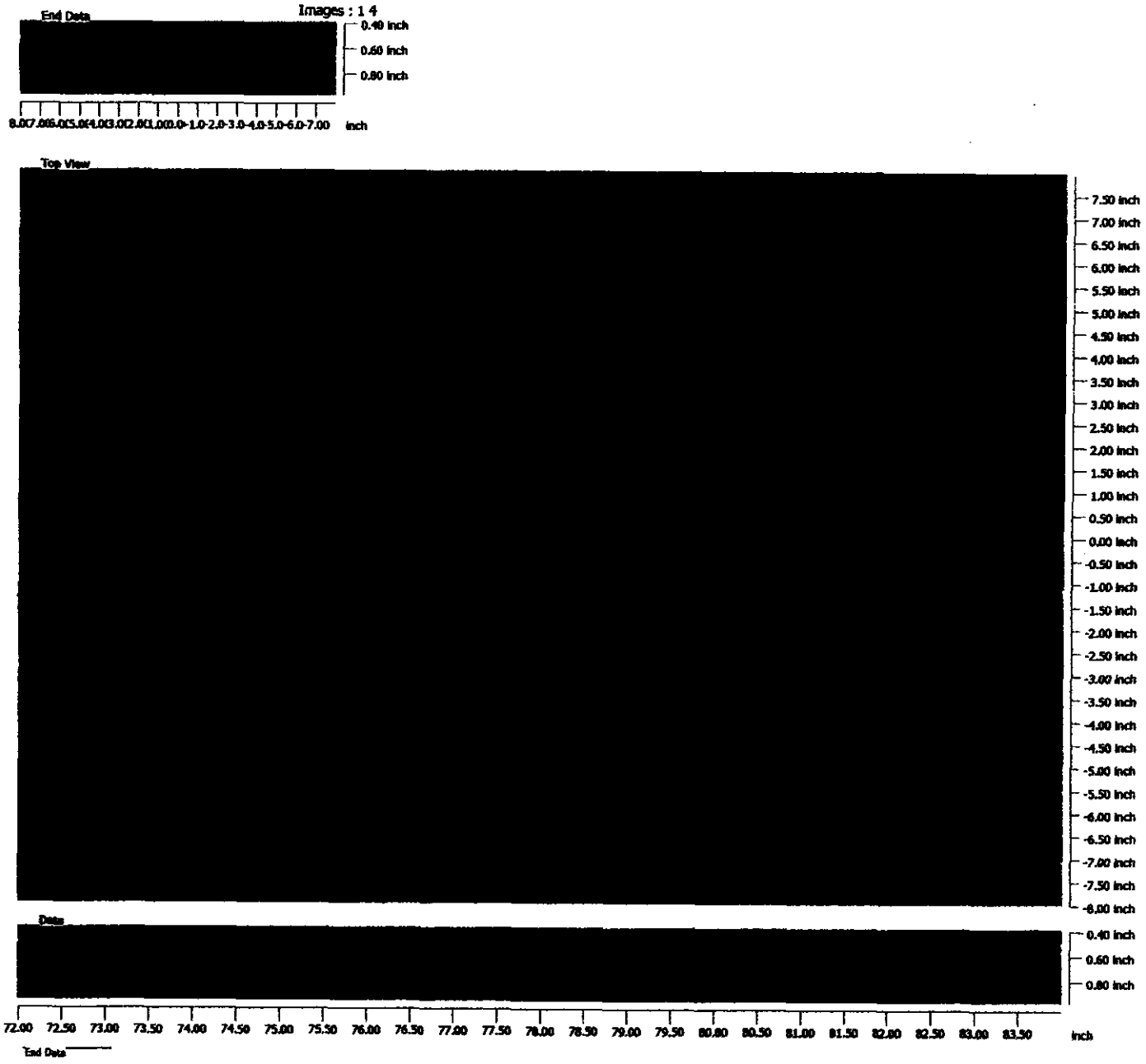


WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, t-scan data1, 6/22/00 10:34
2: P-scan, Images, t-scan data1, 6/22/00 10:34
3: T-scan, Images, t-scan data1, 6/22/00 10:34

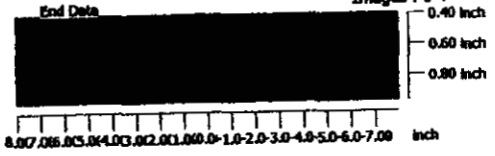
Printed on 2000-8-6 at 21:21 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/3.

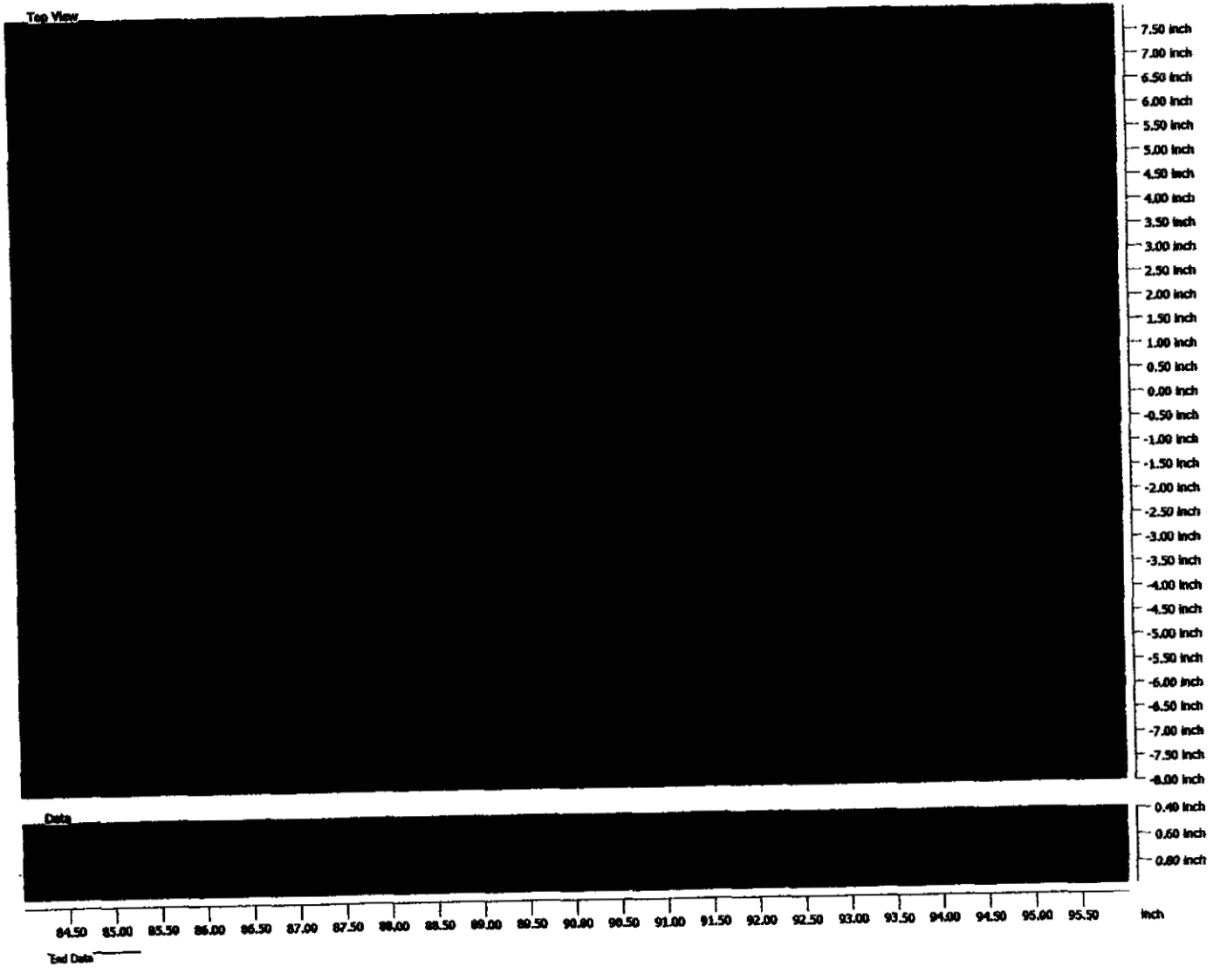


WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2
Printed on 2000-8-6 at 21:21 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/3.

1: P-scan, Images, t-scan data1, 6/22/00 10:34
2: P-scan, Images, t-scan data1, 6/22/00 10:34
3: T-scan, Images, t-scan data1, 6/22/00 10:34

Images : 1 4



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/22/00 9:40 | EXAM END: 15:44 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 2nd Vert. Wall Plate TO Plate (Plate 3) | | CALIBRATED RANGE: 0" To 1.59" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 89.5" | | REF. LEVEL CORRECTION (TRANS CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .5625" NOM. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 2/107 AP/3 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☐ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz Weld | $Y_0$ REF. POINT ($W_0$): 21" from ℄ of 1st Pass | SCAN WIDTH: 15" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS: No Crack-Like Indications

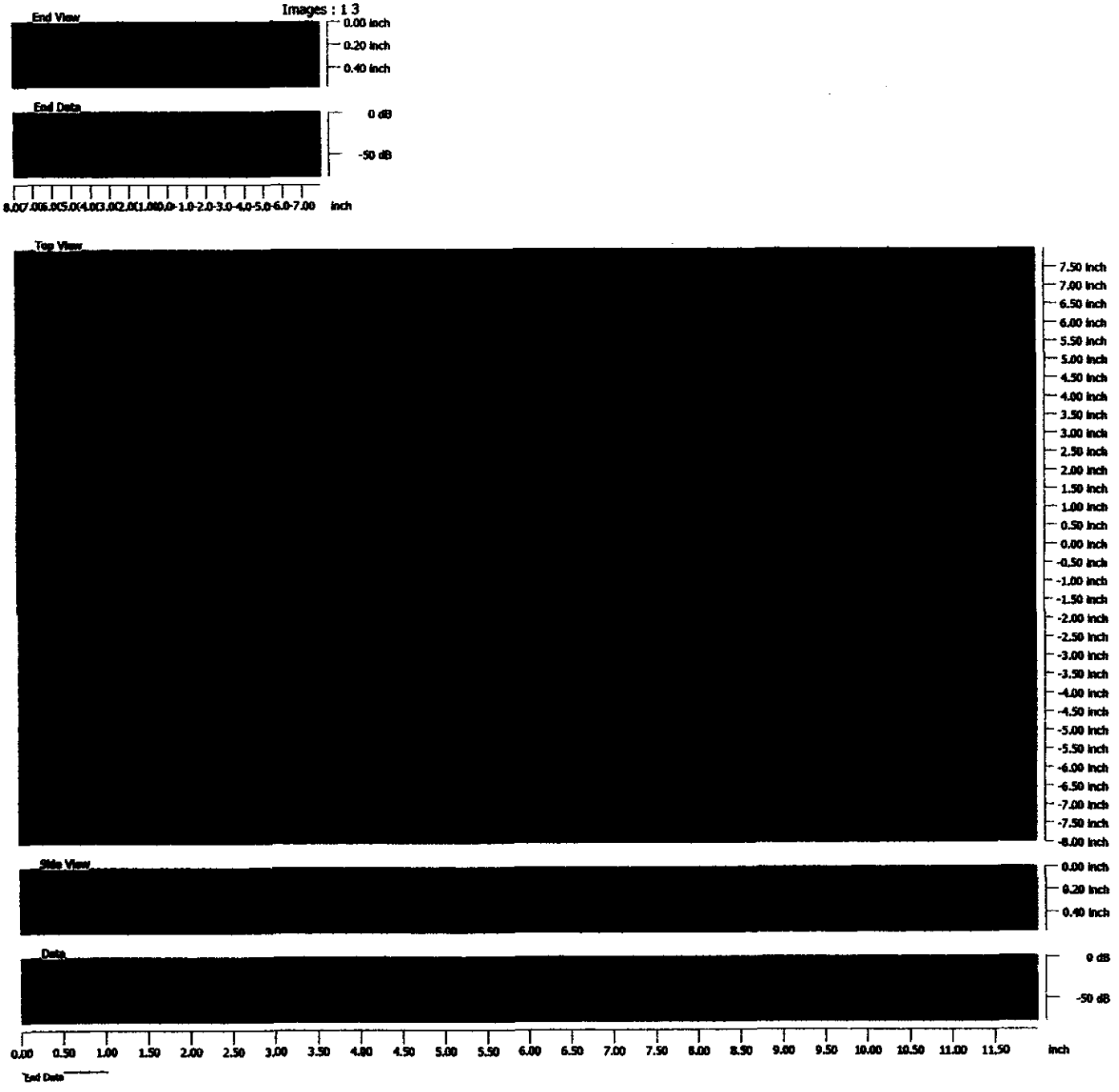
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley A Nelson | Wesley A Nelson | (N1) | |
| Level III Date 6/22/00 | Level III Date 8/6/00 | Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B. Elder

WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, p-scan data1, 6/22/00 10:34
2: P-scan, Images, p-scan data1, 6/22/00 10:34
3: T-scan, Images, p-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:24 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/3.

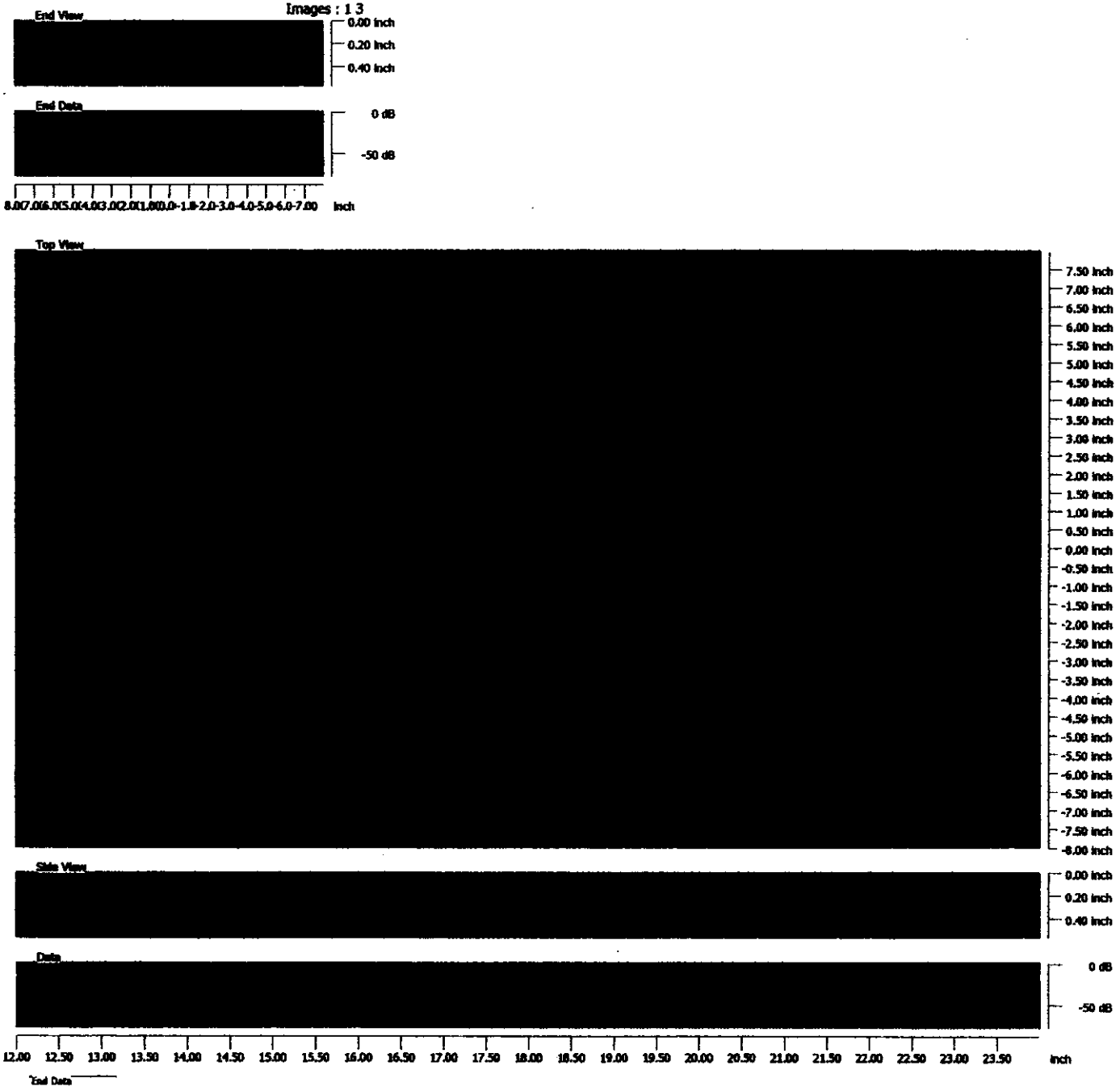


WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, p-scan data1, 6/22/00 10:34
2: P-scan, Images, p-scan data1, 6/22/00 10:34
3: T-scan, Images, p-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:25 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/3.

Images : 1 3



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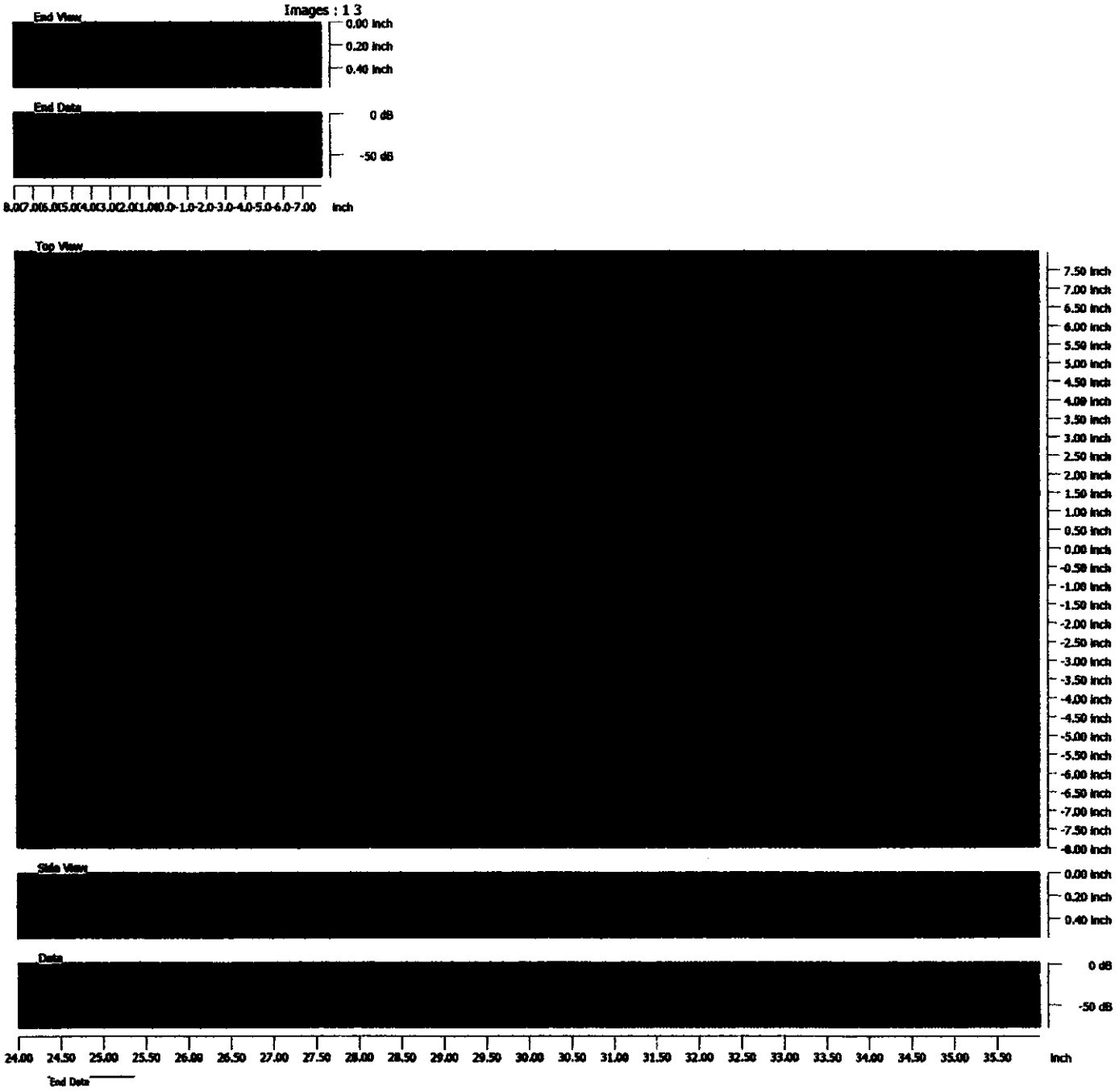
WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, p-scan data1, 6/22/00 10:34
2: P-scan, Images, p-scan data1, 6/22/00 10:34
3: T-scan, Images, p-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:25 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/3.

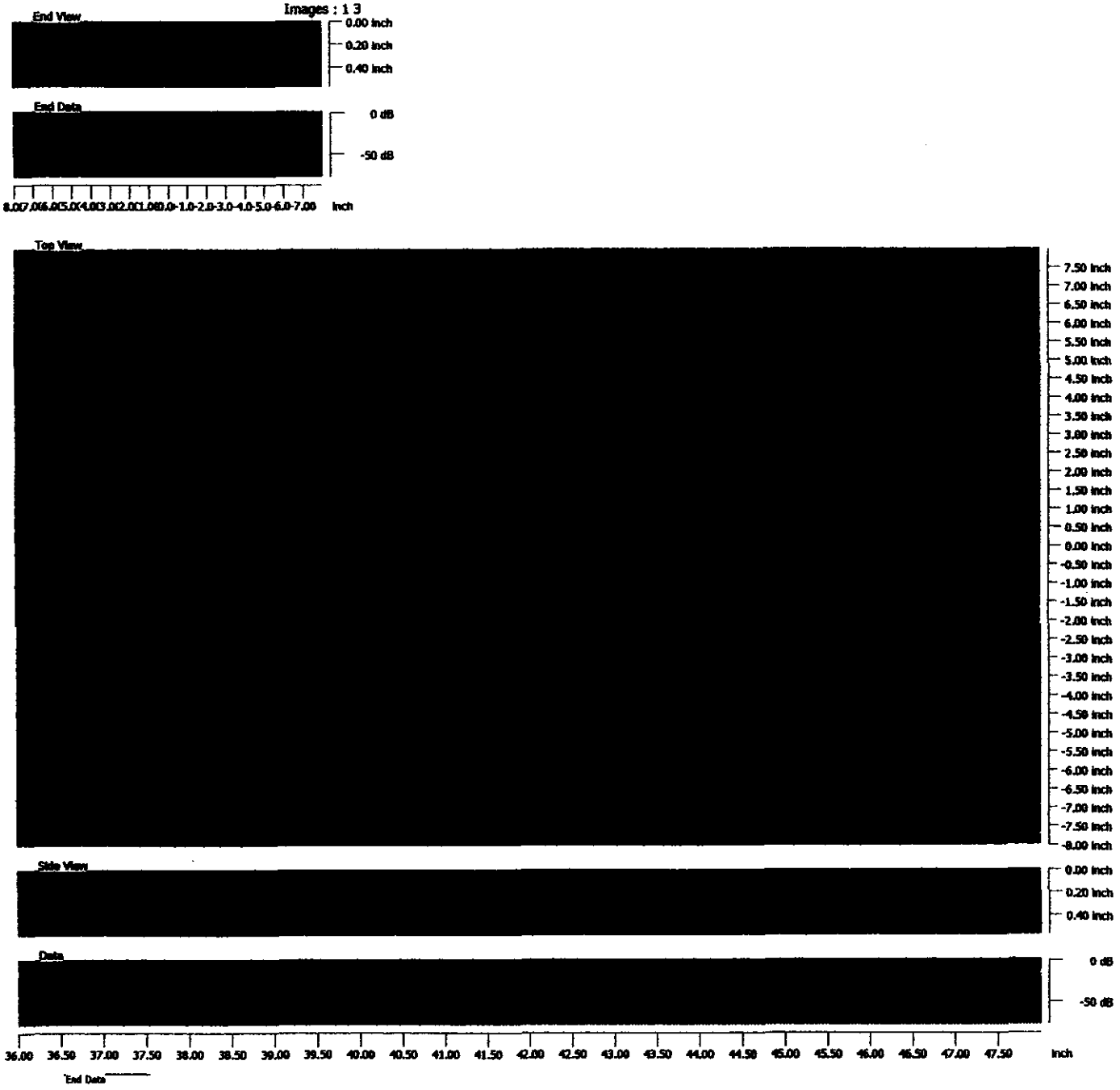


WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, p-scan data1, 6/22/00 10:34
2: P-scan, Images, p-scan data1, 6/22/00 10:34
3: T-scan, Images, p-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:31 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/3.

Images : 1 3



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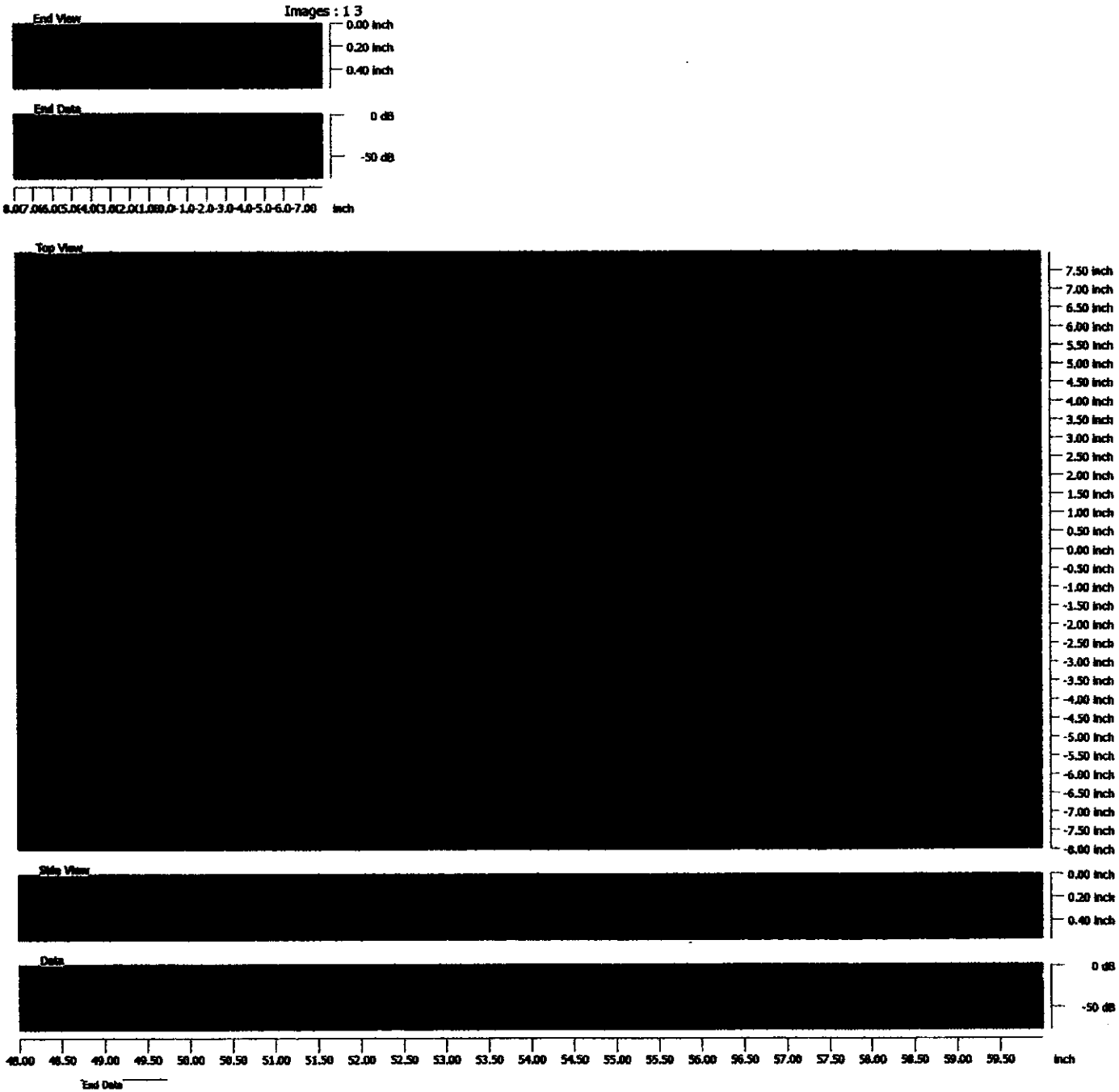
WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, p-scan data1, 6/22/00 10:34
2: P-scan, Images, p-scan data1, 6/22/00 10:34
3: T-scan, Images, p-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:31 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/3.

Images : 1 3



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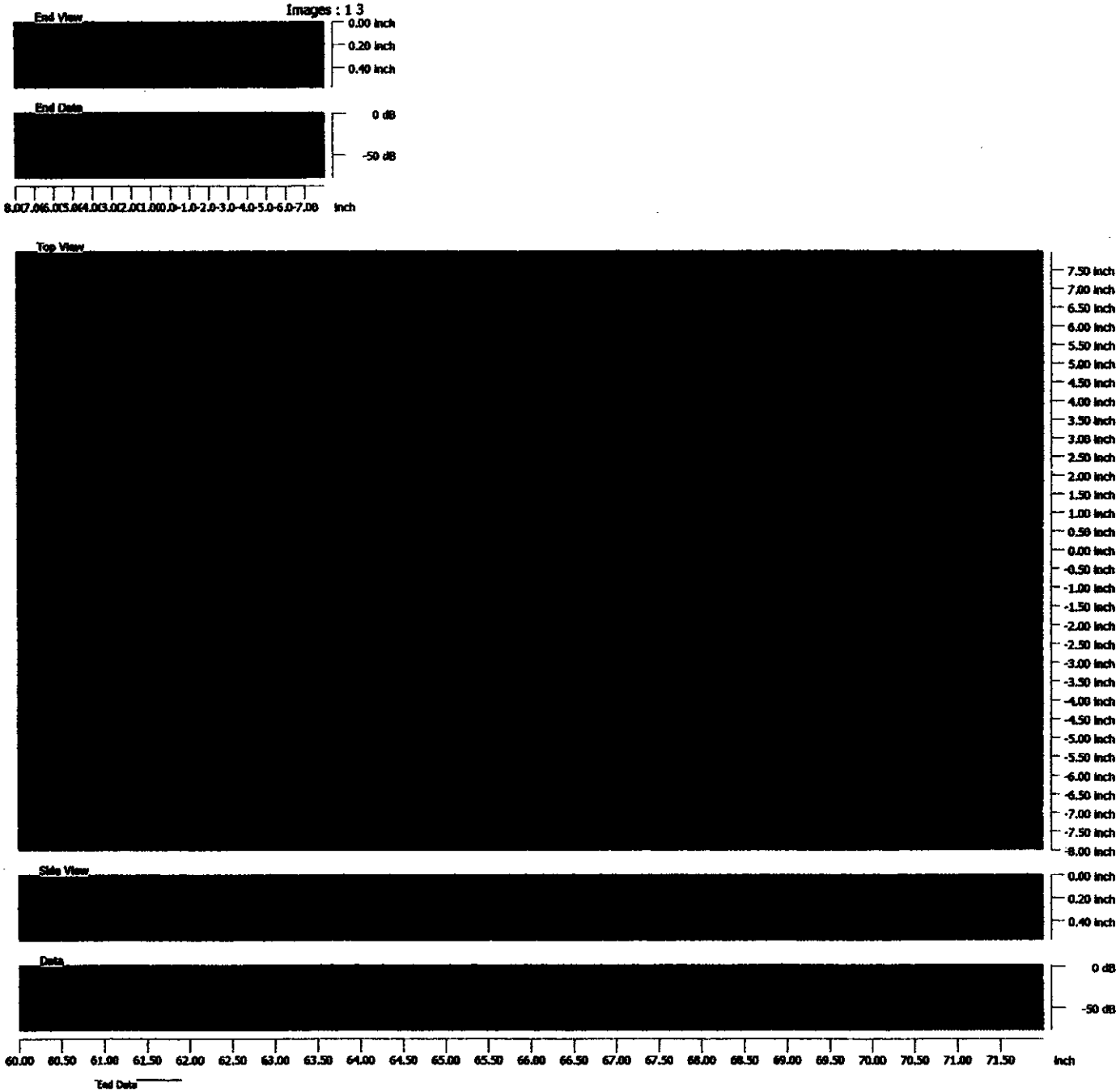
WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, p-scan data1, 6/22/00 10:34
2: P-scan, Images, p-scan data1, 6/22/00 10:34
3: T-scan, Images, p-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:32 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/3.

Images : 1 3

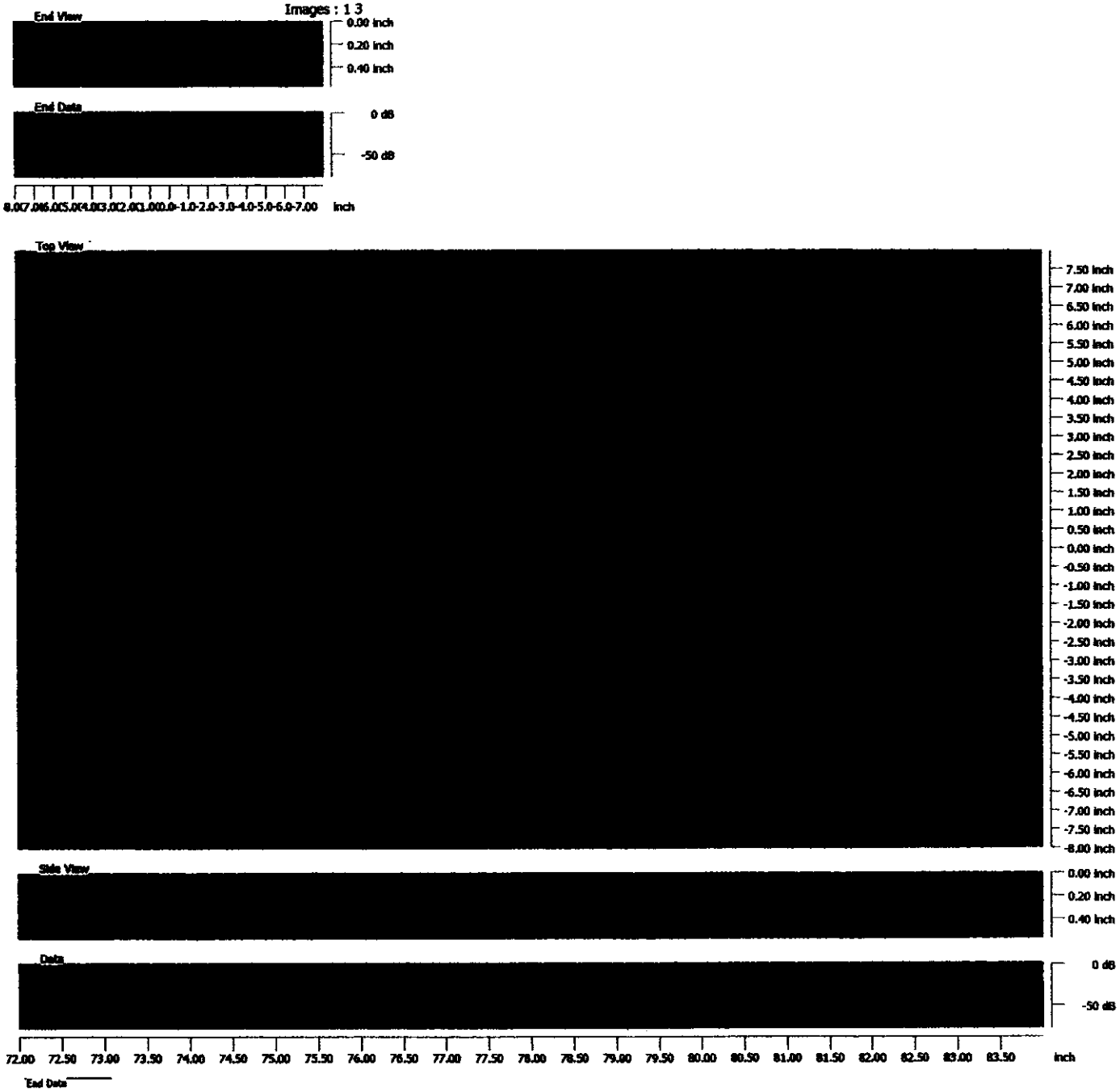


WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, p-scan data1, 6/22/00 10:34
2: P-scan, Images, p-scan data1, 6/22/00 10:34
3: T-scan, Images, p-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:33 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/3.

Images : 1 3

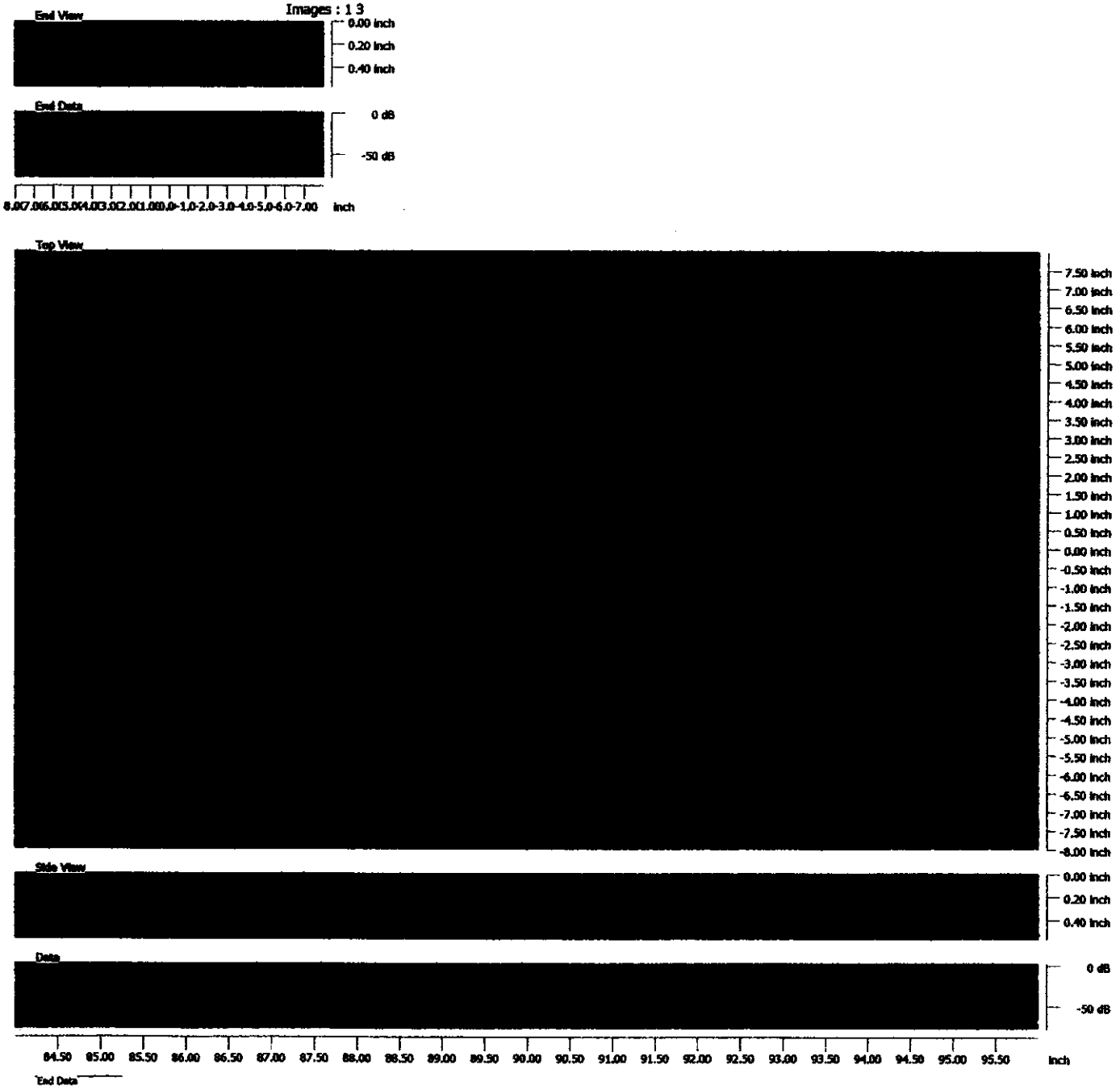


WALL SCAN 2/107AP/3
WHN
AP / 200E TANK FARM
PLATE 3/2

1: P-scan, Images, p-scan data1, 6/22/00 10:34
2: P-scan, Images, p-scan data1, 6/22/00 10:34
3: T-scan, Images, p-scan data1, 6/22/00 10:34

Printed on 2000-8-6 at 21:33 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/3.

Images : 1 3



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/14/00 10:12 | EXAM END: 23:02 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .750" |
| CONFIGURATION: 2nd Vert. WALL Plate TO Plate (Plate 4) | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 105.6" | | REF. LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER | | CONDITION |
| FILE NAME/ITEM#: Wall Scan 2/107AP/4 | | TRANSDUCER: ☒ DUAL ☐ SGL ☐ 0DEG ☐ ANGLE 0° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz Weld | $Y_0$ REF. POINT ($W_0$): 21" from C/L of 1st Pass | SCAN WIDTH: 15" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK, R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .779" | .743" | | |
| | 12" | 24" | | | .785" | .773" | | |
| | 24" | 36" | | | .785" | .776" | | |
| | 36" | 48" | | | .784" | .775" | | |
| | 48" | 60" | | | .783" | .775" | | |
| | 60" | 72" | | | .783" | .776" | | |
| | 72" | 84" | | | .782" | .765" | | |
| | 84" | 96" | | | .780" | .766" | | |
| | 96" | 105.6" | | | .772" | .735" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/14/00 | [signature] Level III Date 8/4/00 | (N1) Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B. Elder

WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

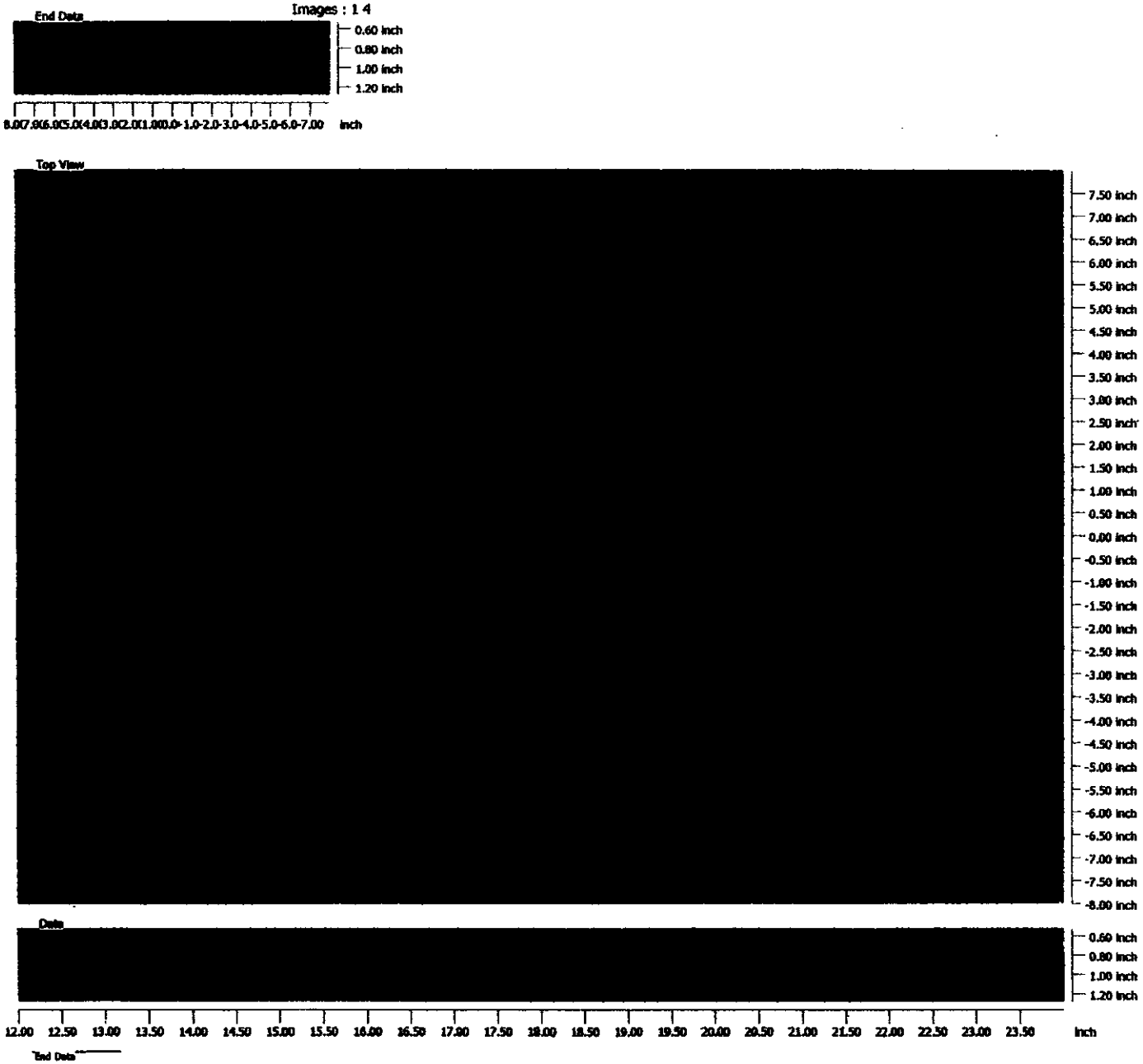
1: P-scan, Images, t-scan data1, 6/14/00 10:56
2: P-scan, Images, t-scan data1, 6/14/00 10:56
3: T-scan, Images, t-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:39 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/4.

WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, t-scan data1, 6/14/00 10:56
2: P-scan, Images, t-scan data1, 6/14/00 10:56
3: T-scan, Images, t-scan data1, 6/14/00 10:56

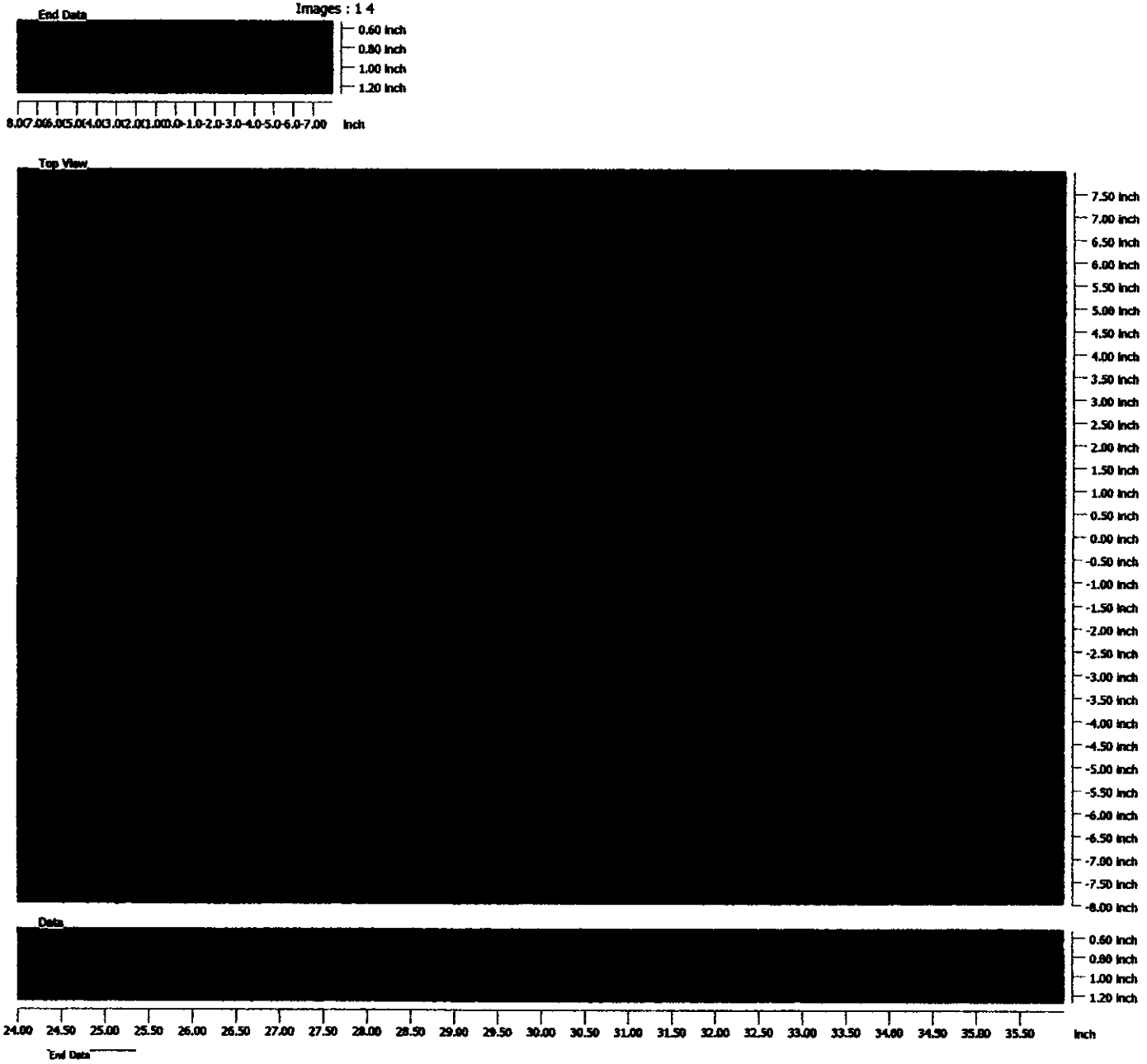
Printed on 2000-8-6 at 21:40 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/4.



WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, t-scan data1, 6/14/00 10:56
2: P-scan, Images, t-scan data1, 6/14/00 10:56
3: T-scan, Images, t-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:42 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/4.



WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, t-scan data1, 6/14/00 10:56
2: P-scan, Images, t-scan data1, 6/14/00 10:56
3: T-scan, Images, t-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:42 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/4.

Images : 1 4

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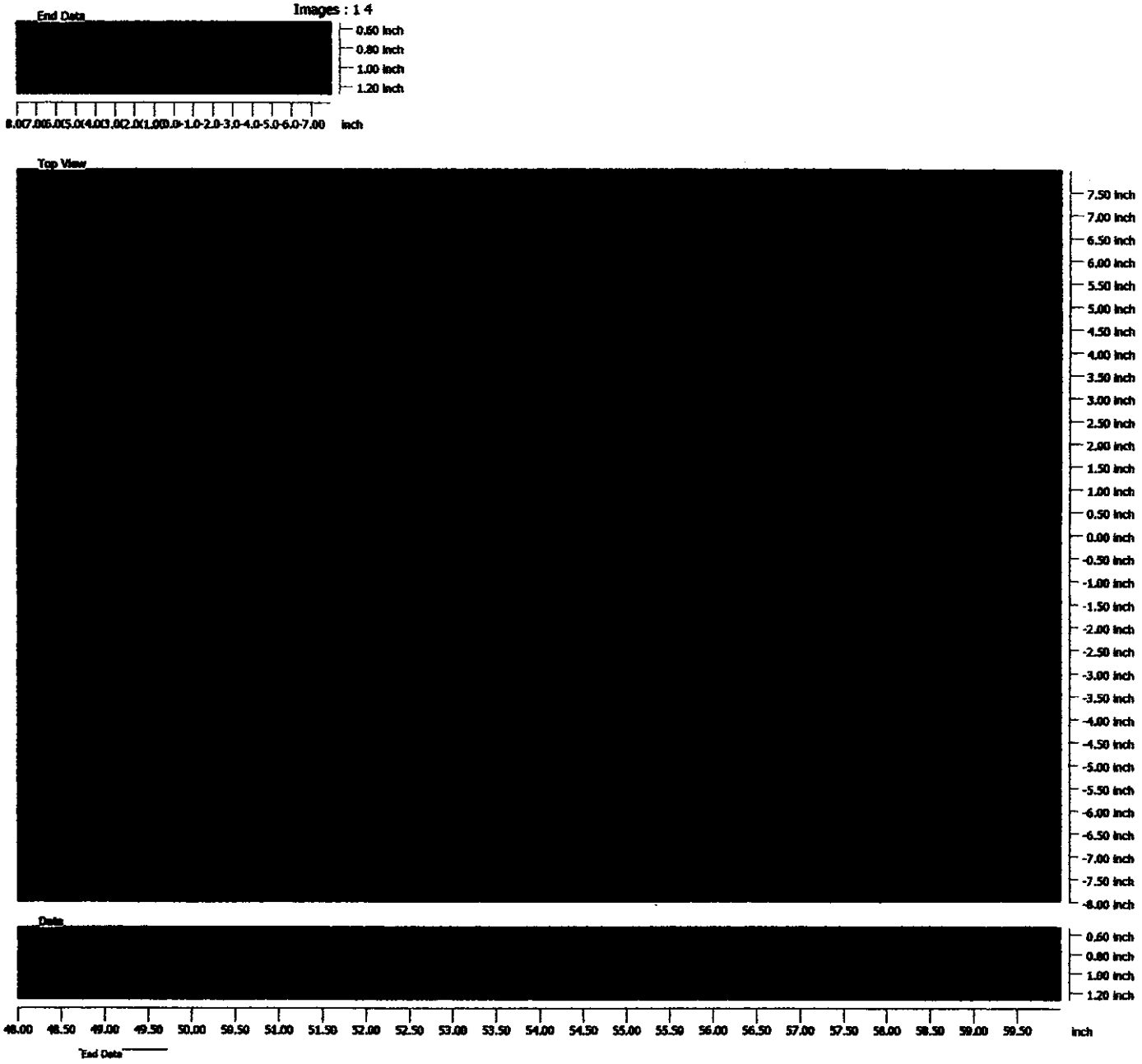
WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, t-scan data1, 6/14/00 10:56
2: P-scan, Images, t-scan data1, 6/14/00 10:56
3: T-scan, Images, t-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:45 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/4.



WALL SCAN 2/107AP/2
WHN
AP / 200E TANK FARM
PLATE 2/2

1: P-scan, Images, t-scan data1, 6/13/00 09:49
2: P-scan, Images, t-scan data1, 6/13/00 09:49
3: T-scan, Images, t-scan data1, 6/13/00 09:49

Printed on 2000-8-24 at 15:02 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/2.

WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, t-scan data1, 6/14/00 10:56
2: P-scan, Images, t-scan data1, 6/14/00 10:56
3: T-scan, Images, t-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:47 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/4.

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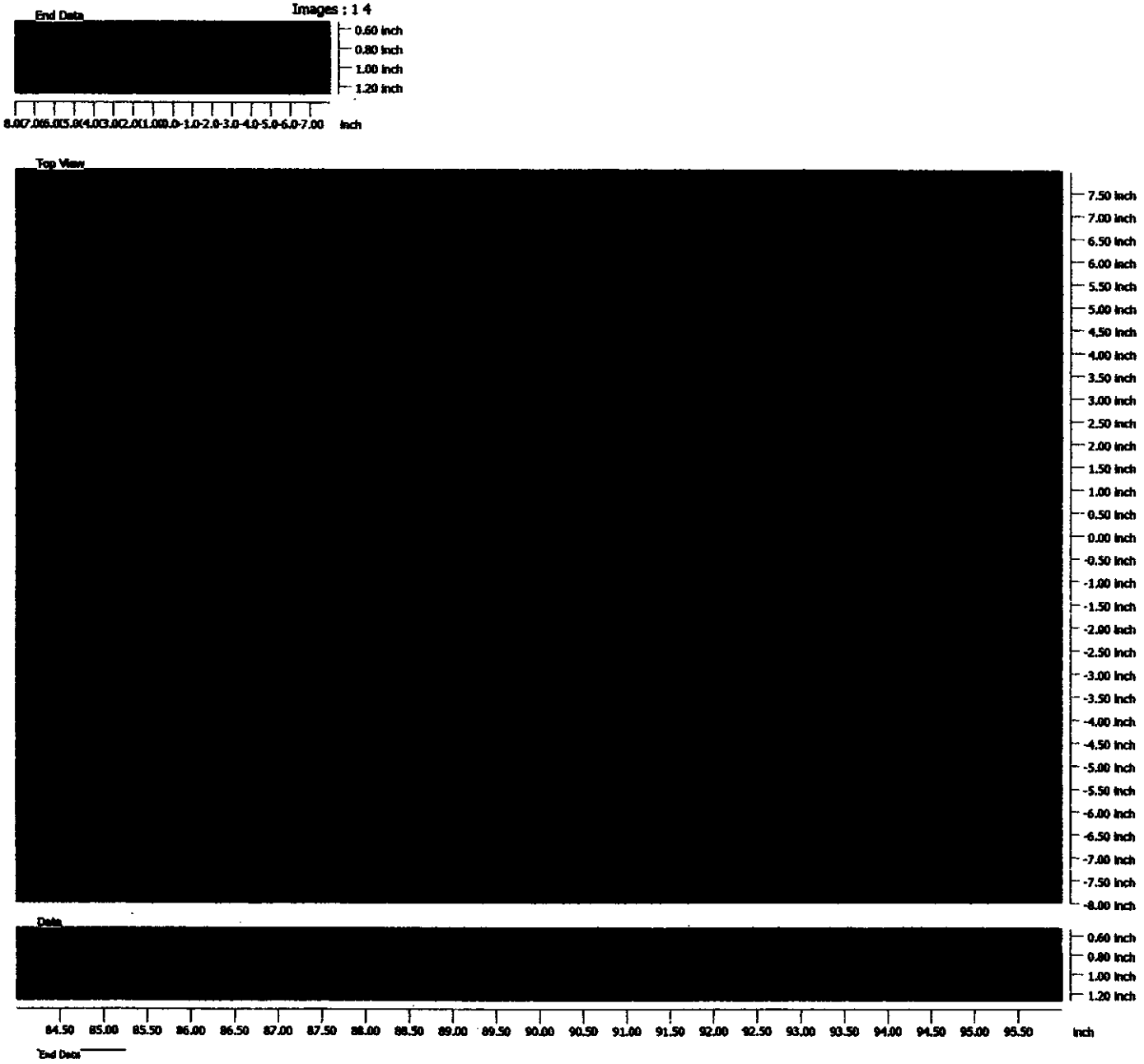
WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, t-scan data1, 6/14/00 10:56
2: P-scan, Images, t-scan data1, 6/14/00 10:56
3: T-scan, Images, t-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:49 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/4.

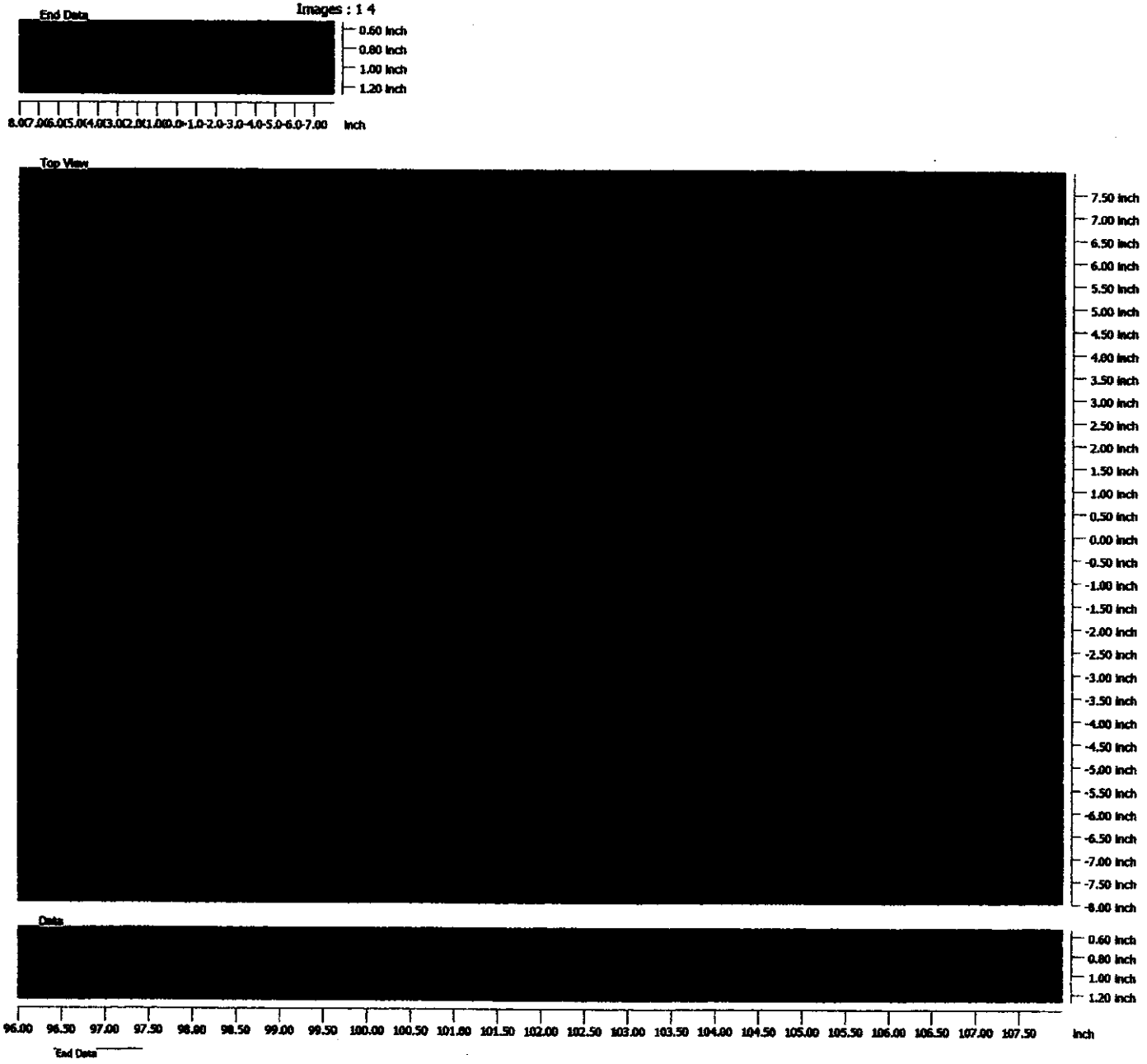


WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, t-scan data1, 6/14/00 10:56
2: P-scan, Images, t-scan data1, 6/14/00 10:56
3: T-scan, Images, t-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:50 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/4.

Images : 1 4



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4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/14/00 10:12 | EXAM END: 23:02 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 2nd Vert. Wall Plate TO Plate (Plate 4) | | CALIBRATED RANGE: 0" TO 2.12" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 105.6" | | REF LEVEL CORRECTION (TRANS CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .750" Nom. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 2/107AP/4 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☐ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz Weld | $Y_0$ REF. POINT ($W_0$): 21" From ℄ of 1st Pass | SCAN WIDTH: 15" | | |

| SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|
| 1 45/60 DEGREE SHEAR | | | |
| 2 AATT | | | |
| 3 RATT | | | |
| 4 DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS: NO Crack-Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Level III Date 6/14/00 | Level III Date 6/16/00 | (NI) Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J. B. Elder

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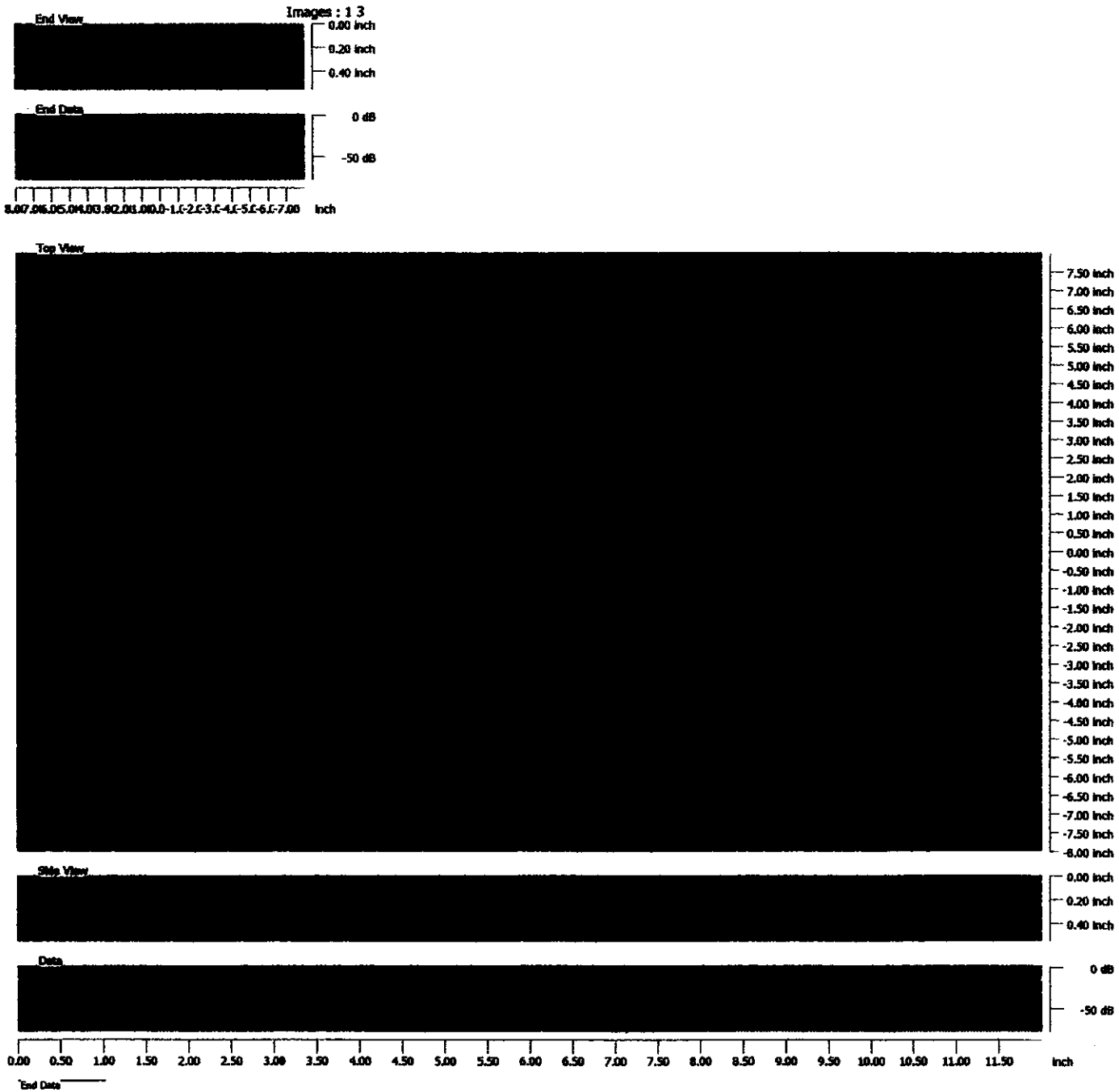
WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

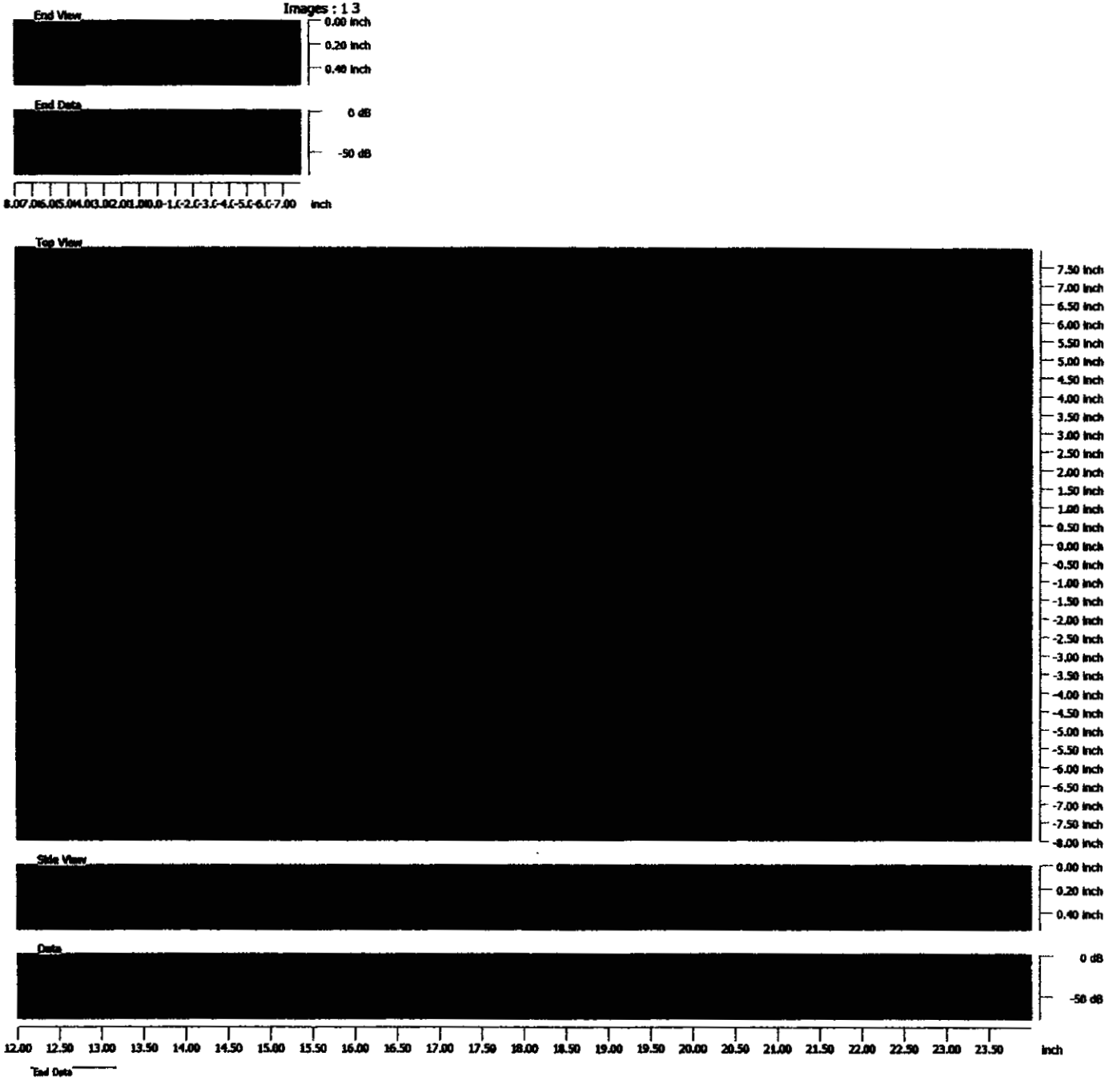
Printed on 2000-8-6 at 21:52 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.



WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:53 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.



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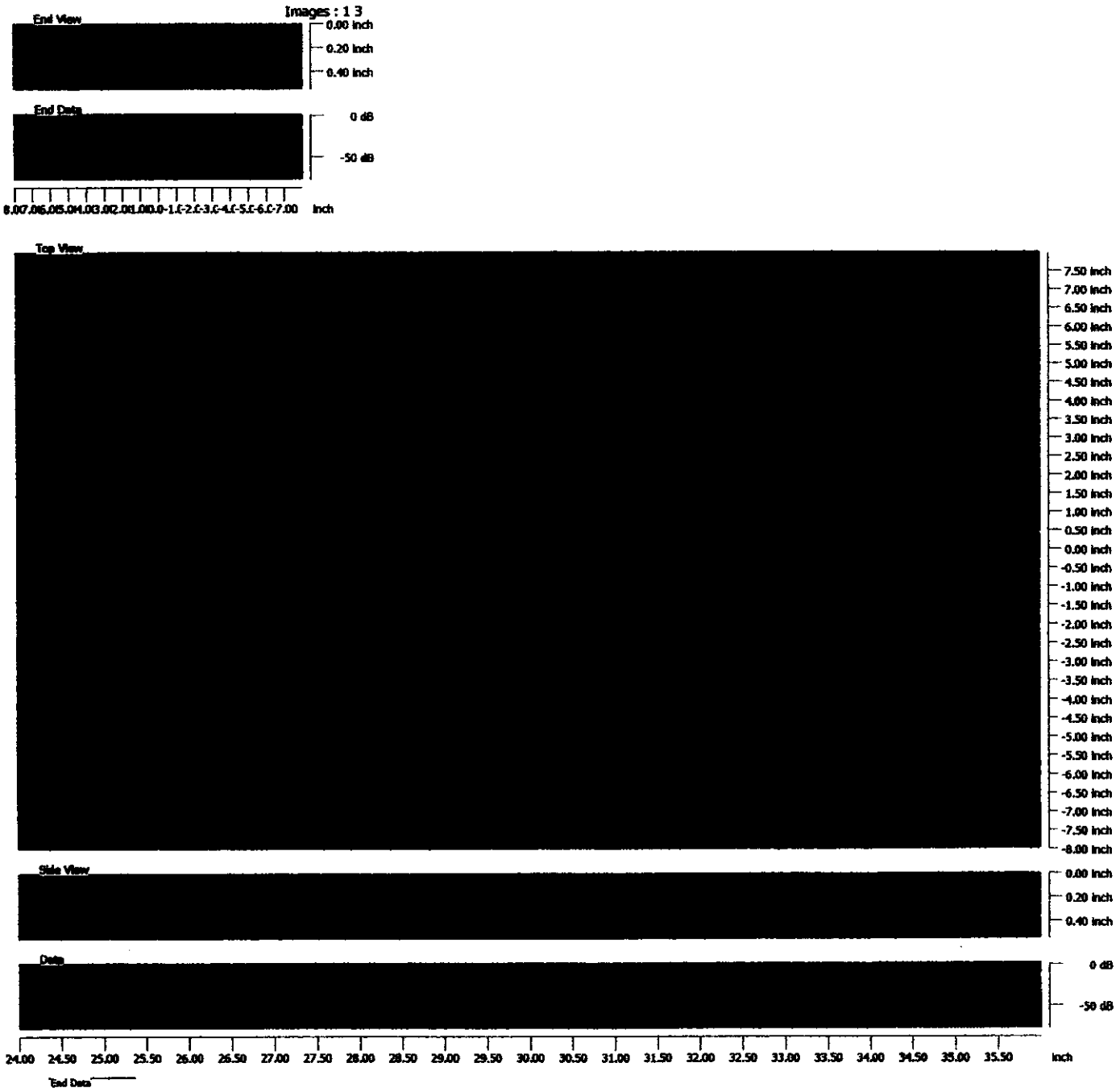
WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:53 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.



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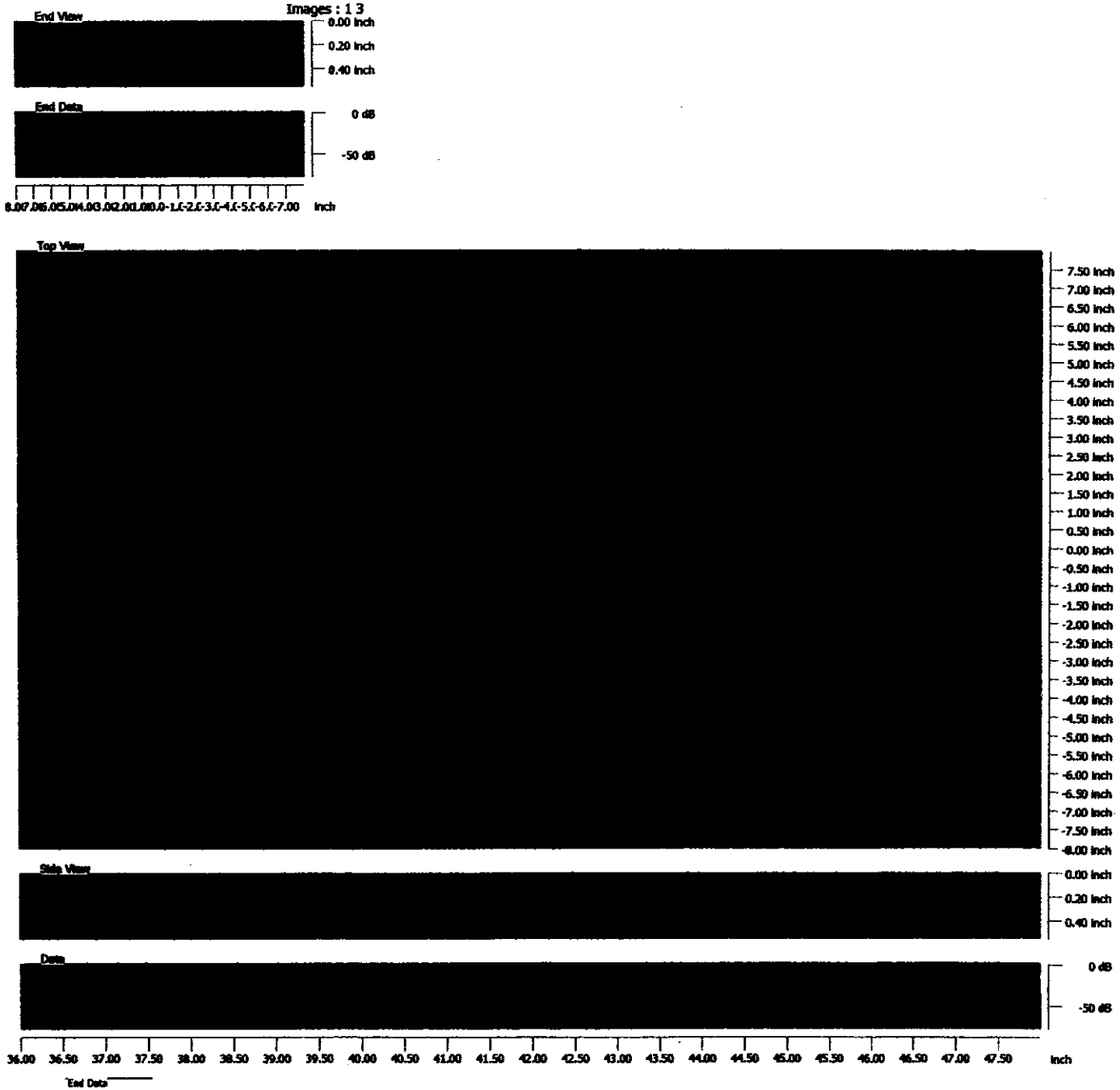
WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:53 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.



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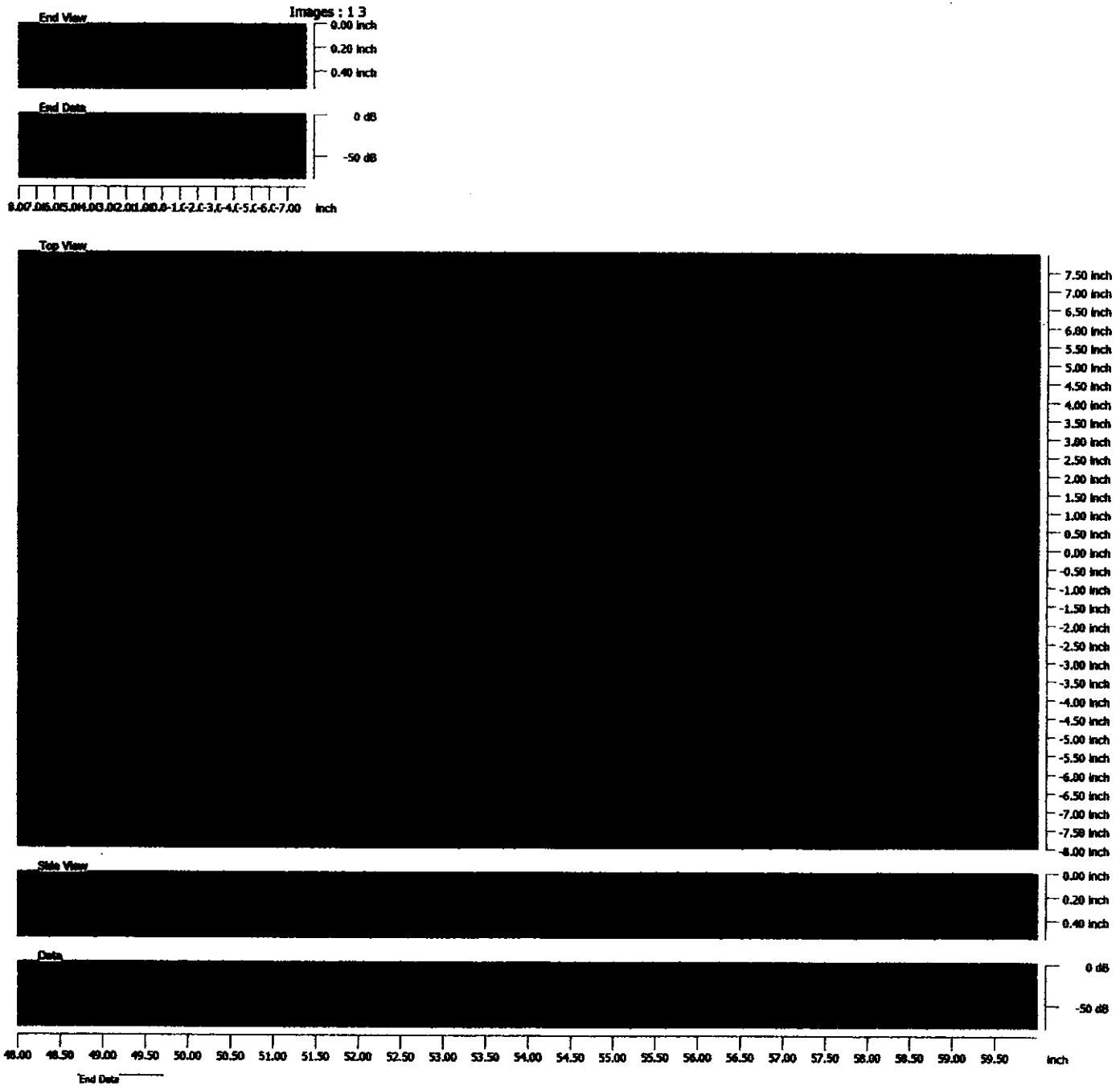
WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

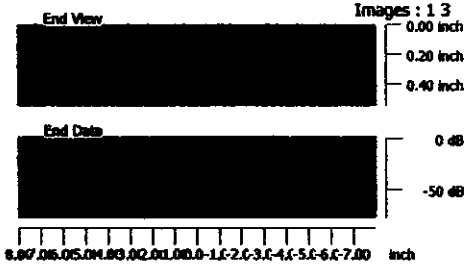
1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

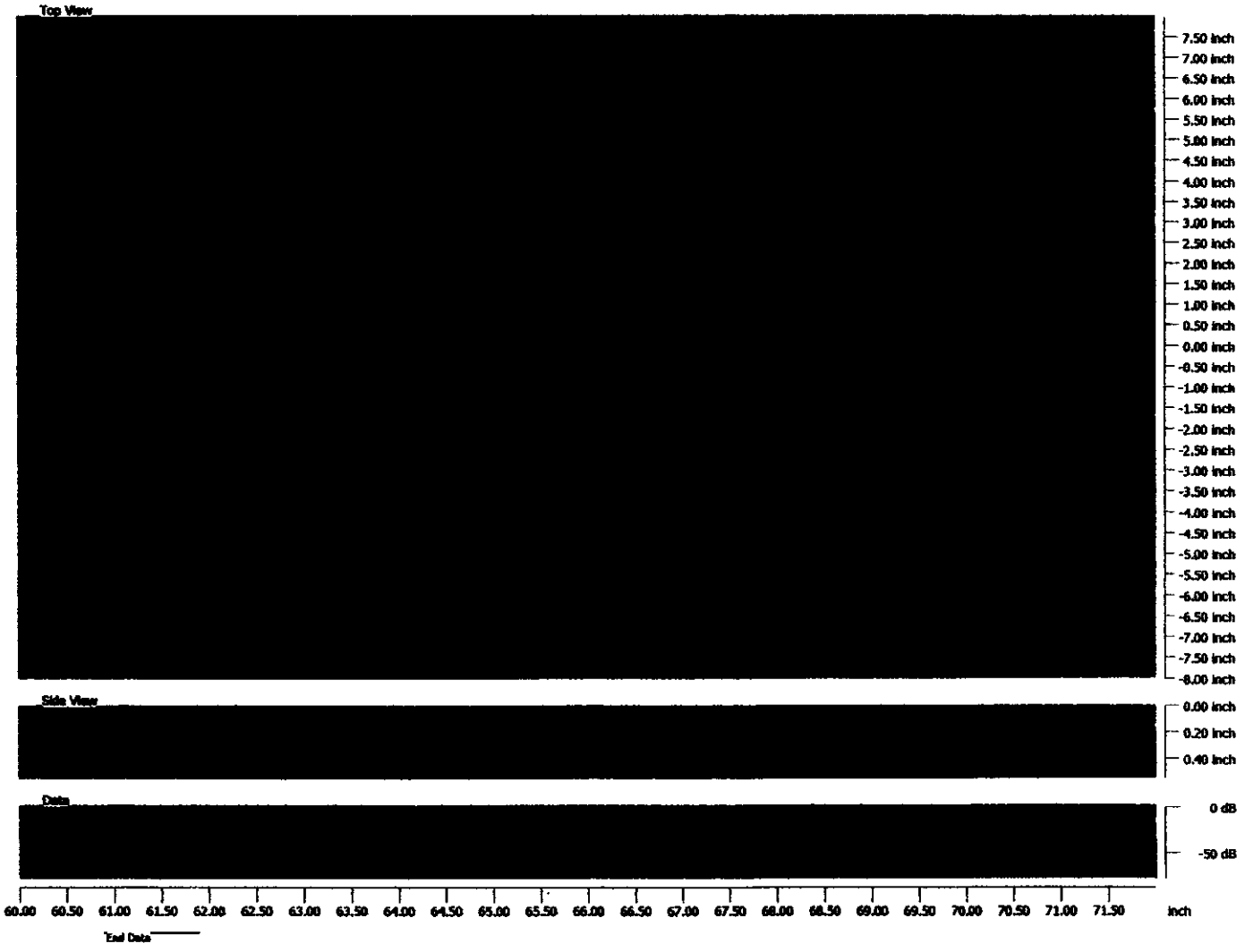
Printed on 2000-8-6 at 21:53 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.



WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2
Printed on 2000-8-6 at 21:53 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.

1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

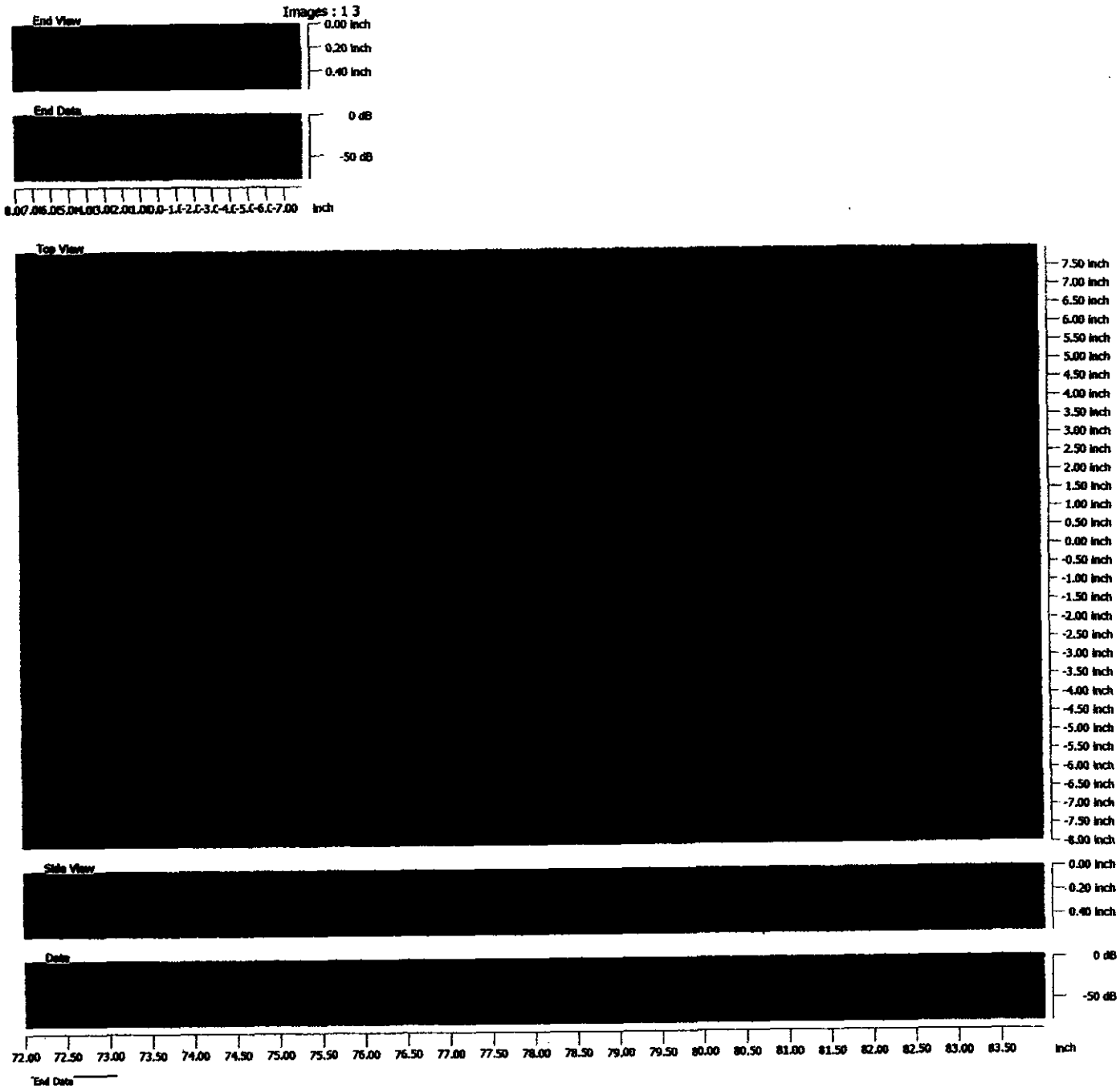


WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:54 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.

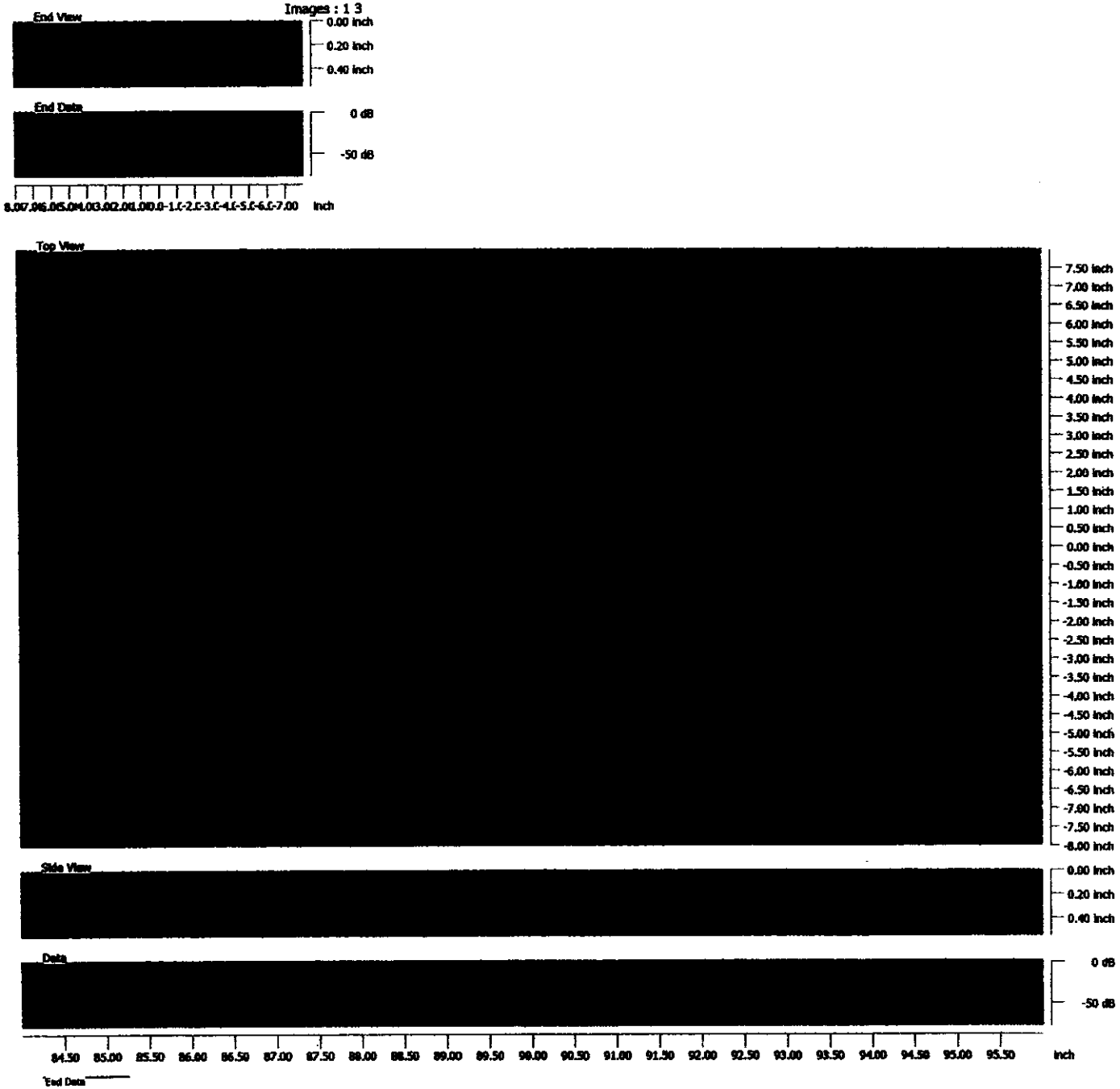


WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:54 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.

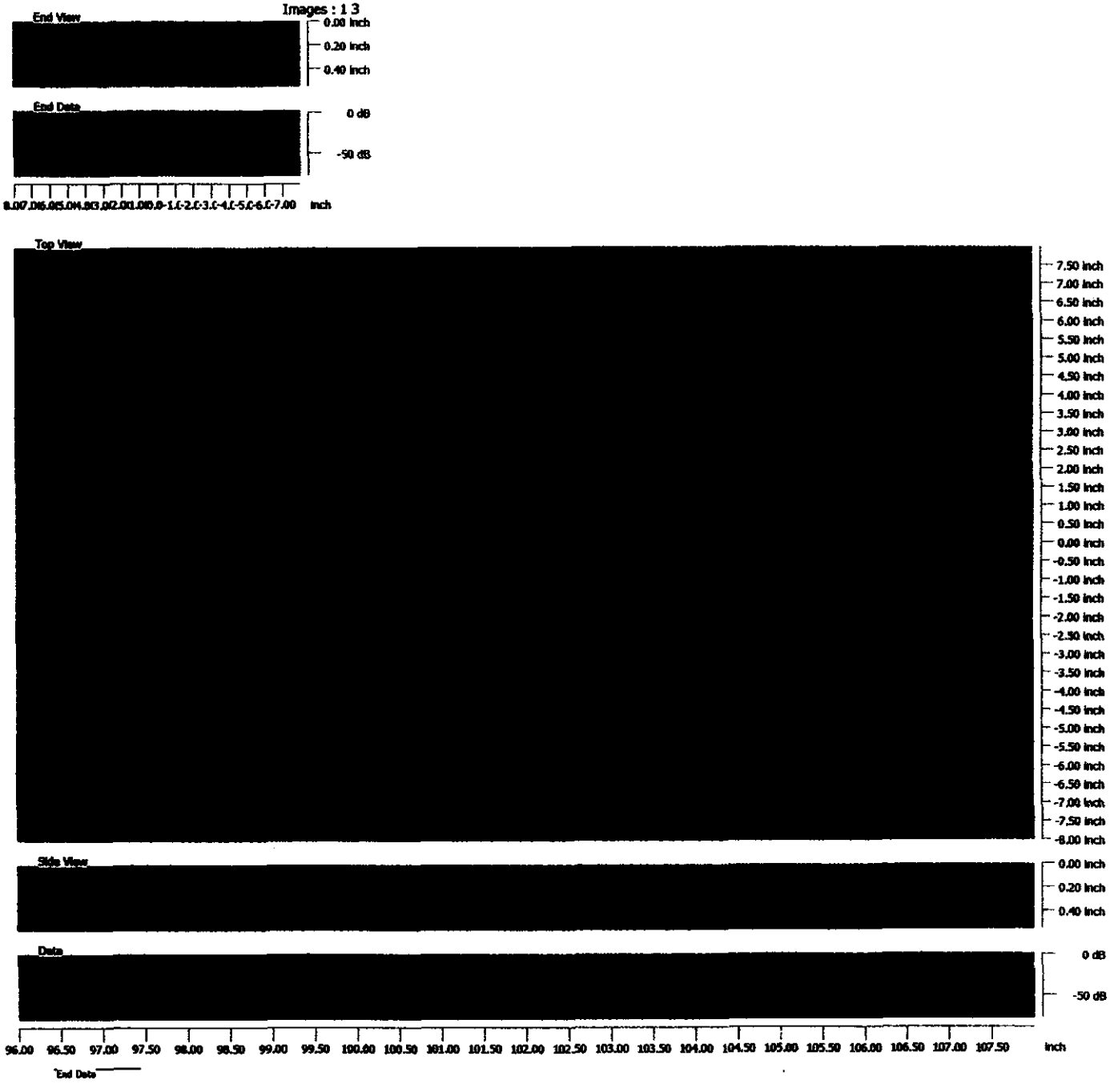
Images : 1 3



WALL SCAN 2/107AP/4
WHN
AP / 200E TANK FARM
PLATE 4/2

1: P-scan, Images, p-scan data1, 6/14/00 10:56
2: P-scan, Images, p-scan data1, 6/14/00 10:56
3: T-scan, Images, p-scan data1, 6/14/00 10:56

Printed on 2000-8-6 at 21:55 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/4.



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4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/14/00 10:12 | EXAM END: 23:02 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM THICKNESS: .875" |
| CONFIGURATION: 2nd Vert Wall Plate TO Plate (Plate 5) | | CALIBRATED RANGE: .3" to 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 20.3" | | REF LEVEL CORRECTION (TRANS CORR): [illegible] DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION: |
| FILE NAME/ITEM#: Wall Scan 3/107AP/5 | | TRANSDUCER: ☒ DUAL ☐ SGL ☐ 0DEG ☐ ANGLE [illegible] | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz Weld | $Y_0$ REF. POINT ($W_0$): 21" from c/L of 1st Pass | SCAN WIDTH: 15" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK, R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .900" | .893" | | |
| | 12" | 20.3" | | | .900" | .879" | | |
| SUMMARY | | | | | | | | |

REMARKS

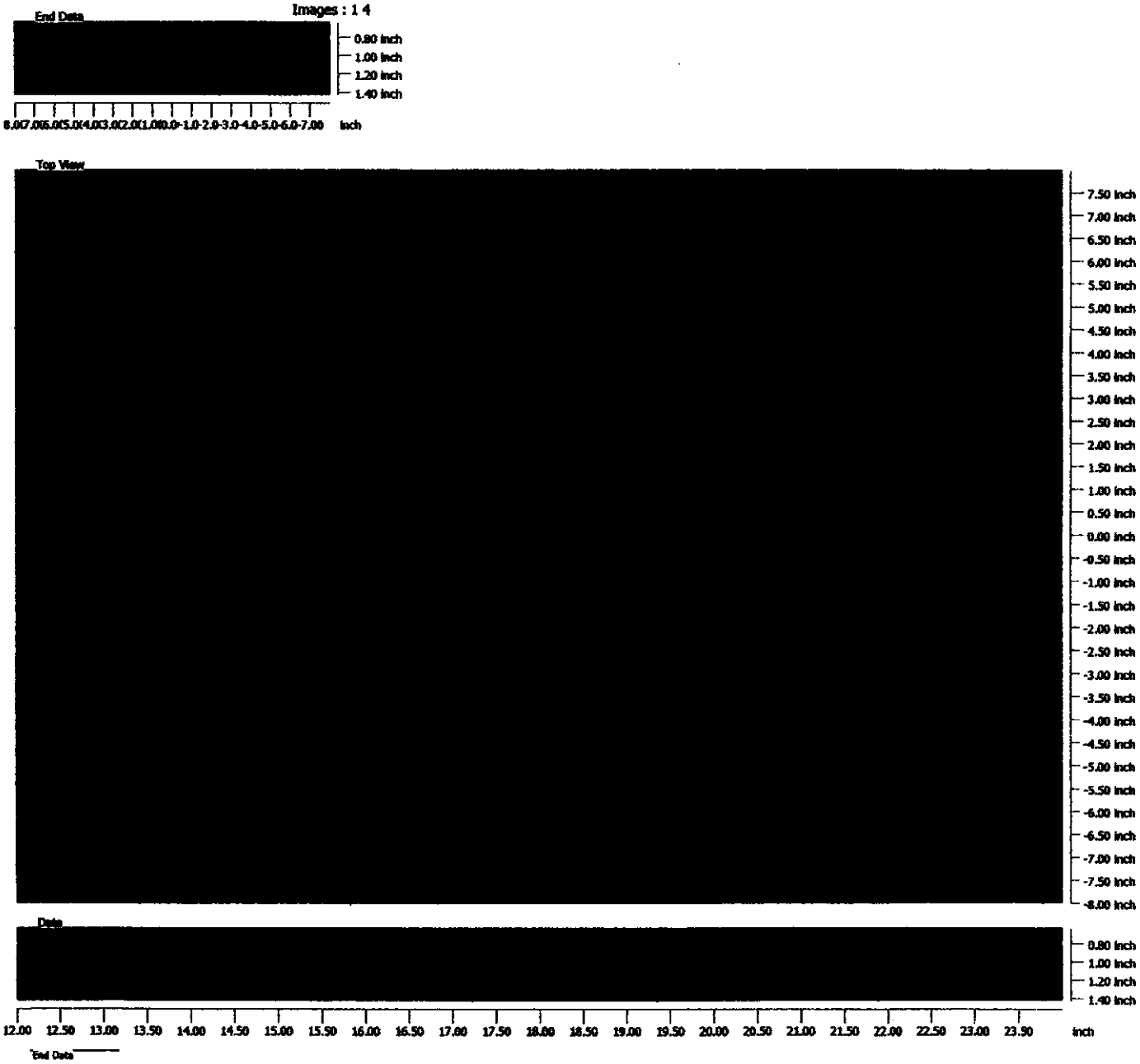
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/14/00 | [signature] Level III Date 6/14/00 | (NI) ____ Level ___ Date ____ | ___ of ___ |

(NI) See Attached Letter From J. B Elder

WALL SCAN 2/107AP/5
WHN
AP / 200E TANK FARM
PLATE 5/2

1: P-scan, Images, t-scan data1, 6/14/00 21:12
2: P-scan, Images, t-scan data1, 6/14/00 21:12
3: T-scan, Images, t-scan data1, 6/14/00 21:12

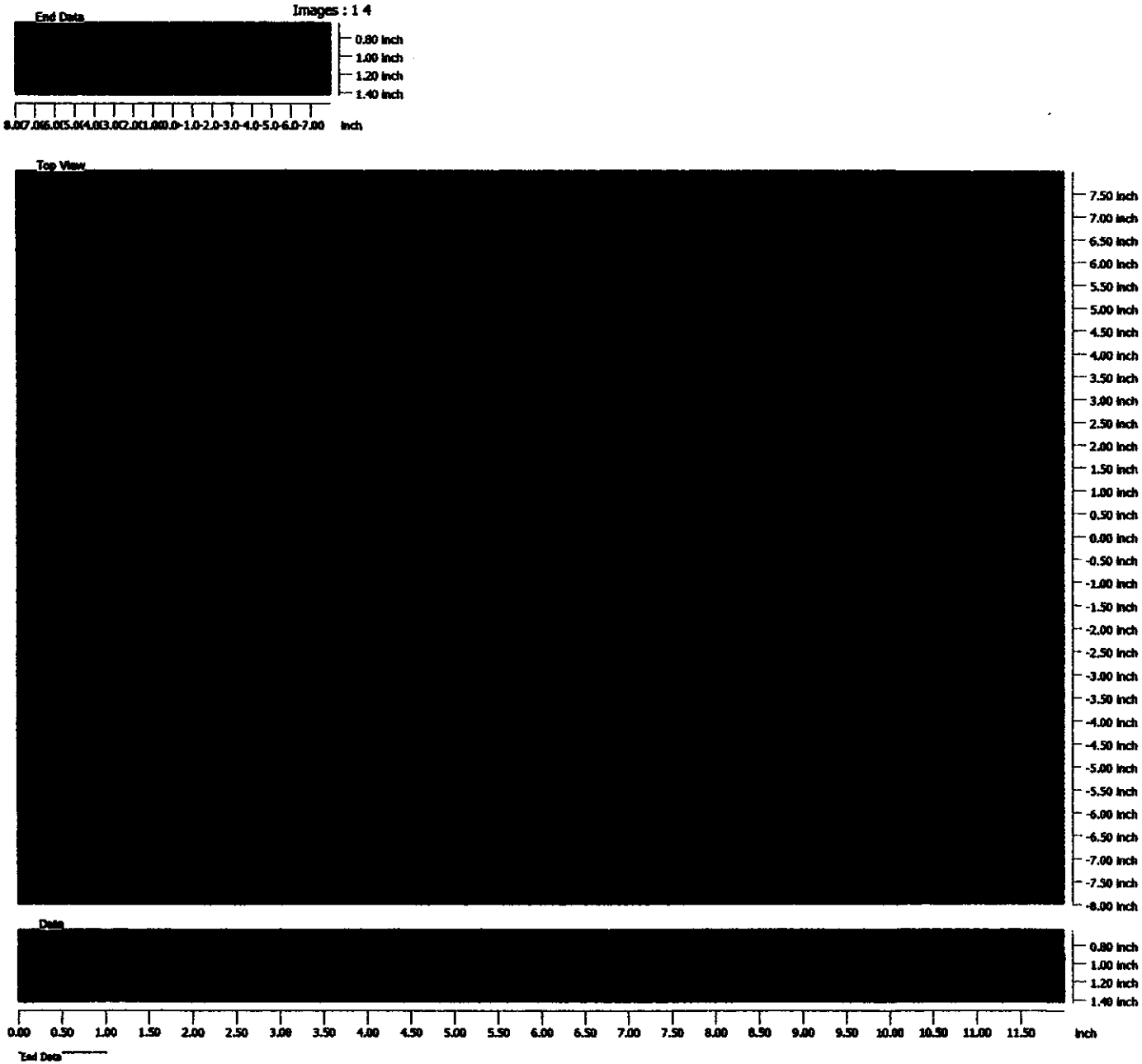
Printed on 2000-8-6 at 22:03 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/5.



WALL SCAN 2/107AP/5
WHN
AP / 200E TANK FARM
PLATE 5/2

1: P-scan, Images, t-scan data1, 6/14/00 21:12
2: P-scan, Images, t-scan data1, 6/14/00 21:12
3: T-scan, Images, t-scan data1, 6/14/00 21:12

Printed on 2000-8-6 at 22:02 : T-scan pres.1 <3> of Job : WALL SCAN 2/107AP/5.



Page 165 of 449

4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/14/00 10:12 | EXAM END: 23102 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: 2nd Vert. Wall TO Plate to Plate (Plates) | | CALIBRATED RANGE: 0" TO 2.47" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 20.3" | | REF LEVEL CORRECTION (TRANS CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .875" Nom. Thickness | | |
| FILE NAME/ITEM#: Wall Scan 2/107AP/S | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☐ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz. Weld | $Y_0$ REF. POINT ($W_0$): 21" from c/L of 1st Pass | SCAN WIDTH: 15" | | |

| SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|
| 1 45/60 DEGREE SHEAR | | | |
| 2 AATT | | | |
| 3 RATT | | | |
| 4 DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO Crack - Like Indications.

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Neff | Wesley D Neff | (N1) | |
| Level III Date 6/14/00 | Level III Date 6/14/00 | Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B Elder

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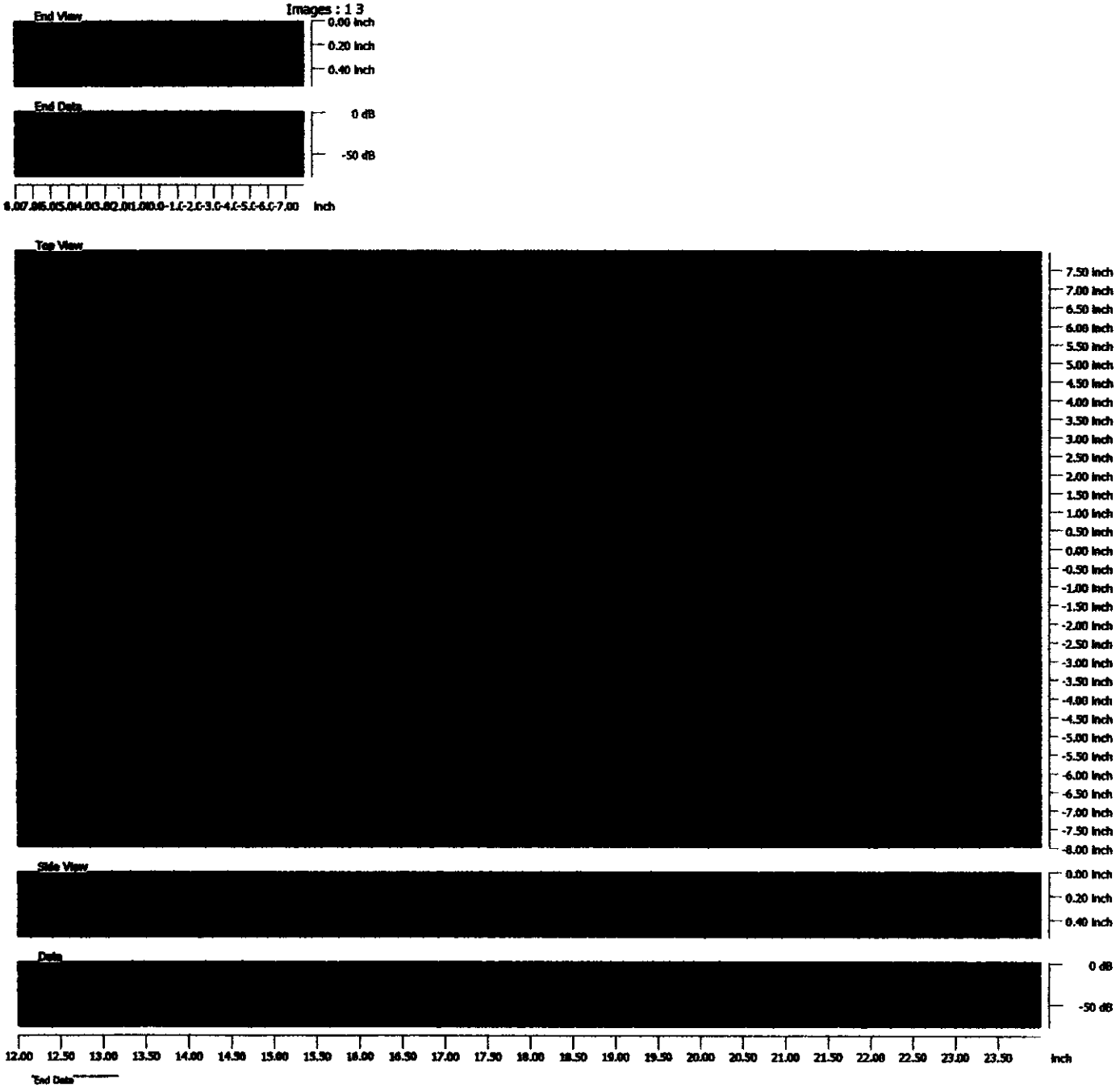
WALL SCAN 2/107AP/5
WHN
AP / 200E TANK FARM
PLATE 5/2

1: P-scan, Images, p-scan data1, 6/14/00 21:12
2: P-scan, Images, p-scan data1, 6/14/00 21:12
3: T-scan, Images, p-scan data1, 6/14/00 21:12

Printed on 2000-8-6 at 22:06 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/5.

Images : 1 3



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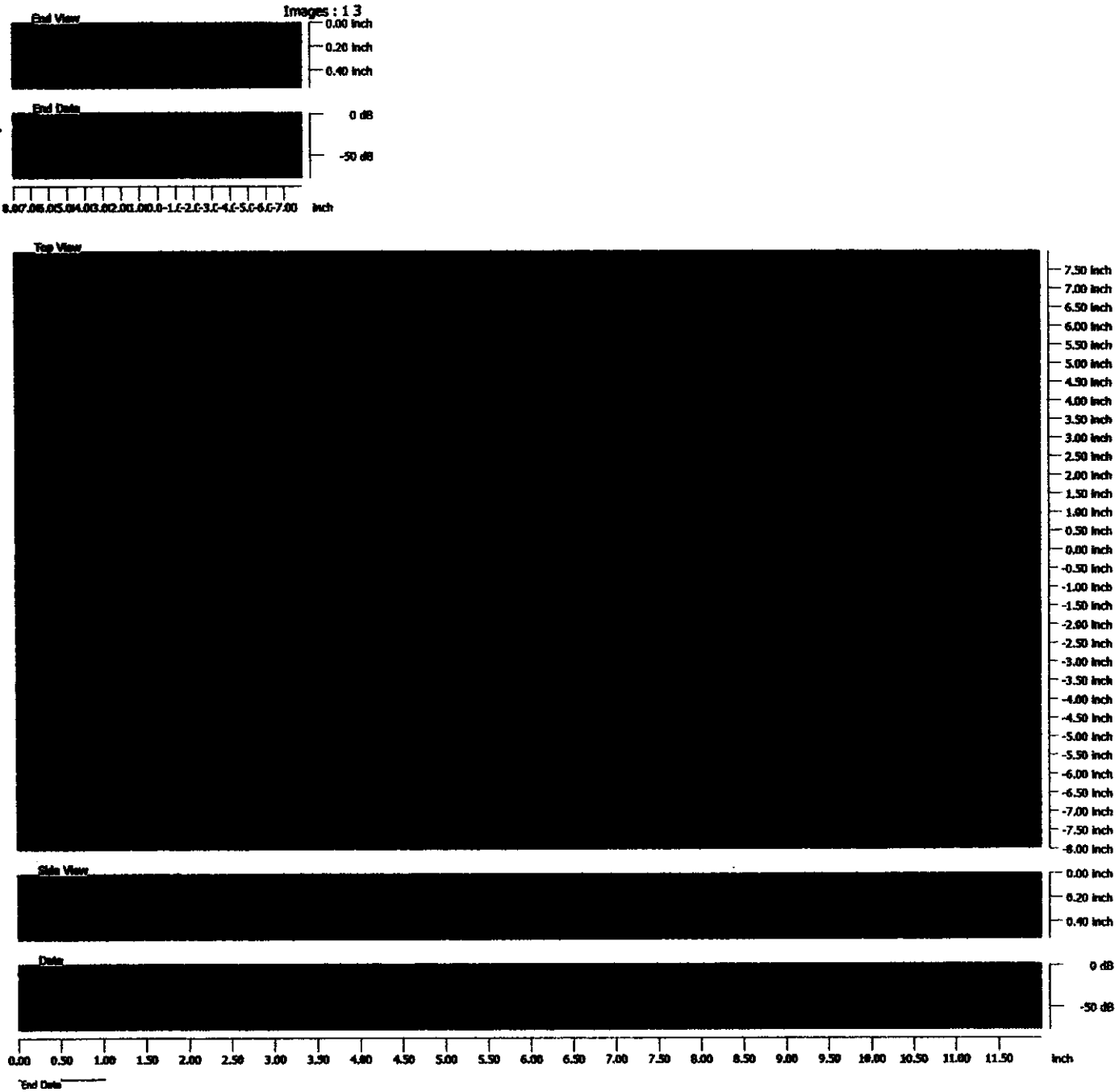
WALL SCAN 2/107AP/5
WHN
AP / 200E TANK FARM
PLATE 5/2

1: P-scan, Images, p-scan data1, 6/14/00 21:12
2: P-scan, Images, p-scan data1, 6/14/00 21:12
3: T-scan, Images, p-scan data1, 6/14/00 21:12

Printed on 2000-8-6 at 22:05 : P-scan pres.1 <1, 2> of Job : WALL SCAN 2/107AP/5.



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/20/00 9:30 | EXAM END: 20:00 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM THICKNESS: .500" |
| CONFIGURATION: VERT. WELD PLATE TO PLATE (PLATE 2 | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 89.7" | | REF LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: VERT. WELD/PLATE 2 | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF POINT ($L_0$): 1" BELOW HORZ. WELD | $Y_0$ REF POINT ($W_0$): ℄ WELD | SCAN WIDTH | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK, R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0 | 12 | | | .500" | .490" | | |
| | 12 | 24 | | | .500" | .494" | | |
| | 24 | 36 | | | .500" | .496" | | |
| | 36 | 48 | | | .500" | .492" | | |
| | 48 | 60 | | | .500" | .490" | | |
| | 60 | 72 | | | .500" | .492" | | |
| | 72 | 84 | | | .500" | .492" | | |
| | 84 | 96 | | | .500" | .488" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Nelson | Wesley D Nelson | (N1) | |
| Level III Date 6/20/00 | Level III Date 8/3/00 | Level ___ Date ___ | ___ of ___ |

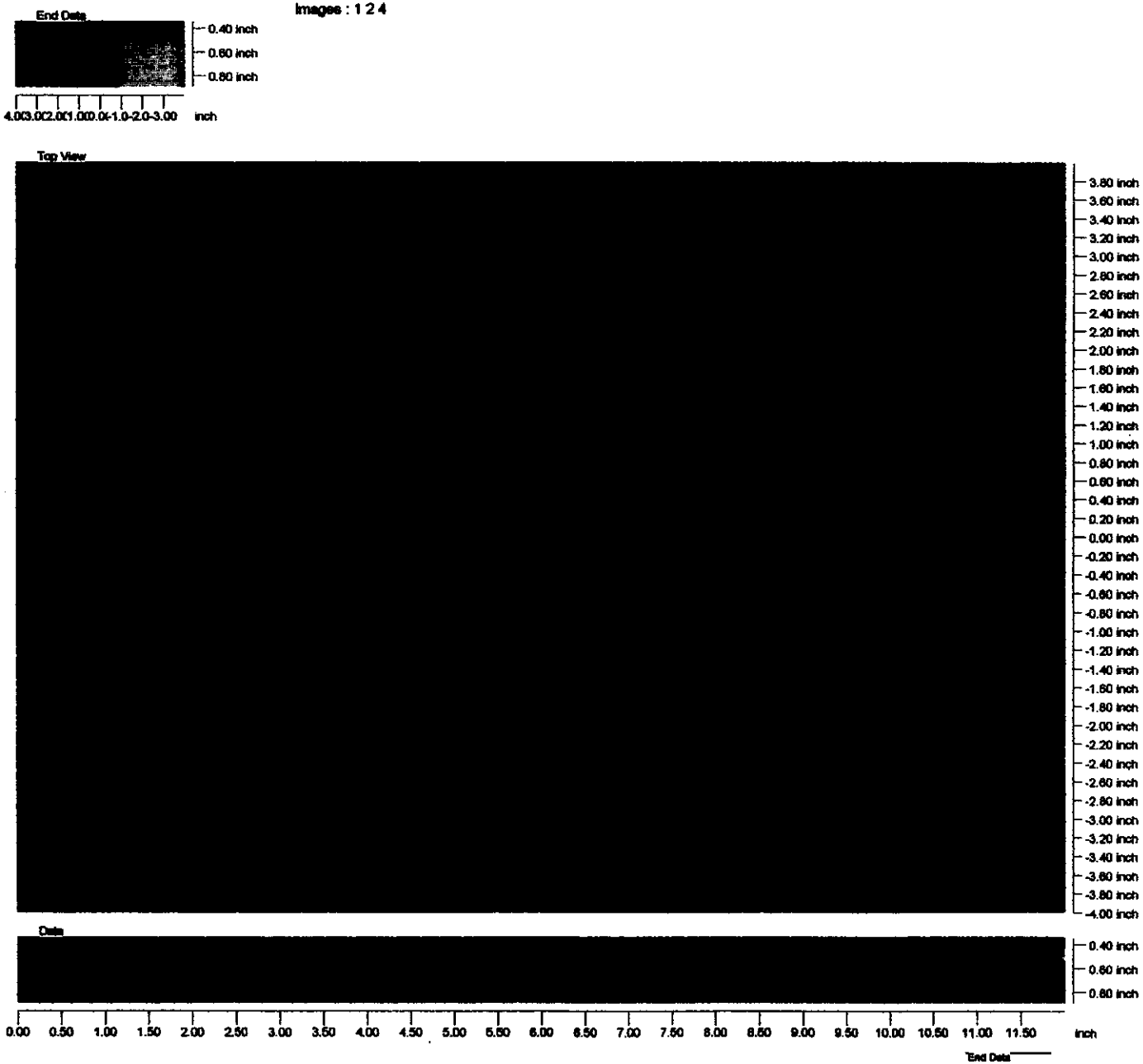
(N1) See Attached Letter From J. B. Elder

VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 10:31
2: P-scan, Images, t-scan data1, 6/20/00 10:31
3: T-scan, Images, t-scan data1, 6/20/00 10:31
4: T-scan, Images, t-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 16:58 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/2.

Images : 1 2 4

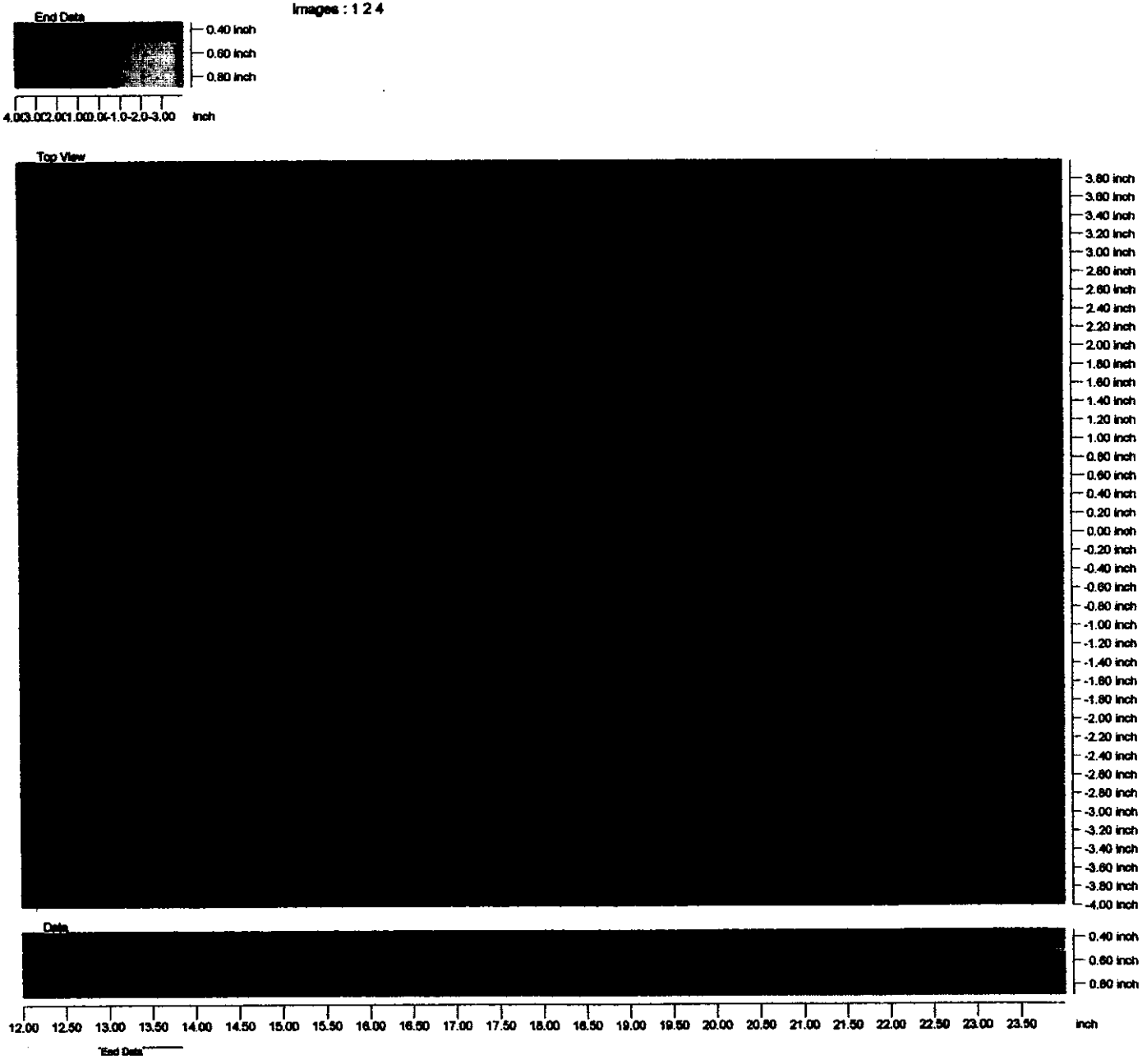


VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 10:31
2: P-scan, Images, t-scan data1, 6/20/00 10:31
3: T-scan, Images, t-scan data1, 6/20/00 10:31
4: T-scan, Images, t-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 16:58 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/2.

Images : 1 2 4

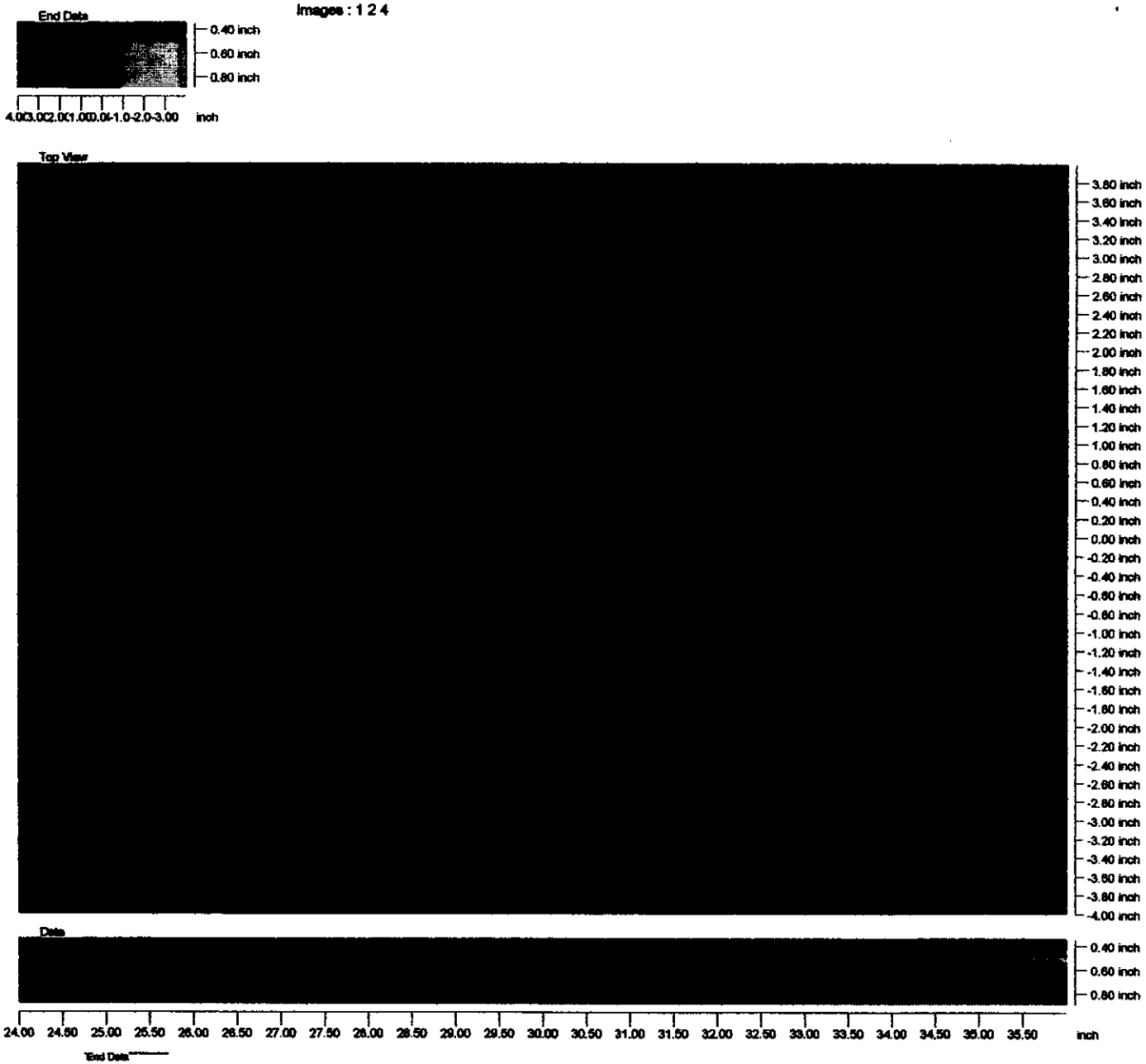


VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 10:31
2: P-scan, Images, t-scan data1, 6/20/00 10:31
3: T-scan, Images, t-scan data1, 6/20/00 10:31
4: T-scan, Images, t-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 16:59 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/2.

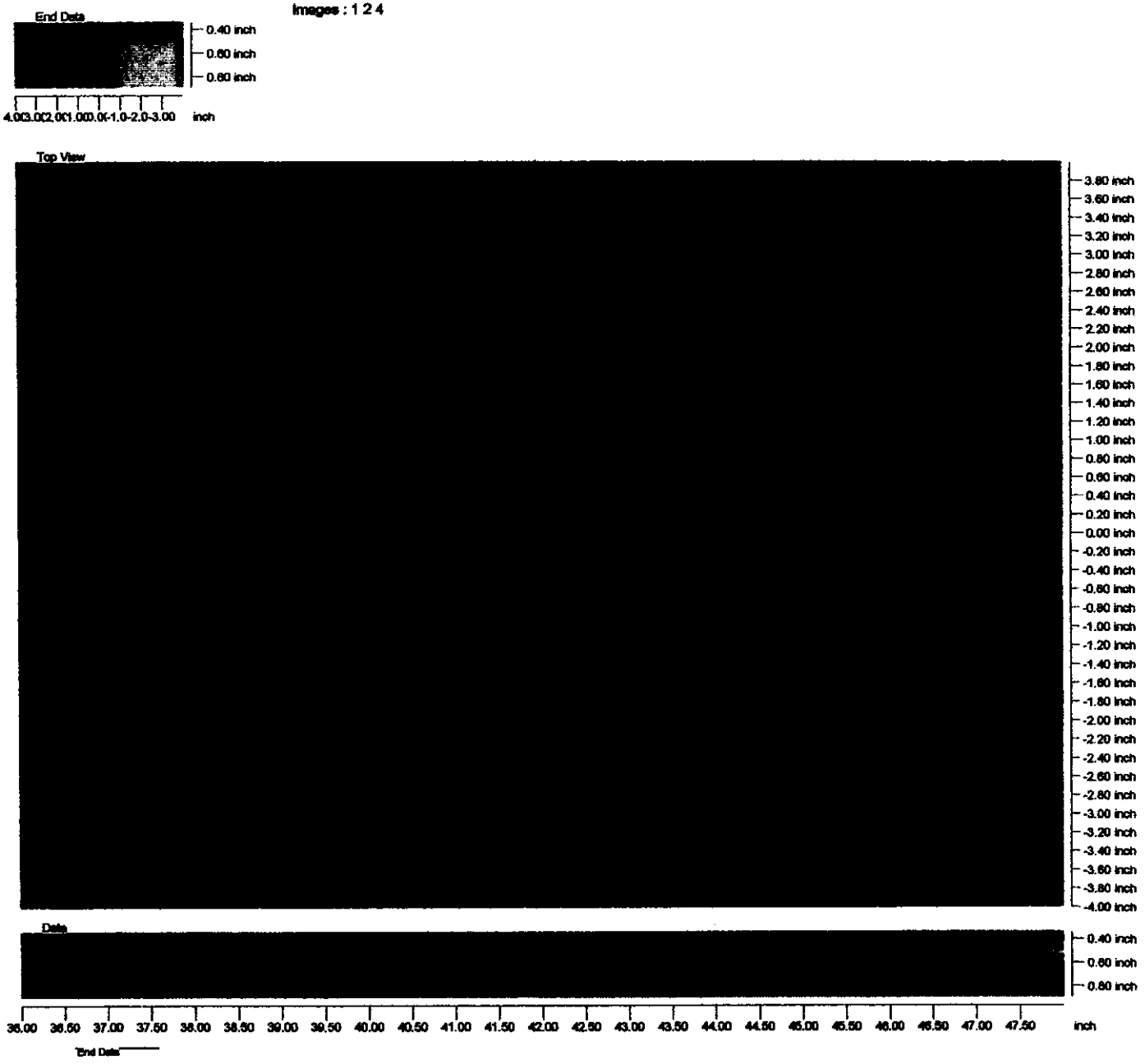
Images : 1 2 4



VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 10:31
2: P-scan, Images, t-scan data1, 6/20/00 10:31
3: T-scan, Images, t-scan data1, 6/20/00 10:31
4: T-scan, Images, t-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:01 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/2.
Images : 1 2 4

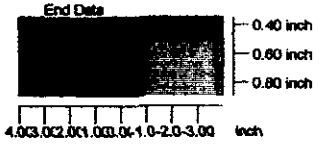


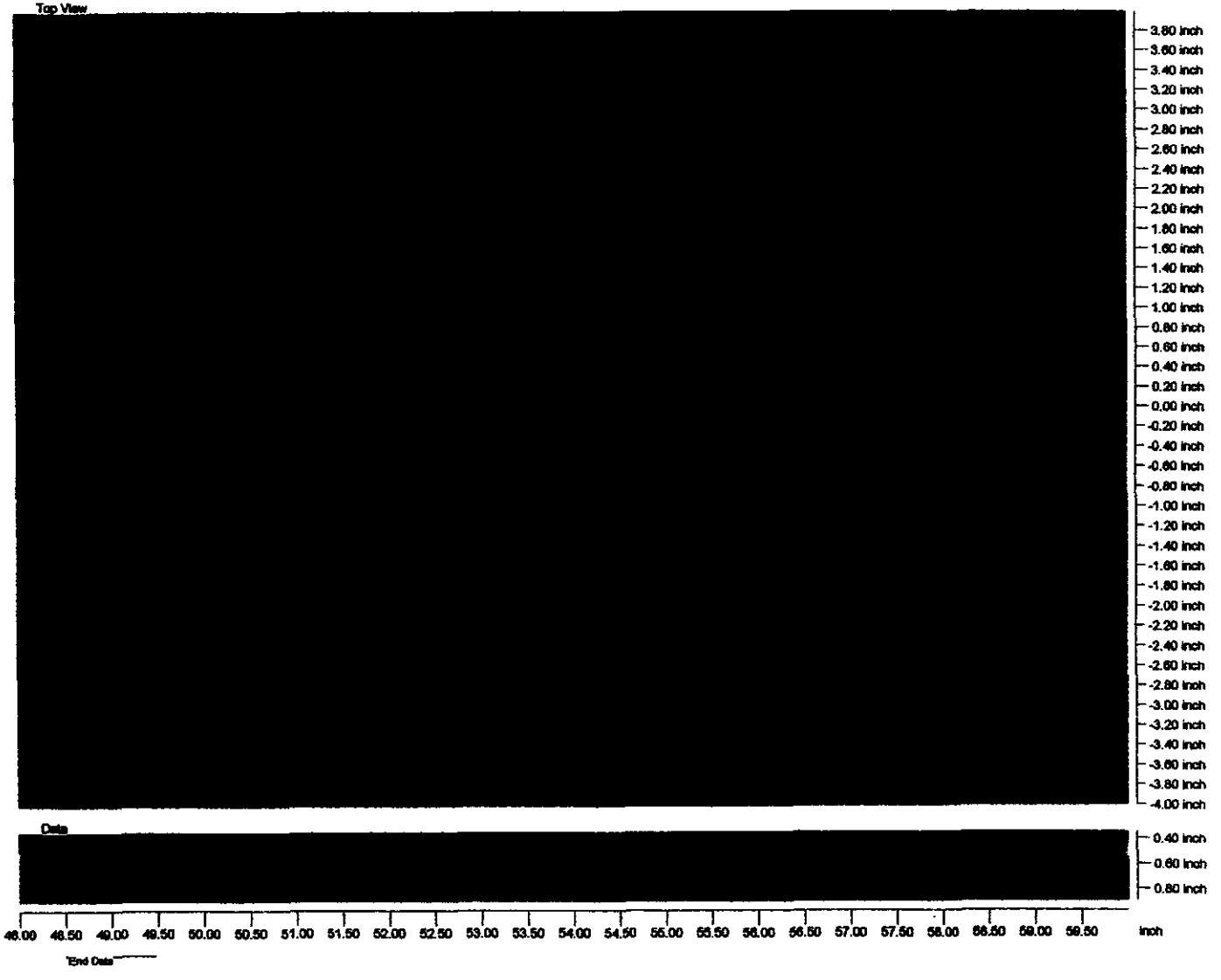
VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 10:31
2: P-scan, Images, t-scan data1, 6/20/00 10:31
3: T-scan, Images, t-scan data1, 6/20/00 10:31
4: T-scan, Images, t-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:02 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/2.

Images : 1 2 4



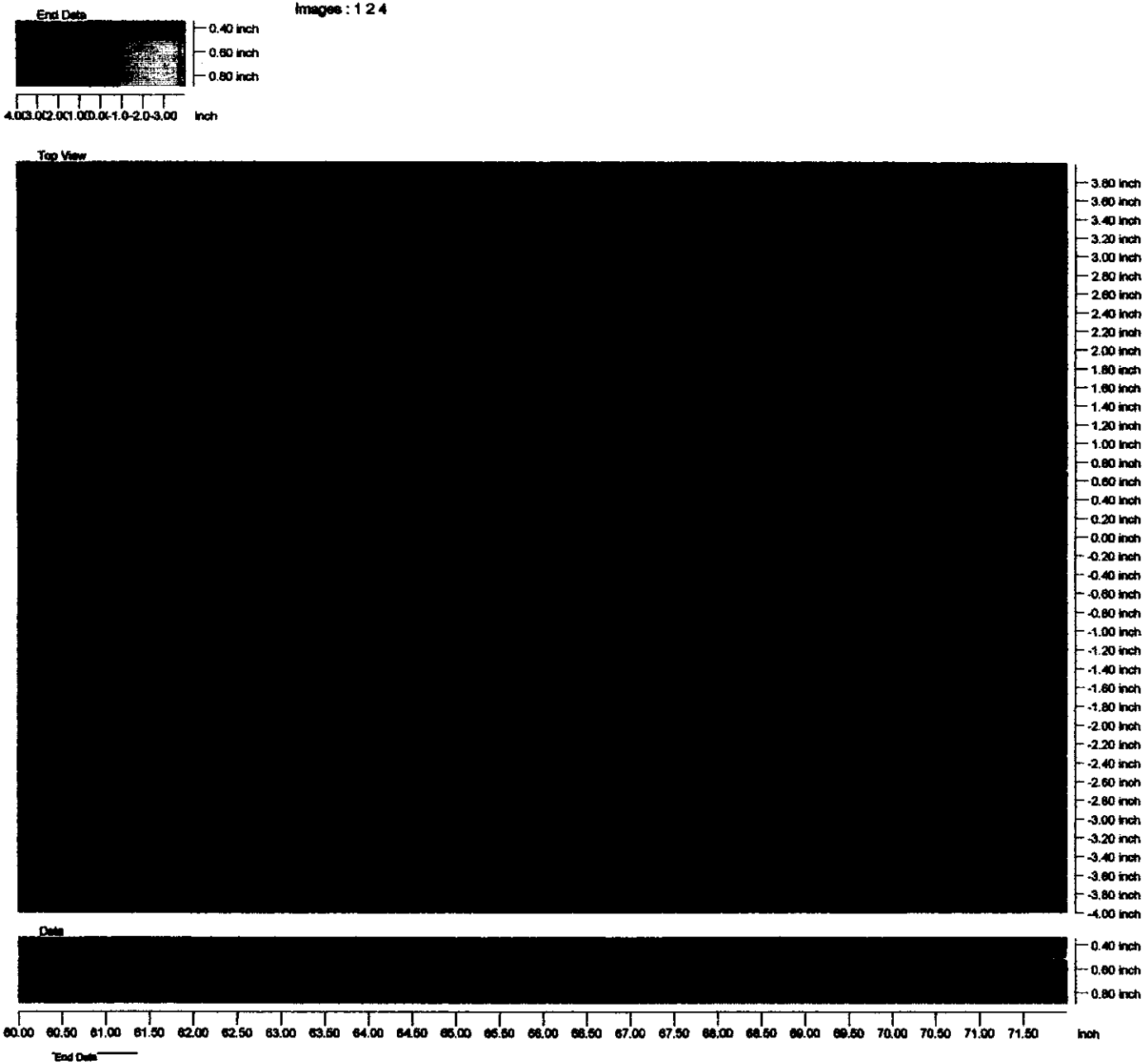



VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 10:31
2: P-scan, Images, t-scan data1, 6/20/00 10:31
3: T-scan, Images, t-scan data1, 6/20/00 10:31
4: T-scan, Images, t-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:03 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/2.

Images : 1 2 4

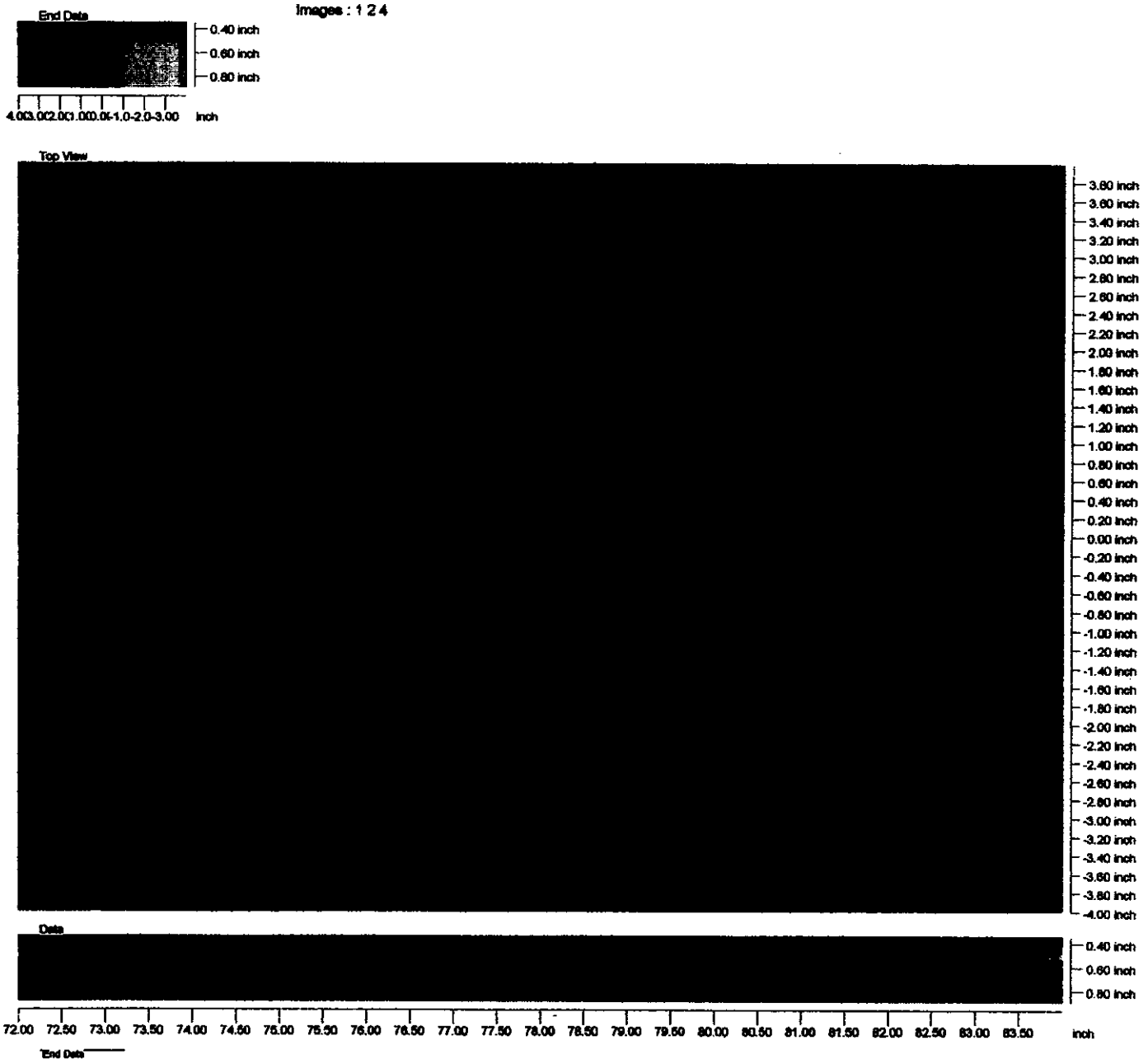


VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, images, t-scan data1, 6/20/00 10:31
2: P-scan, images, t-scan data1, 6/20/00 10:31
3: T-scan, images, t-scan data1, 6/20/00 10:31
4: T-scan, images, t-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:04 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/2.

Images : 1 2 4



VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 10:31
2: P-scan, Images, t-scan data1, 6/20/00 10:31
3: T-scan, Images, t-scan data1, 6/20/00 10:31
4: T-scan, Images, t-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:09 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/2.

Images : 1 2 4

4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/20/00 9:30 | EXAM END: 20:00 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: VERT. WELD PLATE TO PLATE (PLATE 2) | | CALIBRATED RANGE: 2" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 88" | | REF LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .500" NOM. THICKNESS | | |
| FILE NAME/ITEM#: VERT. WELD/PLATE 2 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 60° | | |
| $X_0$ REF. POINT ($L_0$): 1" BELOW HORIZ. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.4" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO CRACK-LIKE INDICATIONS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Nelson | Wesley D Nelson | (NI) | |
| Level III Date 6/20/00 | Level III Date 8/3/00 | Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J. B. Elder

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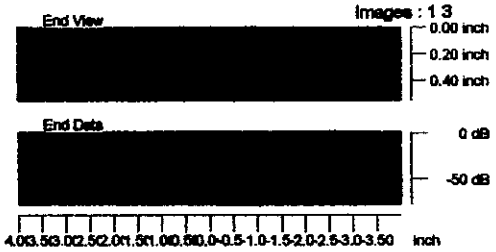
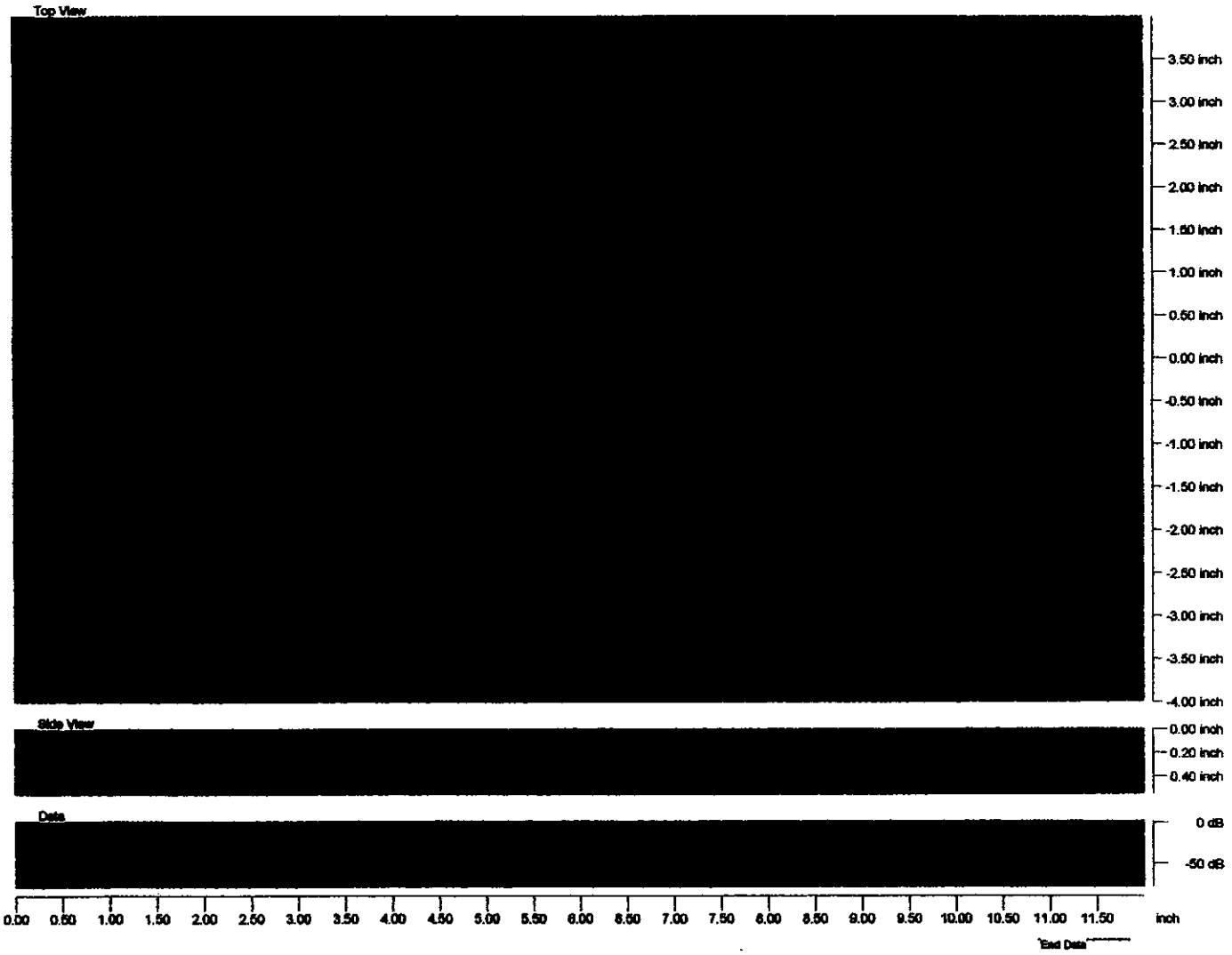
VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 10:31
2: P-scan, Images, p-scan data1, 6/20/00 10:31
3: T-scan, Images, p-scan data1, 6/20/00 10:31
4: T-scan, Images, p-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:14 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/2.

Images : 1 3

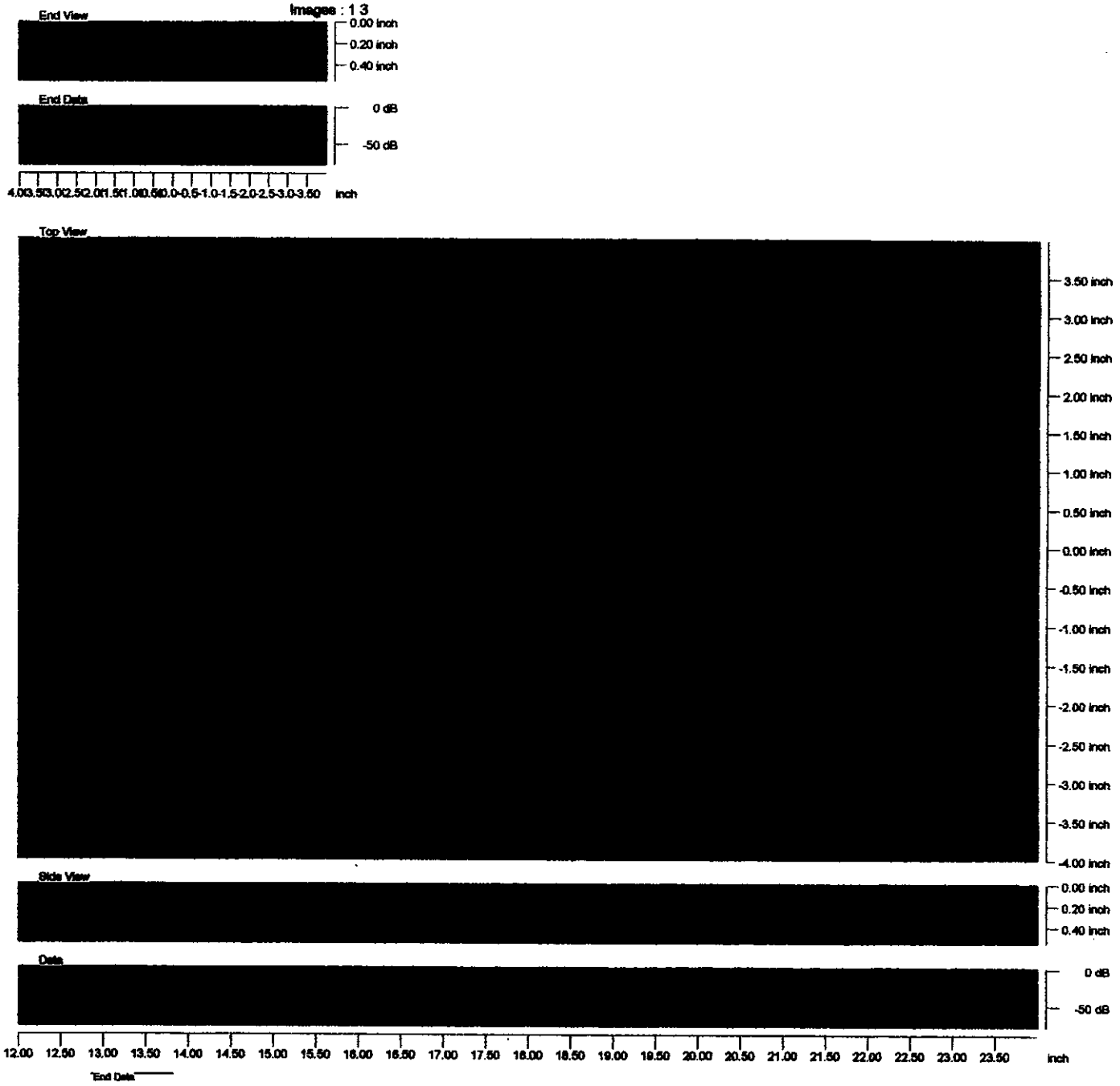


VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 10:31
2: P-scan, Images, p-scan data1, 6/20/00 10:31
3: T-scan, Images, p-scan data1, 6/20/00 10:31
4: T-scan, Images, p-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:15 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/2.

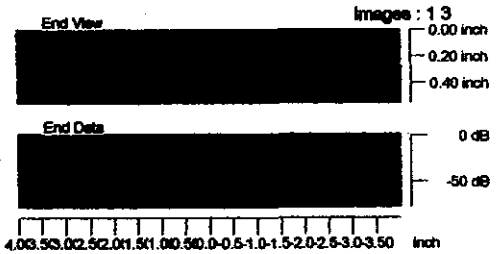


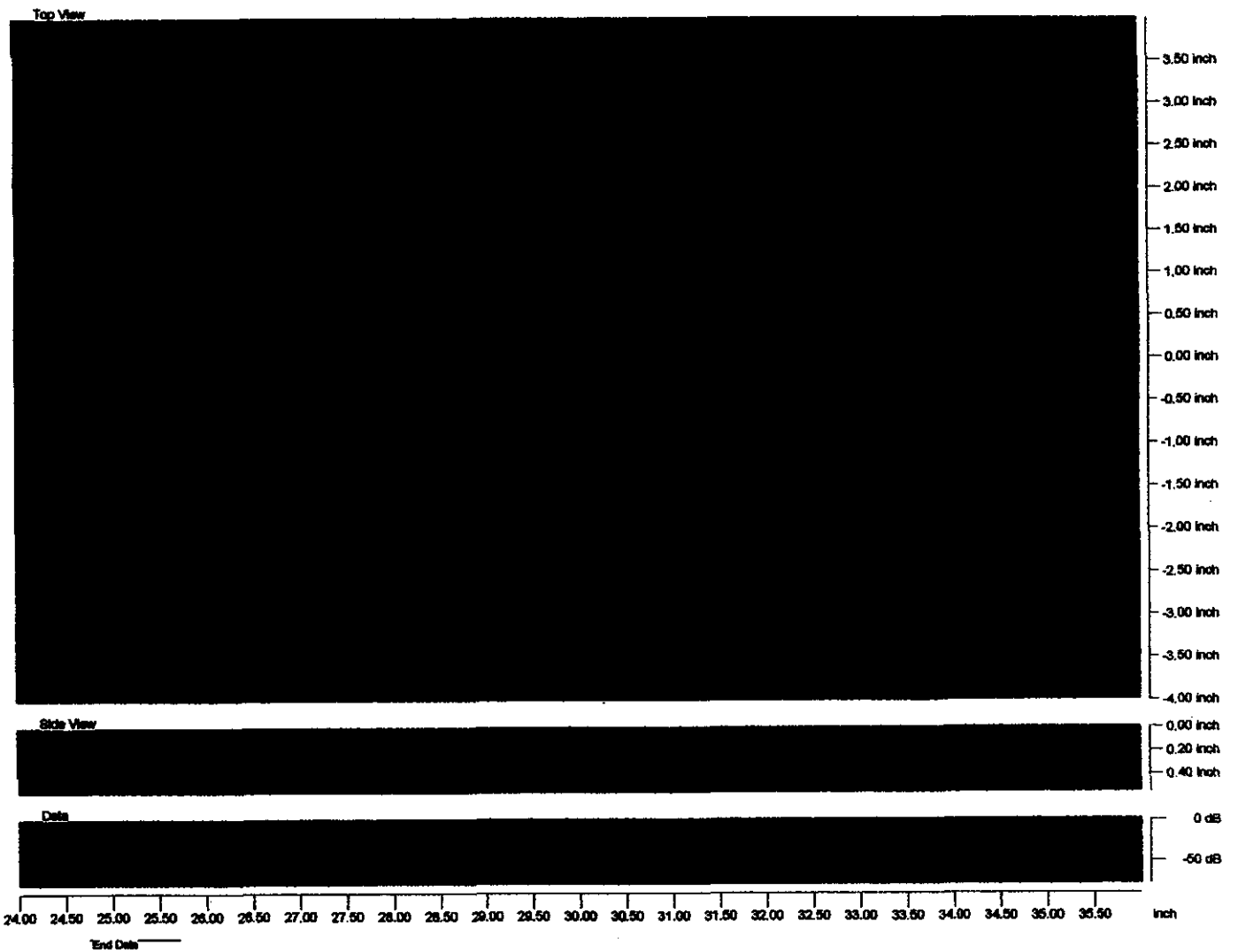
VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 10:31
2: P-scan, Images, p-scan data1, 6/20/00 10:31
3: T-scan, Images, p-scan data1, 6/20/00 10:31
4: T-scan, Images, p-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:15 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/2.

Images : 1 3

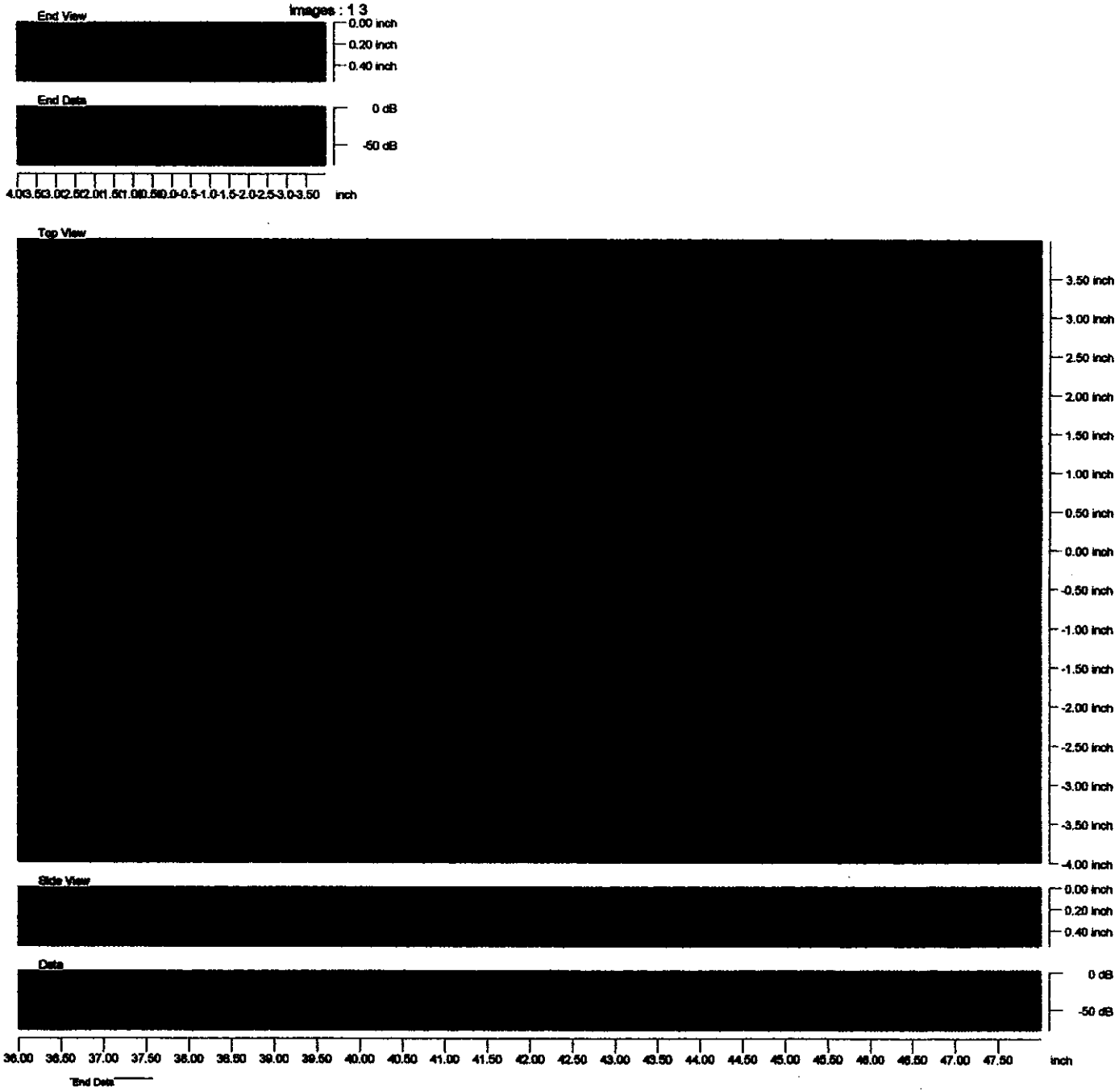


VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 10:31
2: P-scan, Images, p-scan data1, 6/20/00 10:31
3: T-scan, Images, p-scan data1, 6/20/00 10:31
4: T-scan, Images, p-scan data1, 6/20/00 10:31

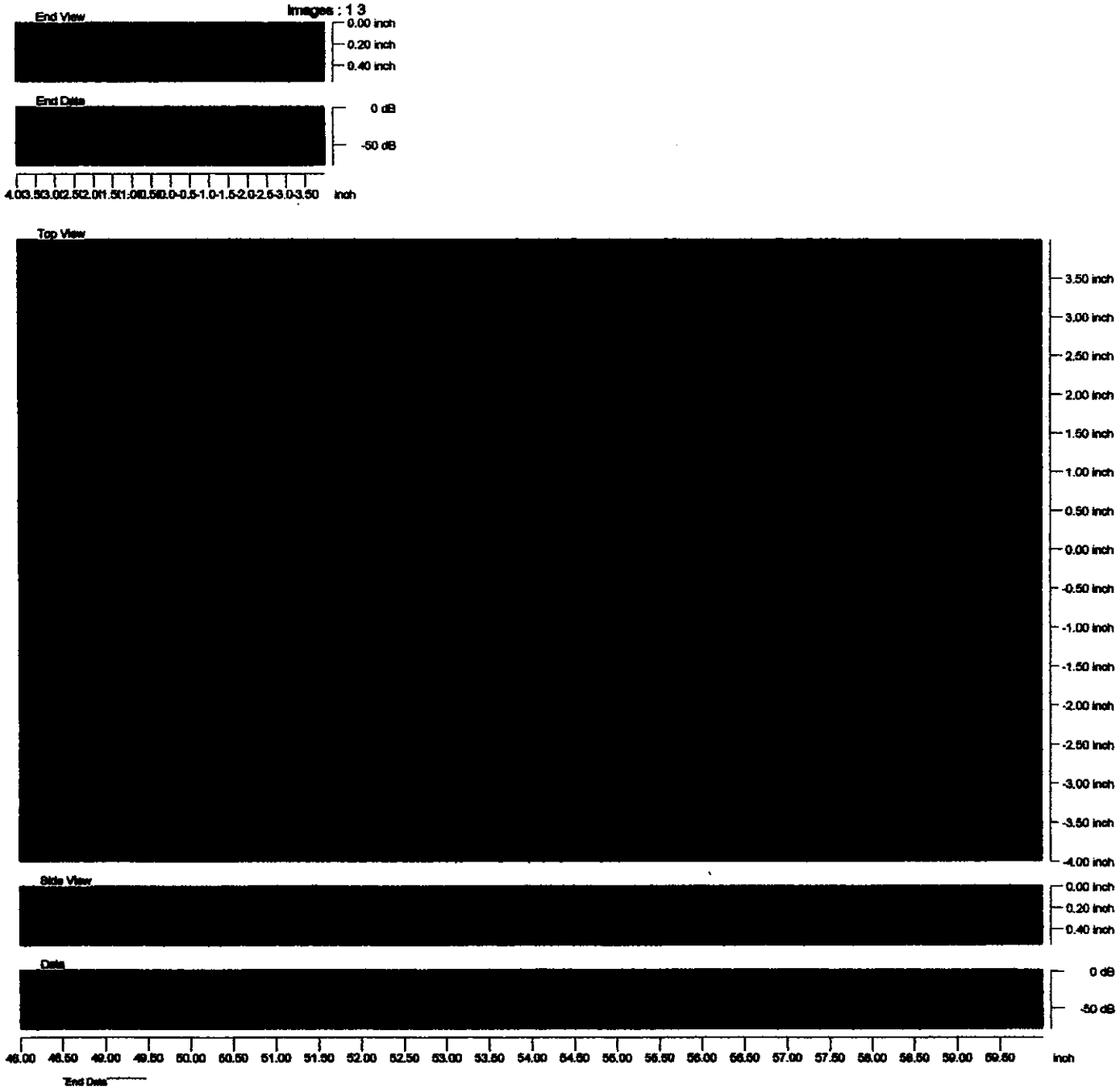
Printed on 2000-8-3 at 17:15 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/2.



VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 10:31
2: P-scan, Images, p-scan data1, 6/20/00 10:31
3: T-scan, Images, p-scan data1, 6/20/00 10:31
4: T-scan, Images, p-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:16 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/2.

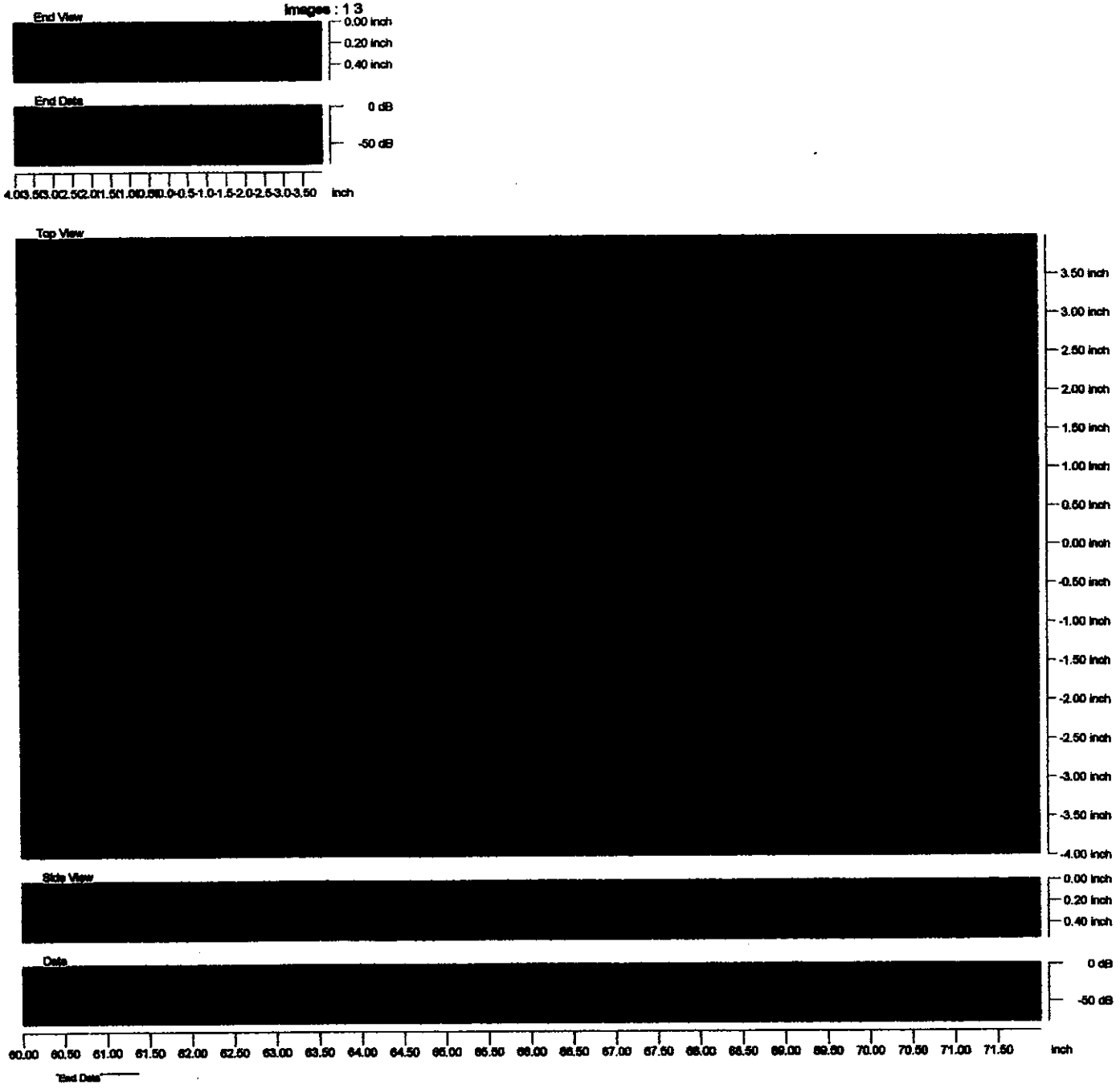


VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-ecan, Images, p-ecan data1, 6/20/00 10:31
2: P-ecan, Images, p-ecan data1, 6/20/00 10:31
3: T-ecan, Images, p-ecan data1, 6/20/00 10:31
4: T-ecan, Images, p-ecan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:16 : P-ecan pres.1 <1, 2> of Job : VERT.WELD/PLATE/2.

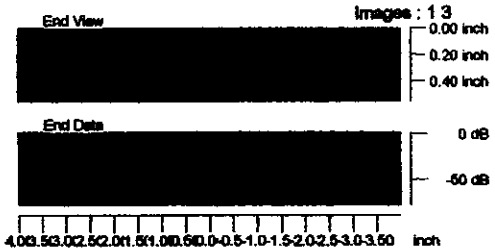
Images : 1 3

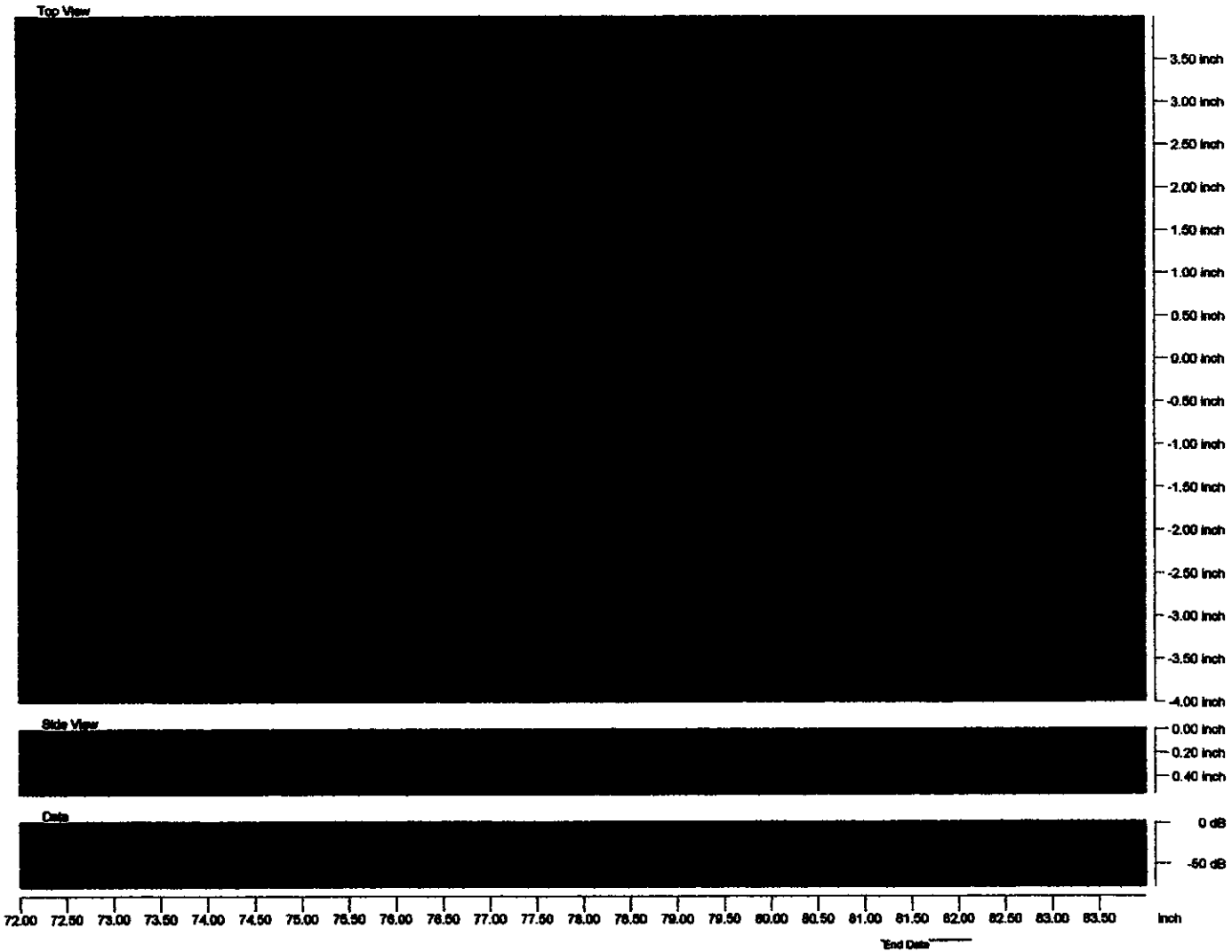


VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 10:31
2: P-scan, Images, p-scan data1, 6/20/00 10:31
3: T-scan, Images, p-scan data1, 6/20/00 10:31
4: T-scan, Images, p-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:17 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/2.

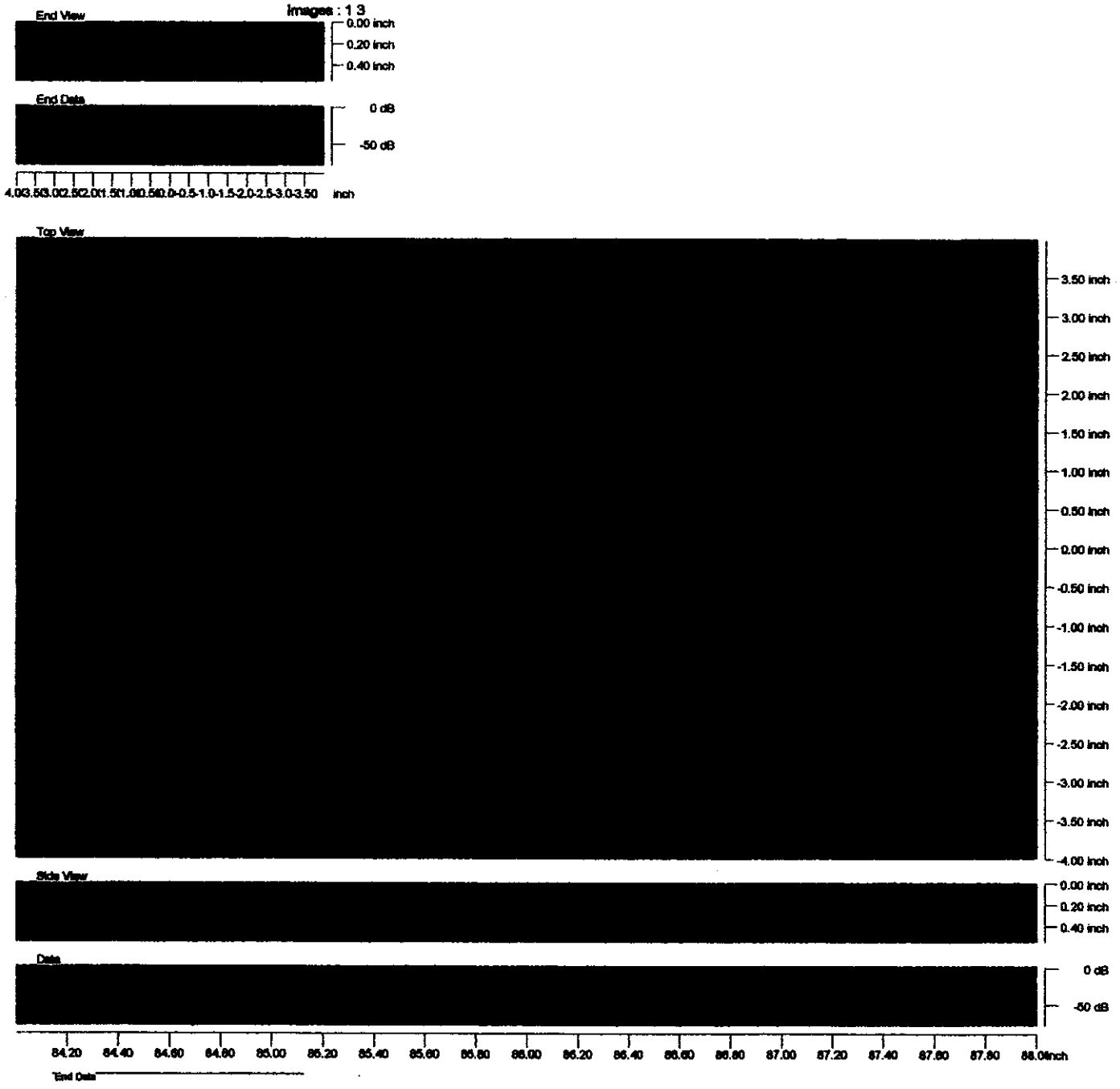


VERT.WELD/PLATE/2
JDE/WHN
AP-107

1: P-scan, images, p-scan data1, 6/20/00 10:31
2: P-scan, images, p-scan data1, 6/20/00 10:31
3: T-scan, images, p-scan data1, 6/20/00 10:31
4: T-scan, images, p-scan data1, 6/20/00 10:31

Printed on 2000-8-3 at 17:17 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/2.



Page 186 of 449

4/00

# ULTRASONIC P-SCAN DATA REPORT

15:44

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/22/00 9:40 | EXAM END: ~~18:47~~ | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION |
| CONFIGURATION: VERT. WELD PLATE TO PLATE (PLATE 2) | | CALIBRATED RANGE: 0" TO 1.414" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 90" | | REF. LEVEL CORRECTION (TRANS. CORR): [redacted] DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .500 NOM. THICKNESS | | |
| FILE NAME/ITEM#: VERT. /45/WELD/2 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" BELOW HORZ. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.375" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

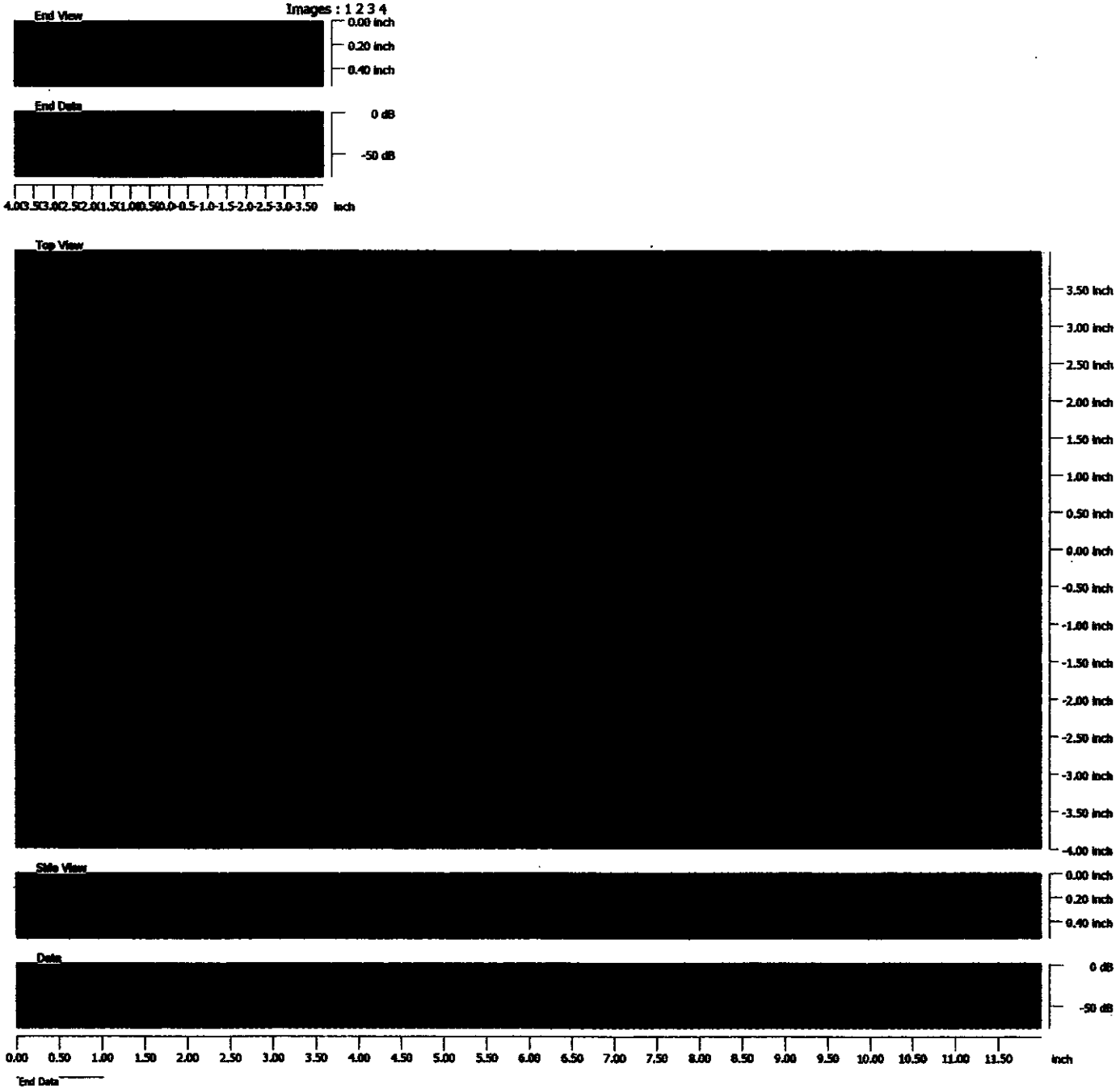
REMARKS
NO CRACK-LIKE INDICATIONS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley H Nelson | Wesley H Nelson | (NI) | |
| Level III Date 6/22/00 | Level III Date 8/1/00 | Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J. B. Elder

VERT/45/WELD/2 — 1: P-scan, Images, p-scan data1, 6/22/00 18:43
WHN — 2: P-scan, Images, p-scan data1, 6/22/00 18:43
AP-107 — 3: P-scan, Images, p-scan data1, 6/22/00 18:43
Plate — 4: P-scan, Images, p-scan data1, 6/22/00 18:43
Printed on 2000-8-7 at 9:43 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/2.

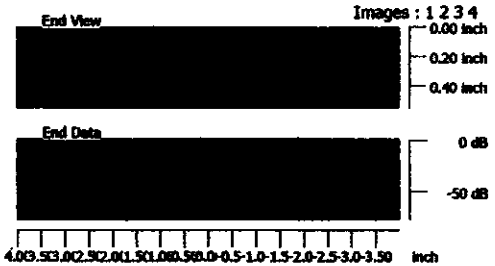
Images : 1 2 3 4

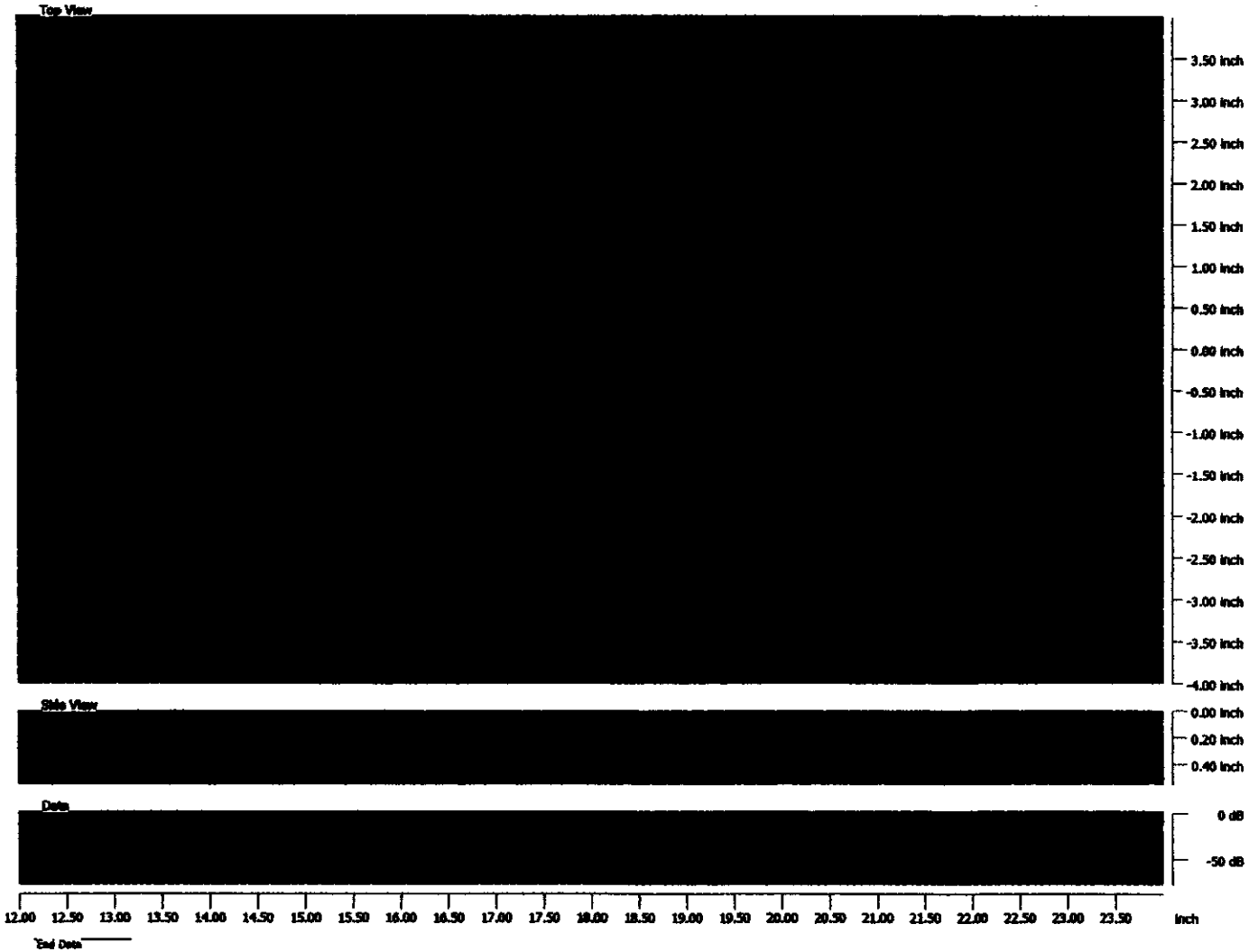


VERT/45/WELD/2
WHN
AP-107
Plate

1: P-scan, Images, p-scan data1, 6/22/00 18:43
2: P-scan, Images, p-scan data1, 6/22/00 18:43
3: P-scan, Images, p-scan data1, 6/22/00 18:43
4: P-scan, Images, p-scan data1, 6/22/00 18:43

Printed on 2000-8-7 at 9:43 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/2.

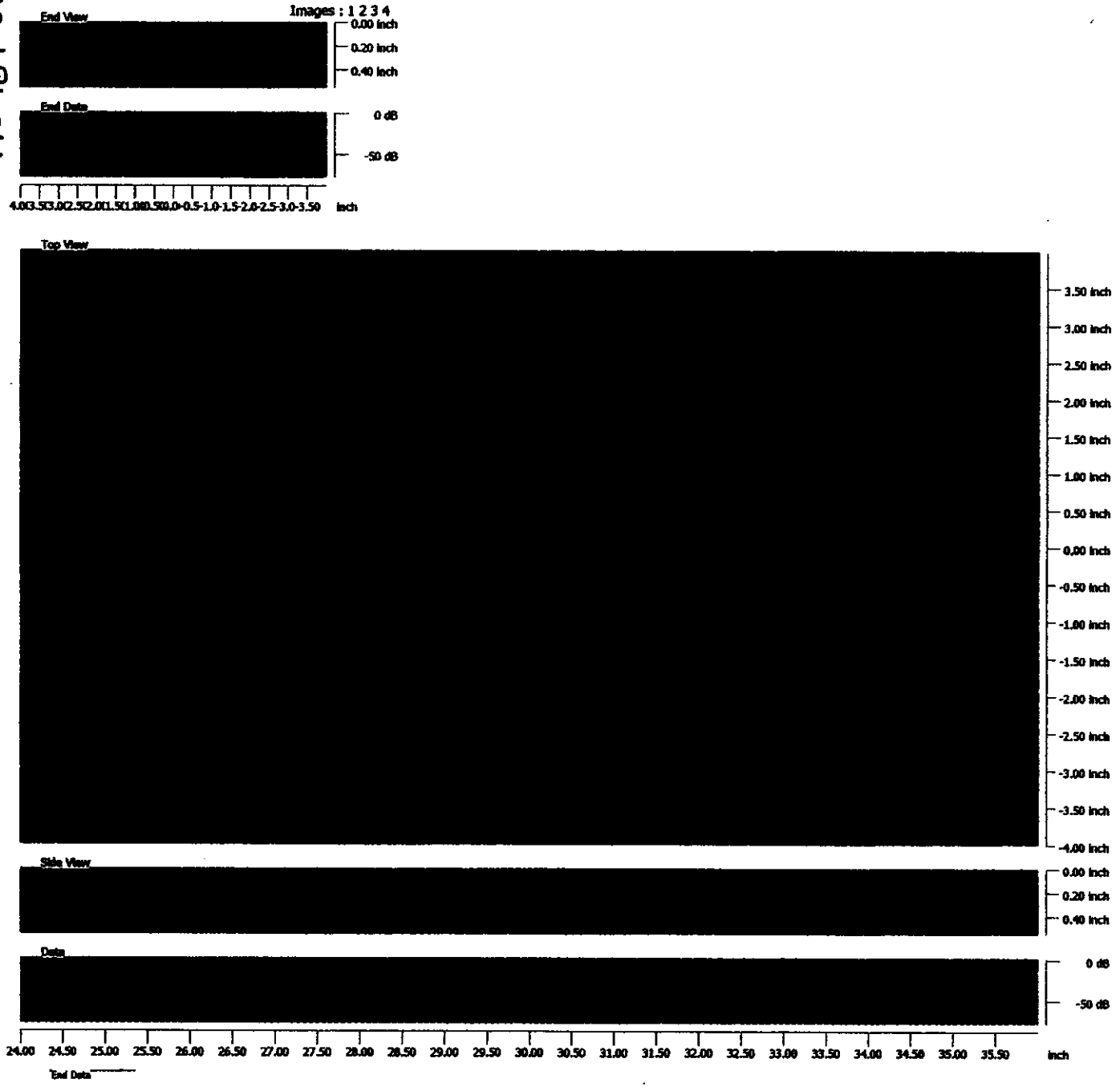


VERT/45/WELD/2
WHN
AP-107
Plate

1: P-scan, Images, p-scan data1, 6/22/00 18:43
2: P-scan, Images, p-scan data1, 6/22/00 18:43
3: P-scan, Images, p-scan data1, 6/22/00 18:43
4: P-scan, Images, p-scan data1, 6/22/00 18:43

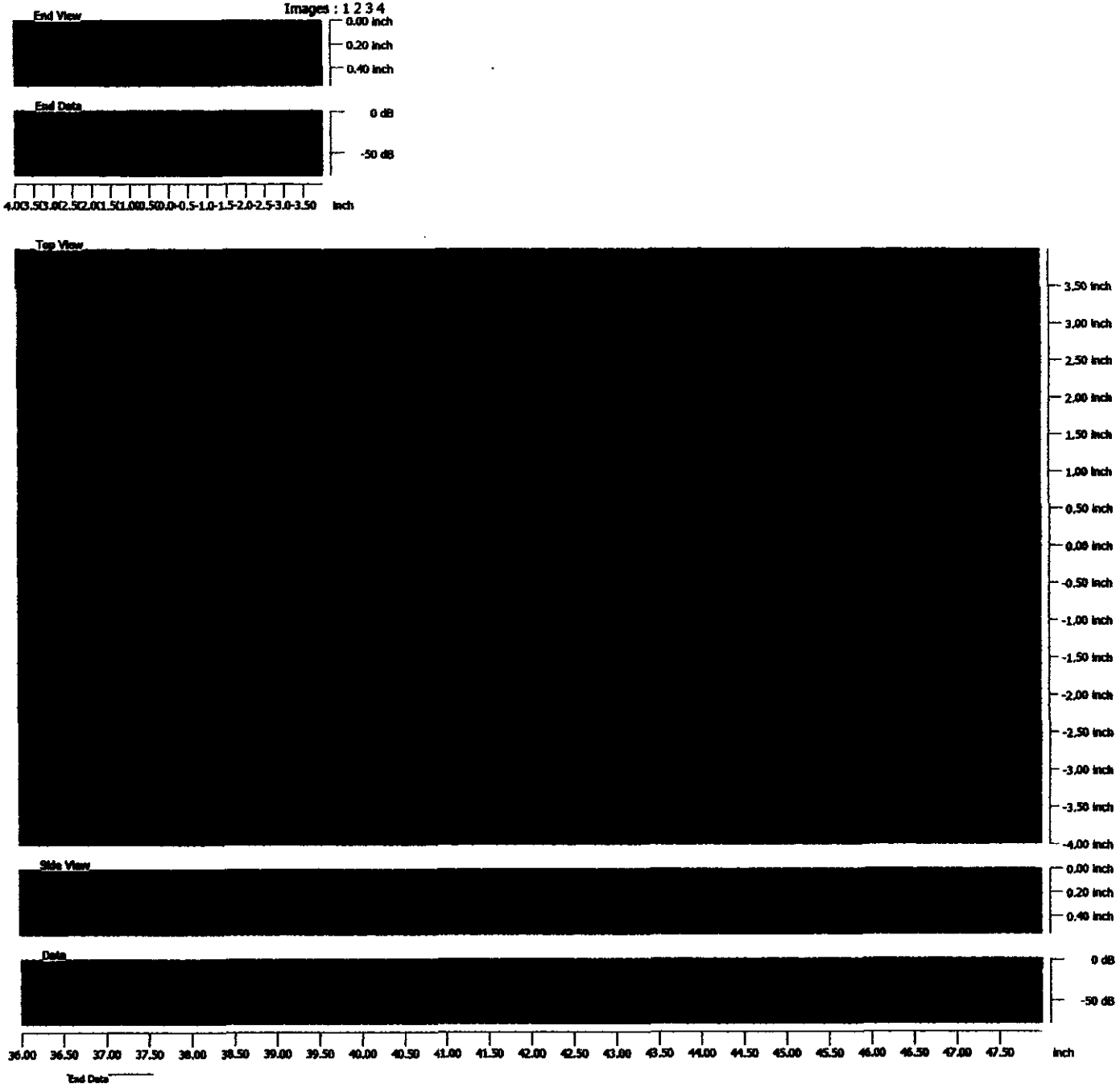
Printed on 2000-8-7 at 9:44 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/2.



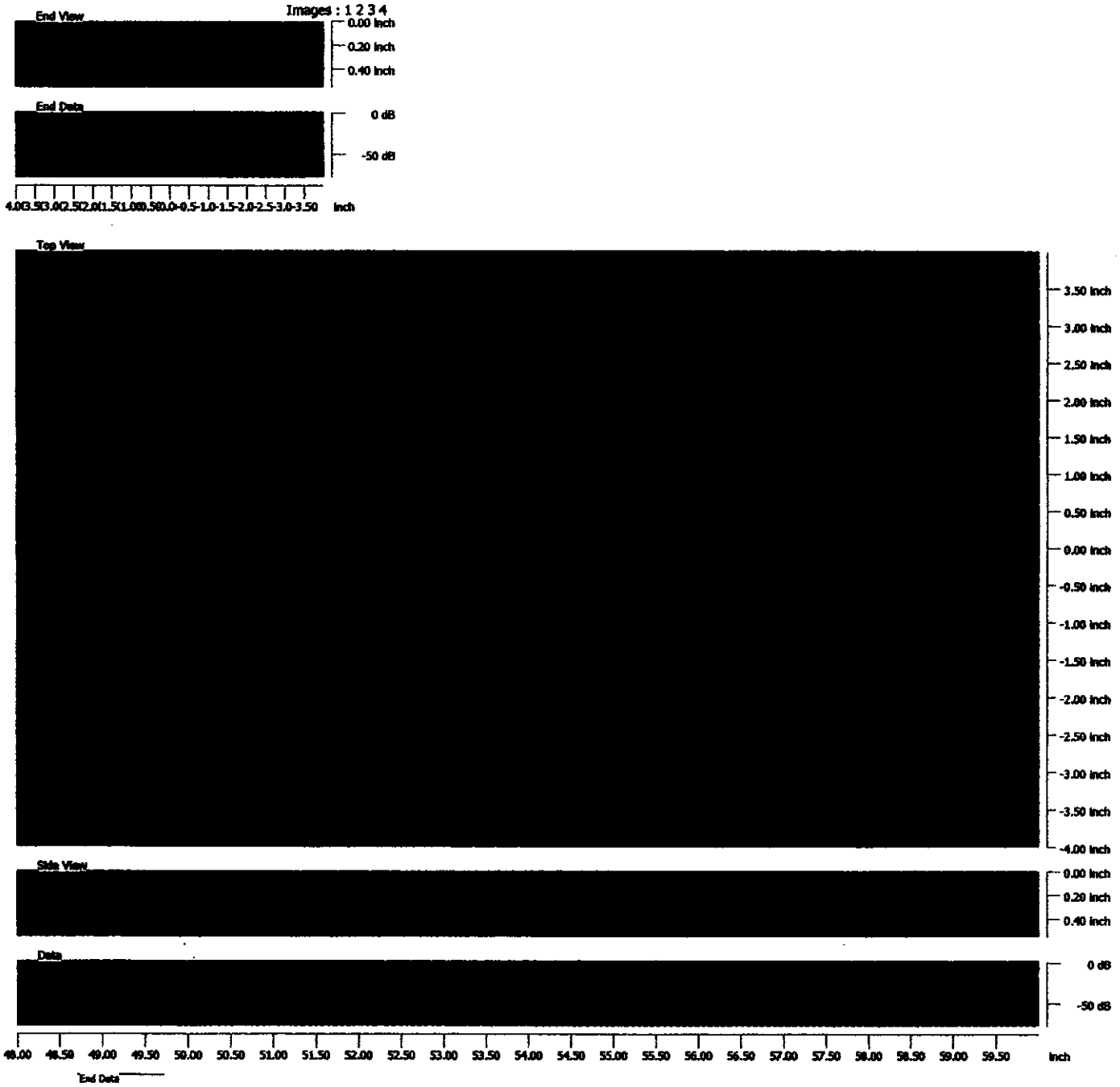
VERT/45/WELD/2 — 1: P-scan, Images, p-scan data1, 6/22/00 18:43
WHN — 2: P-scan, Images, p-scan data1, 6/22/00 18:43
AP-107 — 3: P-scan, Images, p-scan data1, 6/22/00 18:43
Plate — 4: P-scan, Images, p-scan data1, 6/22/00 18:43

Printed on 2000-8-7 at 9:44 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/2.

Images : 1 2 3 4



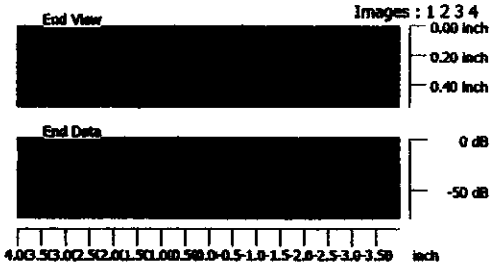
VERT/45/WELD/2 — 1: P-scan, Images, p-scan data1, 6/22/00 18:43
WHN — 2: P-scan, Images, p-scan data1, 6/22/00 18:43
AP-107 — 3: P-scan, Images, p-scan data1, 6/22/00 18:43
Plate — 4: P-scan, Images, p-scan data1, 6/22/00 18:43
Printed on 2000-8-7 at 9:44 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/2.

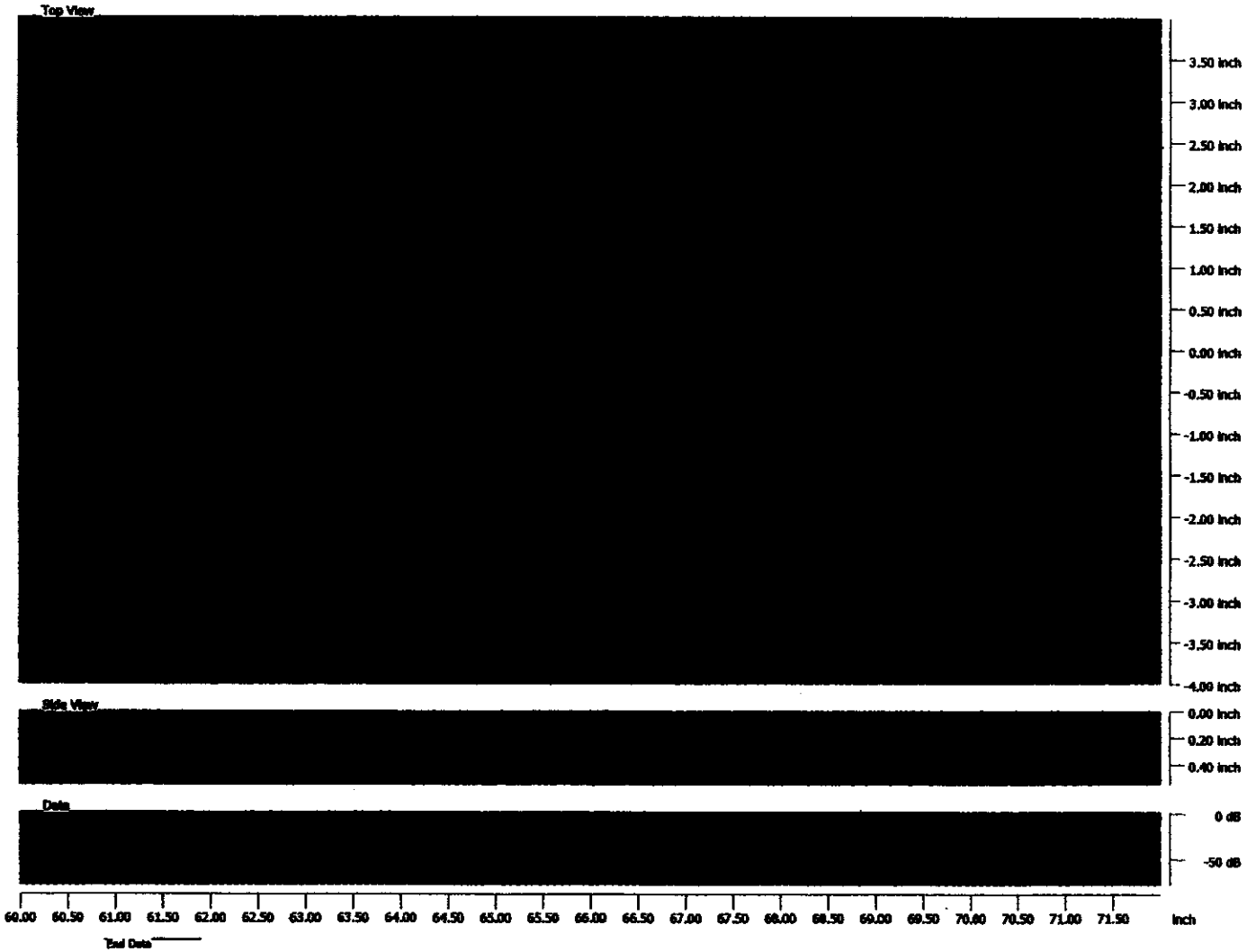


VERT/45/WELD/2
WHN
AP-107
Plate

1: P-scan, Images, p-scan data1, 6/22/00 18:43
2: P-scan, Images, p-scan data1, 6/22/00 18:43
3: P-scan, Images, p-scan data1, 6/22/00 18:43
4: P-scan, Images, p-scan data1, 6/22/00 18:43

Printed on 2000-8-7 at 9:45 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/2.



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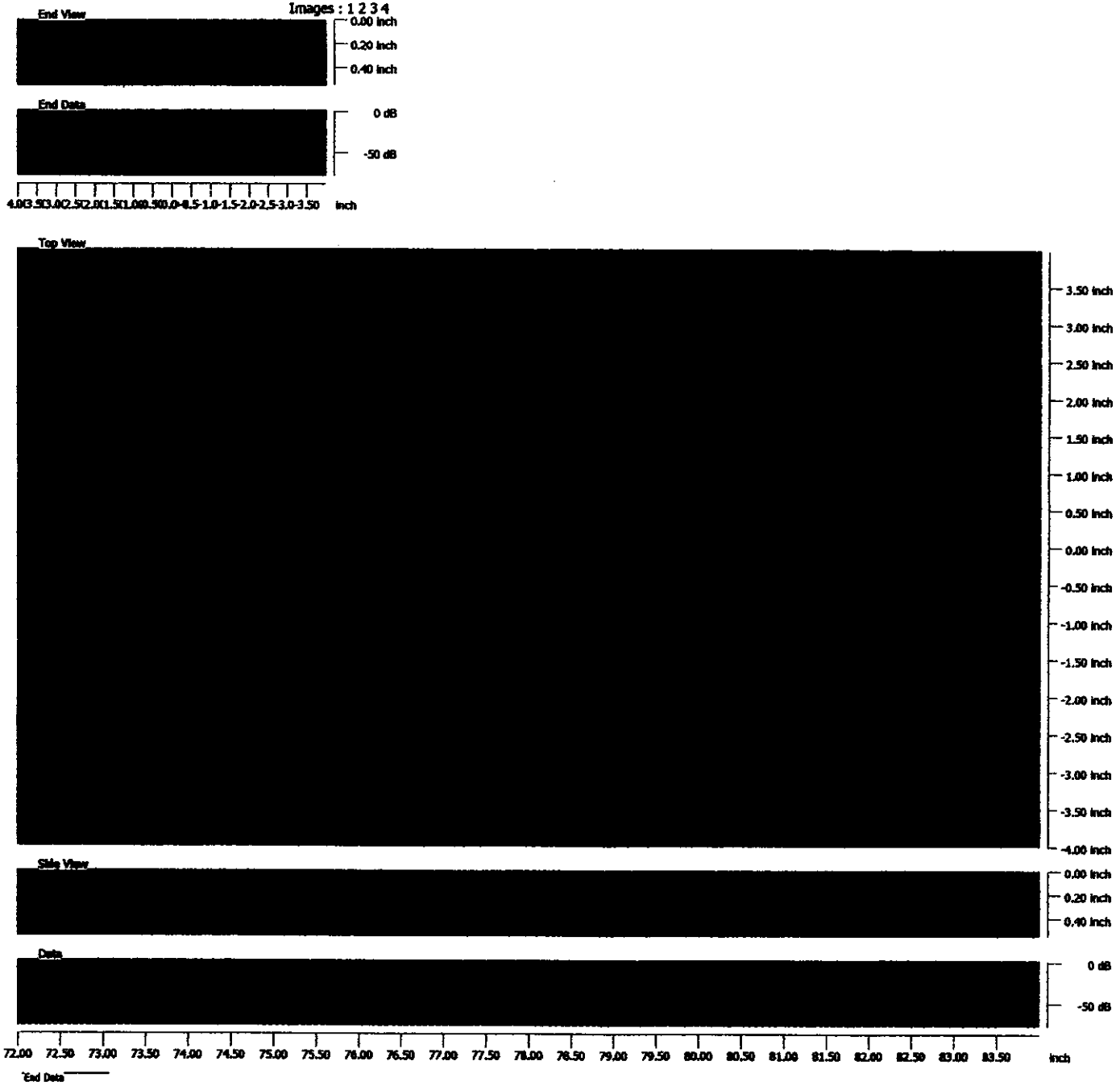
VERT/45/WELD/2
WHN
AP-107
Plate

1: P-scan, Images, p-scan data1, 6/22/00 18:43
2: P-scan, Images, p-scan data1, 6/22/00 18:43
3: P-scan, Images, p-scan data1, 6/22/00 18:43
4: P-scan, Images, p-scan data1, 6/22/00 18:43

Printed on 2000-8-7 at 9:45 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/2.

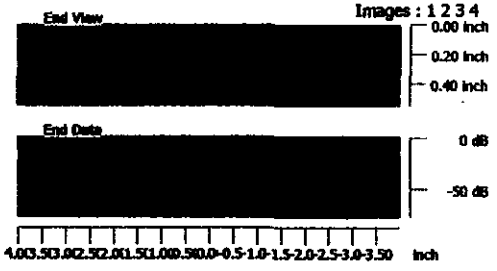
Images : 1 2 3 4

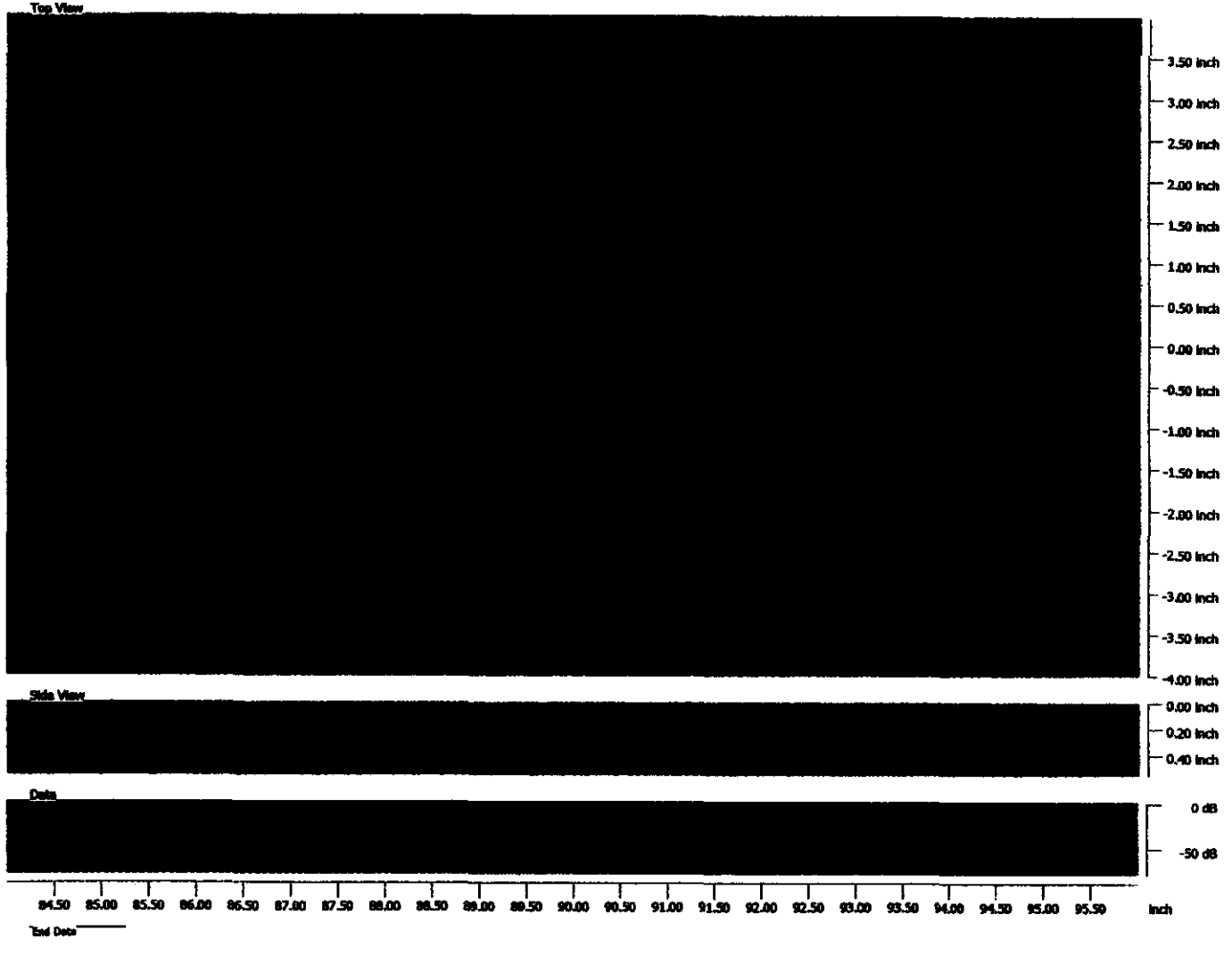


VERT/45/WELD/2
WHN
AP-107
Plate

1: P-scan, Images, p-scan data1, 6/22/00 18:43
2: P-scan, Images, p-scan data1, 6/22/00 18:43
3: P-scan, Images, p-scan data1, 6/22/00 18:43
4: P-scan, Images, p-scan data1, 6/22/00 18:43

Printed on 2000-8-7 at 9:45 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/2.



Page 195 of 449

4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK Farm | SYSTEM: PSP-4 | EXAM START: 6/19/00 12:15 | EXAM END: 22:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .562" |
| CONFIGURATION: Vert. Weld Plate TO Plate (Plate 3) | | CALIBRATED RANGE: .3" To 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 88" | | REF. LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION: |
| FILE NAME/ITEM#: Vert. Weld/Plate 3 & Vert. Weld/Plate 3A | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz. weld | $Y_0$ REF. POINT ($W_0$): C/L weld | SCAN WIDTH: 8" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE. THK. | MIN. THK, R. LIG. | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0" | 12" | | | .570" | .554" | | |
| | 12" | 24" | | | .570" | .558" | | |
| | 0" | 12" | | | .570" | .556" | | |
| | 12" | 24" | | | .575" | .560" | | |
| | 24" | 36" | | | .575" | .558" | | |
| | 36" | 48" | | | .575" | .559" | | |
| | 48" | 60" | | | .575" | .588" | | |
| | 60" | 70.5" | | | .570" | .553" | | |
| SUMMARY | | | | | | | | |

REMARKS

Over Lap Scan 3 @ Approx. 16"

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Nelson Level III Date 6/19/00 | Wesley D Nelson Level III Date 8/3/00 | (NI) Level ___ Date ___ | ___ of ___ |

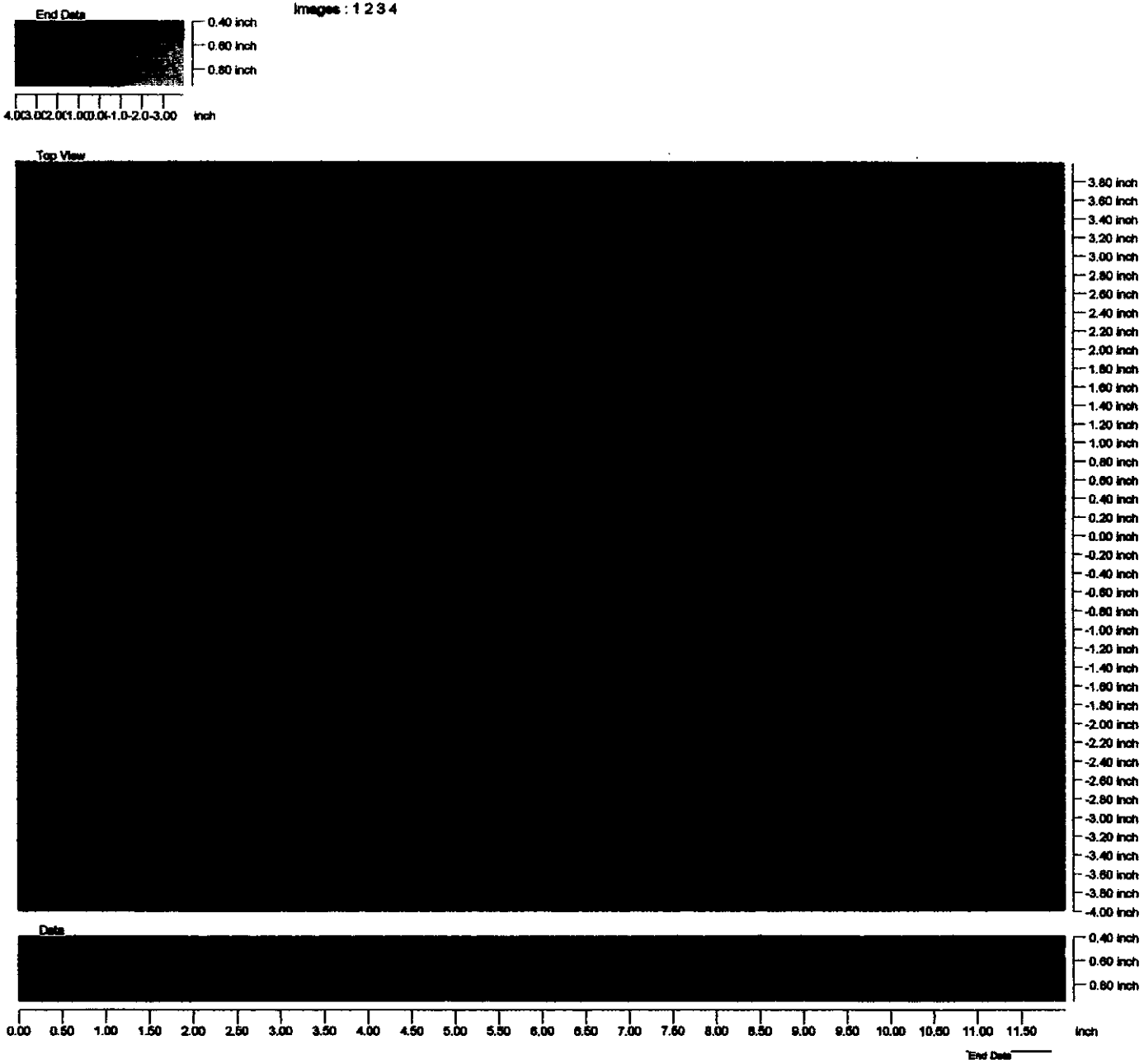
(NI) See Attached Letter From J. B. Elder

VERT.WELD/PLATE3
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 13:36
2: P-scan, Images, t-scan data1, 6/19/00 13:36
3: T-scan, Images, t-scan data1, 6/19/00 13:36
4: T-scan, Images, t-scan data1, 6/19/00 13:36

Printed on 2000-8-3 at 16:18 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE3.

Images : 1 2 3 4

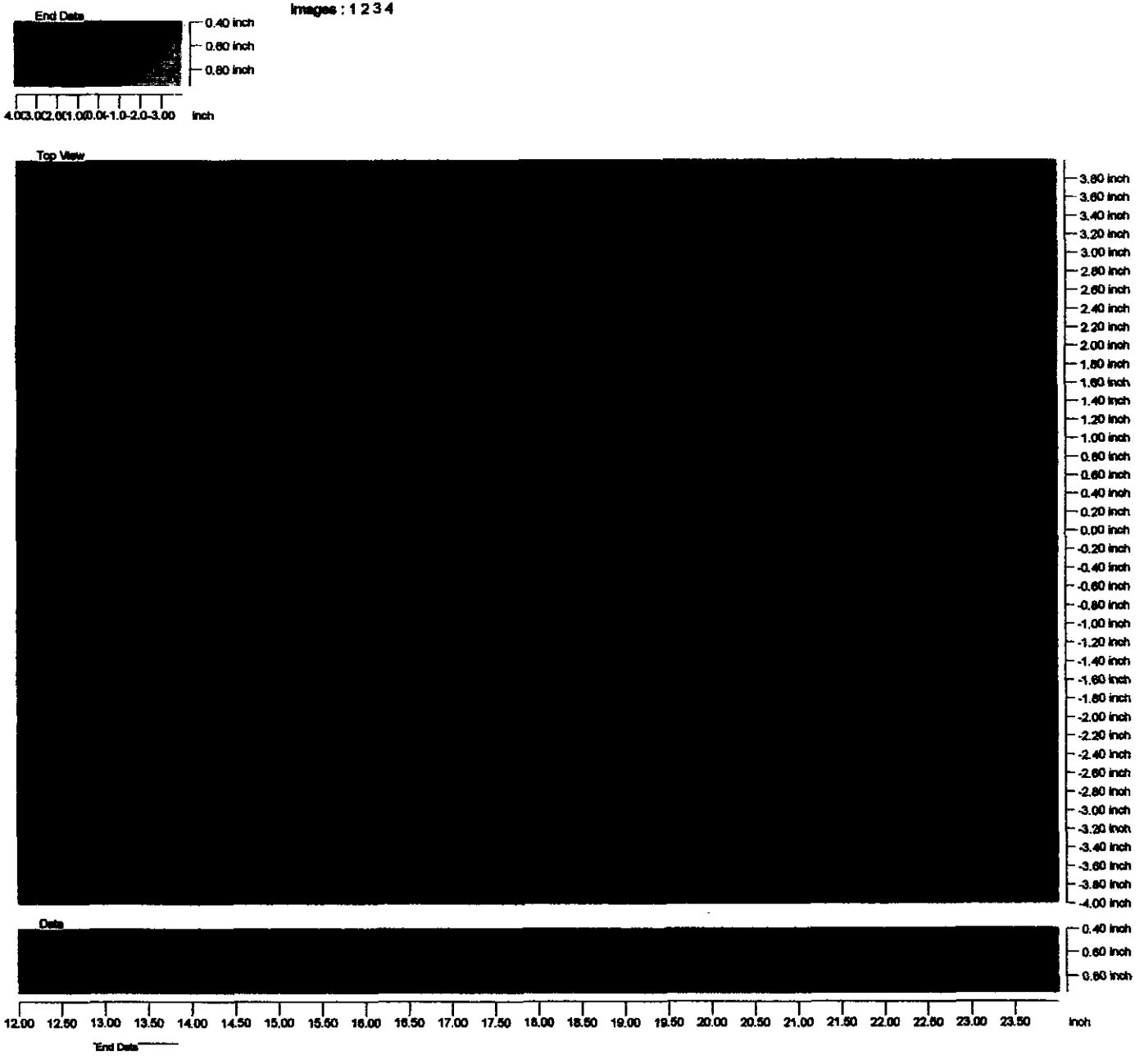


VERT.WELD/PLATE3
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 13:36
2: P-scan, Images, t-scan data1, 6/19/00 13:36
3: T-scan, Images, t-scan data1, 6/19/00 13:36
4: T-scan, Images, t-scan data1, 6/19/00 13:36

Printed on 2000-8-3 at 16:19 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE3.

Images : 1 2 3 4

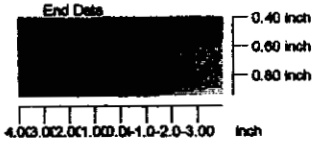


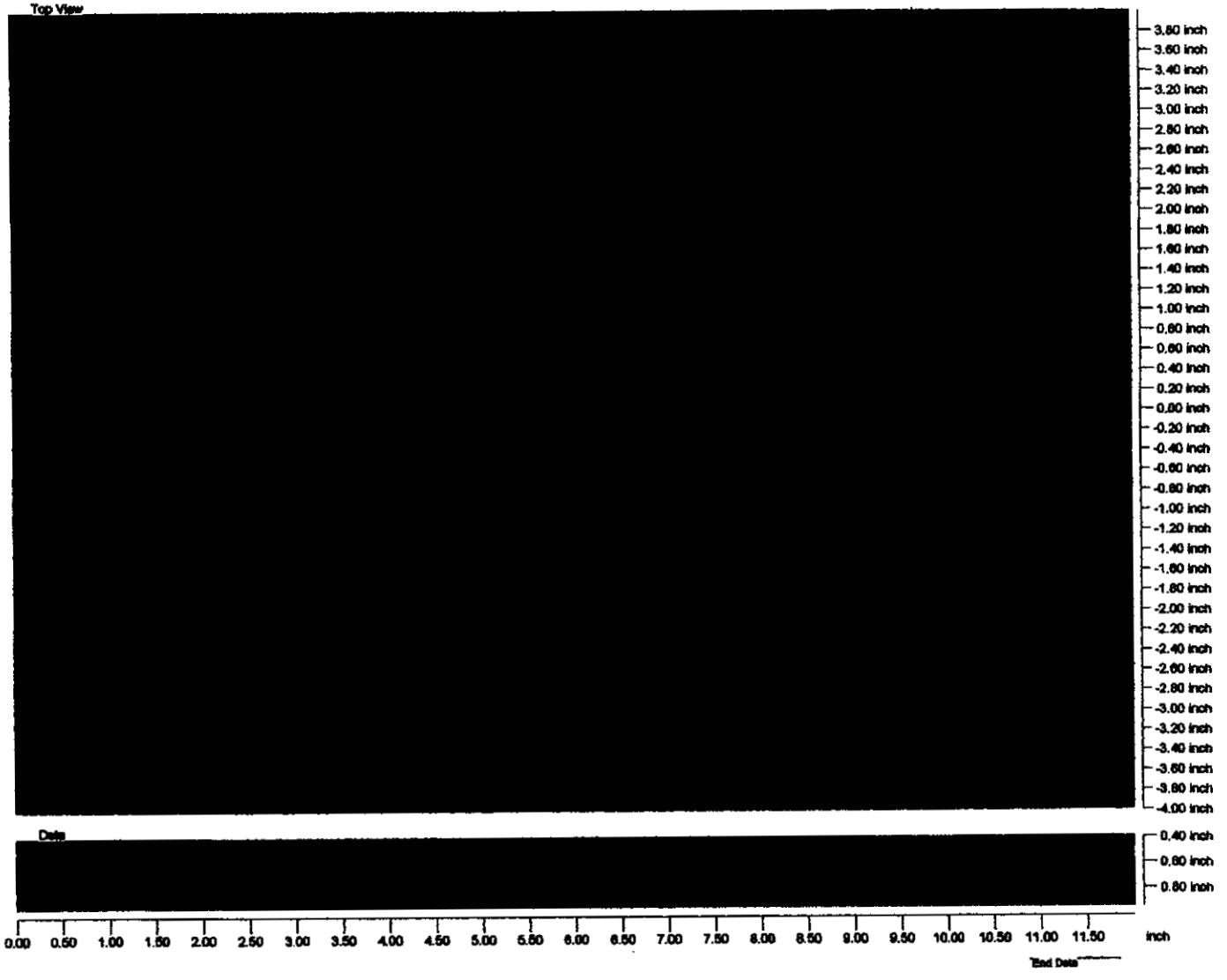
VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 14:26
2: P-scan, Images, t-scan data1, 6/19/00 14:26
3: T-scan, Images, t-scan data1, 6/19/00 14:26
4: T-scan, Images, t-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 16:45 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE3A.

Images : 1 2 3 4



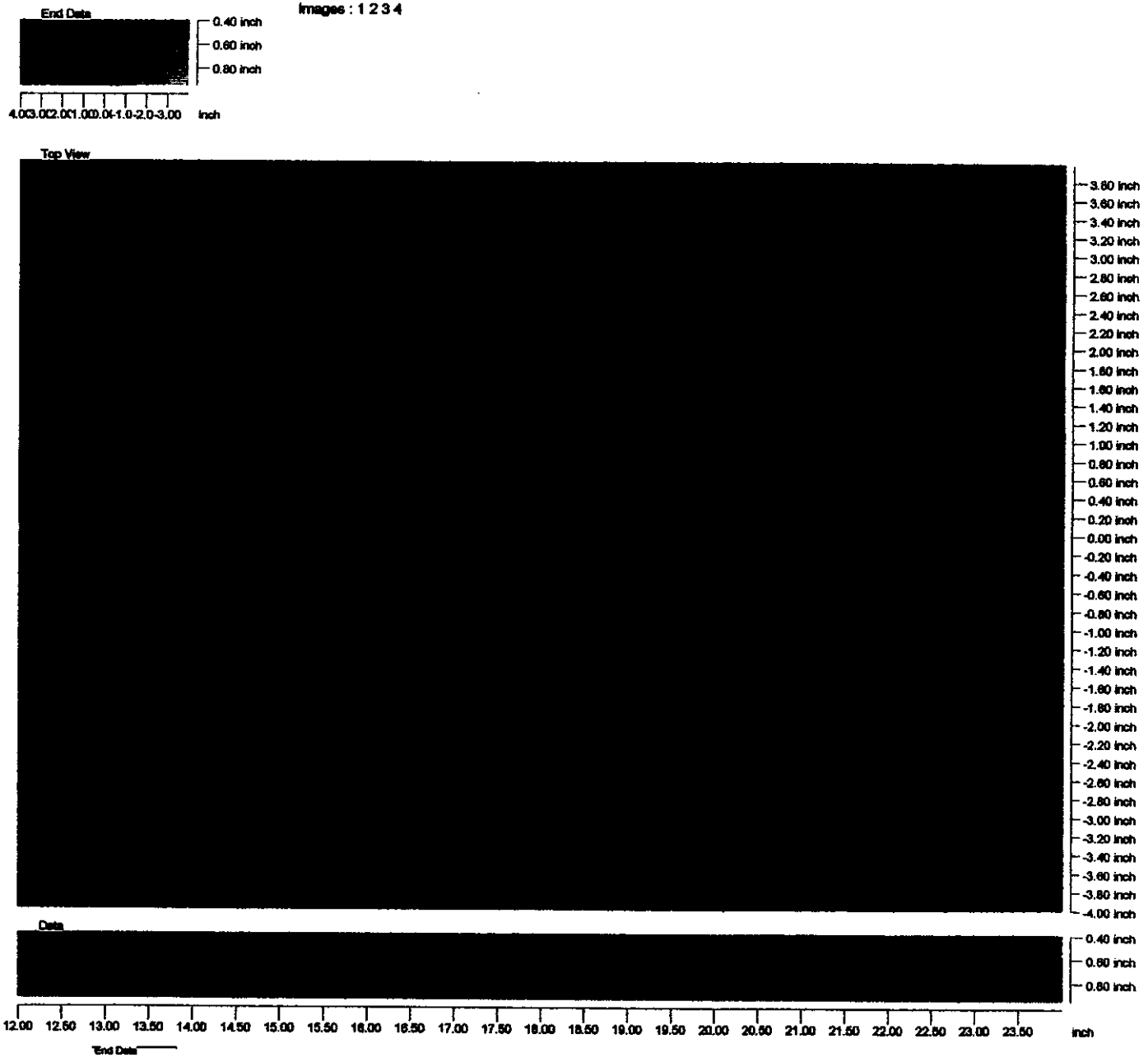



VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 14:26
2: P-scan, Images, t-scan data1, 6/19/00 14:26
3: T-scan, Images, t-scan data1, 6/19/00 14:26
4: T-scan, Images, t-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 16:46 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE3A.

Images : 1 2 3 4

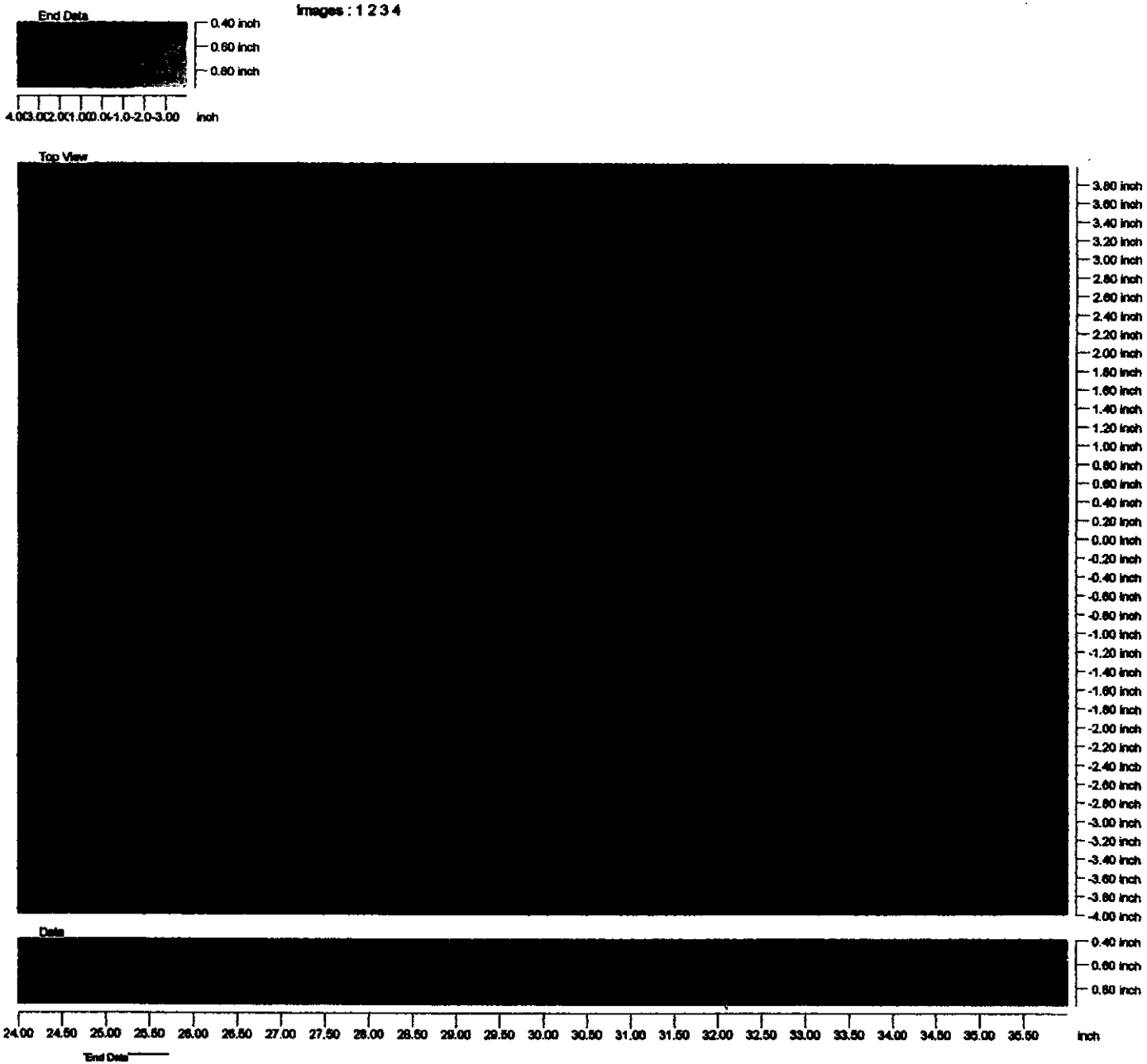


VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 14:26
2: P-scan, Images, t-scan data1, 6/19/00 14:26
3: T-scan, Images, t-scan data1, 6/19/00 14:26
4: T-scan, Images, t-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 16:46 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE3A.

Images : 1 2 3 4

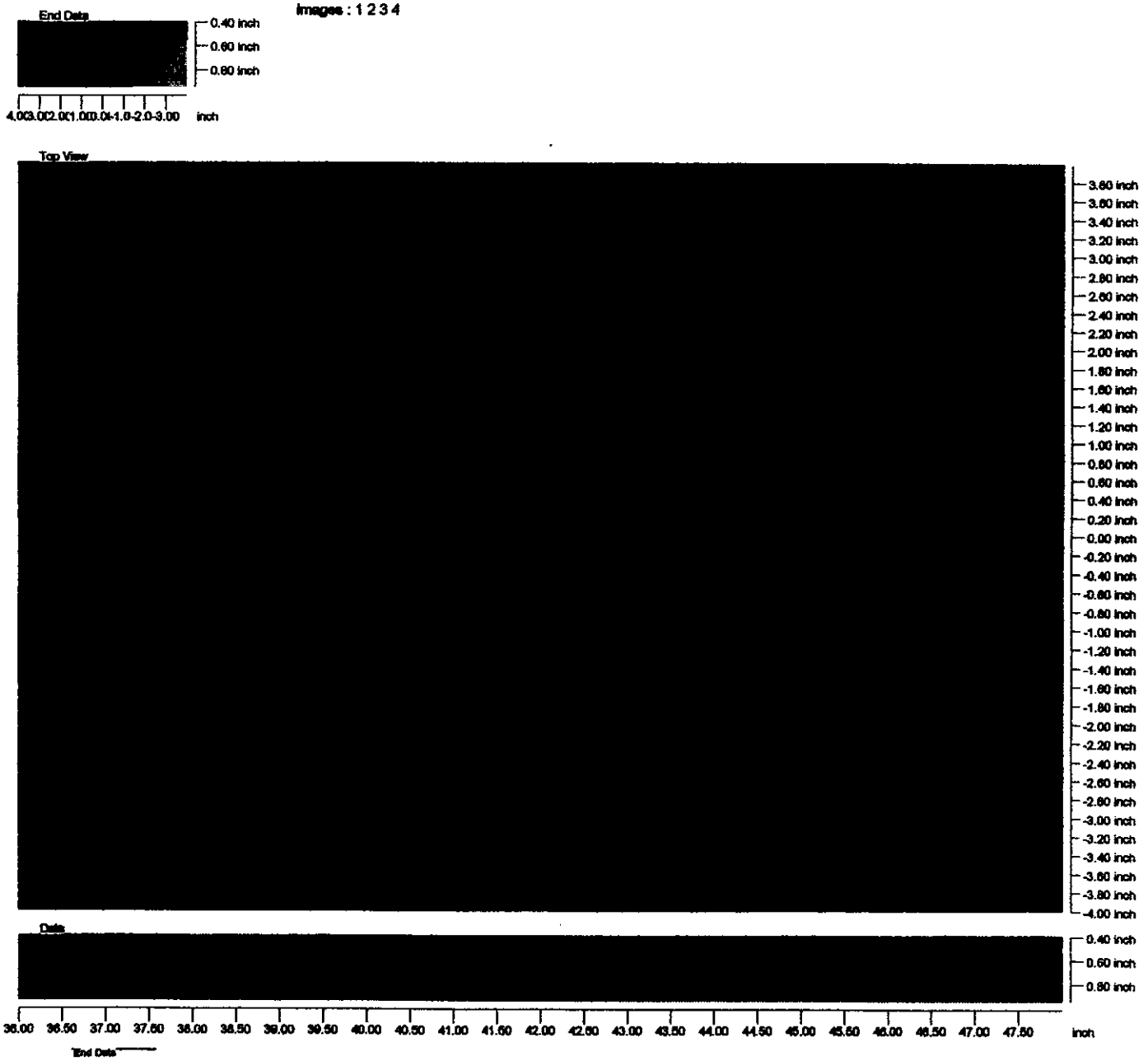


VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 14:26
2: P-scan, Images, t-scan data1, 6/19/00 14:26
3: T-scan, Images, t-scan data1, 6/19/00 14:26
4: T-scan, Images, t-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 16:46 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE3A.

Images : 1 2 3 4

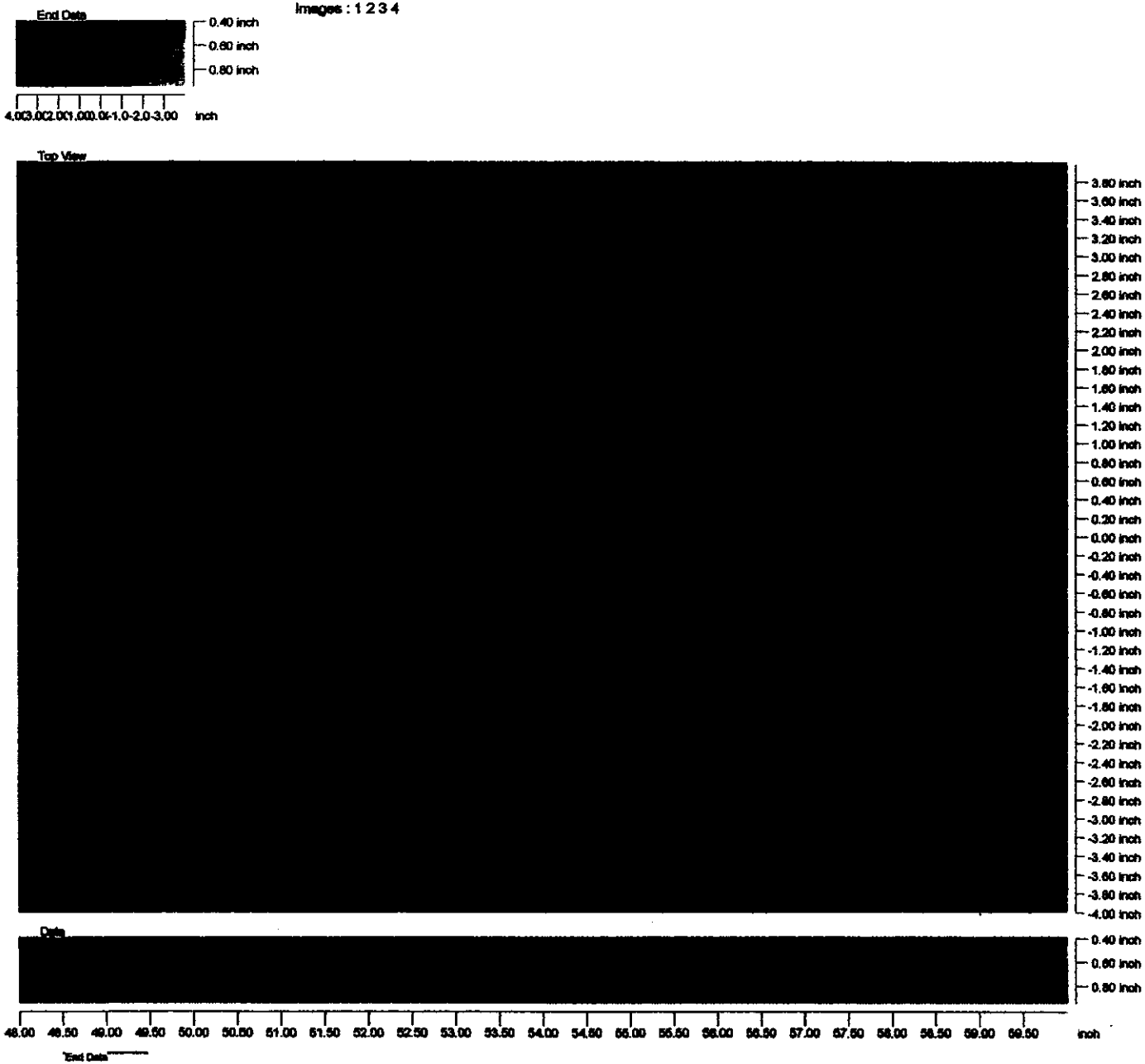


VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 14:26
2: P-scan, Images, t-scan data1, 6/19/00 14:26
3: T-scan, Images, t-scan data1, 6/19/00 14:26
4: T-scan, Images, t-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 16:46 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE3A.

Images : 1 2 3 4

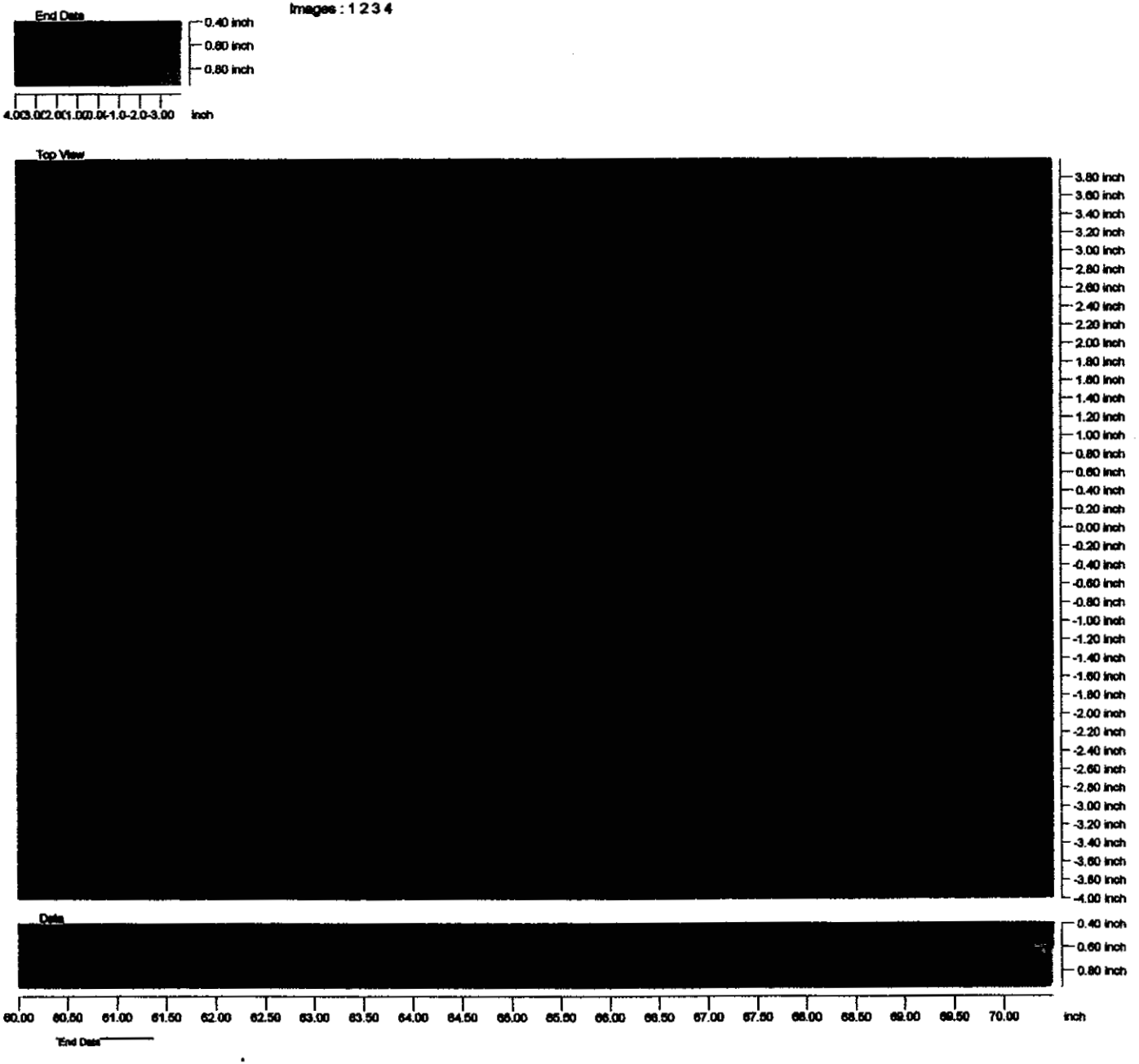


VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 14:26
2: P-scan, Images, t-scan data1, 6/19/00 14:26
3: T-scan, Images, t-scan data1, 6/19/00 14:26
4: T-scan, Images, t-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 16:47 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE3A.

Images : 1 2 3 4



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/19/00 12:15 | EXAM END: 22:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: VERT. WELD | TO: PLATE PLATE (PLATE 3) | CALIBRATED RANGE: 0" - 2.25" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 88" | | REF. LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .562 NOM. THICKNESS | | |
| FILE NAME/ITEM#: VERT. WELD/PLATE 3 & VERT. WELD/PLATE 3A | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 60° | | |
| $X_0$ REF. POINT ($L_0$): 1" BELOW HORZ. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 8" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO CRACK-LIKE INDICATION

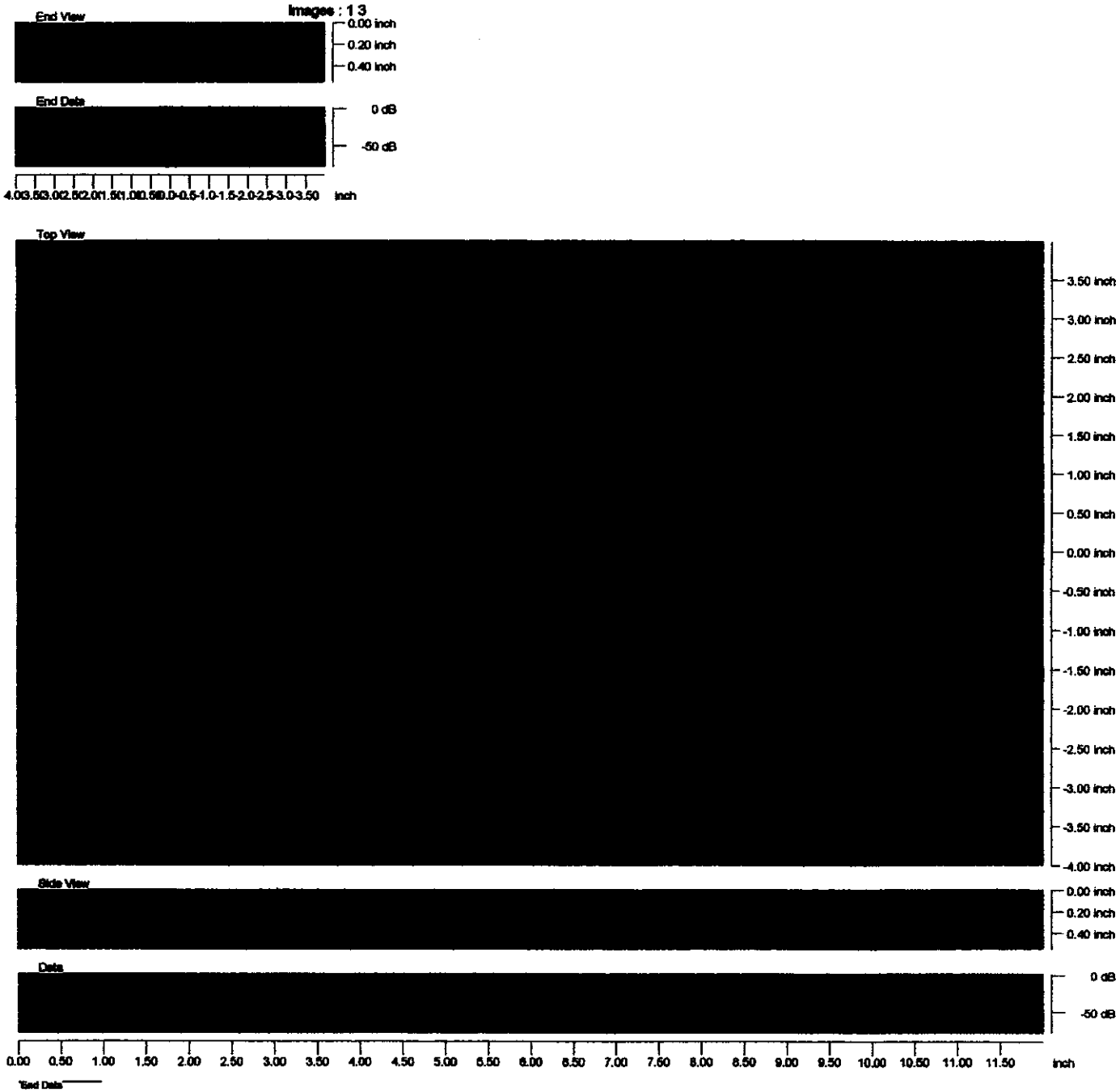
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley H Nelson | Wesley H Nelson | (NI) | |
| Level III Date 6/19/00 | Level III Date 8/3/00 | Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J.B. Elder

VERT.WELD/PLATE3
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 13:36
2: P-scan, Images, p-scan data1, 6/19/00 13:36
3: T-scan, Images, p-scan data1, 6/19/00 13:36
4: T-scan, Images, p-scan data1, 6/19/00 13:36

Printed on 2000-8-3 at 13:07 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE3.

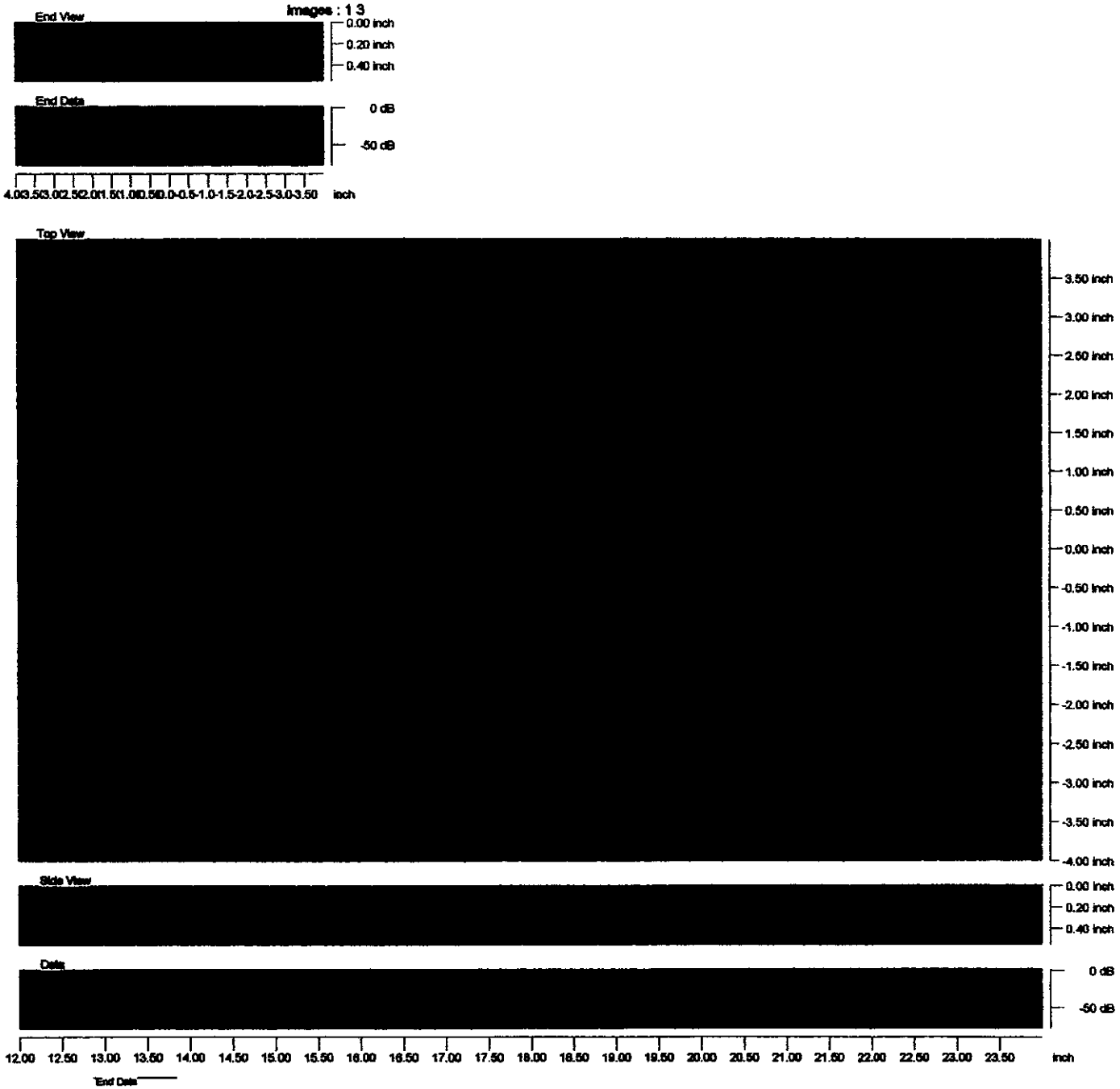


VERT.WELD/PLATE3
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 13:36
2: P-scan, Images, p-scan data1, 6/19/00 13:36
3: T-scan, Images, p-scan data1, 6/19/00 13:36
4: T-scan, Images, p-scan data1, 6/19/00 13:36

Printed on 2000-8-3 at 13:05 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE3.

Images : 1 3

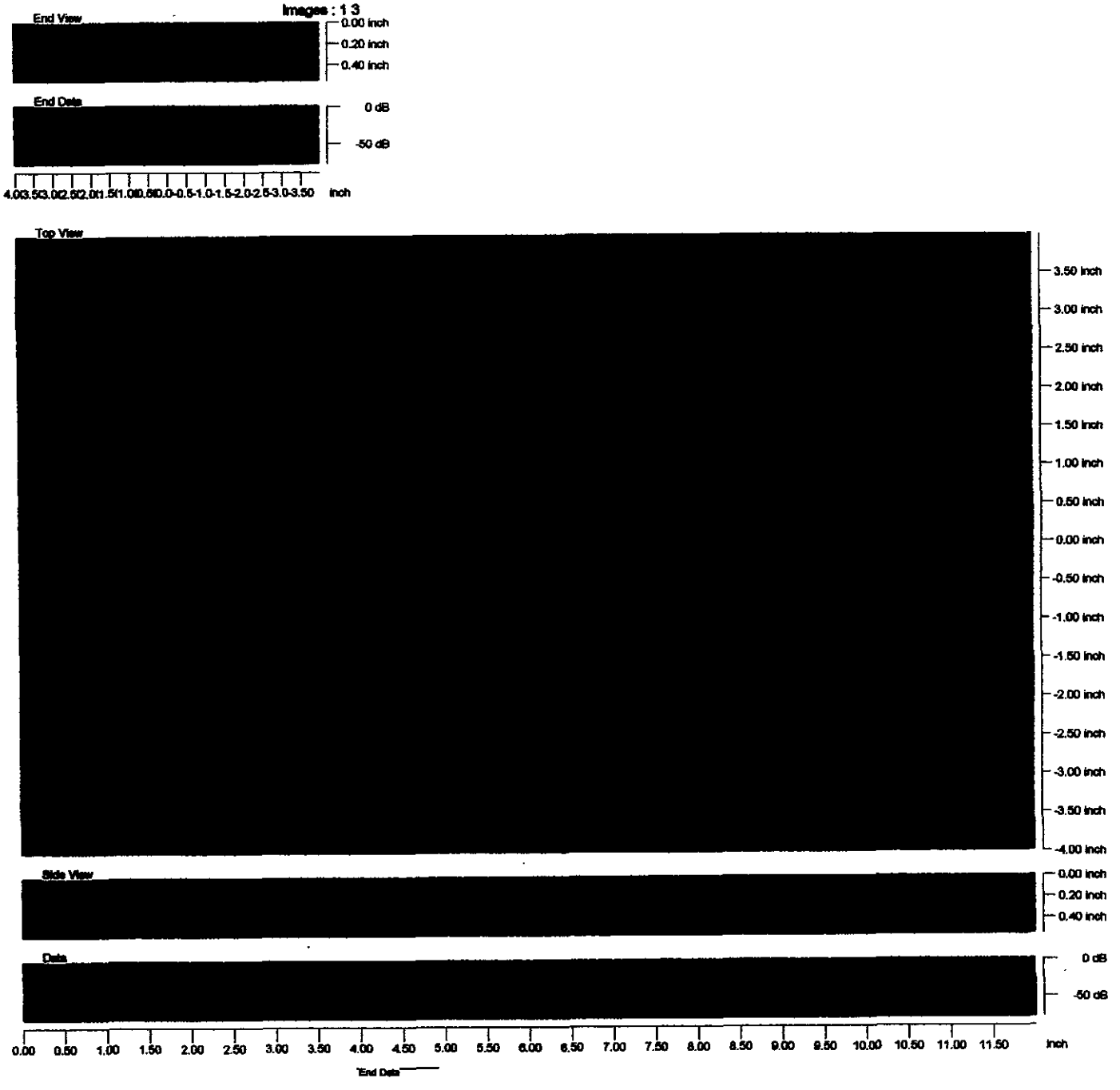


VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 14:26
2: P-scan, Images, p-scan data1, 6/19/00 14:26
3: T-scan, Images, p-scan data1, 6/19/00 14:26
4: T-scan, Images, p-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 14:56 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE3A.

Images : 1 3

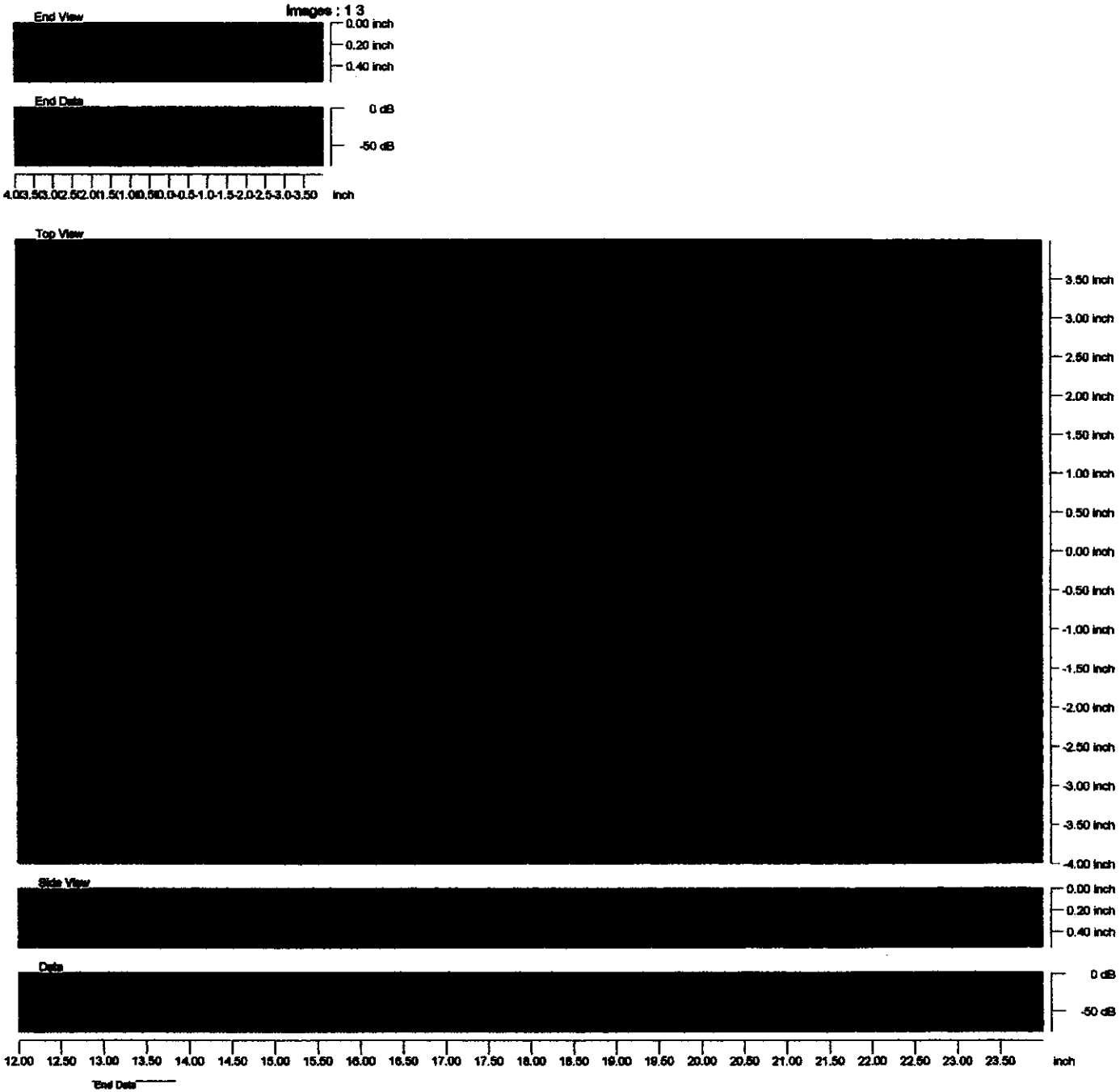


VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 14:26
2: P-scan, Images, p-scan data1, 6/19/00 14:26
3: T-scan, Images, p-scan data1, 6/19/00 14:26
4: T-scan, Images, p-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 14:57 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE3A

Images : 1 3



VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 14:26
2: P-scan, Images, p-scan data1, 6/19/00 14:26
3: T-scan, Images, p-scan data1, 6/19/00 14:26
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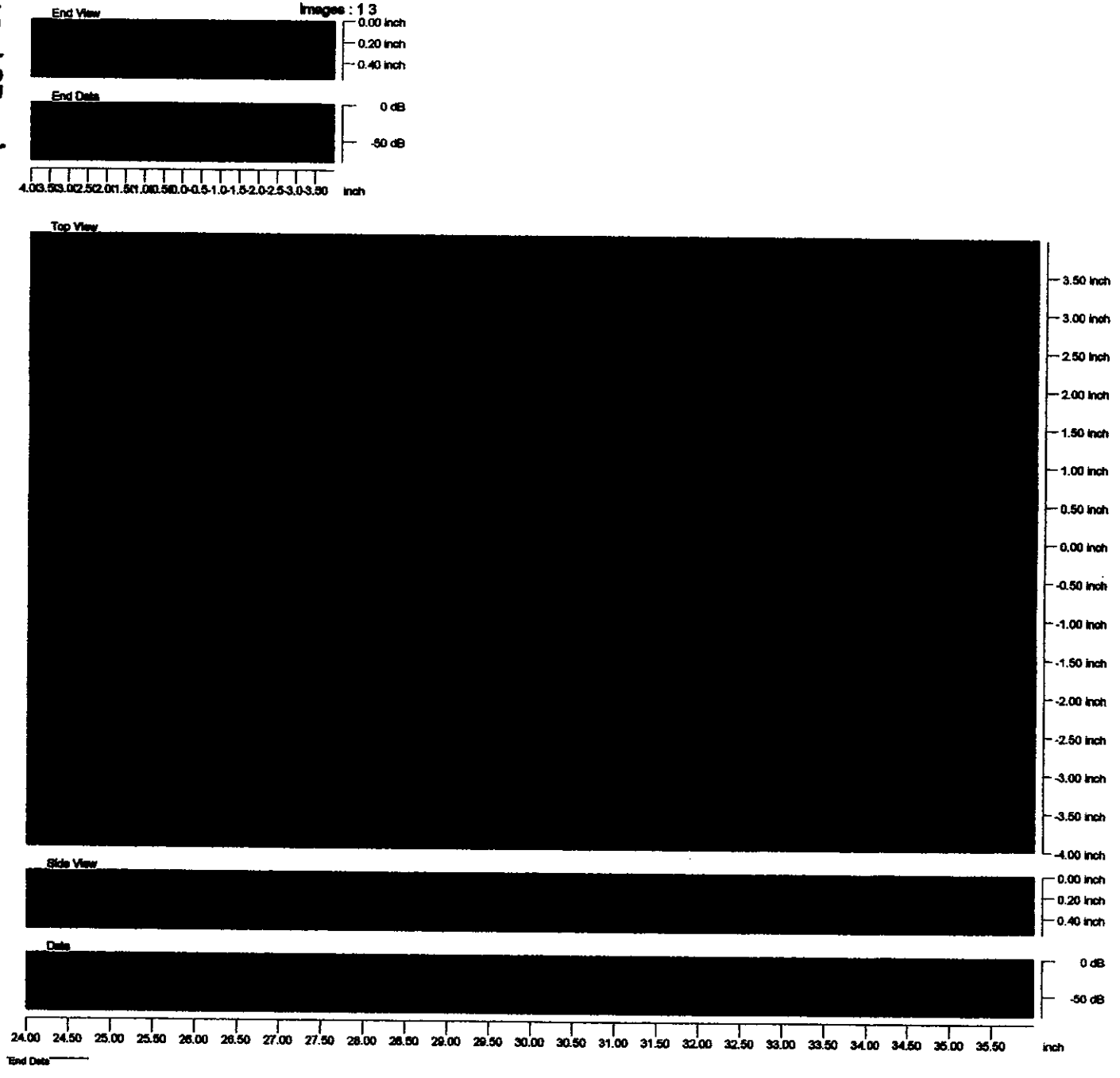
Printed on 2000-8-3 at 14:58 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE3A.

Images : 1 3



VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 14:26
2: P-scan, Images, p-scan data1, 6/19/00 14:26
3: T-scan, Images, p-scan data1, 6/19/00 14:26
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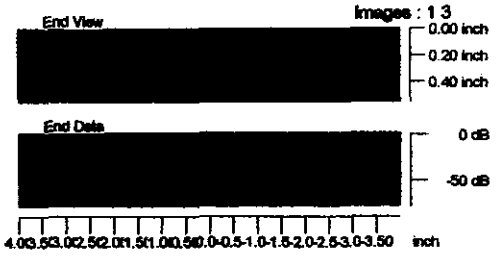
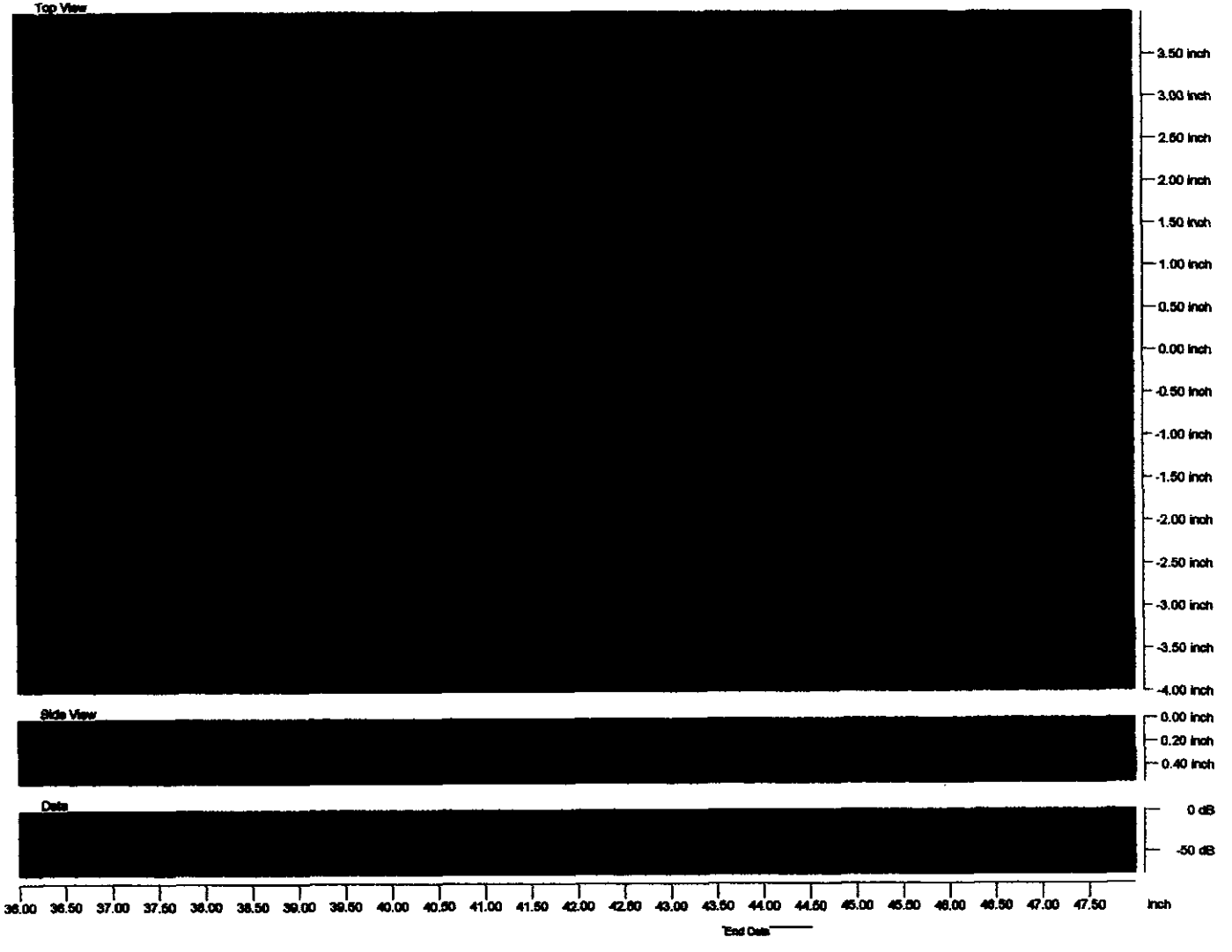
Images : 1 3

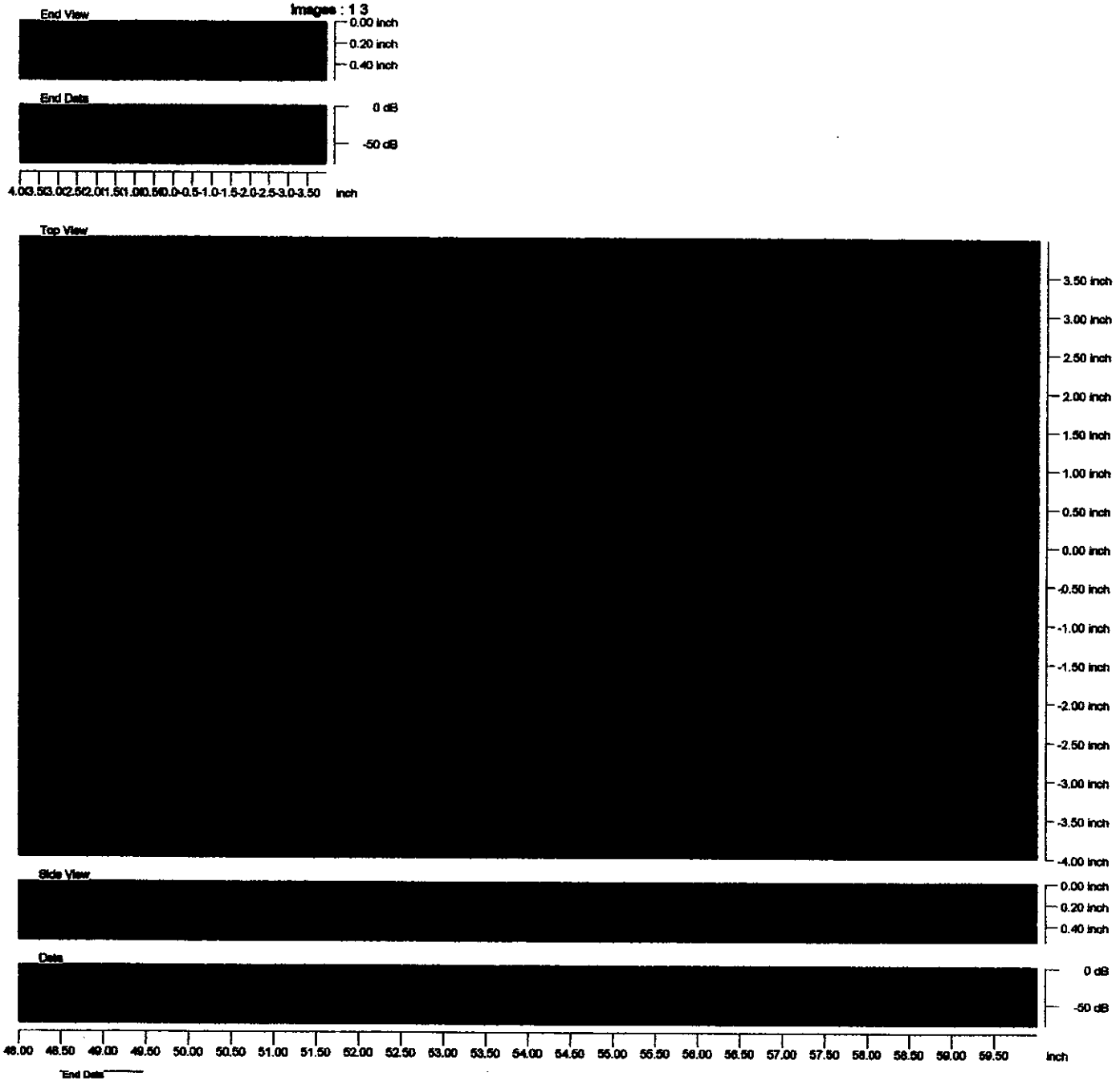


VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 14:26
2: P-scan, Images, p-scan data1, 6/19/00 14:26
3: T-scan, Images, p-scan data1, 6/19/00 14:26
4: T-scan, Images, p-scan data1, 6/19/00 14:26

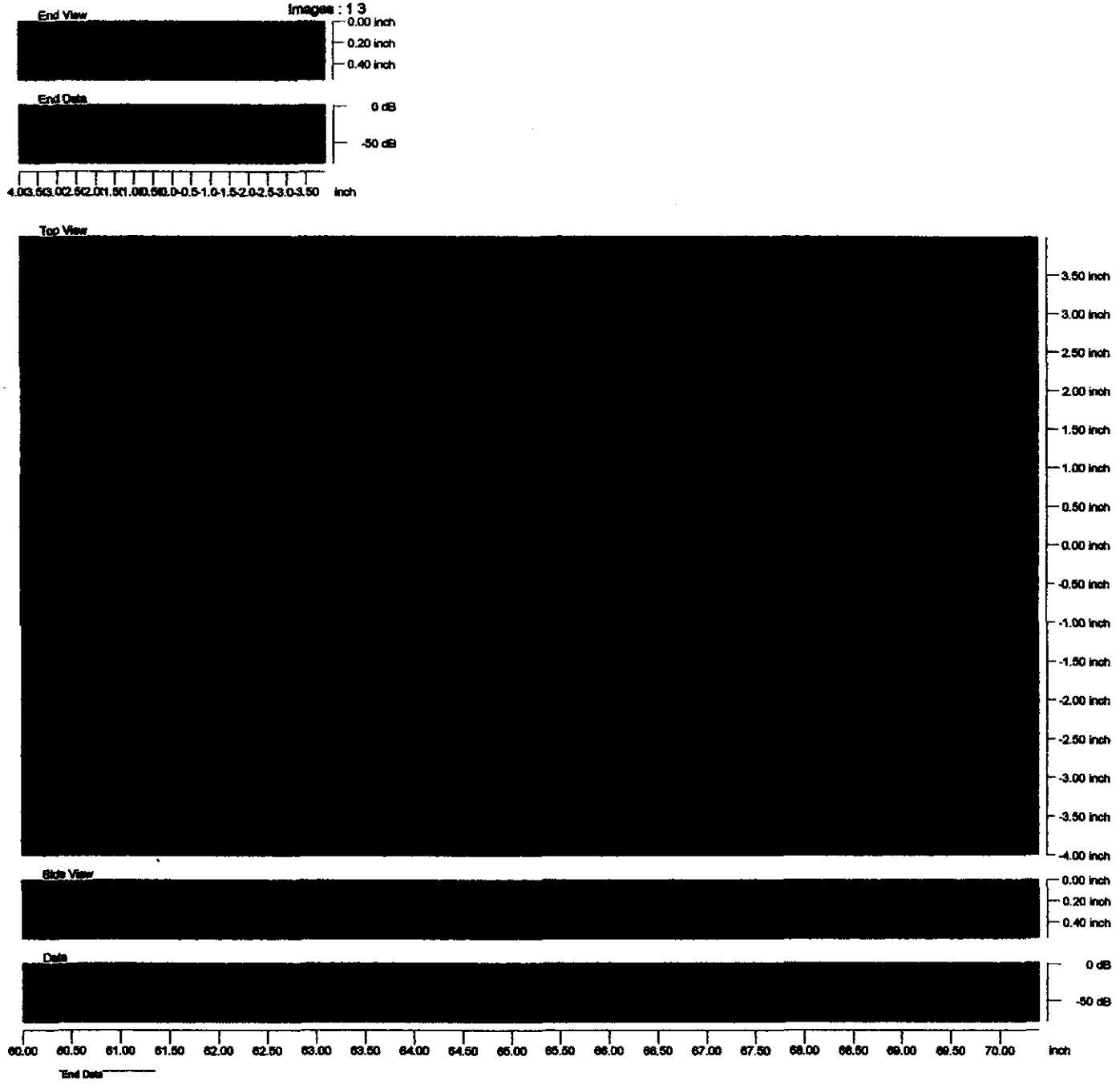
Printed on 2000-8-3 at 14:59 : P-scan prse.1 <1, 2> of Job : VERT.WELD/PLATE3A.



VERT.WELD/PLATE3A
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 14:26
2: P-scan, Images, p-scan data1, 6/19/00 14:26
3: T-scan, Images, p-scan data1, 6/19/00 14:26
4: T-scan, Images, p-scan data1, 6/19/00 14:26

Printed on 2000-8-3 at 15:01 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE3A.



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4/00

# ULTRASONIC P-SCAN DATA REPORT

14:16

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/26/00 9:25 | EXAM END: ~~10:10~~ 5:20 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: VERT. WELD PLATE TO PLATE (PLATE 3) | | CALIBRATED RANGE: 0" TO 1.590" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 89.7" | | REF LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .562 NOM. THICKNESS | | |
| FILE NAME/ITEM#: [redacted] /WELD 13 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE [redacted] | | |
| $X_0$ REF. POINT ($L_0$): 1" BELOW HORZ. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.63" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

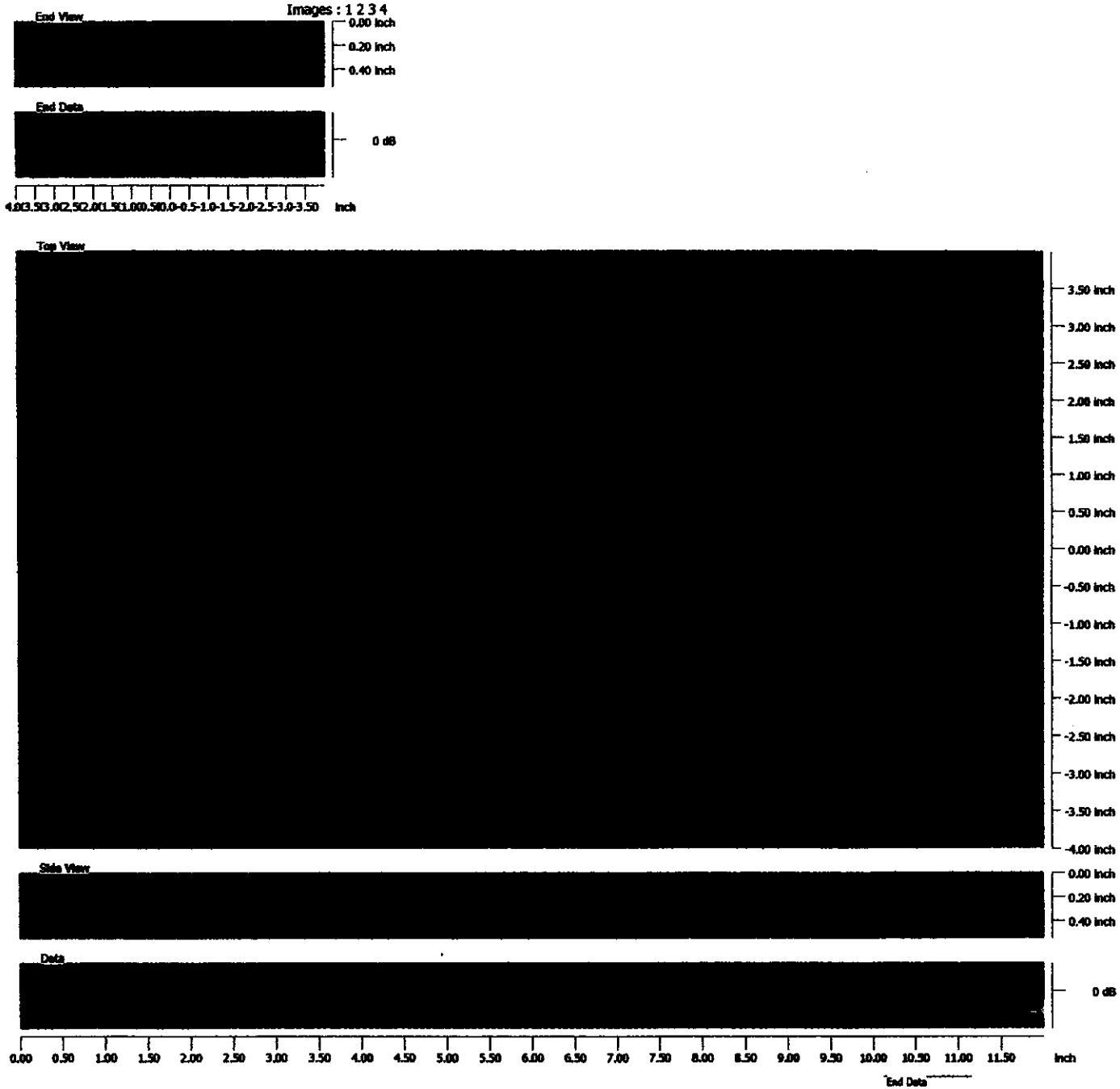
| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO CRACK-LIKE INDICATION

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/26/00 | [signature] Level III Date 8/1/00 | (N1) Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B. Elder

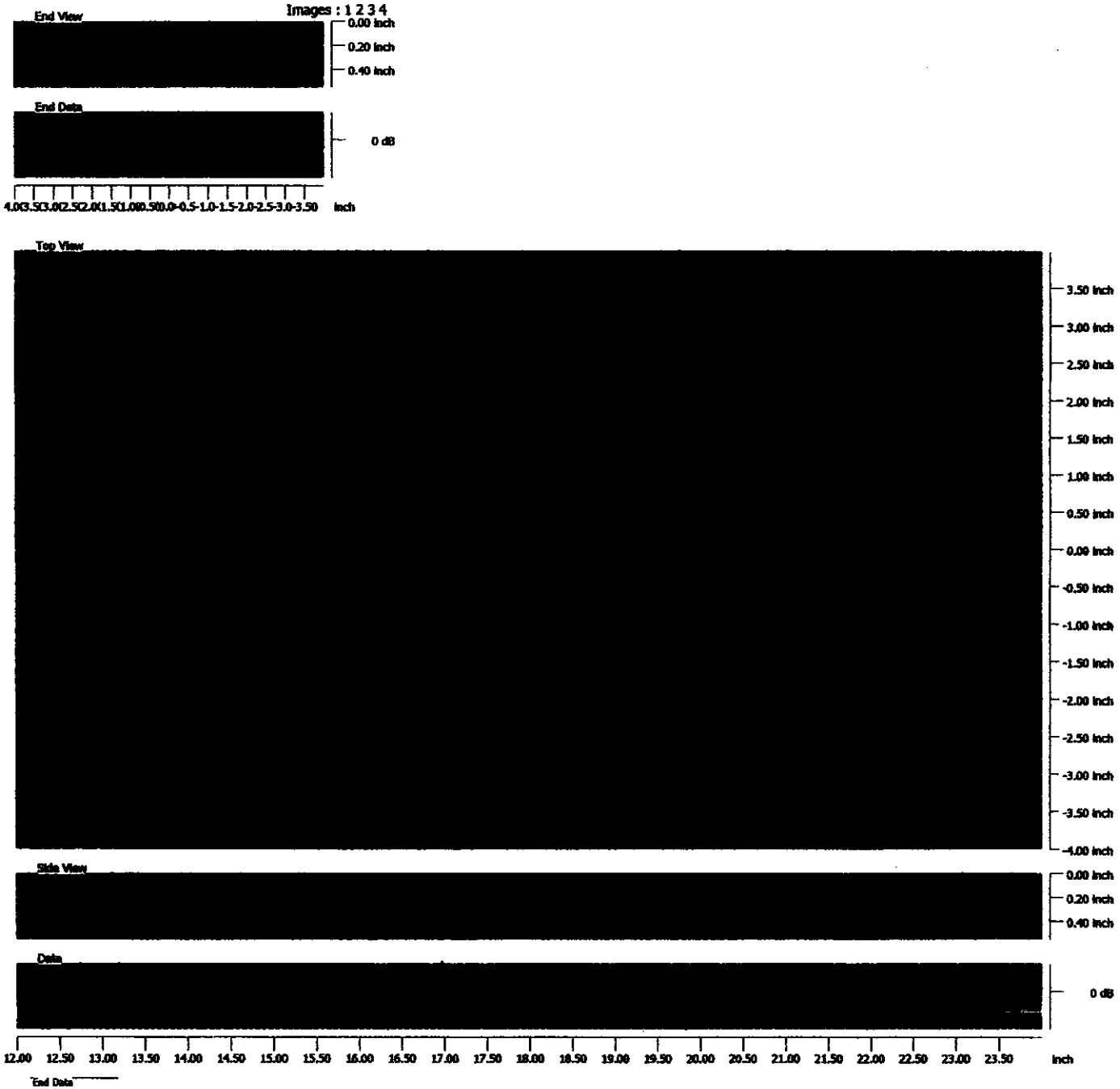
VERT/45/WELD/3 — 1: P-scan, Images, p-scan data1, 6/26/00 10:10
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 10:10
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 10:10
Plate3 — 4: P-scan, Images, p-scan data1, 6/26/00 10:10
Printed on 2000-8-7 at 10:01 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/3.



VERT/45/WELD/3 — 1: P-scan, Images, p-scan data1, 6/26/00 10:10
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 10:10
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 10:10
Plate3 — 4: P-scan, Images, p-scan data1, 6/26/00 10:10

Printed on 2000-8-7 at 10:01 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/3.

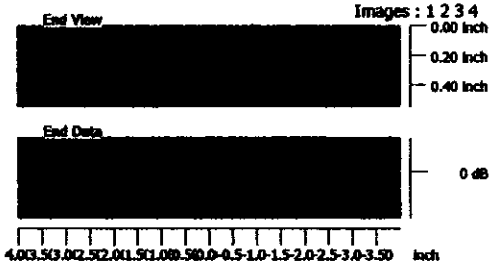
Images : 1 2 3 4

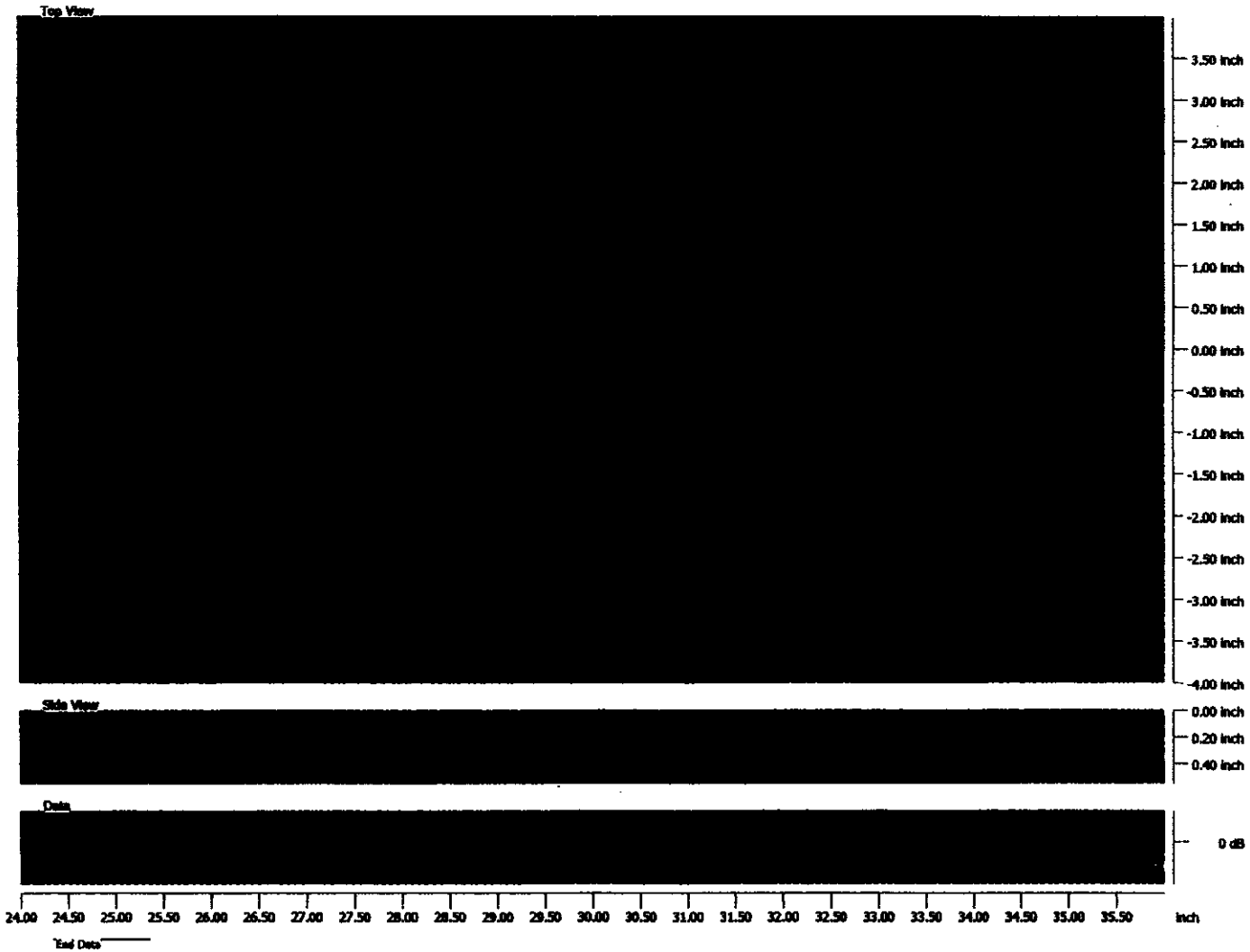


VERT/45/WELD/3 — 1: P-scan, Images, p-scan data1, 6/26/00 10:10
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 10:10
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 10:10
Plate3 — 4: P-scan, Images, p-scan data1, 6/26/00 10:10

Printed on 2000-8-7 at 10:01 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/3.

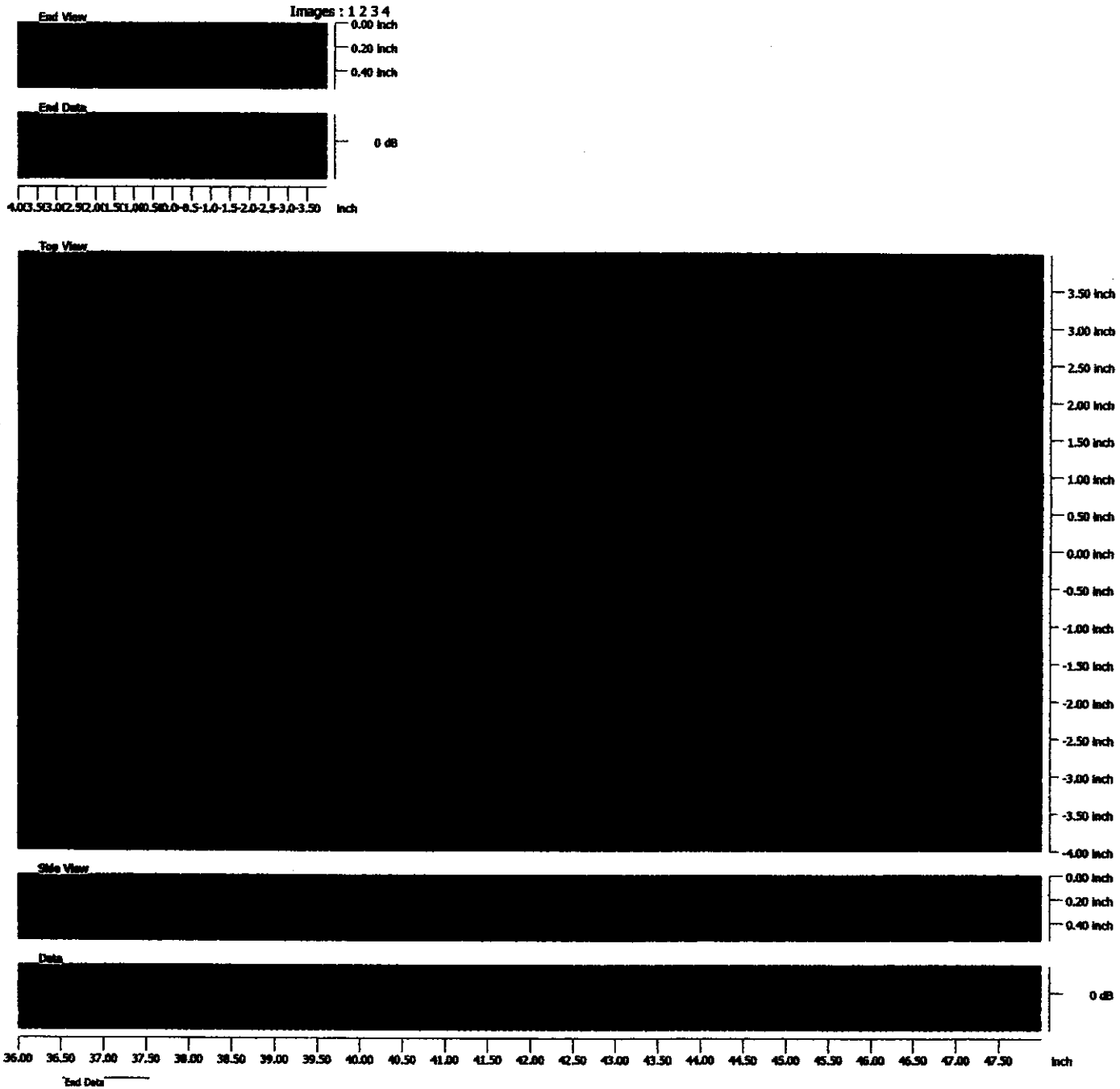
Images : 1 2 3 4



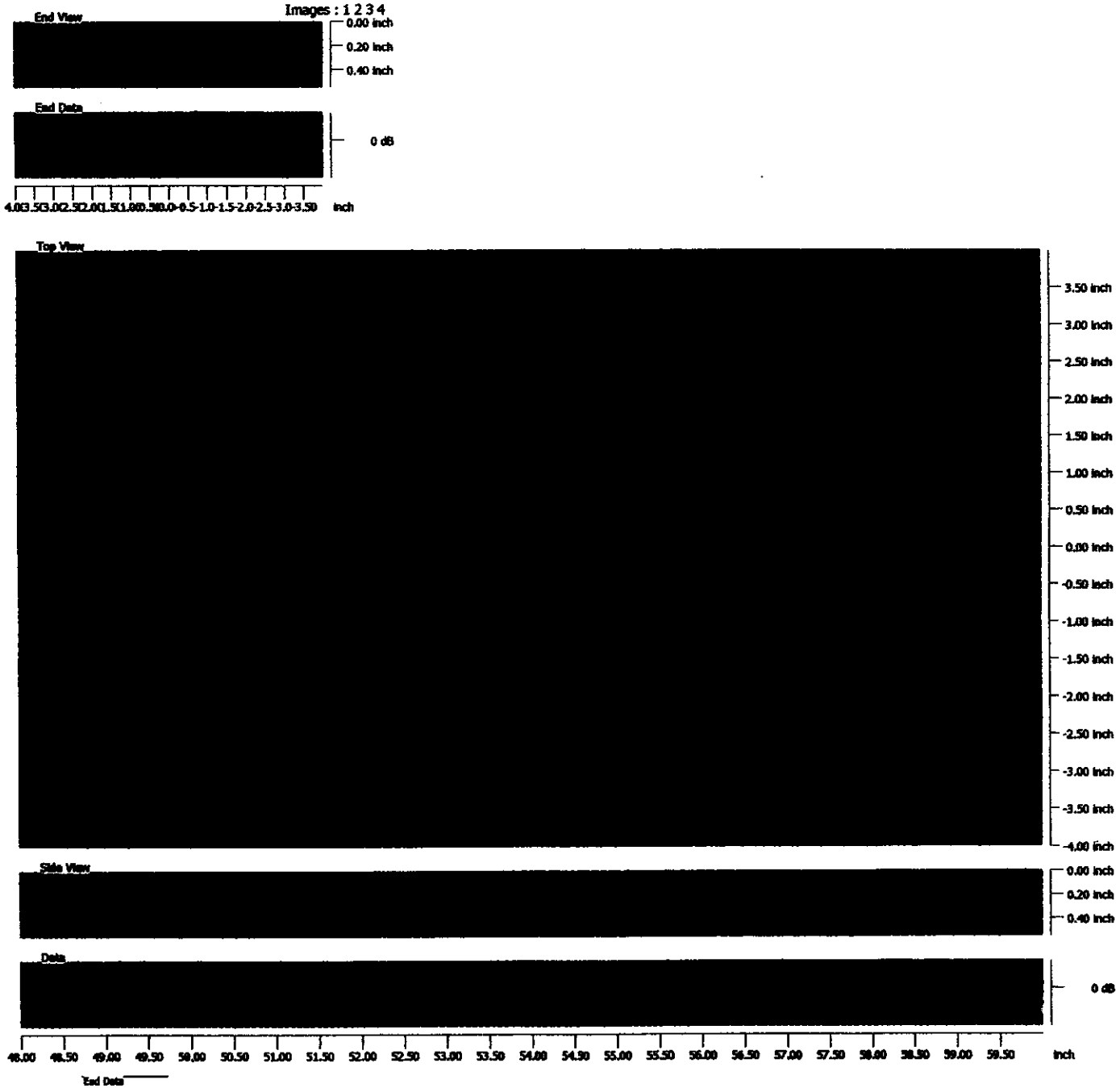
VERT/45/WELD/3 — 1: P-scan, Images, p-scan data1, 6/26/00 10:10
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 10:10
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 10:10
Plate3 — 4: P-scan, Images, p-scan data1, 6/26/00 10:10

Printed on 2000-8-7 at 10:02 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/3.



VERT/45/WELD/3 — 1: P-scan, Images, p-scan data1, 6/26/00 10:10
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 10:10
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 10:10
Plate3 — 4: P-scan, Images, p-scan data1, 6/26/00 10:10

Printed on 2000-8-7 at 10:02 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/3.

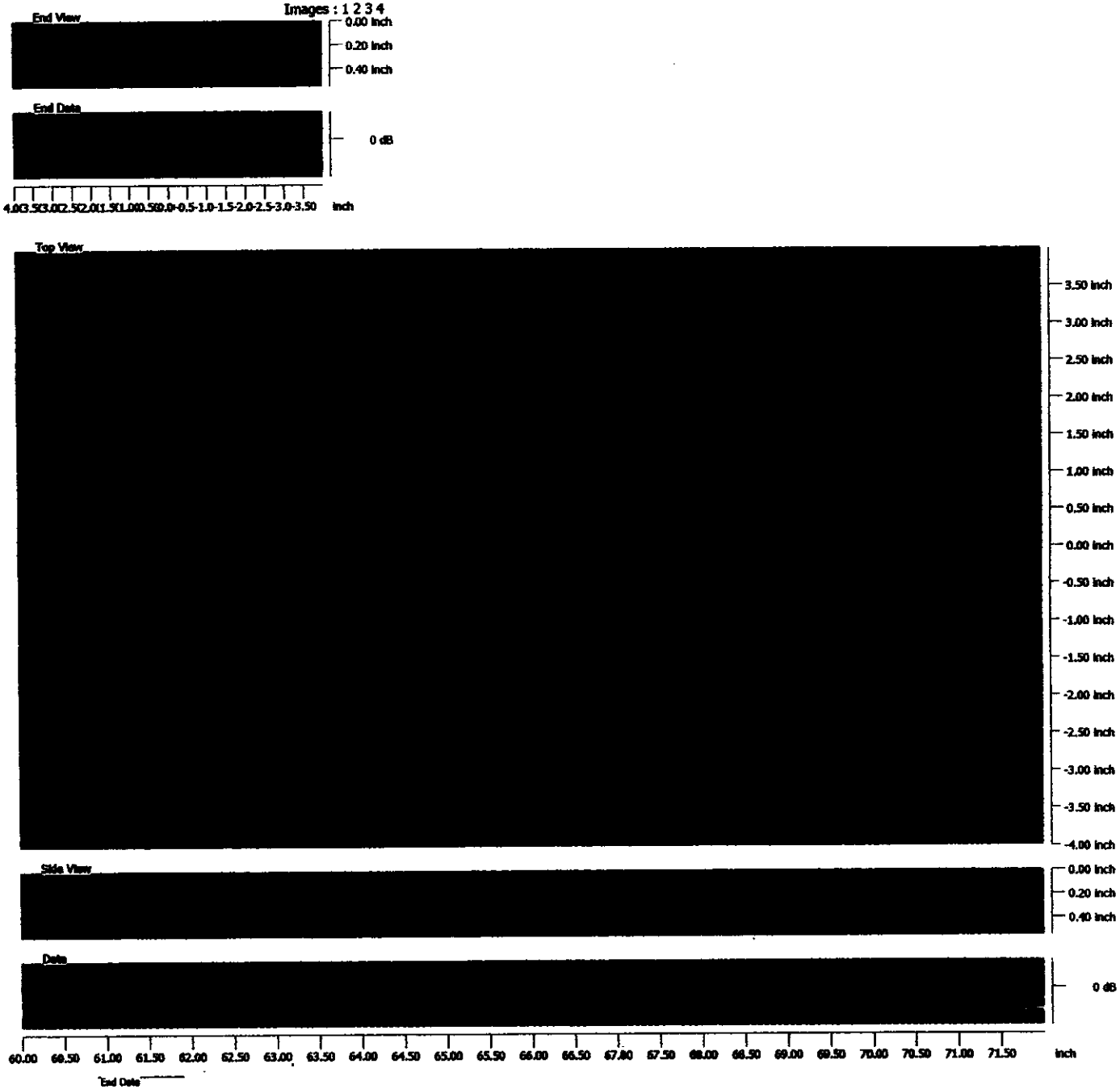


VERT/45/WELD/3
WHN
AP-107
Plate3

1: P-scan, Images, p-scan data1, 6/26/00 10:10
2: P-scan, Images, p-scan data1, 6/26/00 10:10
3: P-scan, Images, p-scan data1, 6/26/00 10:10
4: P-scan, Images, p-scan data1, 6/26/00 10:10

Printed on 2000-8-7 at 10:03 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/3.

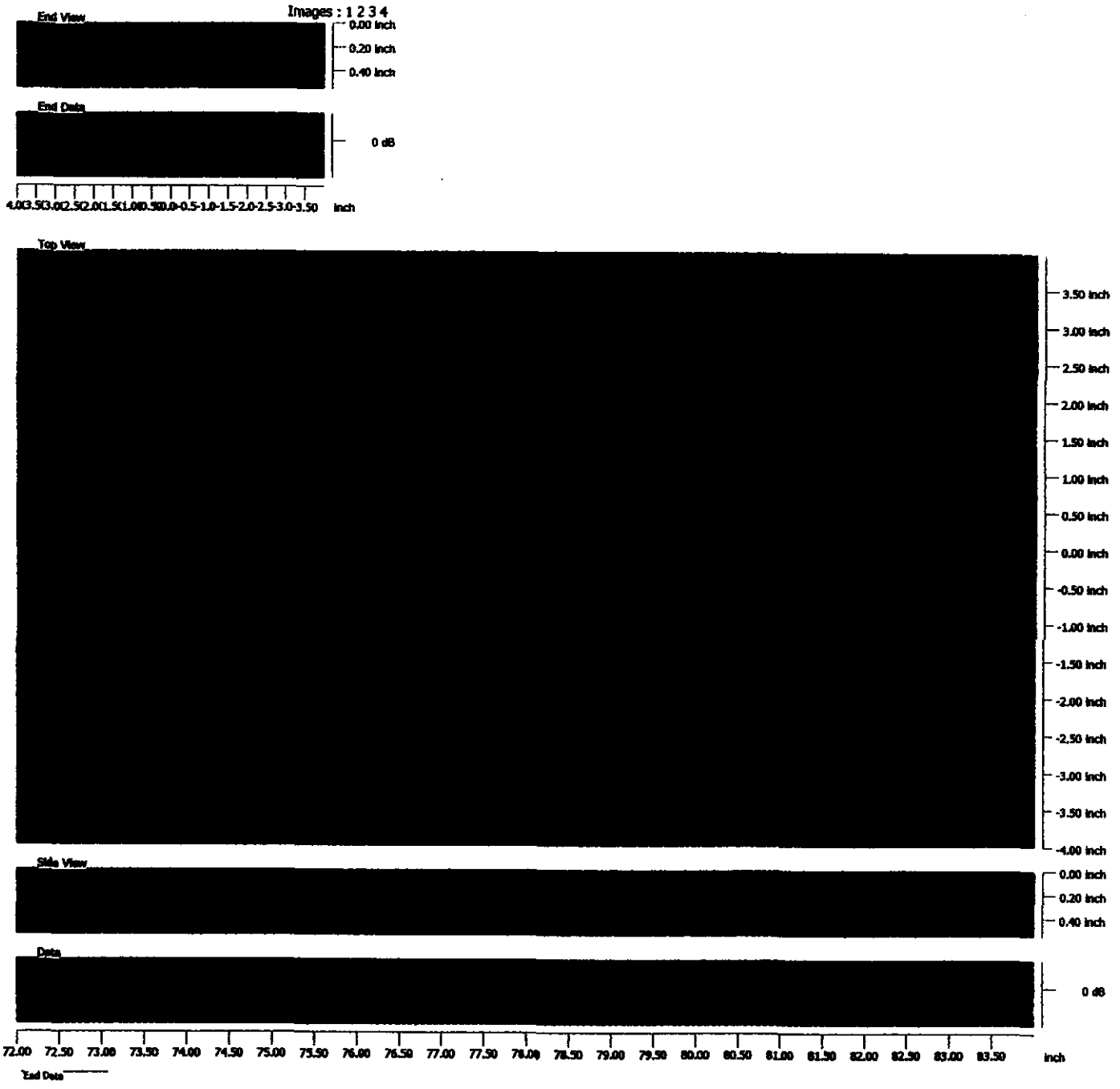
Images : 1 2 3 4



VERT/45/WELD/3
WHN
AP-107
Plate3

1: P-scan, Images, p-scan data1, 6/26/00 10:10
2: P-scan, Images, p-scan data1, 6/26/00 10:10
3: P-scan, Images, p-scan data1, 6/26/00 10:10
4: P-scan, Images, p-scan data1, 6/26/00 10:10

Printed on 2000-8-7 at 10:05 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/3.



VERT/45/WELD/3
WHN
AP-107
Plate3

1: P-scan, Images, p-scan data1, 6/26/00 10:10
2: P-scan, Images, p-scan data1, 6/26/00 10:10
3: P-scan, Images, p-scan data1, 6/26/00 10:10
4: P-scan, Images, p-scan data1, 6/26/00 10:10

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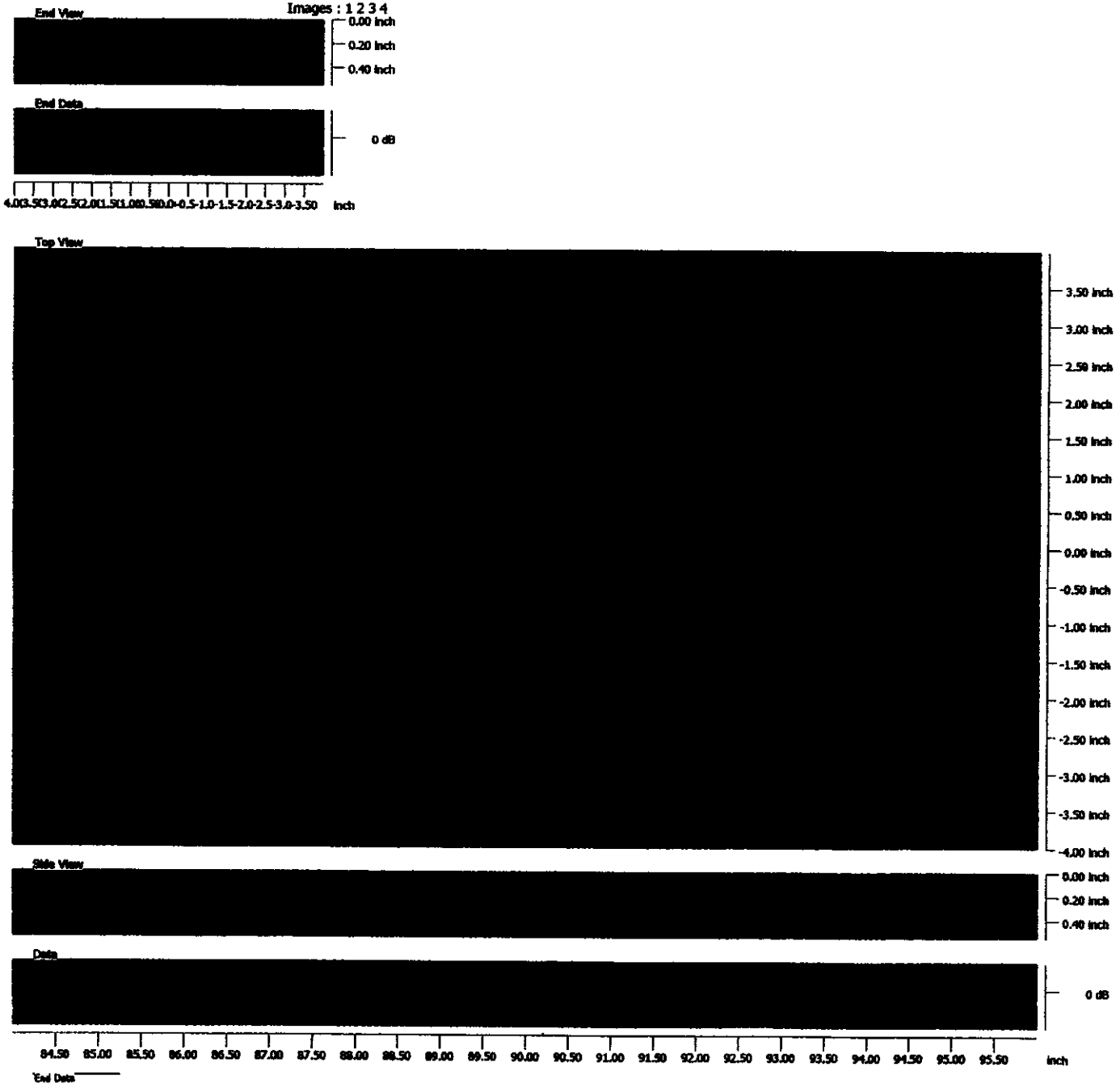


4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/20/00 9:30 | EXAM END: 20:00 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .750" |
| CONFIGURATION: VERT. WELD PLATE TO PLATE (PLATE 4) | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 103.3" | | REF LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: VERT. WELD / PLATE 4 | | TRANSDUCER: ☐ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$): 1" BELOW HORZ. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 8" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK, R. LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0 | 12 | | | .750" | .741" | | |
| | 12 | 24 | | | .750" | .744" | | |
| | 24 | 36 | | | .750" | .747" | | |
| | 36 | 48 | | | .750" | .730" | | |
| | 48 | 60 | | | .750" | .746" | | |
| | 60 | 72 | | | .750" | .740" | | |
| | 72 | 84 | | | .750" | .737" | | |
| | 84 | 96 | | | .750" | .735" | | |
| | 96 | 105.3 | | | .750" | .742" | | |
| SUMMARY | | | | | | | | |

REMARKS

Possible lamination between 19.5" & 21.5"

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Nelson | Wesley D Nelson | (NI) | |
| Level III Date 6/20/00 | Level III Date 8/3/00 | Level ___ Date ___ | ___ of ___ |

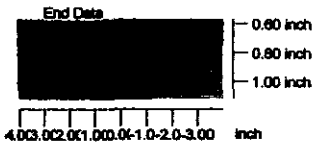
(NI) See Attached Letter From J. B. Elder

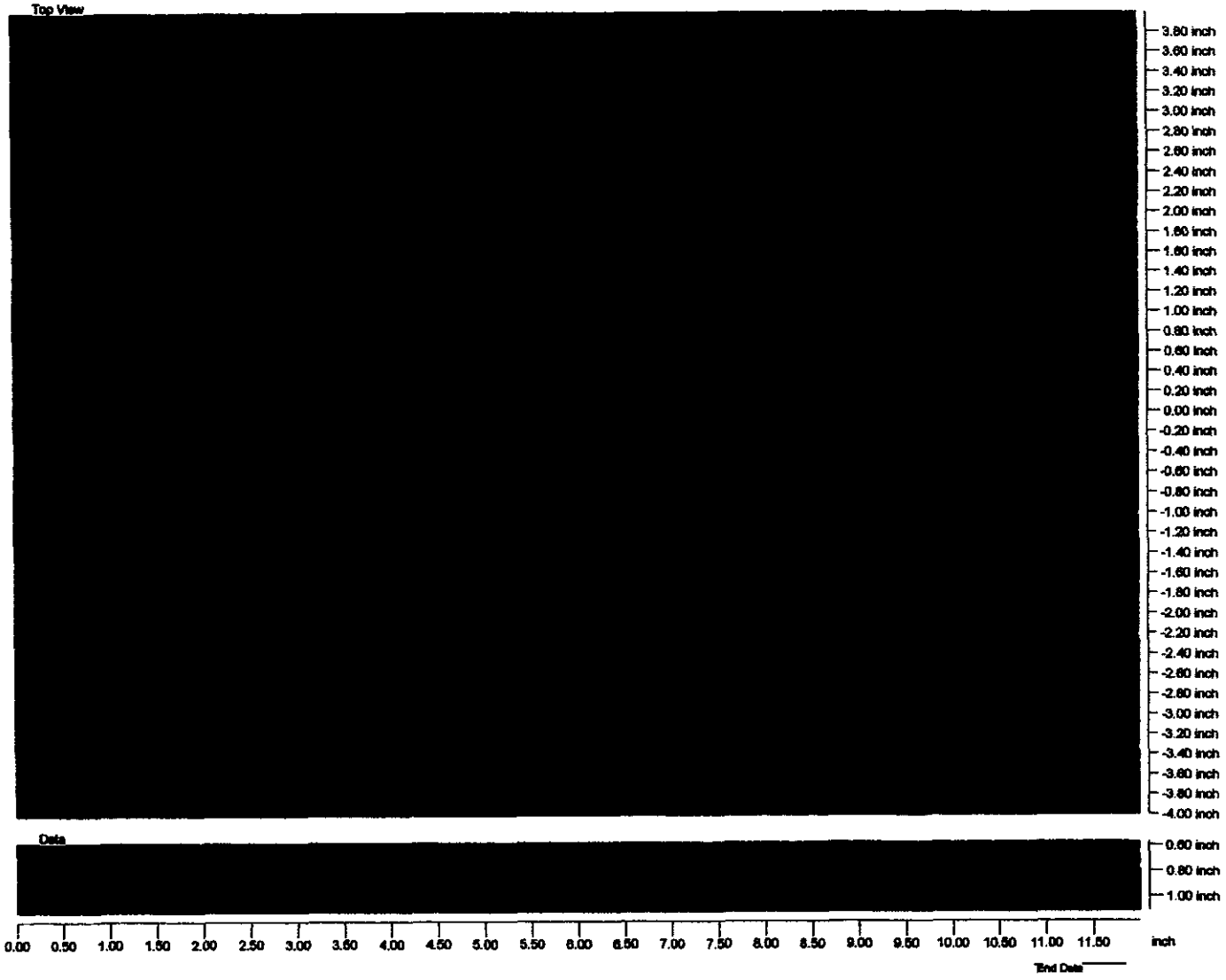
VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 15:50 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.

Images : 1 2 4



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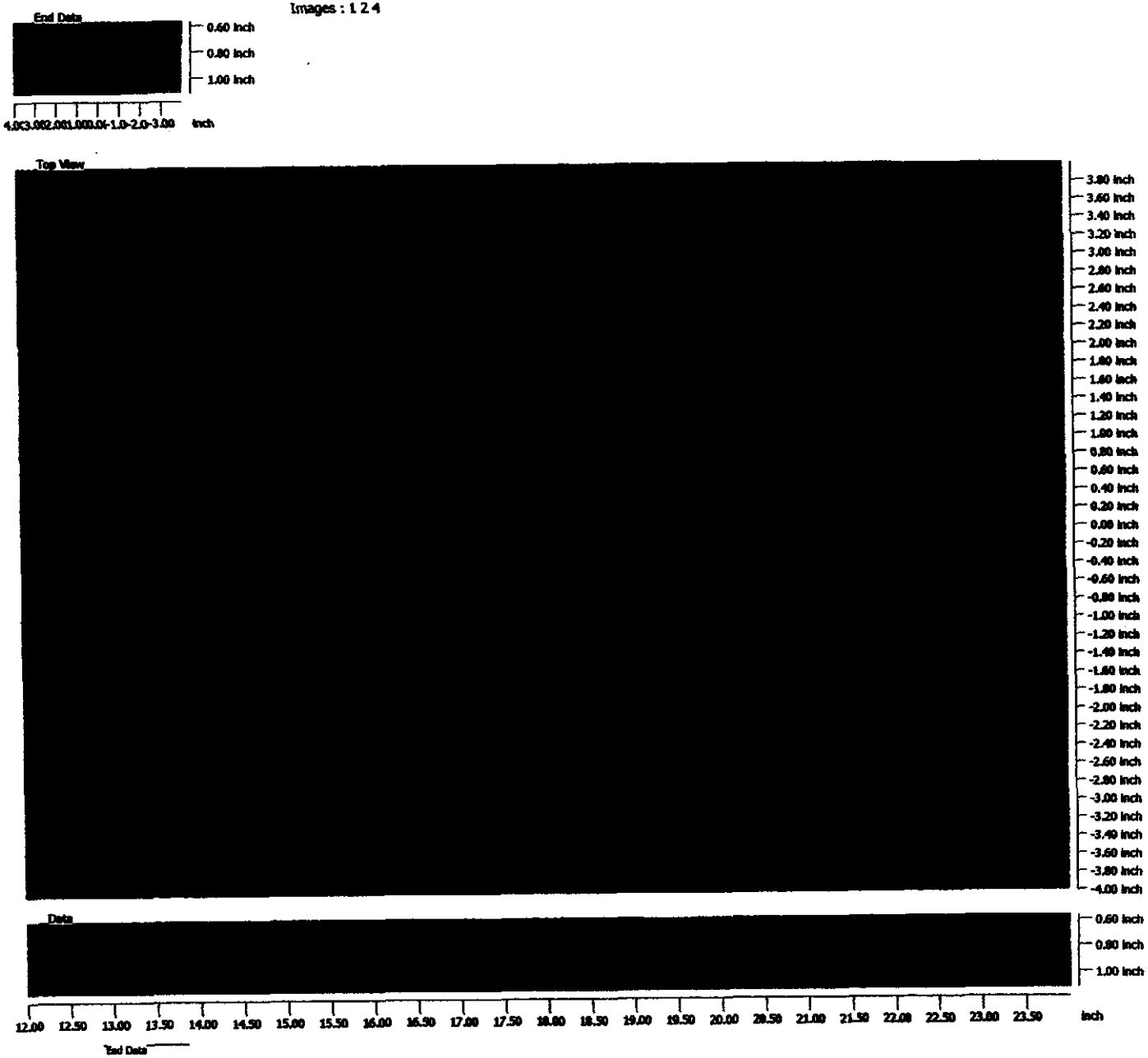
VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-7 at 8:20 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.
Images : 1 2 4

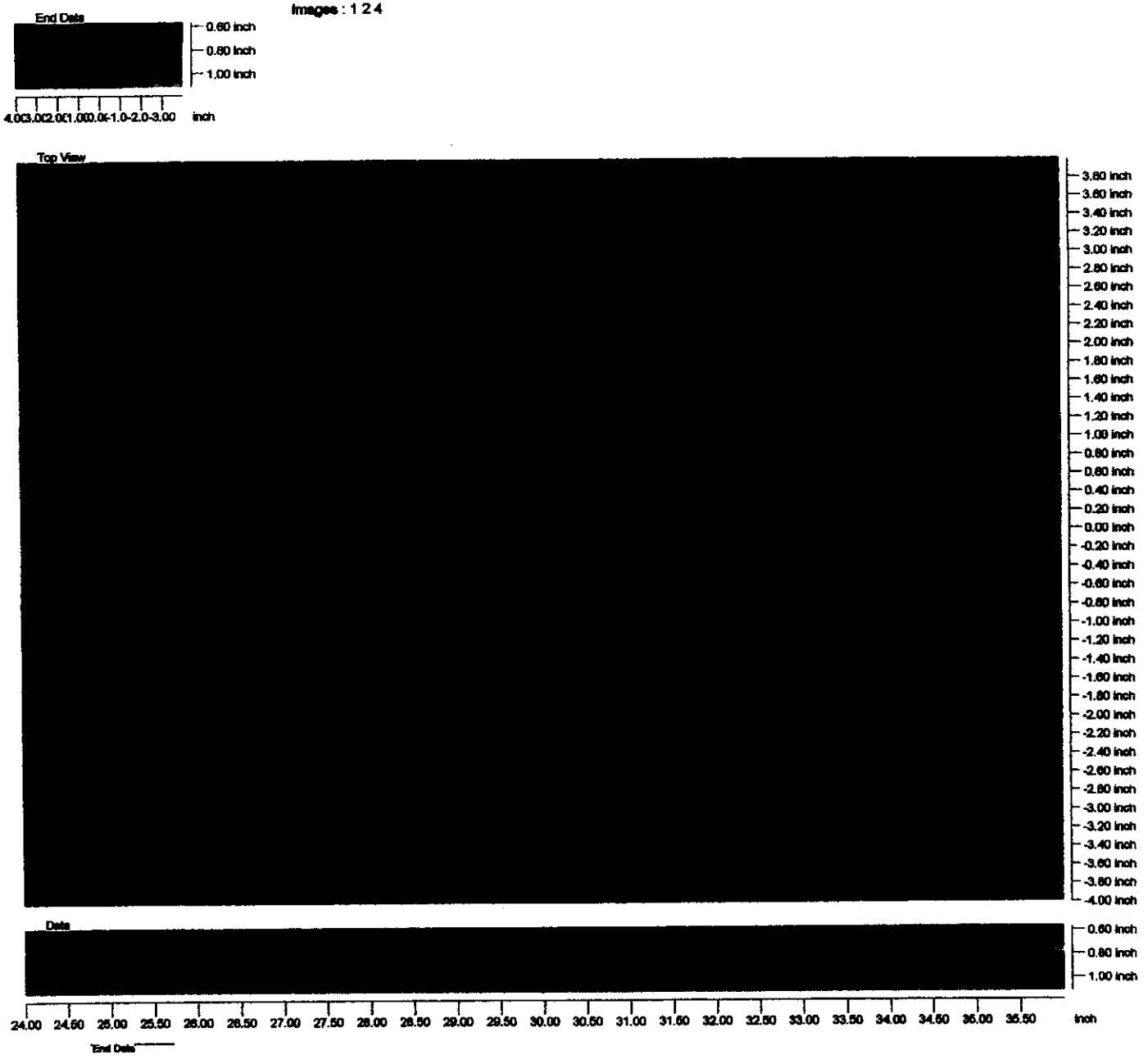


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 15:51 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.

Images : 1 2 4

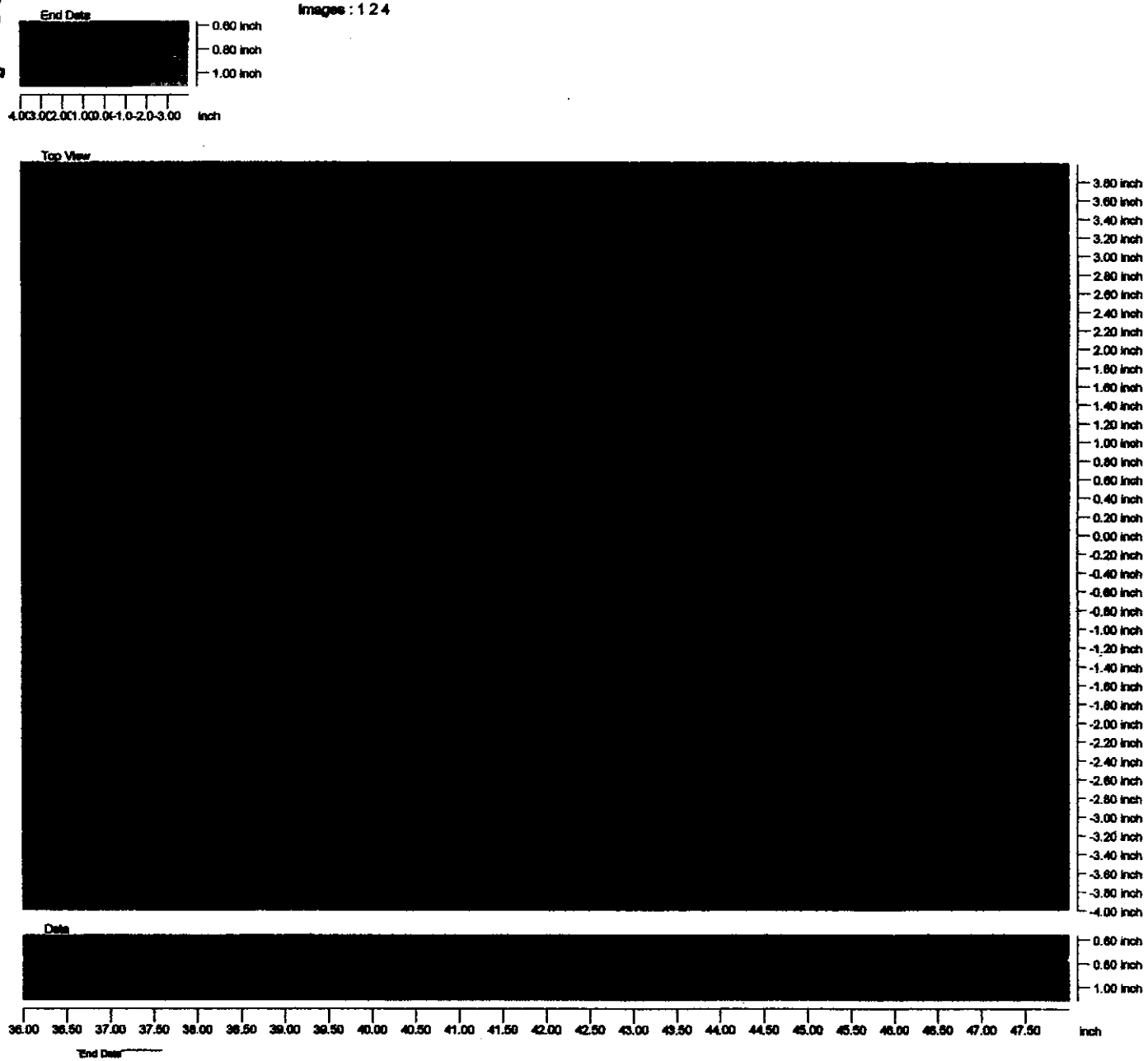


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 15:55 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.

Images : 1 2 4

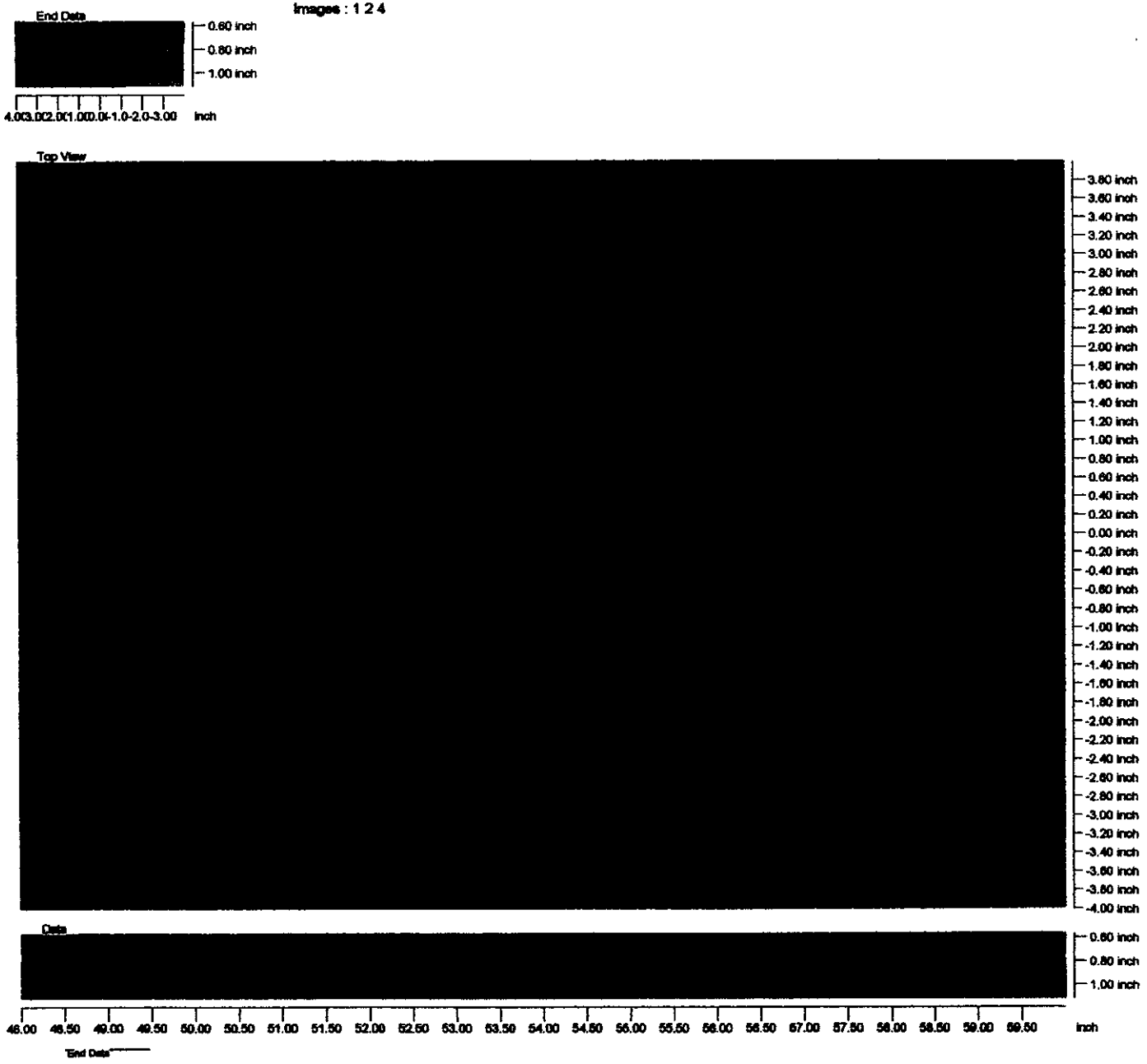


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 15:55 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.

Images : 1 2 4

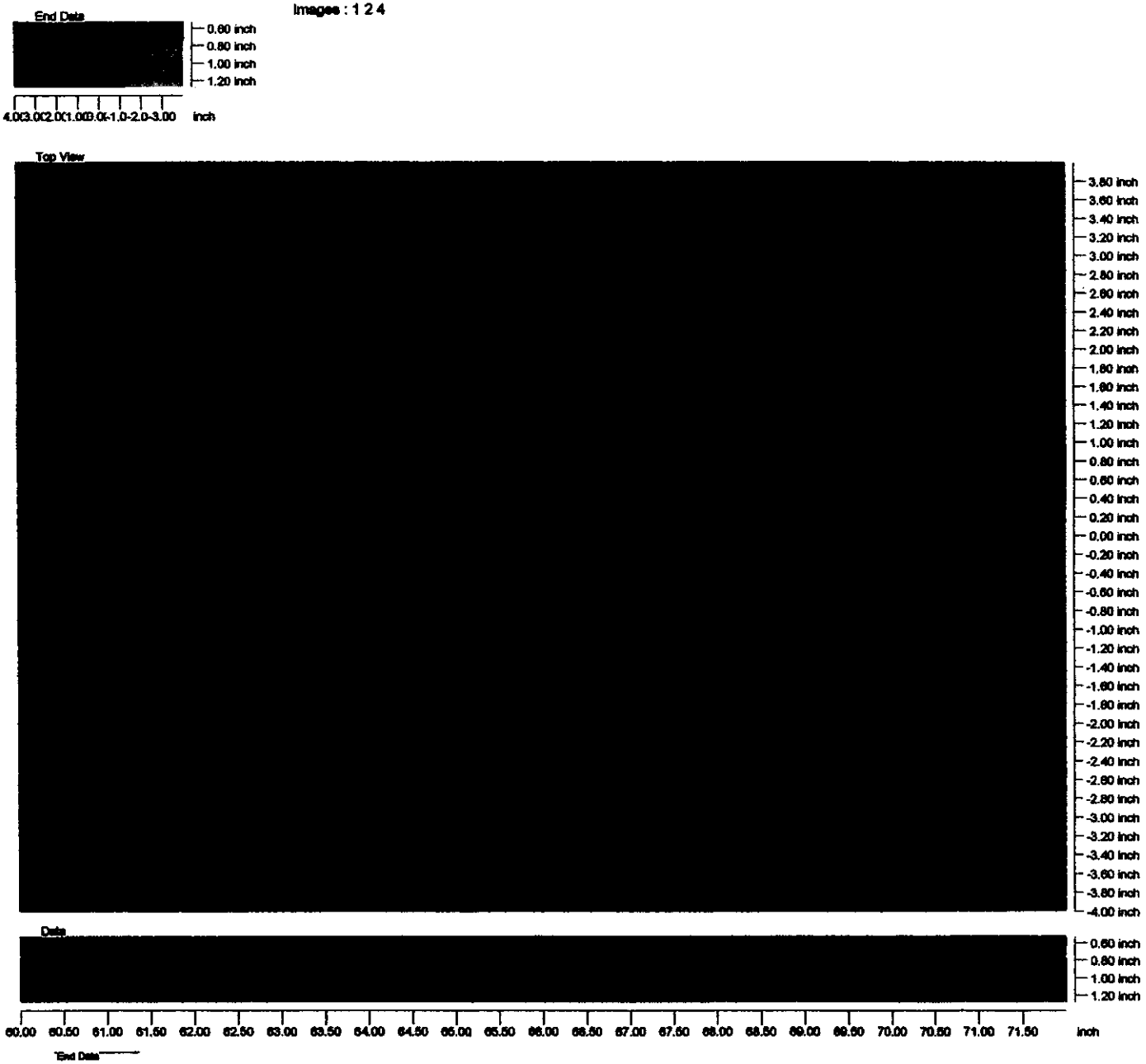


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 15:58 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.

Images : 1 2 4

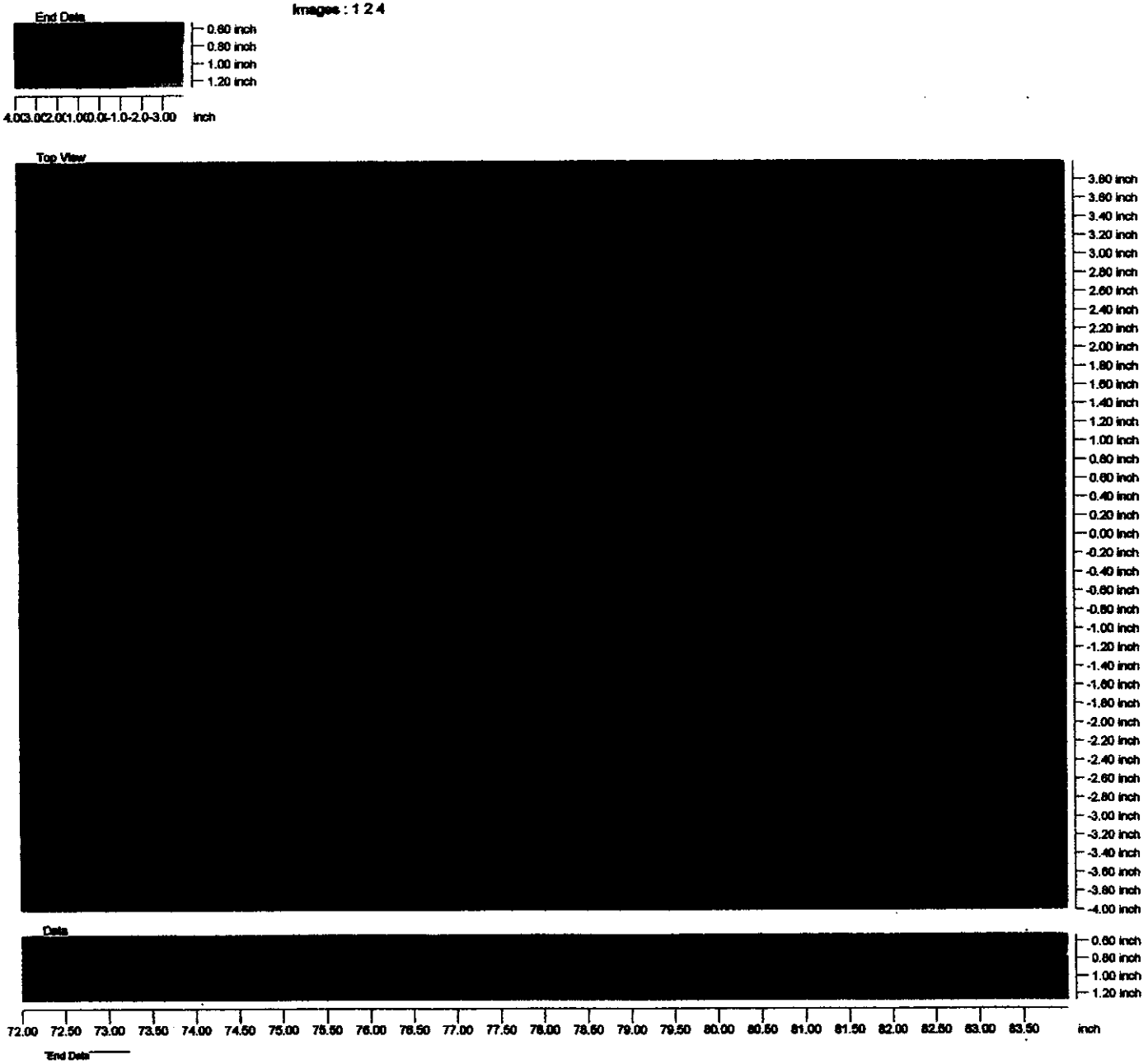


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 15:58 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.

Images : 1 2 4

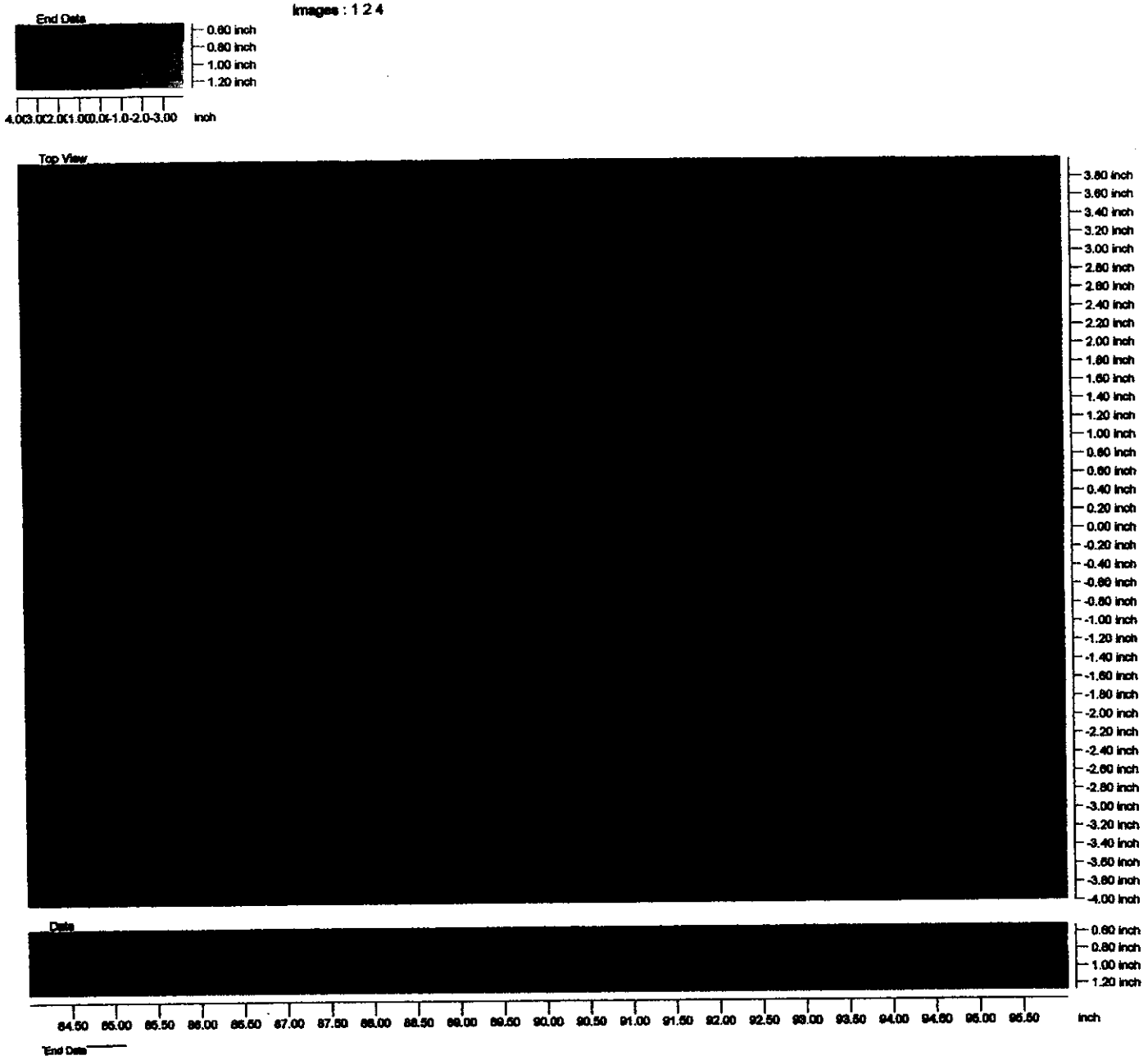


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:00 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.

Images : 1 2 4

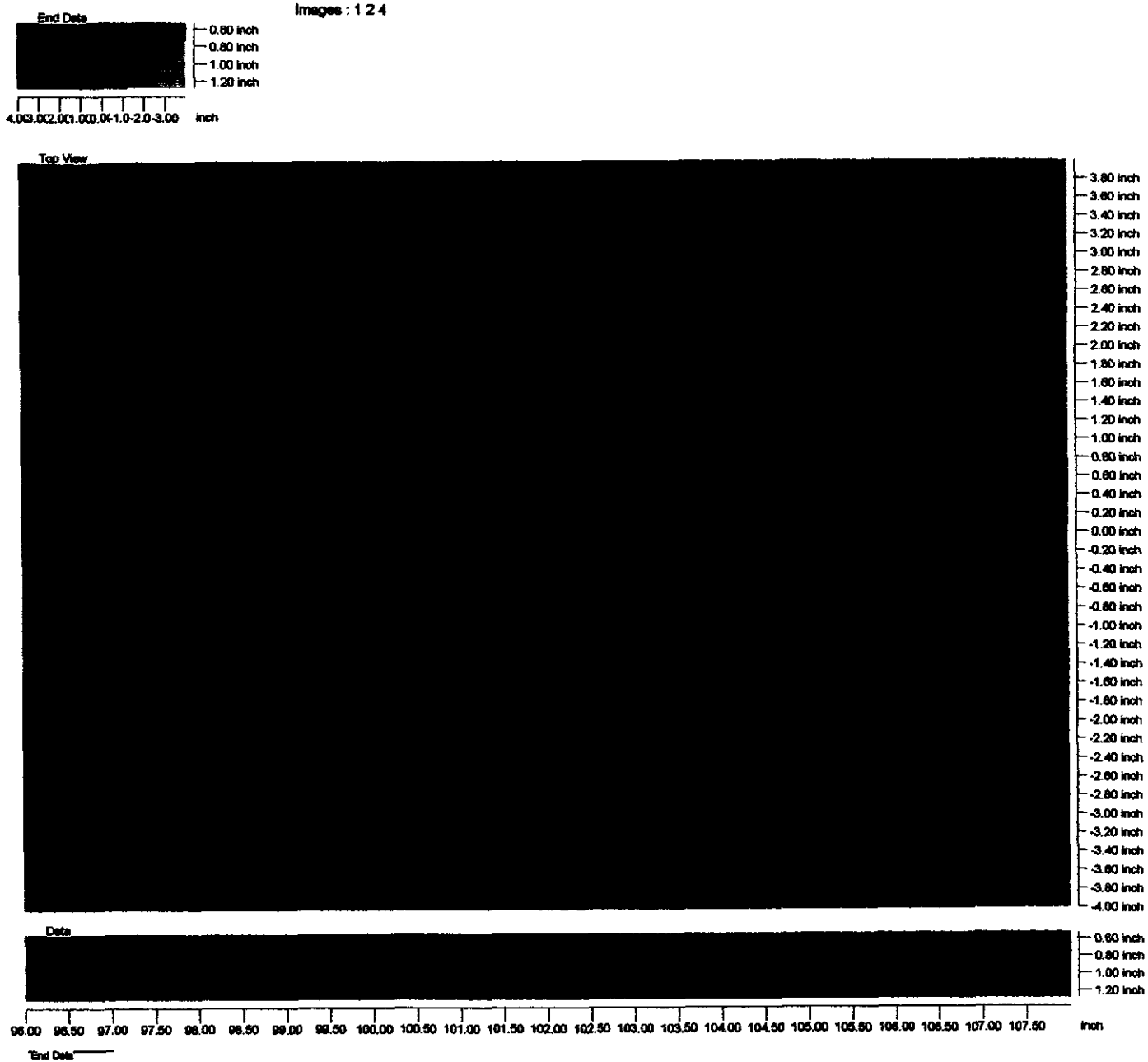


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/20/00 15:26
2: P-scan, Images, t-scan data1, 6/20/00 15:26
3: T-scan, Images, t-scan data1, 6/20/00 15:26
4: T-scan, Images, t-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:01 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/4.

Images : 1 2 4



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/20/00 9130 | EXAM END: 20:00 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: VERT. WELD PLATE TO PLATE (PLATE 4) | | CALIBRATED RANGE: 0" TO 3.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 103.3" | | REF. LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .750" NOM. THICKNESS | | |
| FILE NAME/ITEM#: [redacted] PLATE/4 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 60° | | |
| $X_0$ REF. POINT ($L_0$): 1" BELOW HORZ. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.60" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO CRACK-LIKE INDICATIONS

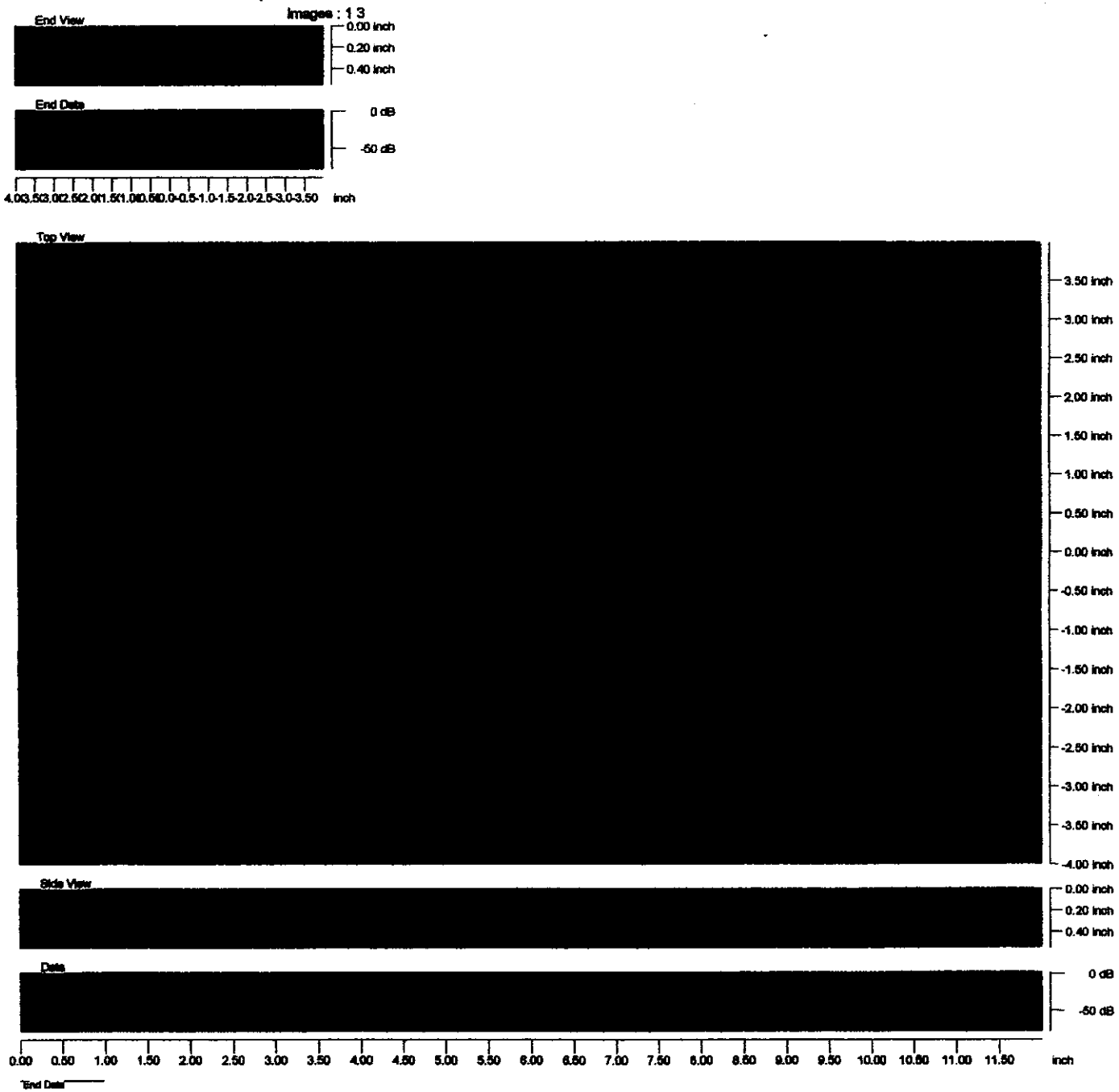
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Nelson | Wesley D Nelson | (VI) | |
| Level III Date 6/20/00 | Level III Date 8/1/00 | Level ___ Date ___ | ___ of ___ |

(VI) See Attached Letter From J. B. Elder

VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, images, p-scan data1, 6/20/00 15:26
2: P-scan, images, p-scan data1, 6/20/00 15:26
3: T-scan, images, p-scan data1, 6/20/00 15:26
4: T-scan, images, p-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:06 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.



VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 8/20/00 15:26
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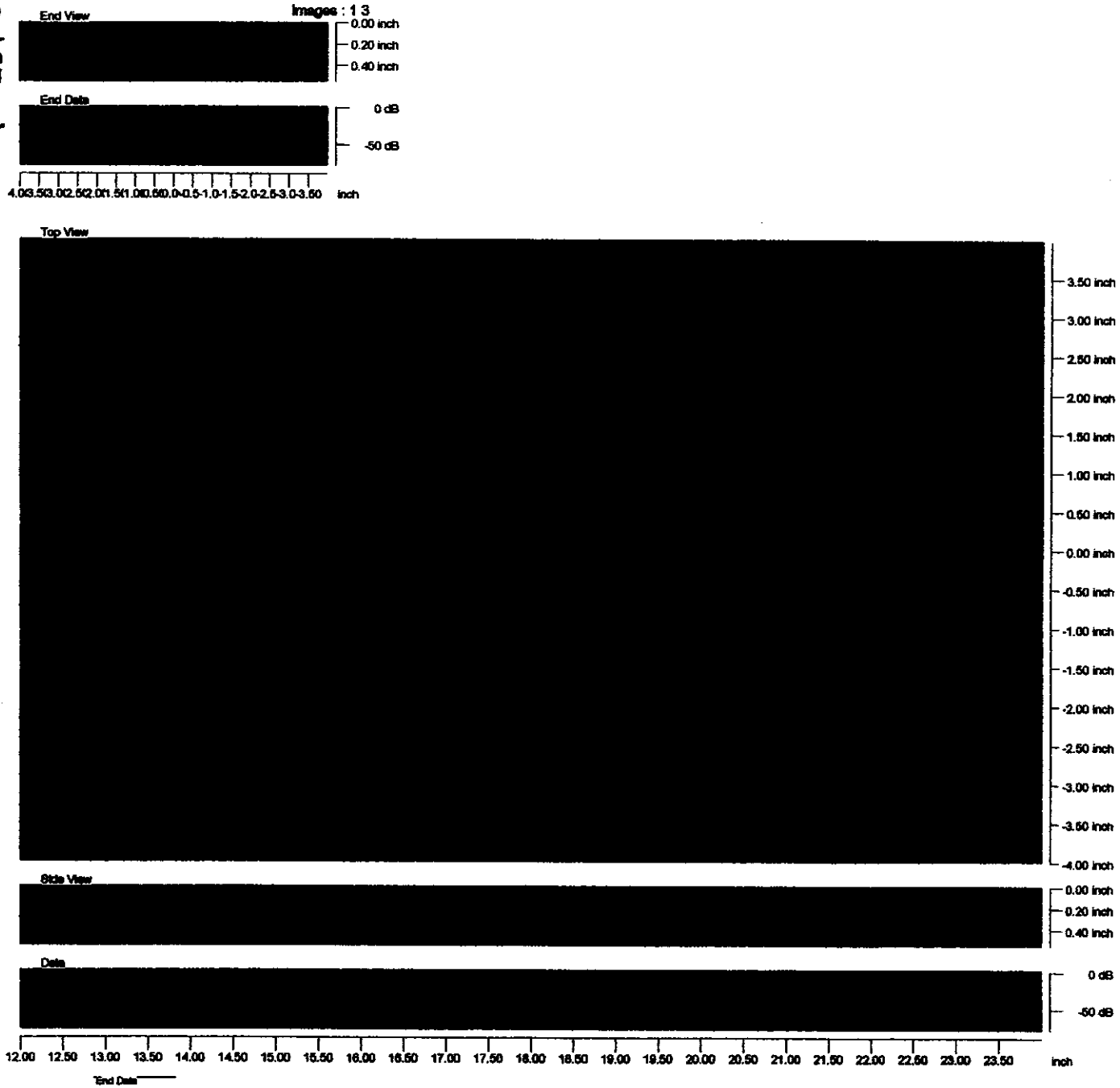
3: T-scan, Images, p-scan data1, 8/20/00 15:26
4: T-scan, Images, p-scan data1, 8/20/00 15:26

Printed on 2000-8-3 at 16:06 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.

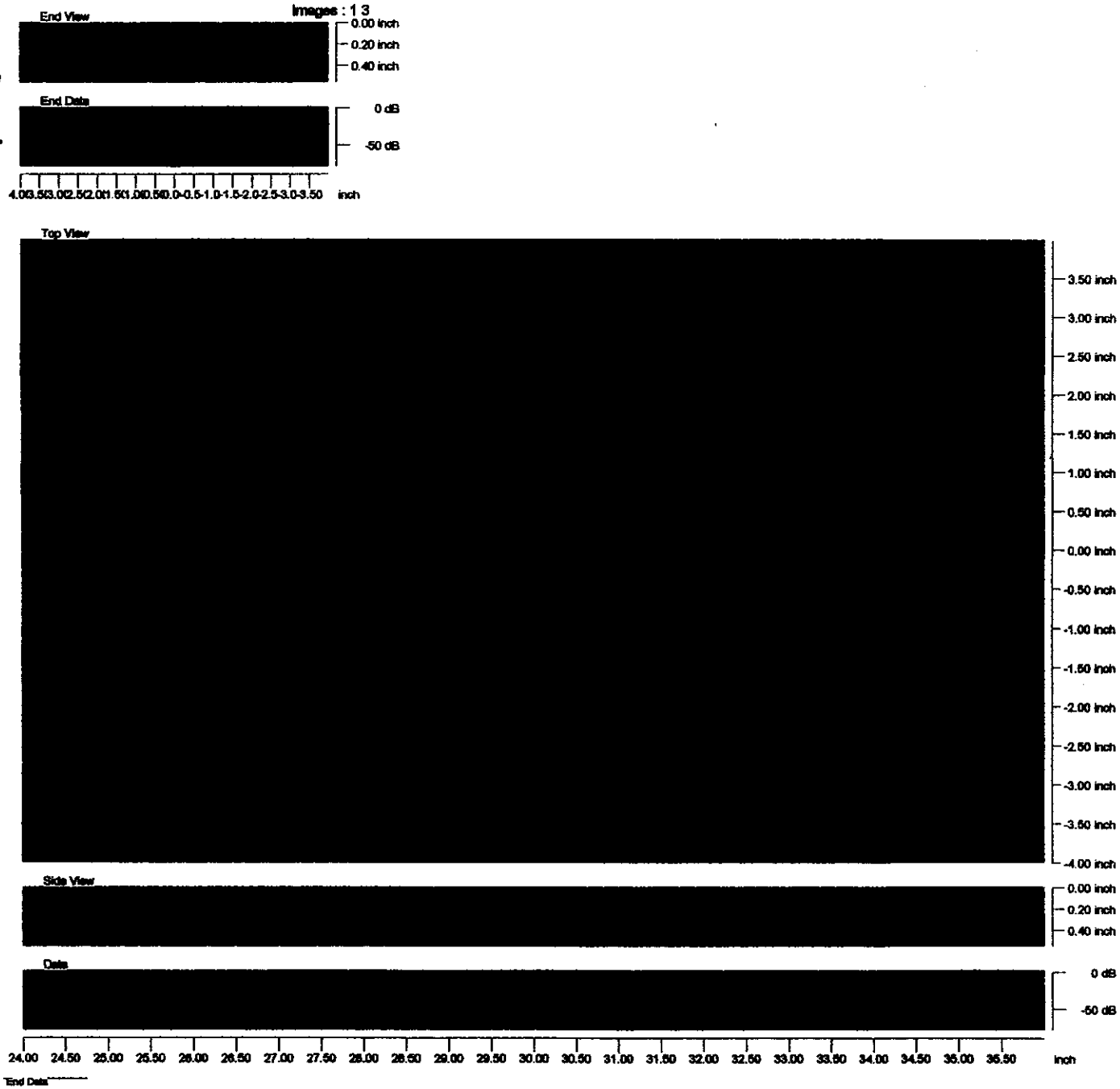


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 15:26
2: P-scan, Images, p-scan data1, 6/20/00 15:26
3: T-scan, Images, p-scan data1, 6/20/00 15:26
4: T-scan, Images, p-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:07 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.

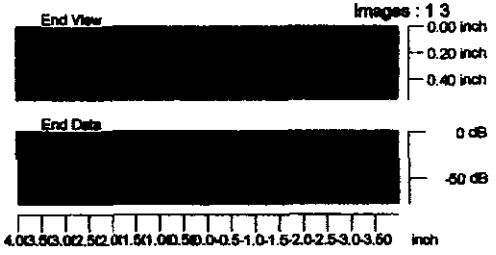
Images : 1 3

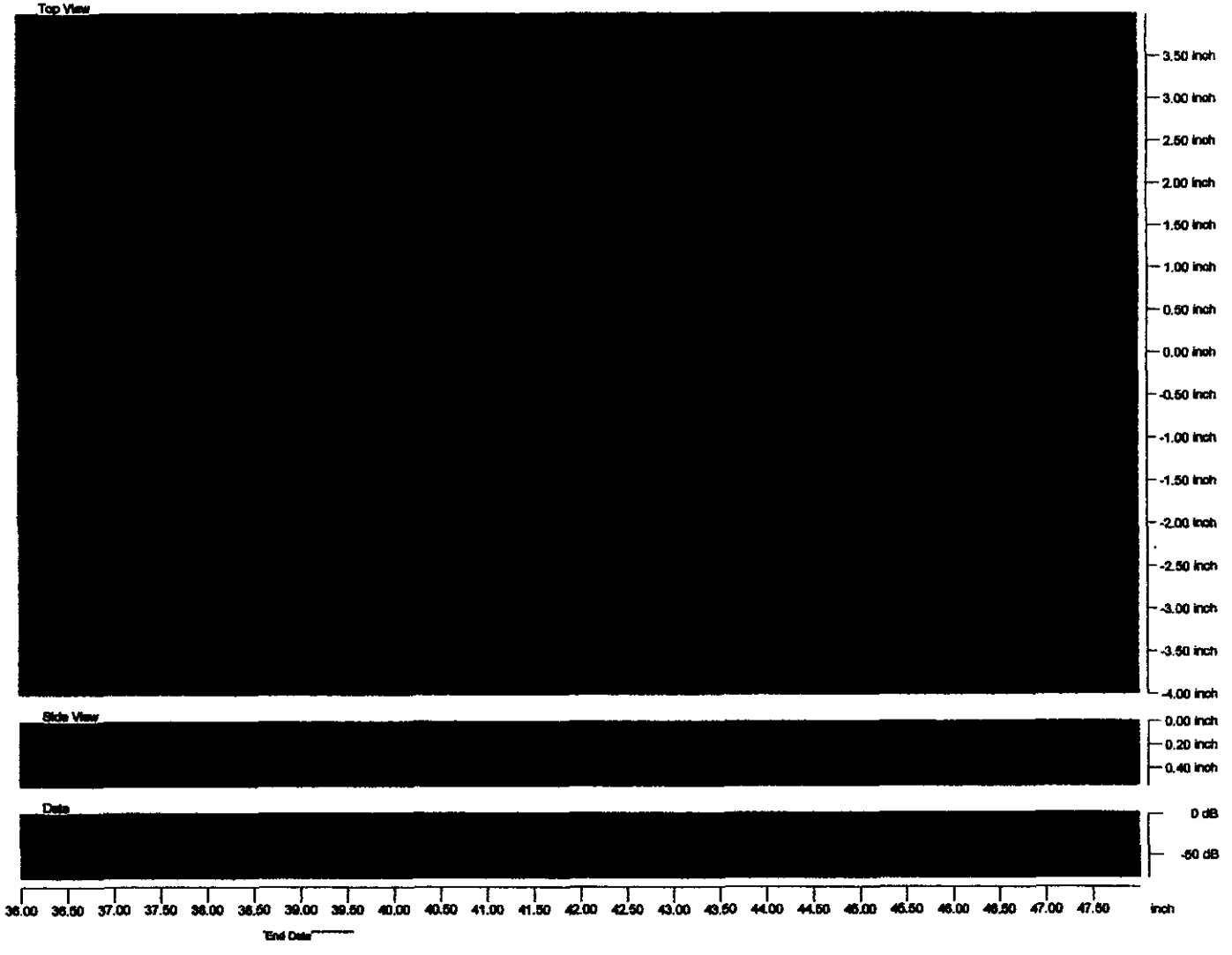


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 15:26
2: P-scan, Images, p-scan data1, 6/20/00 15:26
3: T-scan, Images, p-scan data1, 6/20/00 15:26
4: T-scan, Images, p-scan data1, 6/20/00 15:26

Printed on 2000-6-3 at 16:07 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.



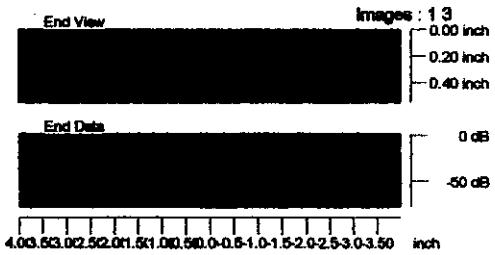



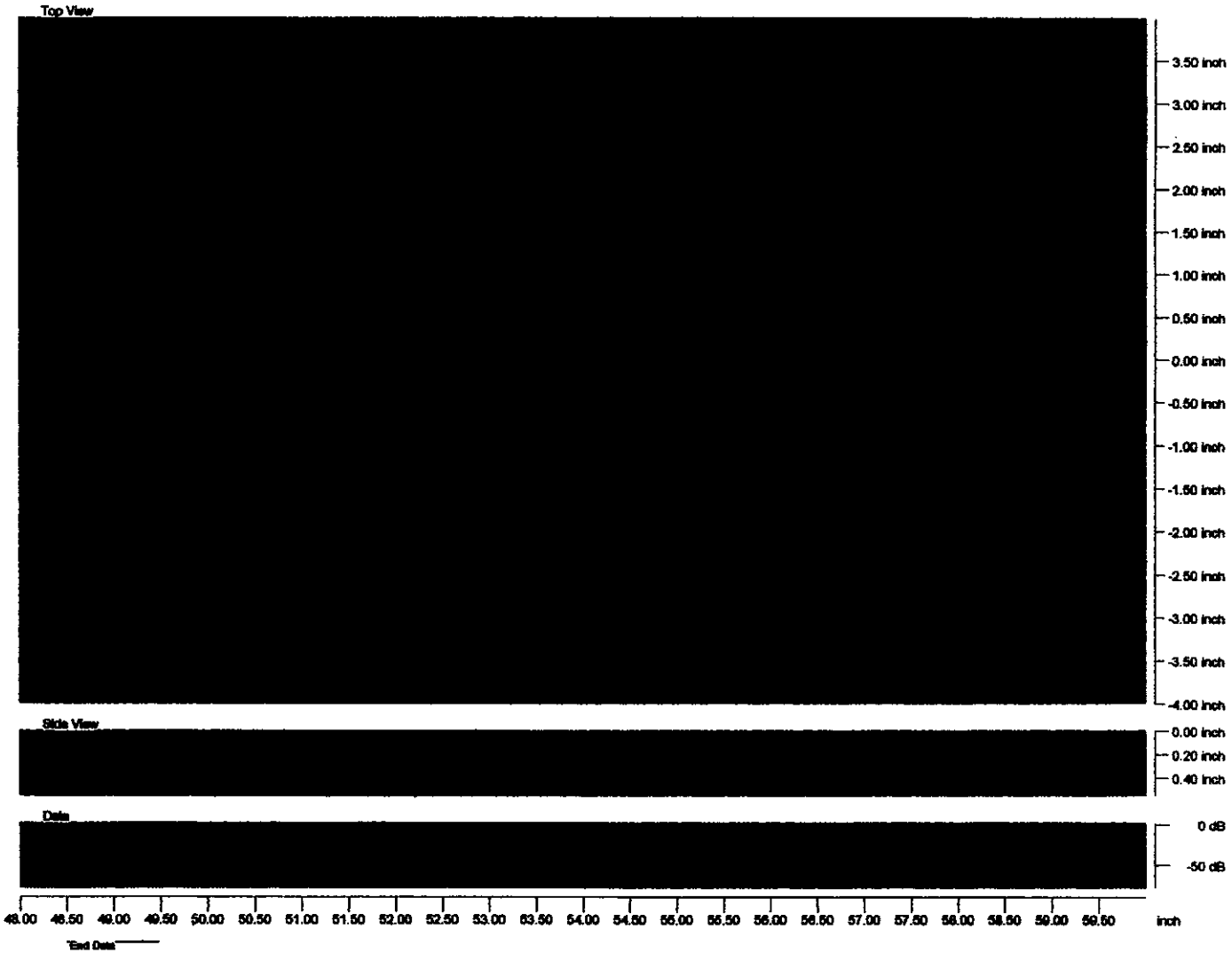
VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 15:26
2: P-scan, Images, p-scan data1, 6/20/00 15:26
3: T-scan, Images, p-scan data1, 6/20/00 15:26
4: T-scan, Images, p-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:08 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.

Images : 1 3



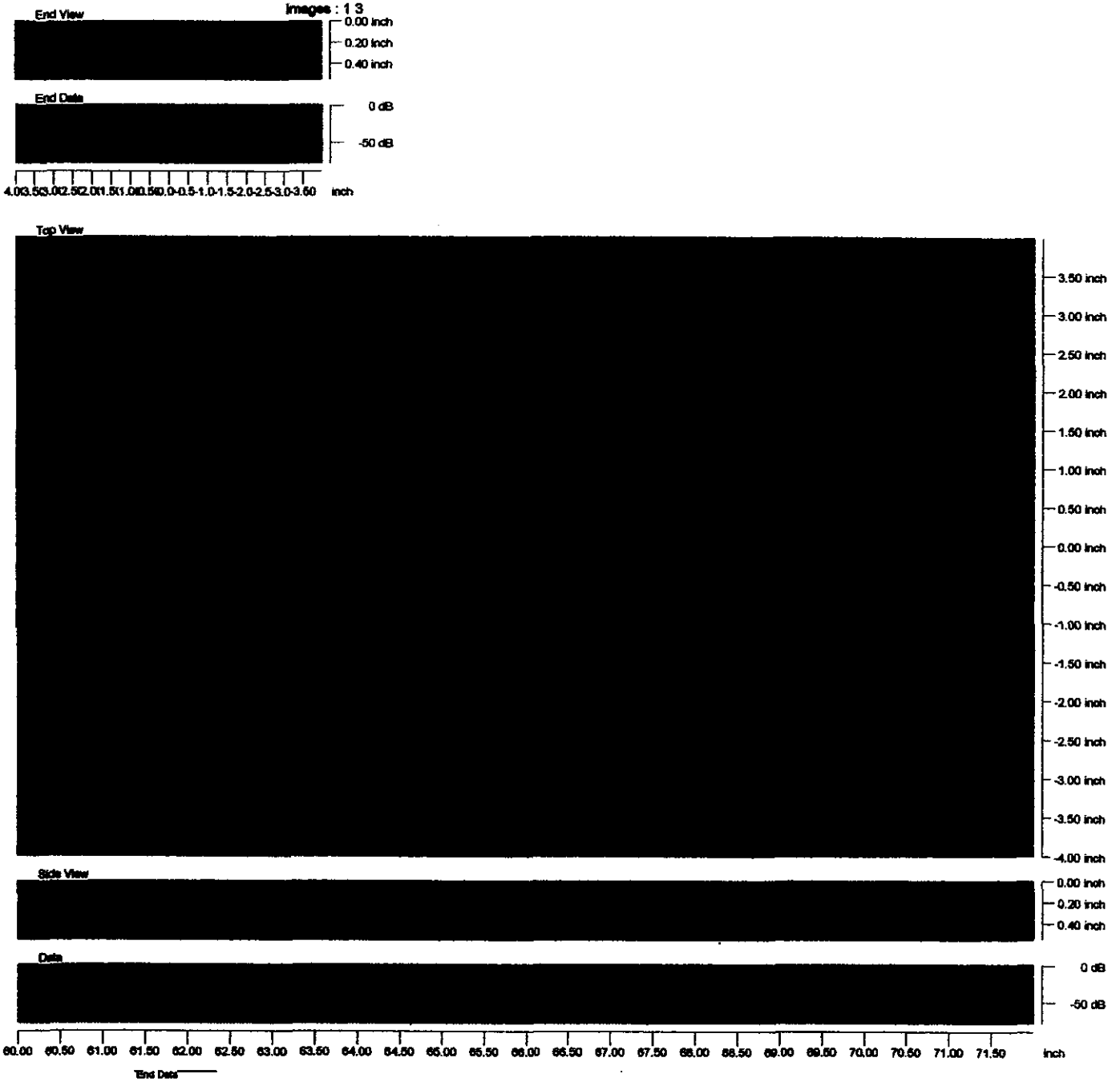



VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 15:26
2: P-scan, Images, p-scan data1, 6/20/00 15:26
3: T-scan, Images, p-scan data1, 6/20/00 15:26
4: T-scan, Images, p-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:08 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.

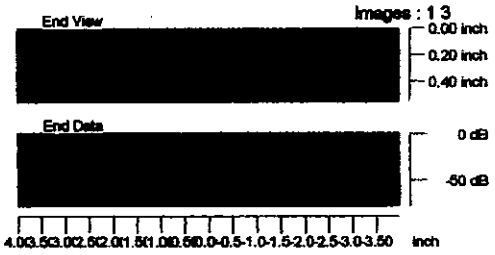
Images : 1 3

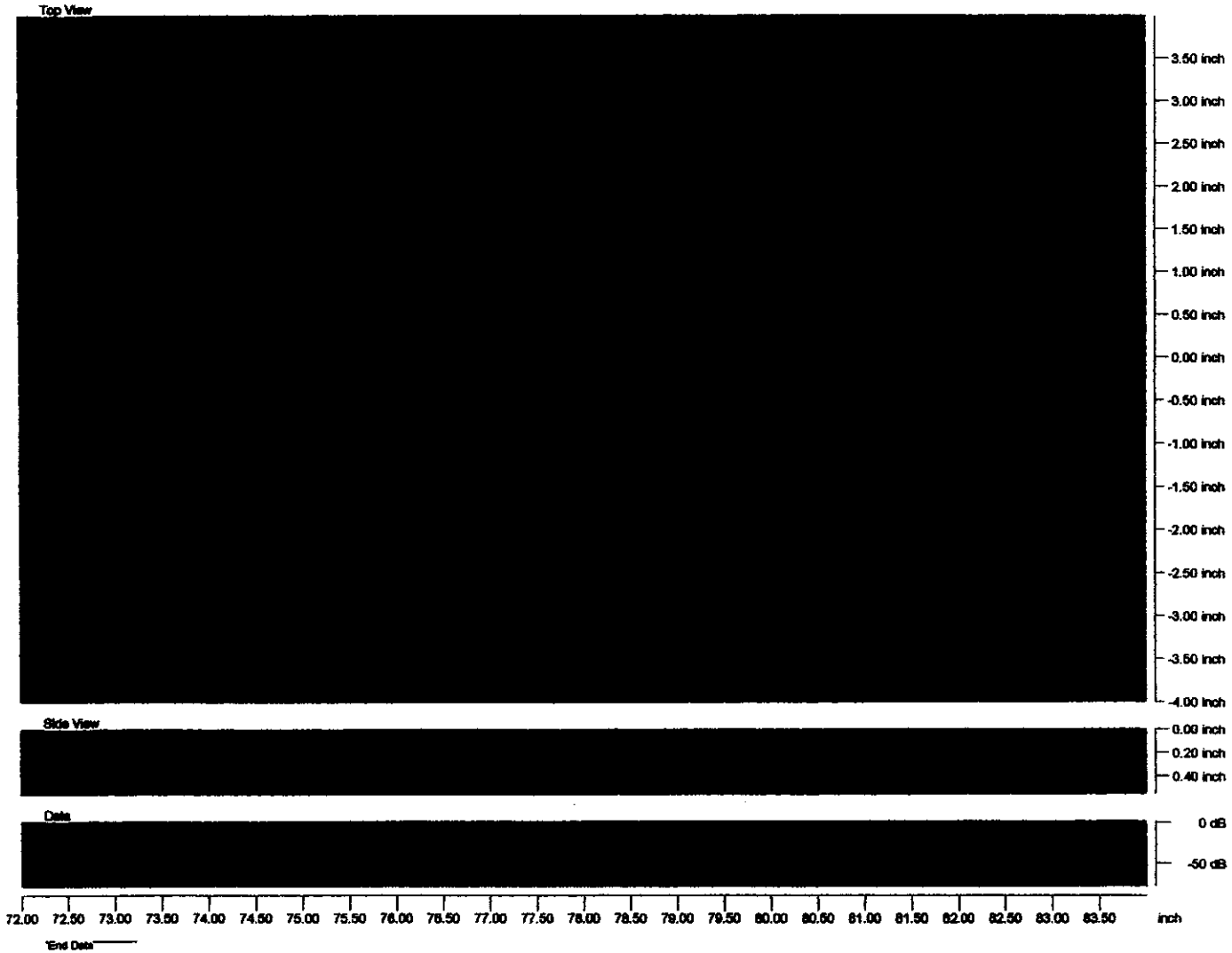


VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 15:26
2: P-scan, Images, p-scan data1, 6/20/00 15:26
3: T-scan, Images, p-scan data1, 6/20/00 15:26
4: T-scan, Images, p-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:09 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.

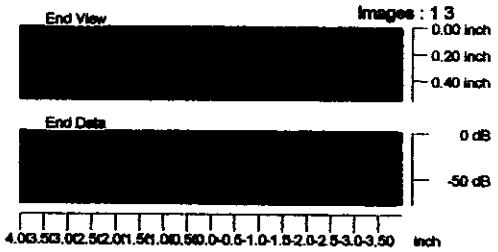


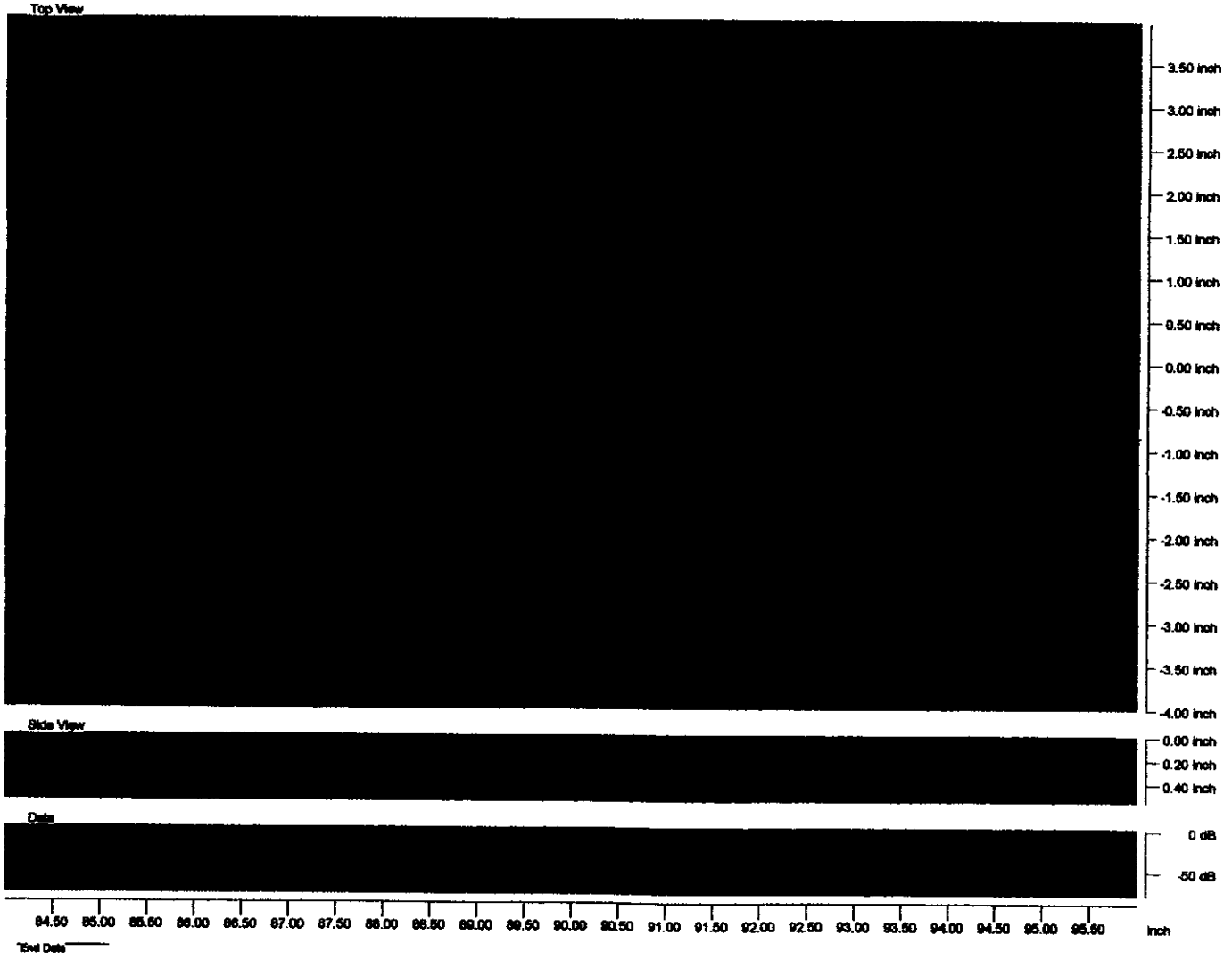



VERT.WELD/PLATE/4
JDEAWHN
AP-107

1: P-scan, Images, p-scan data1, 6/20/00 15:26
2: P-scan, Images, p-scan data1, 6/20/00 15:26
3: T-scan, Images, p-scan data1, 6/20/00 15:26
4: T-scan, Images, p-scan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:09 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.



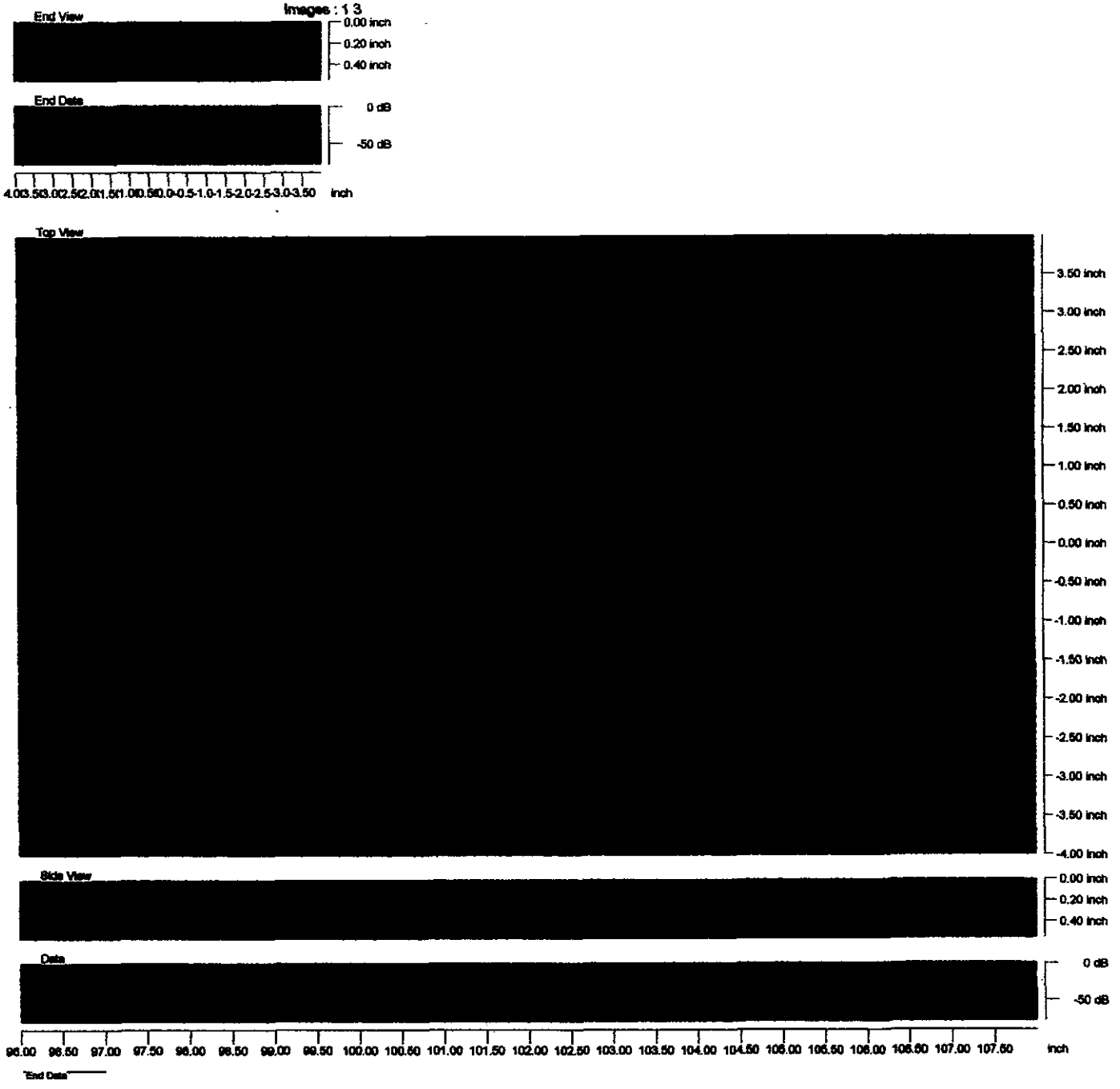



VERT.WELD/PLATE/4
JDE/WHN
AP-107

1: P-ecan, Images, p-ecan data1, 6/20/00 15:26
2: P-ecan, Images, p-ecan data1, 6/20/00 15:26
3: T-ecan, Images, p-ecan data1, 6/20/00 15:26
4: T-ecan, Images, p-ecan data1, 6/20/00 15:26

Printed on 2000-8-3 at 16:09 : P-ecan pres.1 <1, 2> of Job : VERT.WELD/PLATE/4.

Images : 1 3



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/26/00 9:25 | EXAM END: 14:16 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: VERT. WELD PLATE | TO: PLATE (PLATE 4) | CALIBRATED RANGE: 0" - 2.12" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 105" | | REF LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .750" NOM. THICKNESS | | |
| FILE NAME/ITEM#: VERT. WELD/45/WELD/4 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 45° | | |
| $X_0$ REF POINT (Lo): 1" BELOW HORZ. WELD | $Y_0$ REF POINT (Wo): ℄ WELD | SCAN WIDTH: 7.6" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO-CRACK LIKE INDICATIONS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley H Nelson | Wesley H Nelson | (N1) | |
| Level III Date 6/26/00 | Level III Date 8/7/00 | Level ___ Date ___ | ___ of ___ |

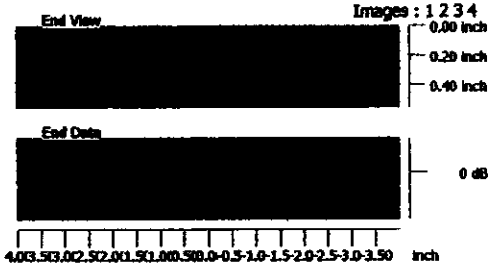
(N1) See Attached Letter From J. B. Elder

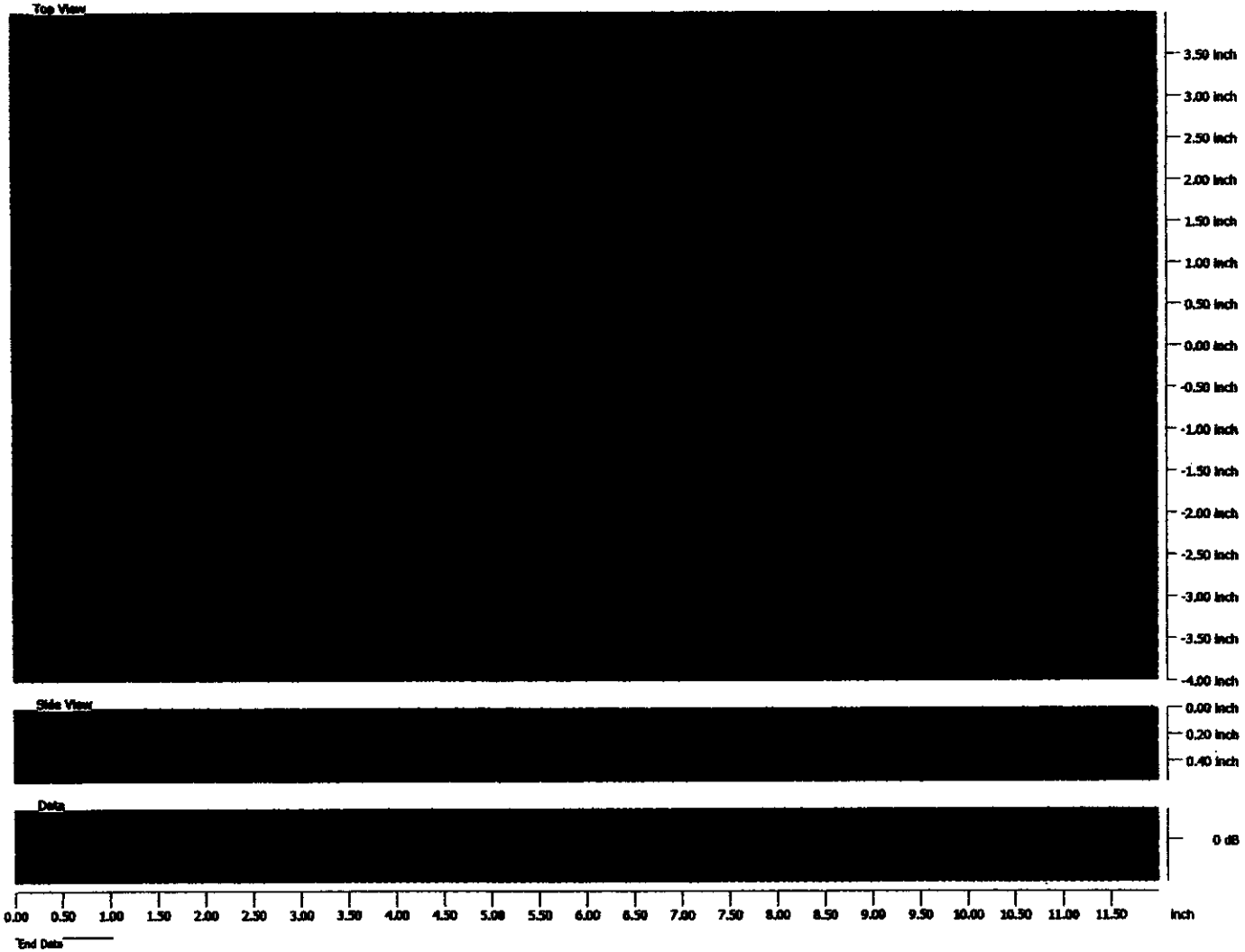
VERT/45/WELD/4
WHN
AP-107
Plate4

1: P-scan, Images, p-scan data1, 6/26/00 12:09
2: P-scan, Images, p-scan data1, 6/26/00 12:09
3: P-scan, Images, p-scan data1, 6/26/00 12:09
4: P-scan, Images, p-scan data1, 6/26/00 12:09

Printed on 2000-8-7 at 10:16 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.

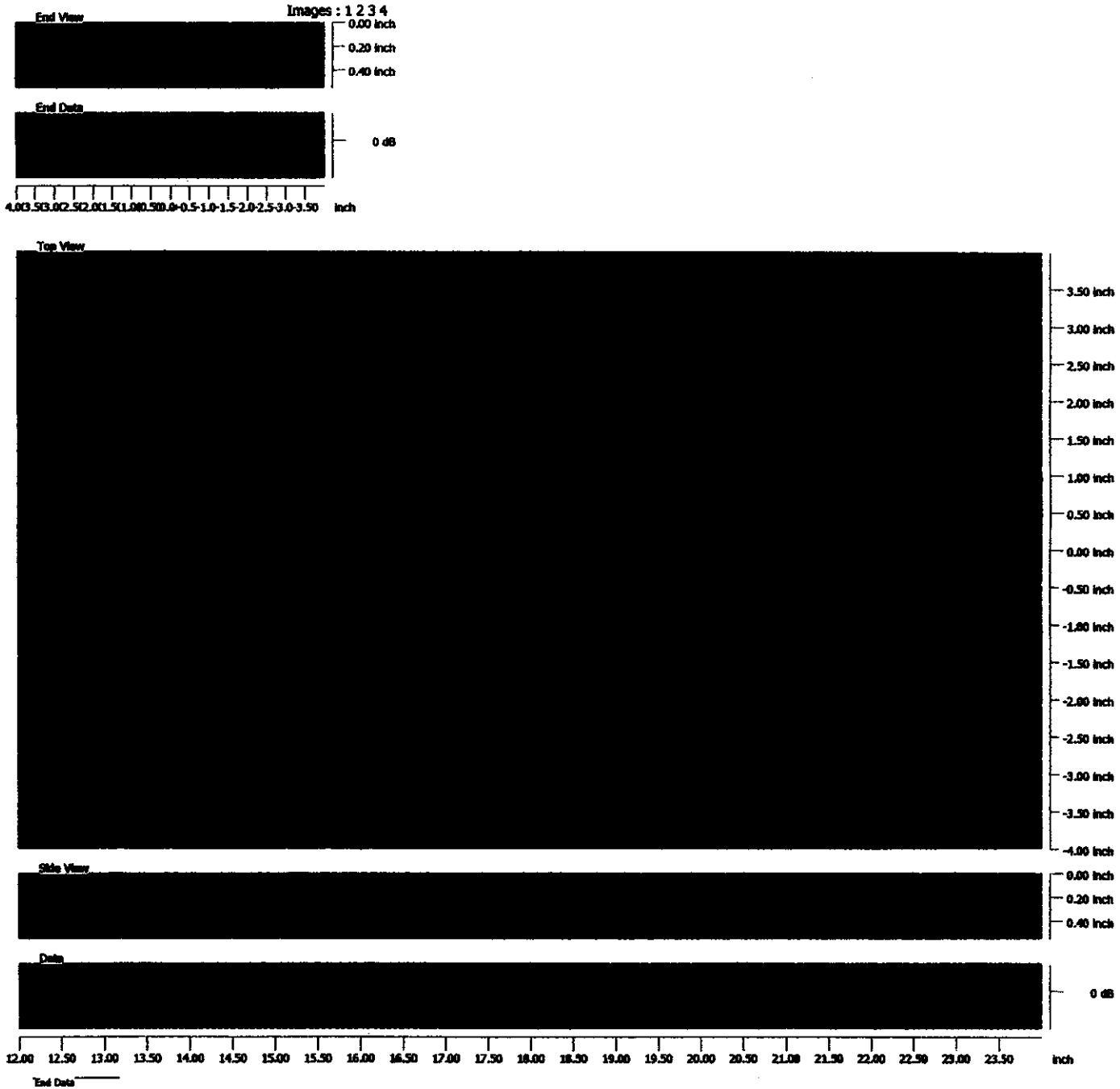
Images : 1 2 3 4



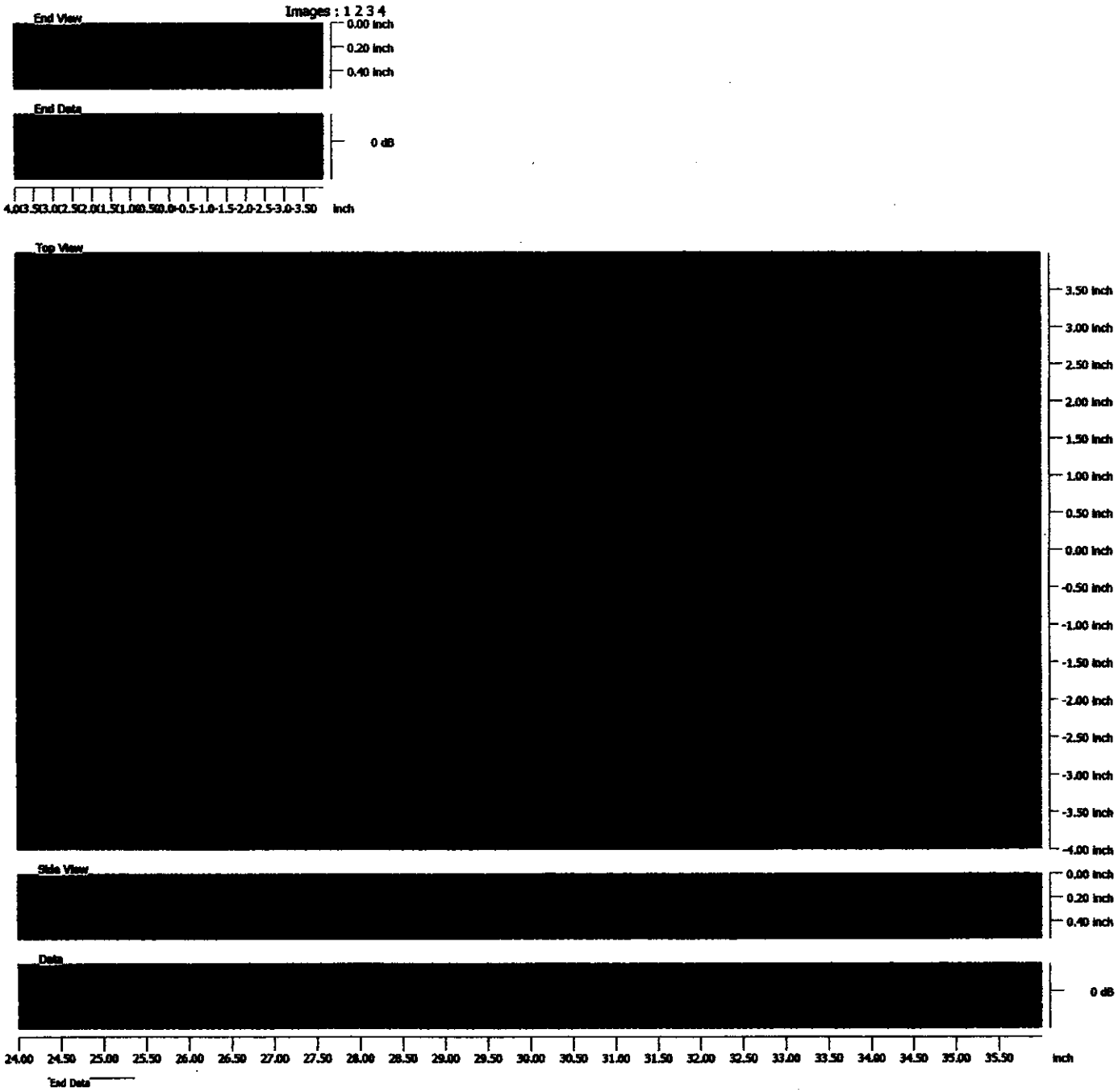
VERT/45/WELD/4 — 1: P-scan, Images, p-scan data1, 6/26/00 12:09
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 12:09
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 12:09
Plate4 — 4: P-scan, Images, p-scan data1, 6/26/00 12:09

Printed on 2000-8-7 at 10:17 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.



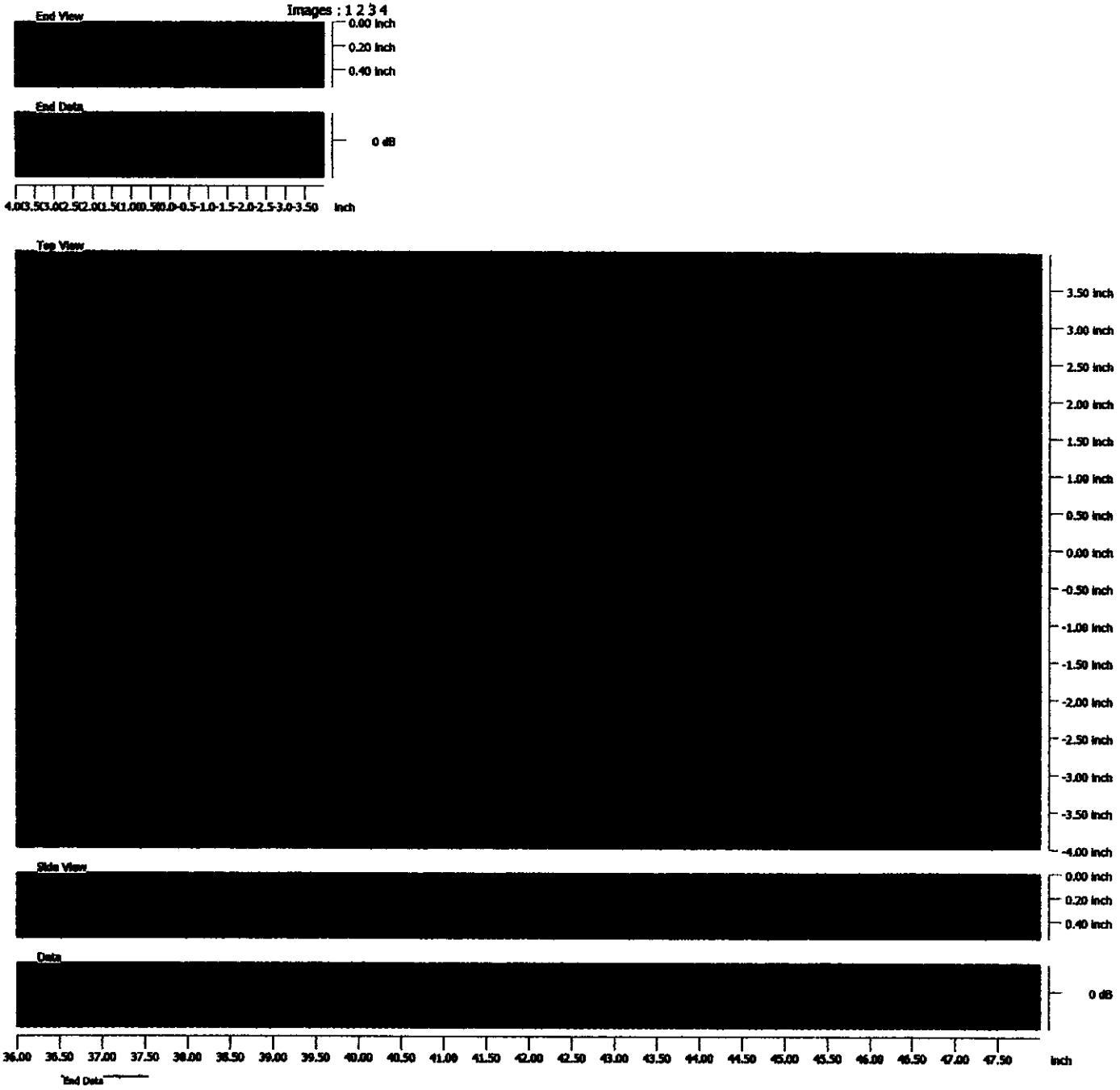
VERT/45/WELD/4 — 1: P-scan, Images, p-scan data1, 6/26/00 12:09
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 12:09
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 12:09
Plate4 — 4: P-scan, Images, p-scan data1, 6/26/00 12:09

Printed on 2000-8-7 at 10:19 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.

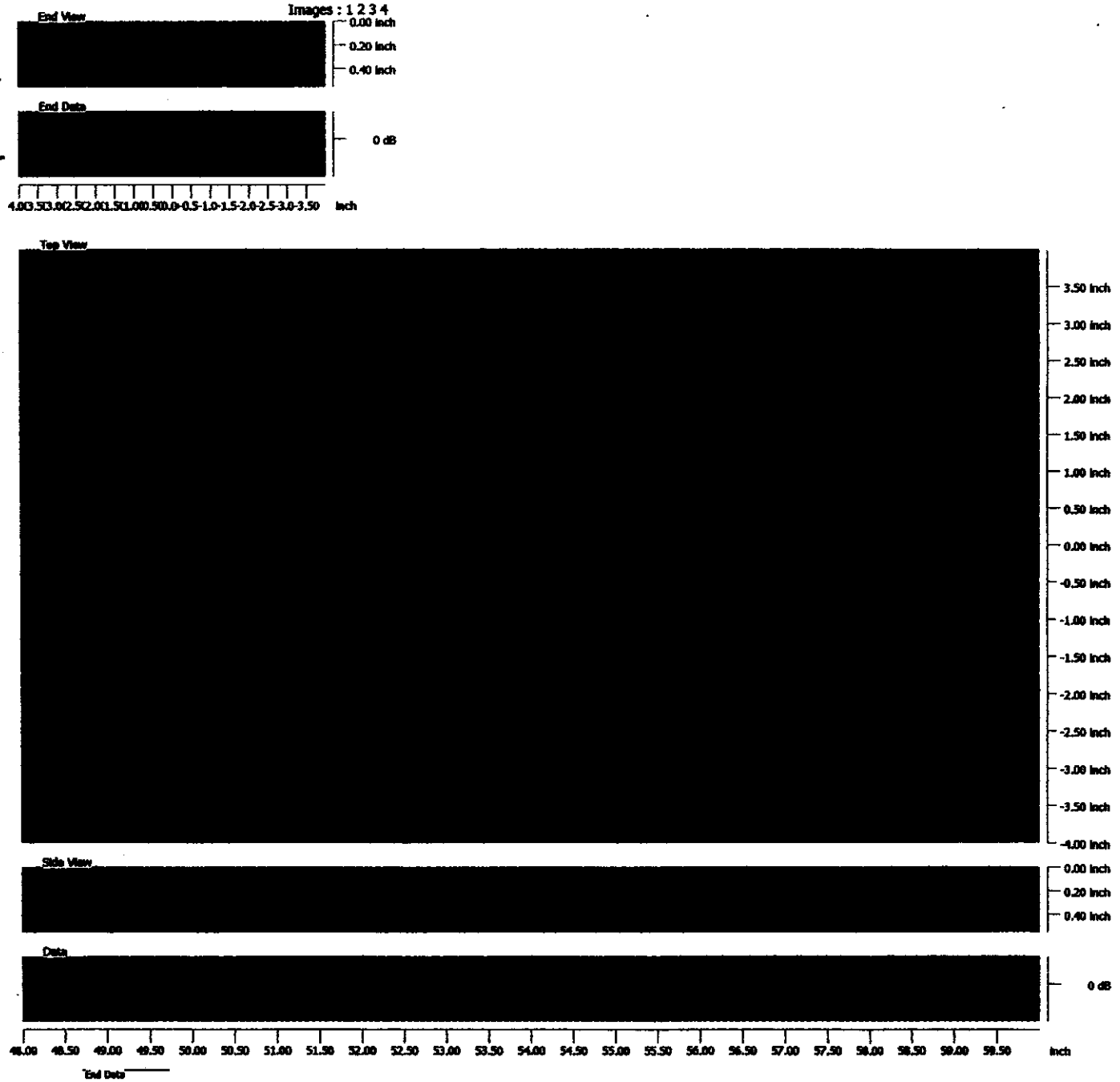


VERT/45/WELD/4 — 1: P-scan, Images, p-scan data1, 6/26/00 12:09
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 12:09
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 12:09
Plate4 — 4: P-scan, Images, p-scan data1, 6/26/00 12:09

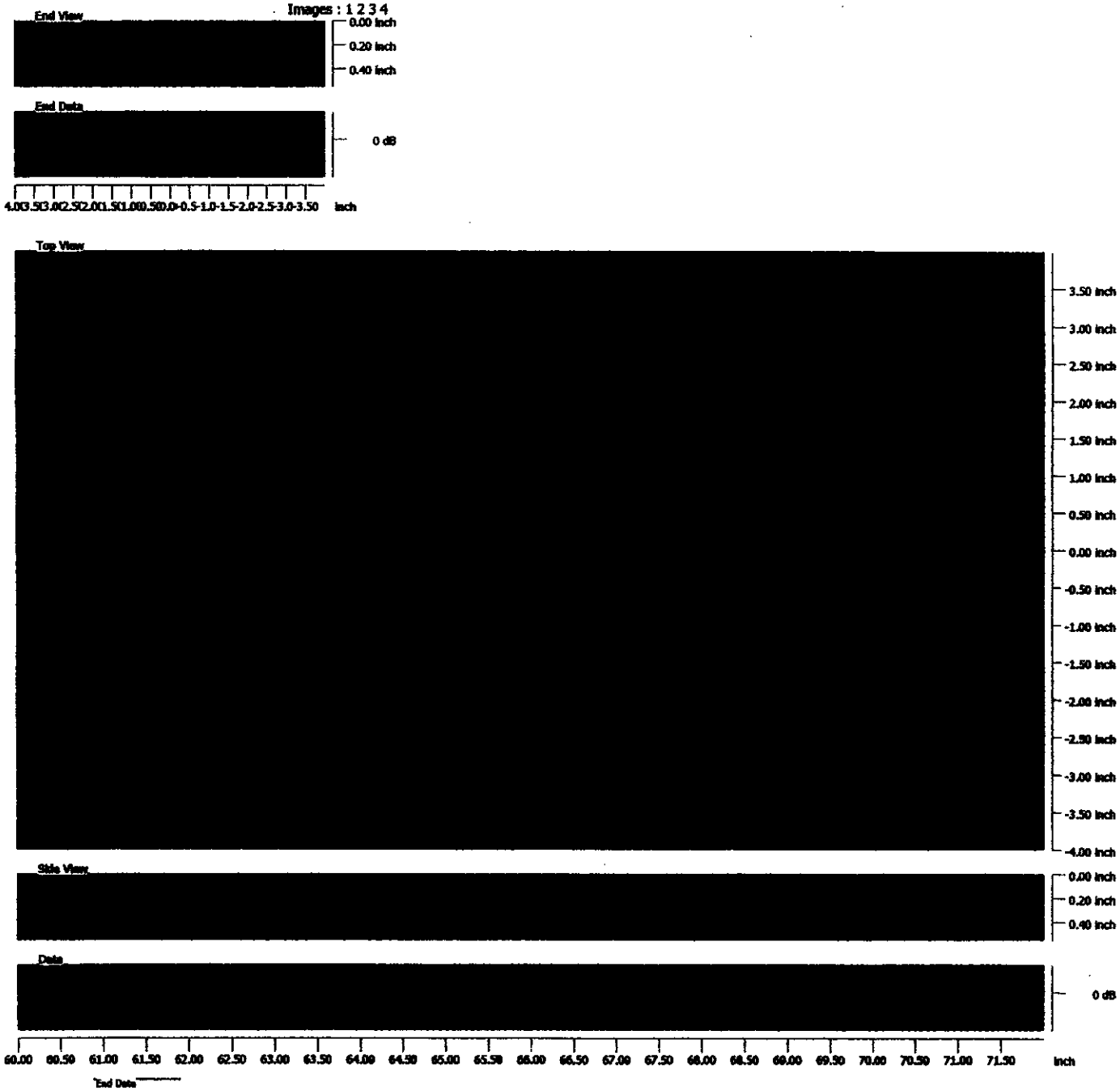
Printed on 2000-8-7 at 10:22 ; P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.



VERT/45/WELD/4 — 1: P-scan, Images, p-scan data1, 6/26/00 12:09
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 12:09
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 12:09
Plate4 — 4: P-scan, Images, p-scan data1, 6/26/00 12:09
Printed on 2000-8-7 at 10:22 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.

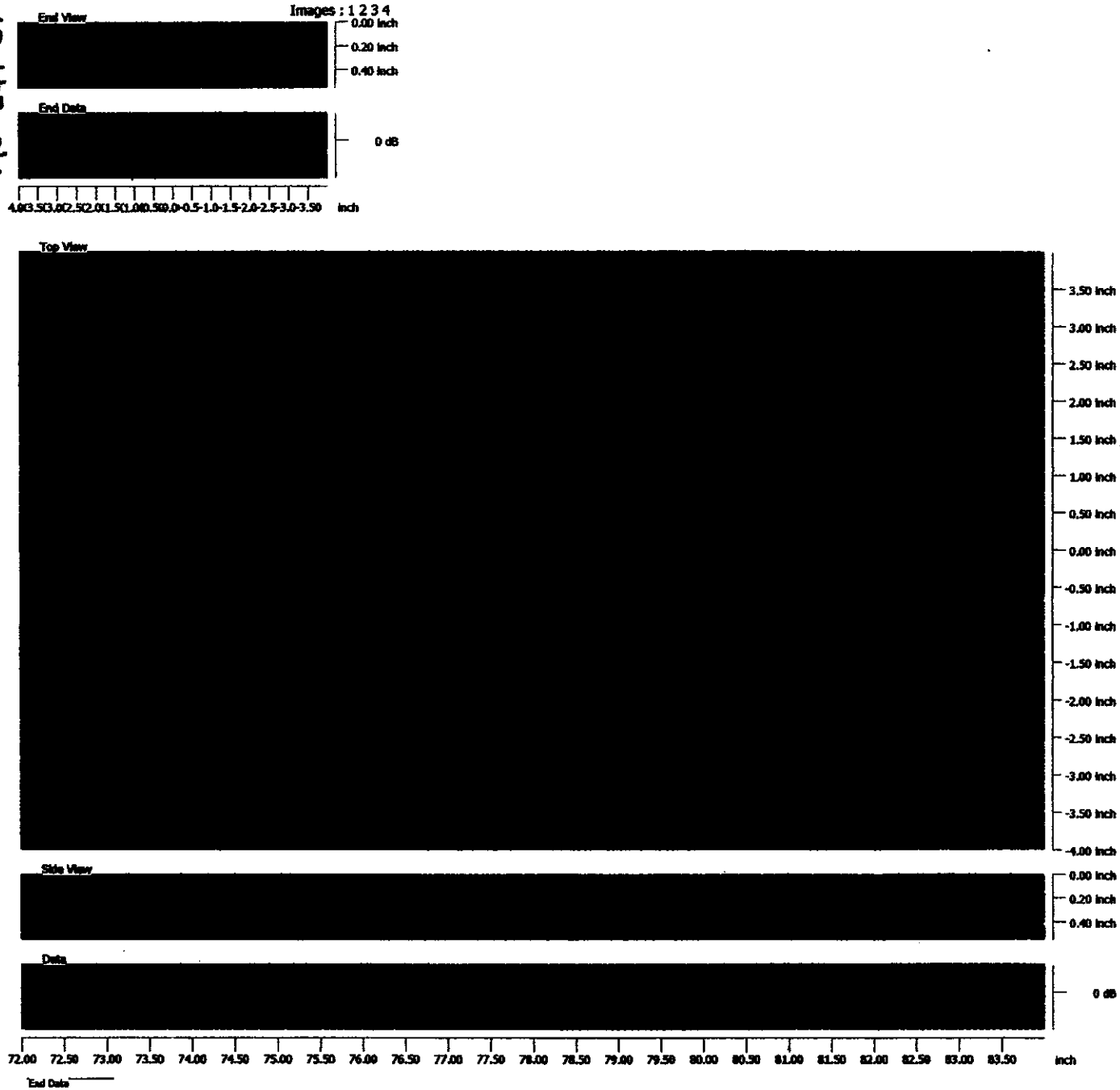


VERT/45/WELD/4 — 1: P-scan, Images, p-scan data1, 6/26/00 12:09
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 12:09
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 12:09
Plate4 — 4: P-scan, Images, p-scan data1, 6/26/00 12:09
Printed on 2000-8-7 at 10:22 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.



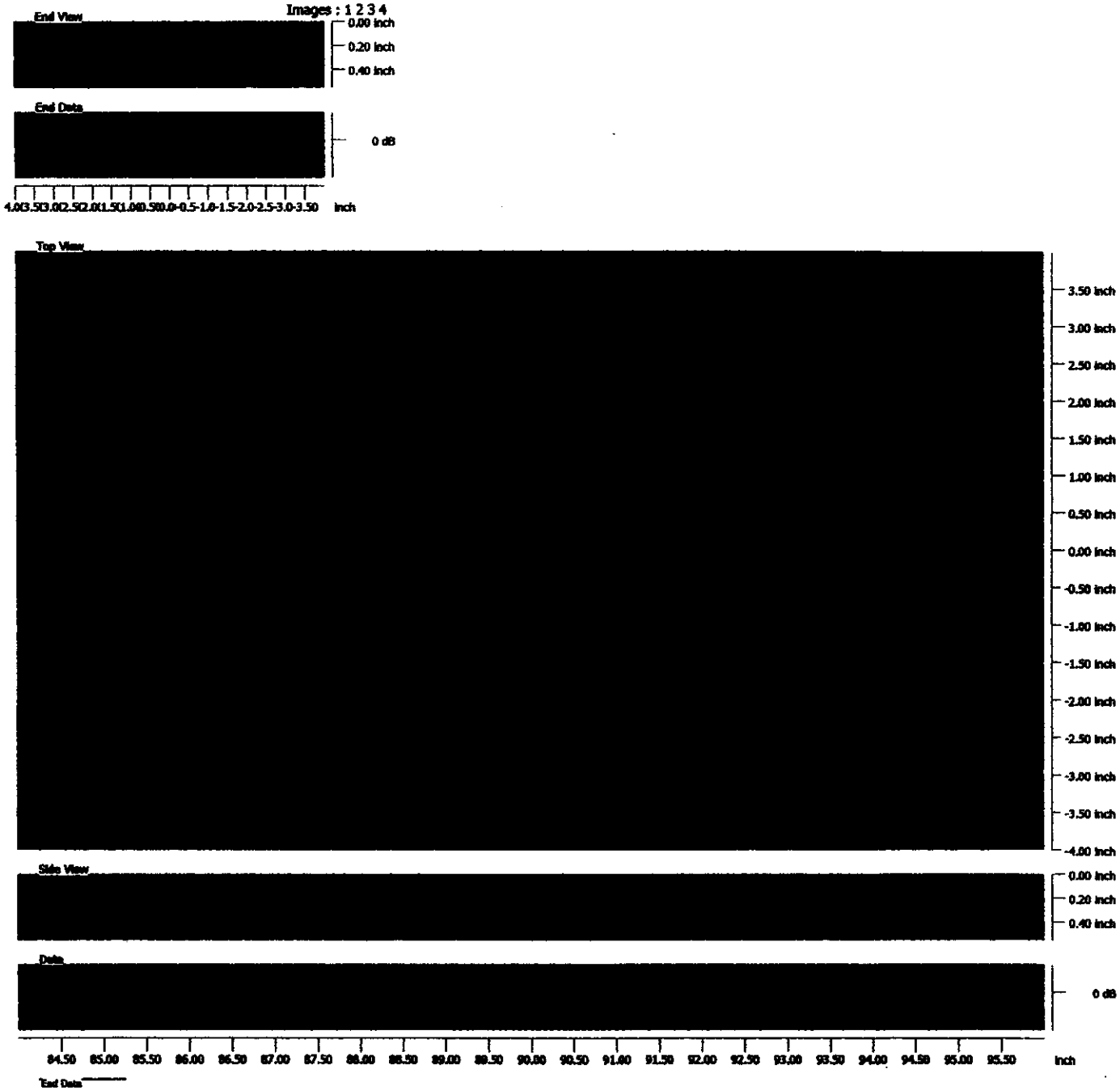
VERT/45/WELD/4 — 1: P-scan, Images, p-scan data1, 6/26/00 12:09
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 12:09
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 12:09
Plate4 — 4: P-scan, Images, p-scan data1, 6/26/00 12:09

Printed on 2000-8-7 at 10:23 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.



VERT/45/WELD/4 — 1: P-scan, Images, p-scan data1, 6/26/00 12:09
WHN — 2: P-scan, Images, p-scan data1, 6/26/00 12:09
AP-107 — 3: P-scan, Images, p-scan data1, 6/26/00 12:09
Plate4 — 4: P-scan, Images, p-scan data1, 6/26/00 12:09

Printed on 2000-8-7 at 10:23 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.

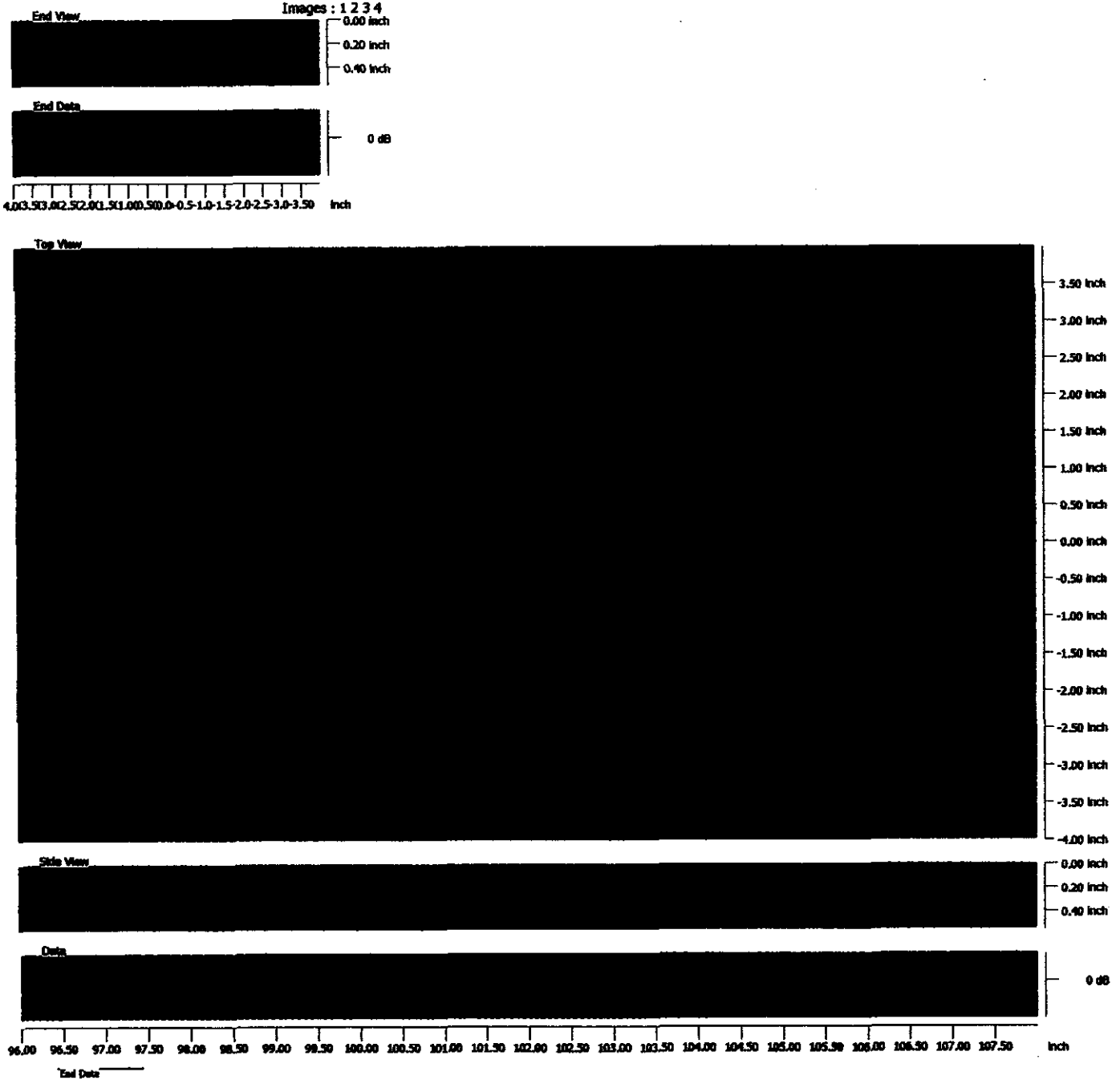


VERT/45/WELD/4
WHN
AP-107
Plate4

1: P-scan, Images, p-scan data1, 6/26/00 12:09
2: P-scan, Images, p-scan data1, 6/26/00 12:09
3: P-scan, Images, p-scan data1, 6/26/00 12:09
4: P-scan, Images, p-scan data1, 6/26/00 12:09

Printed on 2000-8-7 at 10:23 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/4.

Images : 1 2 3 4



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/19/00 12:15 | EXAM END: 21:13 | JOB #: 00-42 |
| COMPONENT ID: 107-AP | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .875" |
| CONFIGURATION: Vert. Weld Plate TO Plate (Plates) | | CALIBRATED RANGE: .3" To 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 20.4" | | REF. LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: LOGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: Vert. Weld/Plate/s | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$): 1" Below Horz. Weld | $Y_0$ REF. POINT ($W_0$): ℄ Weld | SCAN WIDTH: 7.670" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE. THK. | MIN. THK, R. LIG. | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| 1 | 0" | 12" | | | .866" | .860" | | |
| 2 | 12" | 20.4" | | | .873" | .865" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley A. Nelson | Wesley A. Nelson | (U1) | |
| Level III Date 6/19/00 | Level III Date 8/1/00 | Level ___ Date ___ | ___ of ___ |

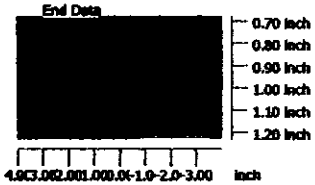
(U1) See Attached Letter From J. B. Elder

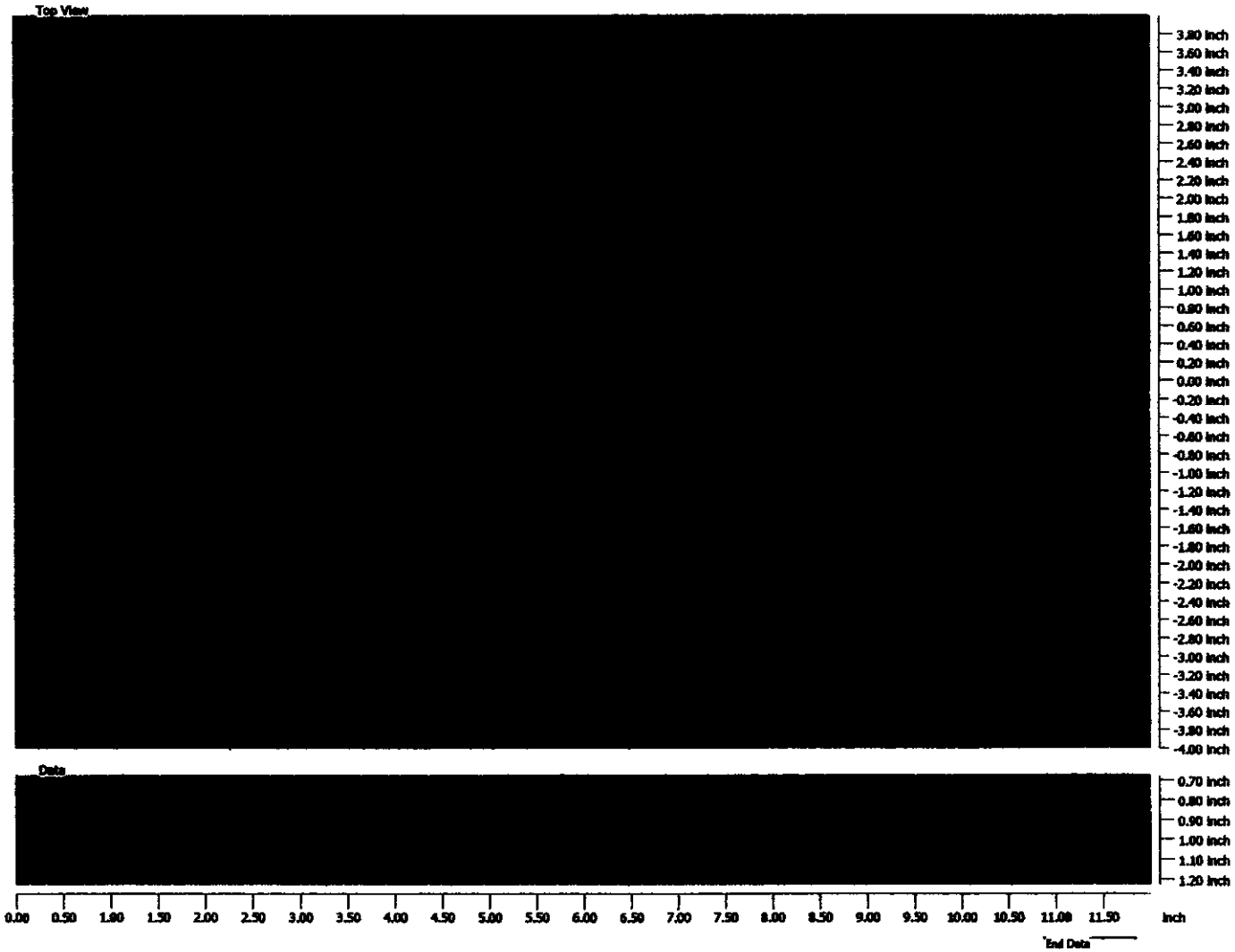
VERT.WELD/PLATE/5
JDE/WHIN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 21:13
2: P-scan, Images, t-scan data1, 6/19/00 21:13
3: T-scan, Images, t-scan data1, 6/19/00 21:13
4: T-scan, Images, t-scan data1, 6/19/00 21:13

Printed on 2000-8-7 at 8:28 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/5.

Images : 1 2 4



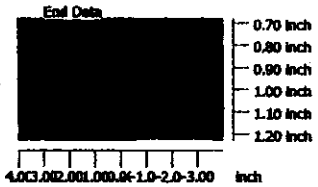



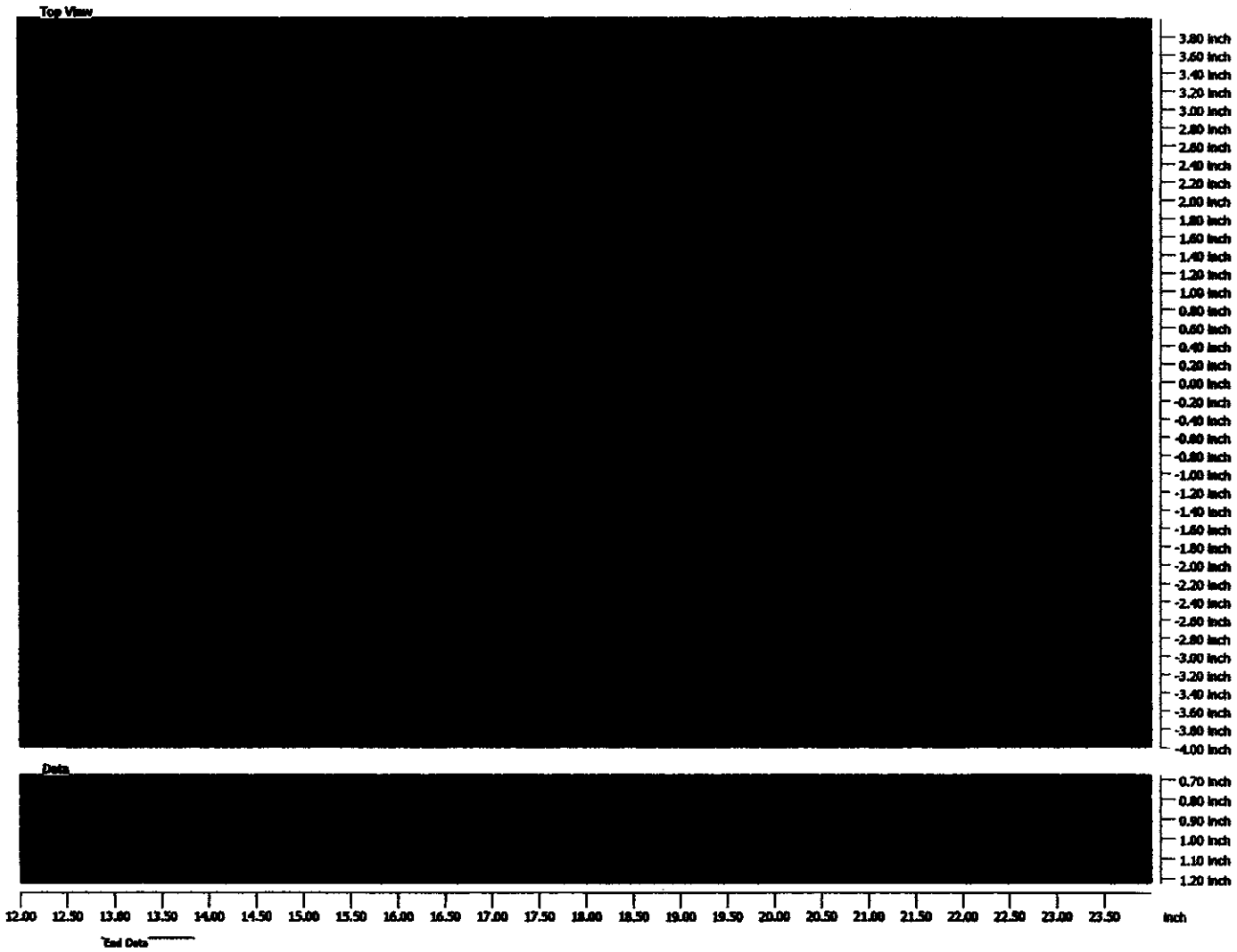
VERT.WELD/PLATE/5
JDE/WHN
AP-107

1: P-scan, Images, t-scan data1, 6/19/00 21:13
2: P-scan, Images, t-scan data1, 6/19/00 21:13
3: T-scan, Images, t-scan data1, 6/19/00 21:13
4: T-scan, Images, t-scan data1, 6/19/00 21:13

Printed on 2000-8-7 at 8:28 : T-scan pres.1 <3, 4> of Job : VERT.WELD/PLATE/5.

Images : 1 2 4



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK Farm | SYSTEM: PSP-4 | EXAM START: 6/19/00 12:15 | EXAM END: 21:13 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: Vert. Weld Plate TO Plate (Plate 5) | | CALIBRATED RANGE: 0" TO 3.50" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 18.8" | | REF. LEVEL CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .875" NOM. Thickness | | |
| FILE NAME/ITEM#: Vert. Weld/Plate/5 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 60° | | |
| Xo REF. POINT (Lo): 1" Below HORZ. Weld | Yo REF. POINT (Wo): ℄ Weld | SCAN WIDTH: 7.670" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO Crack Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/19/00 | [signature] Level III Date 8/1/00 | (N1) Level ___ Date ___ | ___ of ___ |

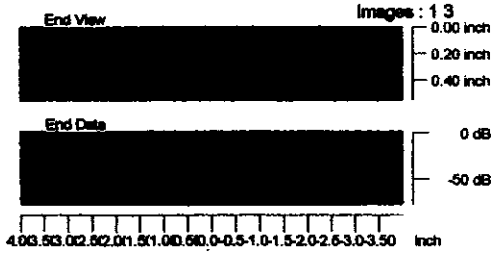
(N1) See Attached Letter From J. B. Elder

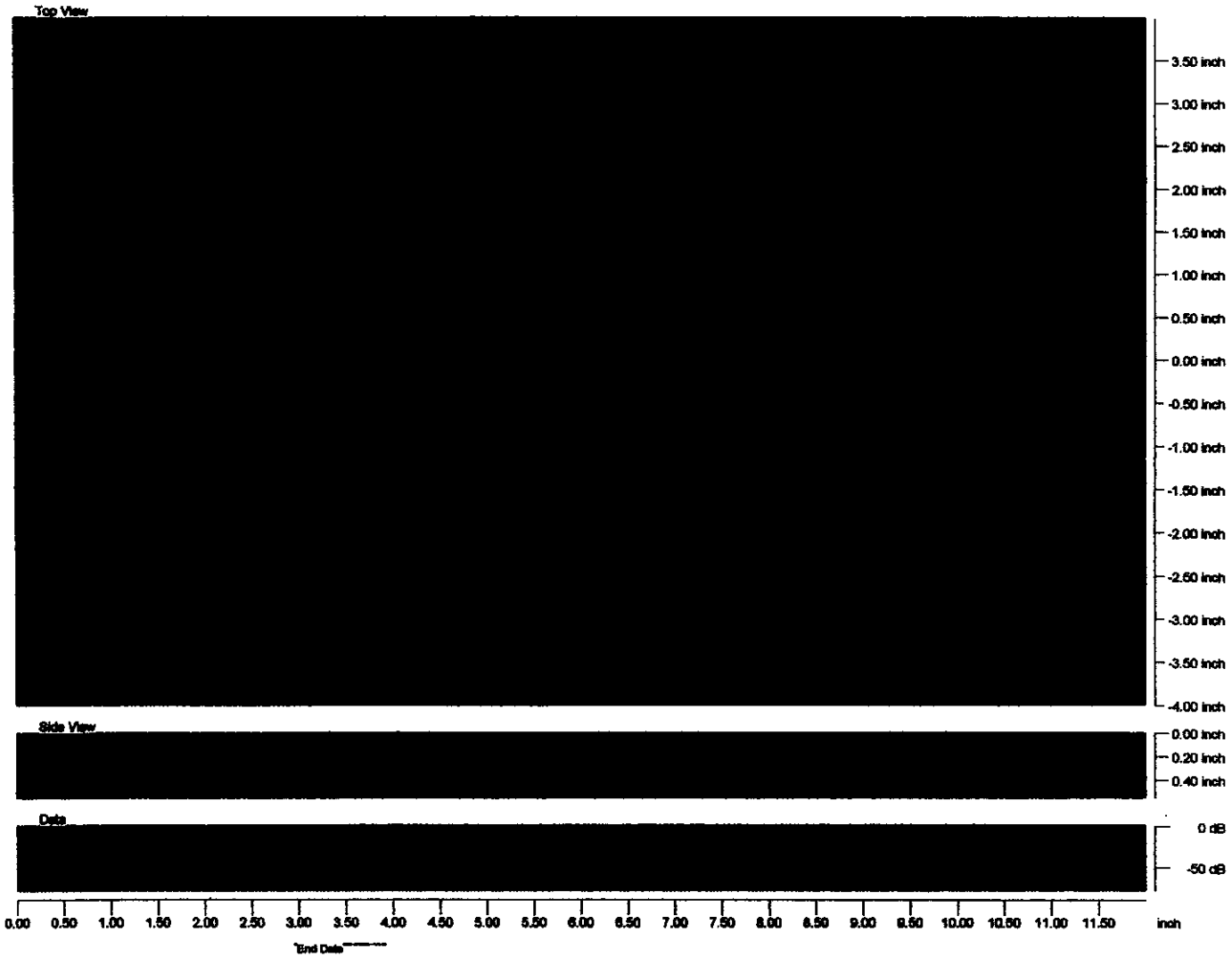
VERT.WELD/PLATE/5
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 21:13
2: P-scan, Images, p-scan data1, 6/19/00 21:13
3: T-scan, Images, p-scan data1, 6/19/00 21:13
4: T-scan, Images, p-scan data1, 6/19/00 21:13

Printed on 2000-8-3 at 15:16 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/5.

Images : 1 3



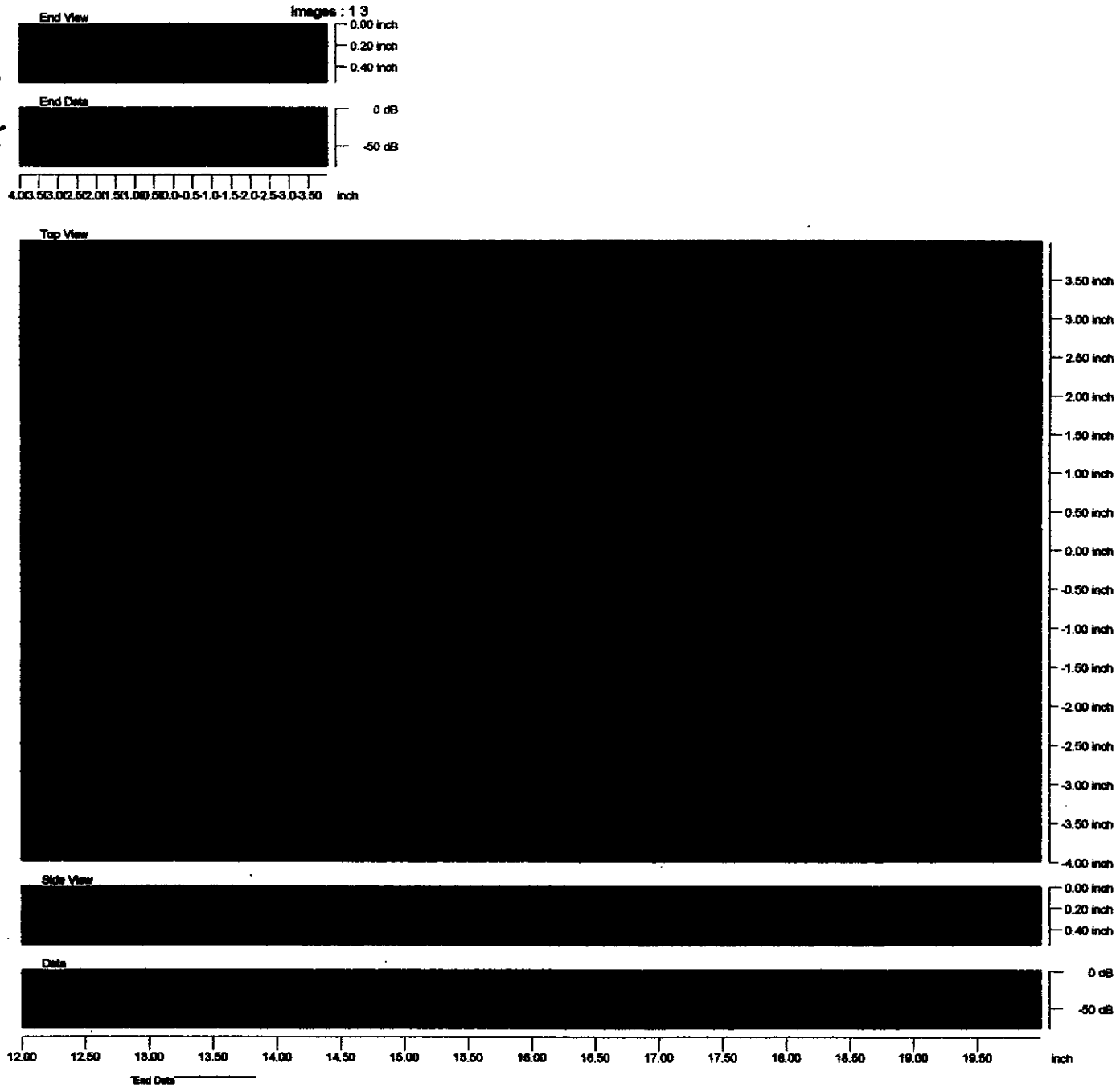



VERT.WELD/PLATE/5
JDE/WHN
AP-107

1: P-scan, Images, p-scan data1, 6/19/00 21:13
2: P-scan, Images, p-scan data1, 6/19/00 21:13
3: T-scan, Images, p-scan data1, 6/19/00 21:13
4: T-scan, Images, p-scan data1, 6/19/00 21:13

Printed on 2000-8-3 at 15:17 : P-scan pres.1 <1, 2> of Job : VERT.WELD/PLATE/5.

Images : 1 3



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/22/00 16:45 | EXAM END: 20:37 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: VERT. WELD PLATE TO PLATE (PLATE 5) | | CALIBRATED RANGE: 0" - 2.475" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 20" | | REF LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .875" NOM. THICKNESS | | |
| FILE NAME/ITEM#: VERT. 145 WELD 15 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ OD ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): 1" BELOW HORZ. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.52" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

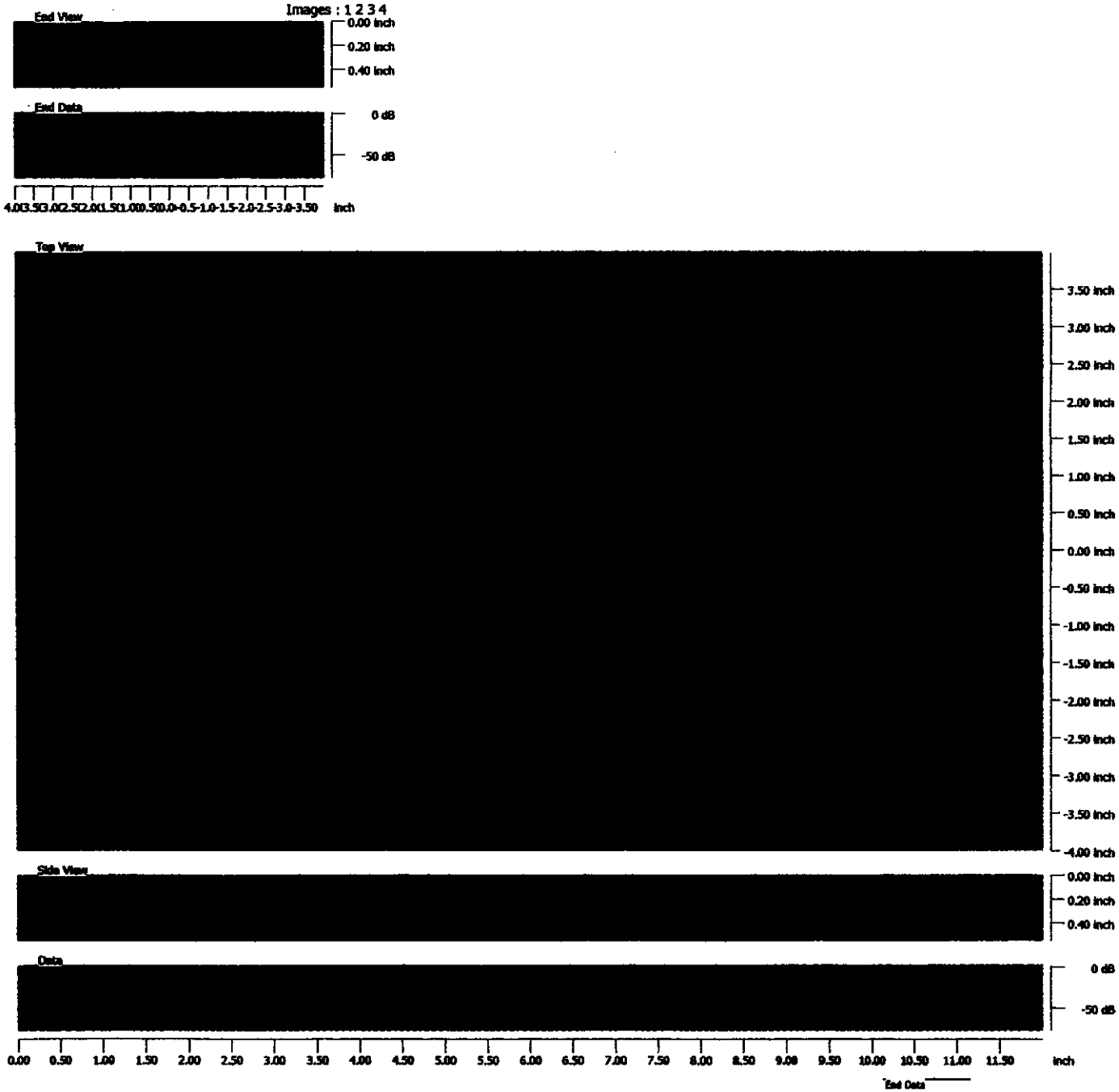
| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO CRACK-LIKE INDICATIONS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/22/00 | [signature] Level III Date 8/1/00 | (N1) Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B. Elder

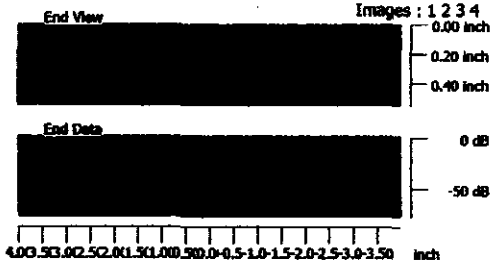
VERT/45/WELD/5 — 1: P-scan, Images, p-scan data1, 6/22/00 20:37
WHN — 2: P-scan, Images, p-scan data1, 6/22/00 20:37
AP-107 — 3: P-scan, Images, p-scan data1, 6/22/00 20:37
Plate5 — 4: P-scan, Images, p-scan data1, 6/22/00 20:37
Printed on 2000-8-7 at 11:23 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/5.

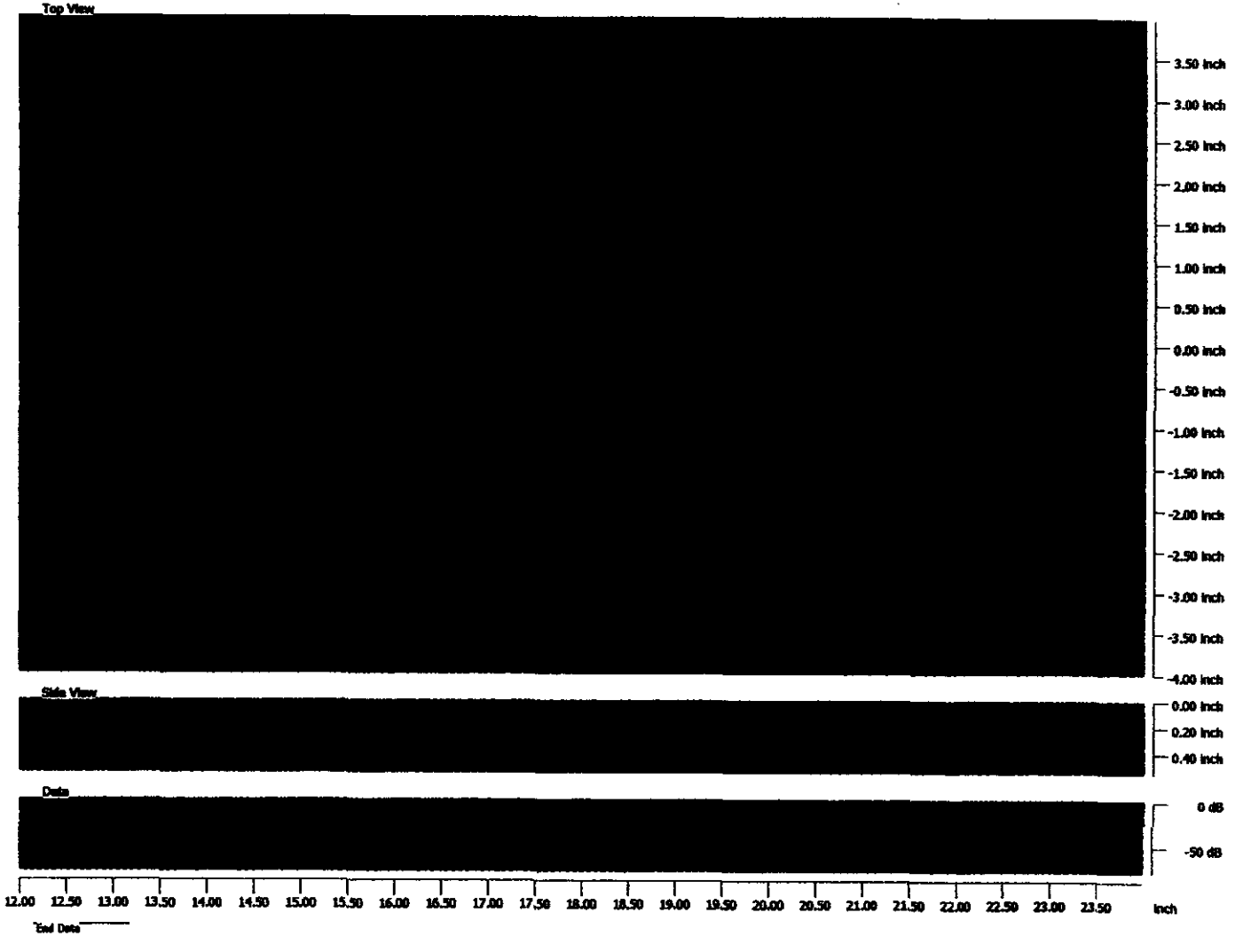


VERT/45/WELD/5
WHN
AP-107
Plate5

1: P-scan, Images, p-scan data1, 6/22/00 20:37
2: P-scan, Images, p-scan data1, 6/22/00 20:37
3: P-scan, Images, p-scan data1, 6/22/00 20:37
4: P-scan, Images, p-scan data1, 6/22/00 20:37

Printed on 2000-8-7 at 11:24 : P-scan pres.1 <1, 2, 3, 4> of Job : VERT/45/WELD/5.



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/26/00 17:00 | EXAM END: 21:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .875" |
| CONFIGURATION: HORZ. WELD PLATE TO KNUCKLE | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 122" | | REF. LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION: |
| FILE NAME/ITEM#: HORZ. WELD/60/0/B | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$): 108" FROM 1st VERT. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.1" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE. THK. | MIN. THK. R. LIG. | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0 | 12 | | | .896" | .877" | | |
| | 12 | 24 | | | .897" | .879" | | |
| | 24 | 36 | | | .897" | .882" | | |
| | 36 | 48 | | | .896" | .879" | | |
| | 48 | 60 | | | .896" | .877" | | |
| | 60 | 72 | | | .896" | .872" | | |
| | 72 | 84 | | | .895" | .875" | | |
| | 84 | 96 | | | .895" | .875" | | |
| | 96 | 108 | | | .895" | .892" | | |
| | 108 | 120 | | | .895" | .879" | | |
| | 120 | 122 | | | .895" | .872" | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/26/00 | [signature] Level III Date 8/7/00 | (N1) Level ___ Date ___ | ___ of ___ |

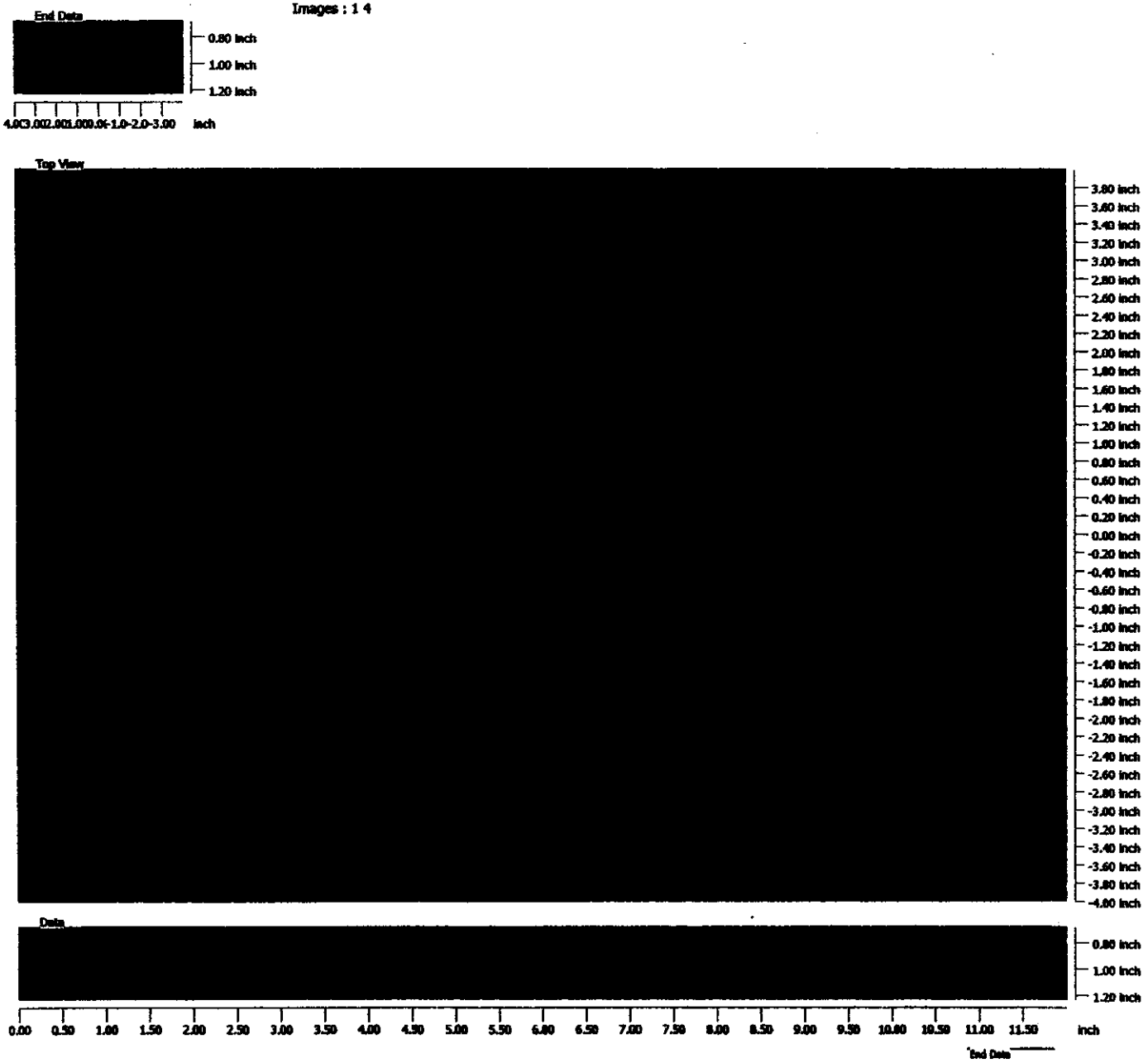
(N1) SEE ATTACHED LETTER FROM J. B. ELDER

HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-25 at 9:46 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1 4

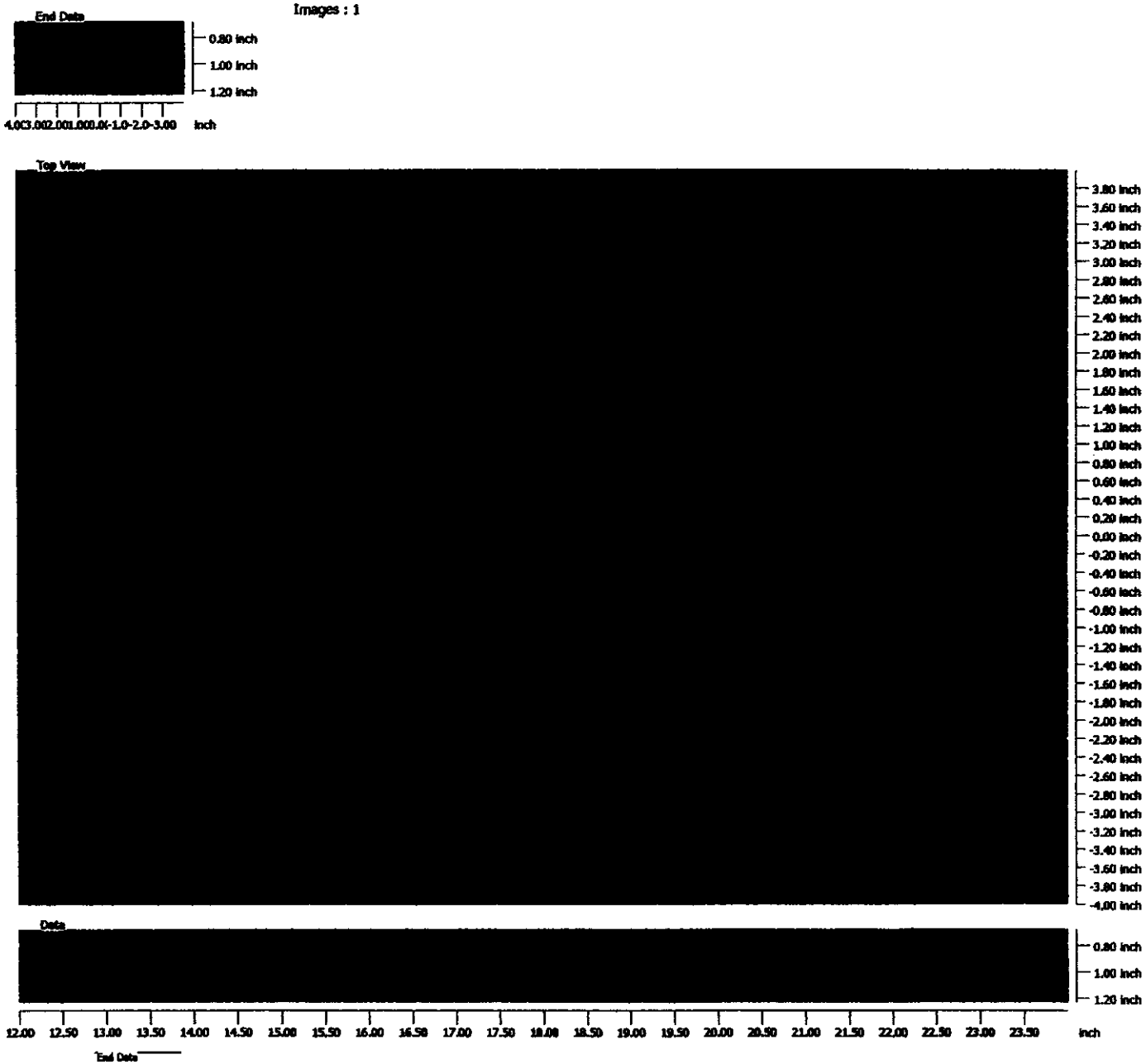


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:11 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/8.

Images : 1

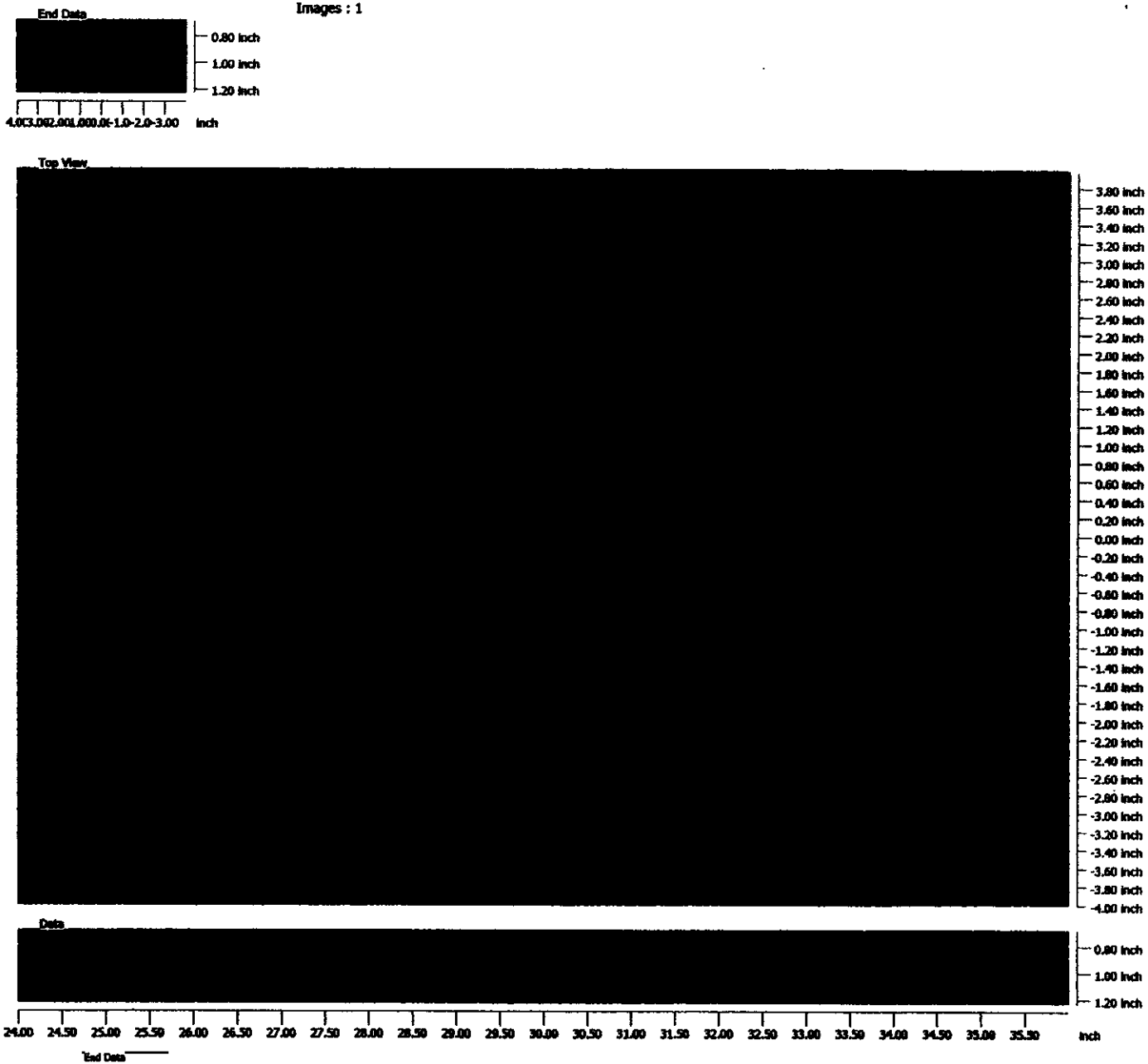


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:14 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1

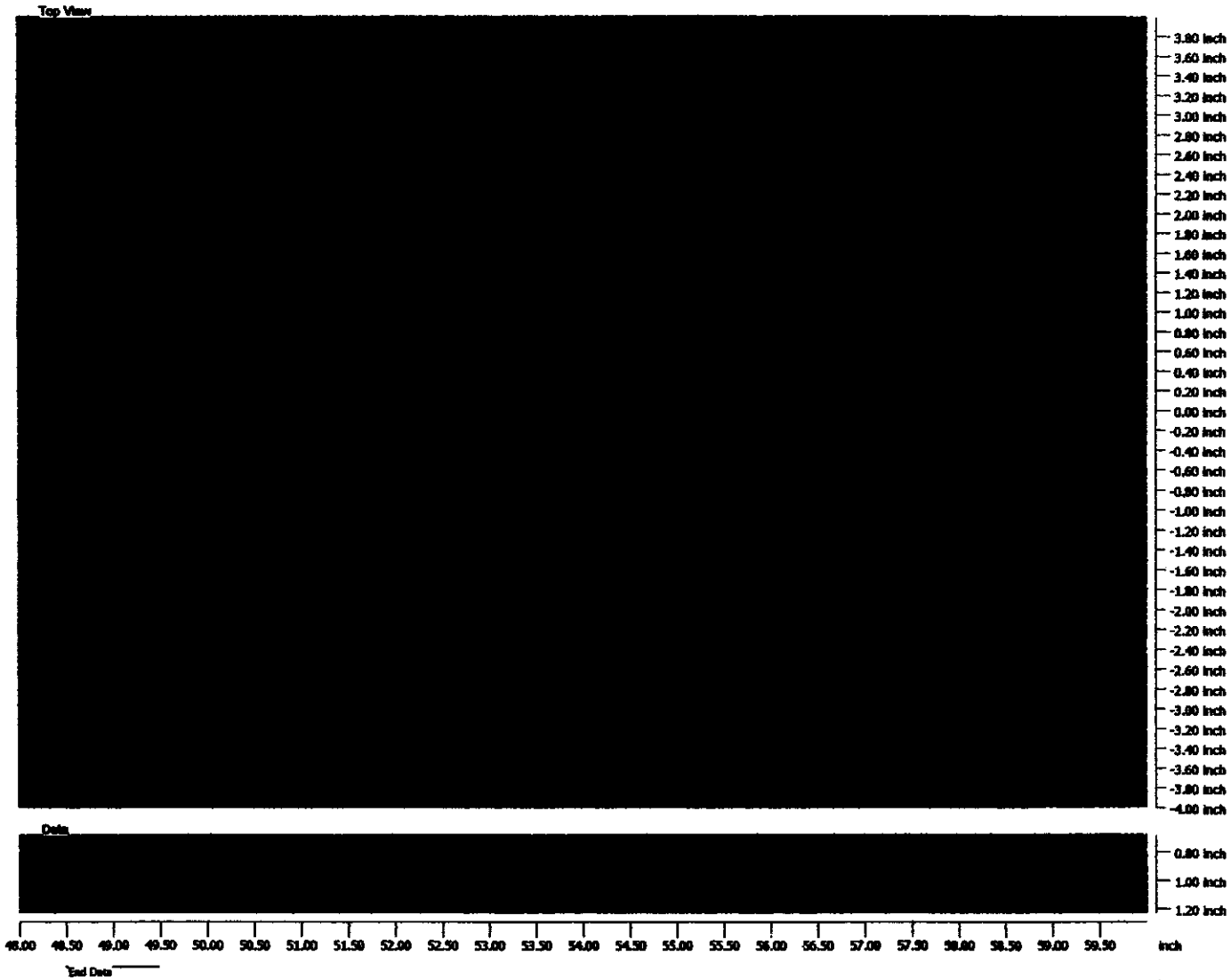


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:18 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1

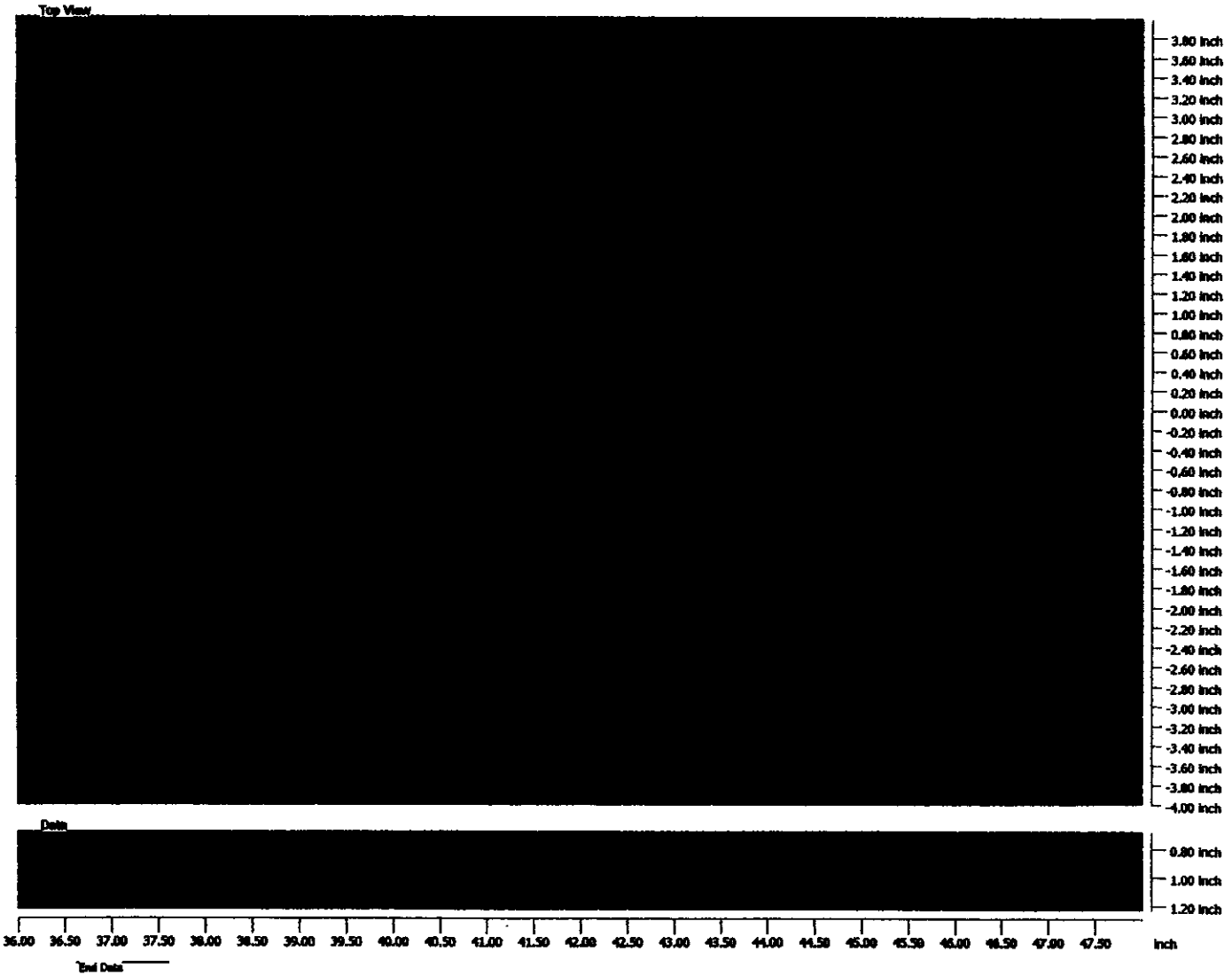


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:18 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1

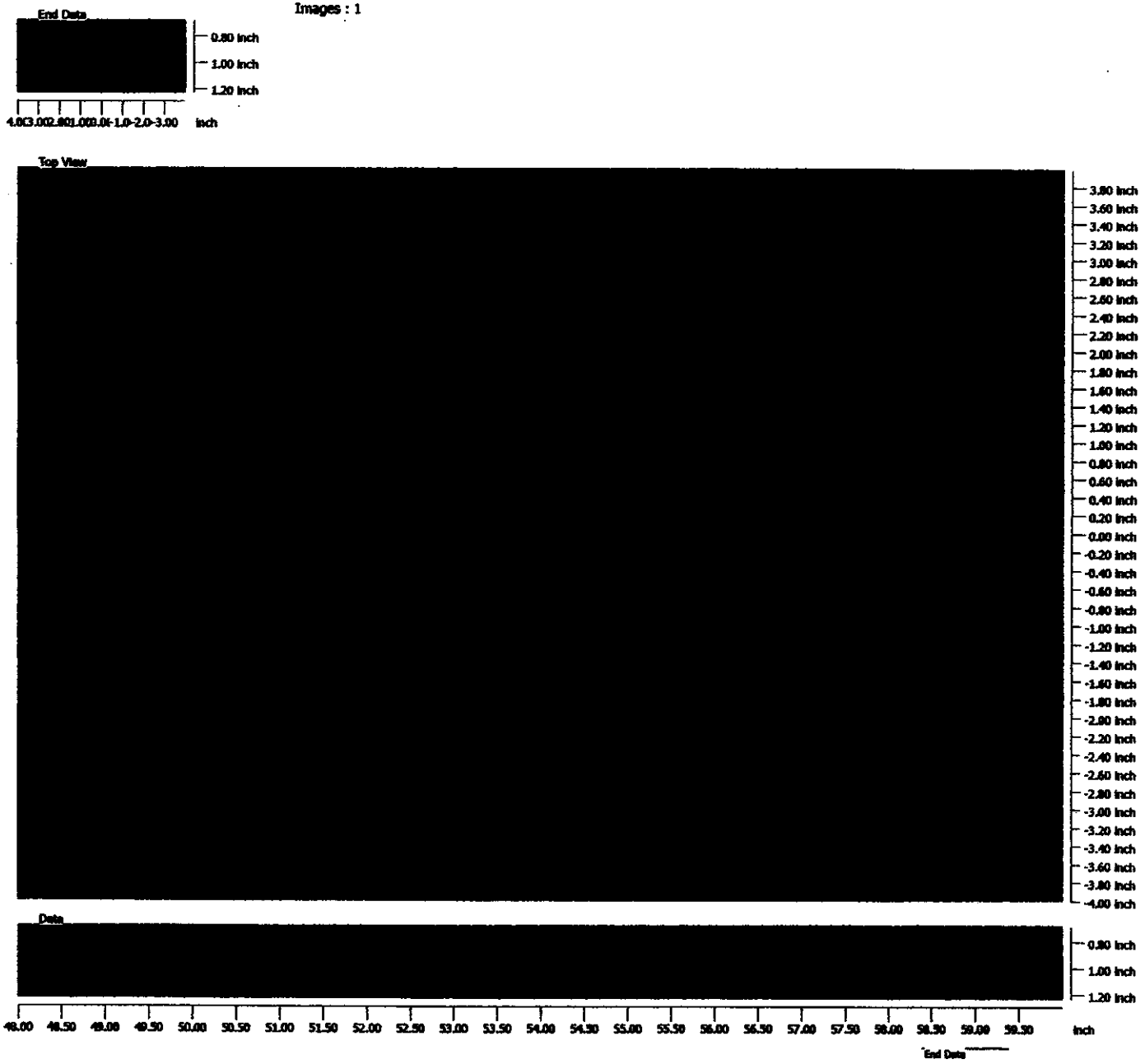


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:25 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1

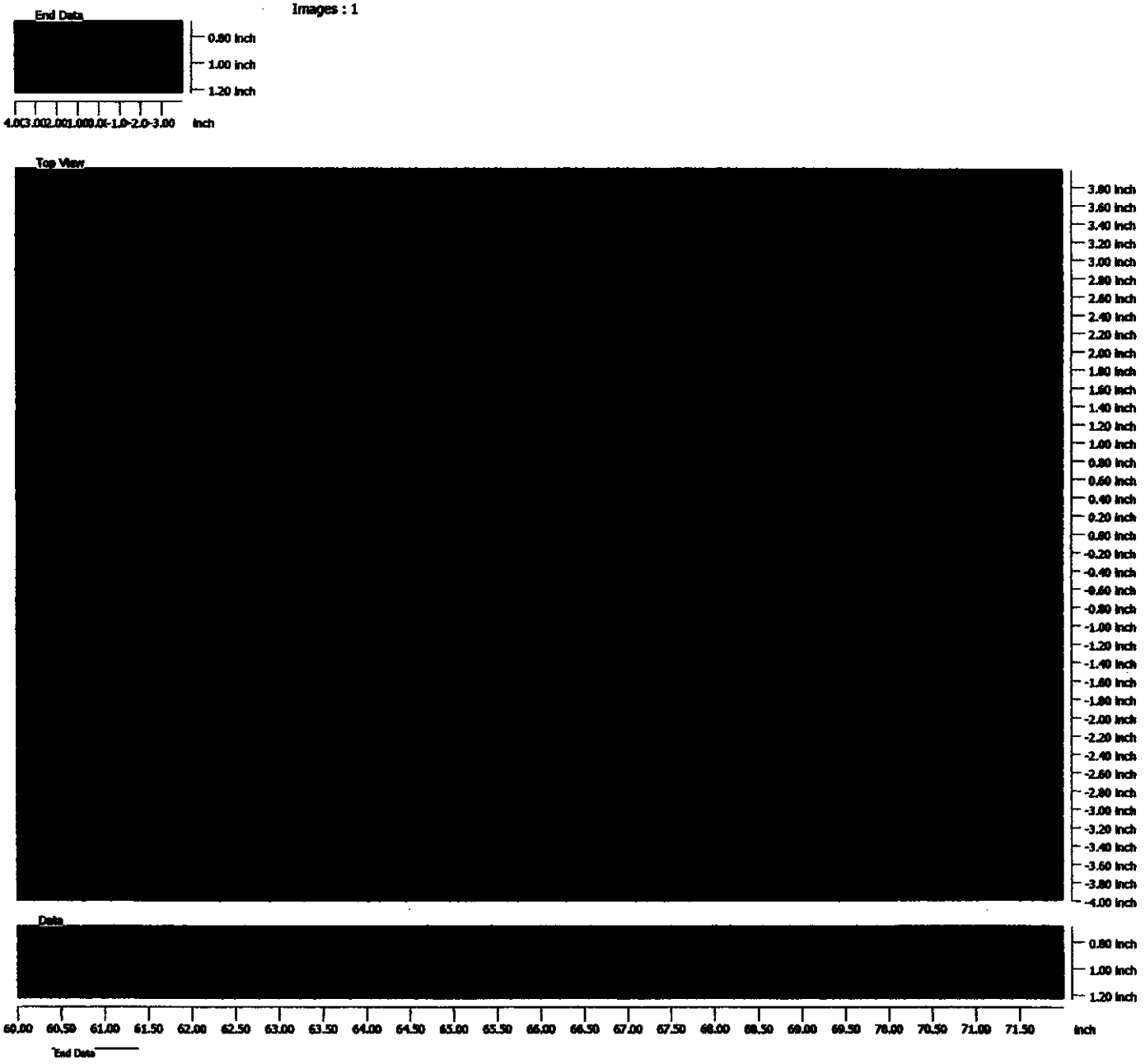


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:25 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1



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HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:28 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

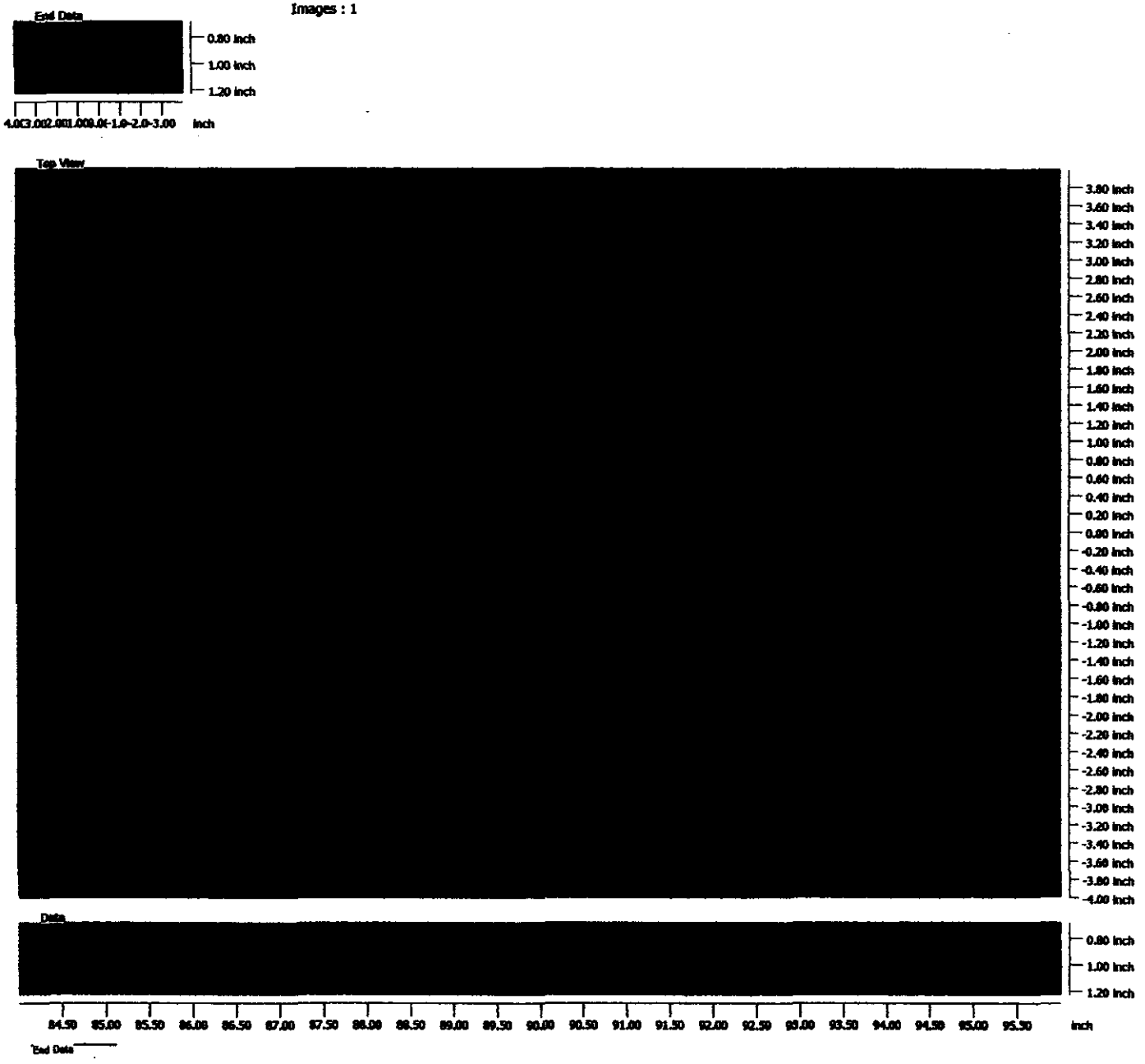
Images : 1

HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:28 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1

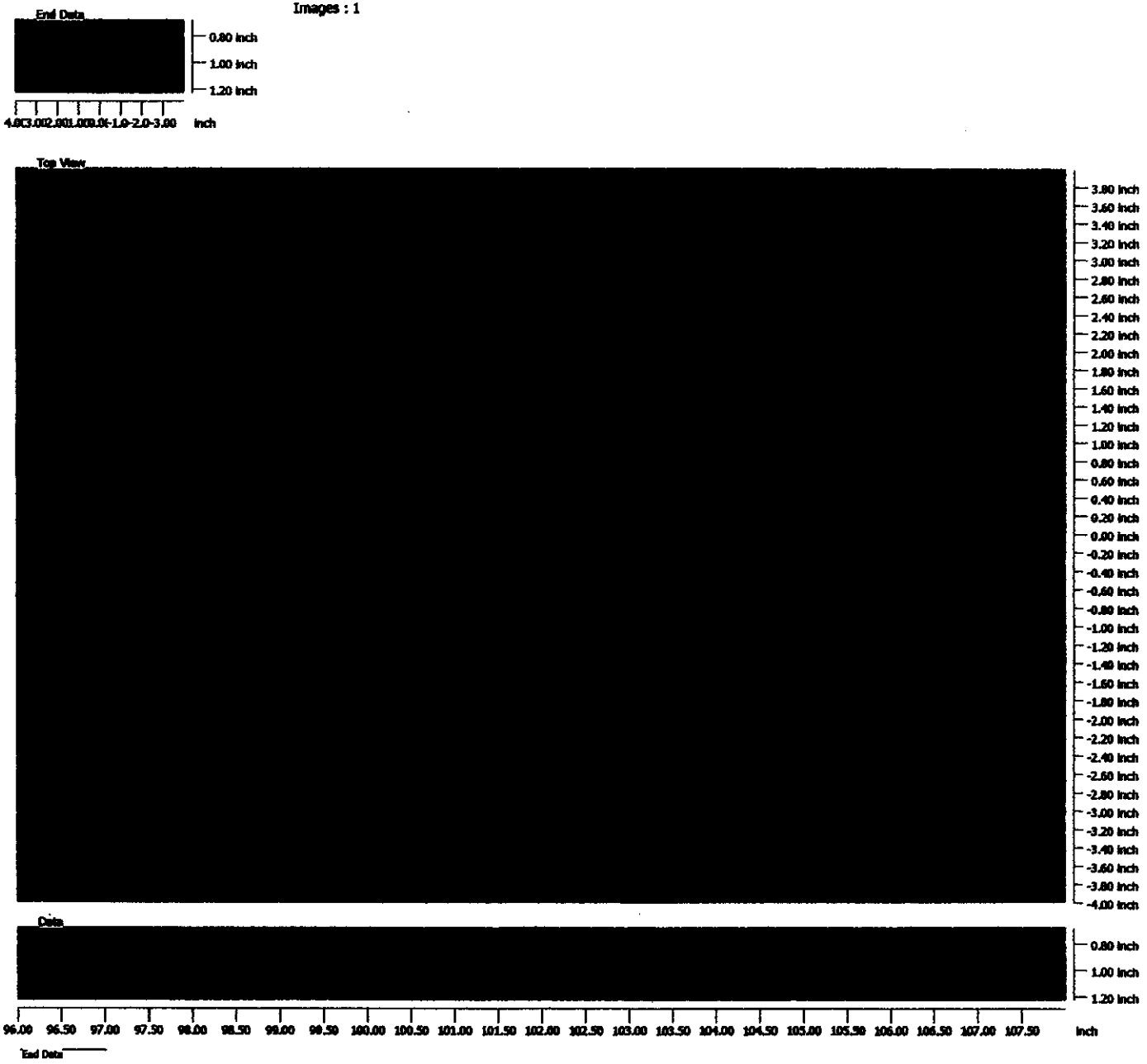


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:30 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1

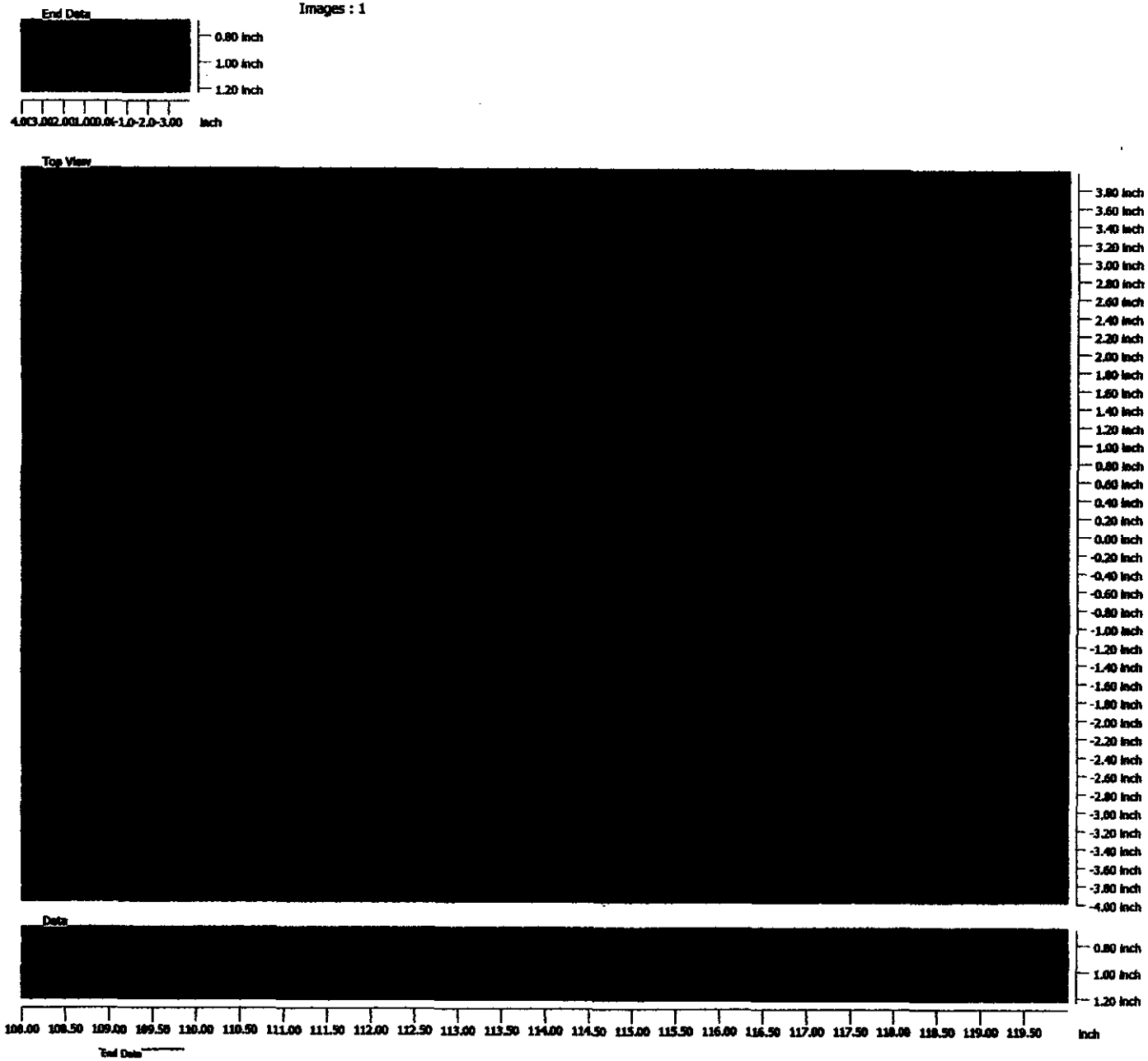


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 12:31 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.

Images : 1

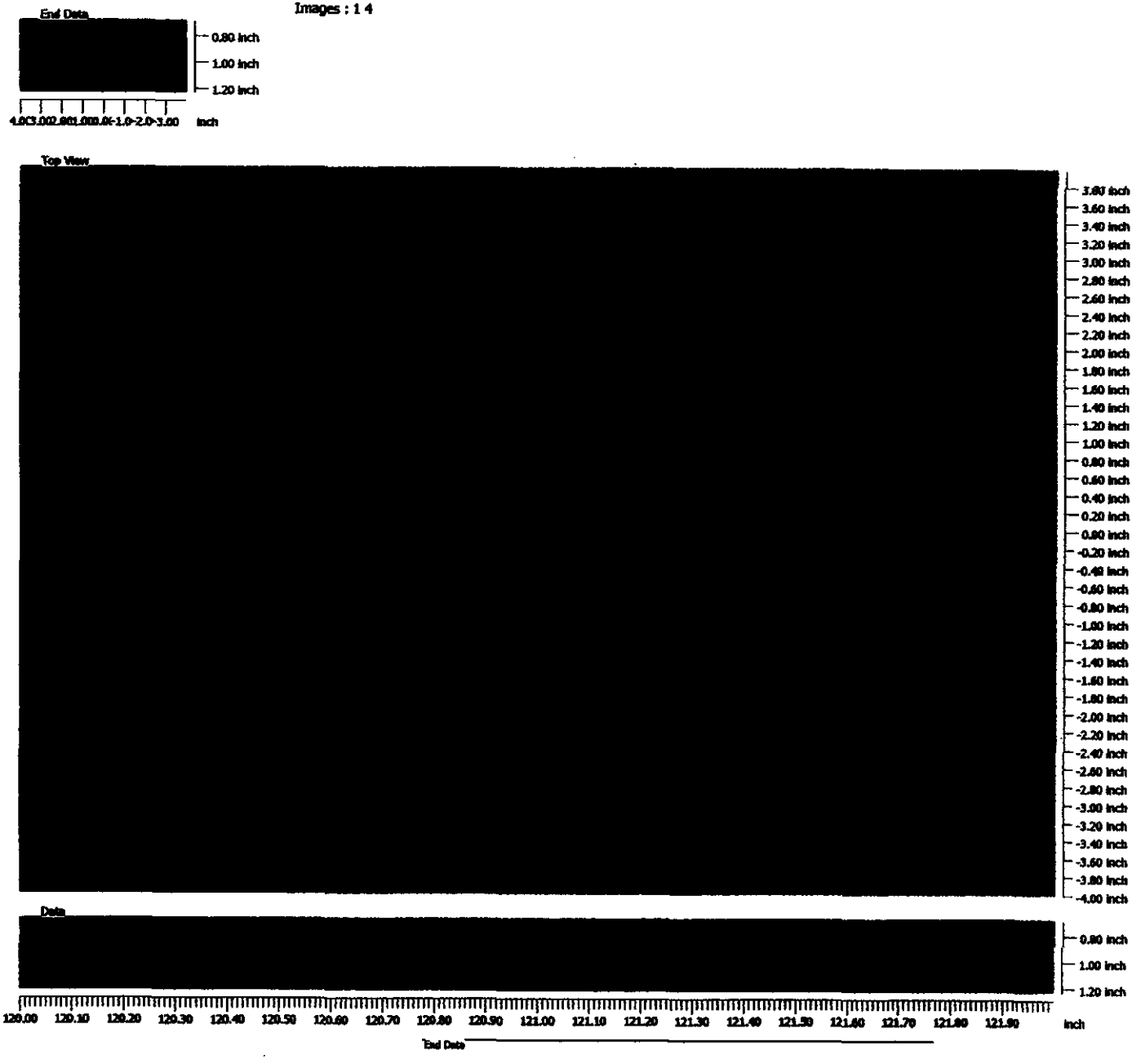


HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 18:22
2: P-scan, Images, t-scan data1, 6/26/00 18:22
3: T-scan, Images, t-scan data1, 6/26/00 18:22
4: T-scan, Images, t-scan data1, 6/26/00 18:22

*Printed on 2000-8-7 at 19:16 : T-scan pres.1 <3> of Job : HORZ.Weld/60/0/B.*

Images : 1 4



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/26/00 17:00 | EXAM END: 21:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .875" |
| CONFIGURATION: HORZ. WELD PLATE TO KNUCKLE | | CALIBRATED RANGE: .3 TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION: |
| FILE NAME/ITEM#: HORZ. WELD/60/0/C | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$): SEE REPORT HORZ WELD B | $Y_0$ REF POINT ($W_0$): 6 WELD | SCAN WIDTH: 7.1" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK. R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0 | 12 | | | .895" | .878" | | |
| | 12 | 24 | | | .895" | .877" | | |
| | 24 | 36 | | | .897" | .879" | | |
| | 36 | 48 | | | .896" | .877" | | |
| | 48 | 60 | | | .895" | .878" | | |
| | 60 | 72 | | | .898" | .883" | | |
| | 72 | 84 | | | .897" | .877" | | |
| | 84 | 96 | | | .902" | .877" | | |
| | 96 | 108 | | | .892" | .883" | | |
| | 108 | 120 | | | .887" | .862" | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D. Neh | Wesley D. Neh | (NI) | |
| Level III Date 6/26/00 | Level III Date 8/7/00 | Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J.B. Elder

HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, t-scan data1, 6/26/00 19:49
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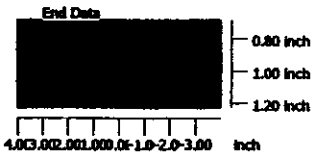


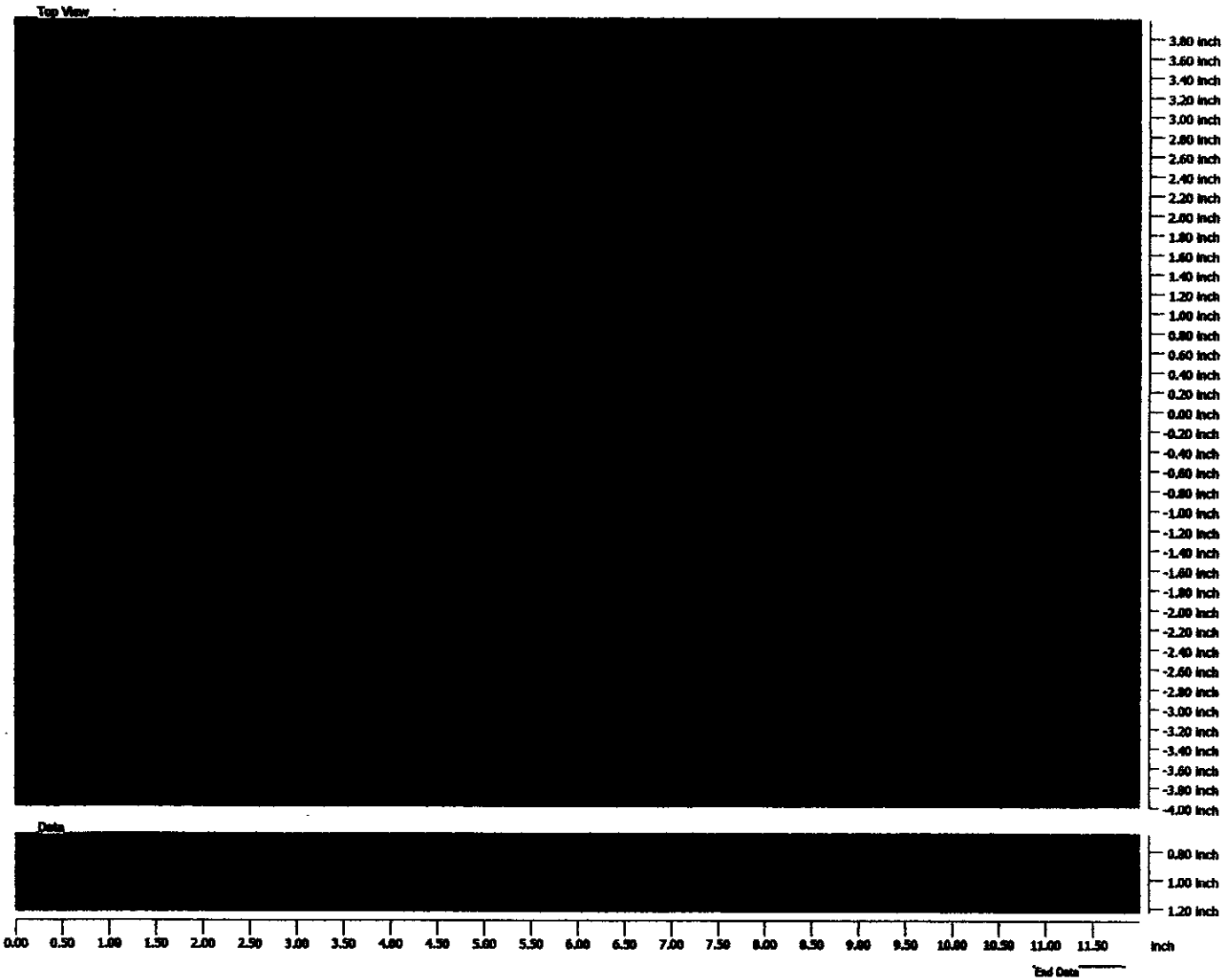

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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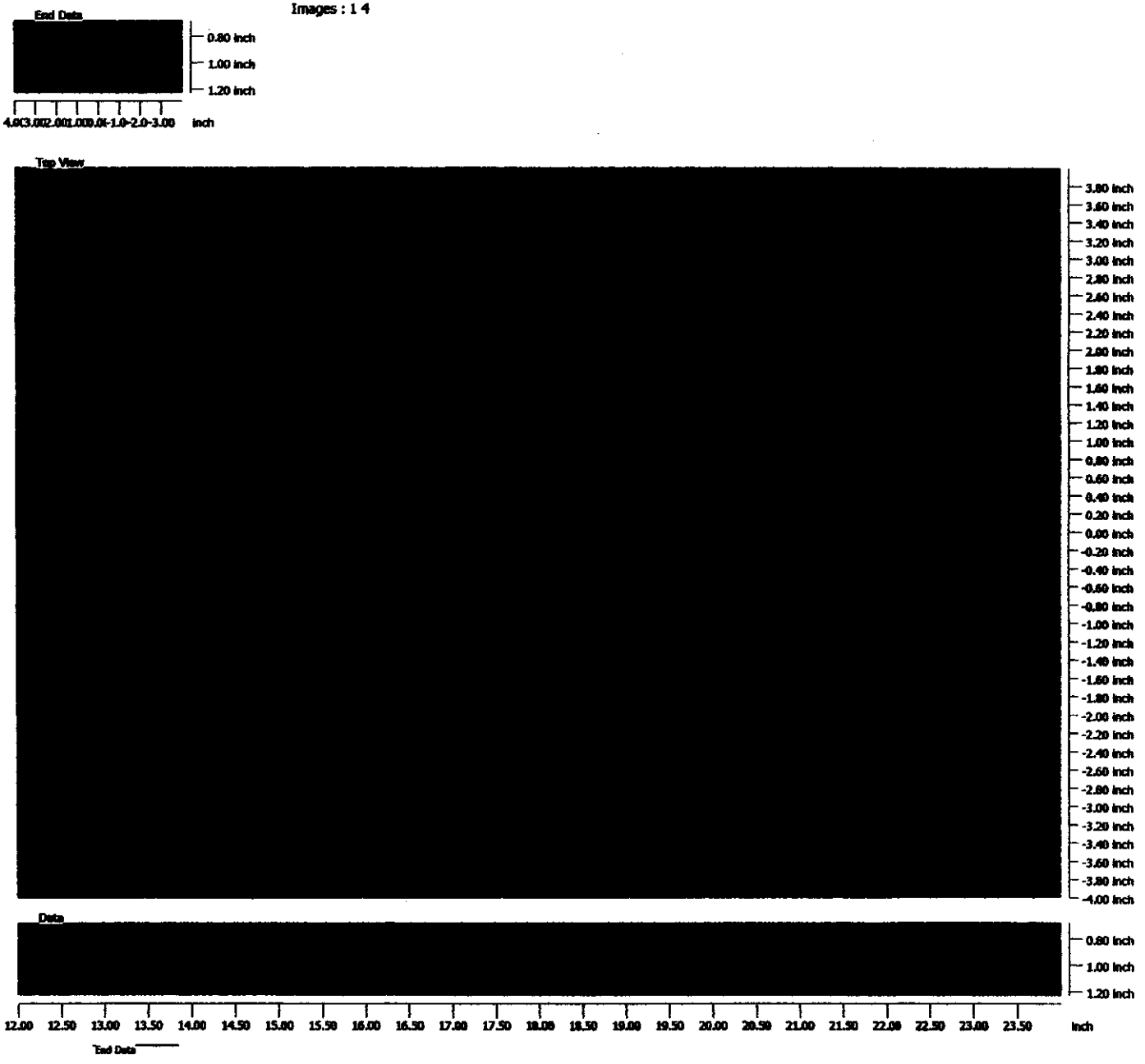

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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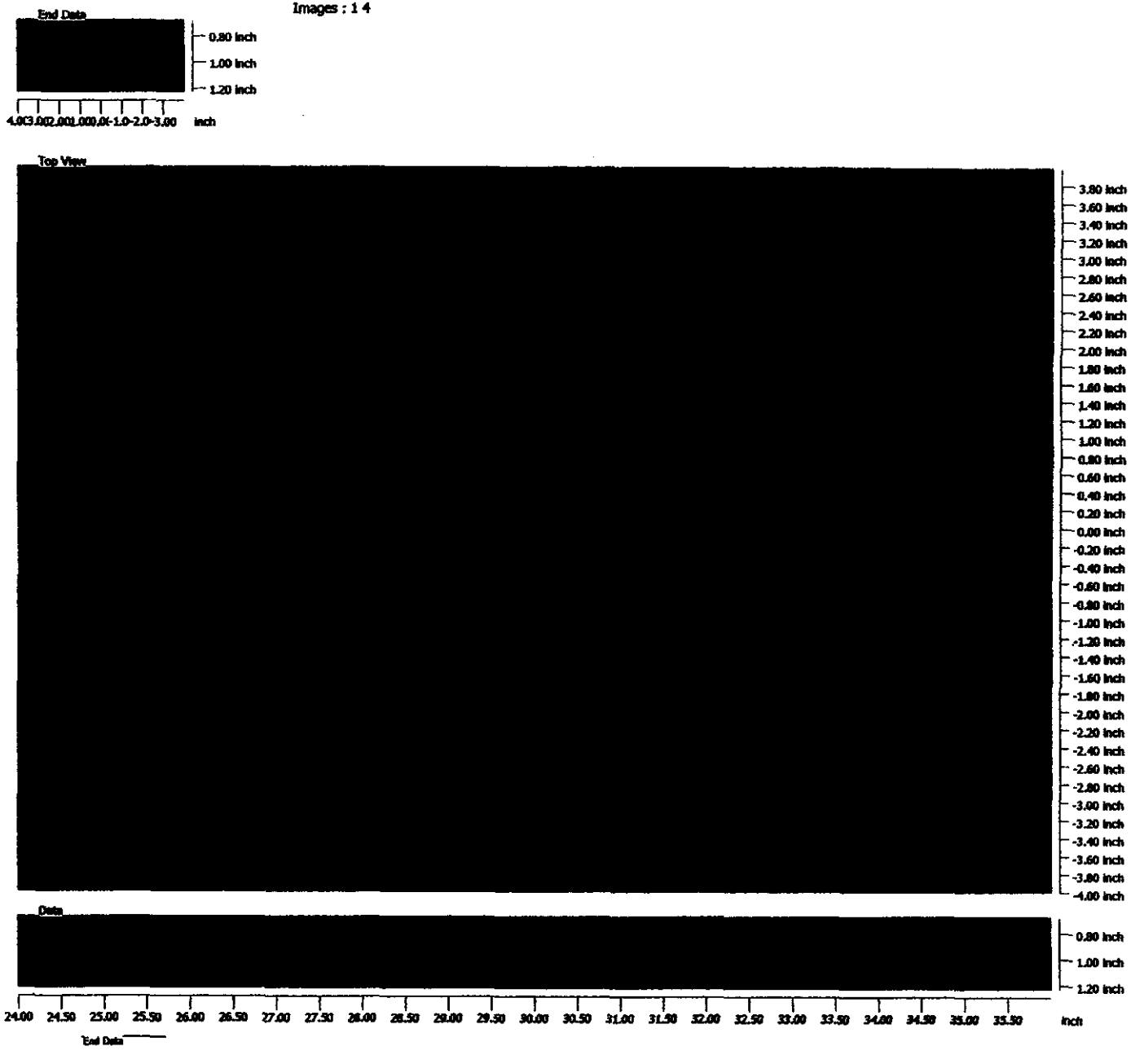

HORZ.WD/P-5/Knuckle C
WHN
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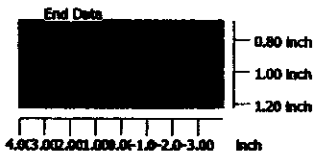


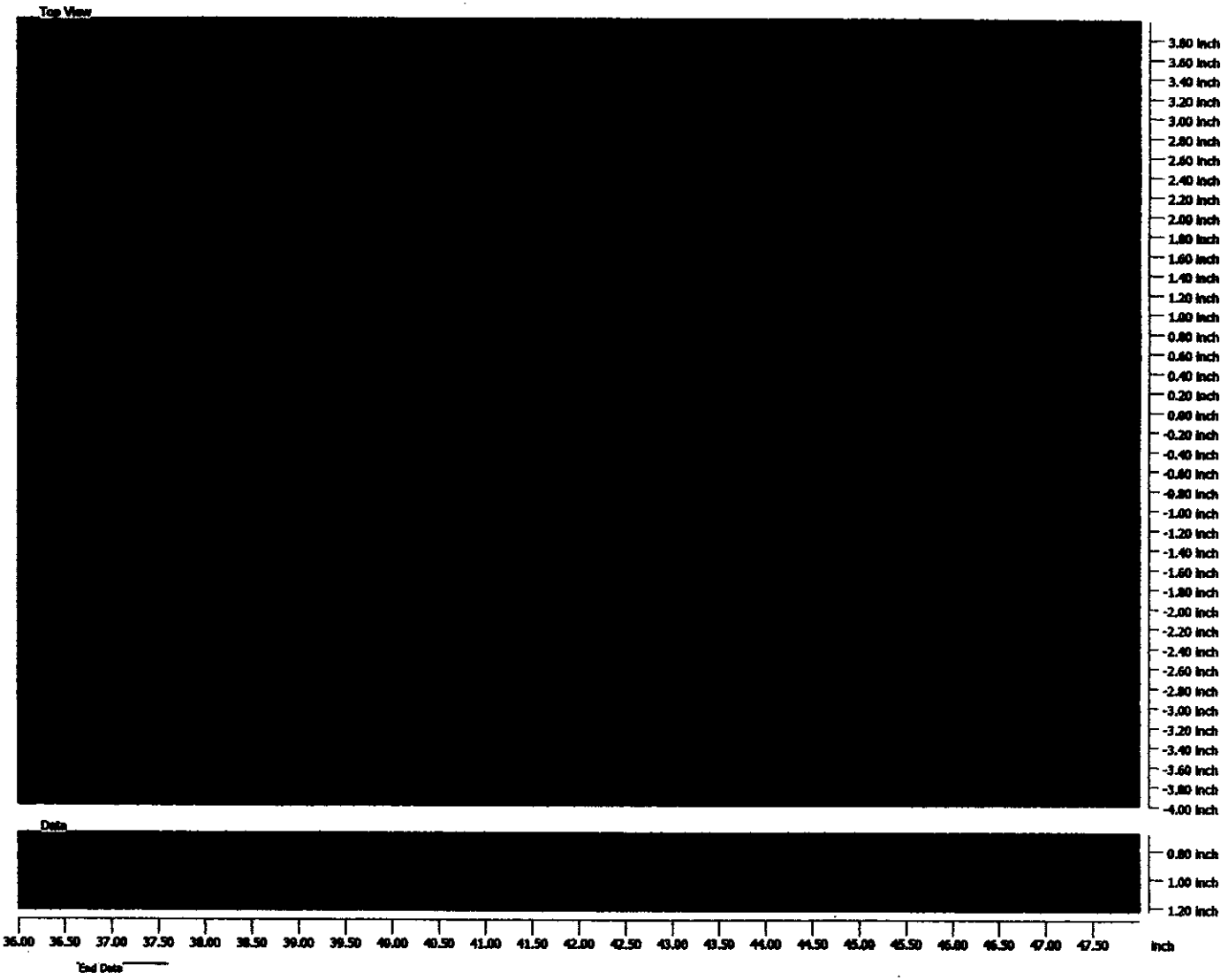

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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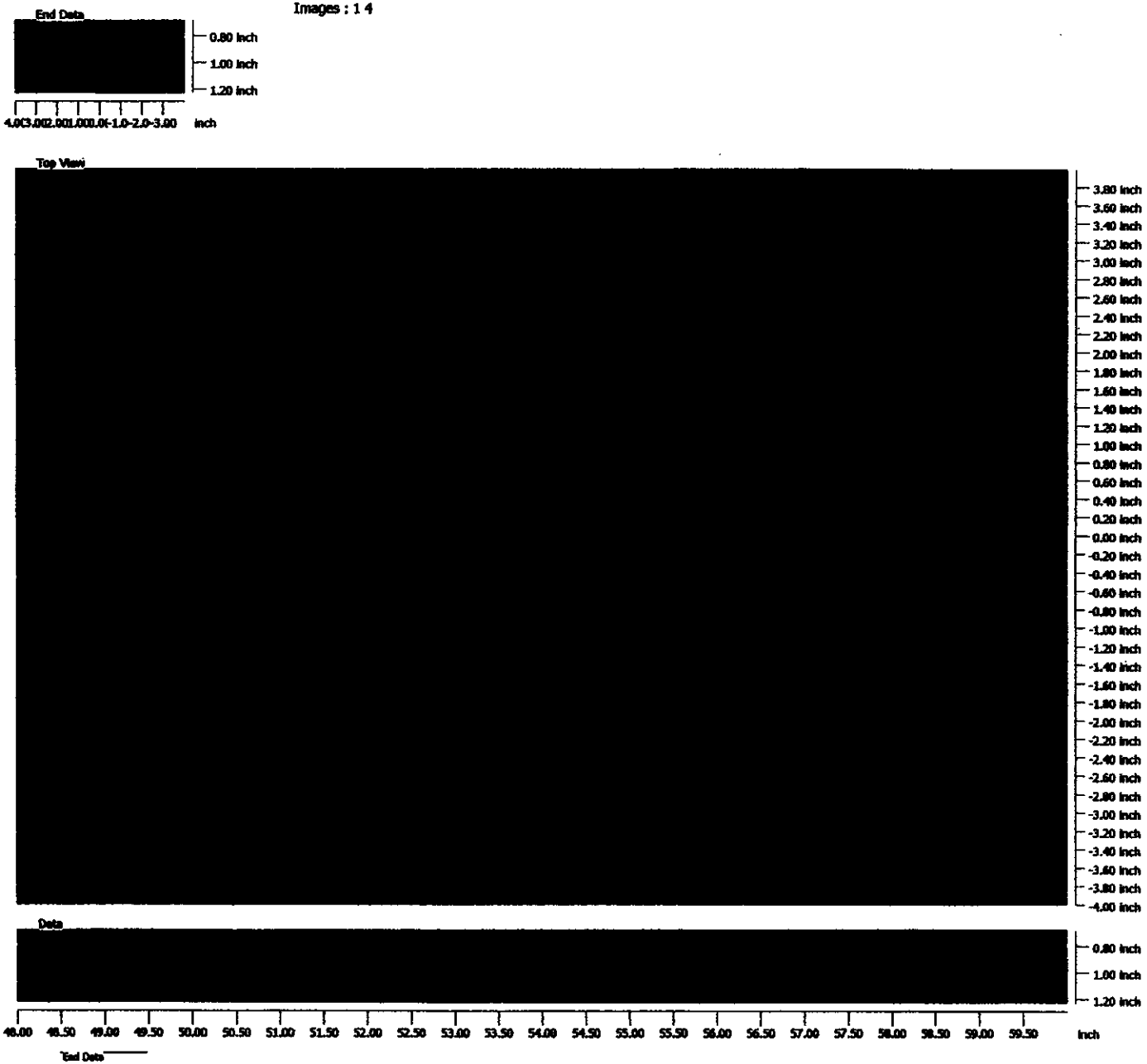

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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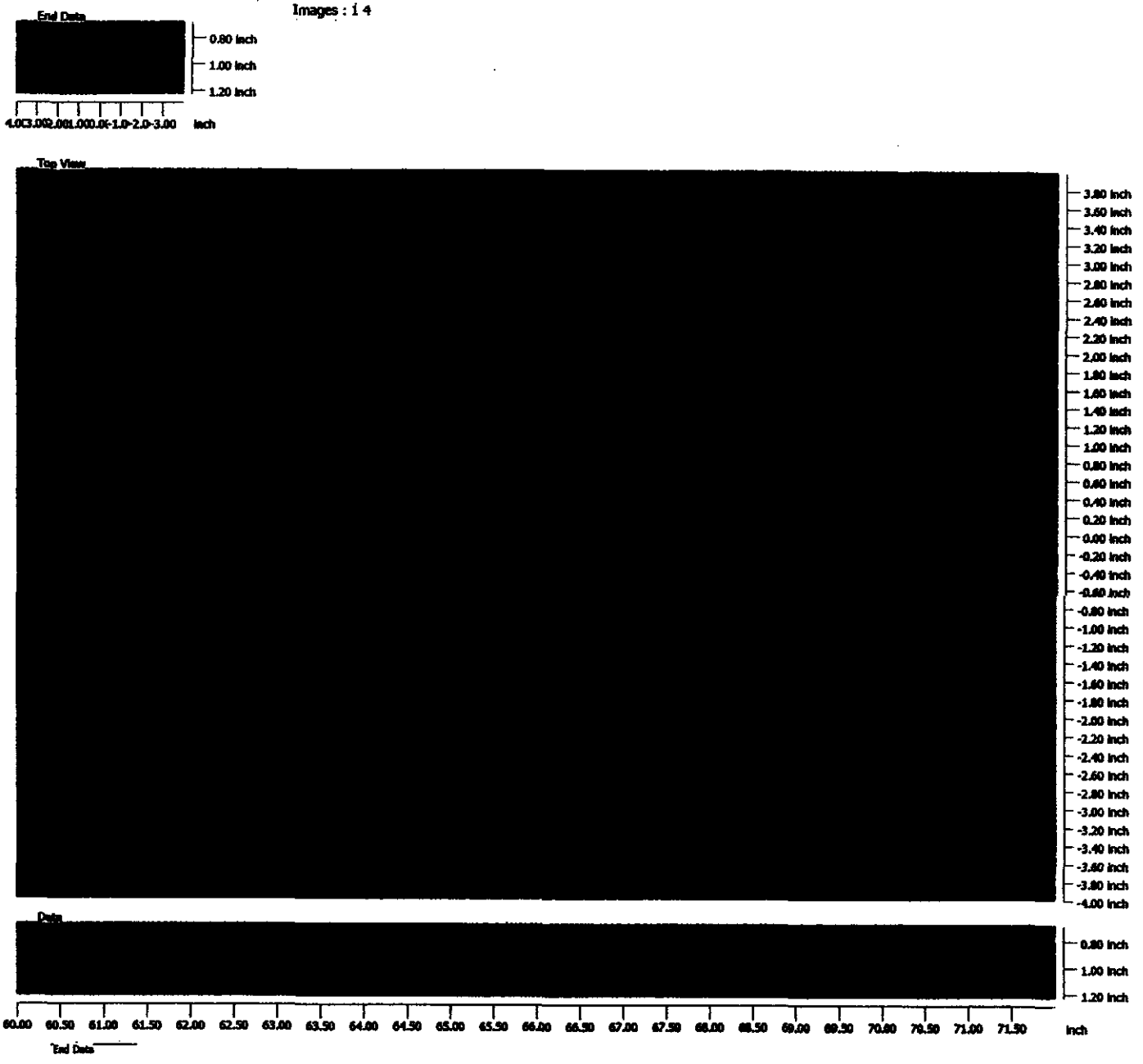

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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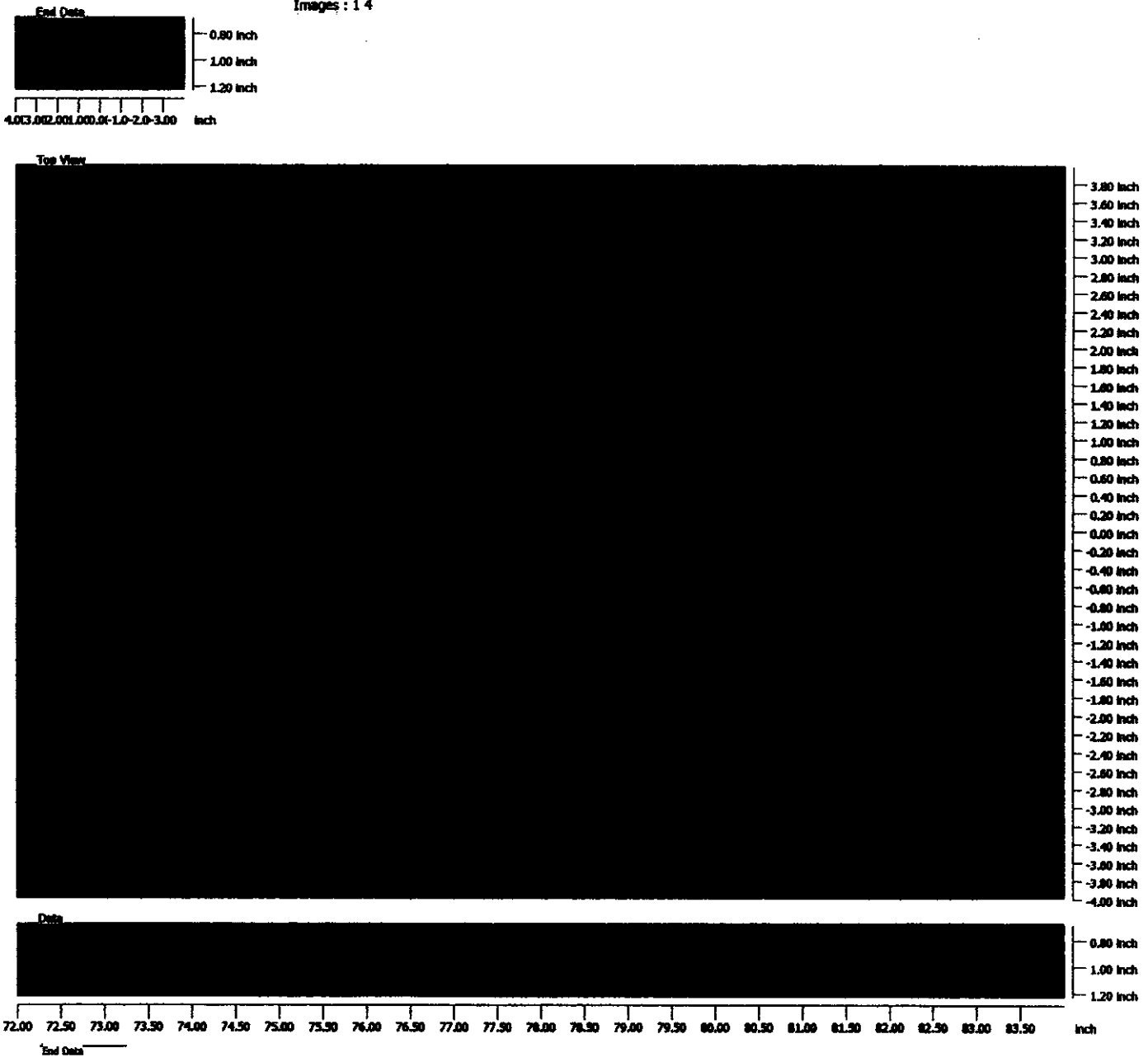

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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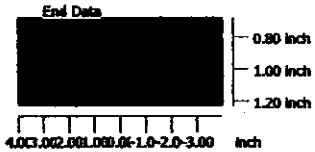


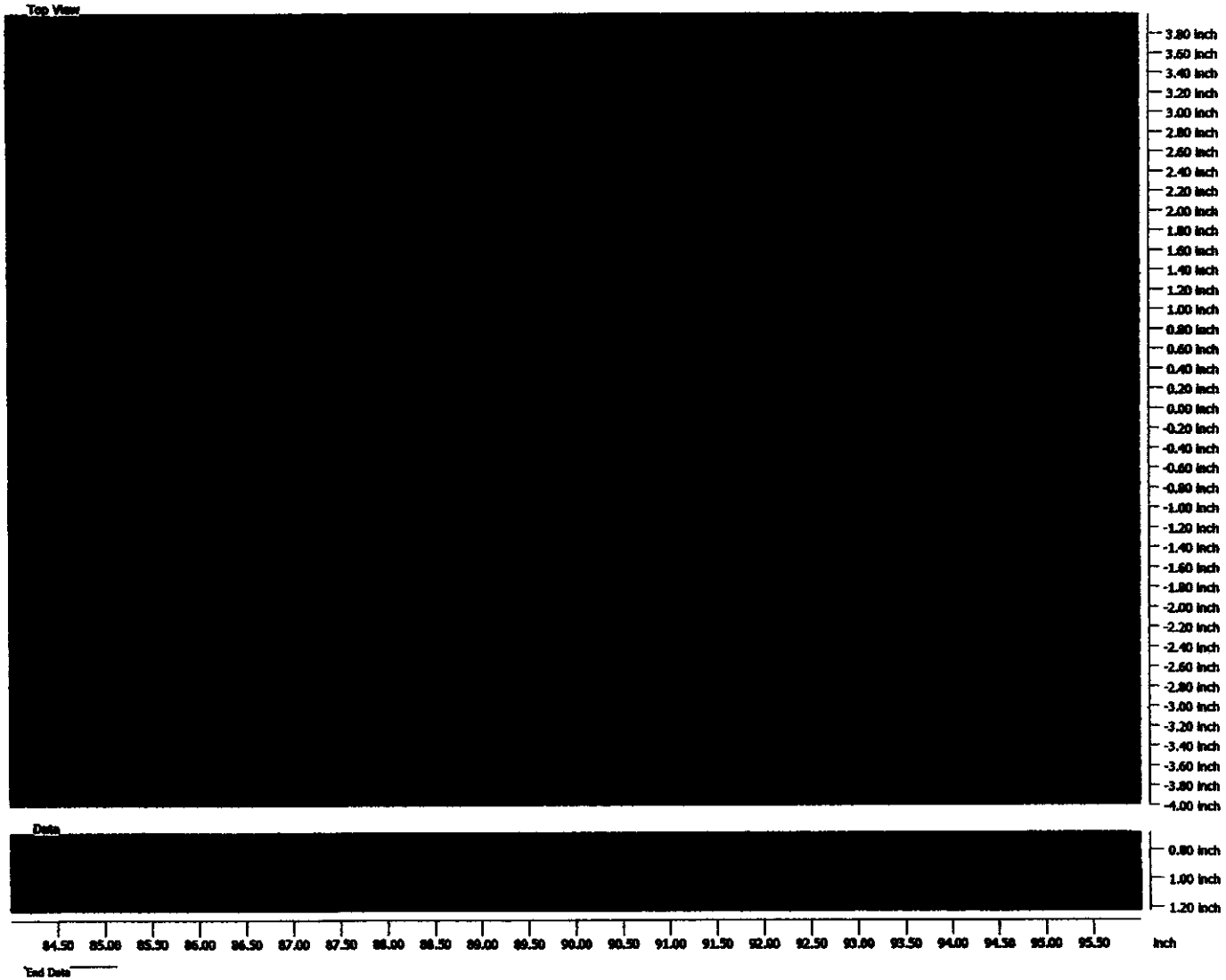

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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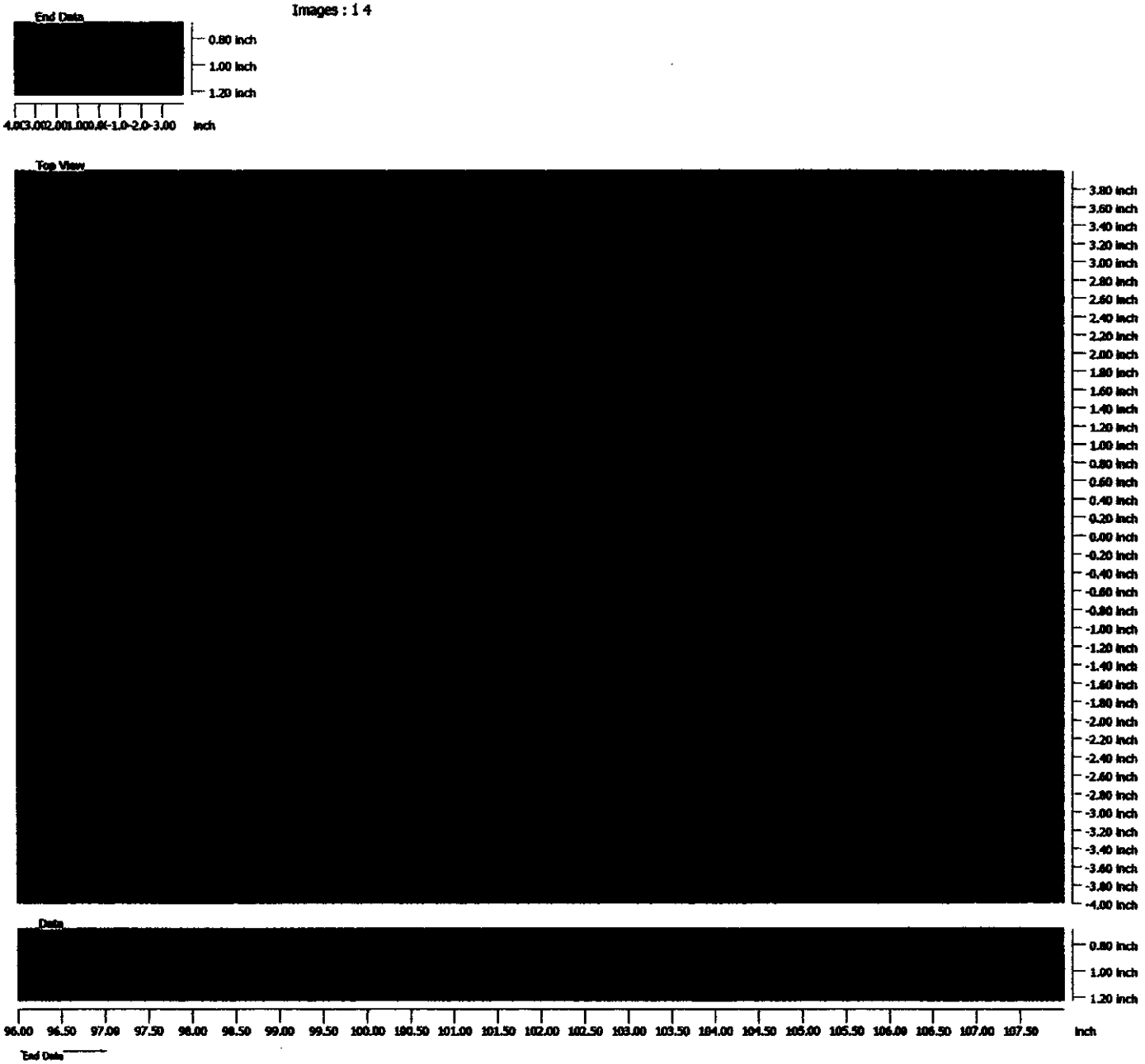

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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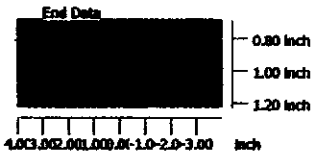
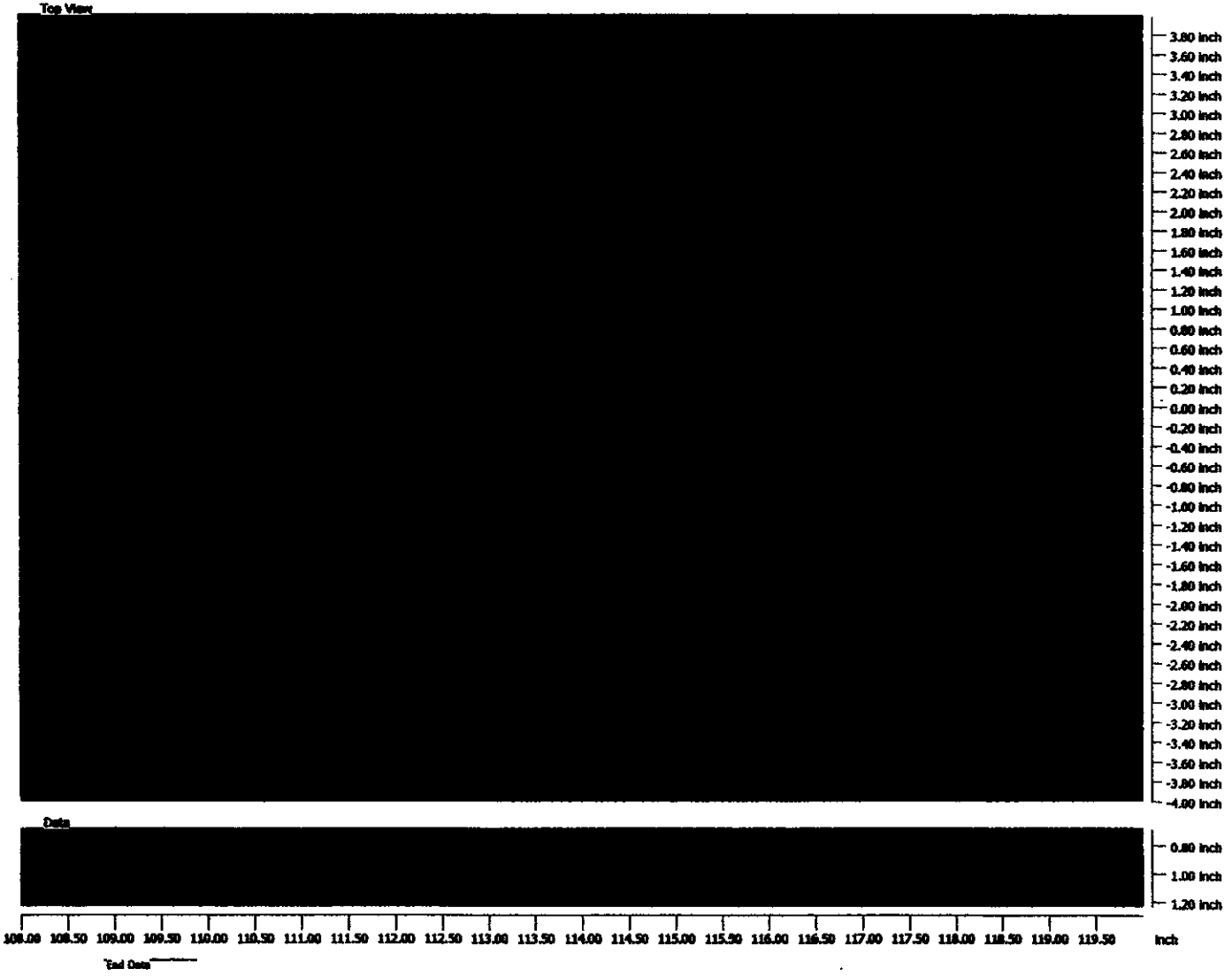
Images : 1 4



**This document was too large to scan as a single document. It has been divided into smaller sections.**

**Section 2 of 2**

| Document Information | | | |
|---|---|---|---|
| **Document #** | **RPP-6231** | **Revision** | **0** |
| **Title** | ULTRASONIC INSPECTION RESULTS OF DST 241AP107 | | |
| **Date** | **9/11/2000** | | |
| **Originator** | **CE JENSEN, RW LYSHER** | **Originator Co.** | **CHG, COGEMA** |
| **Recipient** | | **Recipient Co.** | |
| **References** | **EDT-62742** | | |
| **Keywords** | | | |
| **Projects** | **RPP, TANK FARM** | | |
| **Other Information** | **BEST AVAILABLE COPY** | | |

4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/26/00 17:00 | EXAM END: 21:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .937" |
| CONFIGURATION: HORZ. WELD PLATE TO KNUCKLE | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 122" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: HORZ. WELD/60/0/B | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF POINT (Lo): 108" from 1st VERT. WELD | $Y_0$ REF POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.1" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK. R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0 | 12 | | | .950" | .939" | | |
| | 12 | 24 | | | .945" | .921" | | |
| | 24 | 36 | | | .945" | .933" | | |
| | 36 | 48 | | | .940" | .930" | | |
| | 48 | 60 | | | .940" | .921" | | |
| | 60 | 72 | | | .940" | .930" | | |
| | 72 | 84 | | | .940" | .920" | | |
| | 84 | 96 | | | .940" | .915" | | |
| | 96 | 108 | | | .945" | .926" | | |
| | 108 | 120 | | | .960" | .937" | | |
| | 120 | 122 | | | .960" | .942" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D. Fleck | Wesley D. Fleck | (N1) | |
| Level II Date 6/26/00 | Level III Date 8/7/00 | Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B. Elder

HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, t-scan data2, 6/26/00 18:22
2: P-scan, Images, t-scan data2, 6/26/00 18:22
3: T-scan, Images, t-scan data2, 6/26/00 18:22
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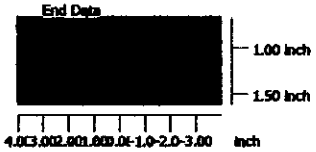


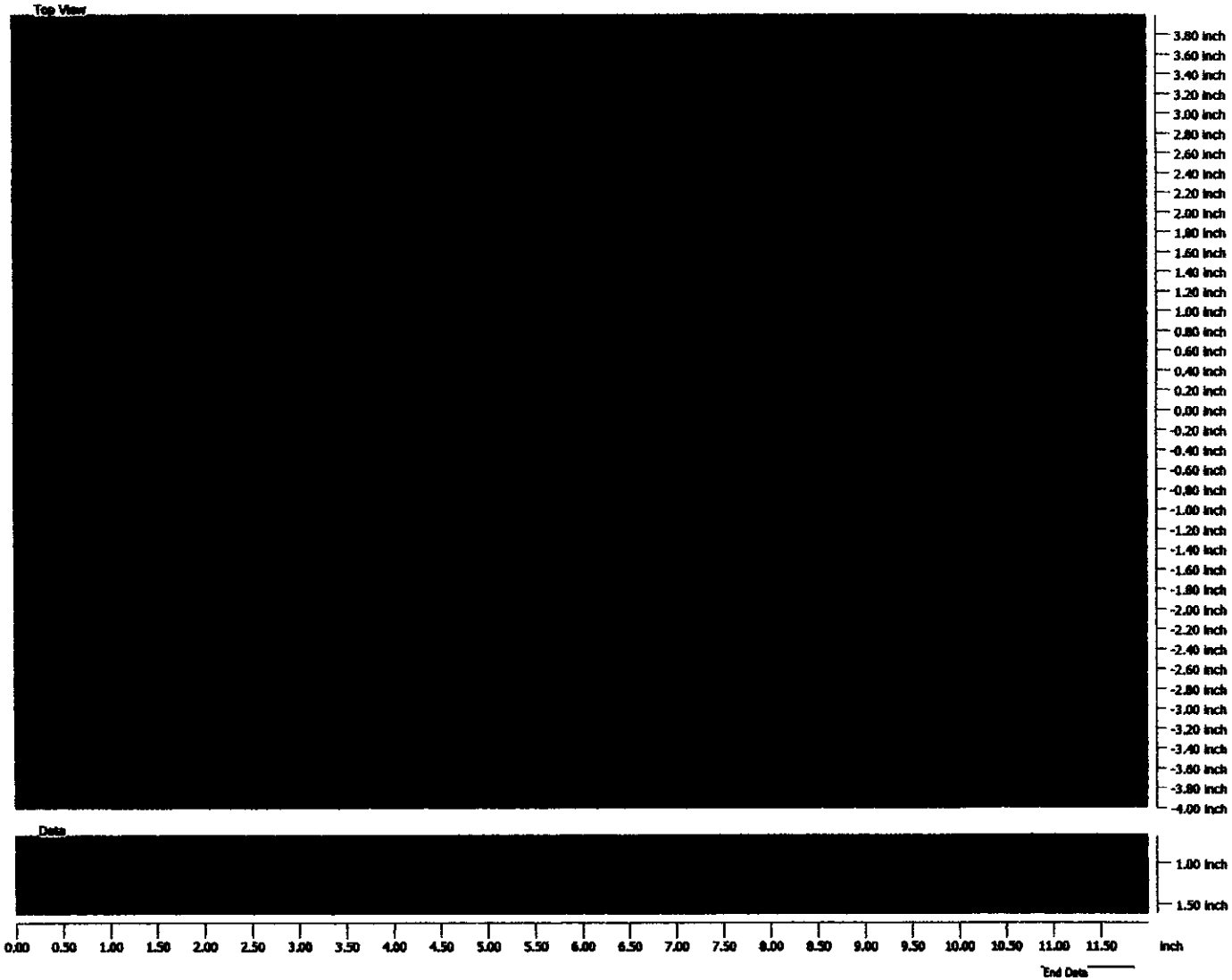

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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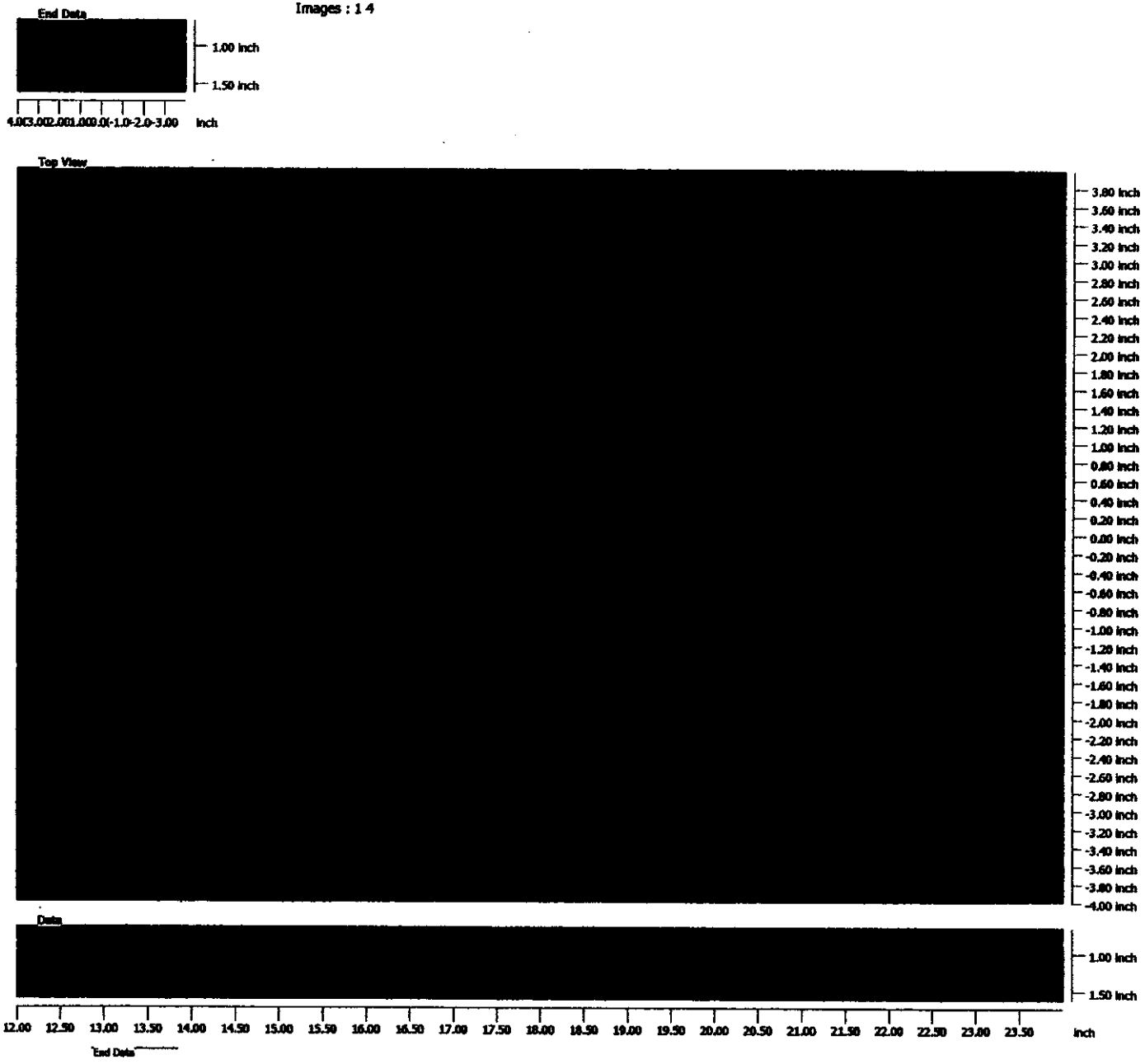

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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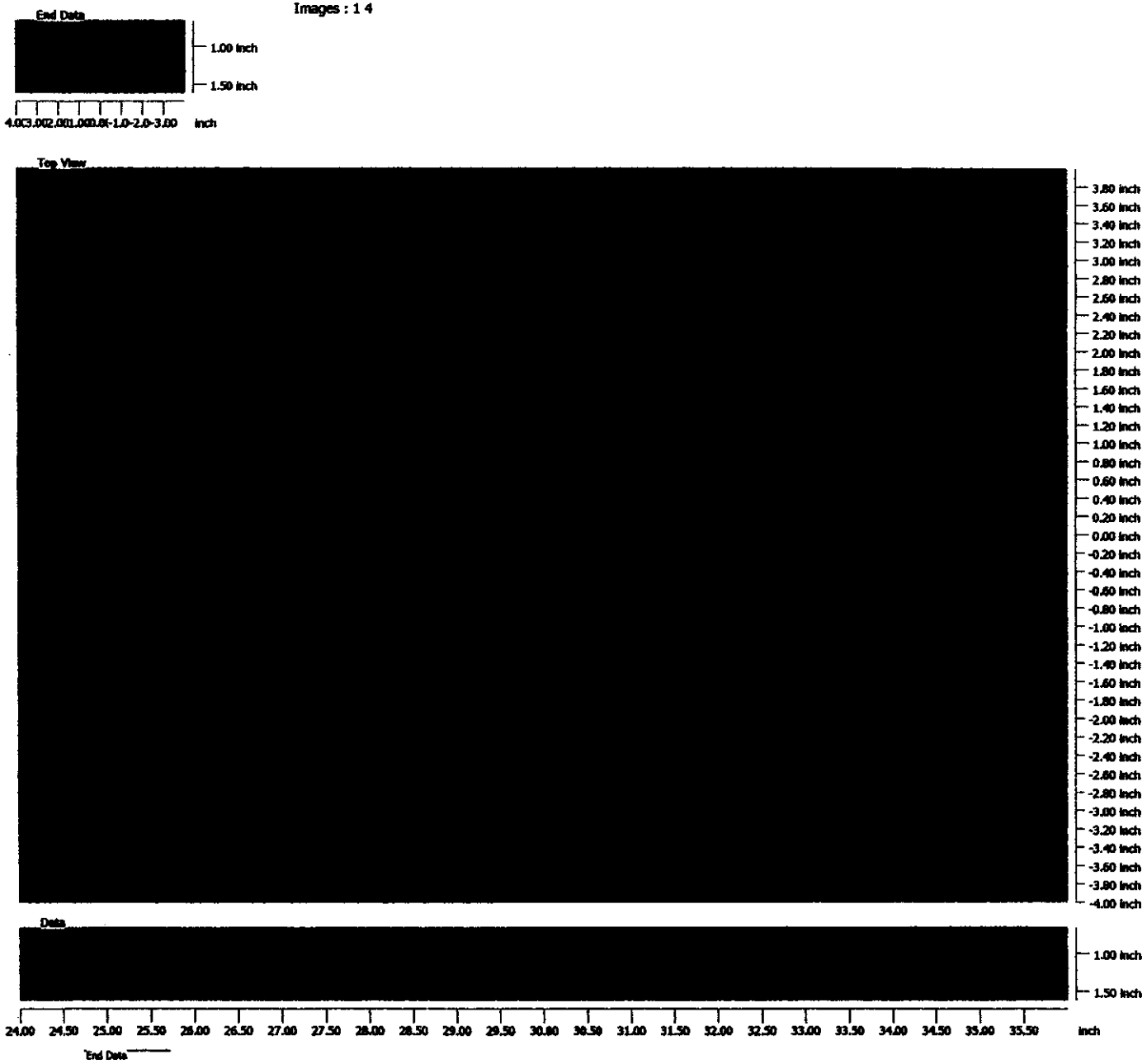

HORZ.WD/P-5/Knuckle B
WHN
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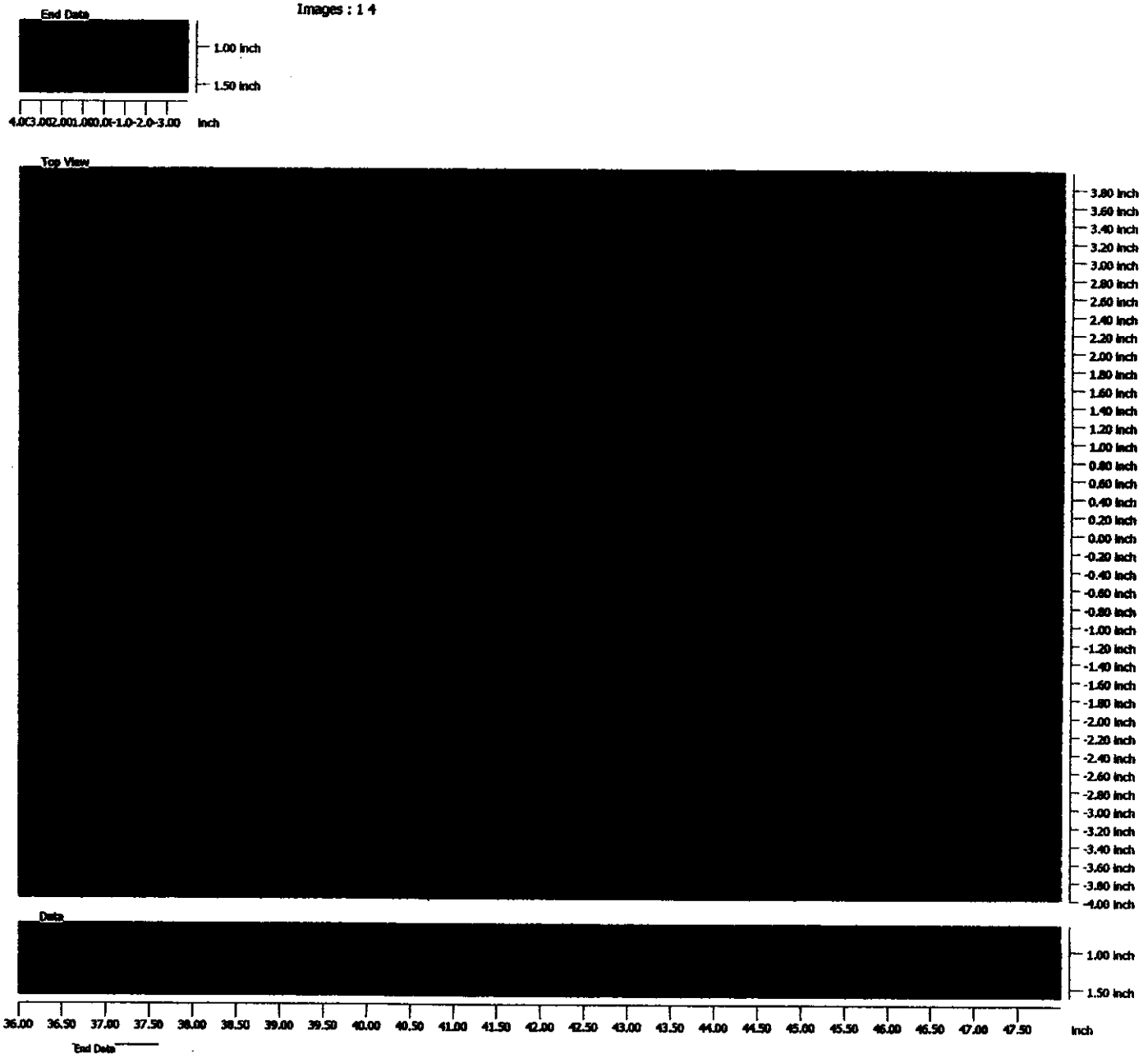

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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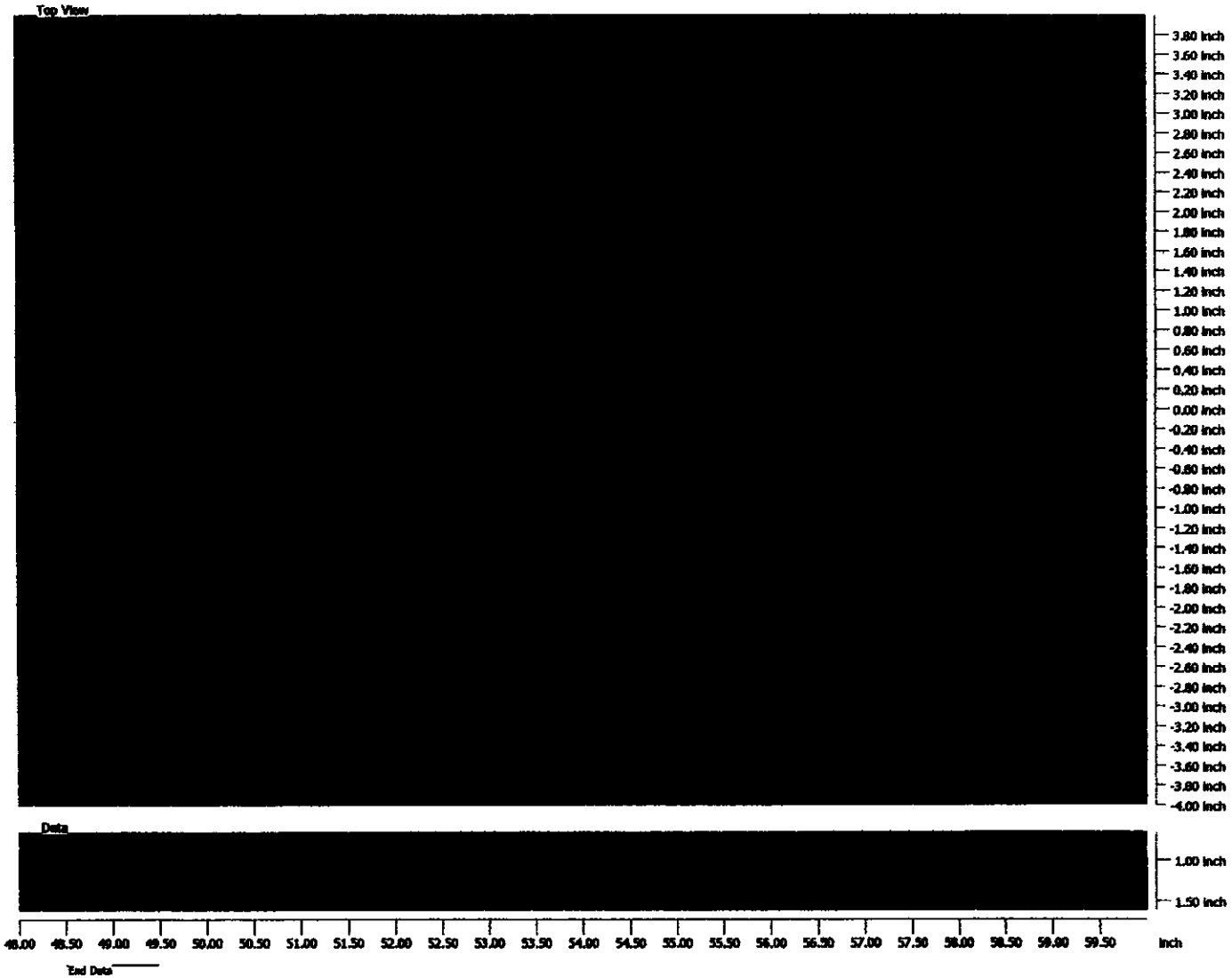

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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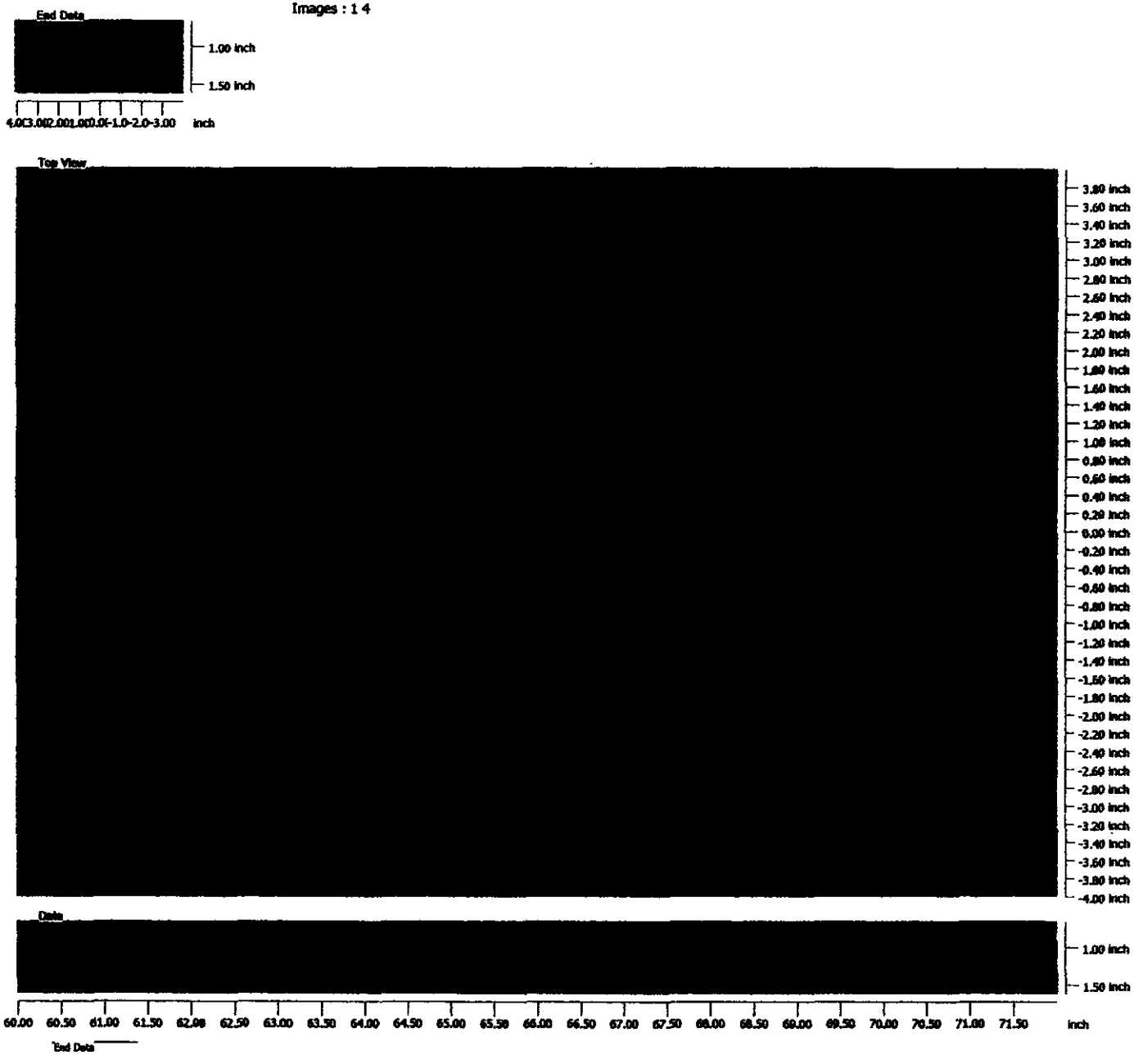

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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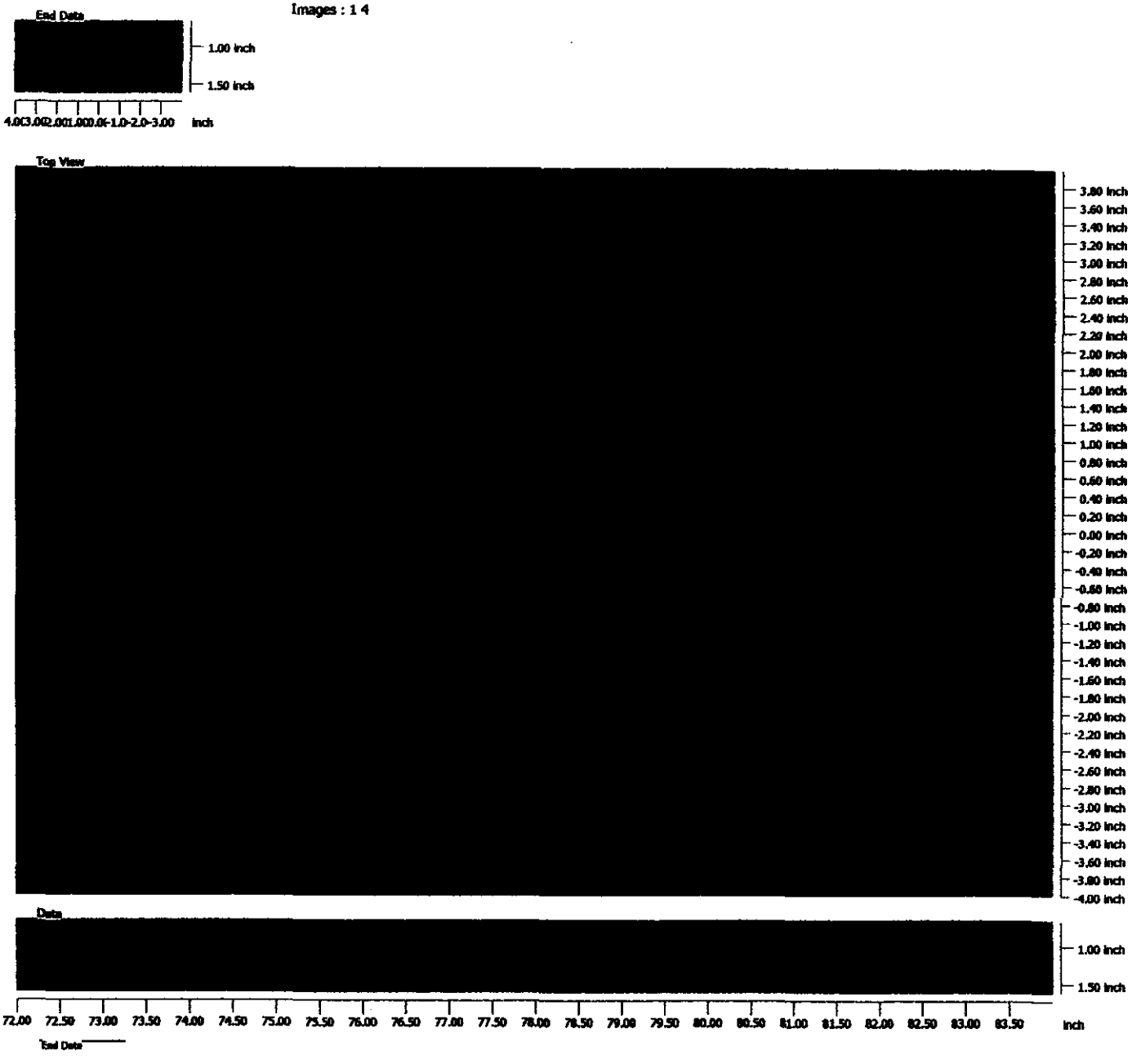

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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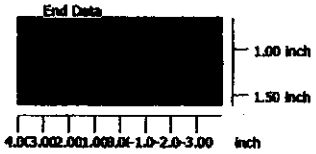


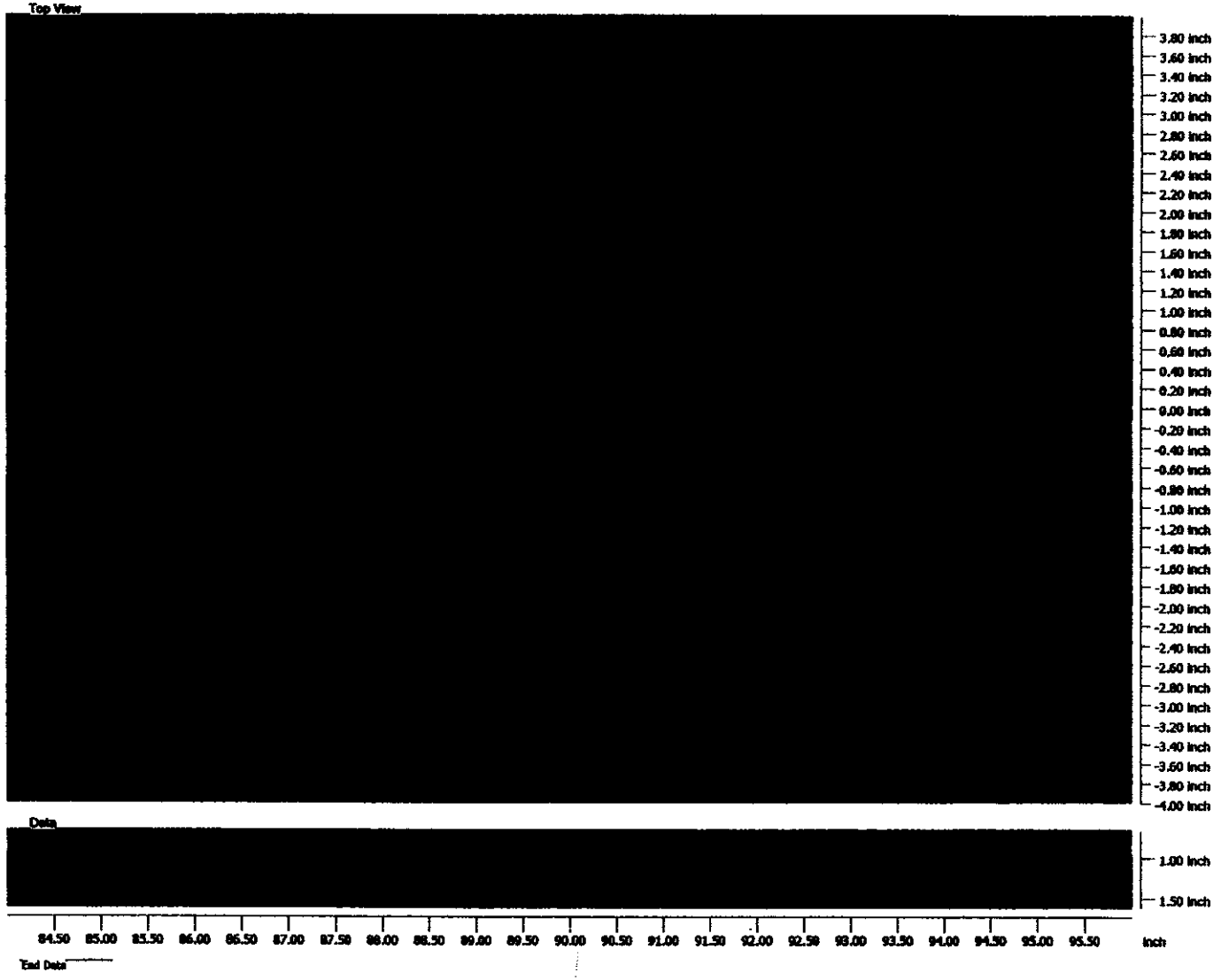

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HORZ.WD/P-5/Knuckle B
WHN
AP-107

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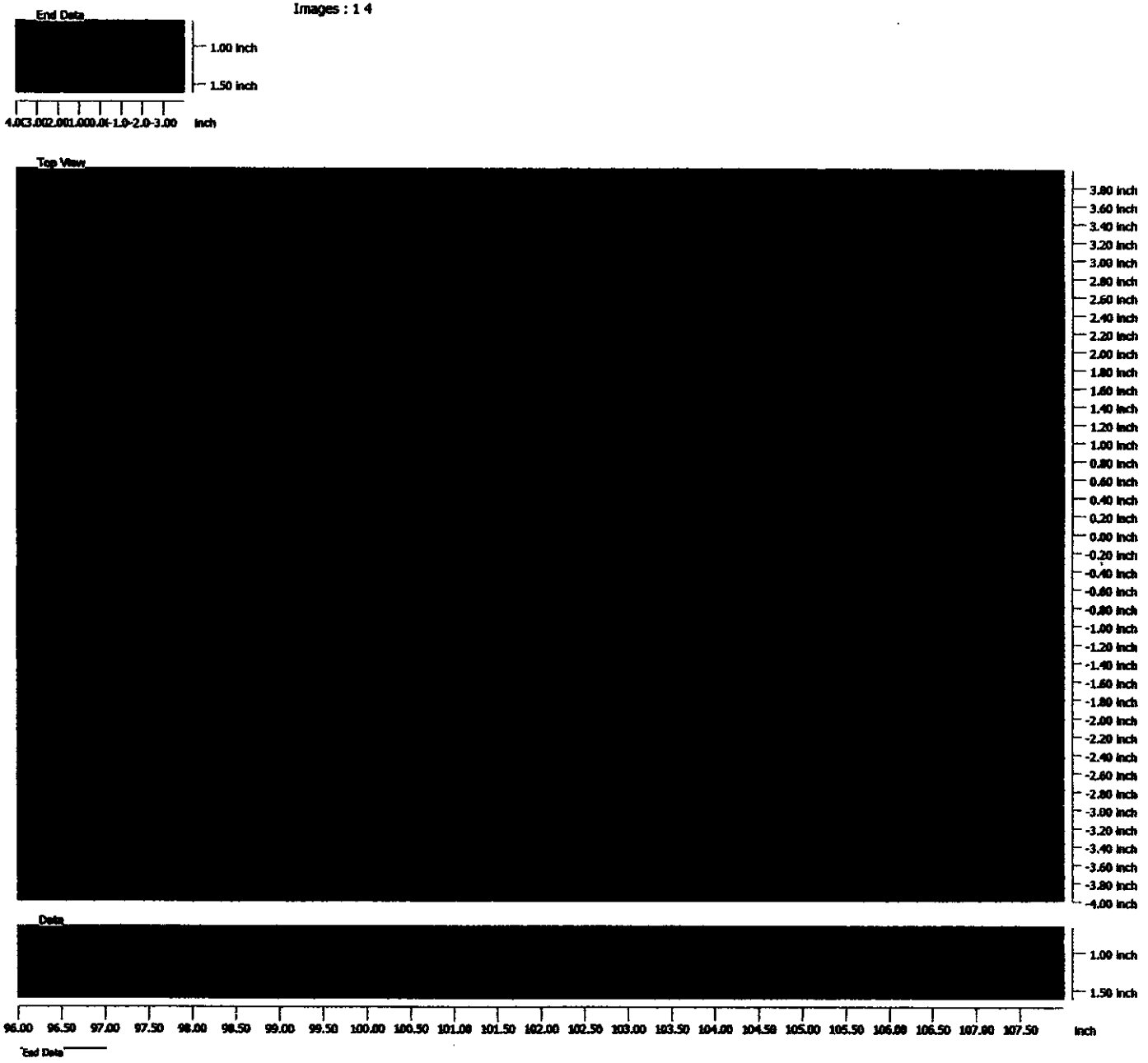

HORZ.WD/P-5/Knuckle B
WHN
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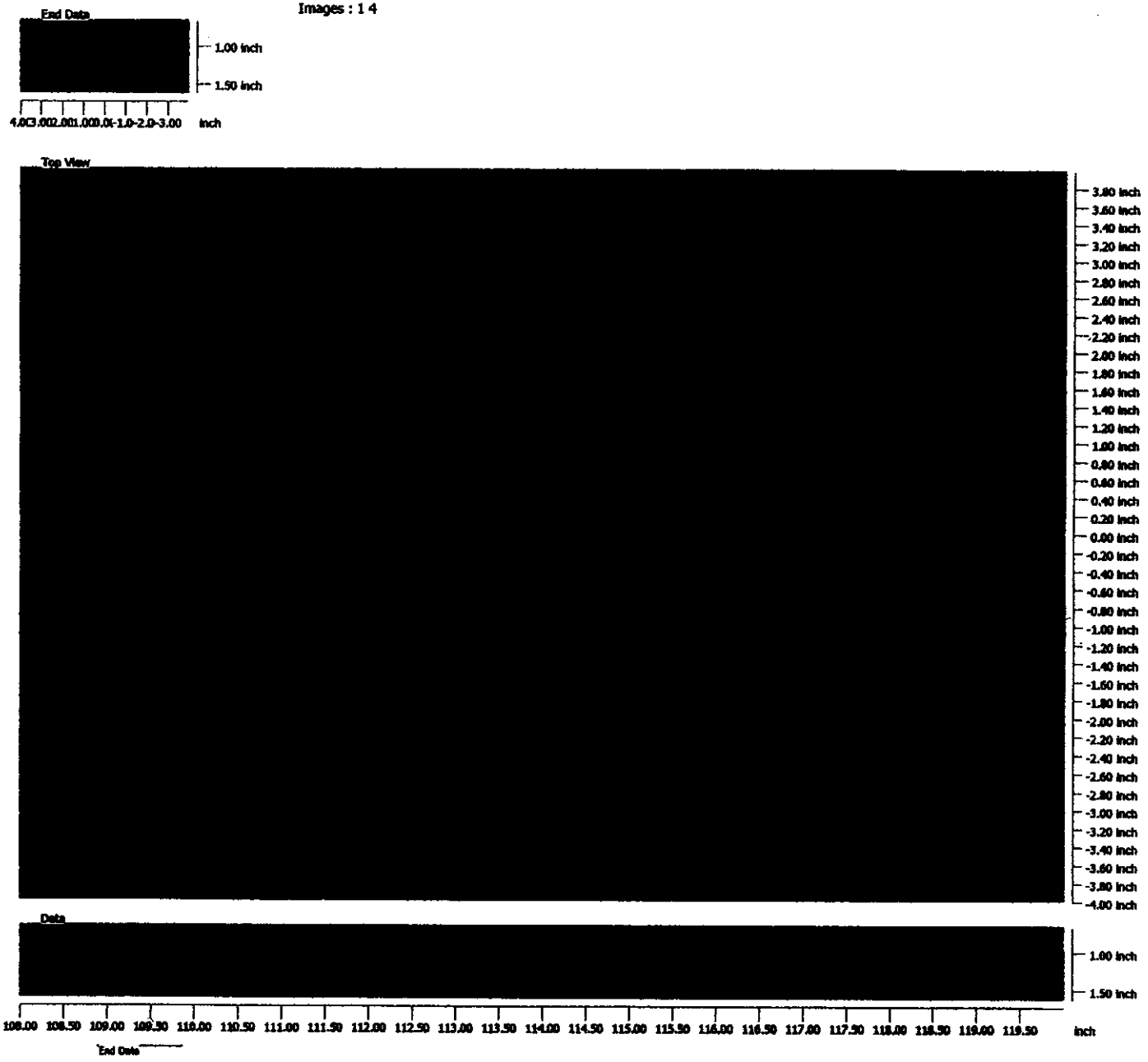

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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3: T-scan, Images, t-scan data2, 6/26/00 18:22
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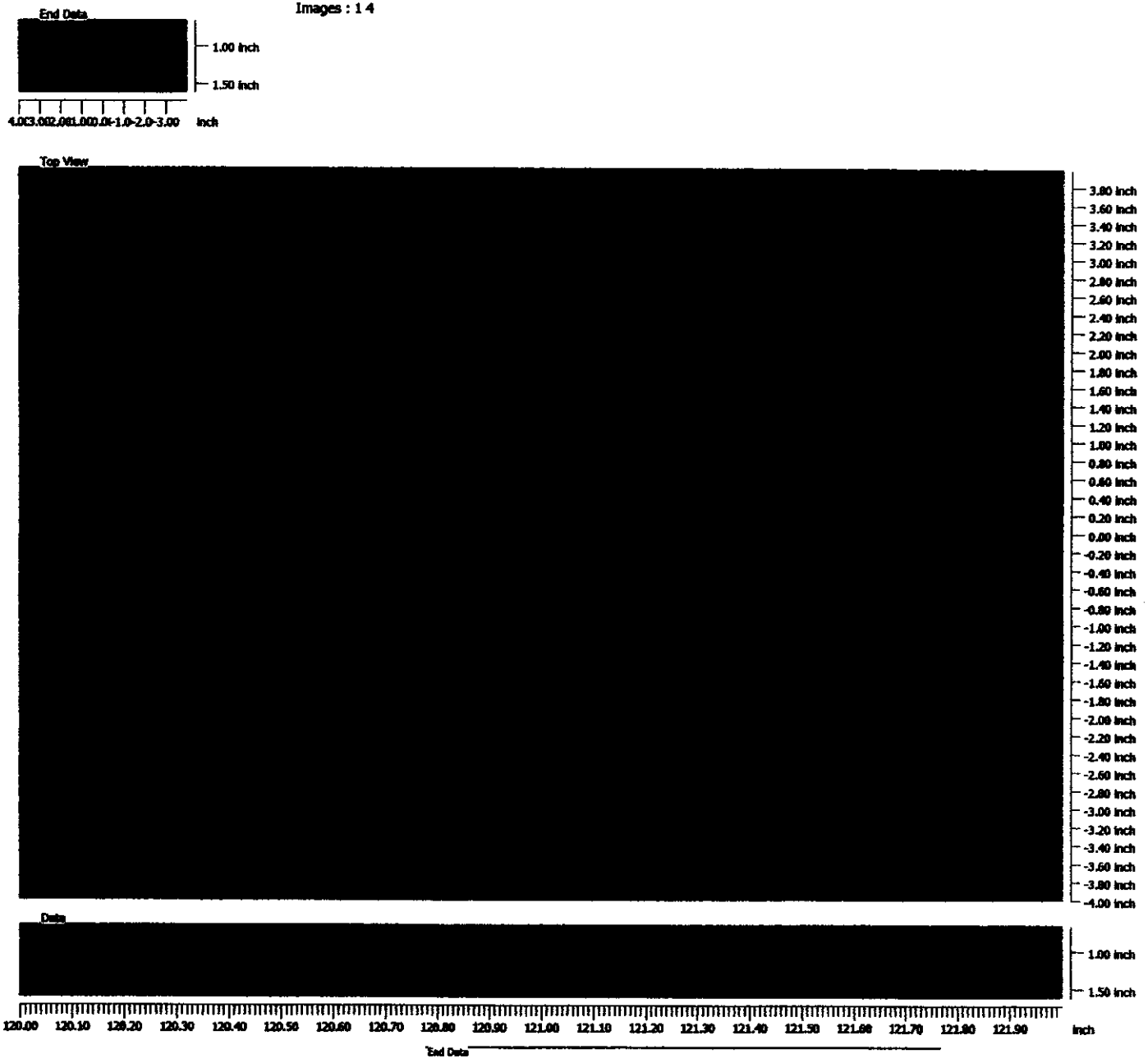
Printed on 2000-8-7 at 19:04 : T-scan pres.2 <4> of Job : HORZ.Weld/60/0/B.

Images : 1 4



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/26/00 17:00 | EXAM END: 21:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .937" |
| CONFIGURATION: HORZ. WELD PLATE TO KNUCKLE | | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | REF. LEVEL CORRECTION (TRANS CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION: |
| FILE NAME/ITEM#: HORZ. WD/P-5/KNUCKLE/C | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$) | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.1 | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK, R. LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0 | 12 | | | .960" | .926" | | |
| | 12 | 24 | | | .955" | .928" | | |
| | 24 | 36 | | | .955" | .930" | | |
| | 36 | 48 | | | .950" | .934" | | |
| | 48 | 60 | | | .950" | .931" | | |
| | 60 | 72 | | | .950" | .930" | | |
| | 72 | 84 | | | .950" | .927" | | |
| | 84 | 96 | | | .950" | .931" | | |
| | 96 | 108 | | | .955" | .931" | | |
| | 108 | 120 | | | .950" | .926" | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level II Date 6/26/00 | [signature] Level II Date 8/7/00 | (NI) Level ___ Date ___ | ___ of ___ |

(NI) See Letter From J. B. Elder

HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, t-scan data2, 6/26/00 19:49
2: P-scan, Images, t-scan data2, 6/26/00 19:49
3: T-scan, Images, t-scan data2, 6/26/00 19:49
4: T-scan, Images, t-scan data2, 6/26/00 19:49

Printed on 2000-8-7 at 14:44 : T-scan pres.2 <4> of Job : HORZ.Weld/60/0/C.

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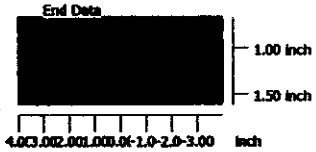


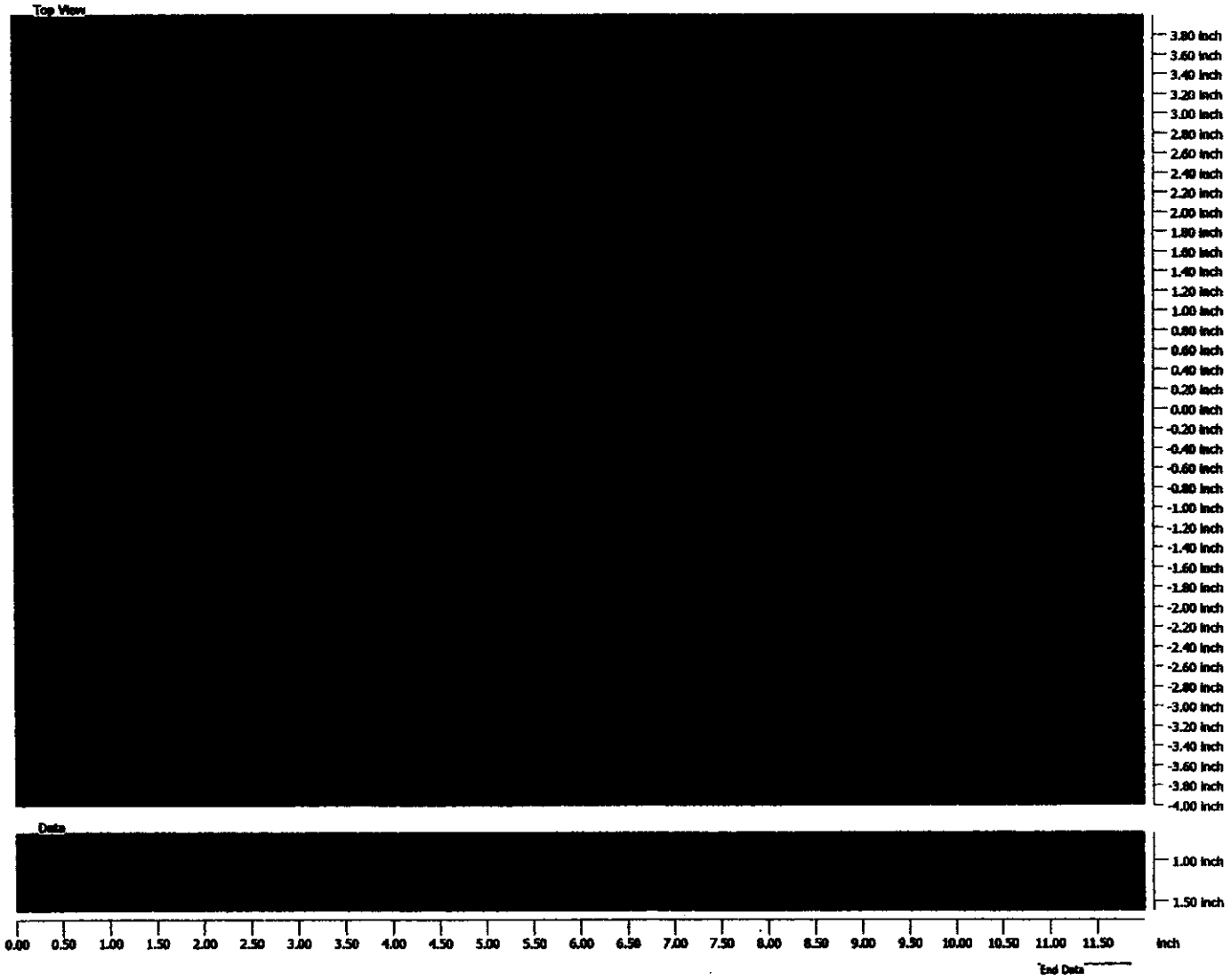

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HORZ.WD/P-5/Knuckle C
WHN
AP-107

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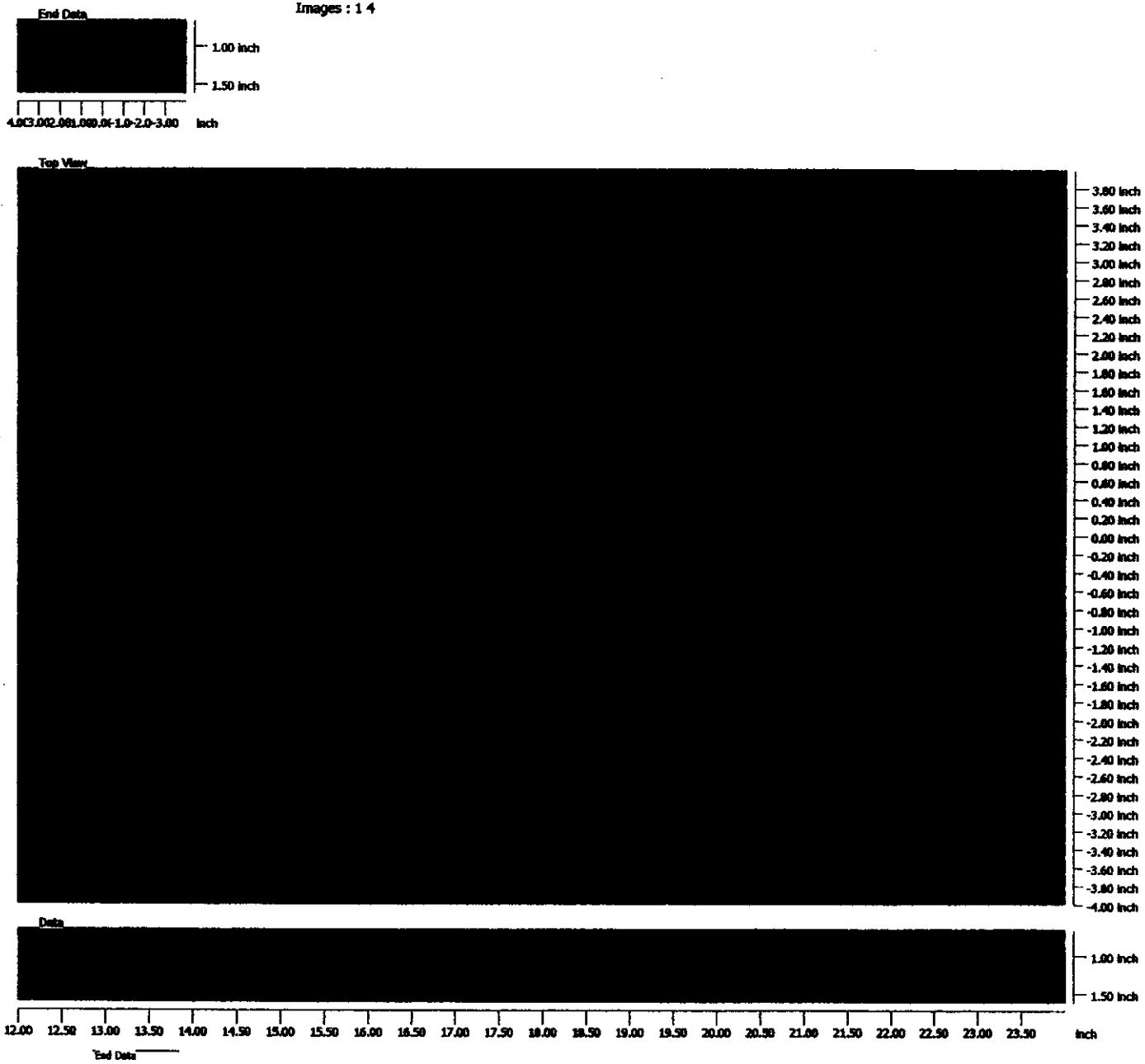
Printed on 2000-8-7 at 14:44 : T-scan pres.2 <4> of Job : HORZ.Weld/60/0/C.

Images : 1 4



HORZ.WD/P-5/Knuckle C
WHN
AP-107

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4: T-scan, Images, t-scan data2, 6/26/00 19:49

Printed on 2000-8-7 at 14:45 : T-scan pres.2 <4> of Job : HORZ.Weld/60/0/C.

Images : 1 4

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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4: T-scan, Images, t-scan data2, 6/26/00 19:49

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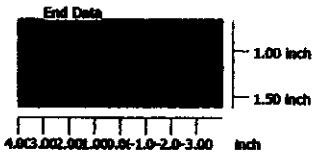
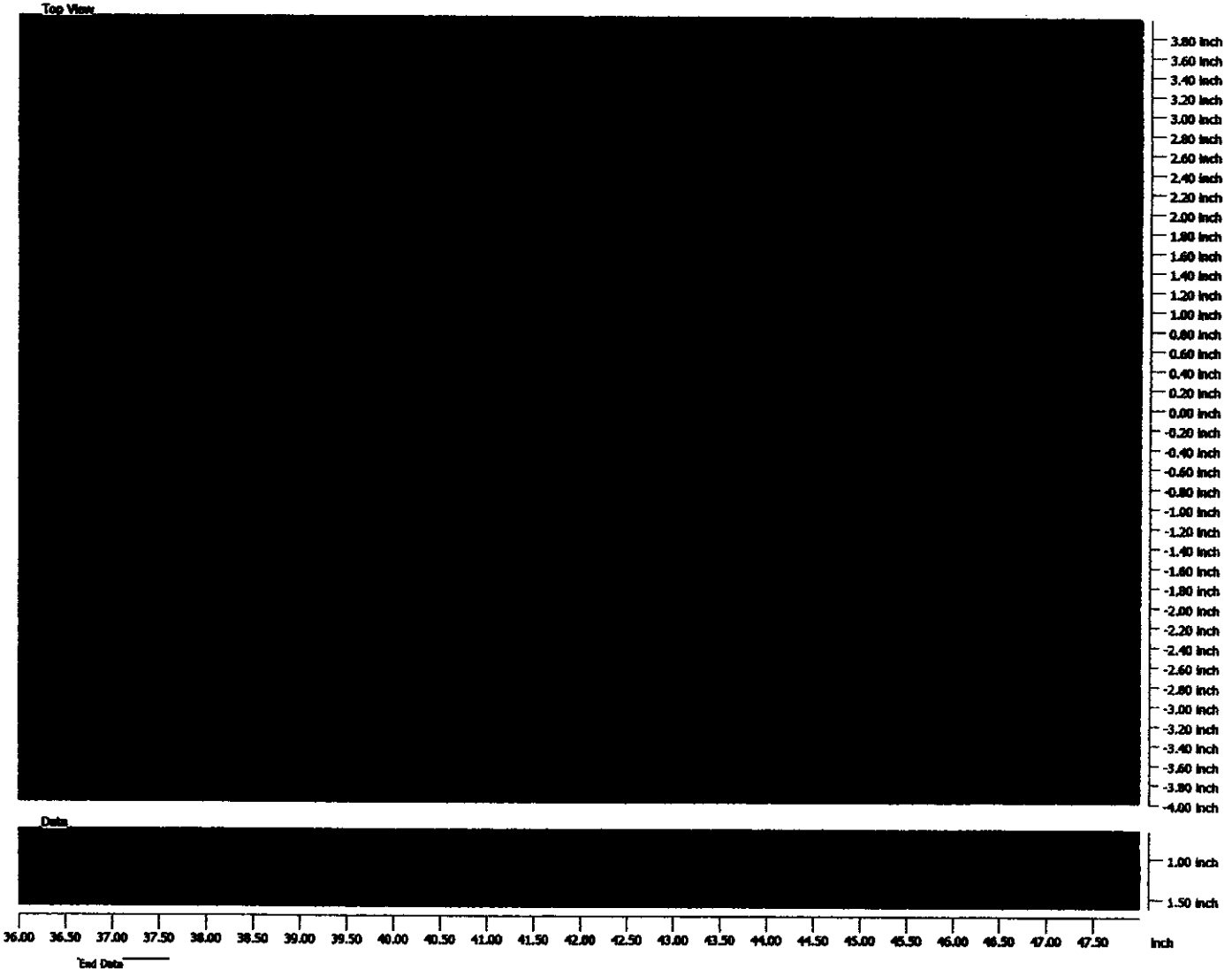
Images : 1 4



HORZ.WD/P-5/Knuckle C
WHN
AP-107

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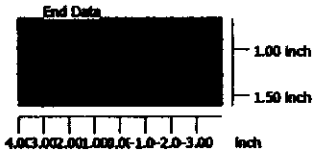


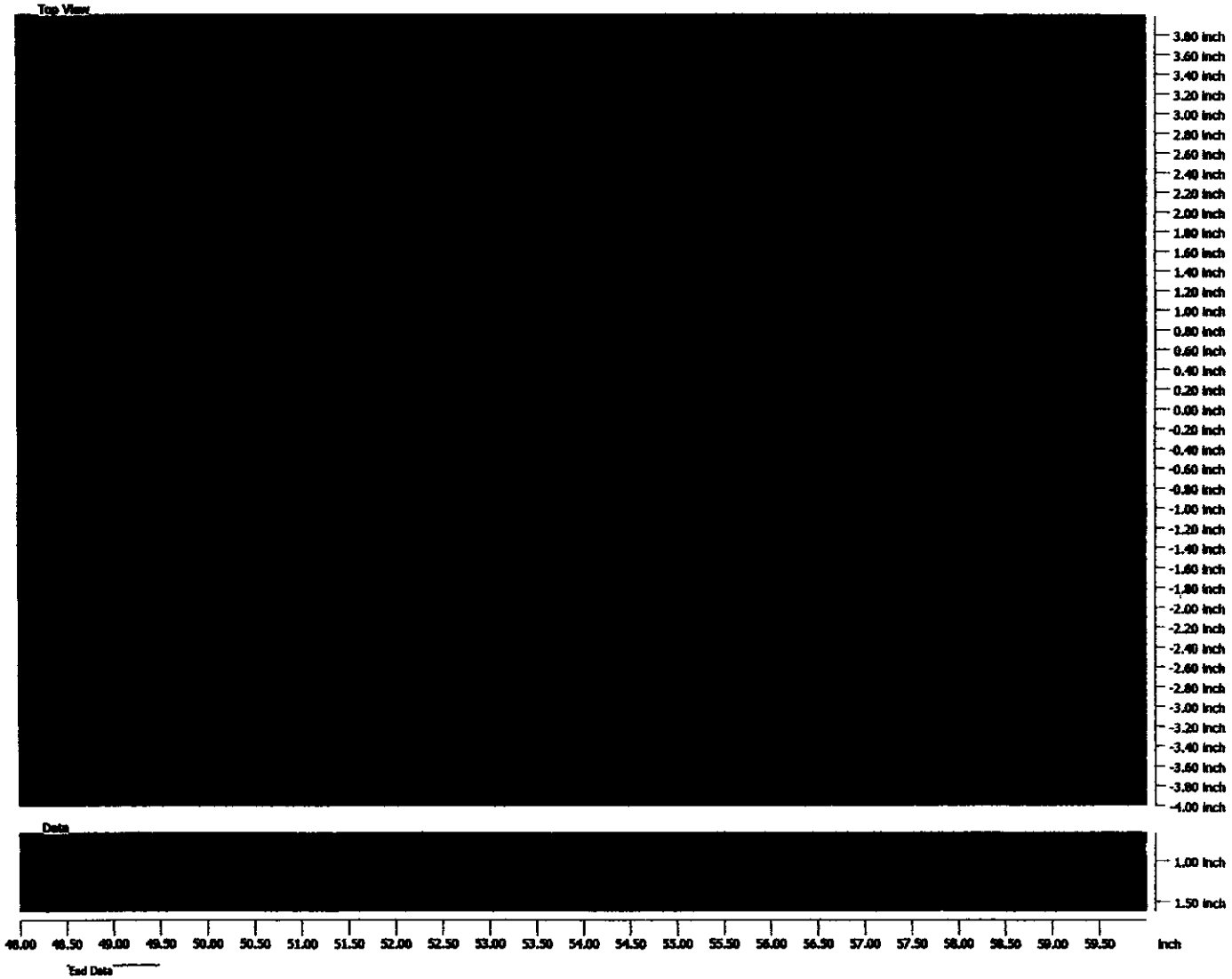

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HORZ.WD/P-5/Knuckle C
WHN
AP-107

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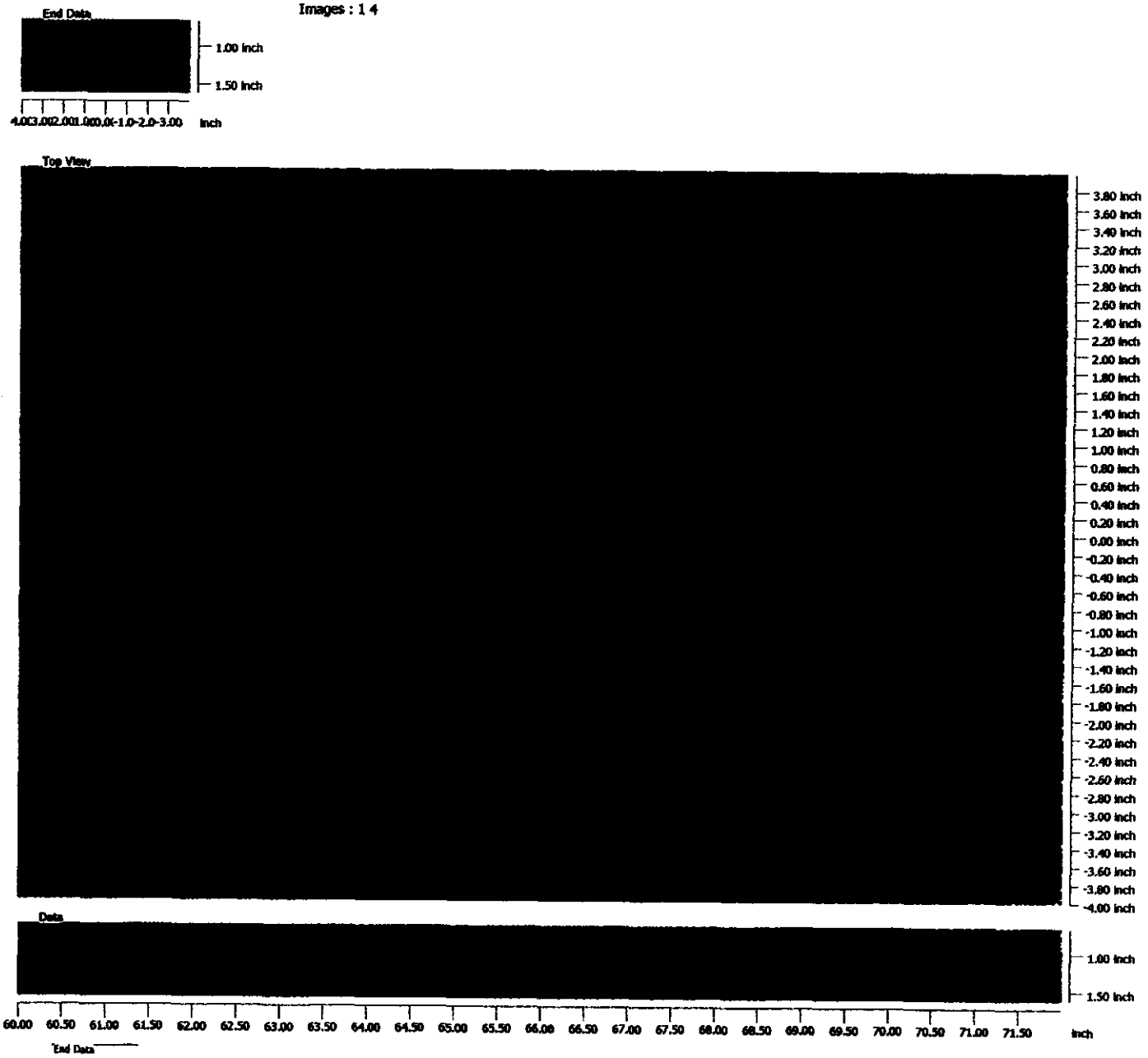

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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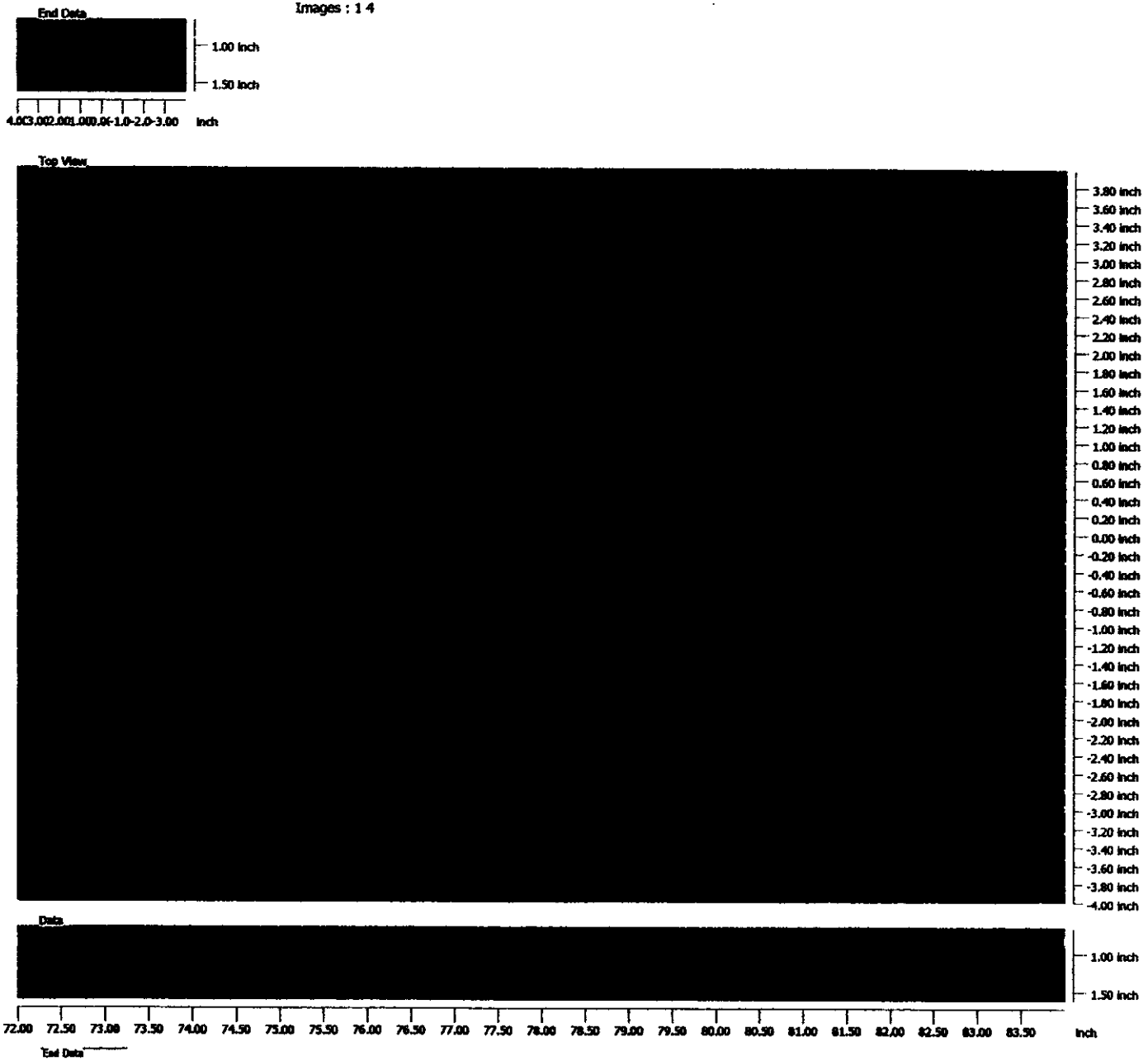

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HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, t-scan data2, 6/26/00 19:49
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Printed on 2000-8-7 at 14:46 : T-scan pres.2 <4> of Job : HORZ.Weld/60/0/C.

Images : 1 4

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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2: P-scan, Images, t-scan data2, 6/26/00 19:49
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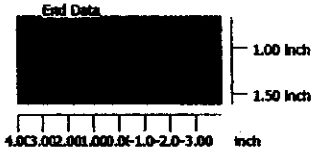
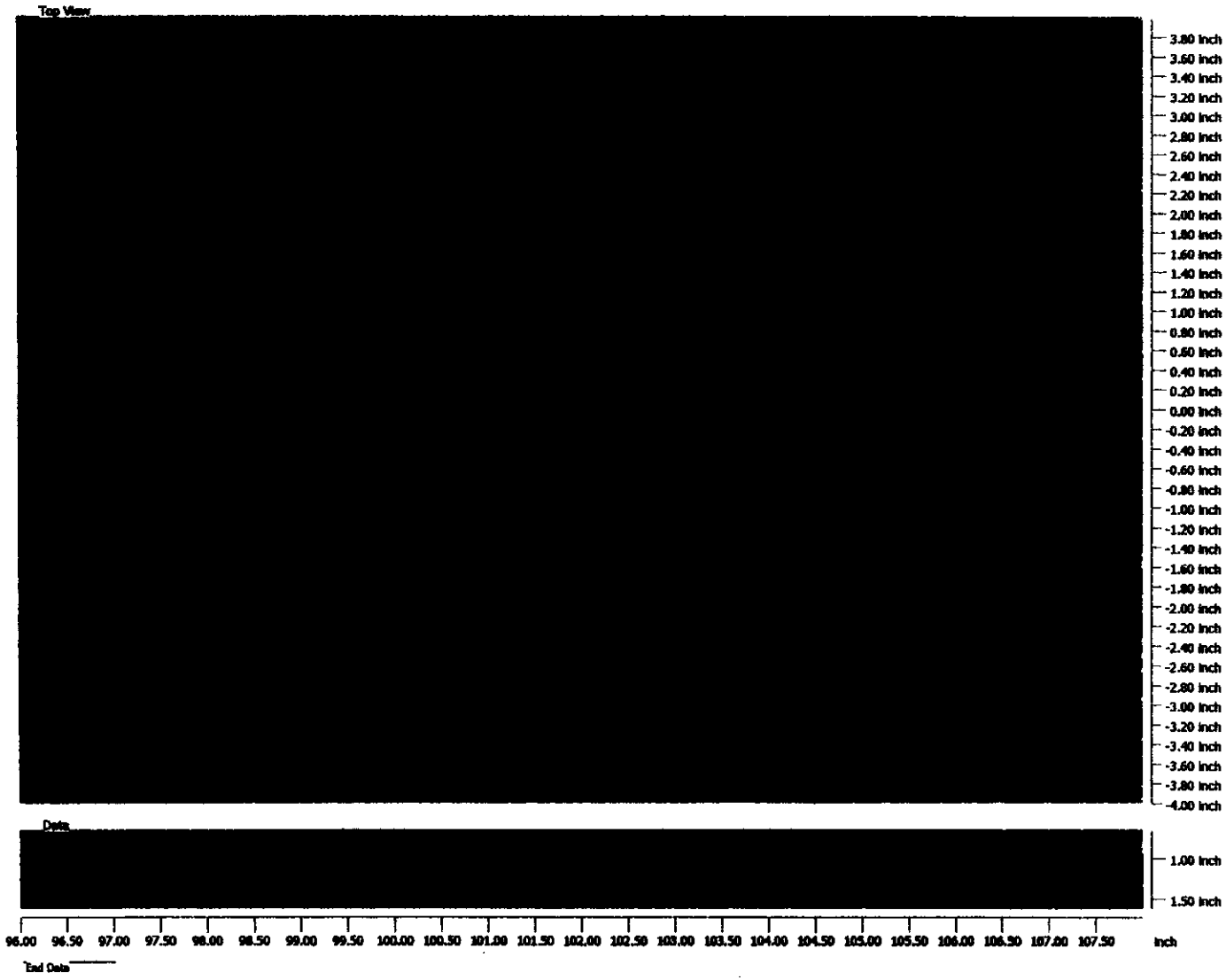
Images : 1 4



HORZ.WD/P-5/Knuckle C
WHN
AP-107

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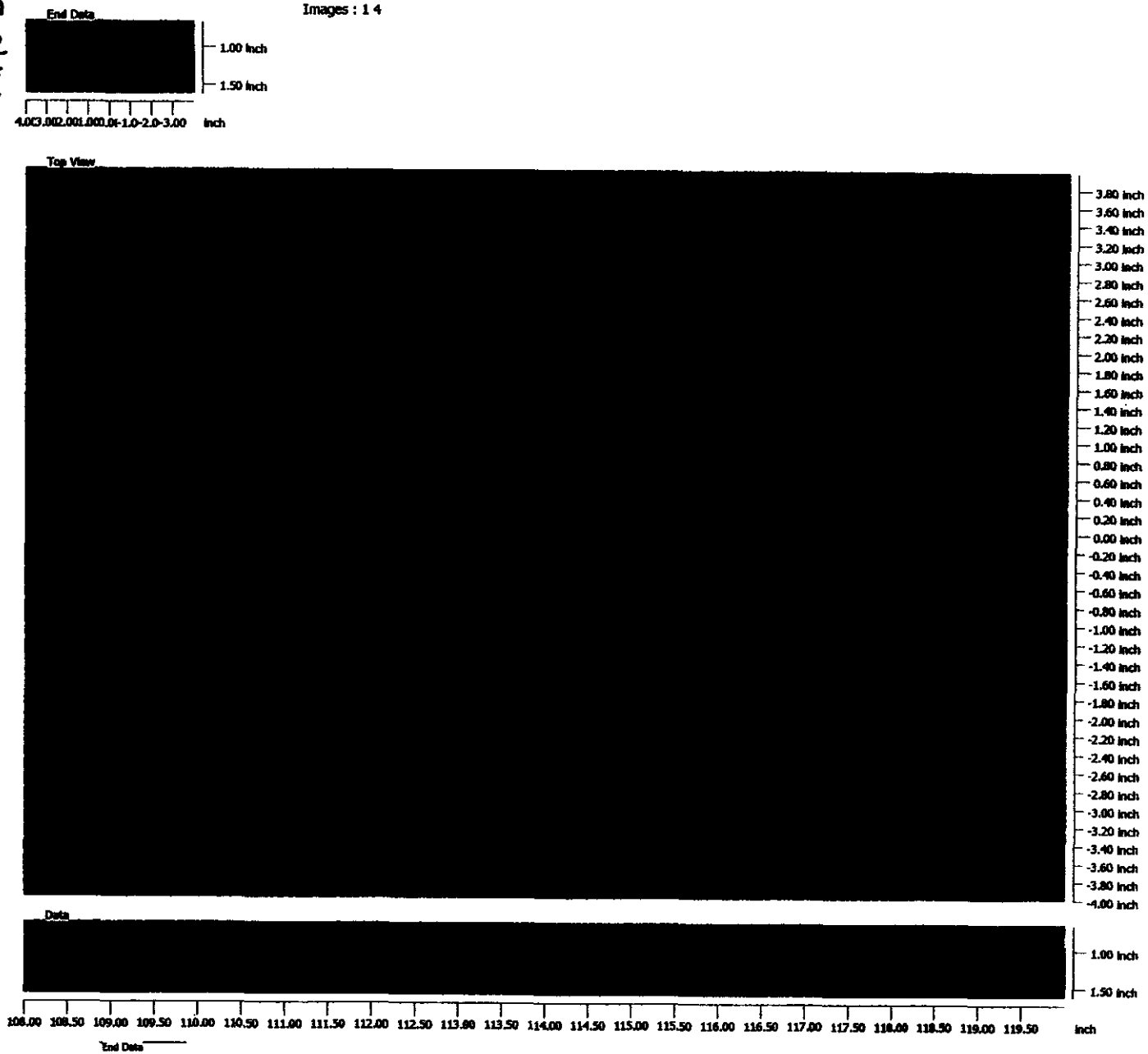
Images : 1 4



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/26/00 16:30 | EXAM END: 21:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: HORZ. WELD PLATE TO KNUCKLE | | CALIBRATED RANGE: 0" TO 3.50" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | REF. LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .875" NOM. THICKNESS | | |
| FILE NAME/ITEM#: HORZ. WELD/60/0/B & C | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 60° | | |
| $X_0$ REF. POINT ($L_0$): 108" from 1st VERT. WELD | $Y_0$ REF. POINT ($W_0$): ℄ WELD | SCAN WIDTH: 7.1" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS: NO Crack-Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley A Neb | W A Neb | (NI) | |
| Level III Date 6/26/00 | Level III Date 8/7/00 | Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J B. Elder

HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, p-scan data1, 6/26/00 18:22
2: P-scan, Images, p-scan data1, 6/26/00 18:22
3: T-scan, Images, p-scan data1, 6/26/00 18:22
4: T-scan, Images, p-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 11:44 [redacted] Job : HORZ.Weld/60/0/B

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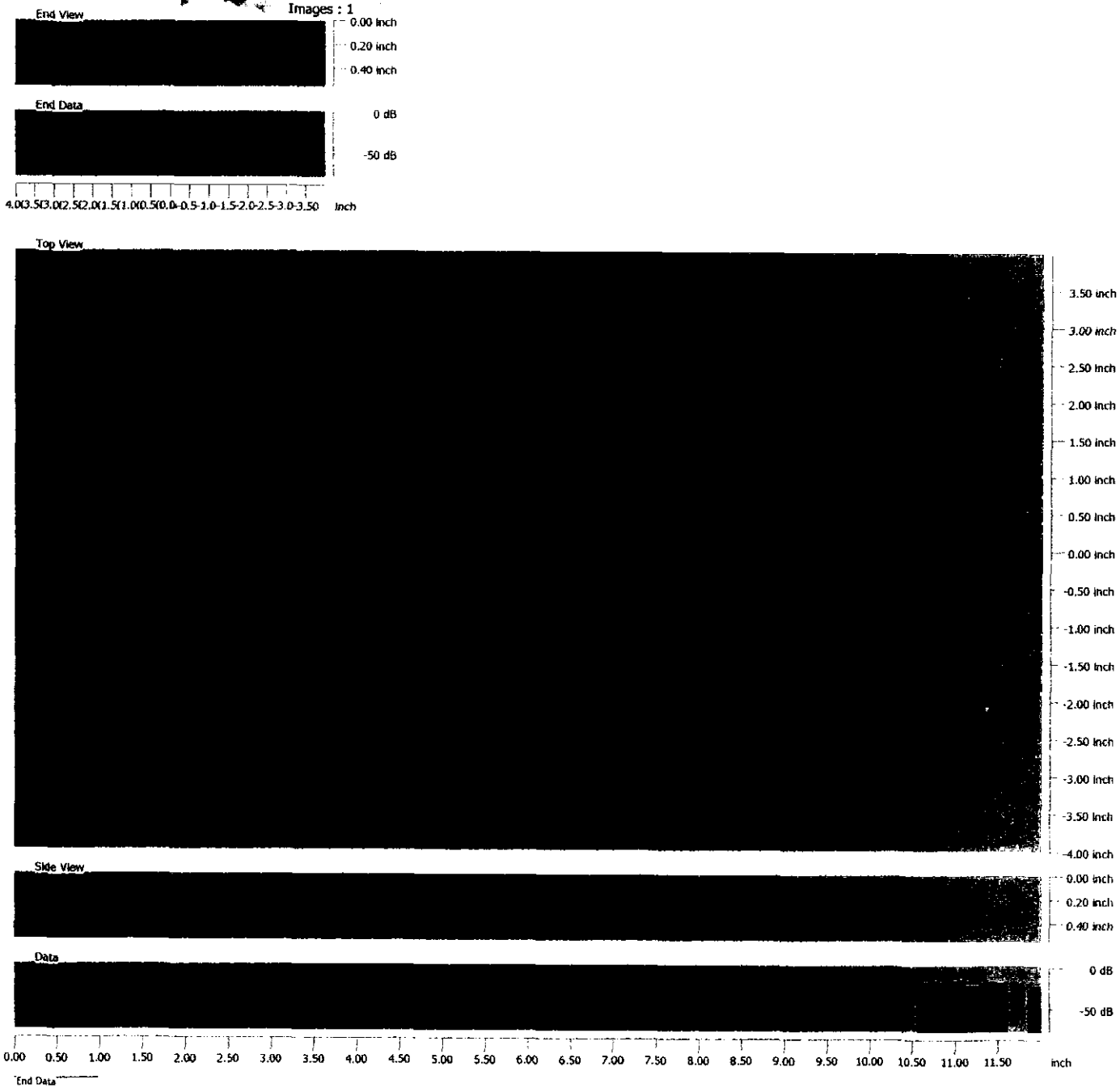

HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, p-scan data1, 6/26/00 18:22
2: P-scan, Images, p-scan data1, 6/26/00 18:22
3: T-scan, Images, p-scan data1, 6/26/00 18:22
4: T-scan, Images, p-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 11:44 : P-scan pres.1 <1> of Job : HORZ.Weld/60/0/B.

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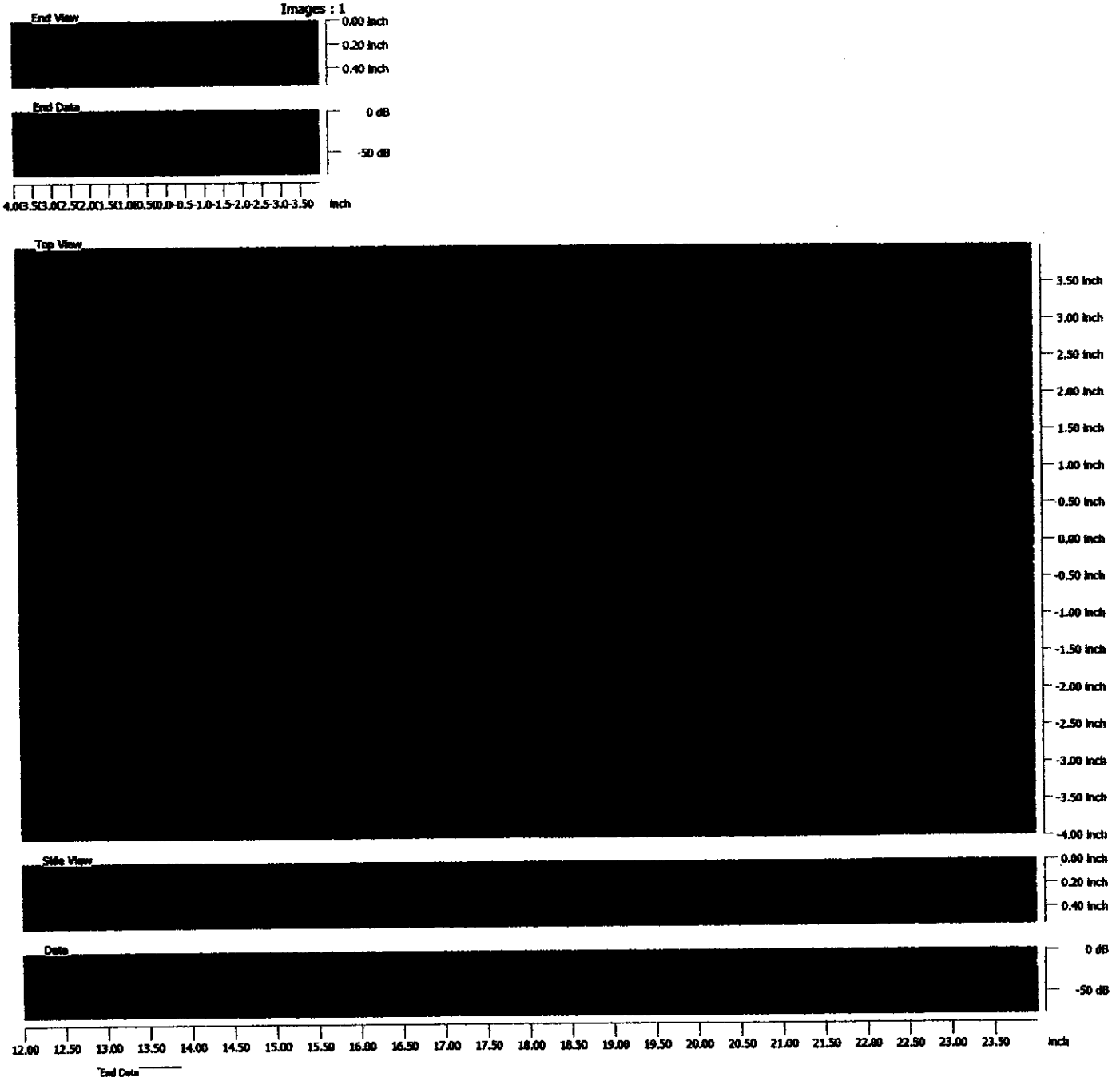

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HORZ.WD/P-5/Knuckle B
WHN
AP-107

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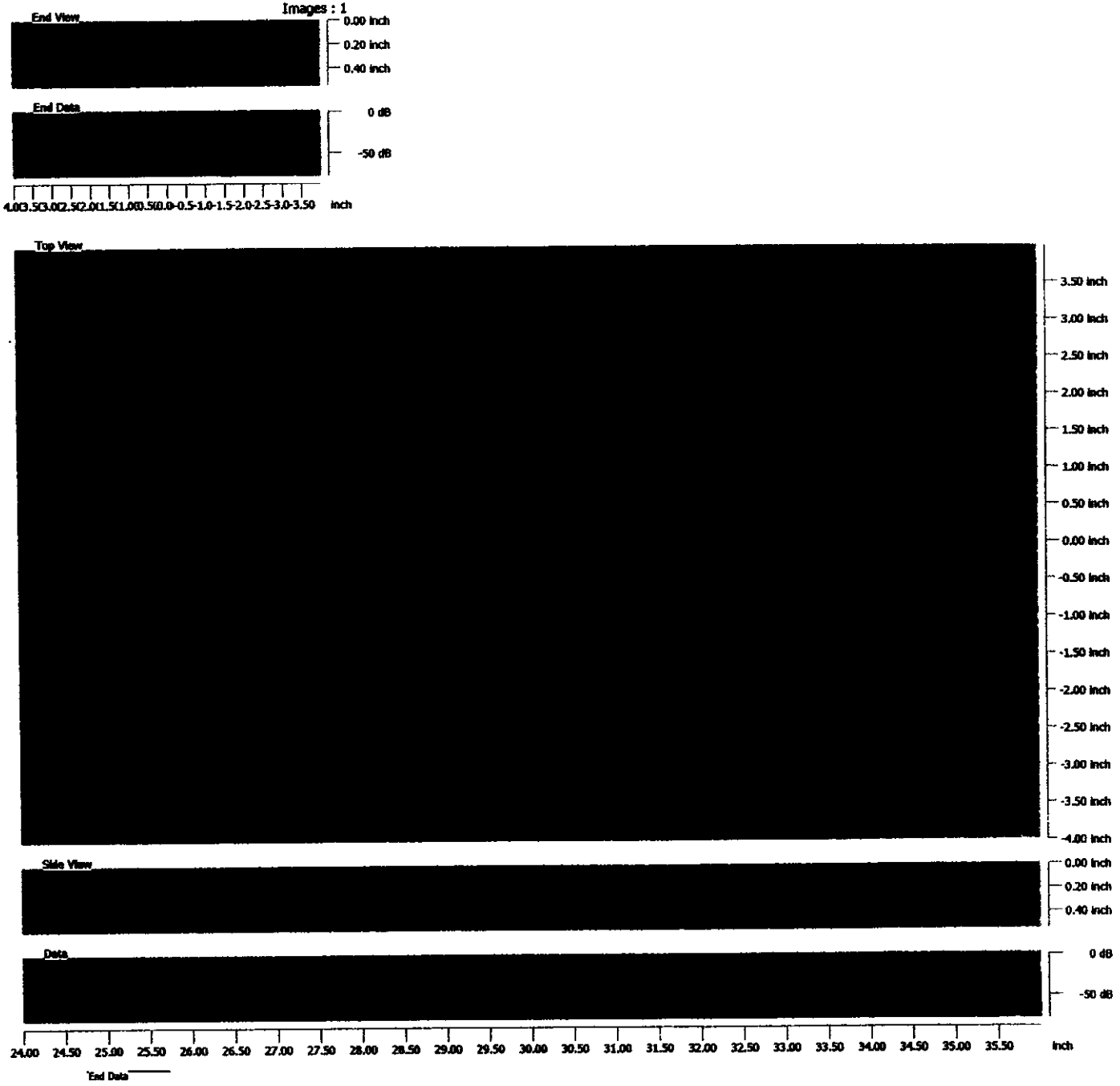

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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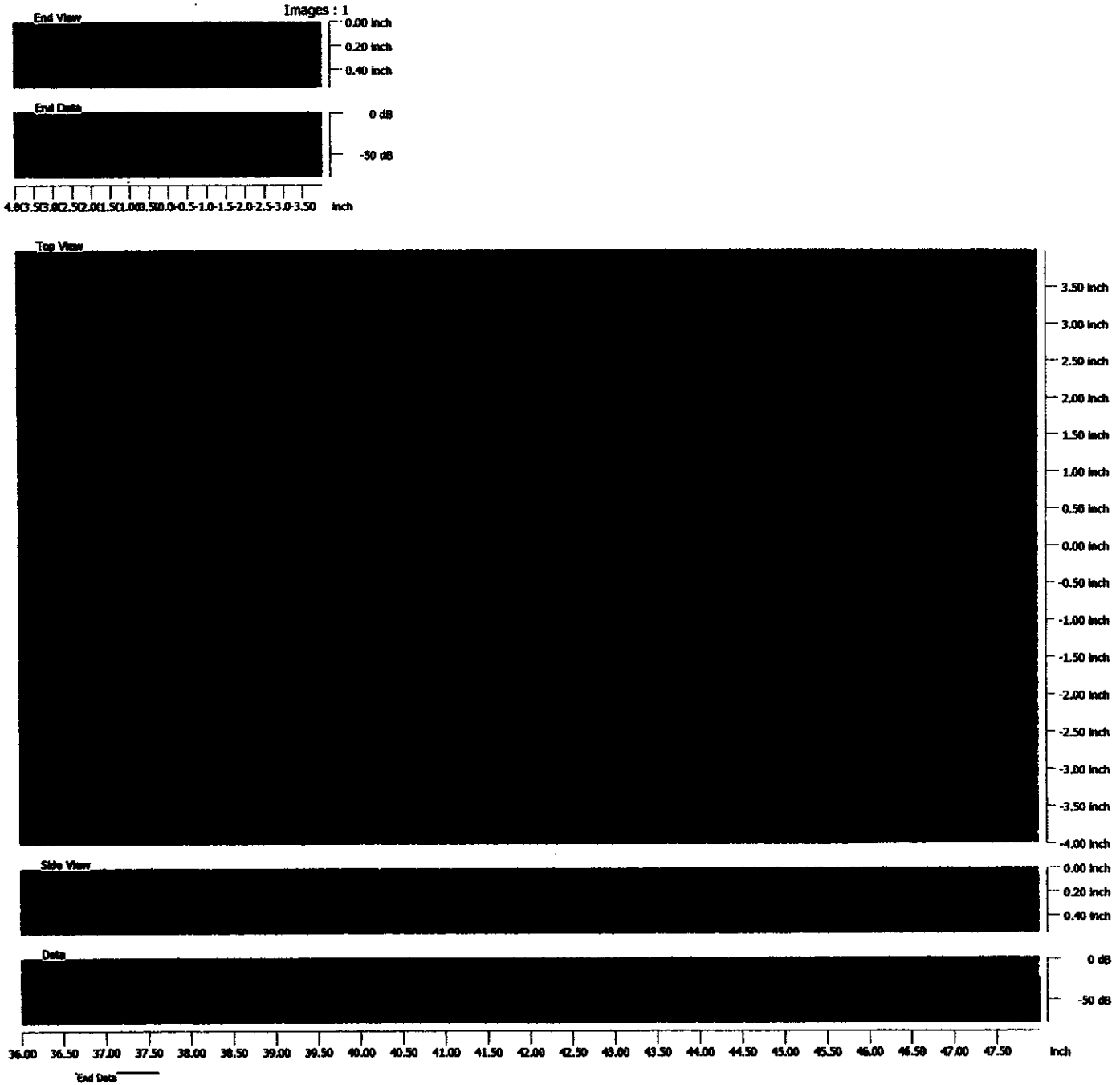
4: T-scan, Images, p-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 11:45 : P-scan pres.1 <1> of Job : HORZ.Weld/60/0/B.



HORZ.WD/P-5/Knuckle B
WHN
AP-107

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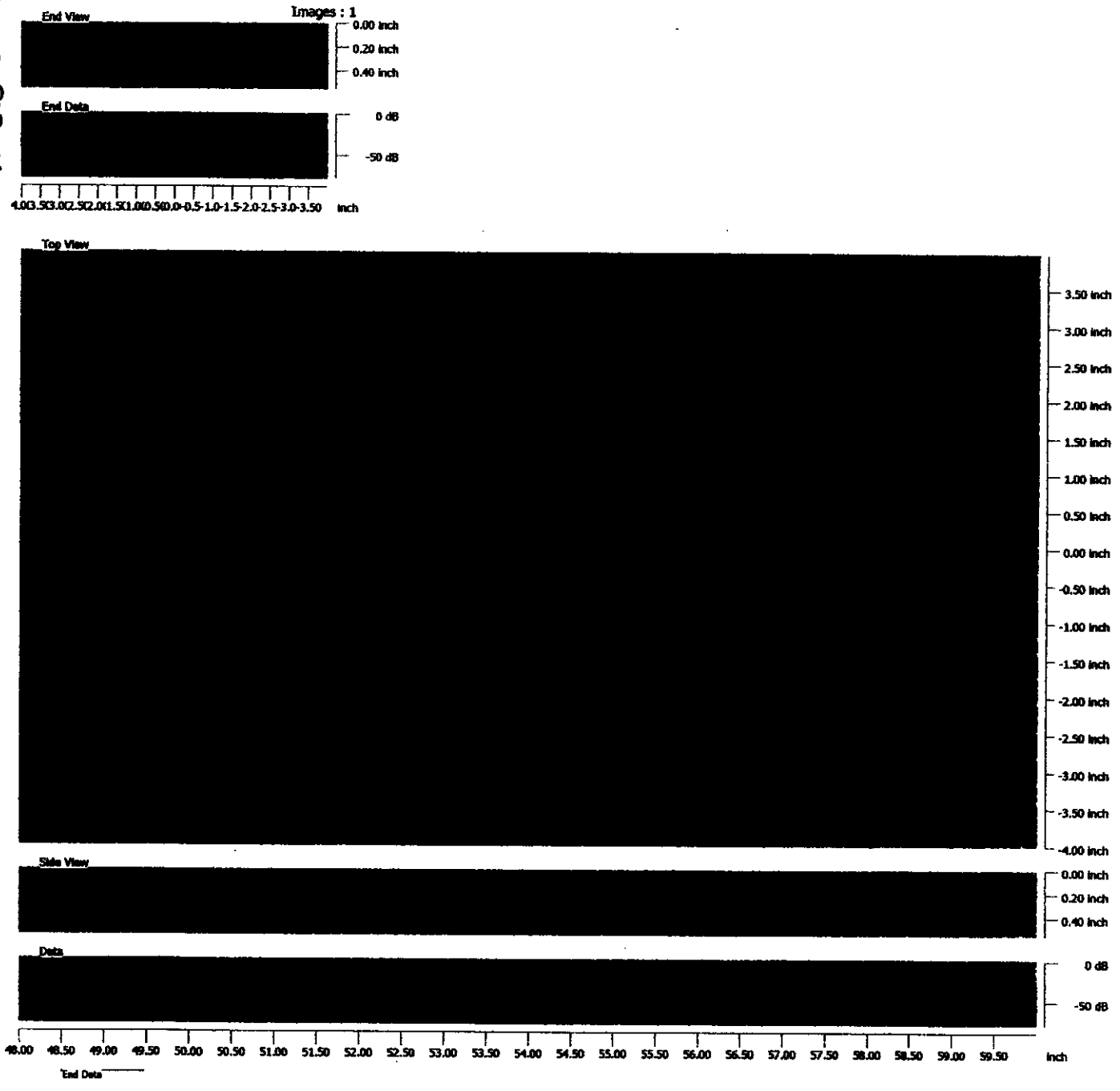
Printed on 2000-8-7 at 11:45 : P-scan pres.1 <1> of Job : HORZ.Weld/60/0/B.



HORZ.WD/P-5/Knuckle B
WHN
AP-107

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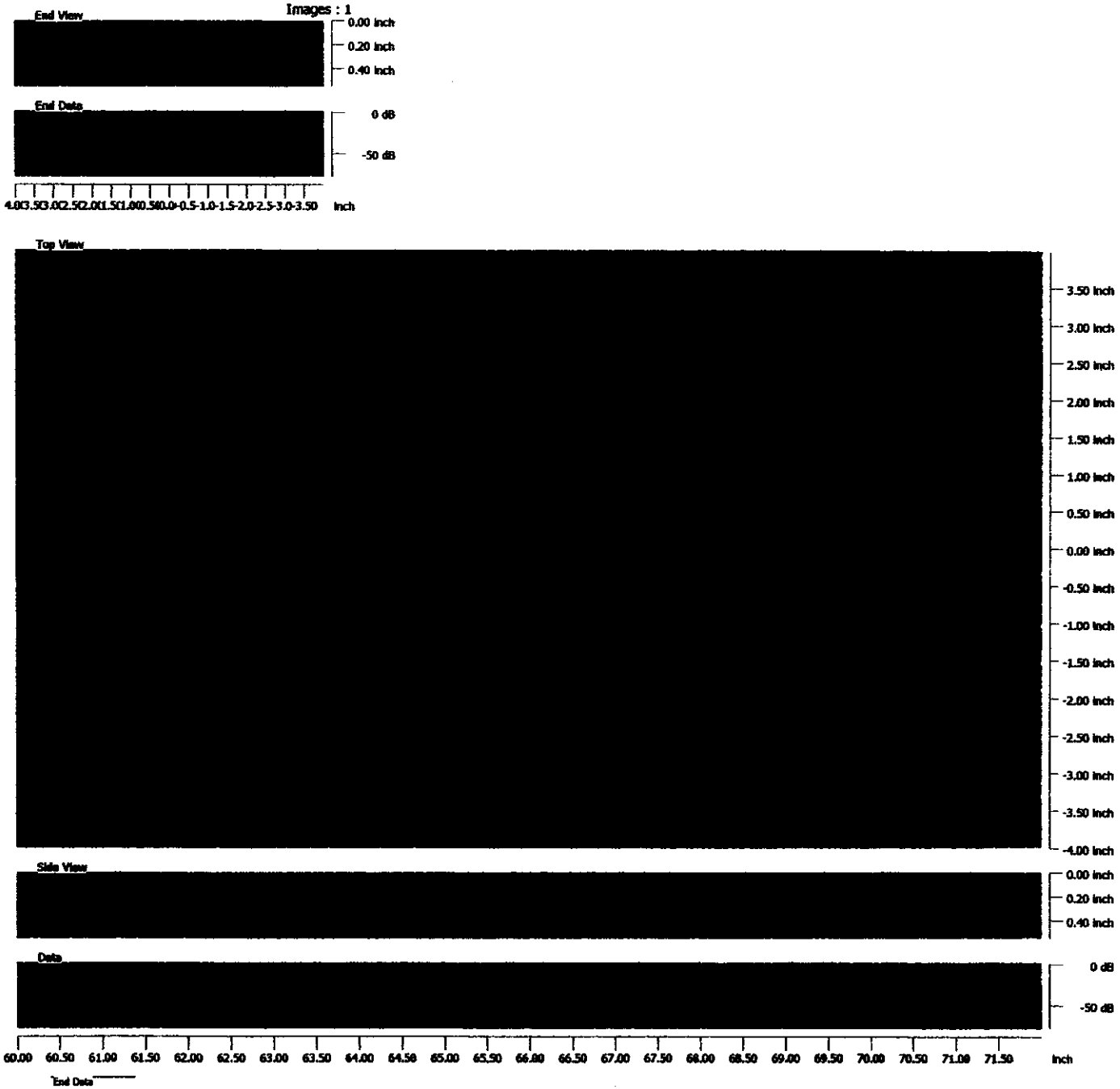

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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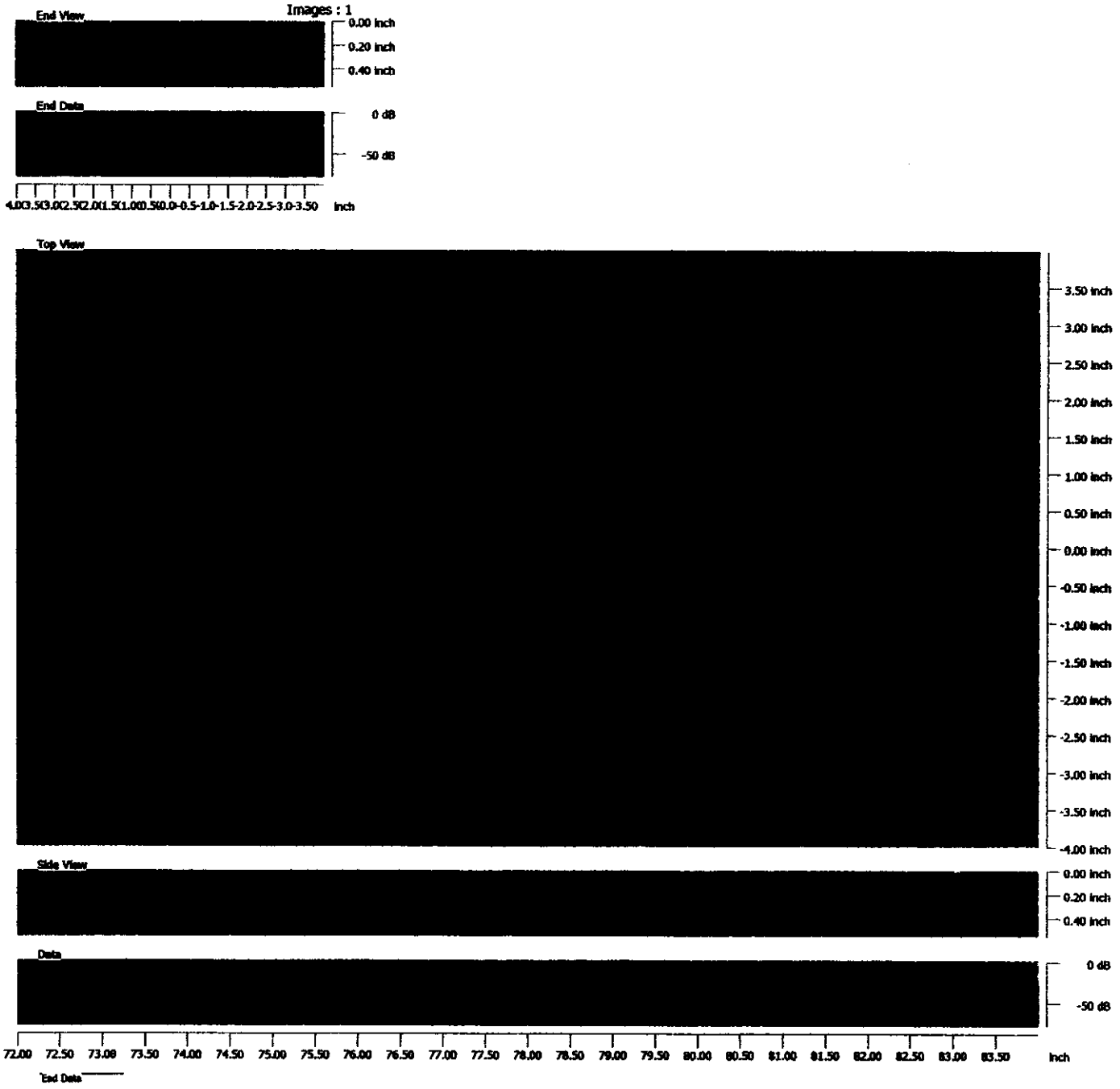

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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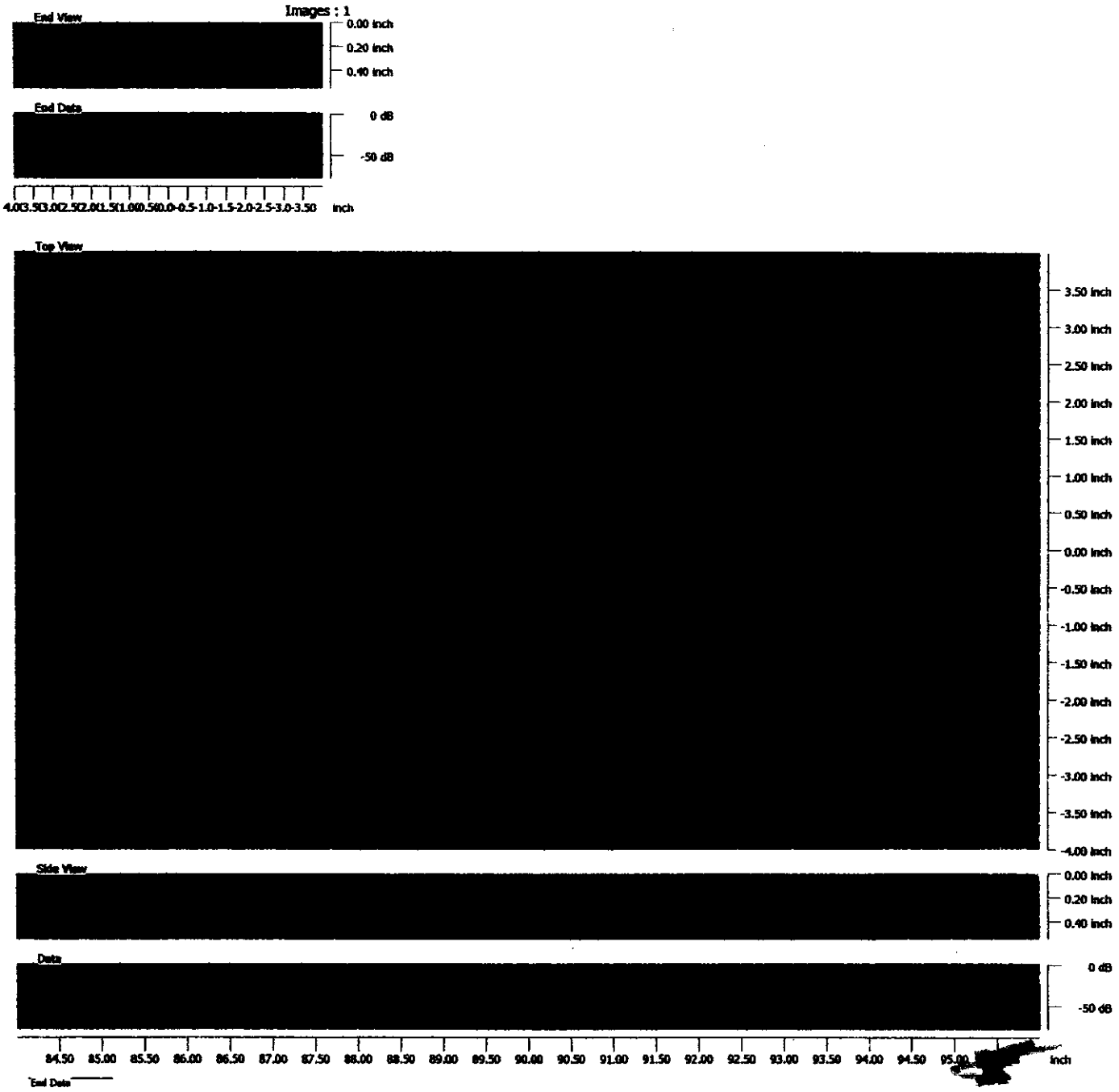

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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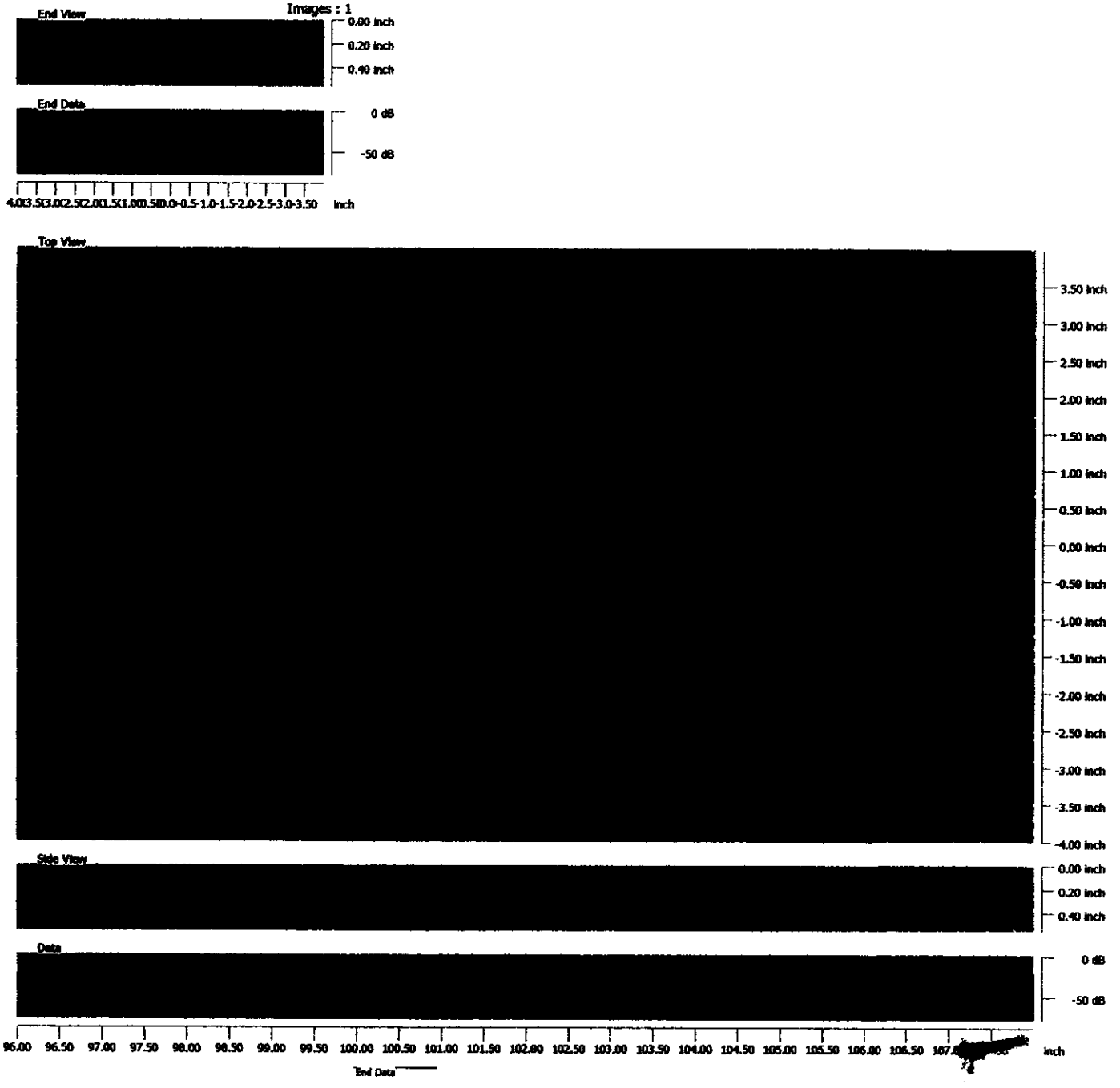
4: T-scan, Images, p-scan data1, 6/26/00 18:22

Printed on 2000-8-7 at 11:46 : P-scan pres.1 <1> of Job : HORZ.Weld/60/0/B.

Images : 1



HORZ.WD/P-5/Knuckle B
WHN
AP-107

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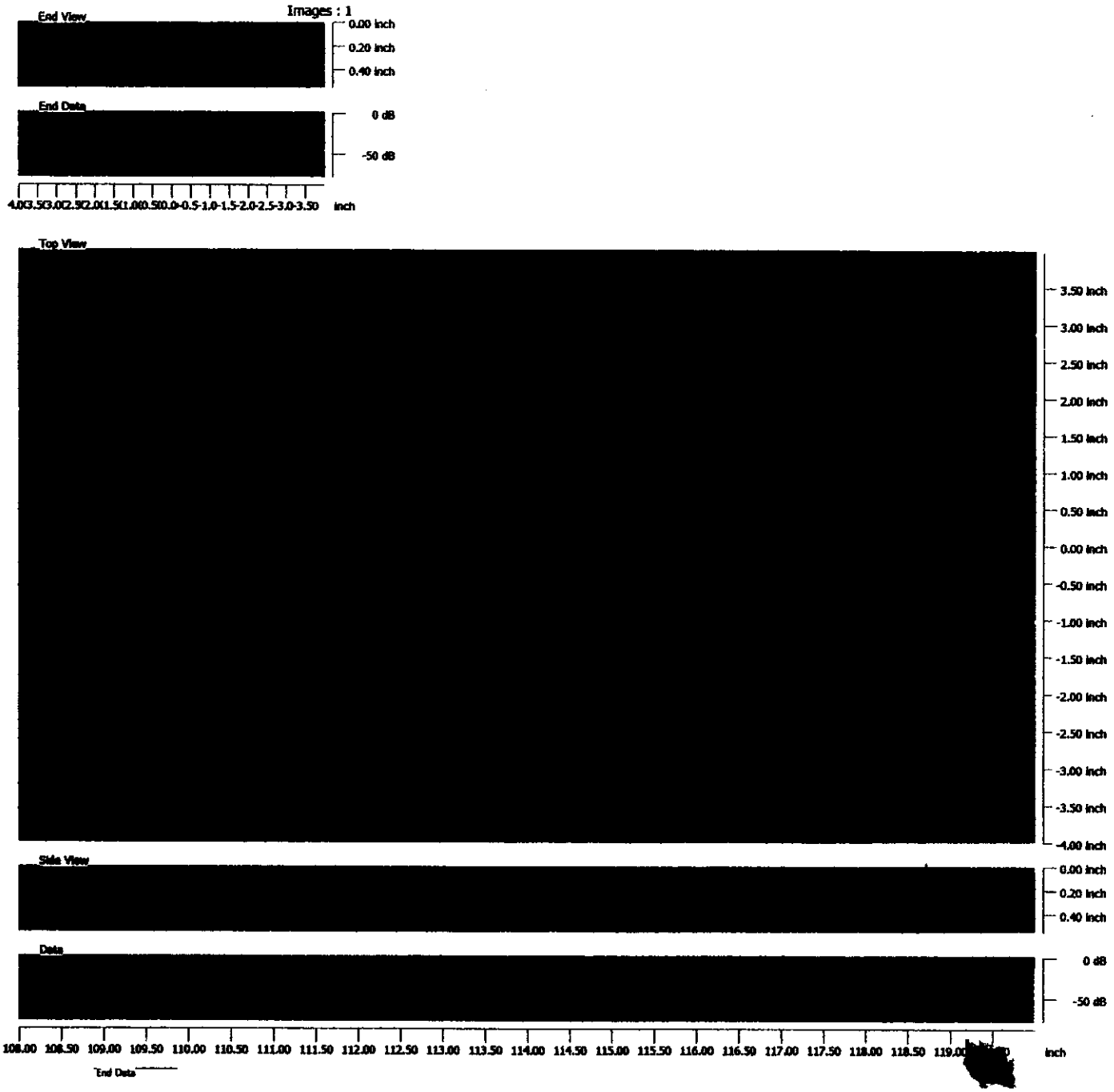

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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2: P-scan, Images, p-scan data1, 6/26/00 19:49
3: T-scan, Images, p-scan data1, 6/26/00 19:49
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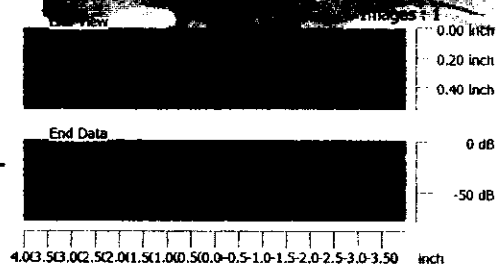
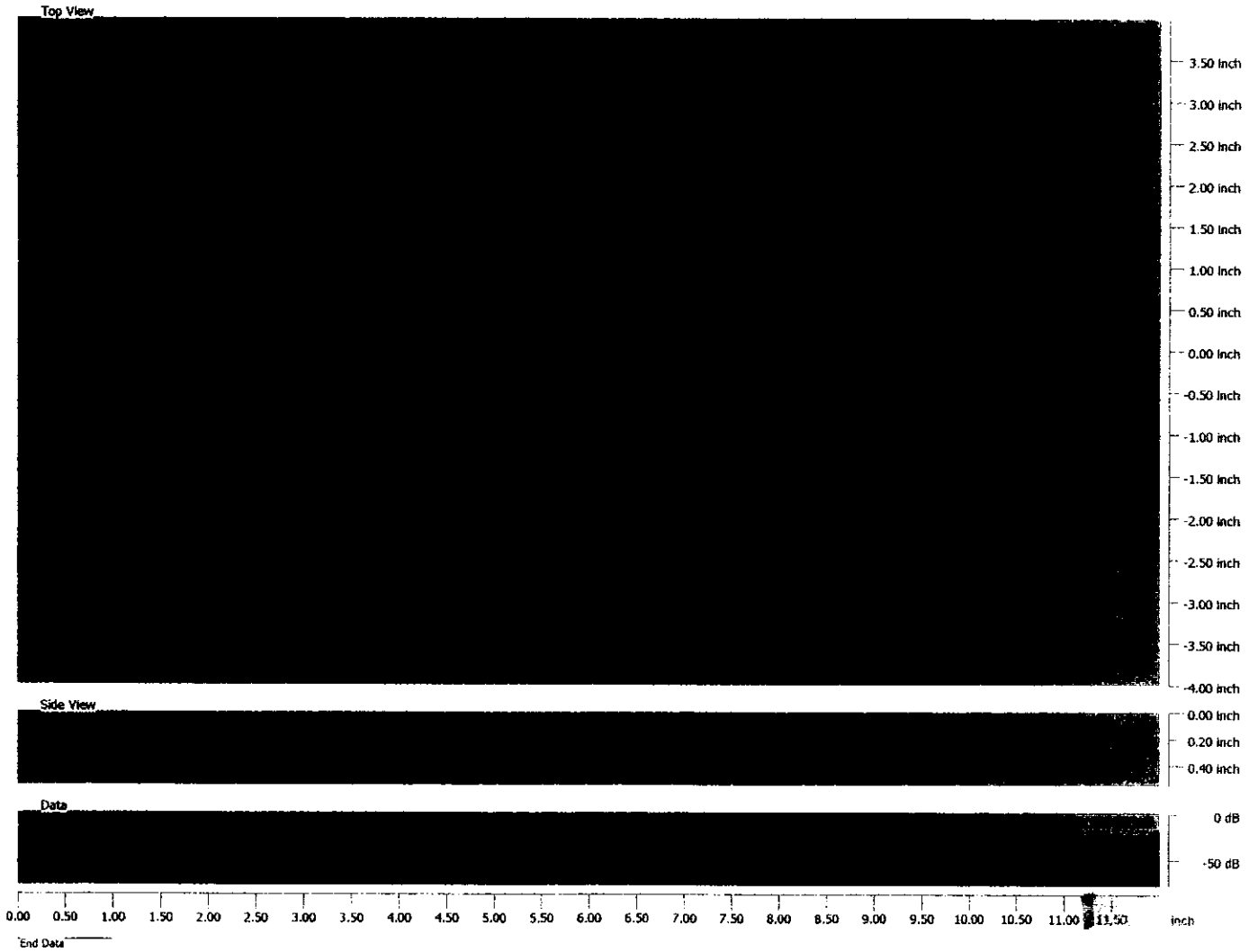
Pri[redacted] of Job : HORZ.Weld/60/0/C[redacted]

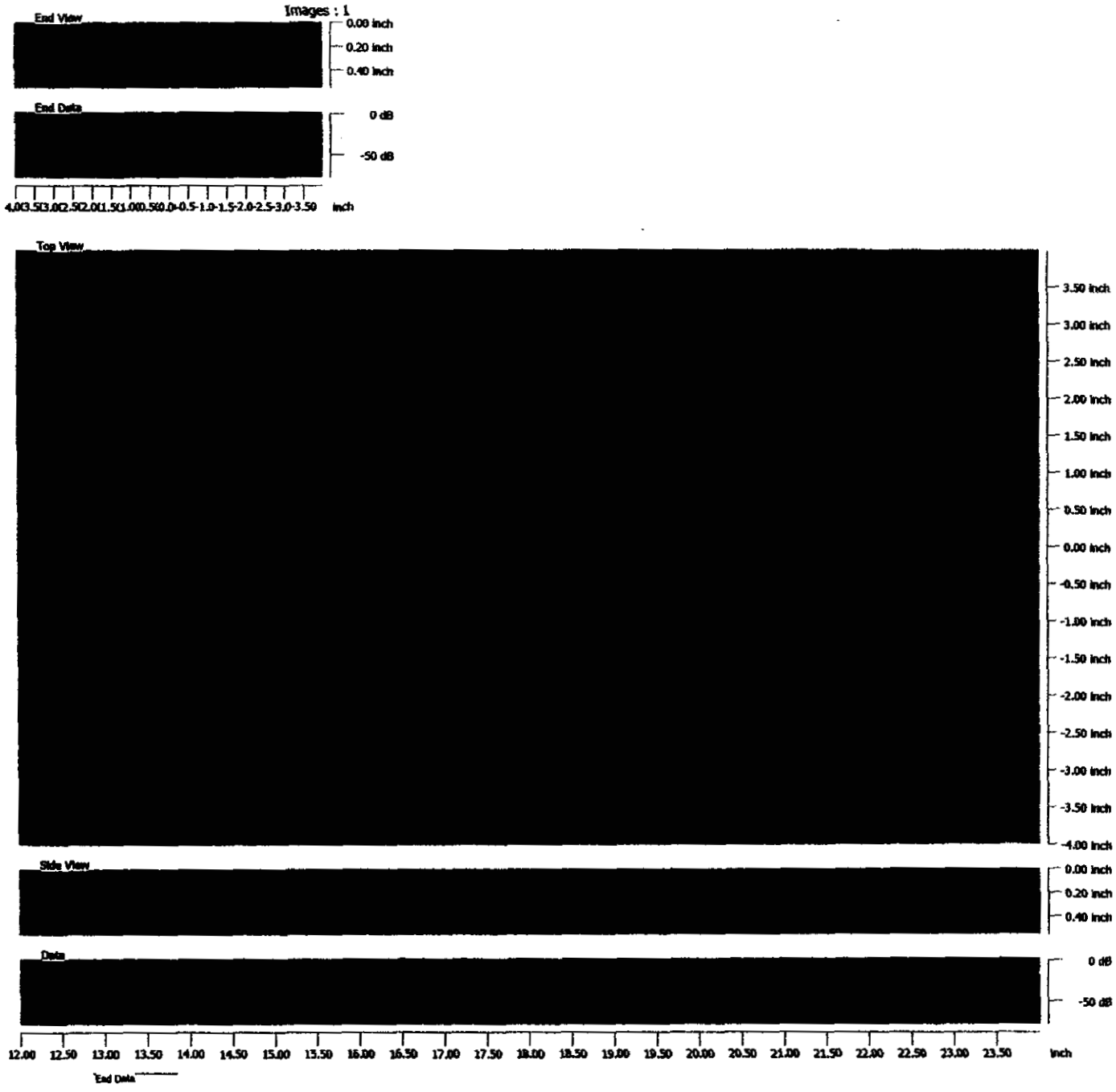


HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data1, 6/26/00 19:49
2: P-scan, Images, p-scan data1, 6/26/00 19:49
3: T-scan, Images, p-scan data1, 6/26/00 19:49
4: T-scan, Images, p-scan data1, 6/26/00 19:49

Printed on 2000-8-7 at 14:23 : P-scan pres.1 <1> of Job : HORZ.Weld/60/0/C.



HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data1, 6/26/00 19:49
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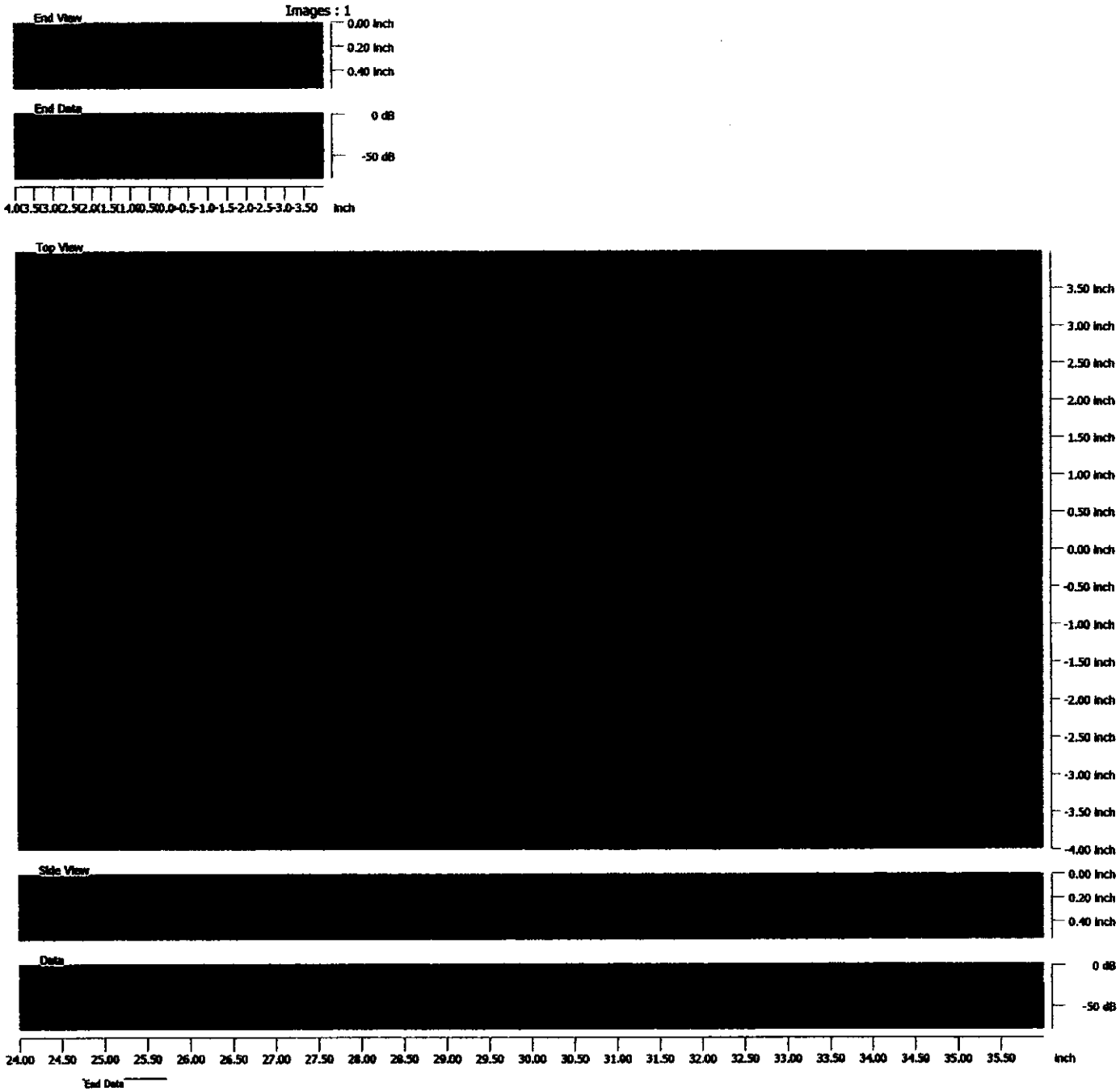

HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data1, 6/26/00 19:49
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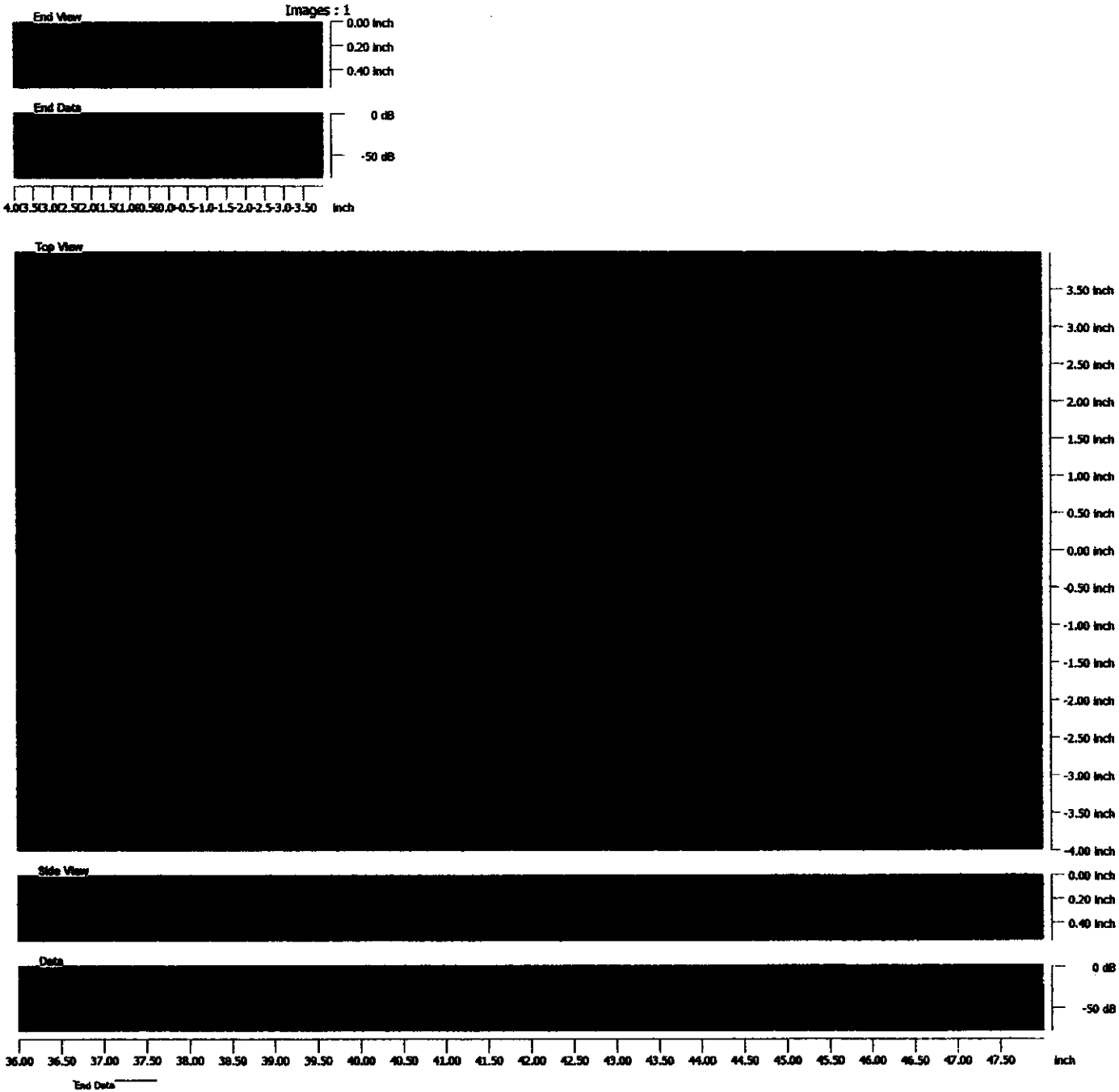

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HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data1, 6/26/00 19:49
2: P-scan, Images, p-scan data1, 6/26/00 19:49
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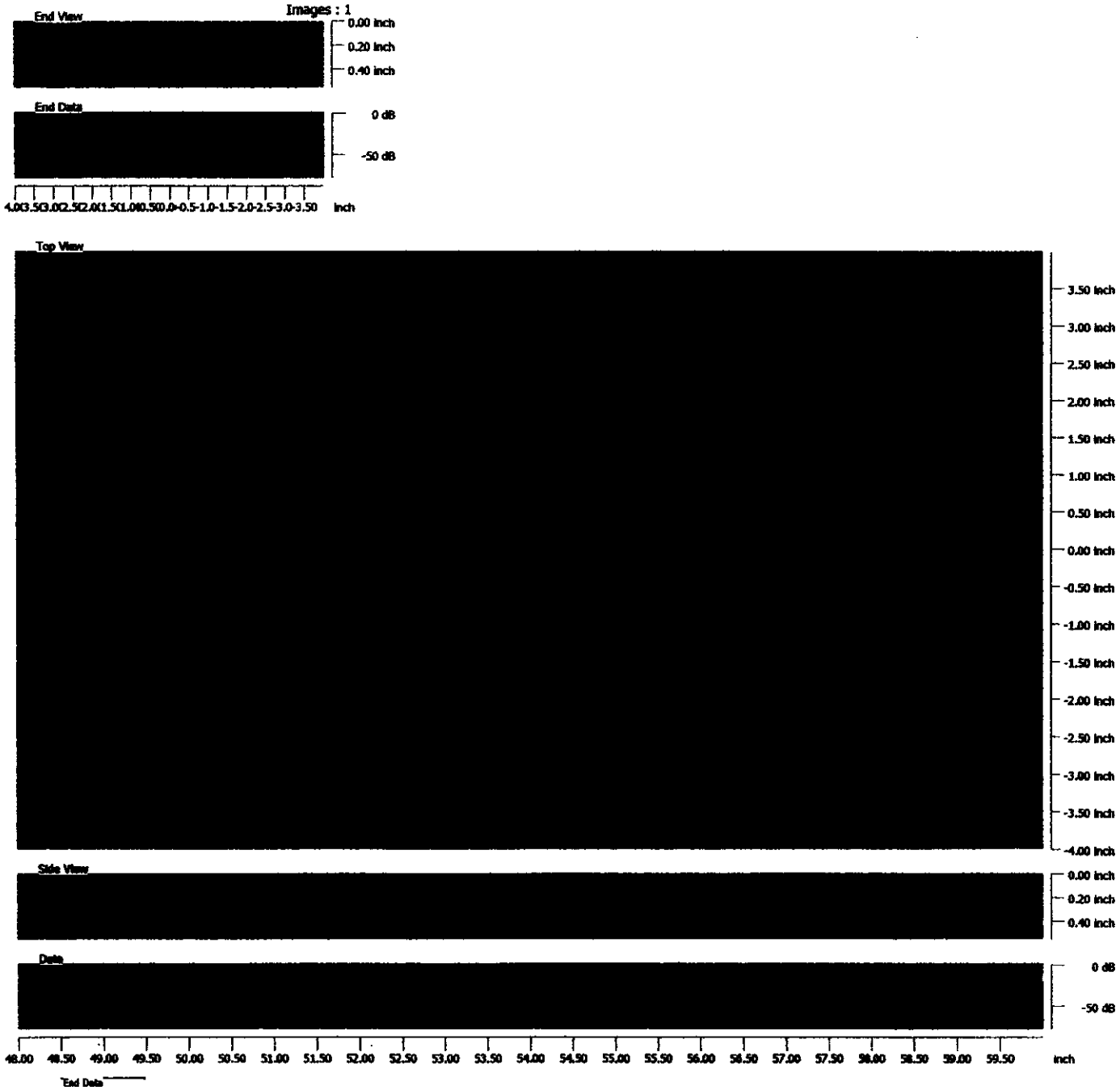

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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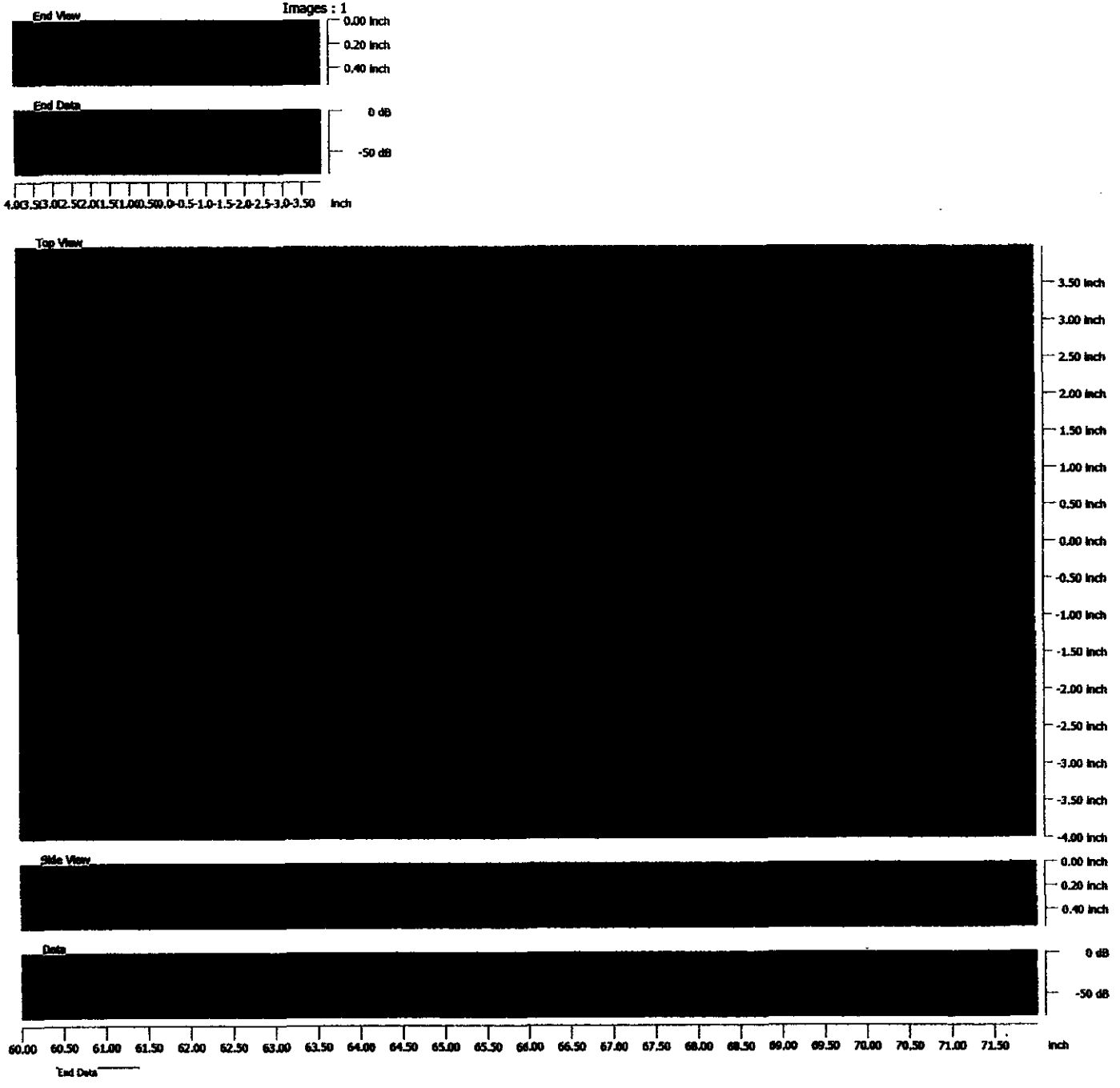

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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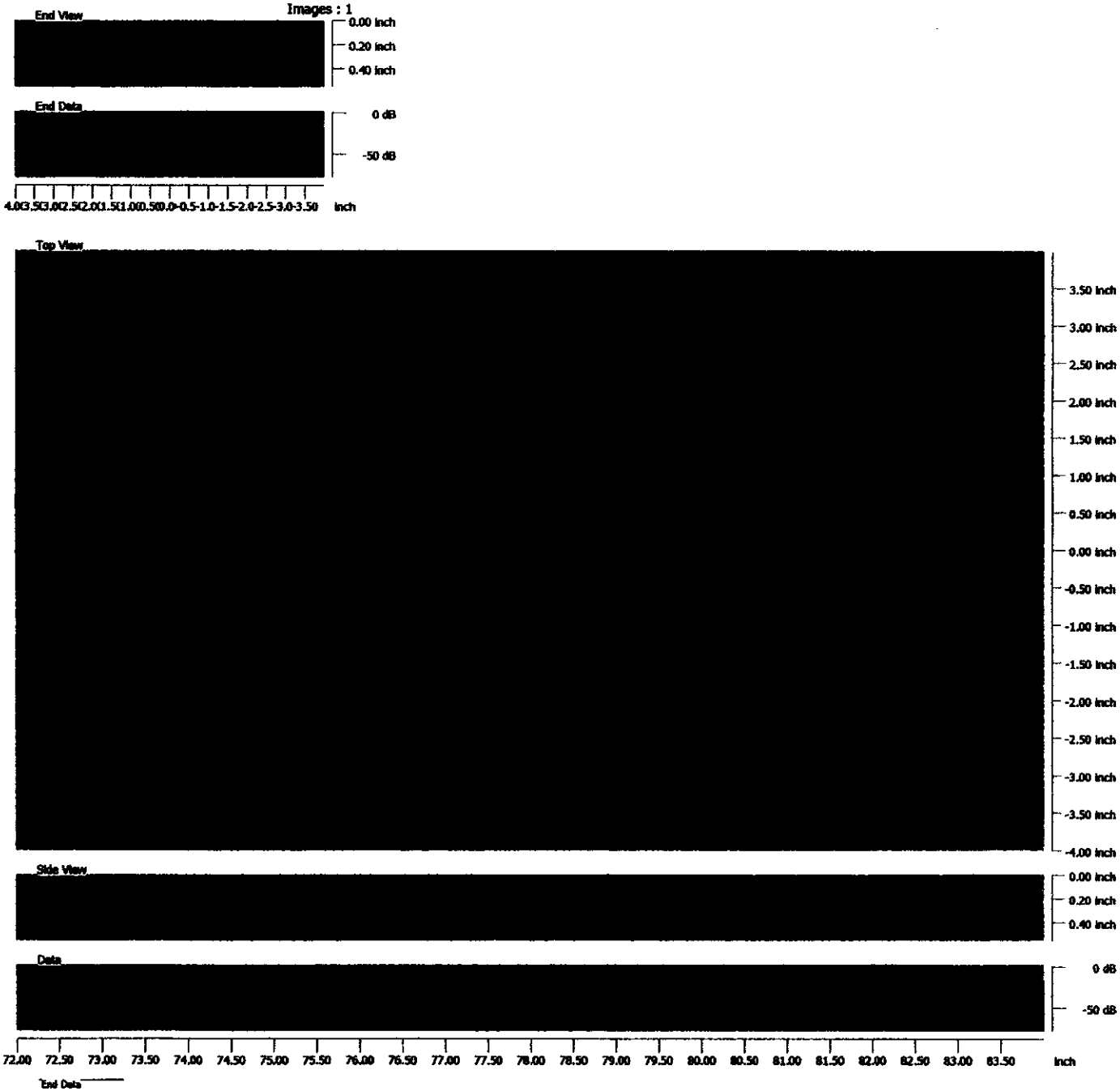

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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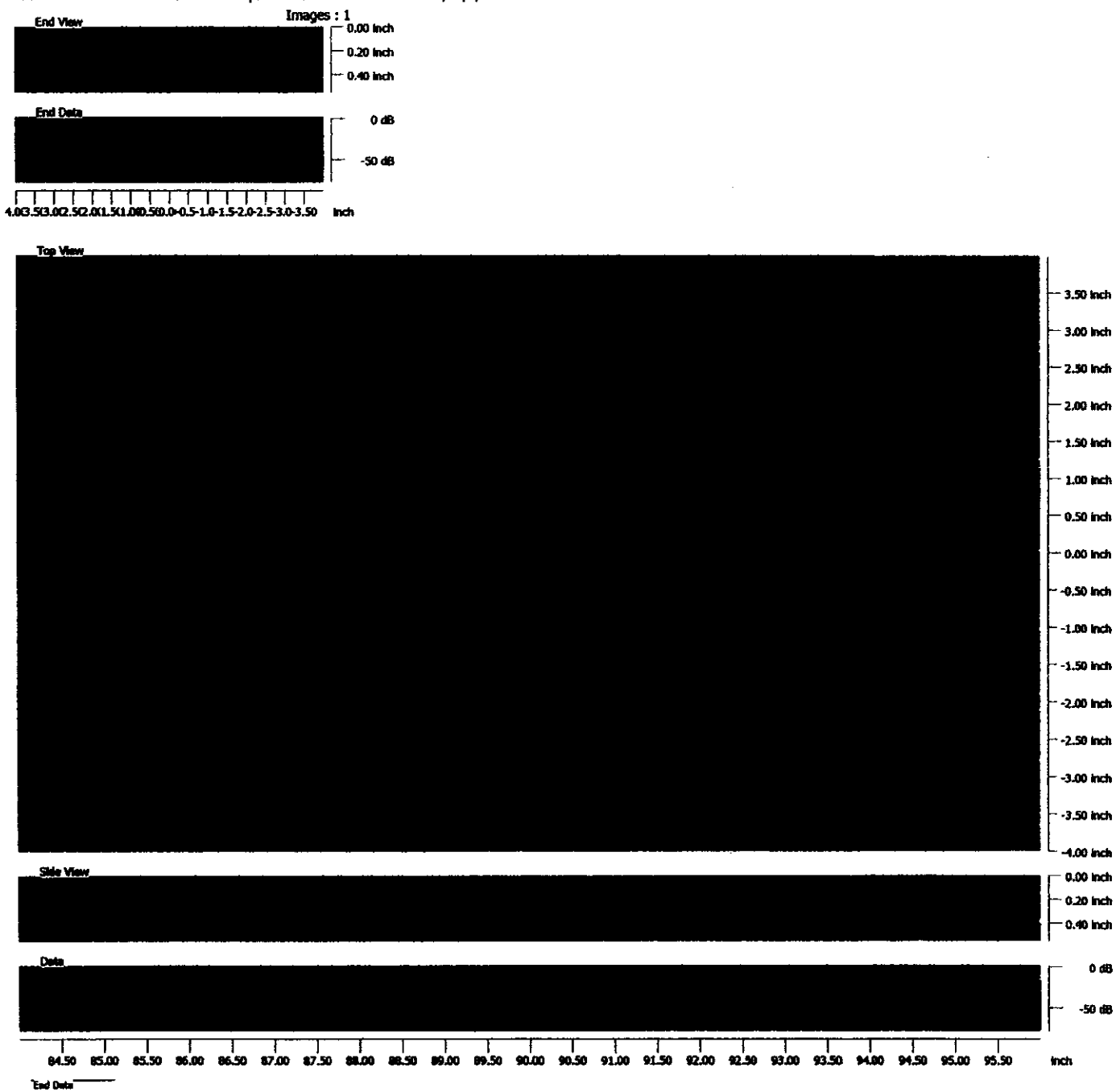

HORZ.WD/P-S/Knuckle C
WHN
AP-107

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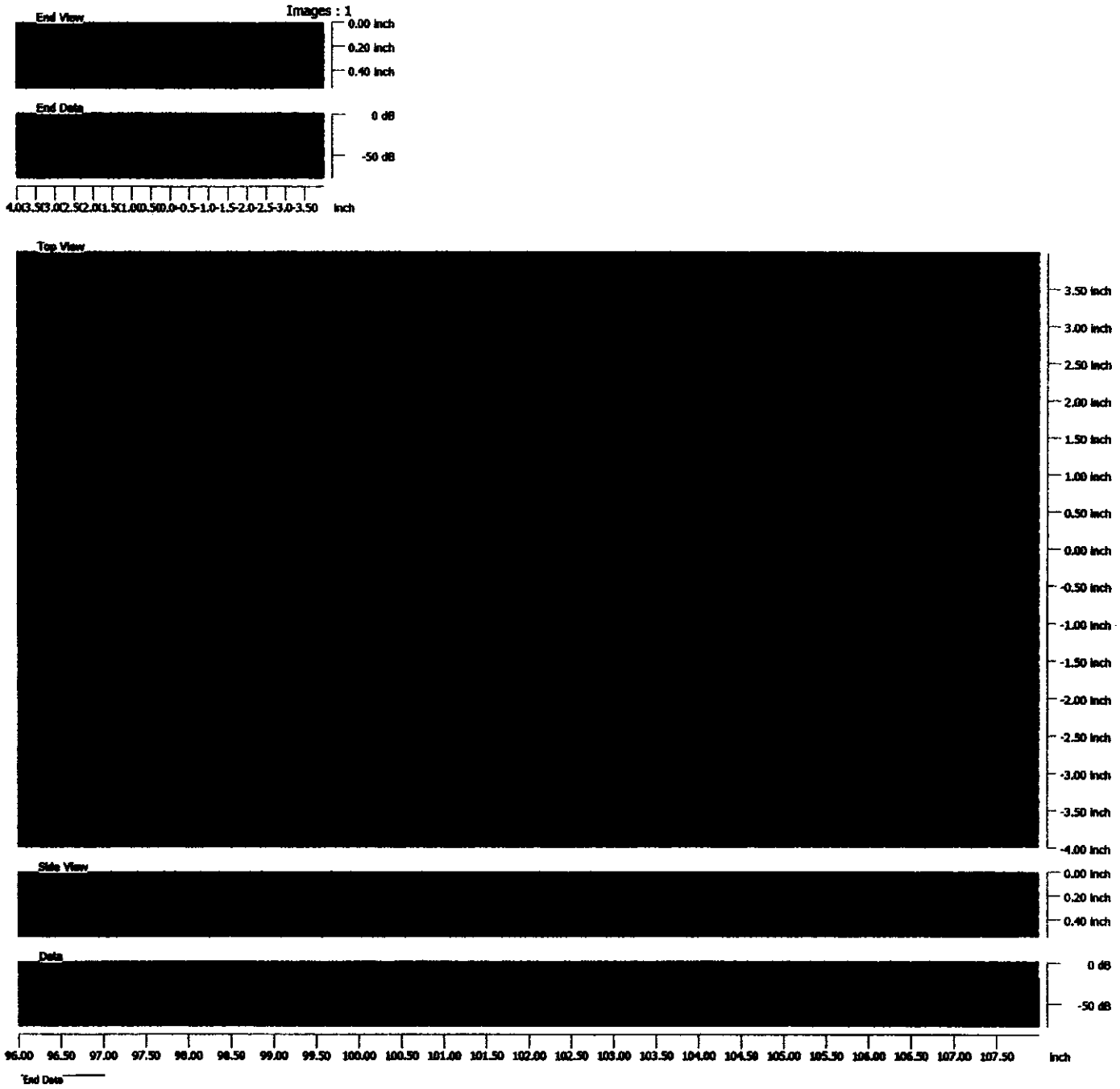

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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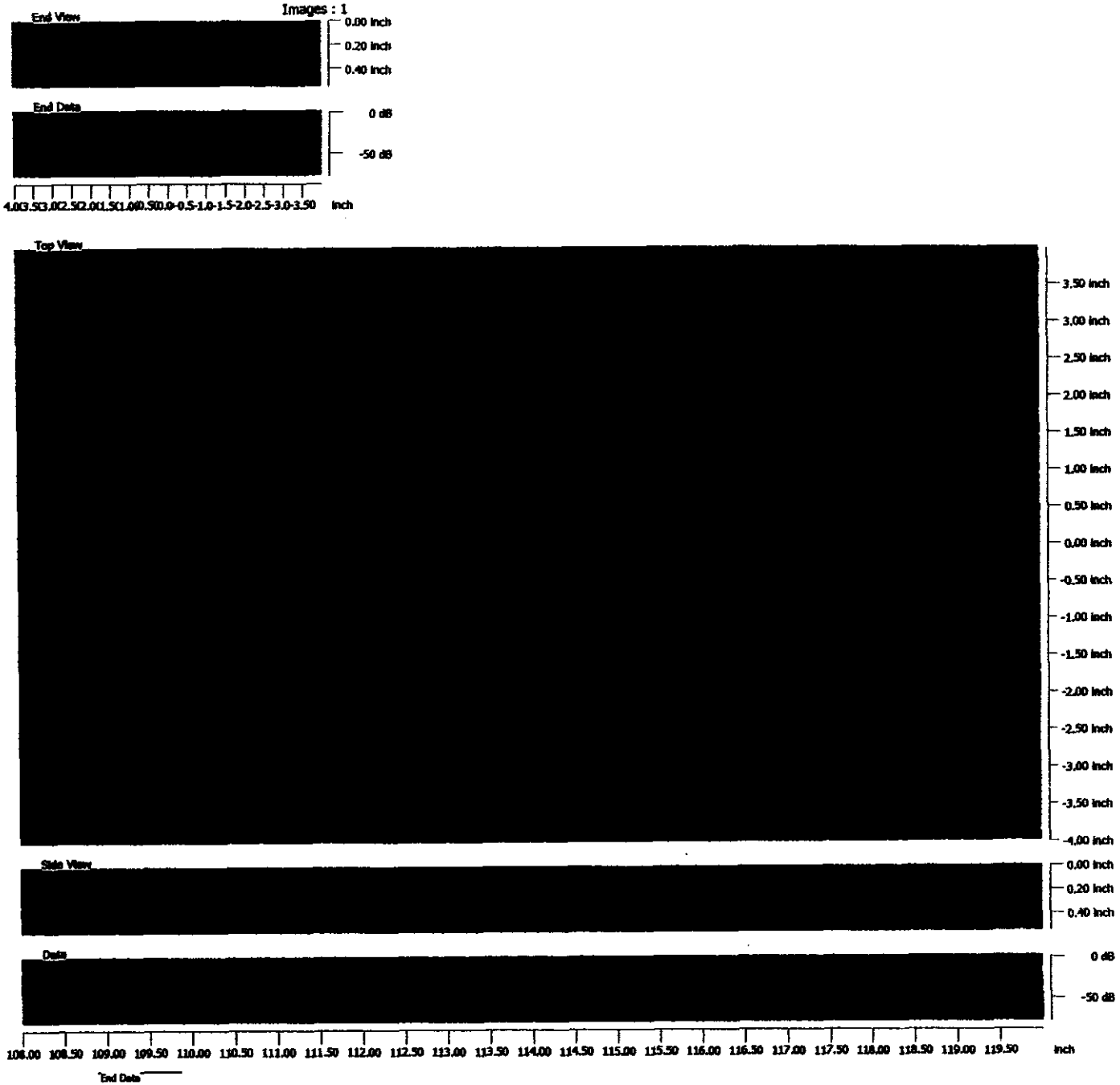

4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/26/00 16:30 | EXAM END: 21:30 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: HORZ. WELD PLATE TO KNUCKLE | | CALIBRATED RANGE: 0" TO 3.75" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | TRANSFER CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS | OTHER: .937" NOM. THICKNESS | |
| FILE NAME/ITEM#: HORZ. WELD/60/0/B & C | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ CDEG ☐ ANGLE 60° | | |
| $X_0$ REF. POINT (in): 108" from 1st VERT. WELD | $Y_0$ REF. POINT (in): ℄ WELD | | DATA PITCH: 7.1" | |

| SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|
| 1 45/60 DEGREE SHEAR | | | |
| 2 AATT | | | |
| 3 RATT | | | |
| 4 DUAL 0 DEGREE | | | |

## INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO CRACK-LIKE INDICATIONS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley H. Nelson | Wesley H. Nelson | (NI) | |
| Level III Date 6/26/00 | Level III Date 9/7/00 | Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter From J. B. Elder

HORZ.WD/P-5/Knuckle B
WHN
AP-107

1: P-scan, Images, p-scan data2, 6/26/00 18:22
2: P-scan, Images, p-scan data2, 6/26/00 18:22
3: T-scan, Images, p-scan data2, 6/26/00 18:22
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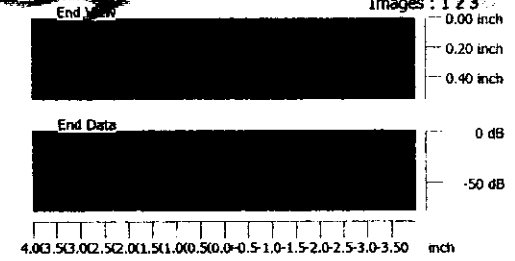
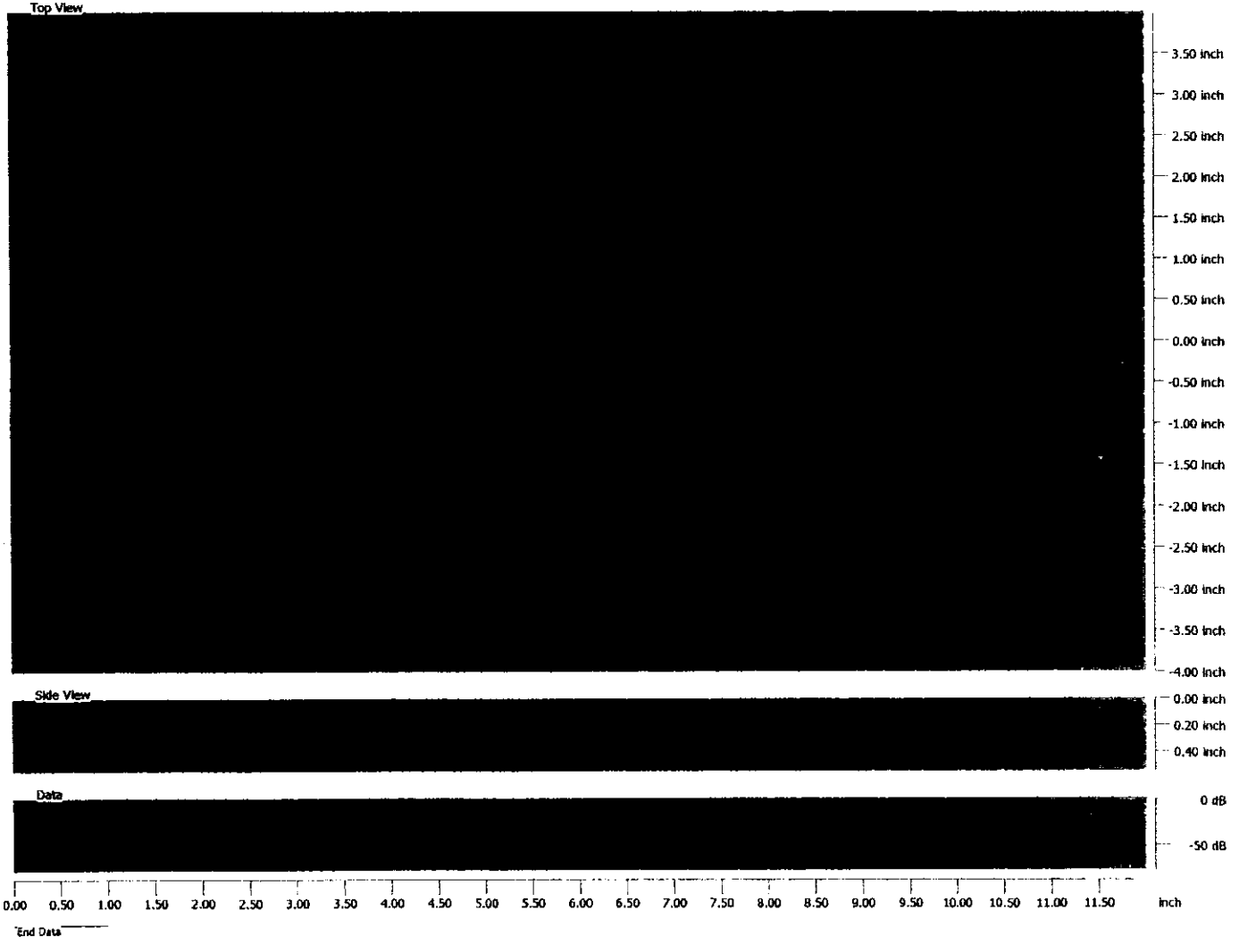
[redacted] of Job : HORZ.Weld/60/0/B.

Images : 1 2 3



HORZ.WD/P-5/Knuckle B
WHN
AP-107

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3: T-scan, Images, p-scan data2, 6/26/00 18:22
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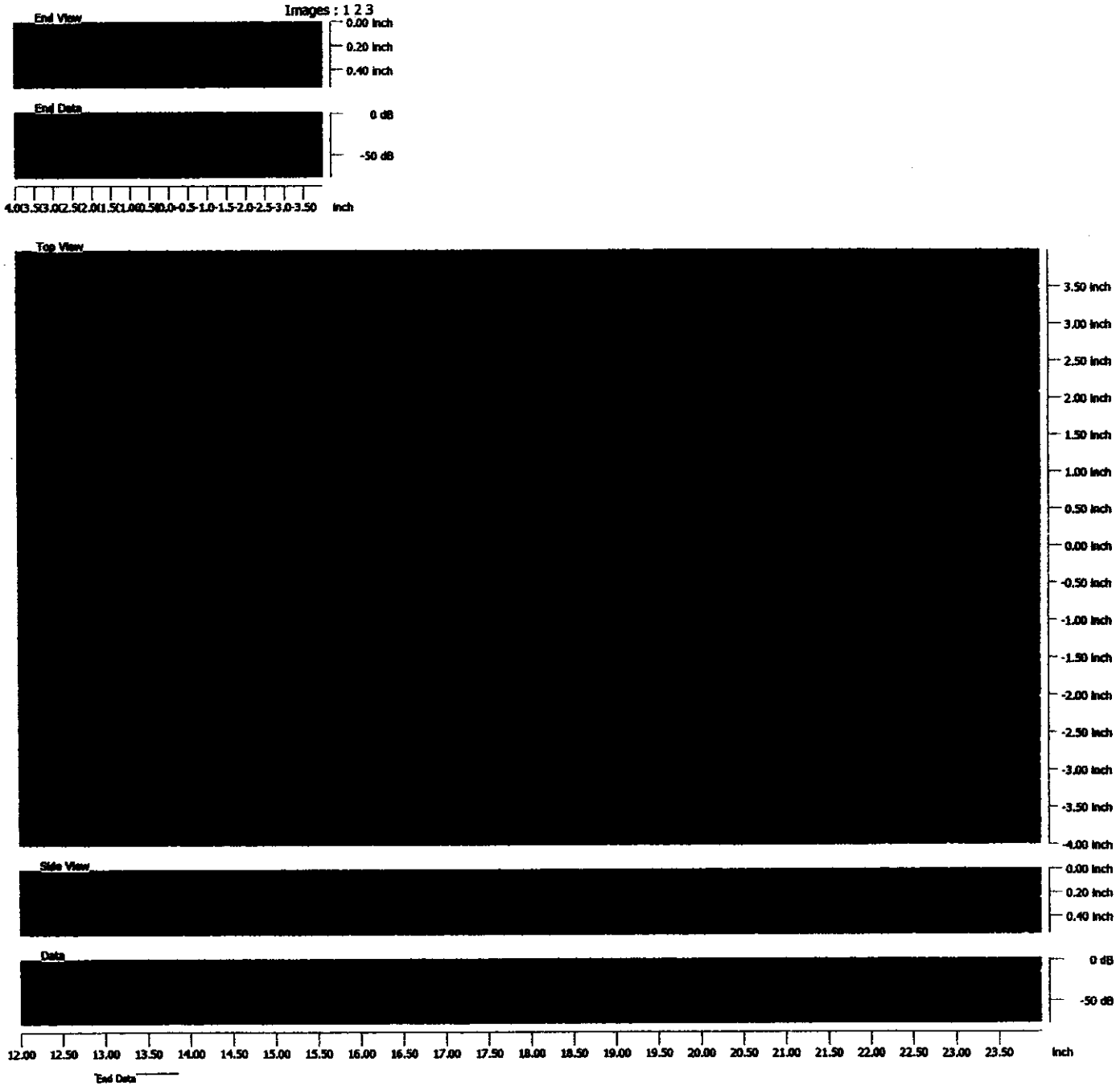

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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3: T-scan, Images, p-scan data2, 6/26/00 18:22
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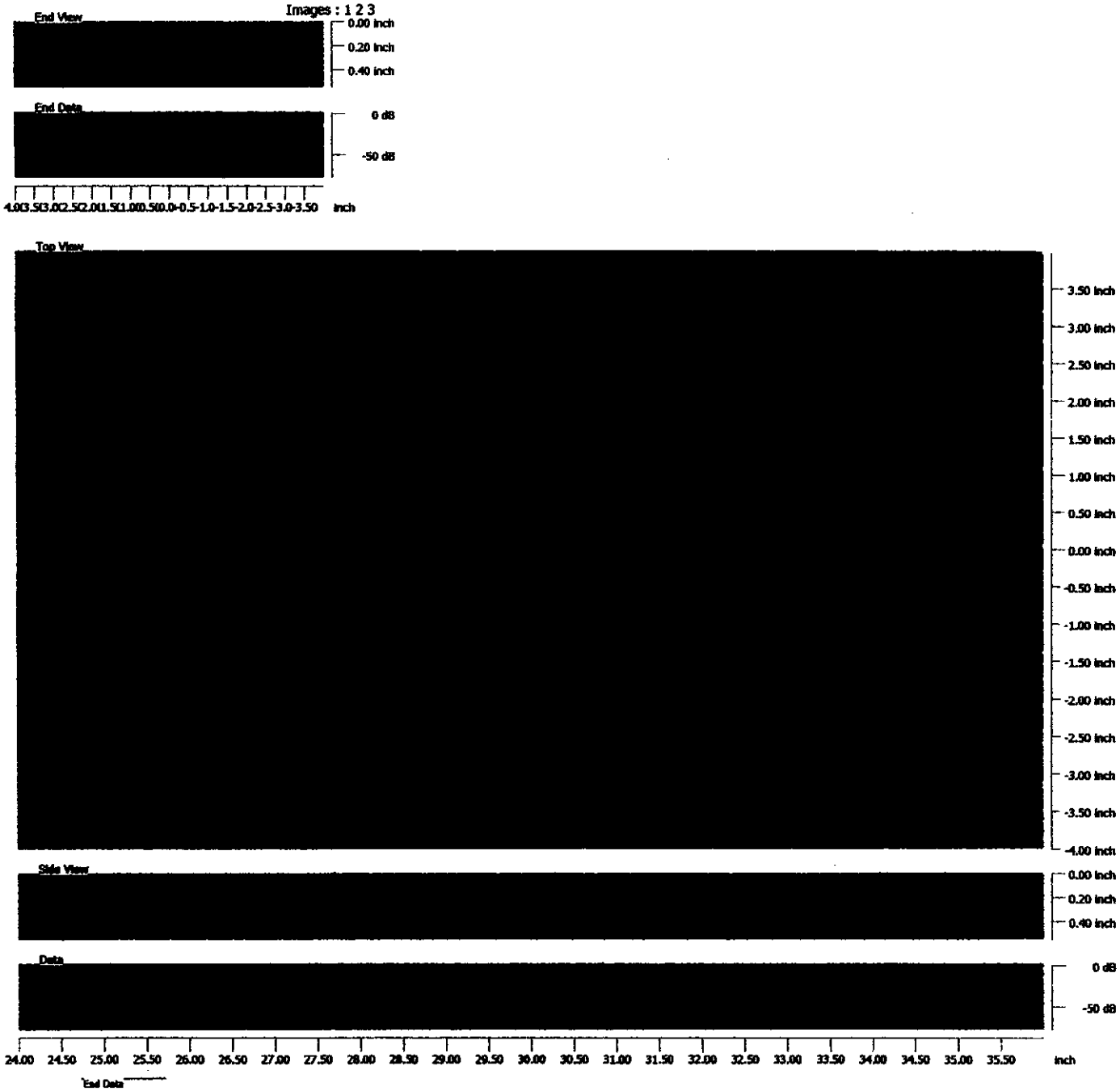
Printed on 2000-8-7 at 11:53 : P-scan pres.2 <2> of Job : HORZ.Weld/60/0/B.



HORZ.WD/P-5/Knuckle B
WHN
AP-107

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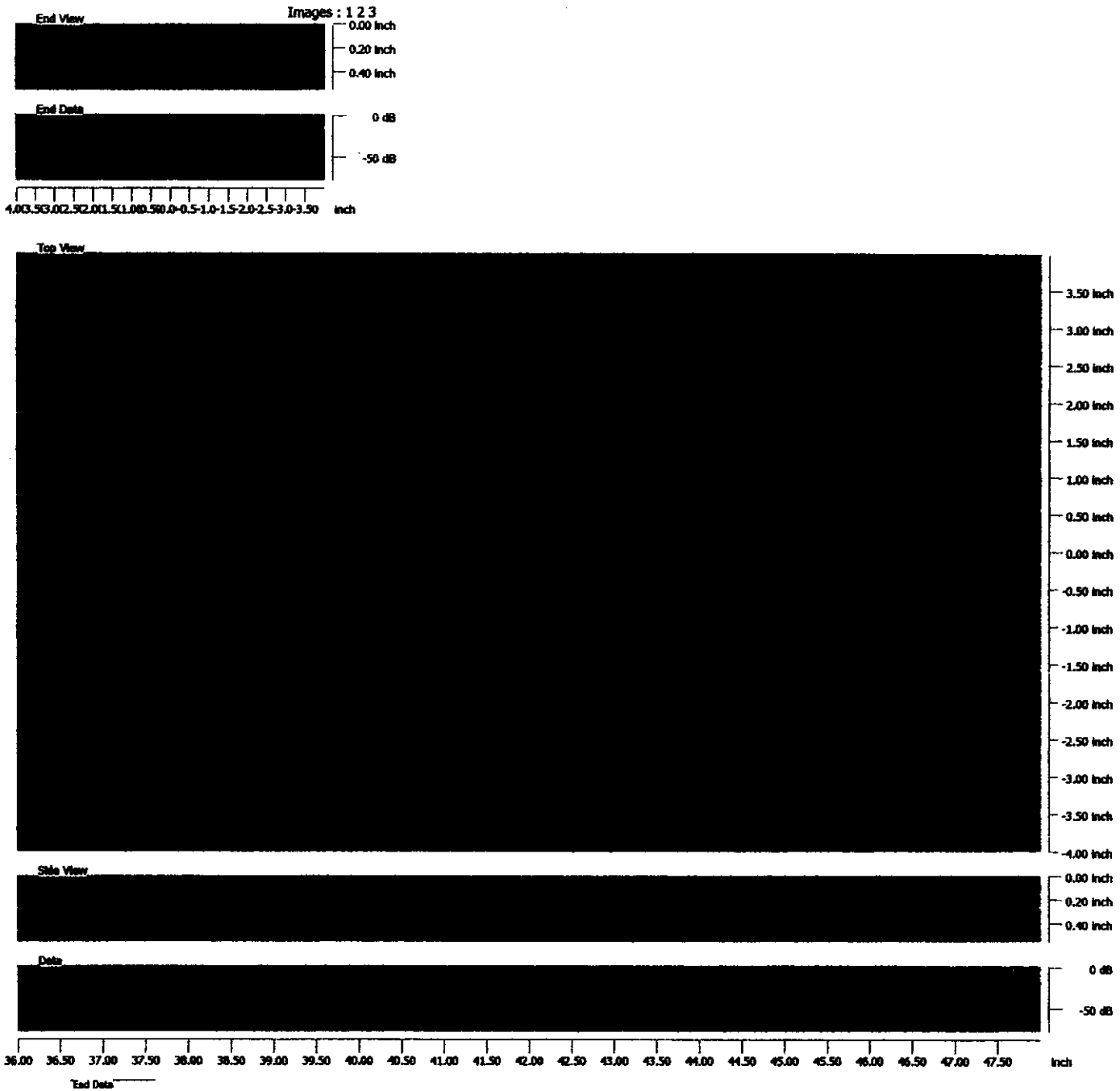

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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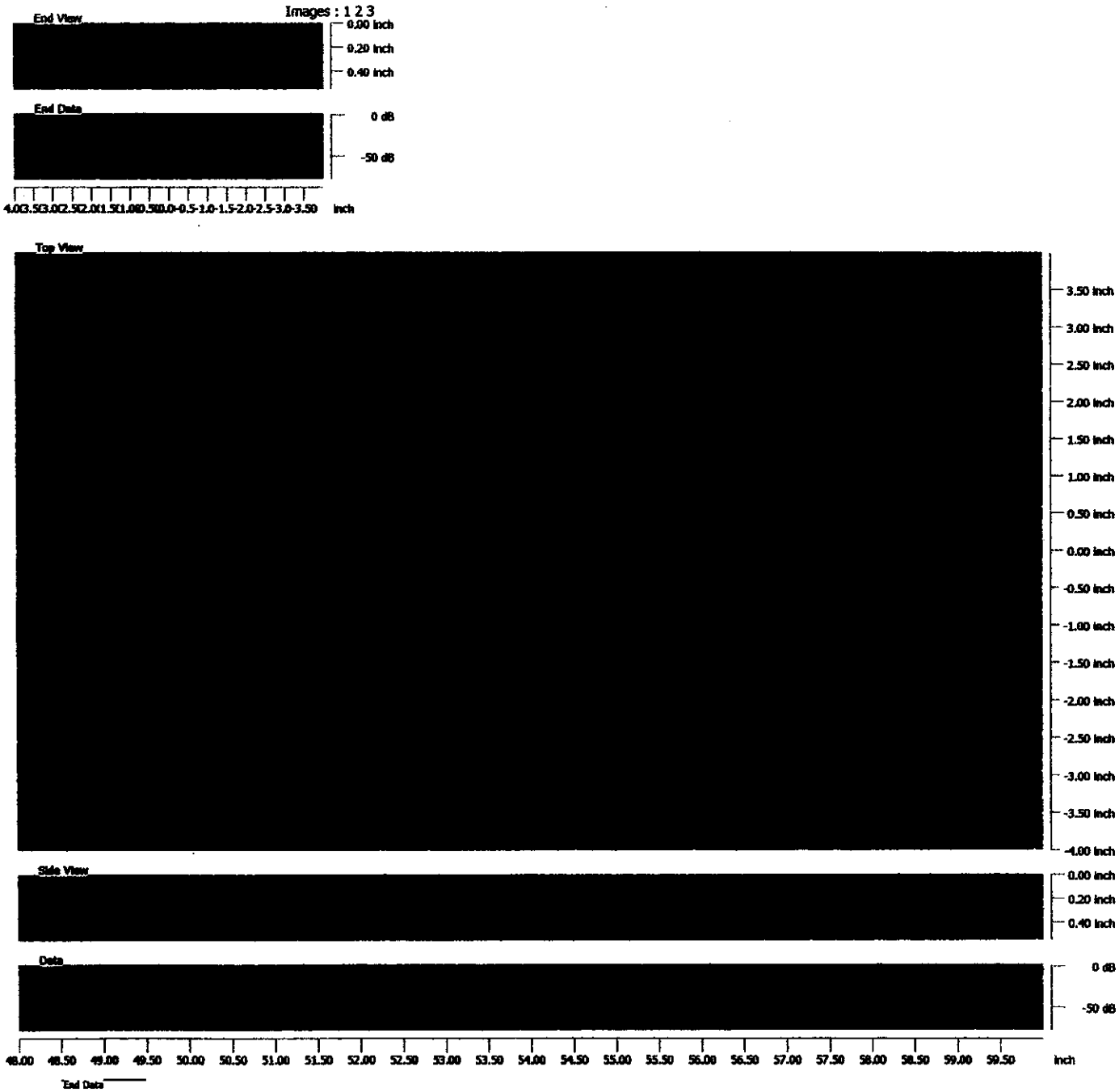

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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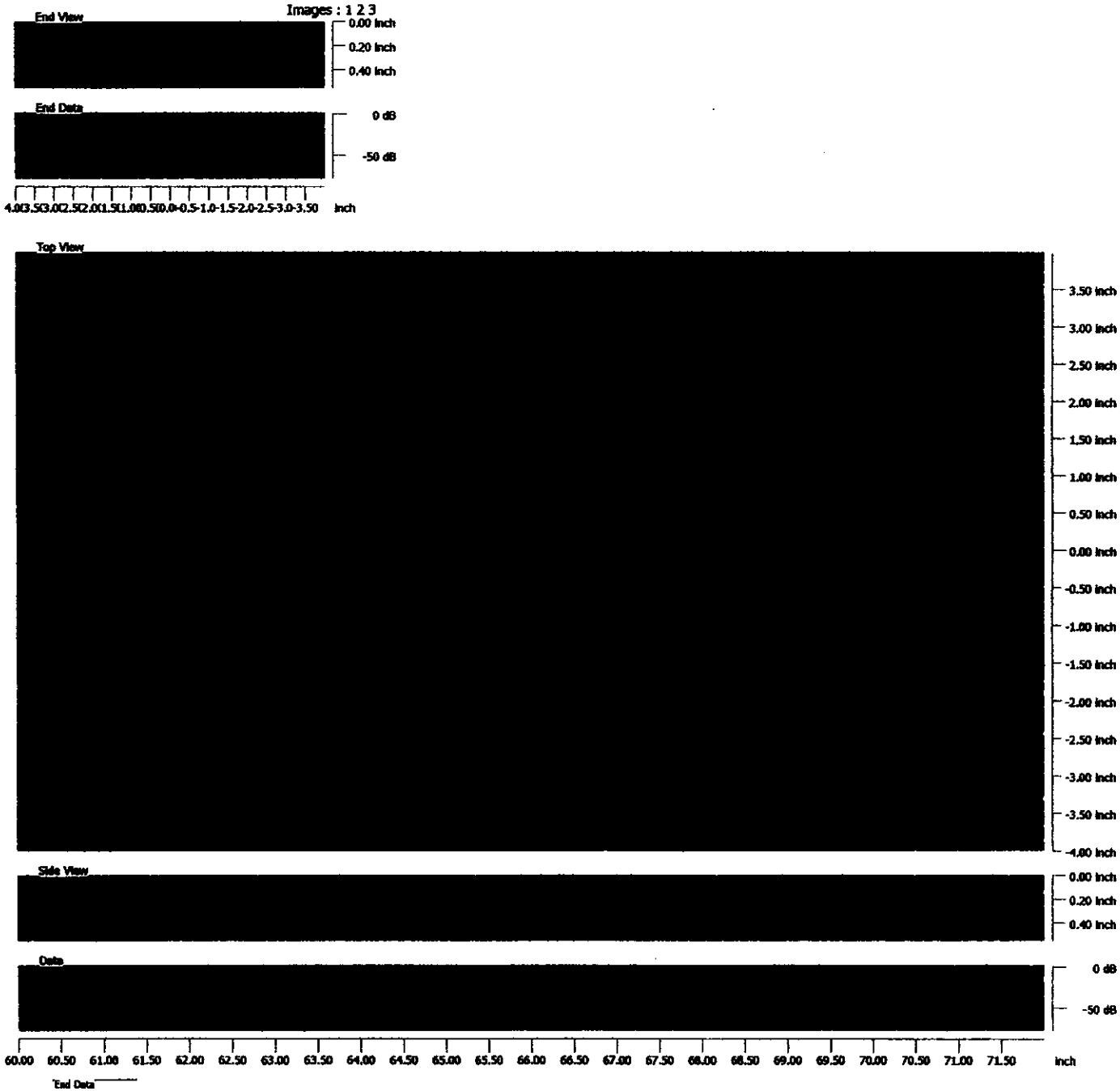

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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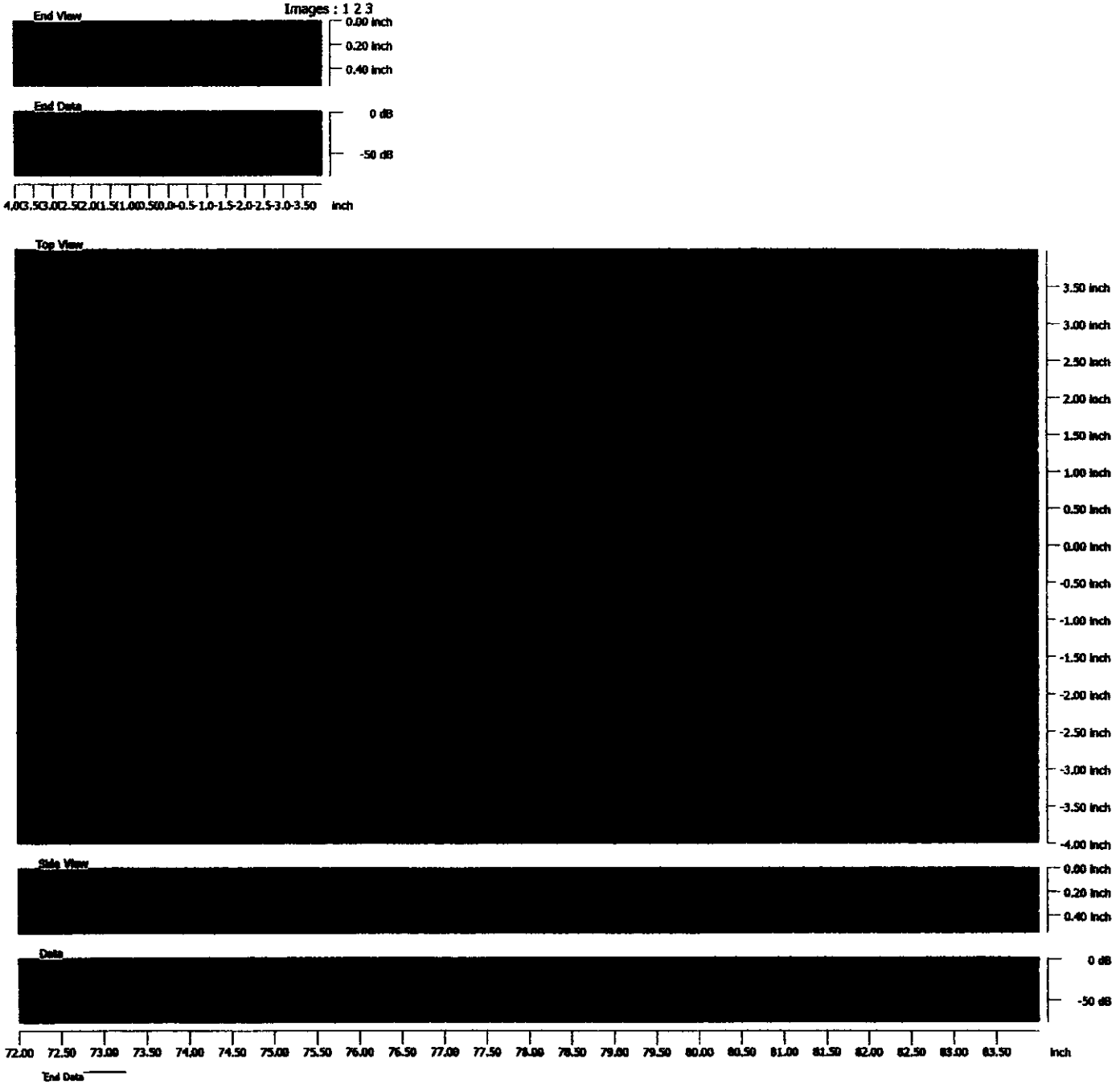

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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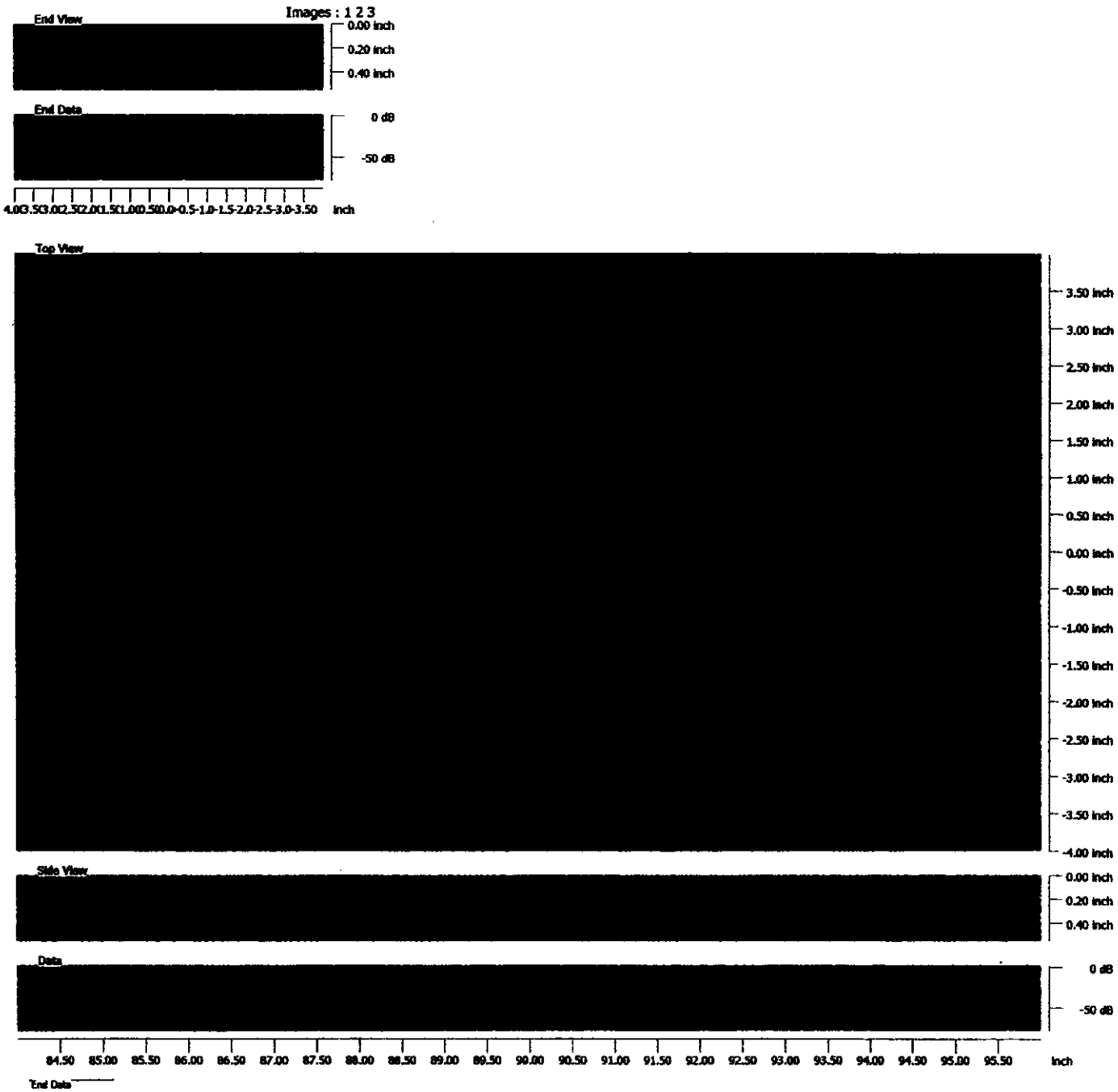

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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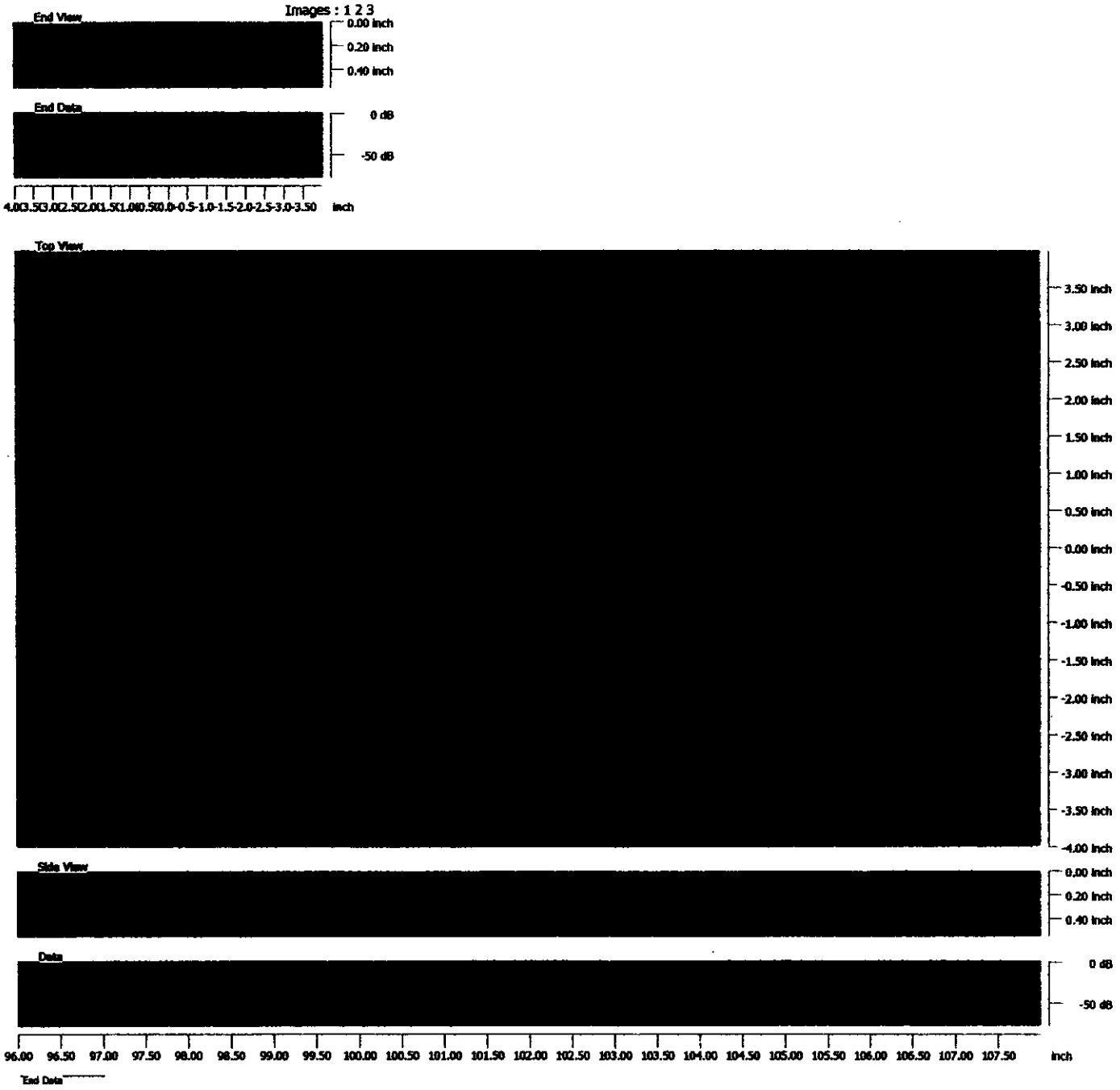

HORZ.WD/P-5/Knuckle B
WHN
AP-107

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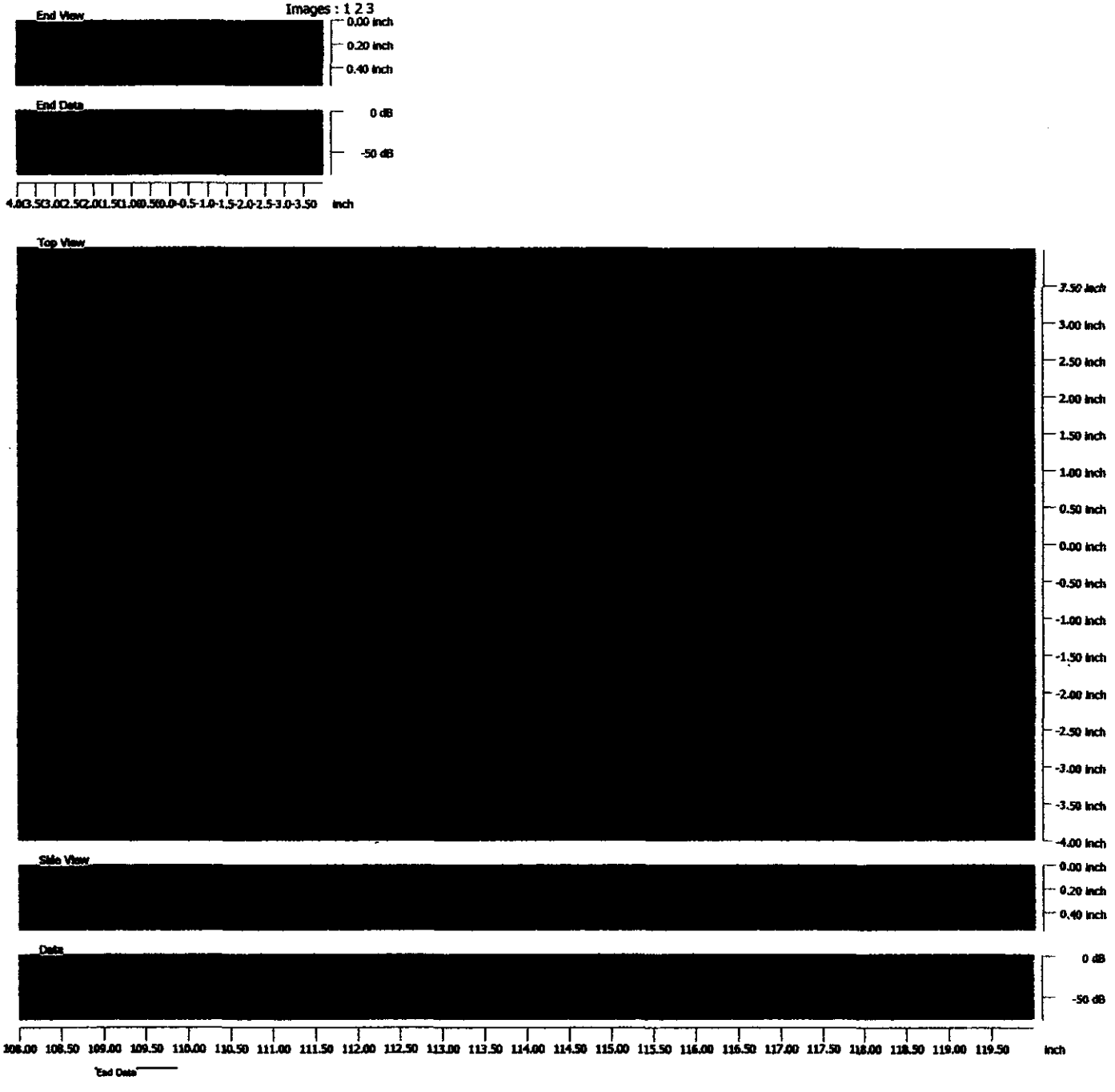

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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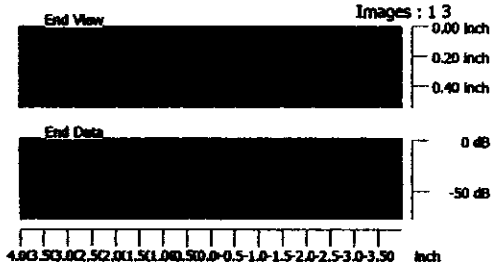


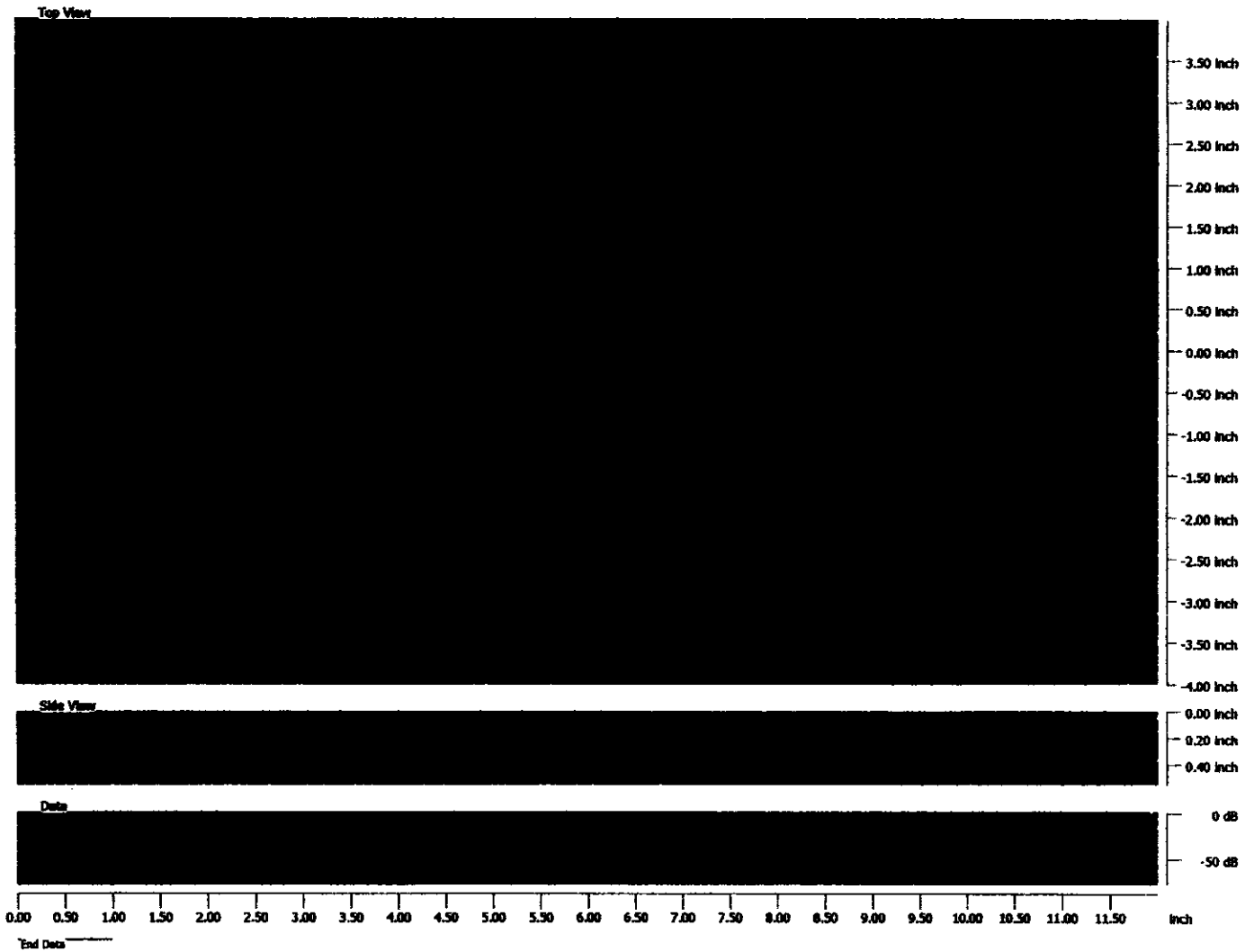

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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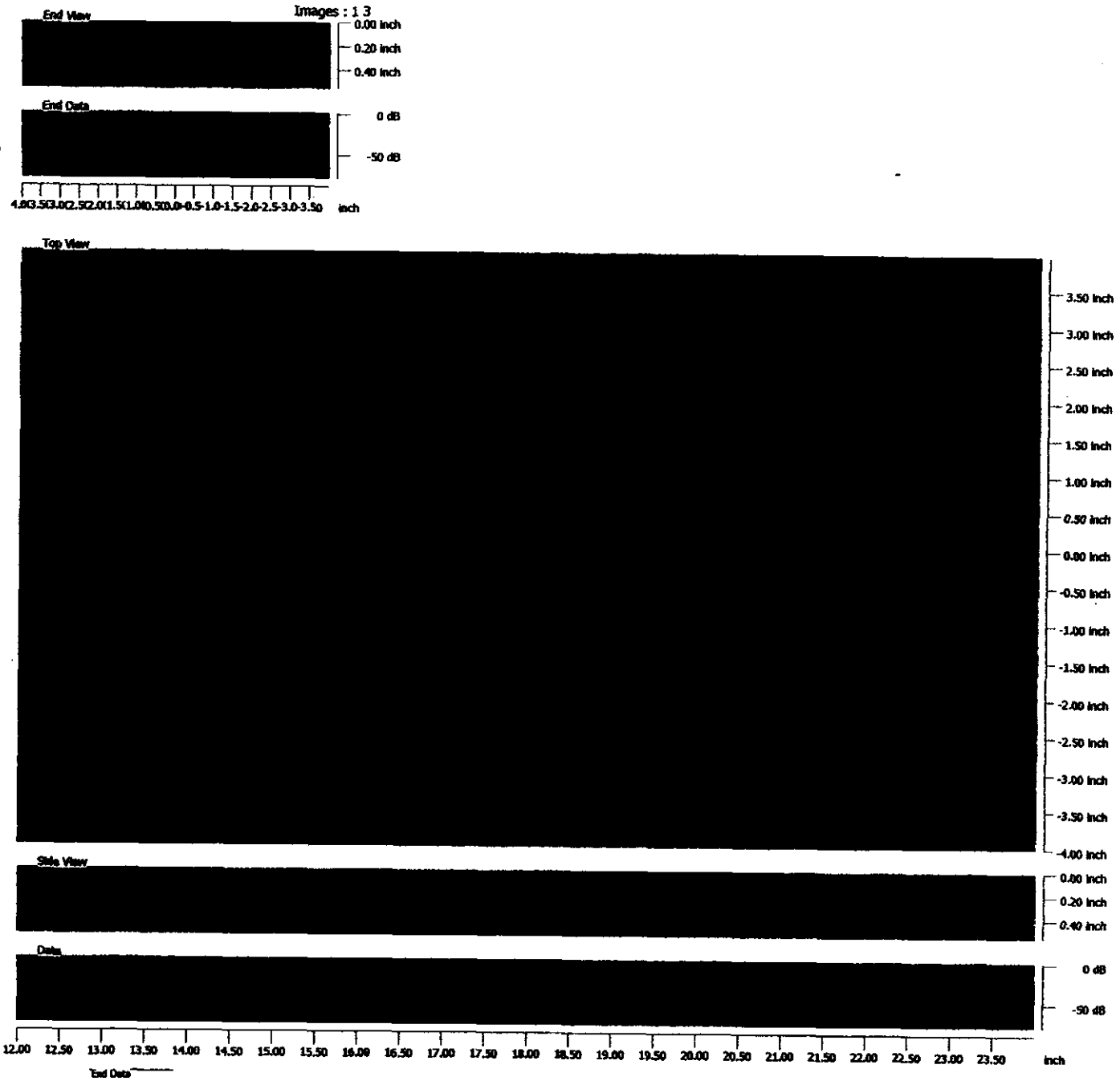

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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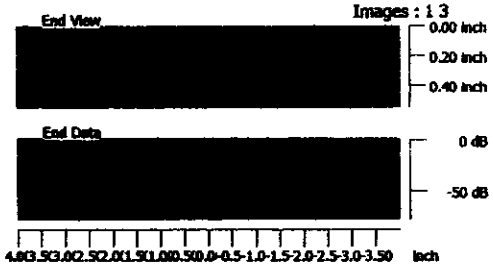


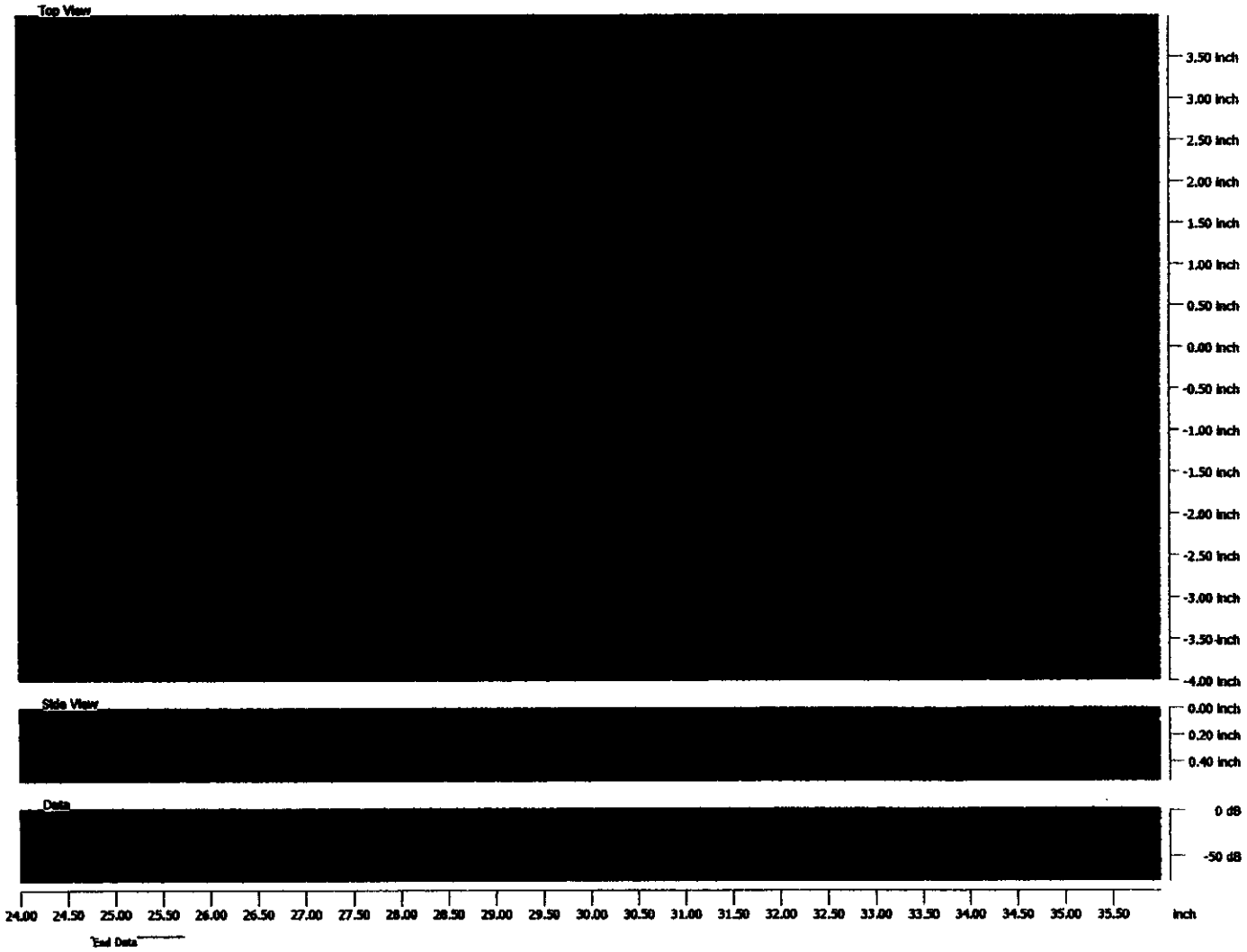

HORZ.WD/P-5/Knuckle C
WHN
AP-107

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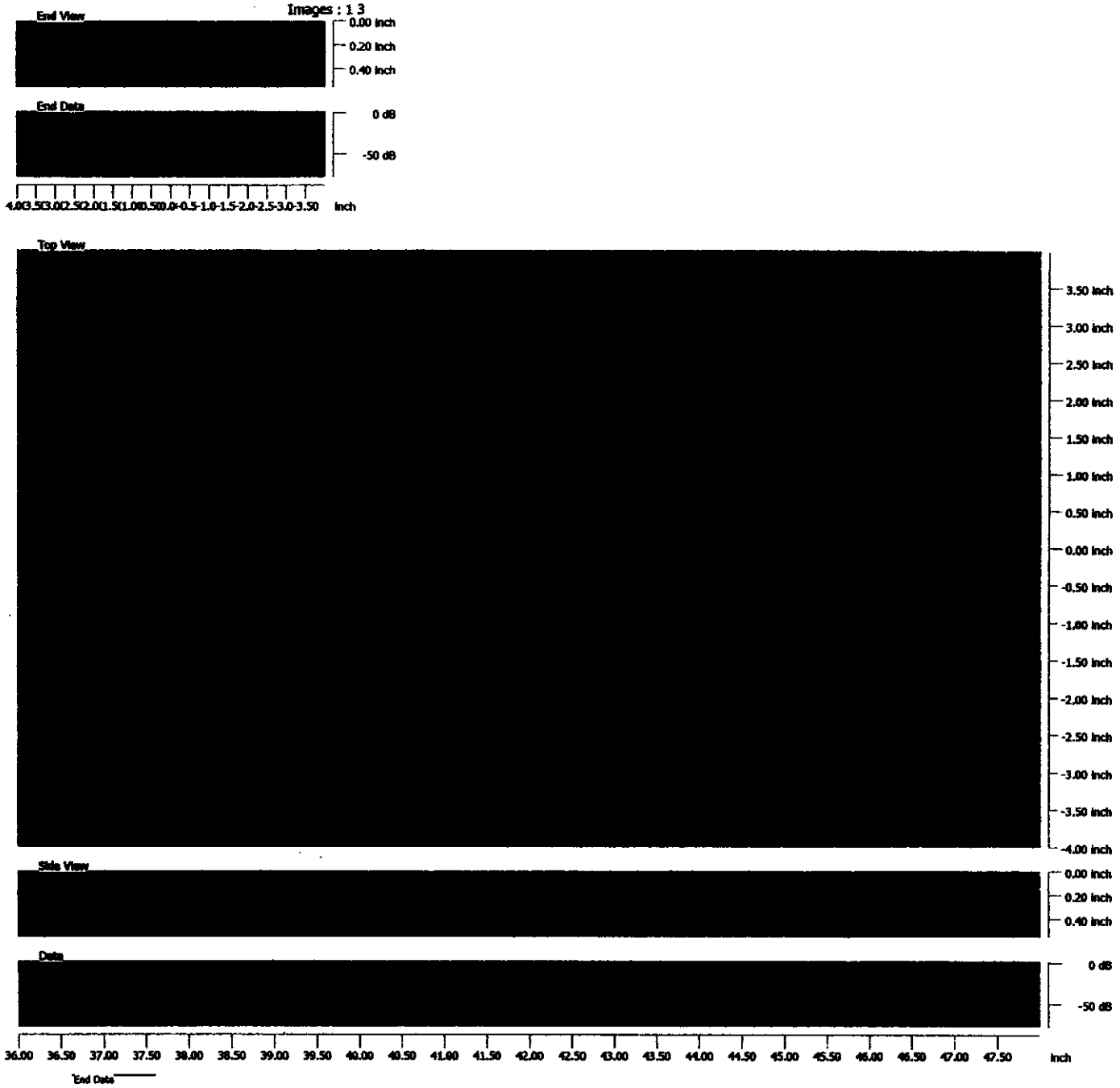
Images : 1 3



HORZ.WD/P-5/Knuckle C
WHN
AP-107

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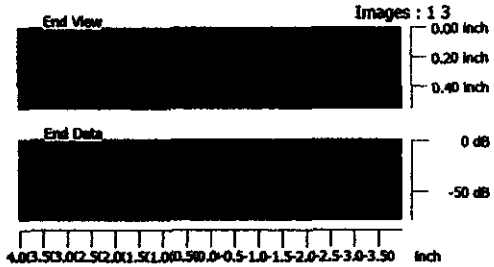
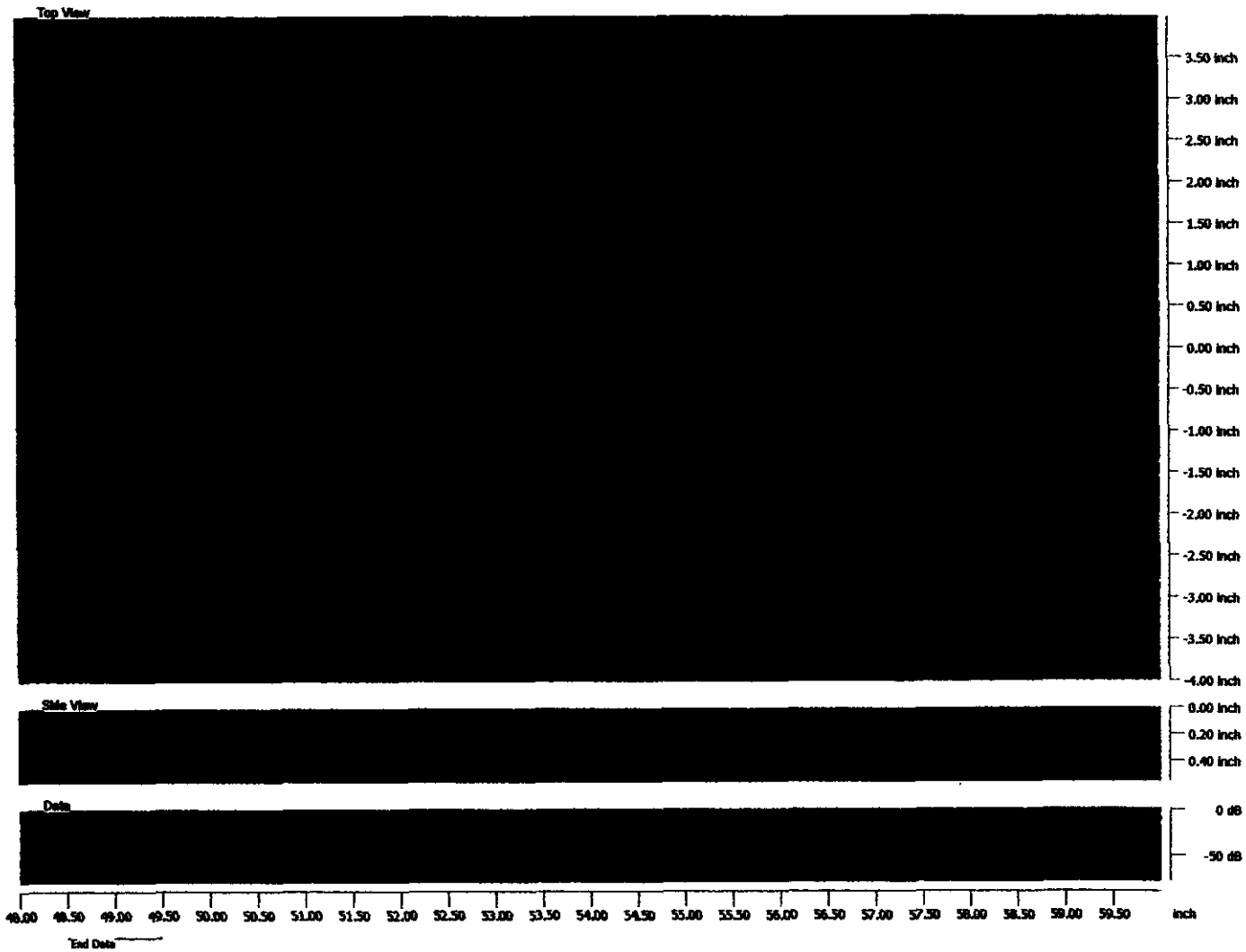
Images : 1 3



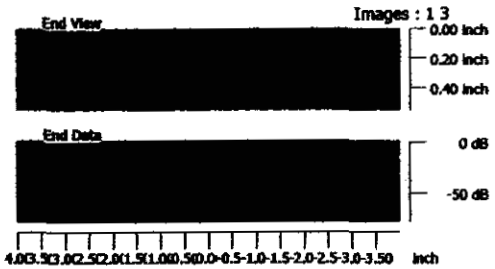



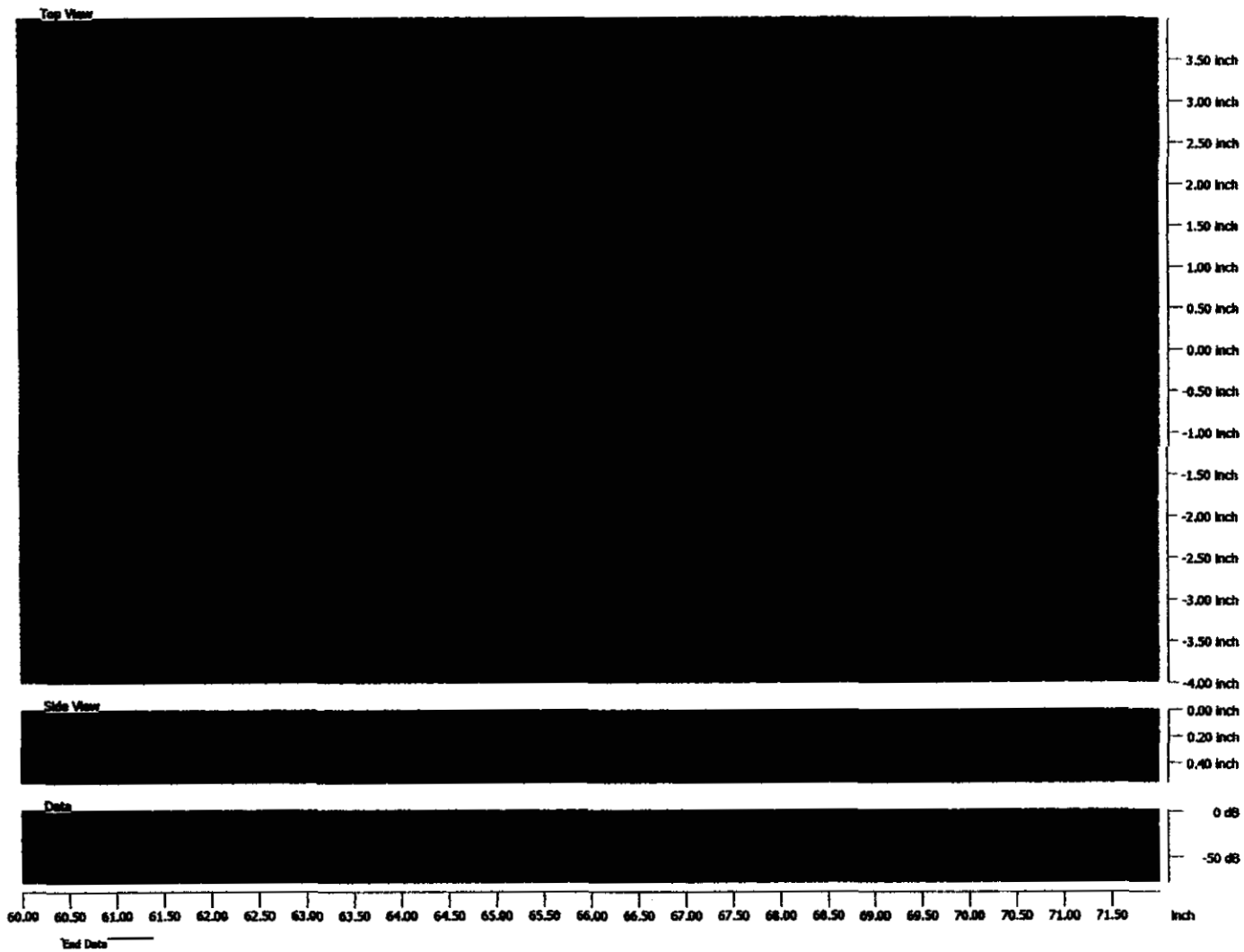
HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data2, 6/26/00 19:49
2: P-scan, Images, p-scan data2, 6/26/00 19:49
3: T-scan, Images, p-scan data2, 6/26/00 19:49
4: T-scan, Images, p-scan data2, 6/26/00 19:49

Printed on 2000-8-7 at 14:35 : P-scan pres.2 <2> of Job : HORZ.Weld/60/0/C.

Images : 1 3



HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data2, 6/26/00 19:49
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3: T-scan, Images, p-scan data2, 6/26/00 19:49
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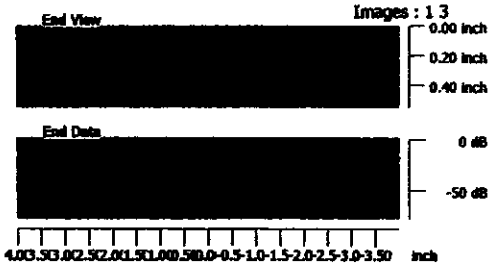
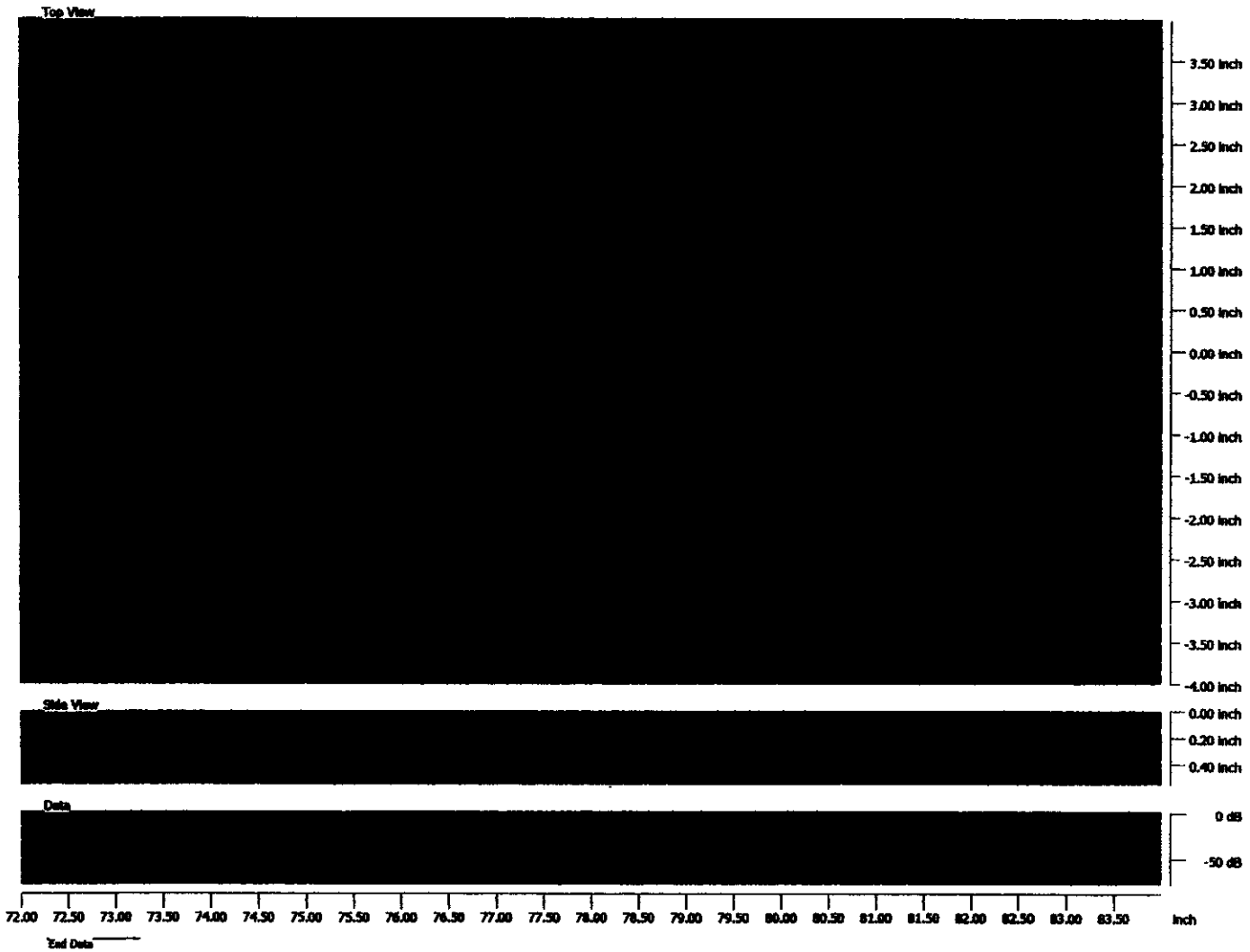
Printed on 2000-8-7 at 14:35 : P-scan pres.2 <2> of Job : HORZ.Weld/60/0/C.

Images : 1 3



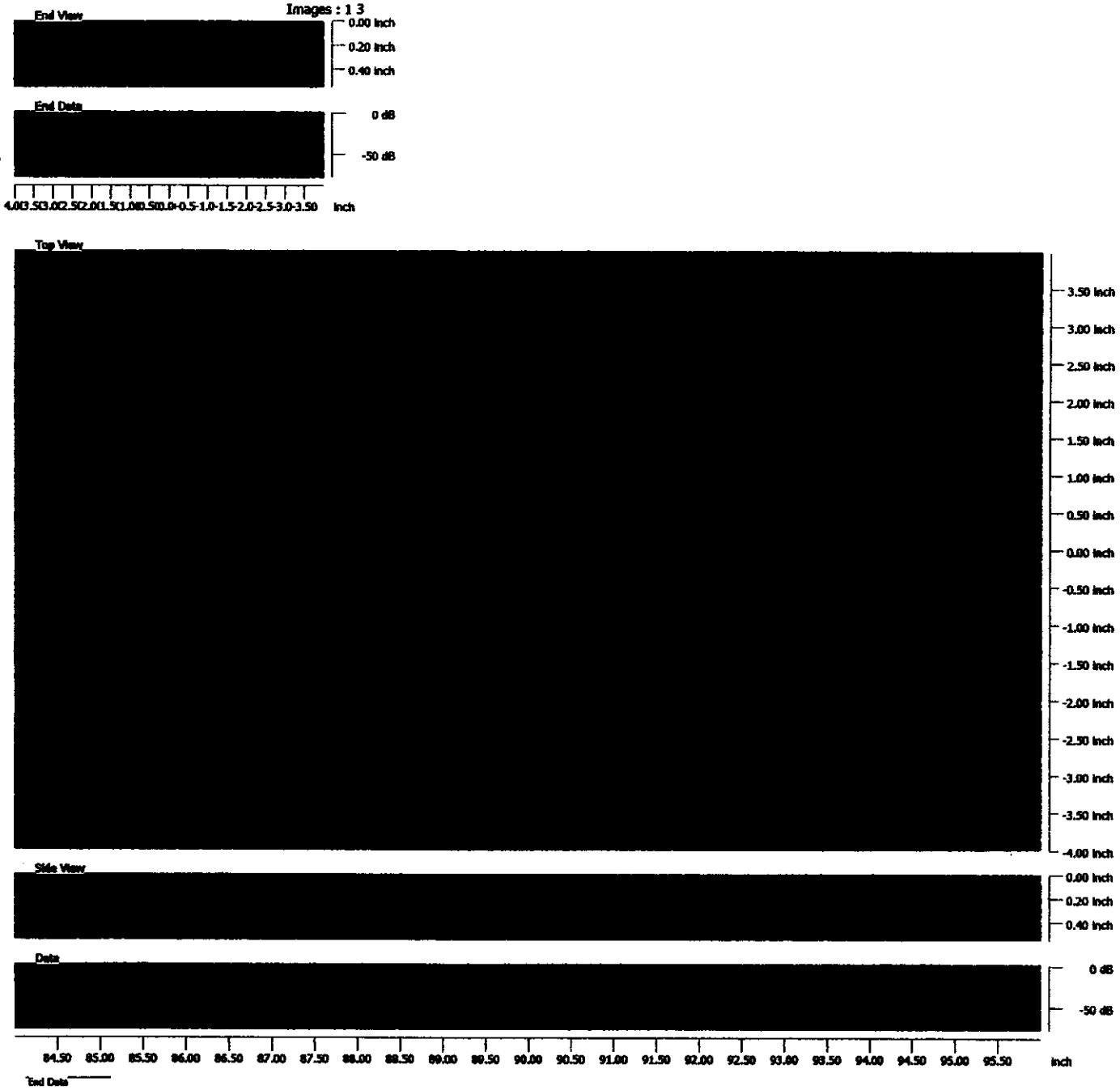



HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data2, 6/26/00 19:49
2: P-scan, Images, p-scan data2, 6/26/00 19:49
3: T-scan, Images, p-scan data2, 6/26/00 19:49
4: T-scan, Images, p-scan data2, 6/26/00 19:49

Printed on 2000-8-7 at 14:35 : P-scan pres.2 <2> of Job : HORZ.Weld/60/0/C.

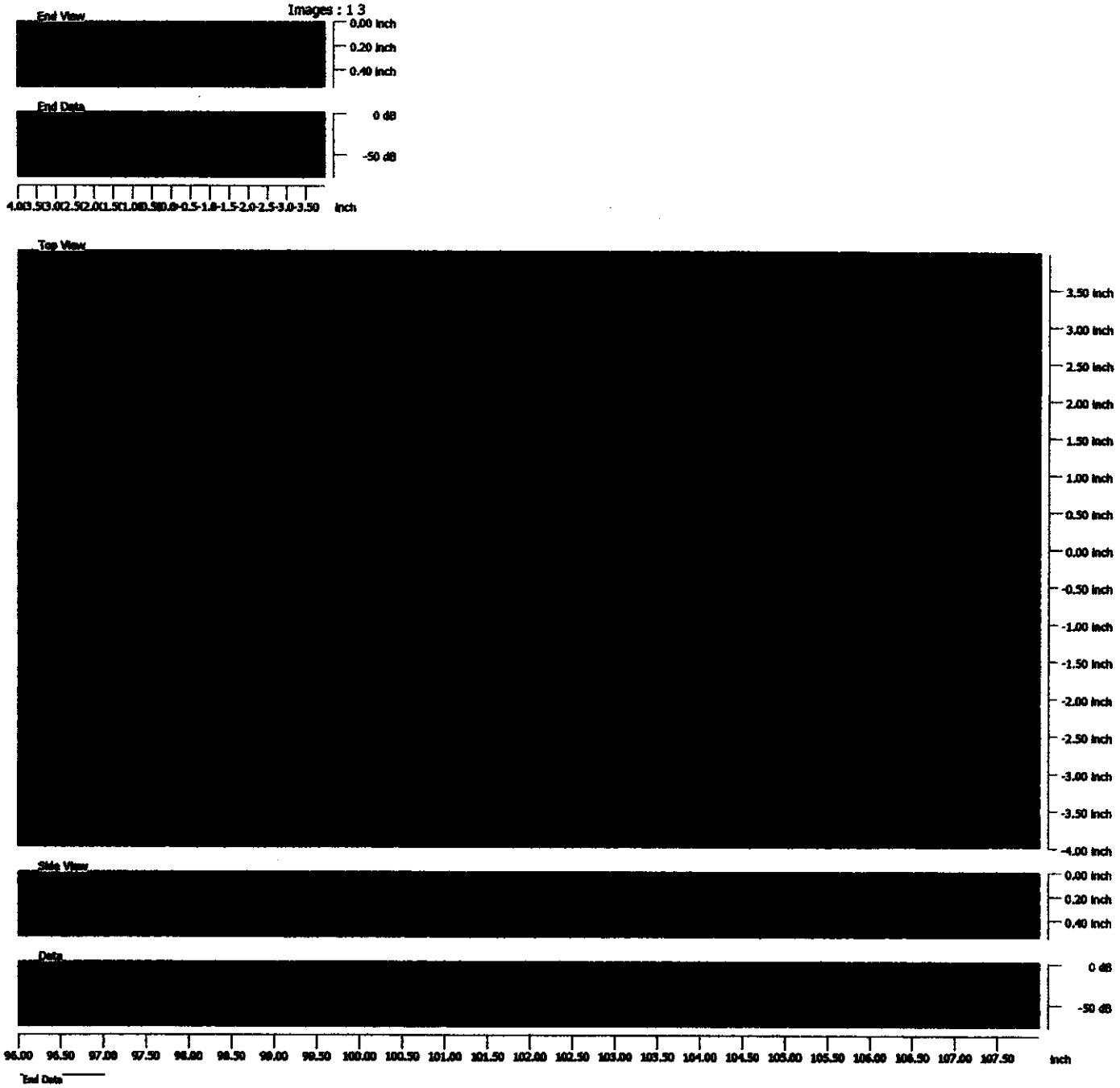
Images : 1 3



HORZ.WD/P-S/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data2, 6/26/00 19:49
2: P-scan, Images, p-scan data2, 6/26/00 19:49
3: T-scan, Images, p-scan data2, 6/26/00 19:49
4: T-scan, Images, p-scan data2, 6/26/00 19:49

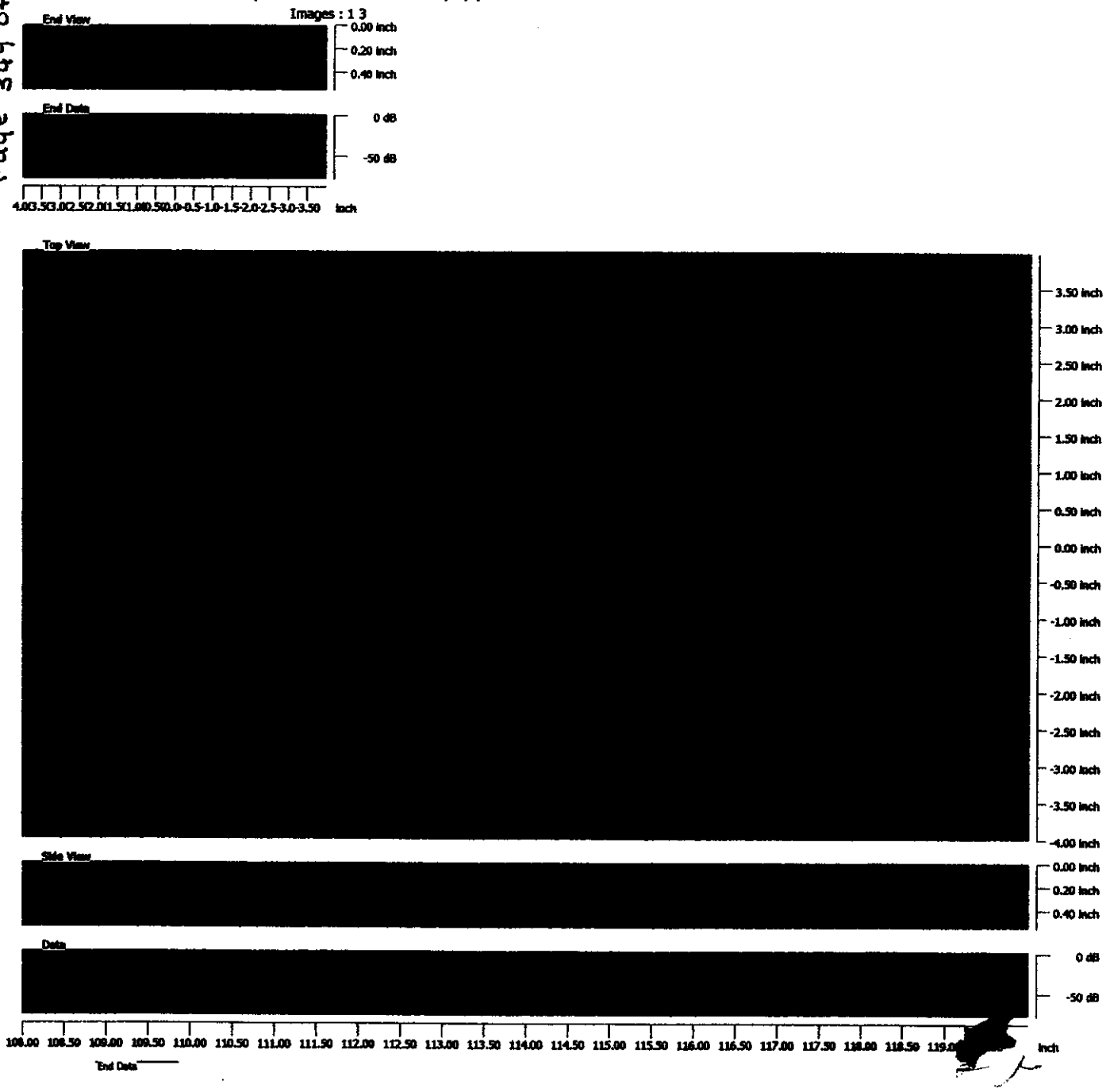
Printed on 2000-8-7 at 14:36 : P-scan pres.2 <2> of Job : HORZ.Weld/60/0/C.



HORZ.WD/P-5/Knuckle C
WHN
AP-107

1: P-scan, Images, p-scan data2, 6/26/00 19:49
2: P-scan, Images, p-scan data2, 6/26/00 19:49
3: T-scan, Images, p-scan data2, 6/26/00 19:49
4: T-scan, Images, p-scan data2, 6/26/00 19:49

Printed on 2000-8-7 at 14:36 : P-scan pres.2 <2> of Job : HORZ.Weld/60/0/C.



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/27/00 11:05 | EXAM END: 15:38 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: Horz Weld Plate to Knuckle | | CALIBRATED RANGE: 0" TO 2.47" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | NOTE LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .875" NOM. THICKNESS | | |
| FILE NAME/ITEM#: 45 HOR./WD/1 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ DBLG ☒ ANGLE 45° | | |
| $X_0$ REF. POINT (Lo): 96" FROM 1st VERT WELD | $Y_0$ REF. POINT (Wo): C/L of Weld | SCAN WIDTH: 7" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

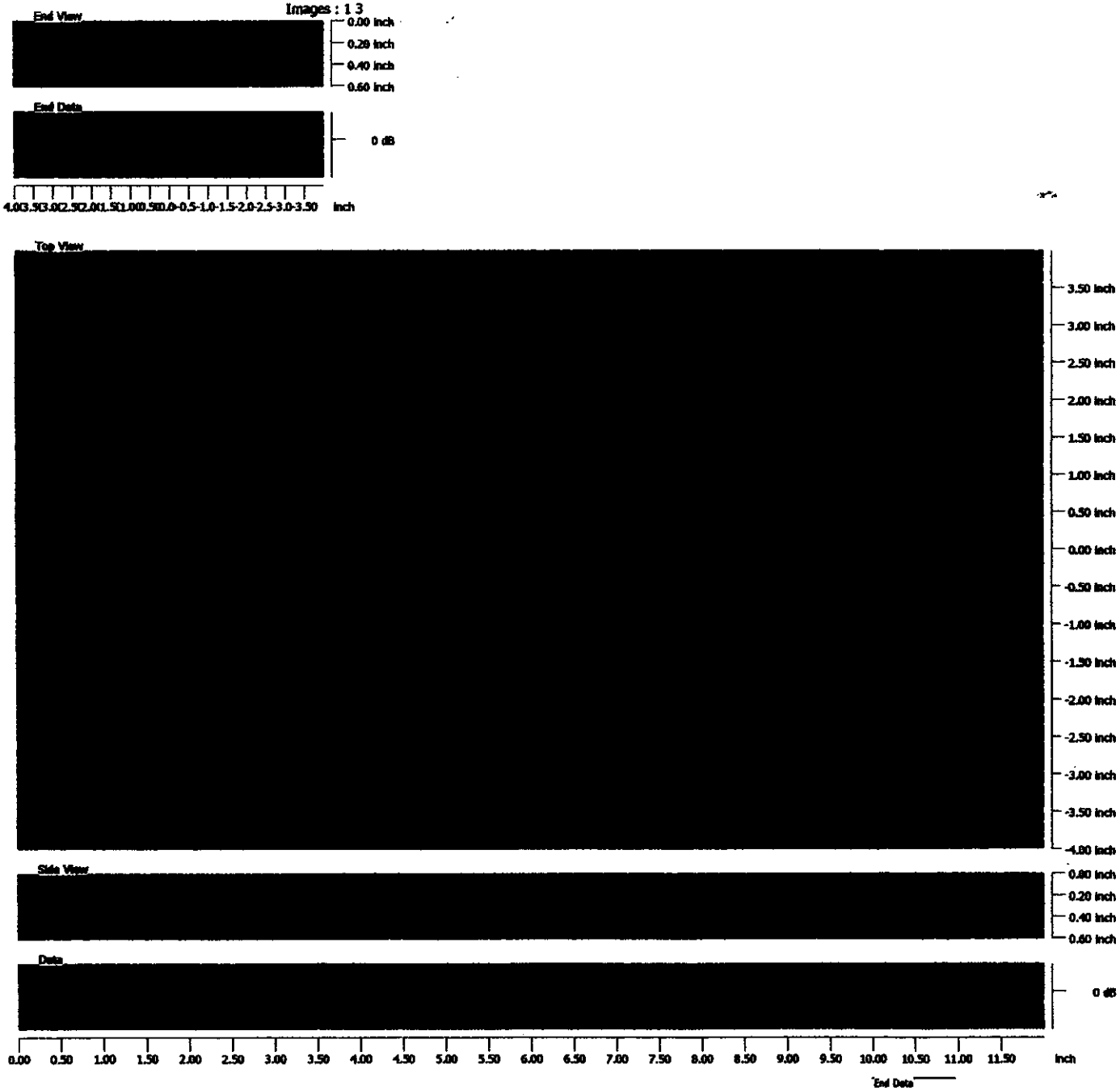
REMARKS
NO CRACK LIKE INDICATION

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley H Nelson | Wesley H Nelson | (NI) | |
| Level III Date 6/27/00 | Level III Date 6/27/00 | Level ___ Date ___ | ___ of ___ |

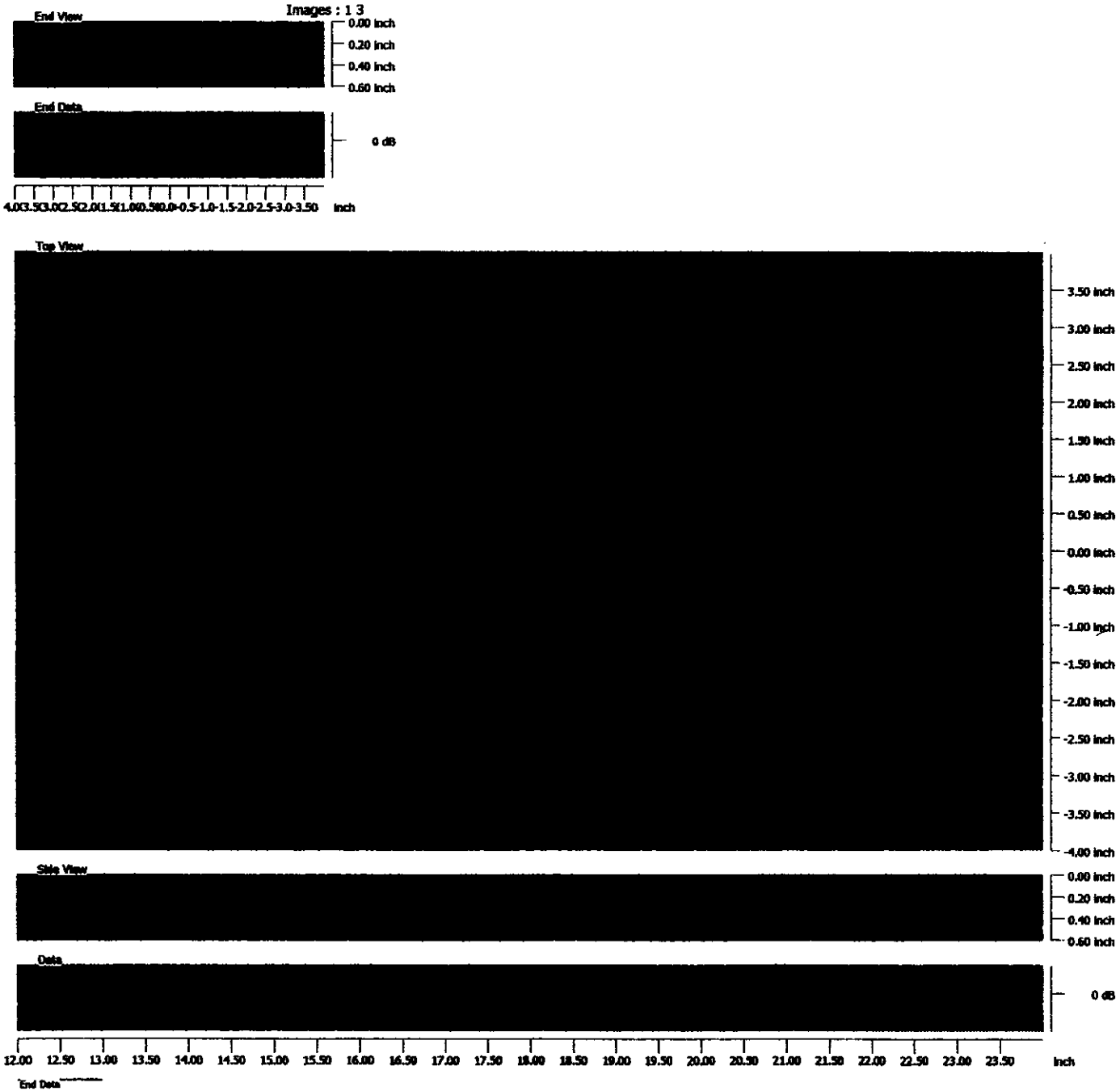
(NI) See Attached Letter From J. B. Elder

HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:28 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/1.

Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:28 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/1.



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
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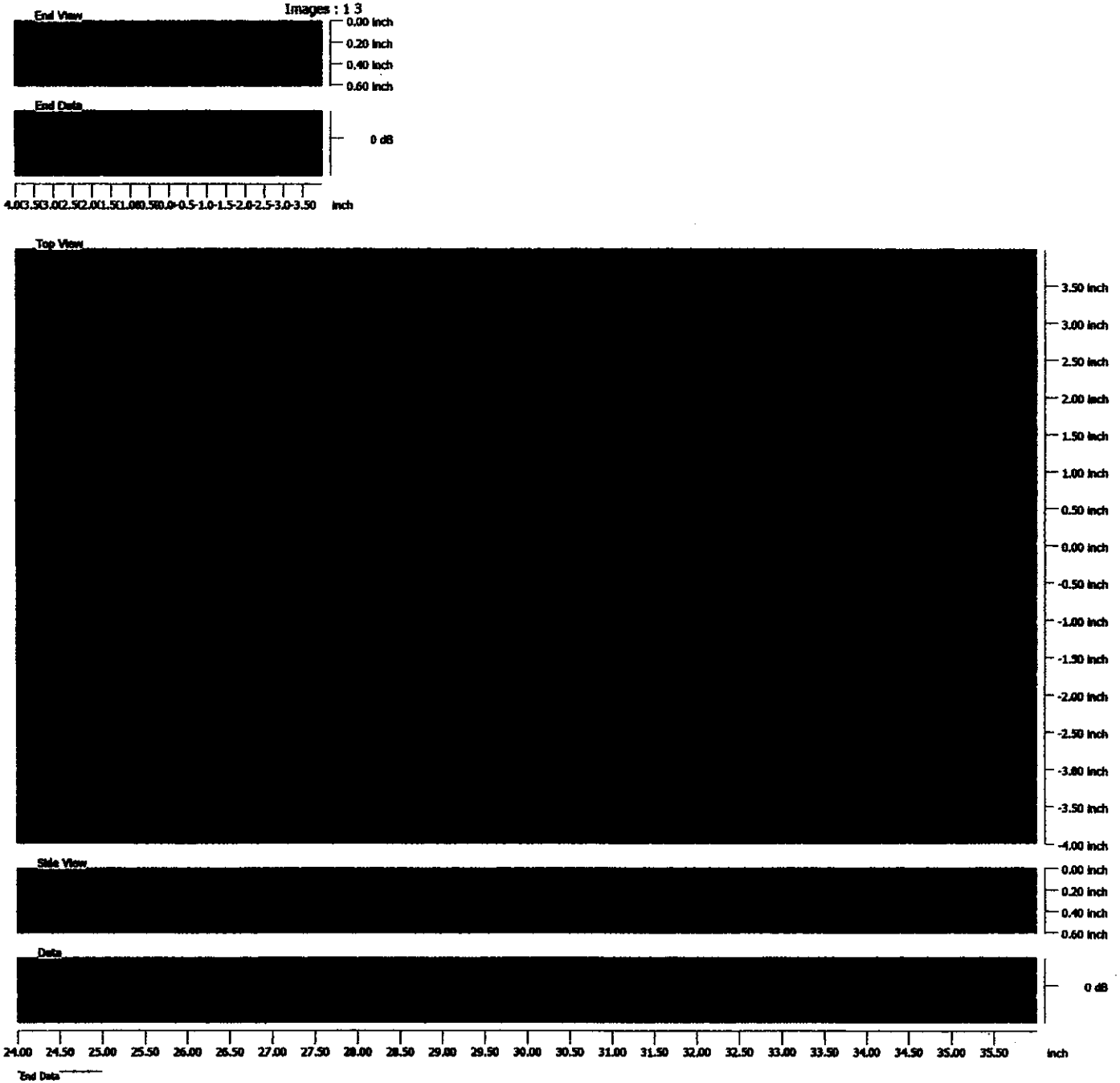
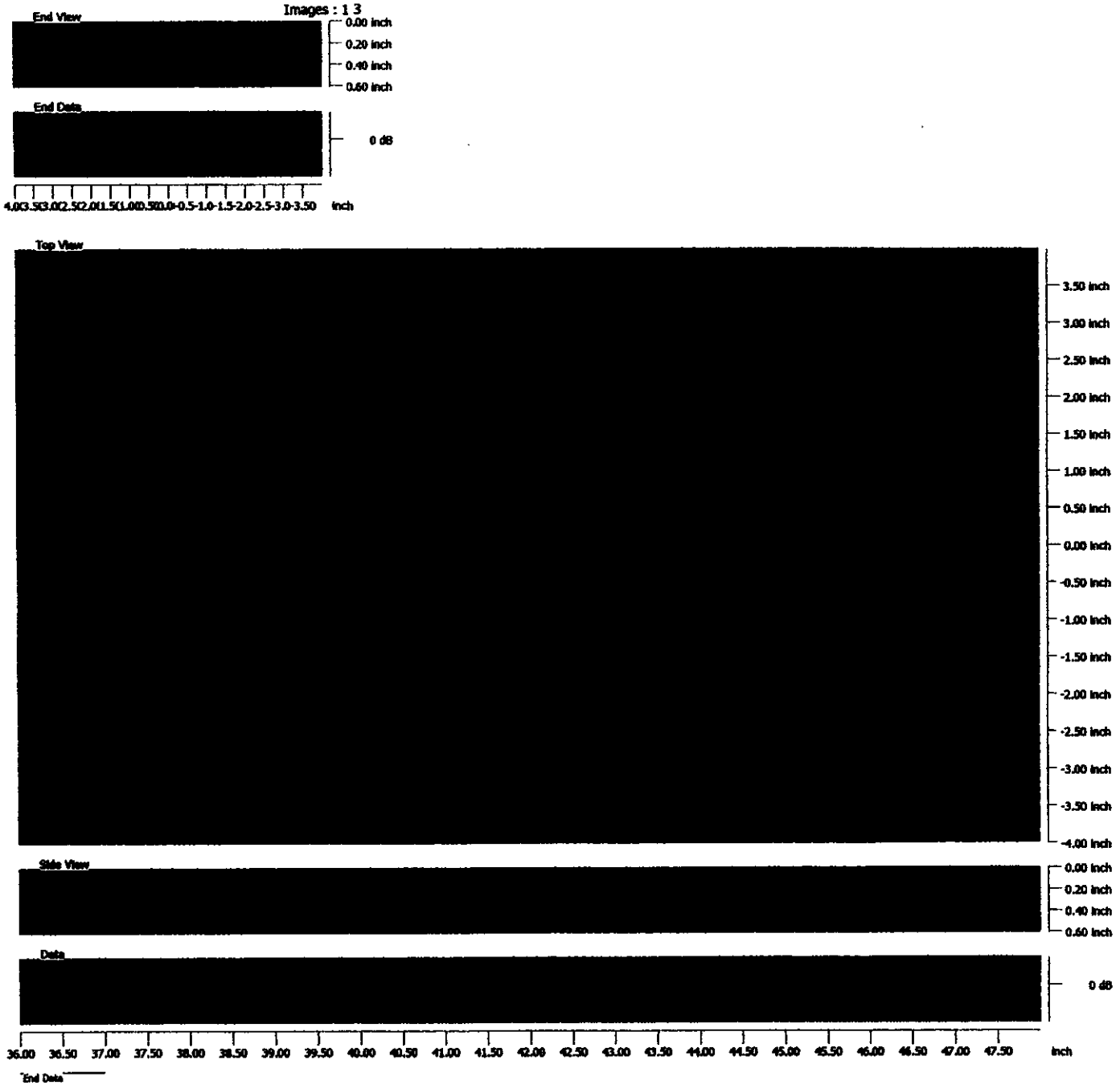
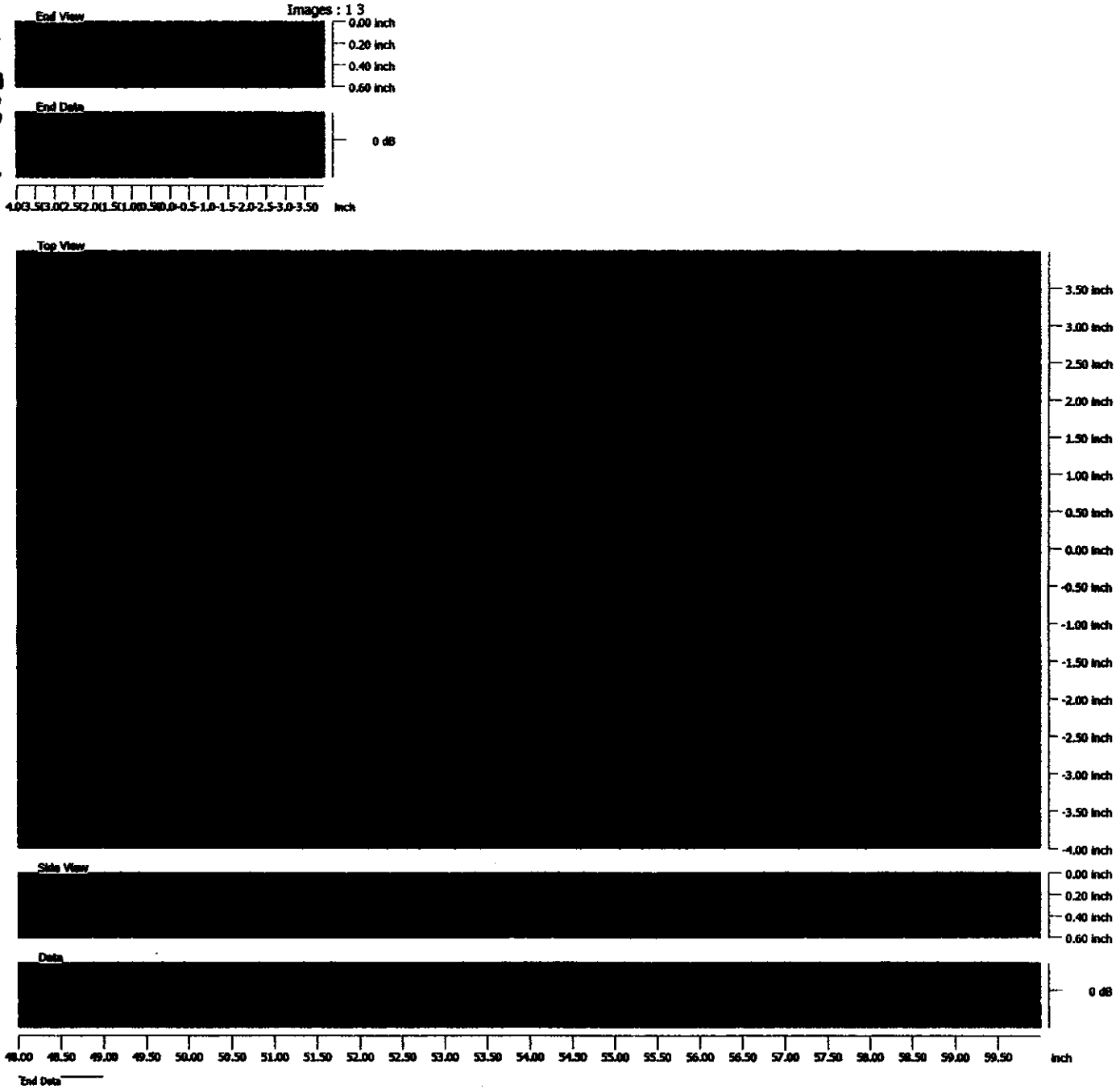


HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:29 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/1.



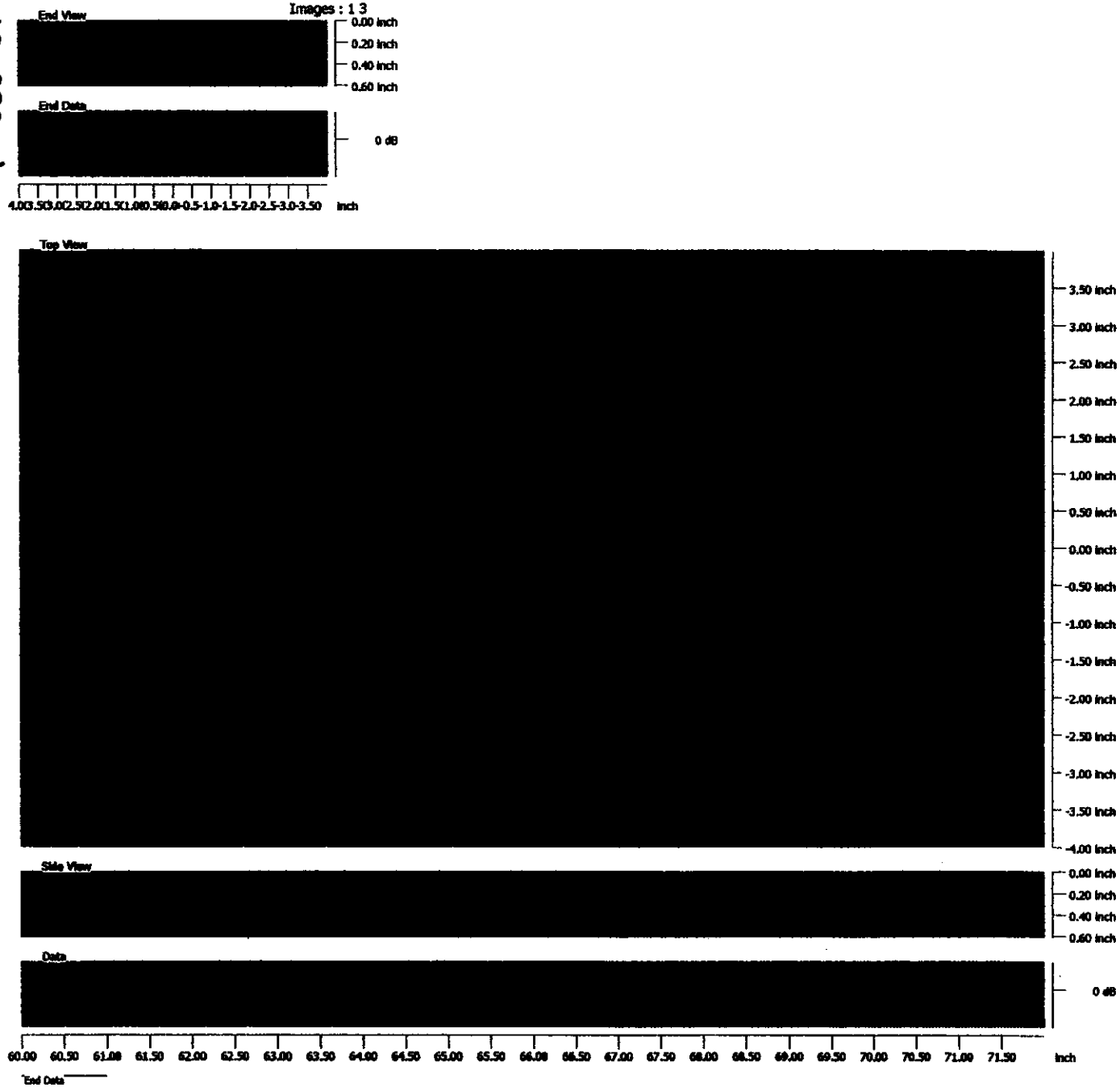
HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:31 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/1.

Images : 1 3

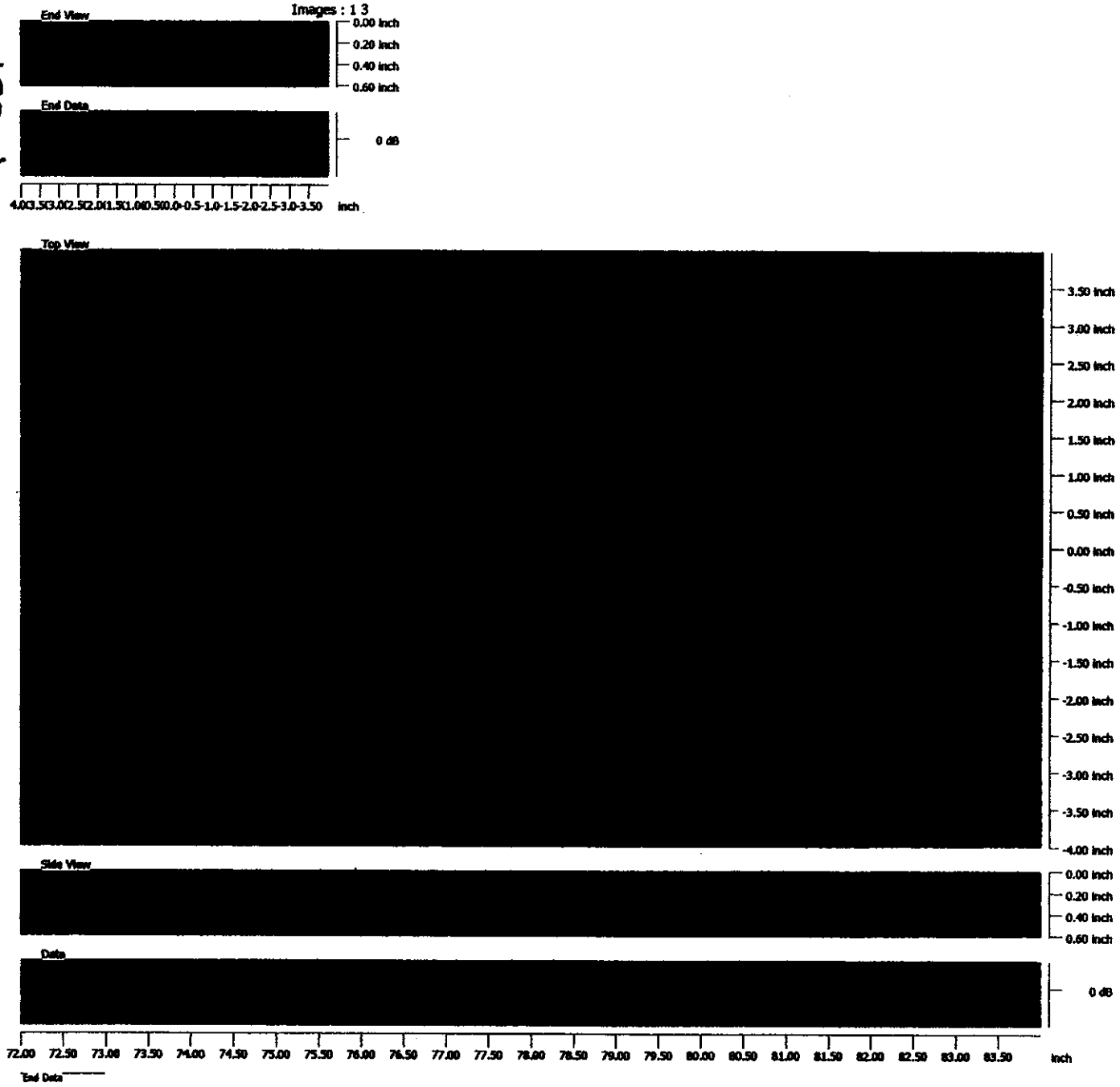


HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:31 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/1.

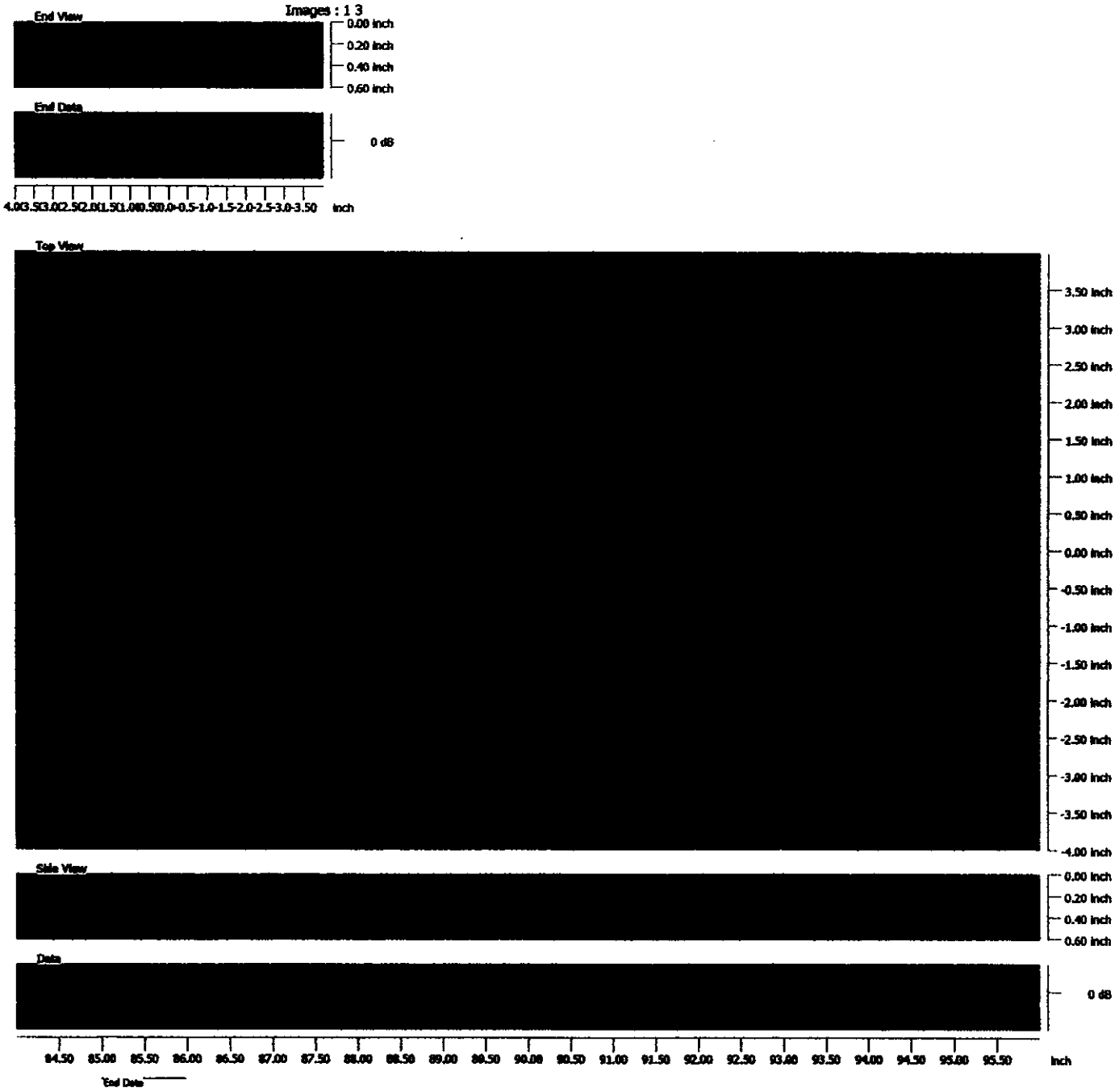
Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:33 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/1.

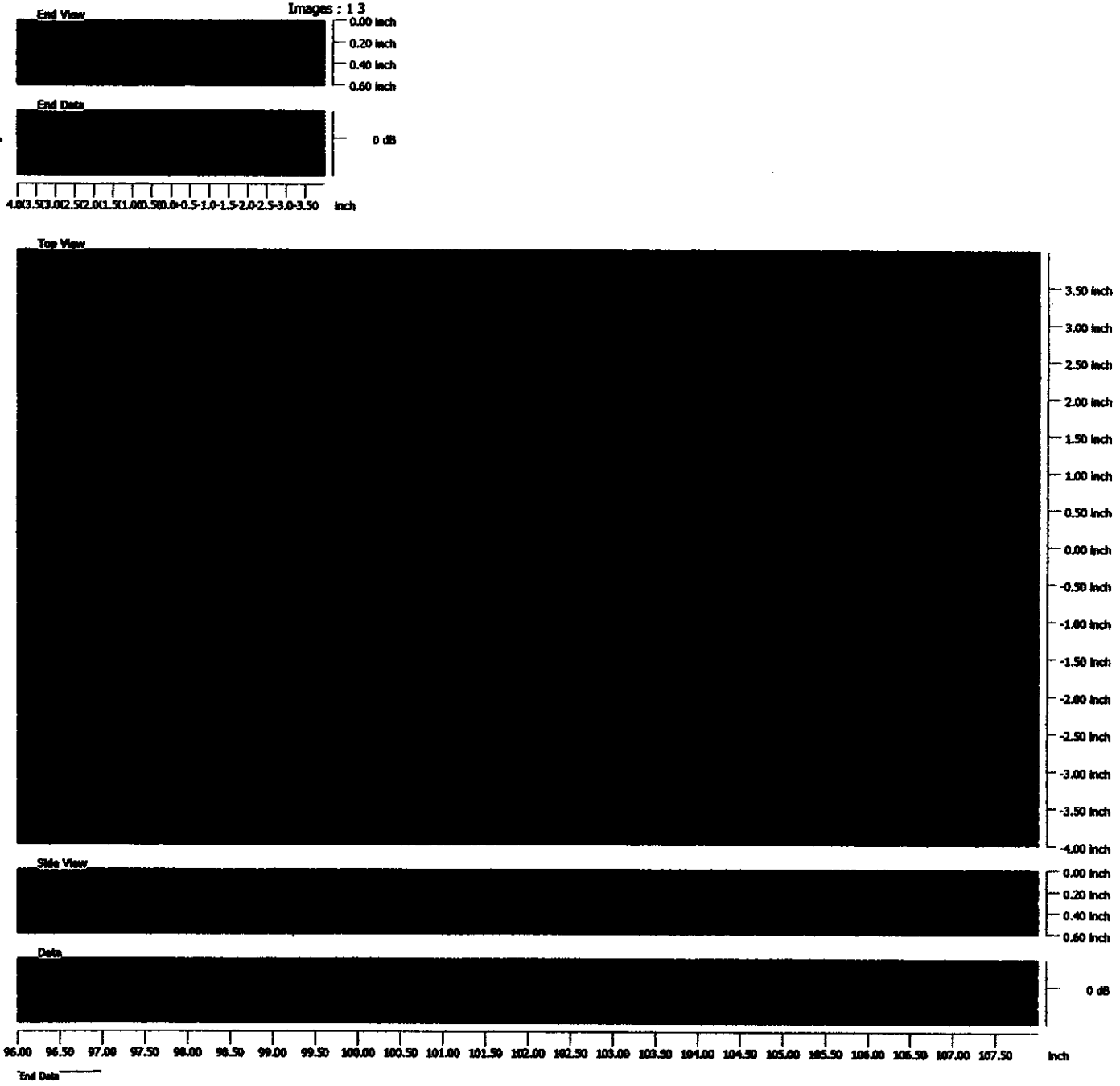


HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:35 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/1.



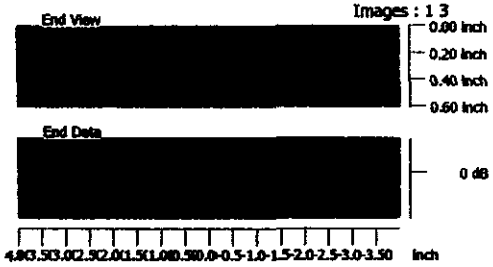
HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:36 : P-scan pres.1 <1, 3> of Job : 4SHOR./WD/1.

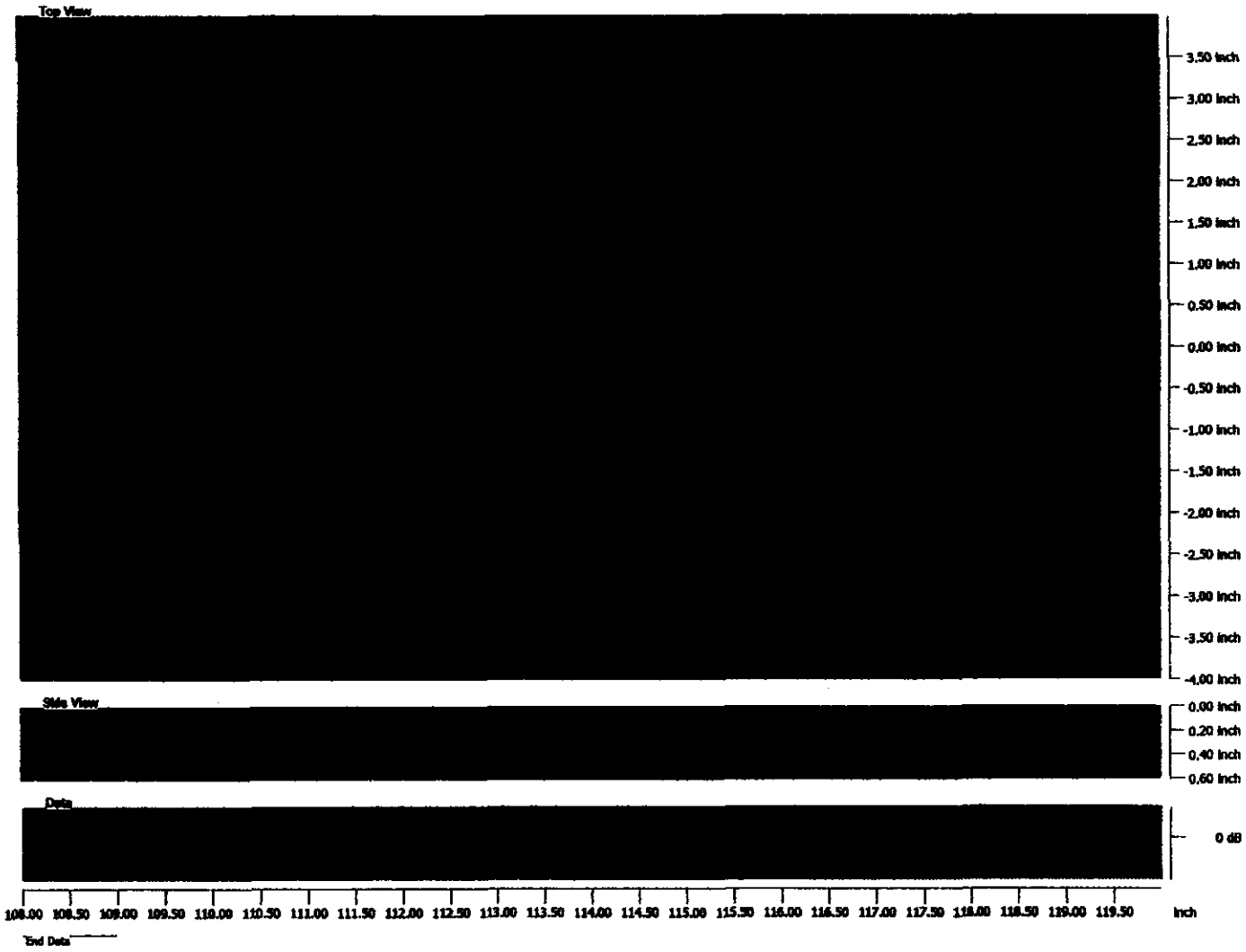
Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 12:11
Printed on 2000-8-7 at 19:36 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/1.

Images : 1 3



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/27/00 11:05 | EXAM END: 15:38 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: Horz. Weld Plate TO Knuckle | | CALIBRATED RANGE: 0" to 2.47" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | REF. LEVEL CORRECTION (TRANS. CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .875" NOM THICKNESS | | |
| FILE NAME/ITEM#: 45 HOR./WD/2 | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 45° | | |
| $X_0$ REF. POINT ($L_0$): SEE 45 HOR./WD/1 | $Y_0$ REF. POINT ($W_0$): ℄ of weld | SCAN WIDTH: 7" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO Crack Like Indications

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/27/00 | [signature] Level III Date 8/7/00 | (N1) Level ___ Date ___ | ___ of ___ |

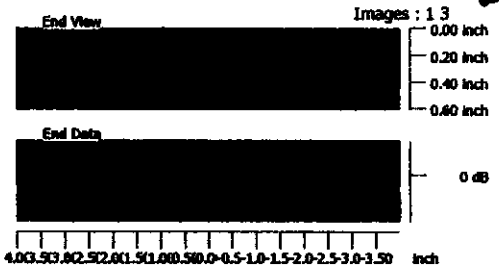
(N1) See Attached Letter From J. B. Elder

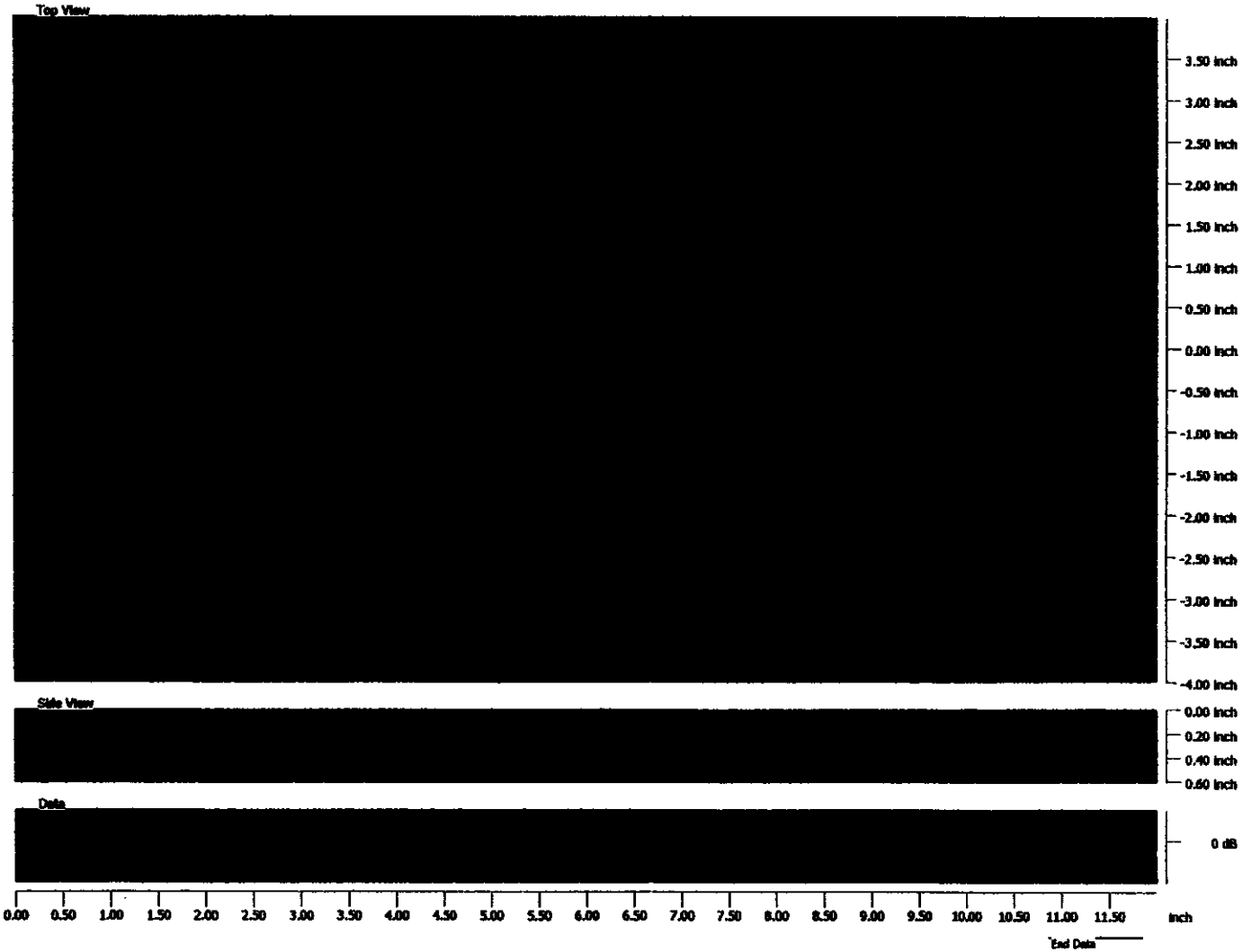
HOR./45/WD/P5/Knuckle1
WHN
AP-107
Plate5/knuckle

1: P-scan, Images, p-scan data1, 6/27/00 14:00
2: P-scan, Images, p-scan data1, 6/27/00 14:00
3: P-scan, Images, p-scan data1, 6/27/00 14:00
4: P-scan, Images, p-scan data1, 6/27/00 14:00

Printed on 2000-8-7 at 19:53 : P-scan pres.1 <1, 3> of Job : [redacted]

Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 14:00
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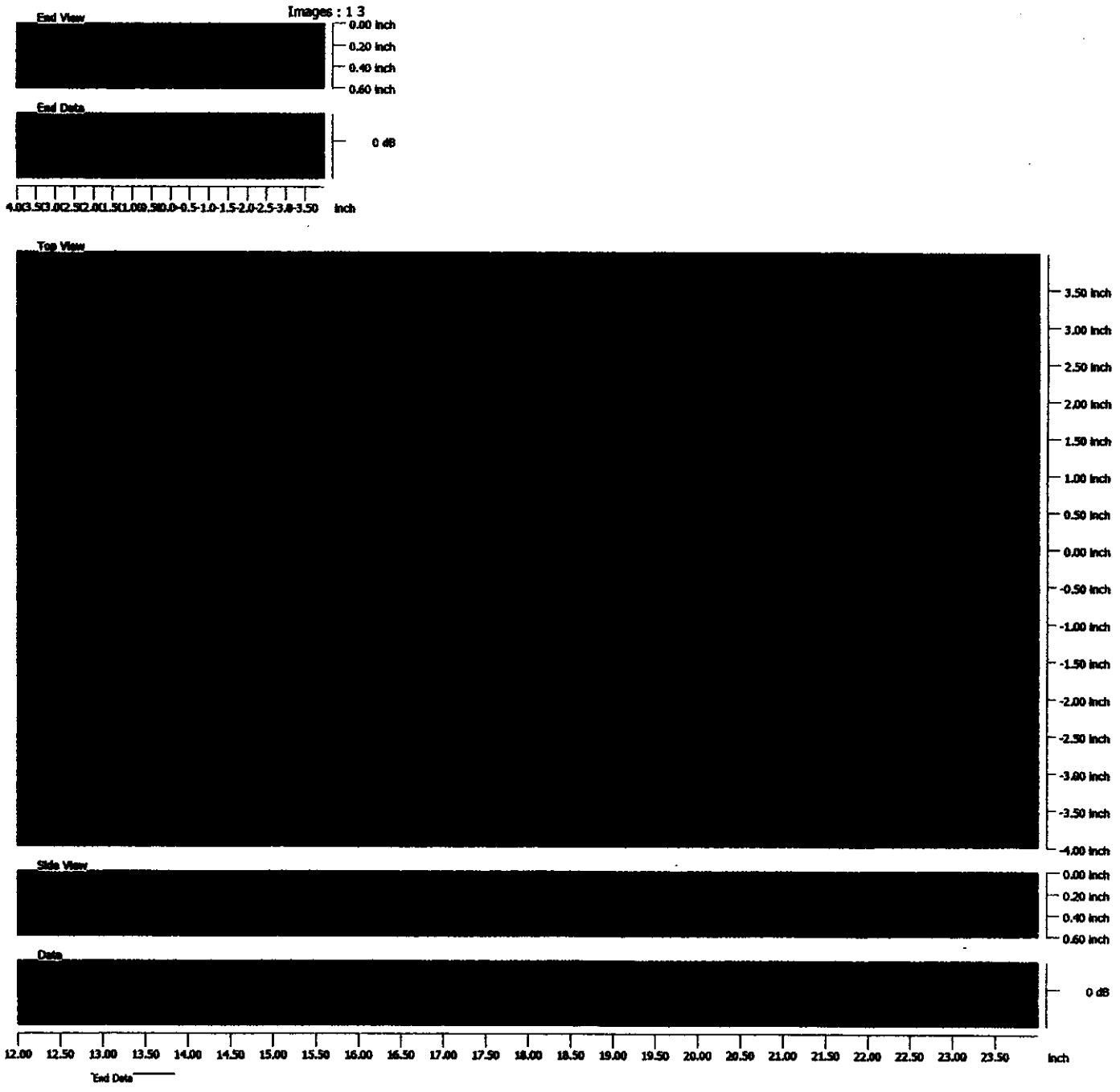

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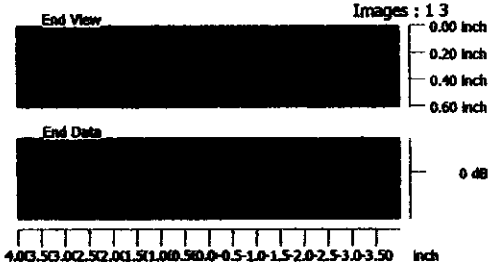
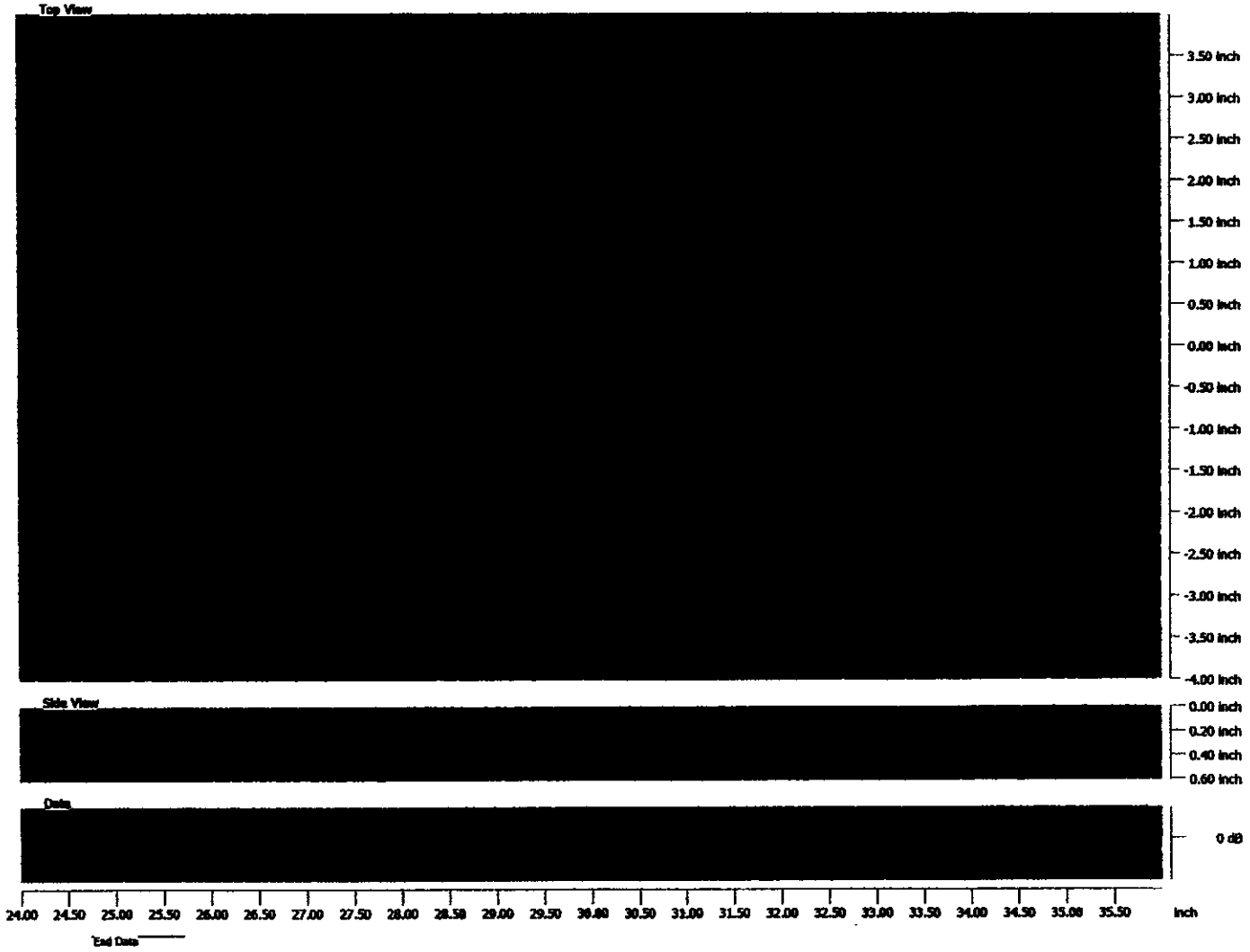
HOR./45/WD/PS/Knuckle1
WHN
AP-107
Plate5/knuckle

1: P-scan, Images, p-scan data1, 6/27/00 14:00
2: P-scan, Images, p-scan data1, 6/27/00 14:00
3: P-scan, Images, p-scan data1, 6/27/00 14:00
4: P-scan, Images, p-scan data1, 6/27/00 14:00

Printed on 2000-8-7 at 19:54 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/2.

Images : 1 3



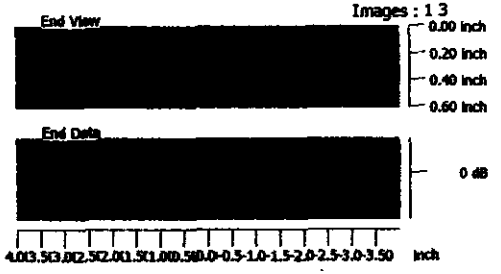



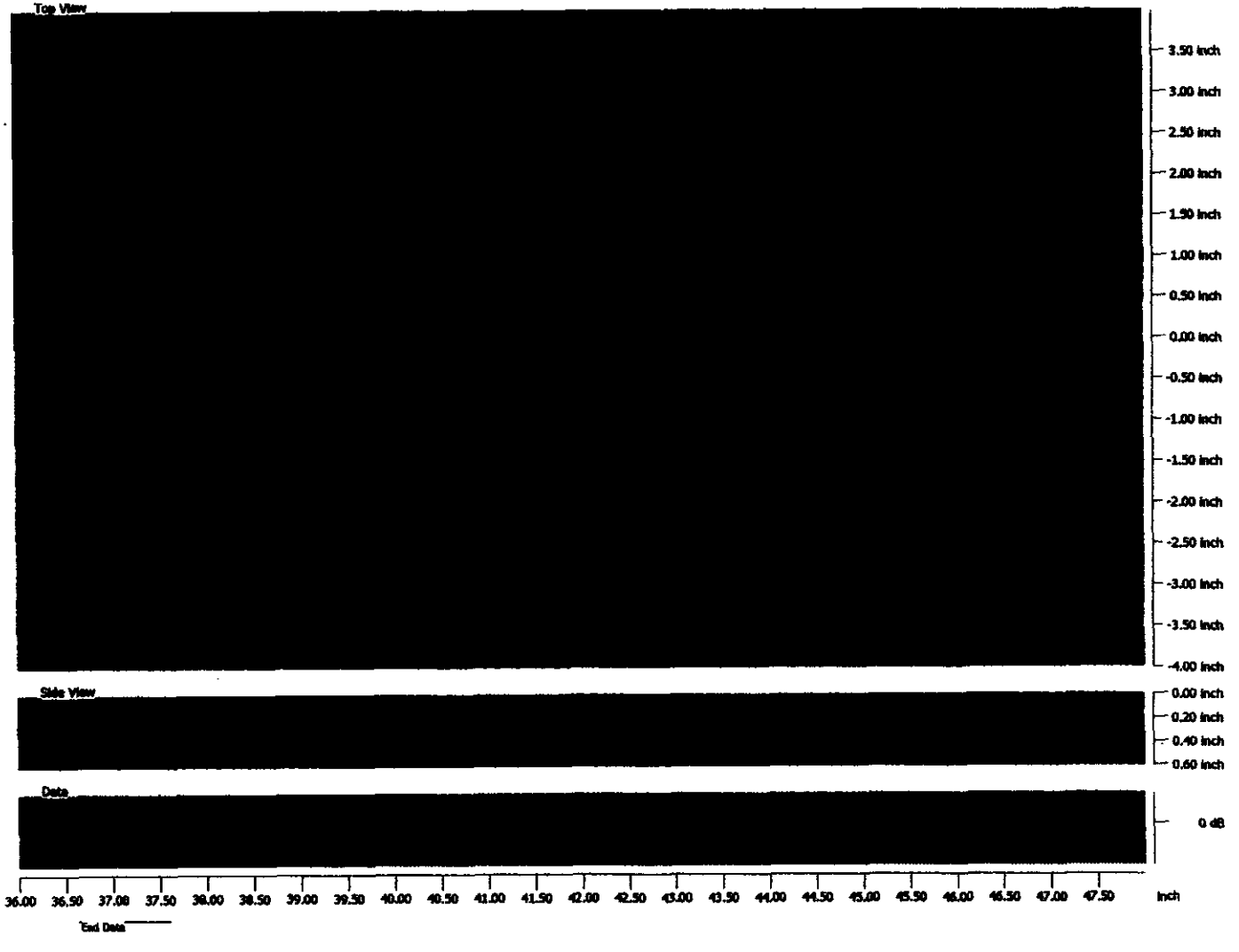
HOR./45/WD/P5/Knuckle1
WHN
AP-107
Plate5/knuckle

1: P-scan, Images, p-scan data1, 6/27/00 14:00
2: P-scan, Images, p-scan data1, 6/27/00 14:00
3: P-scan, Images, p-scan data1, 6/27/00 14:00
4: P-scan, Images, p-scan data1, 6/27/00 14:00

Printed on 2000-8-7 at 19:54 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/2.

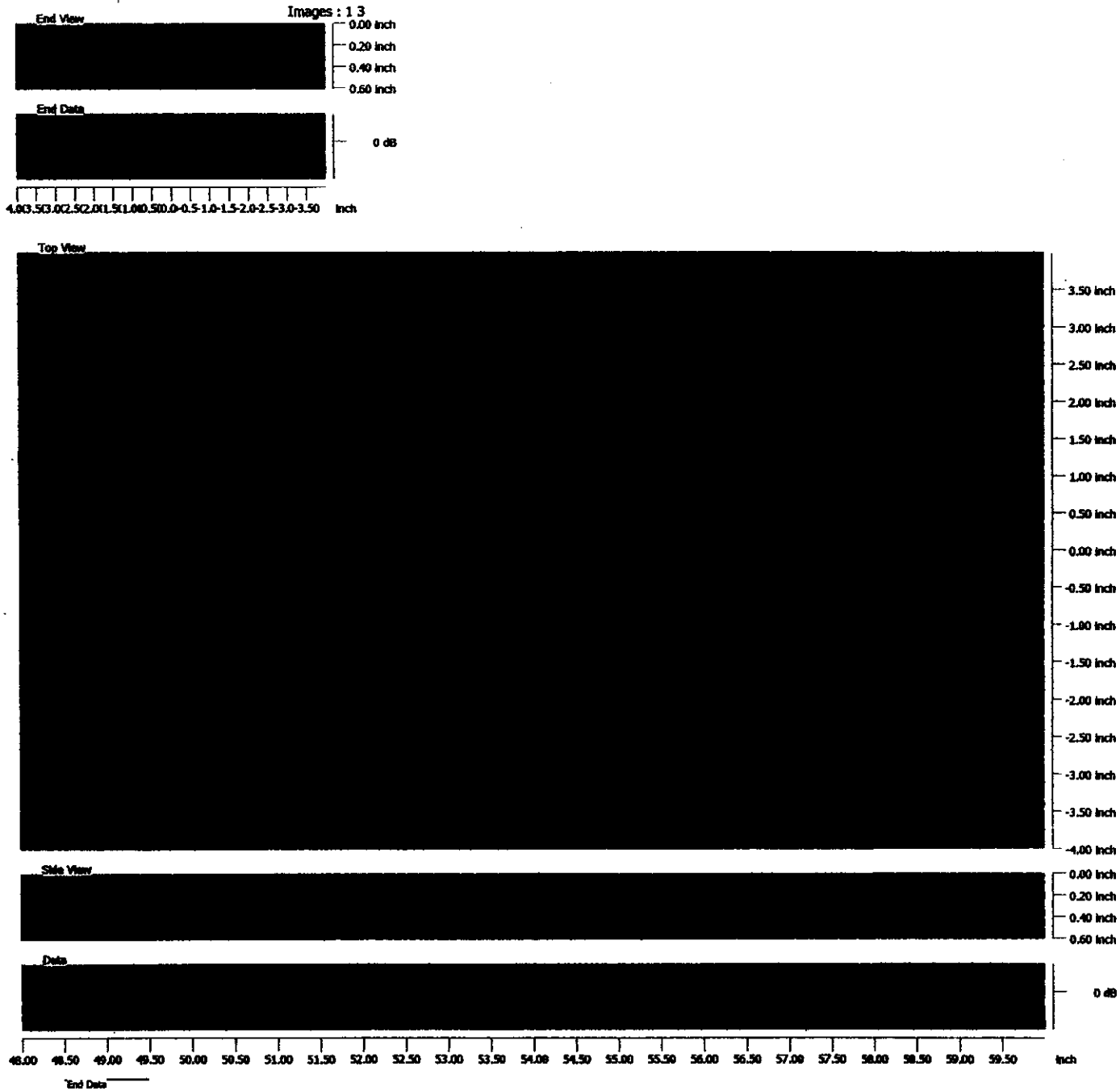
Images : 1 3



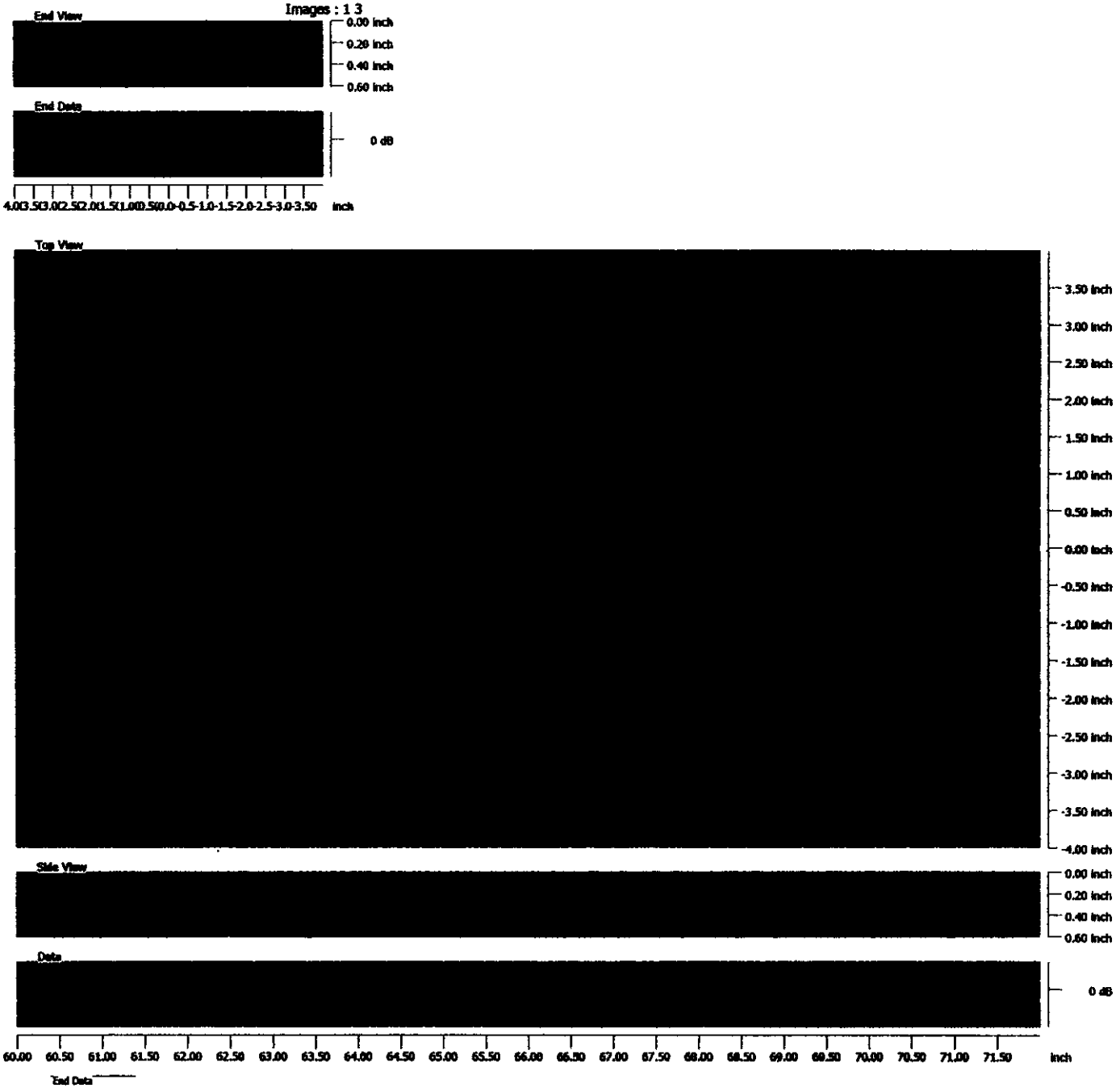



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 14:00
Printed on 2000-8-7 at 19:54 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/2.

Images : 1 3

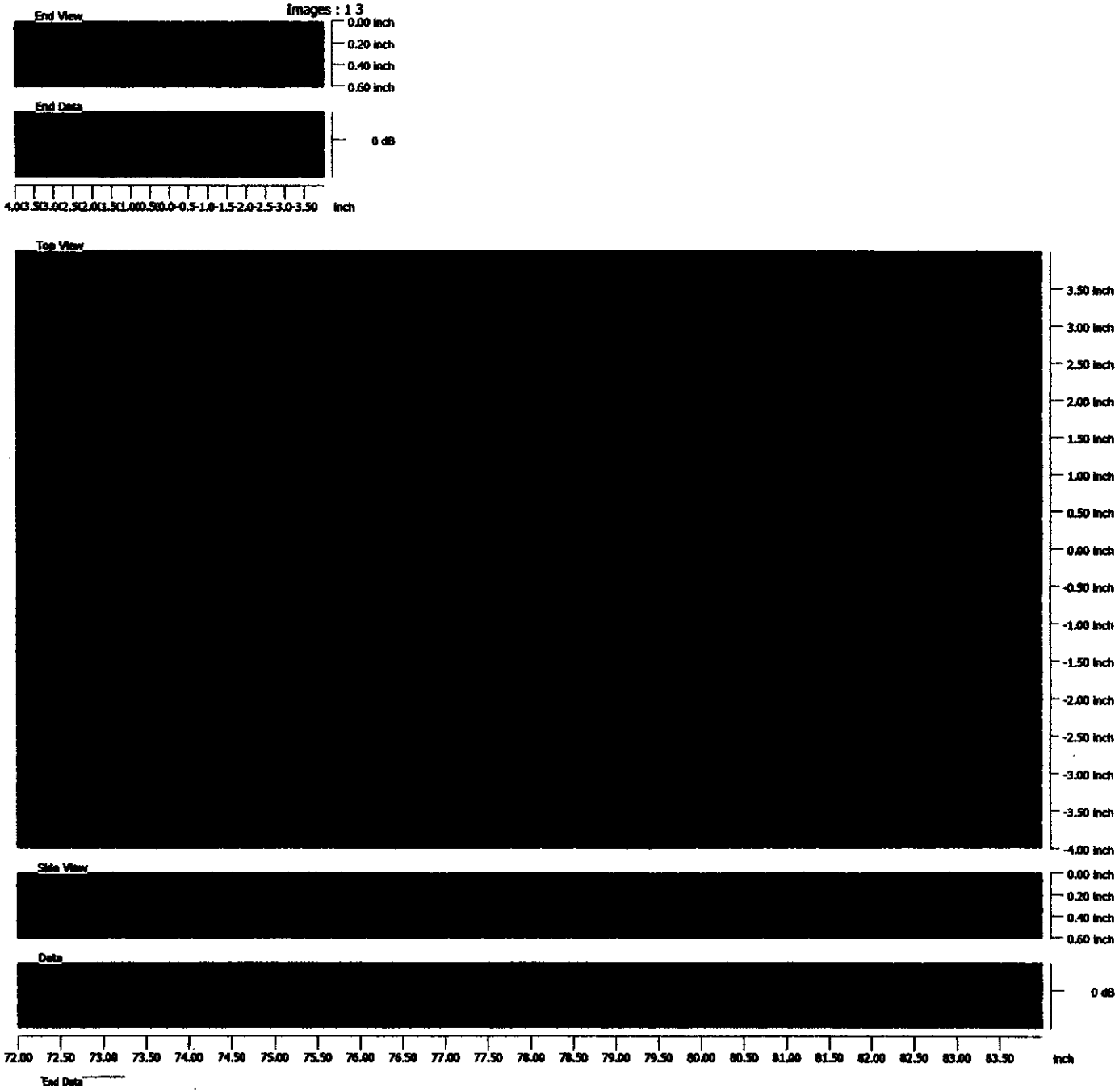


HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 14:00
Printed on 2000-8-7 at 19:54 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/2.



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 14:00
Printed on 2000-8-7 at 19:54 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/2.

Images : 1 3



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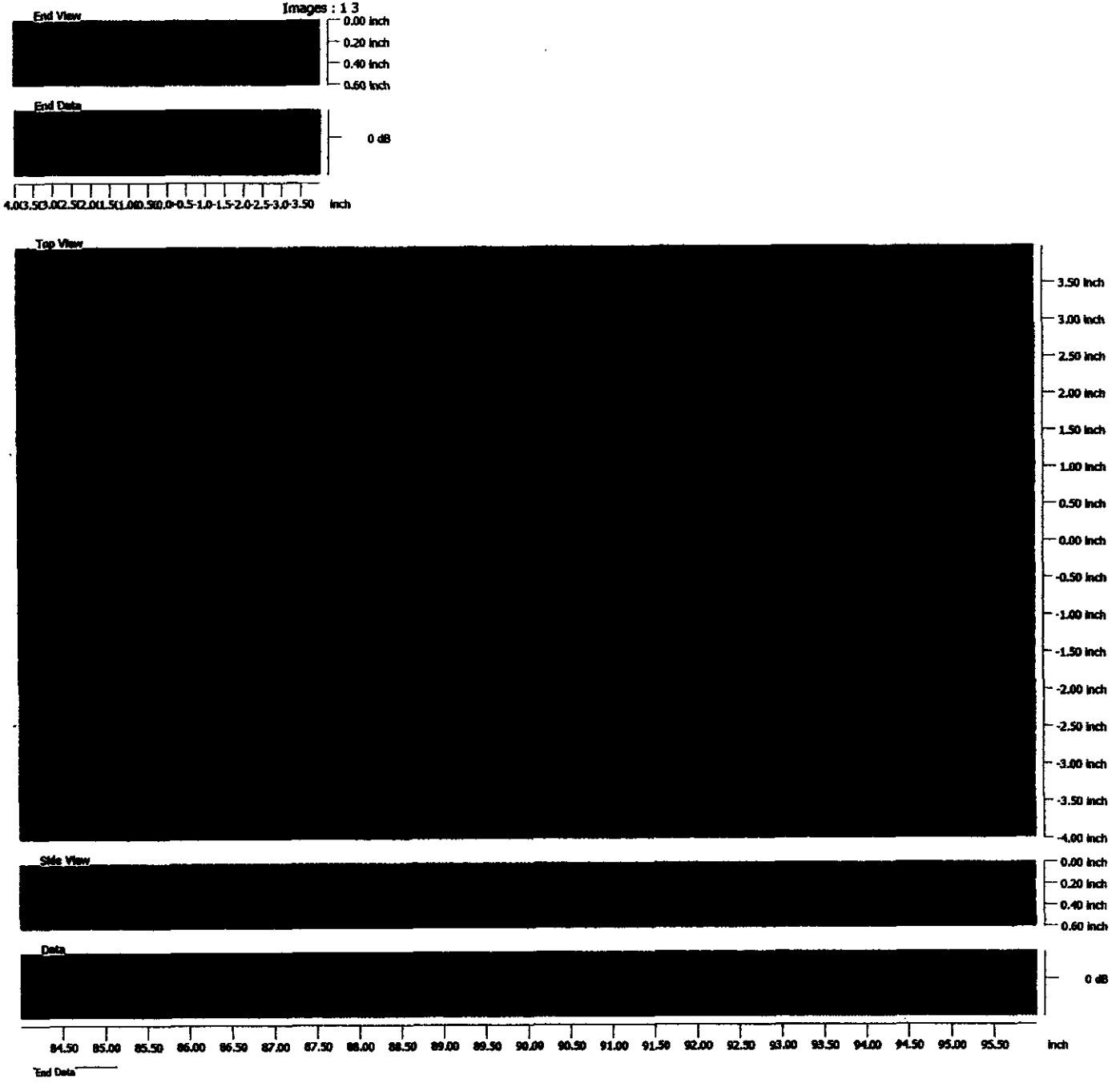
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 14:00
Printed on 2000-8-7 at 19:55 : P-scan pres.1 <1, 3> of Job : 45HOR./WD/2.

Images : 1 3



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WHN — 2: P-scan, Images, p-scan data1, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 14:00
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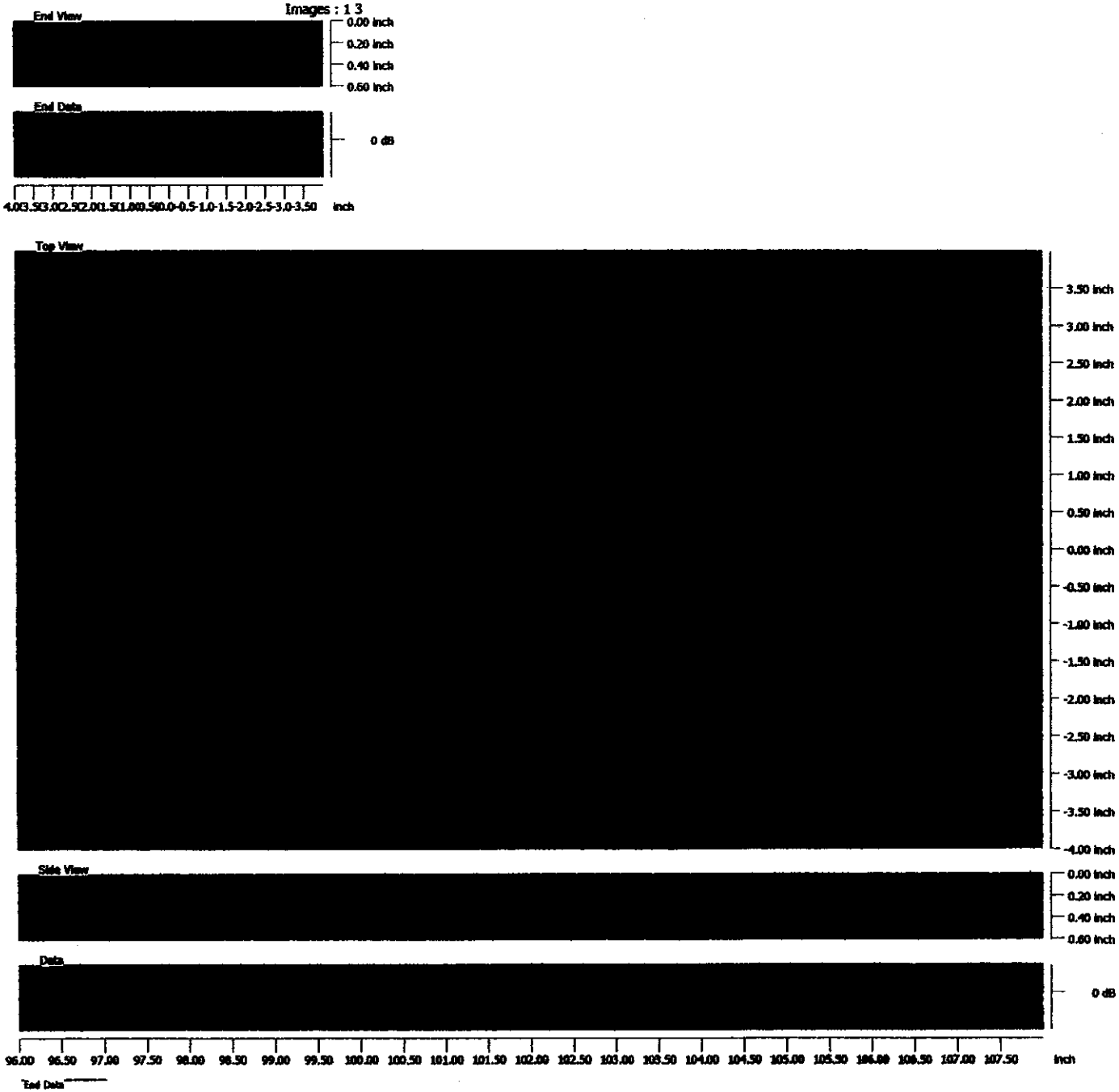
Images : 1 3



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HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data1, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data1, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data1, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data1, 6/27/00 14:00
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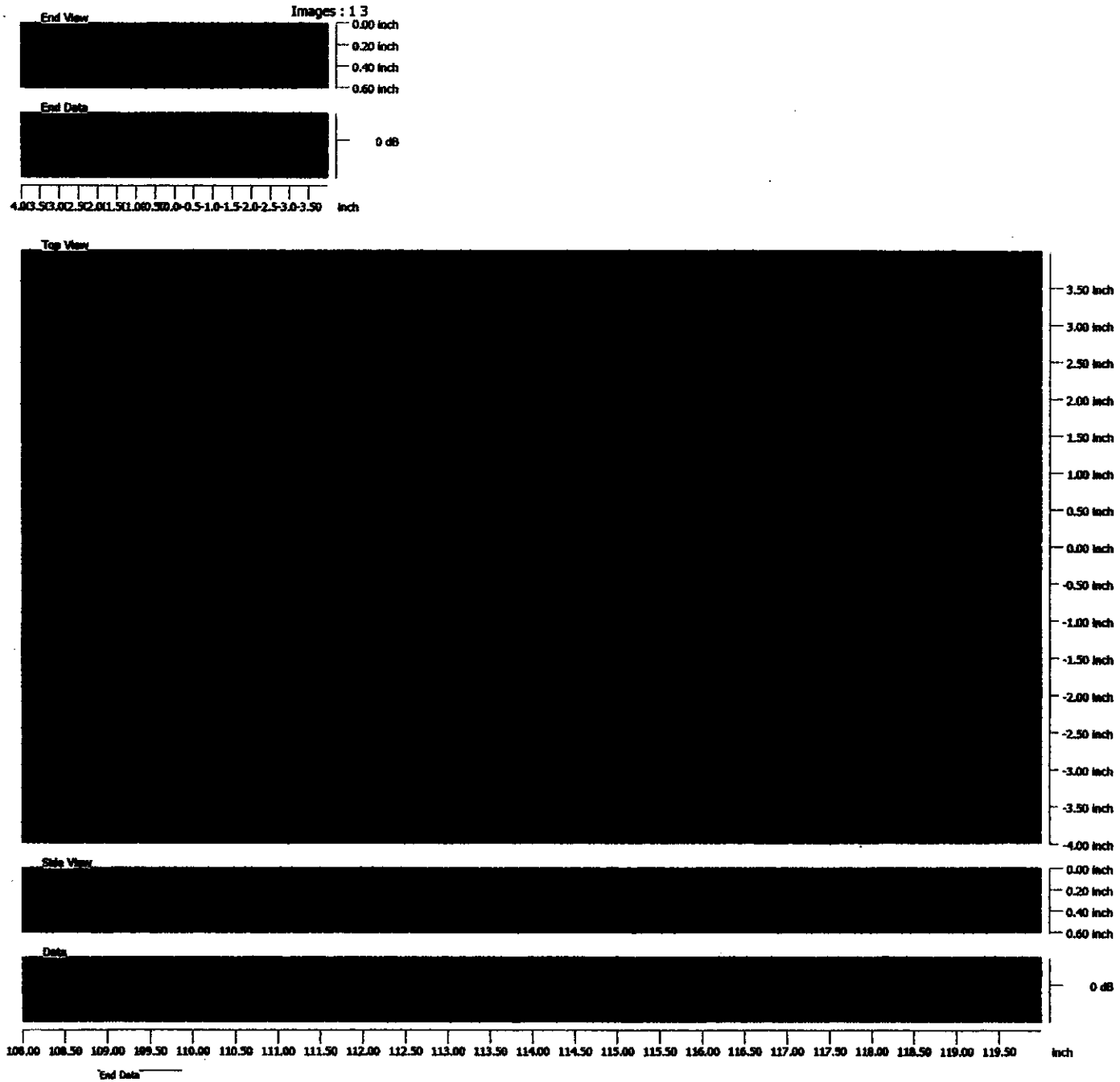


4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM DATE: 6/27/00 11:05 | EXAMINER: 15:38 | LOG #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PARTIAL | | CONDITION: |
| CONFIGURATION: Horz. Weld Plate TO Knuckle | | CALIBRATION RANGE: 0" to 2.65" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | REF. LEVEL CORRECTION / TRANS. CORR.: 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER .937" Nom. Thickness | | |
| FILE NAME/ITEM#: 45 Hor. / WD / 1 | | TRANSDUCER: ☐ DUAL ☒ SQ. ☐ DEFC ☒ ANGLE 45 | | |
| X0 REF. POINT (Lo): 96" from (S) Vert. Weld | Y0 REF. POINT (Wo): ℄ of Weld | SCAN WIDTH: 7" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R LIG | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

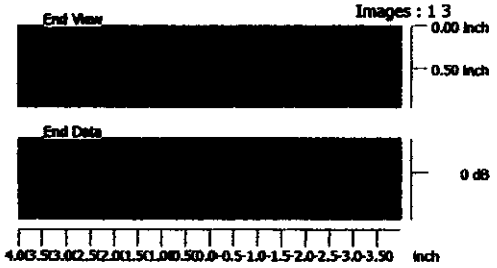
REMARKS
No Crack Like Indications

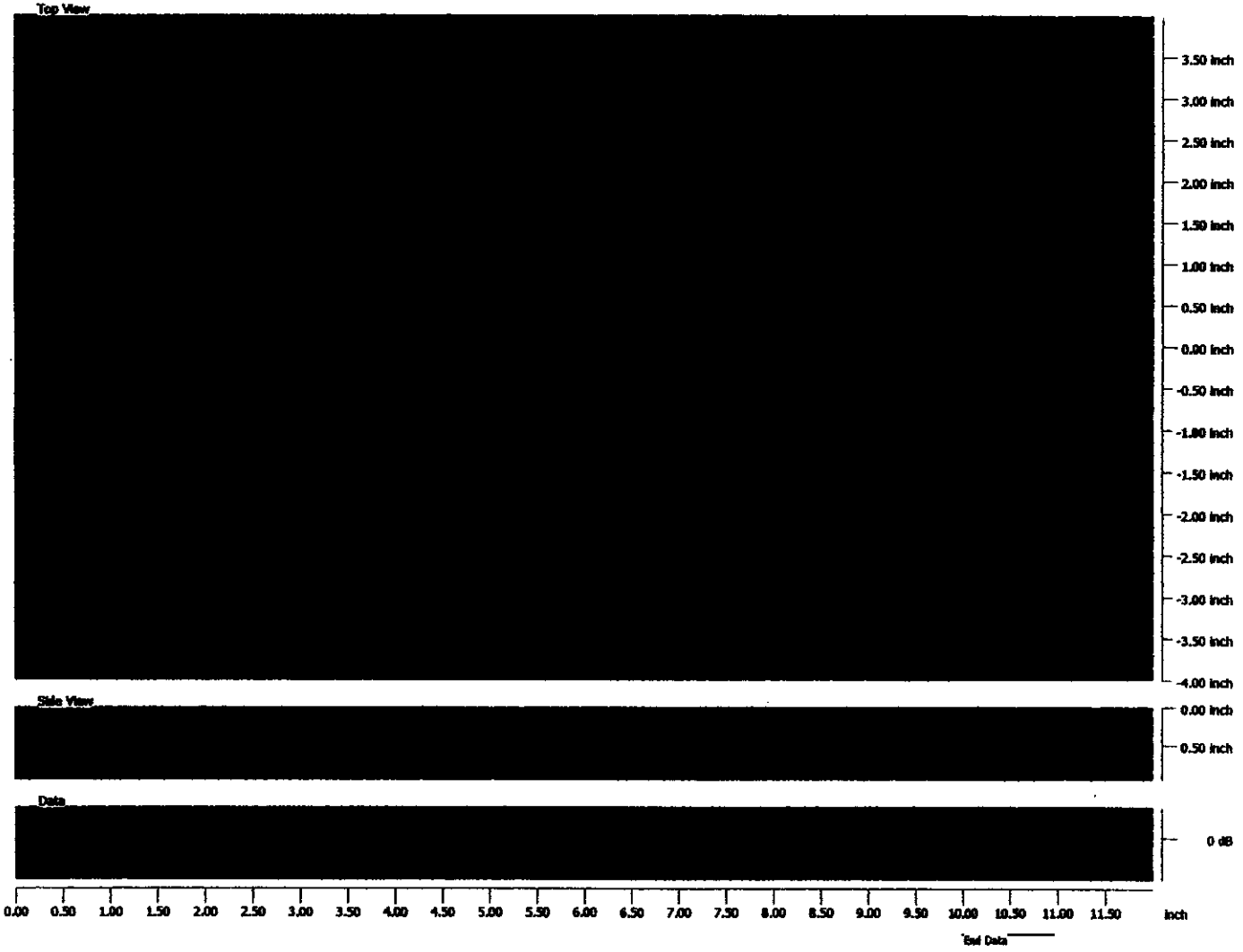
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Rich | Wesley D Rich | (W1) | |
| Level III Date 6/27/00 | Level III Date 8/7/00 | Level ___ Date ___ | ___ of ___ |

(W1) See Attached Letter From J. B. Elder

HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 12:11
Printed on 2000-8-7 at 19:42 : P-scan pres.2 <2, 4> of Job : 45[redacted]

Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 12:11
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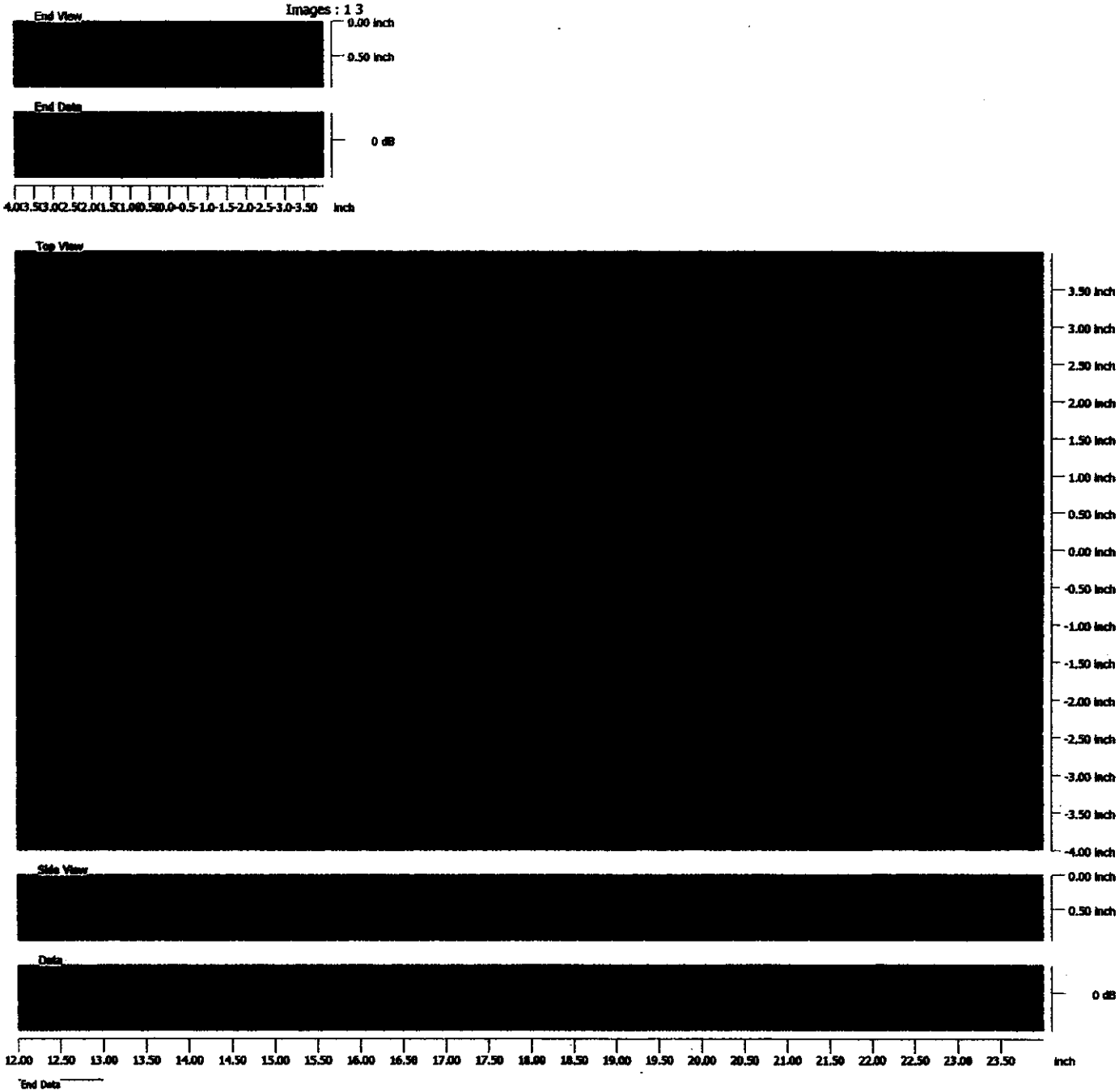
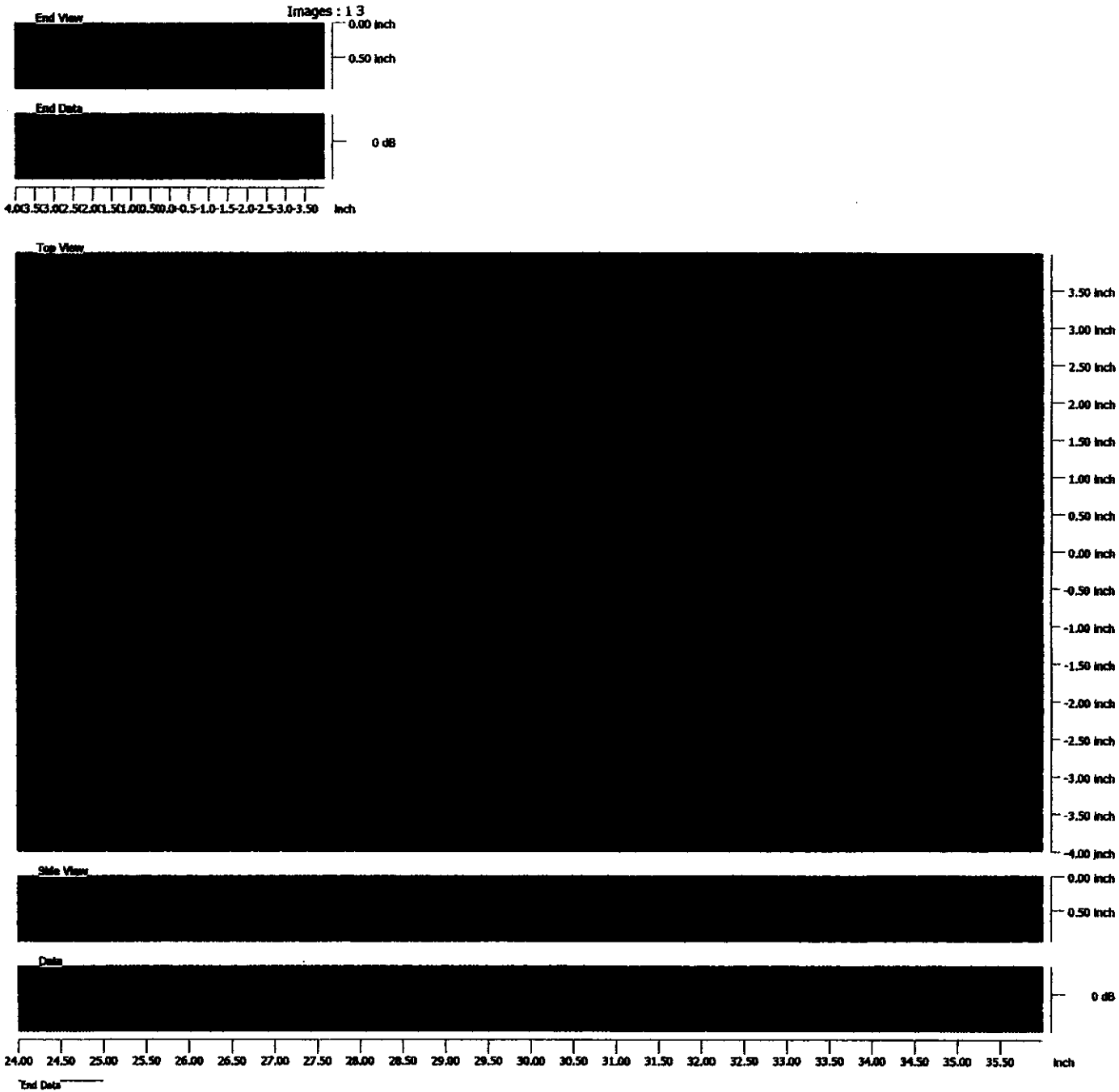
Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 12:11
Printed on 2000-8-7 at 19:43 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/1.



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 12:11
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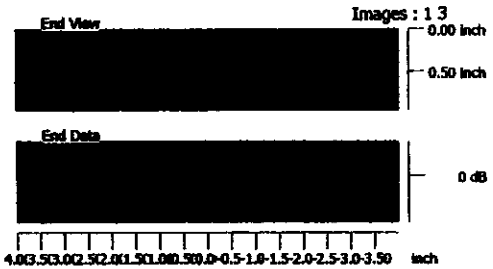
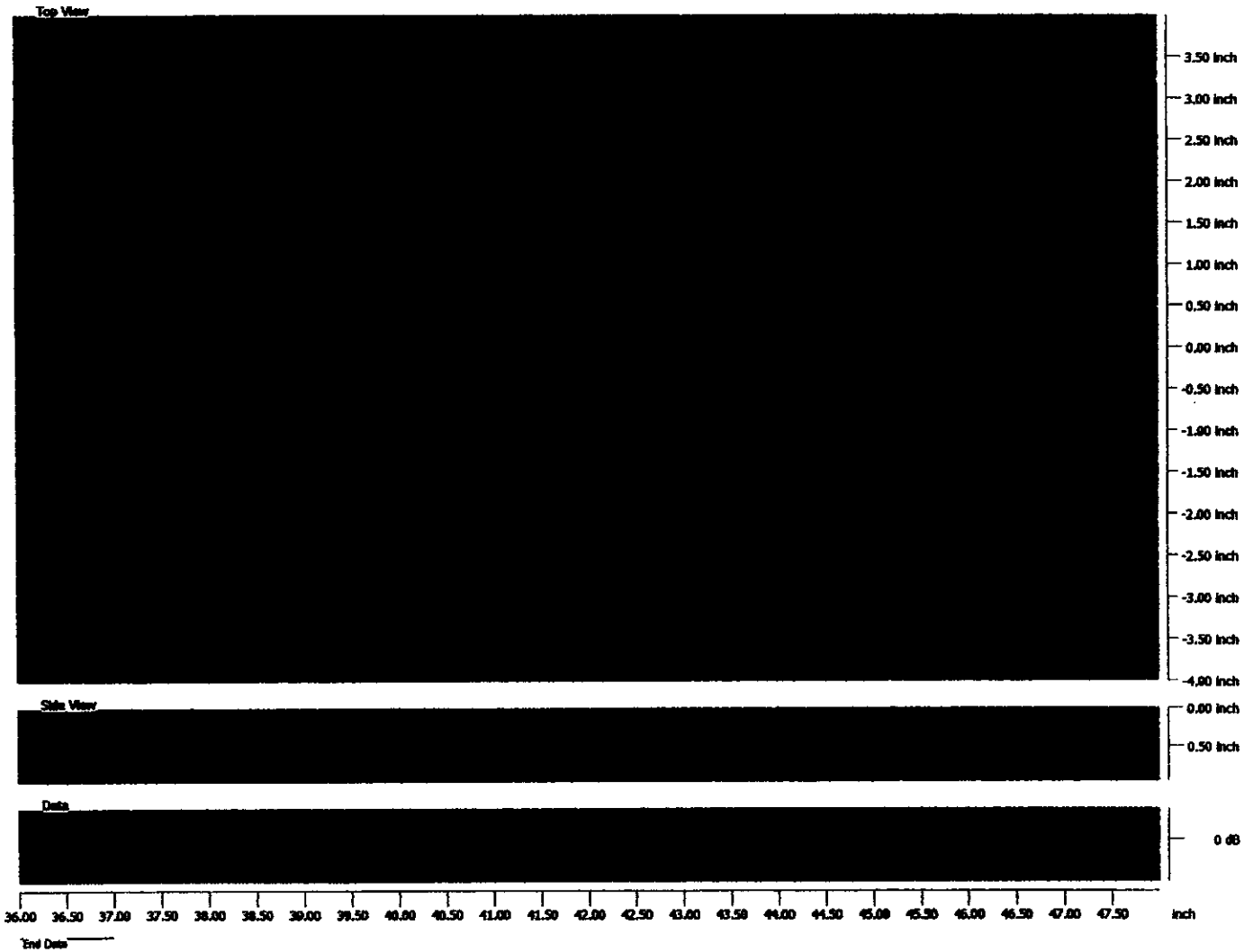
Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 12:11
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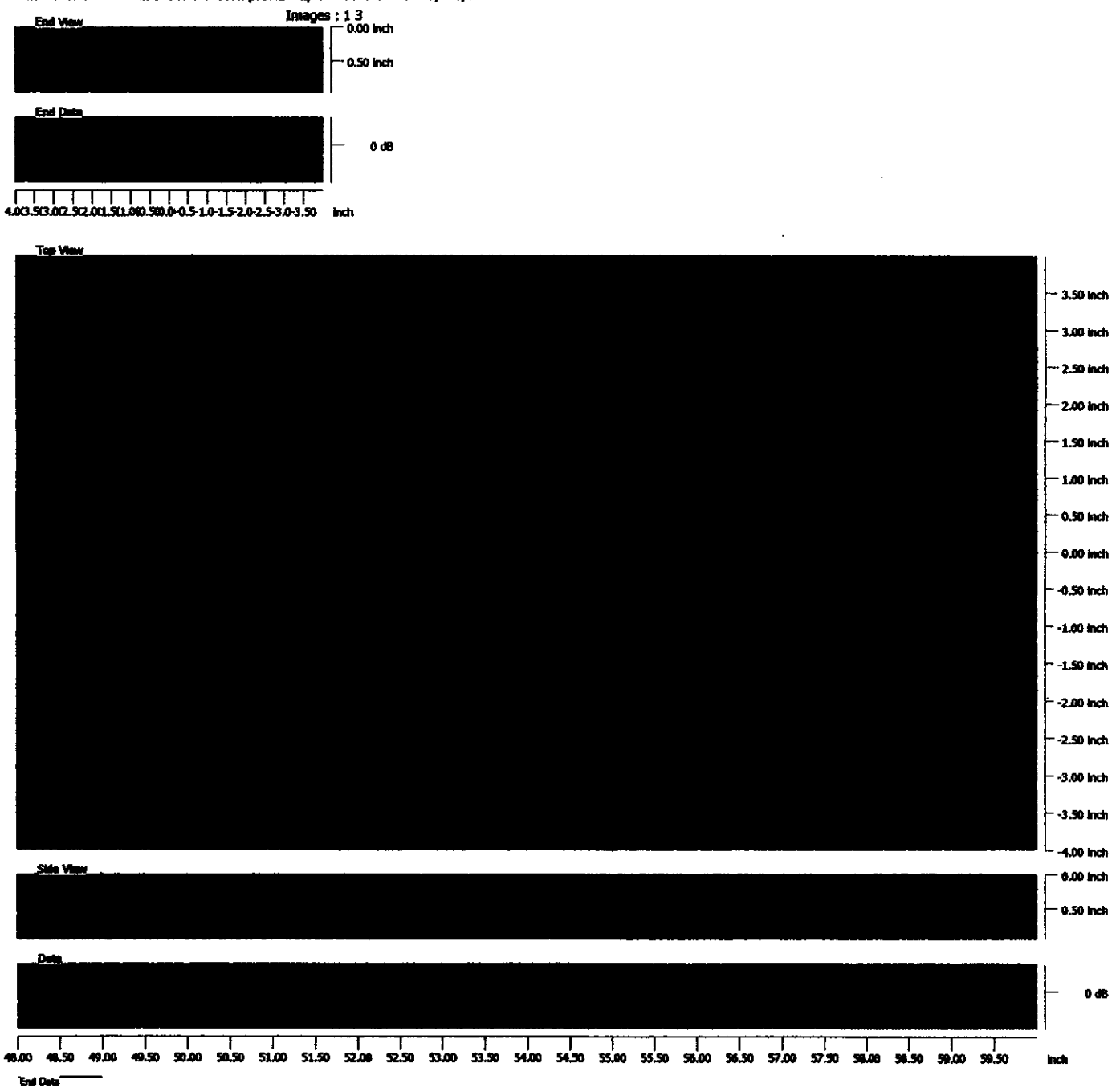
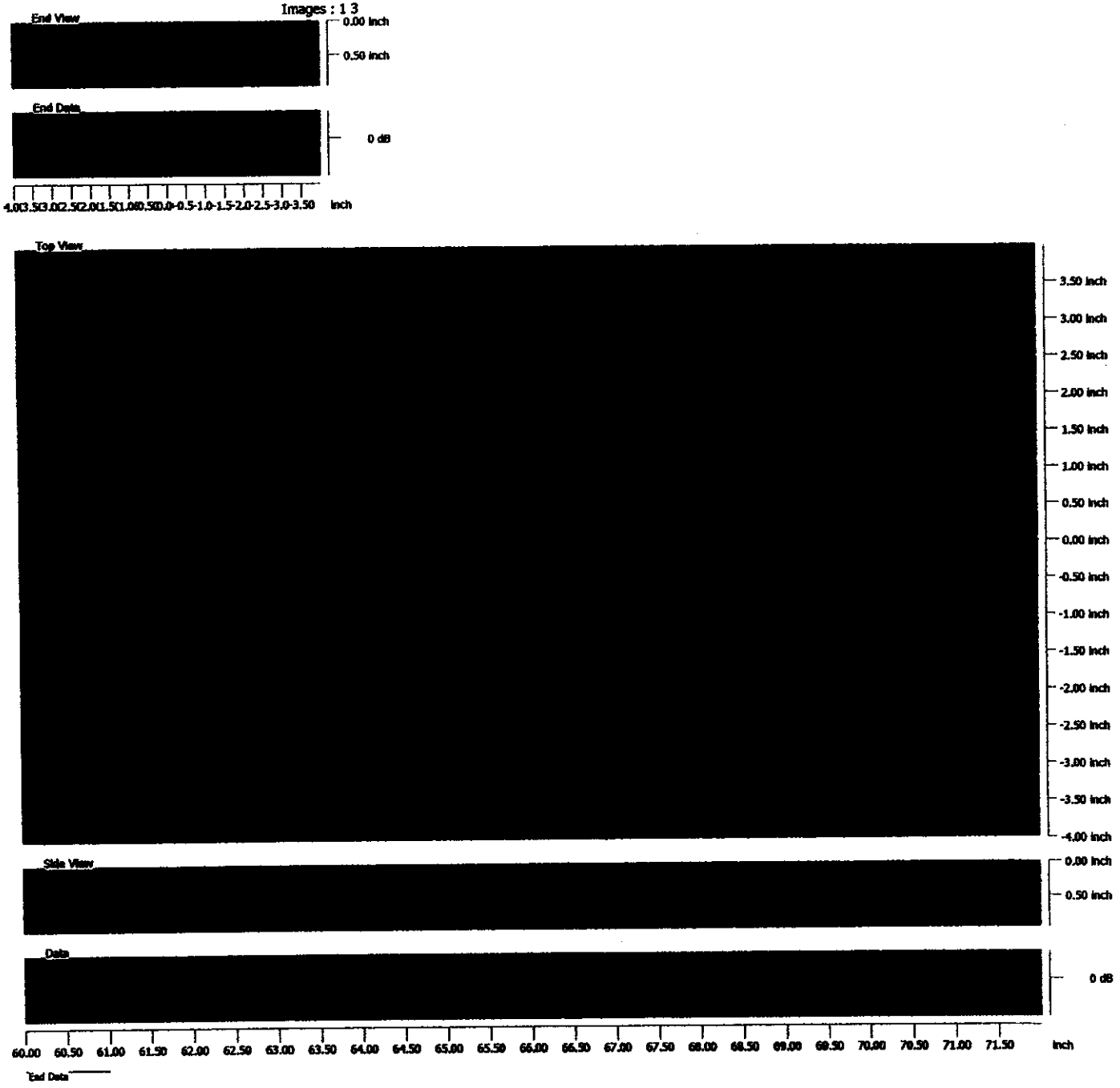


HOR./45/WD/P5/Knuckle1
WHN
AP-107
Plate5/knuckle

1: P-scan, Images, p-scan data2, 6/27/00 12:11
2: P-scan, Images, p-scan data2, 6/27/00 12:11
3: P-scan, Images, p-scan data2, 6/27/00 12:11
4: P-scan, Images, p-scan data2, 6/27/00 12:11

Printed on 2000-8-7 at 19:43 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/1.

Images : 1 3

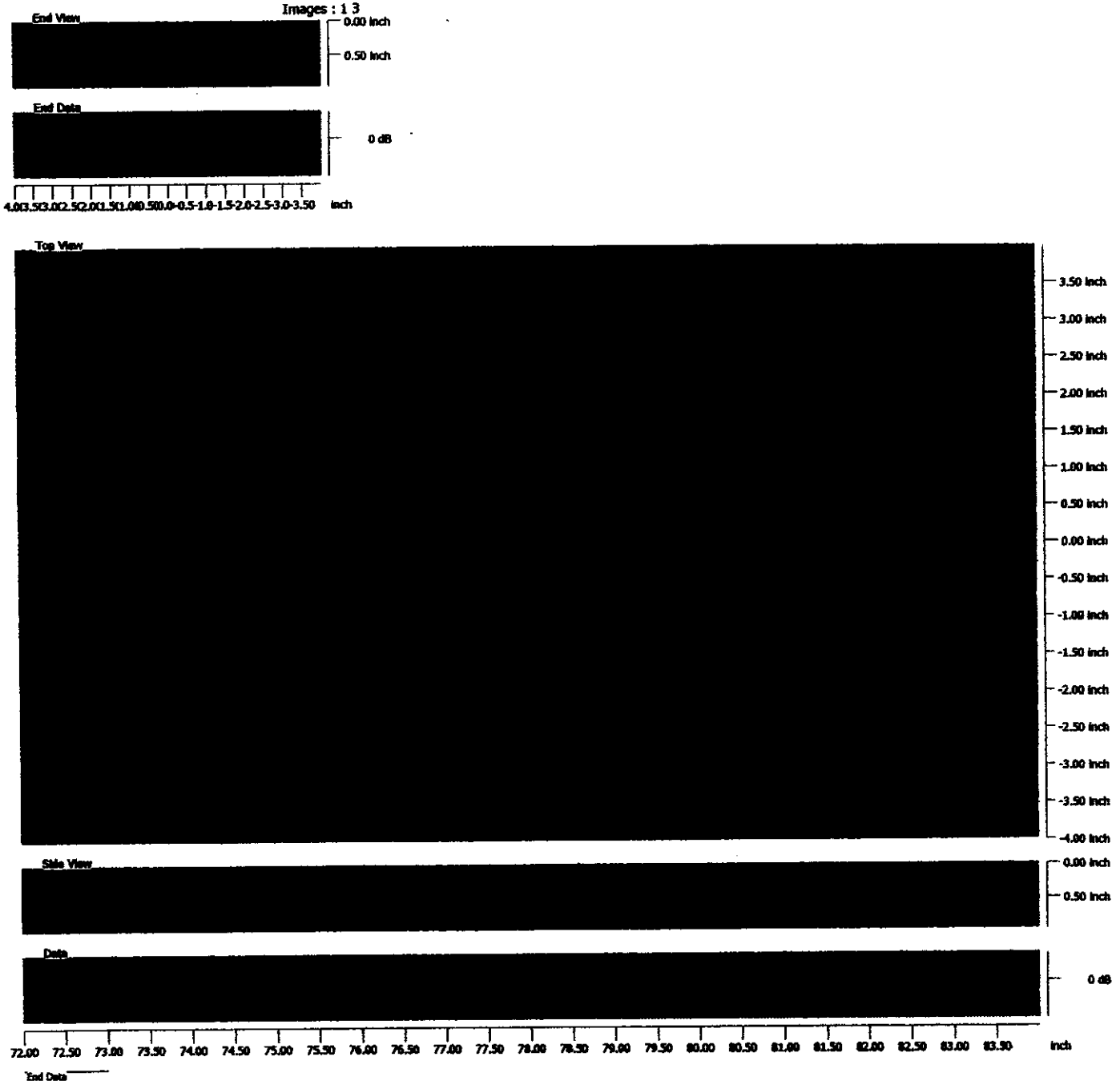


HOR./45/WD/P5/Knuckle1
WHN
AP-107
Plate5/knuckle

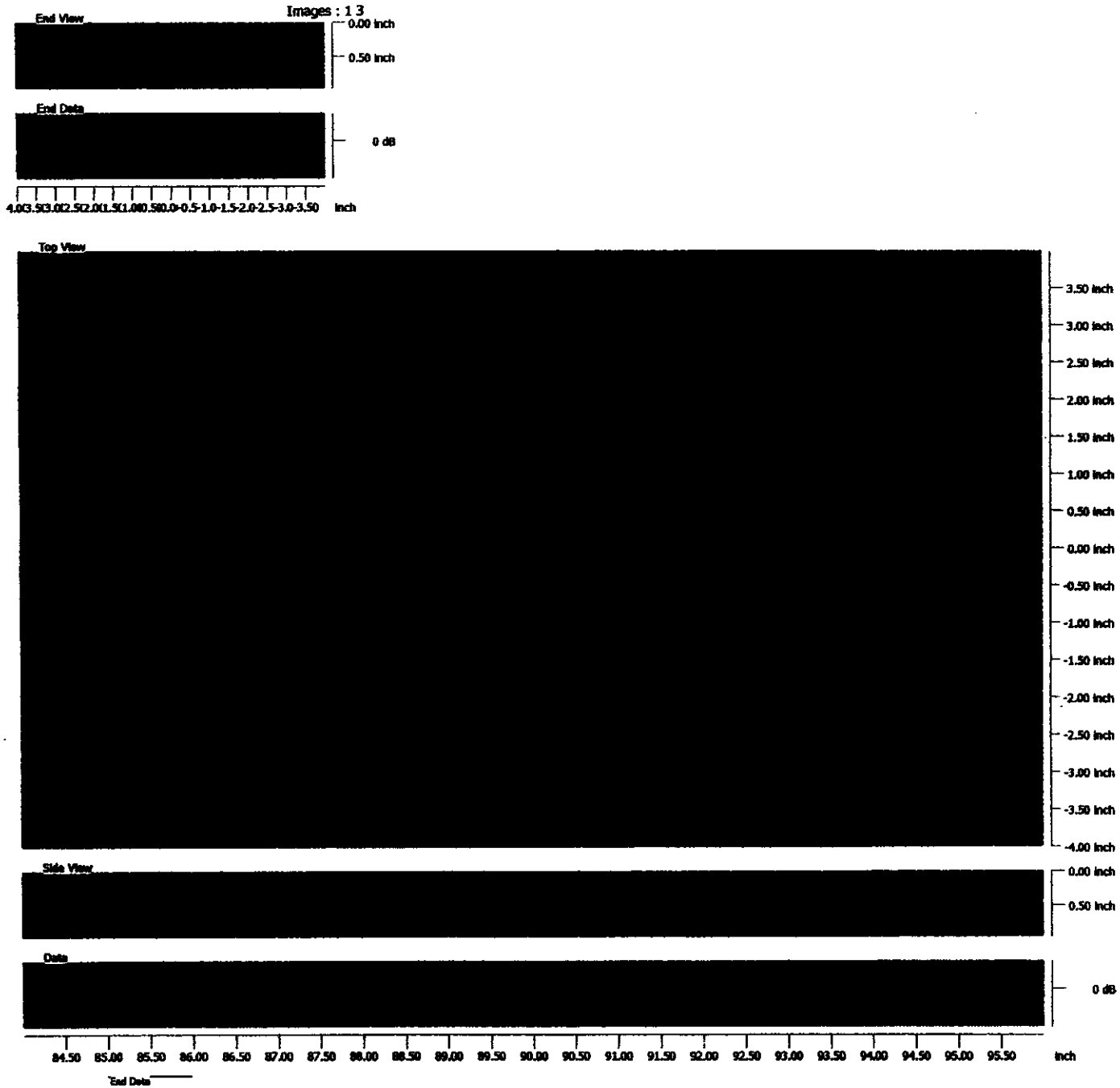
1: P-scan, Images, p-scan data2, 6/27/00 12:11
2: P-scan, Images, p-scan data2, 6/27/00 12:11
3: P-scan, Images, p-scan data2, 6/27/00 12:11
4: P-scan, Images, p-scan data2, 6/27/00 12:11

Printed on 2000-8-7 at 19:47 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/1.

Images : 1 3

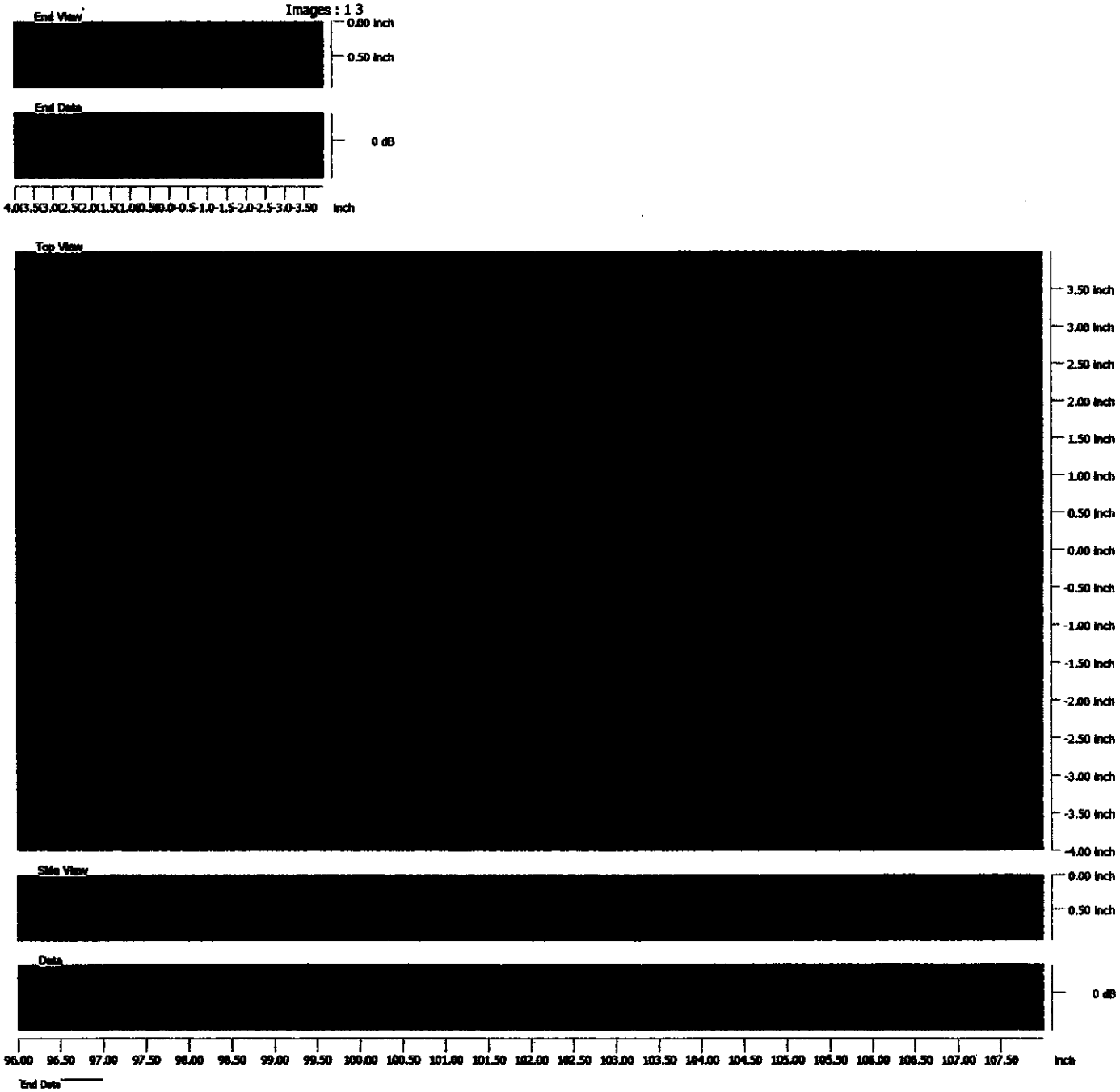


HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 12:11
Printed on 2000-8-7 at 19:47 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/1.



HOR./45/WD/PS/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 12:11
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 12:11
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 12:11
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 12:11
Printed on 2000-8-7 at 19:47 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/1

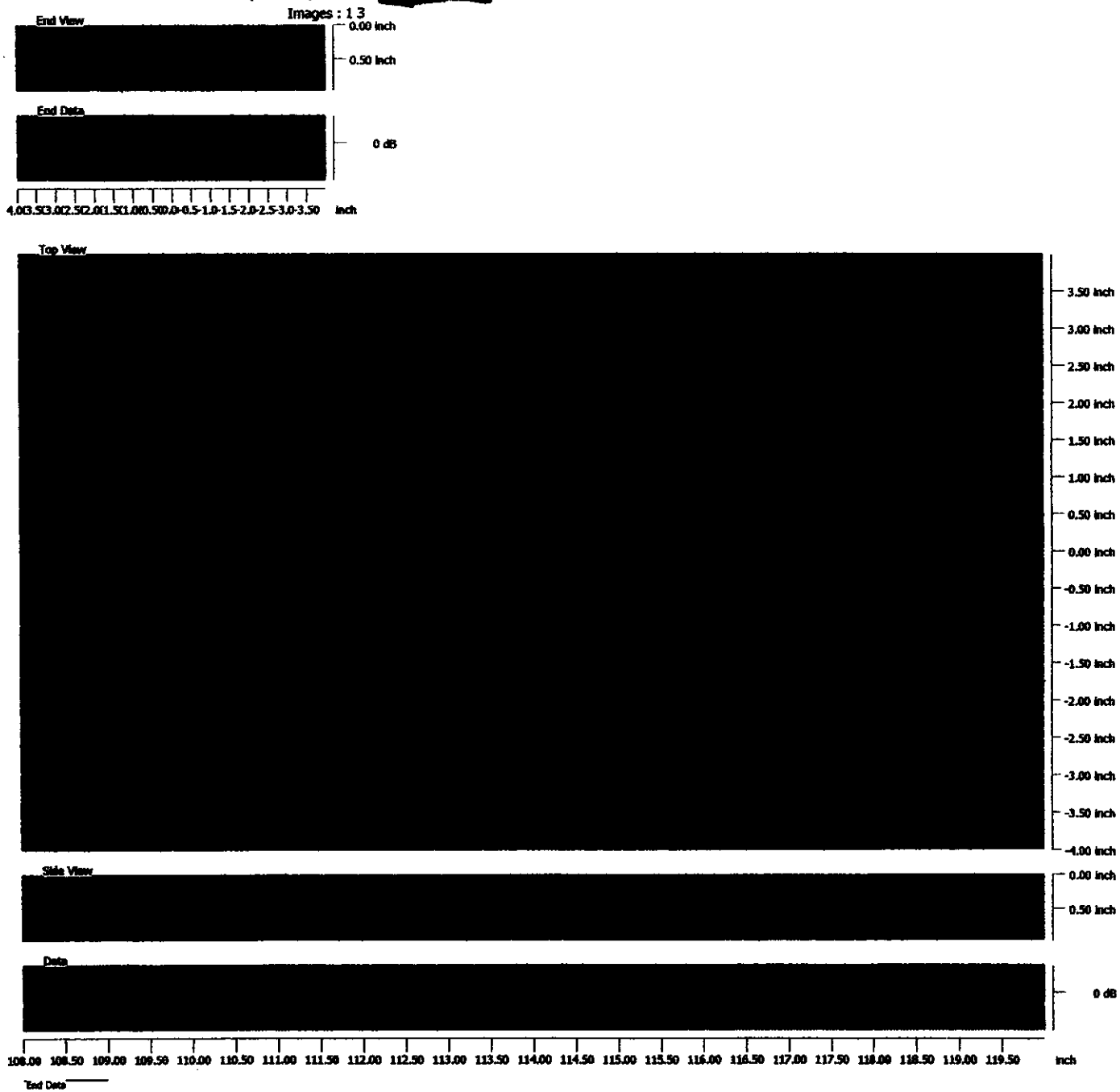
Images : 1 3



HOR./45/WD/P5/Knuckle1
WHN
AP-107
Plate5/knuckle
Printed on 2000-8-7 at 19:47 : P-scan pres.2 <2, 4> of Job [redacted]

1: P-scan, Images, p-scan data2, 6/27/00 12:11
2: P-scan, Images, p-scan data2, 6/27/00 12:11
3: P-scan, Images, p-scan data2, 6/27/00 12:11
4: P-scan, Images, p-scan data2, 6/27/00 12:11

Images : 1 3



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/27/00 11:05 | EXAM STOP: 15:38 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PARTIAL | | COND HOT: |
| CONFIGURATION: Horz. Weld Plate TO Knuckle | | CALIBRATED RANGE: 0" TO 2.65" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | REFERENCE CORRECTION (TRANS. CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS | | .937" NOM THICKNESS |
| FILE NAME/ITEM#: 45 Hor./WD/2 | | TRANSDUCER: ☐ DUAL ☐ SQ ☐ DBLE ☐ ANGLE 45° | | |
| $X_0$ REF. POINT (Lo): SEE 45HOR./WD/1 | $Y_0$ REF. POINT (Wo): ℄ of Weld | SCAN WIDTH: 7" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL SHEET | SET UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
No Crack Like Indications

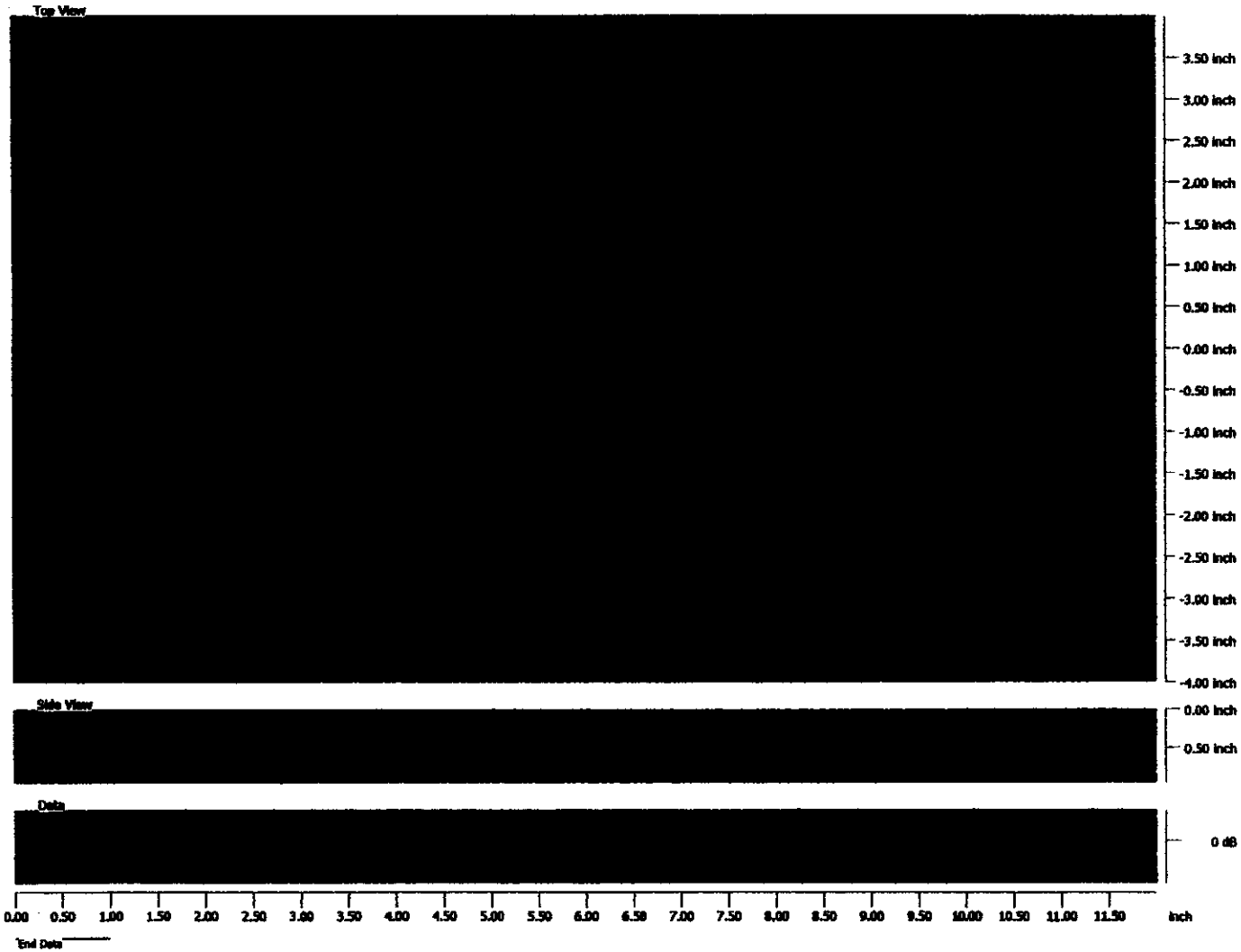
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/27/00 | [signature] Level III Date 8/7/00 | (NI) Level ___ Date ___ | ___ of ___ |

(NI) See Attached Letter from J. B. Elder

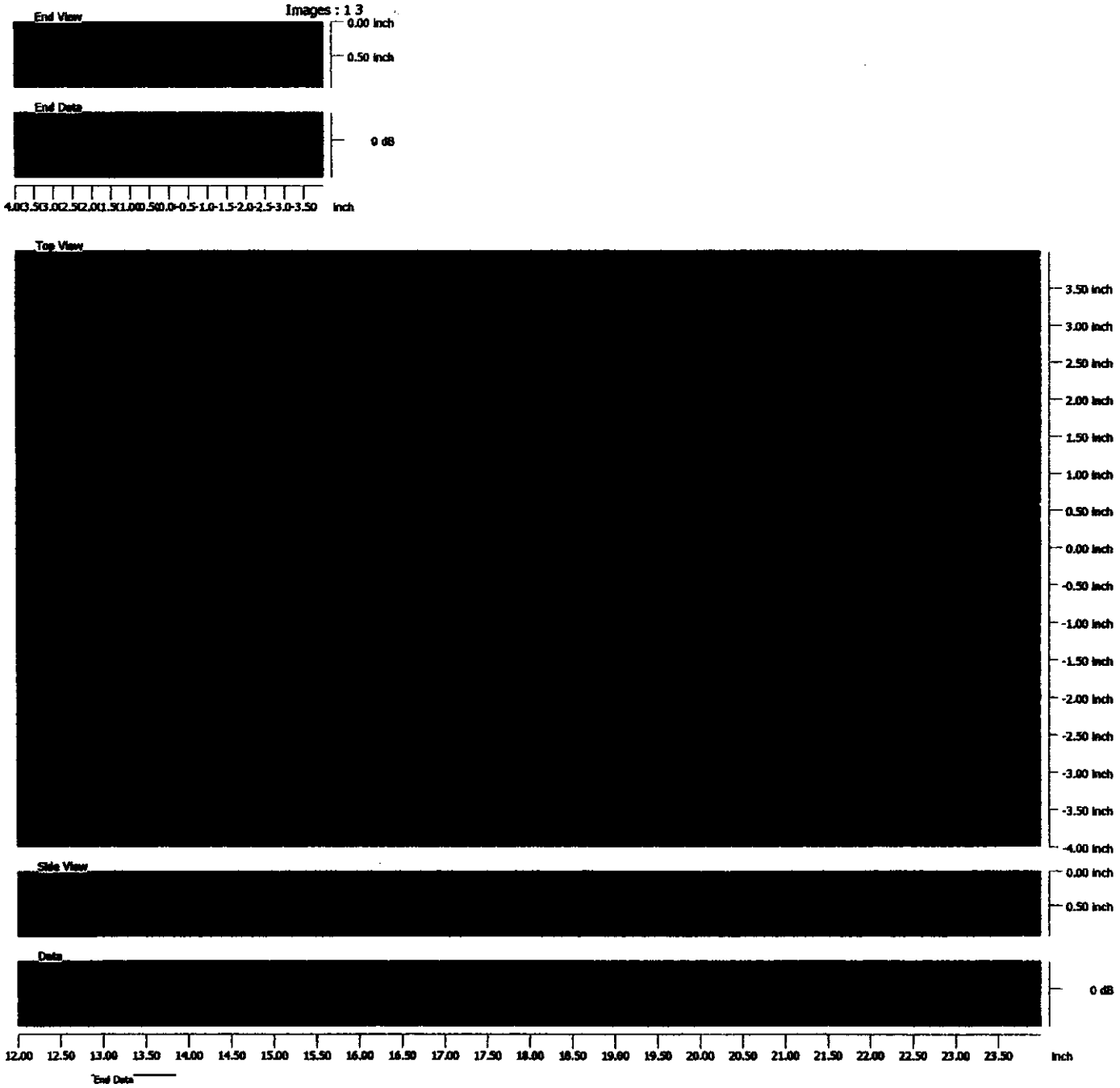
HOR./45/WD/P5/Knuckle1
WHN
AP-107
Plate5/knuckle
Printed on 2000-8-7 at 20:01 : P-scan pres.2 <2, 4> of Job : [redacted]

1: P-scan, Images, p-scan data2, 6/27/00 14:00
2: P-scan, Images, p-scan data2, 6/27/00 14:00
3: P-scan, Images, p-scan data2, 6/27/00 14:00
4: P-scan, Images, p-scan data2, 6/27/00 14:00

Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 14:00
Printed on 2000-8-7 at 20:01 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/2.



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 14:00
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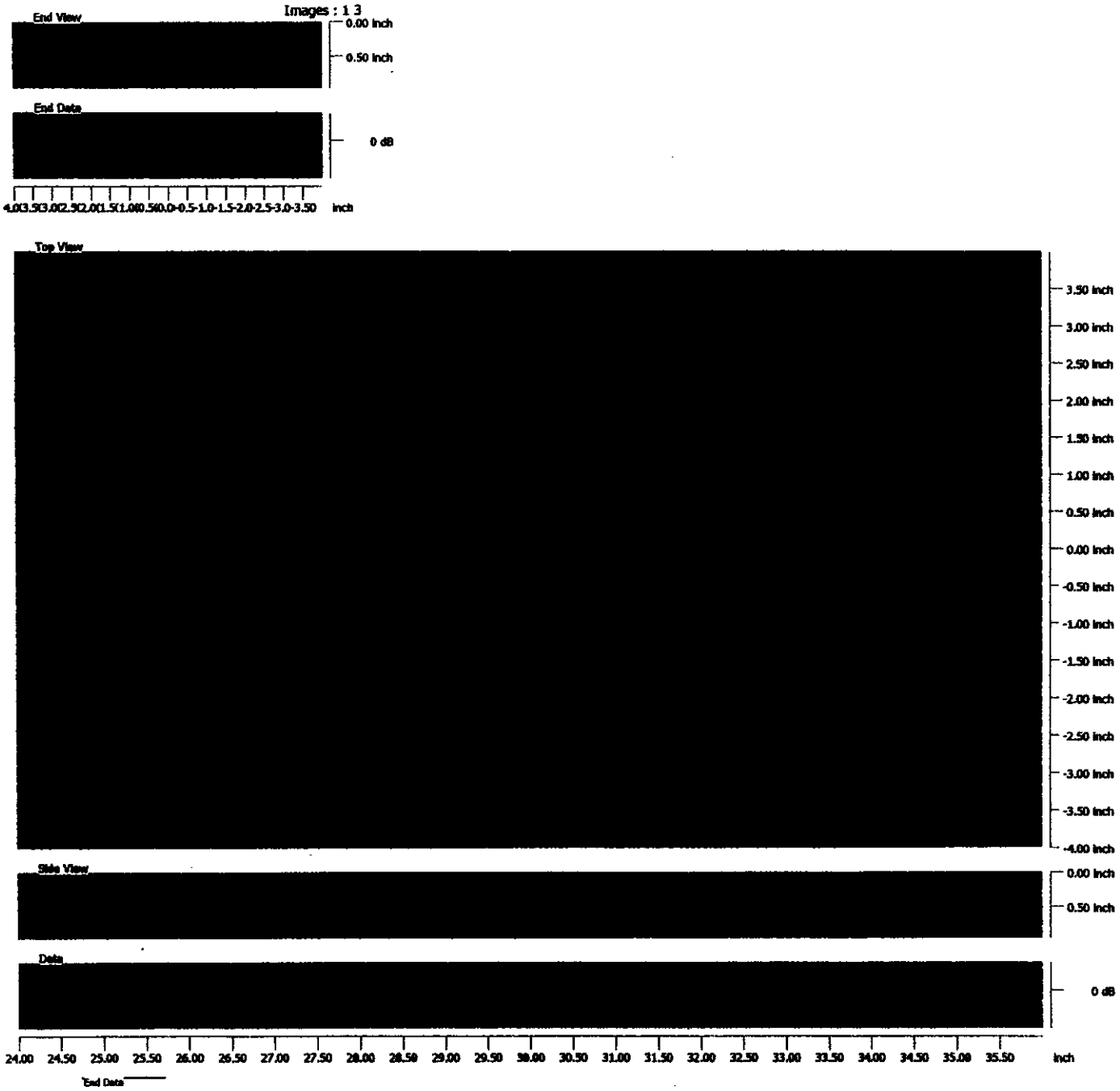
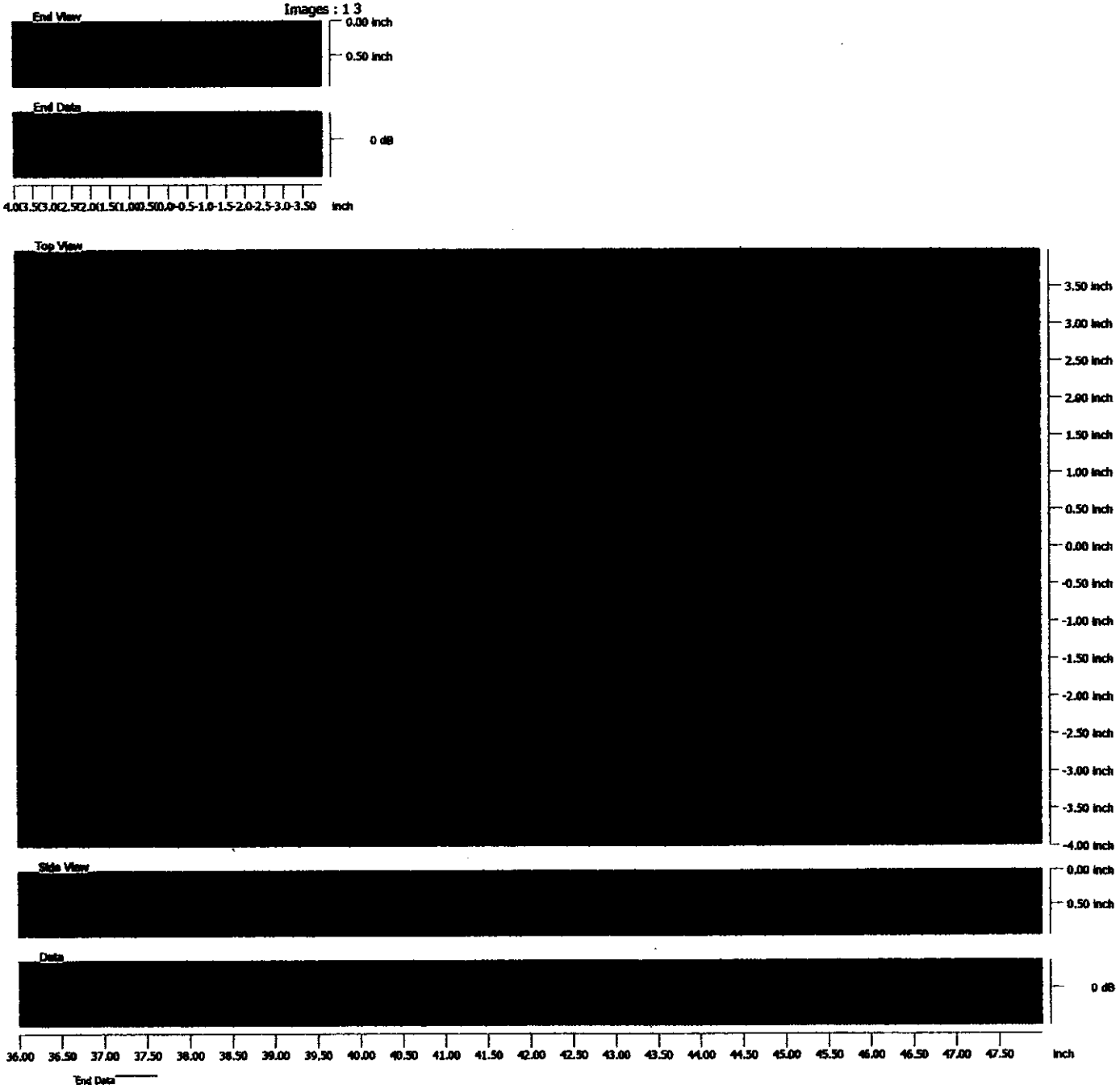


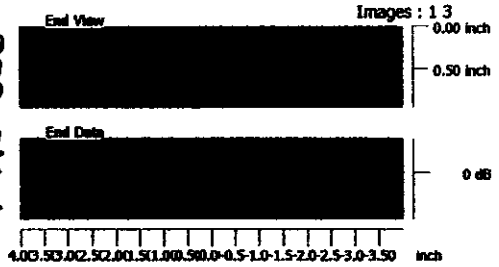
HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 14:00
Printed on 2000-8-7 at 20:03 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/2.

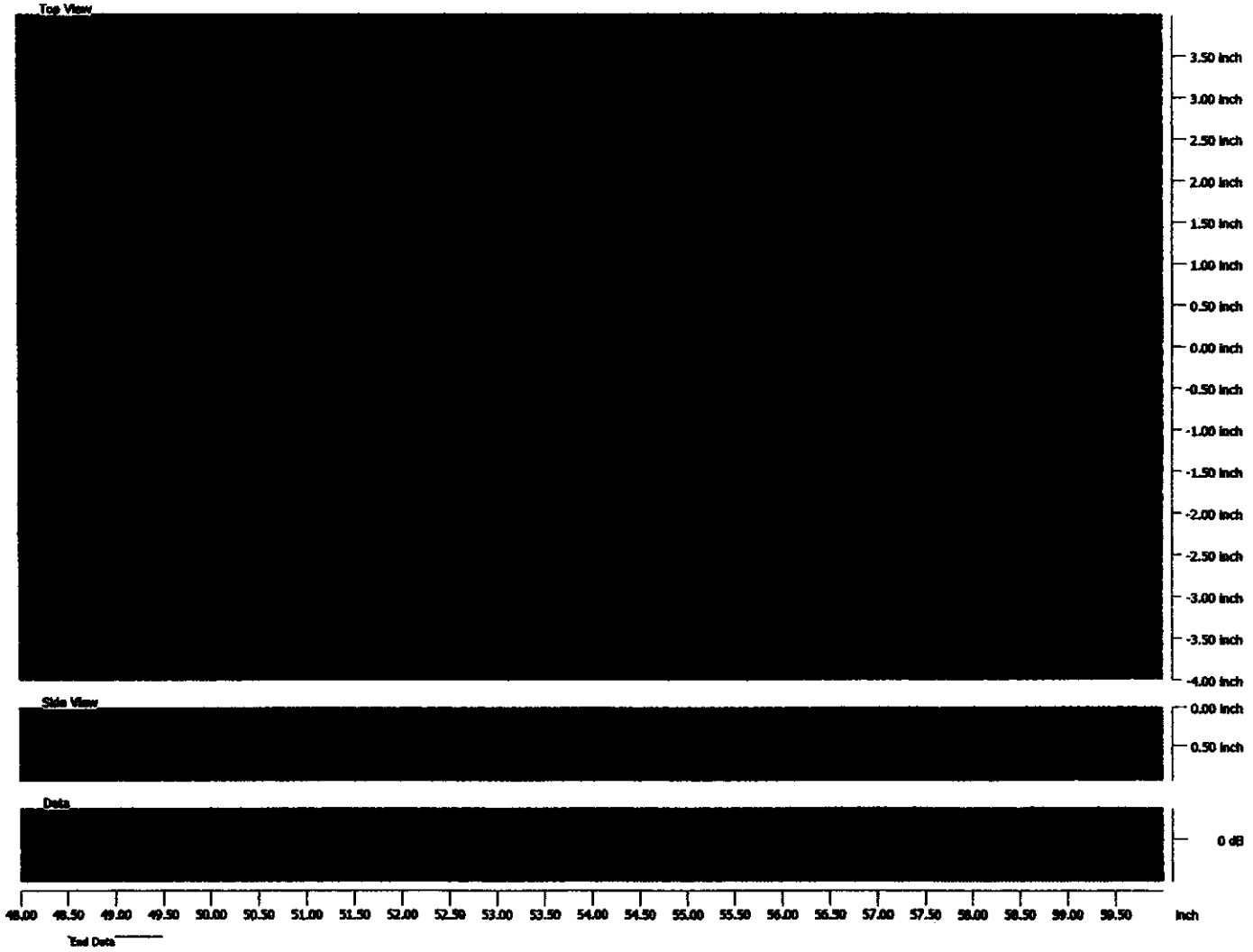
Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 14:00
Printed on 2000-8-7 at 20:03 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/2.

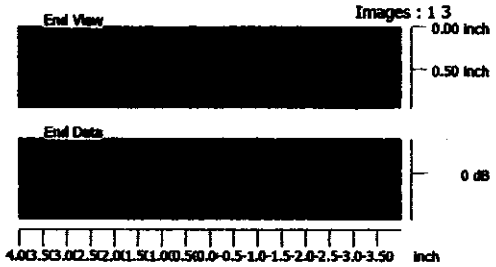
Images : 1 3

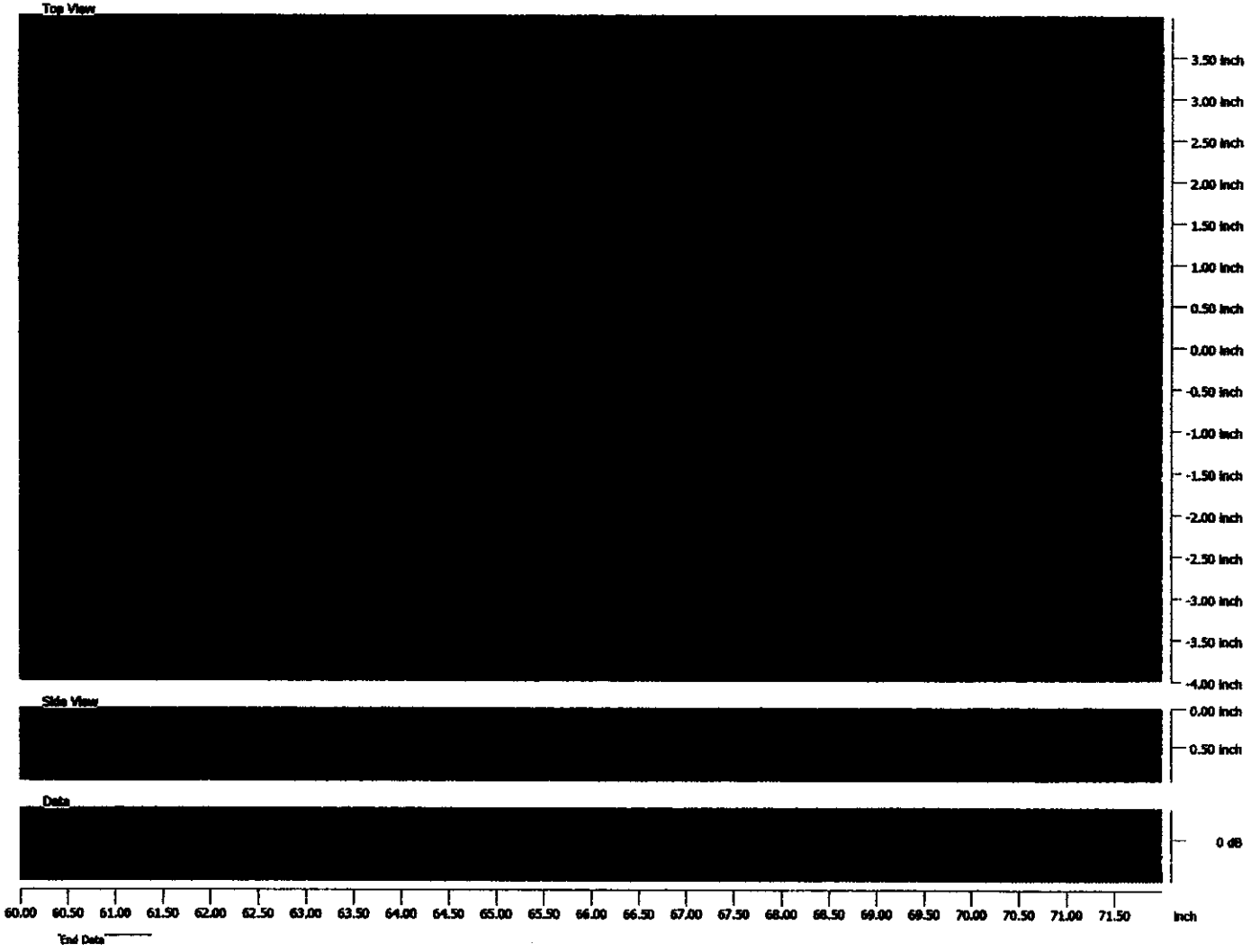


HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 14:00
Printed on 2000-8-7 at 20:06 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/2.

Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 14:00
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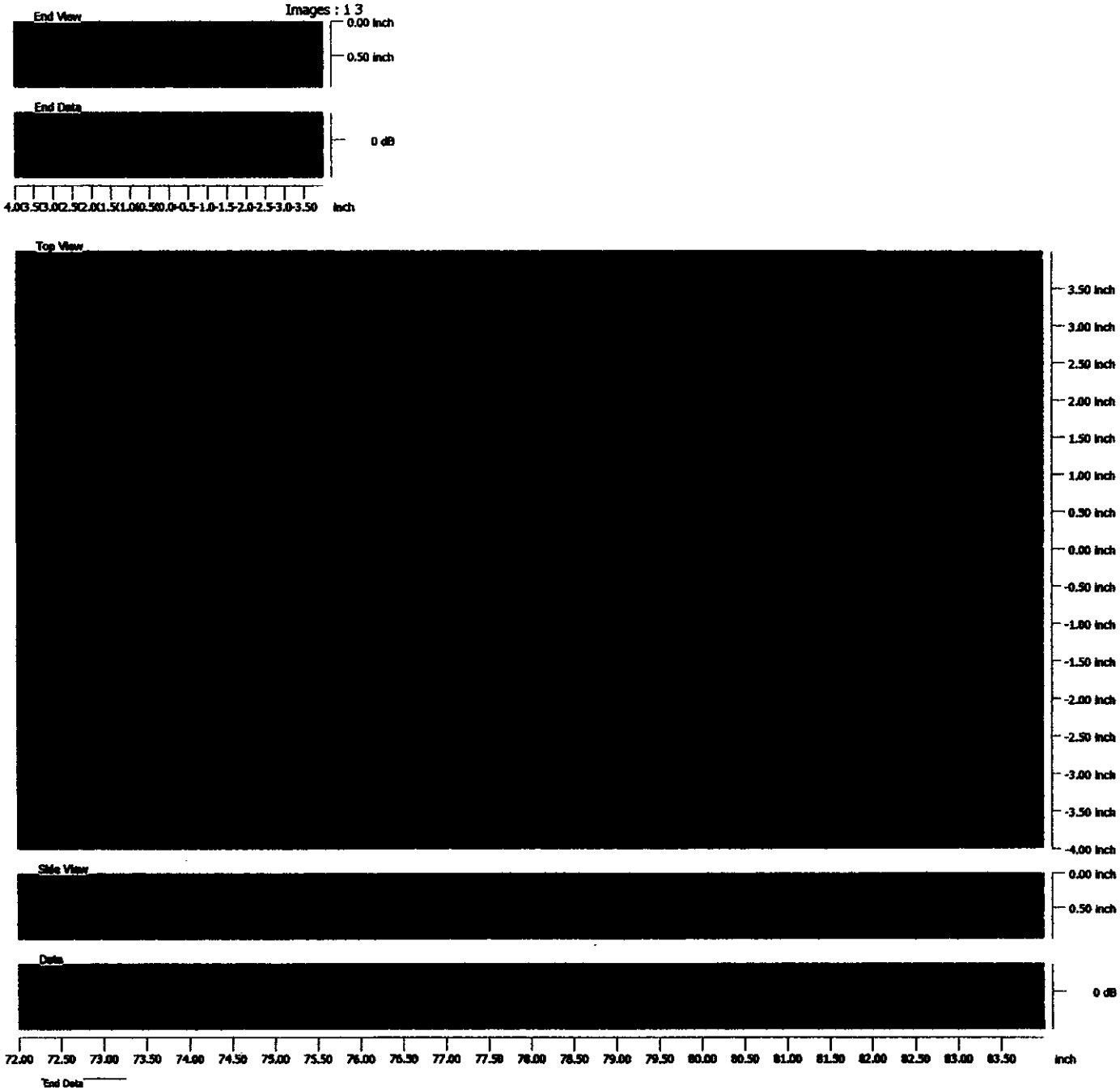
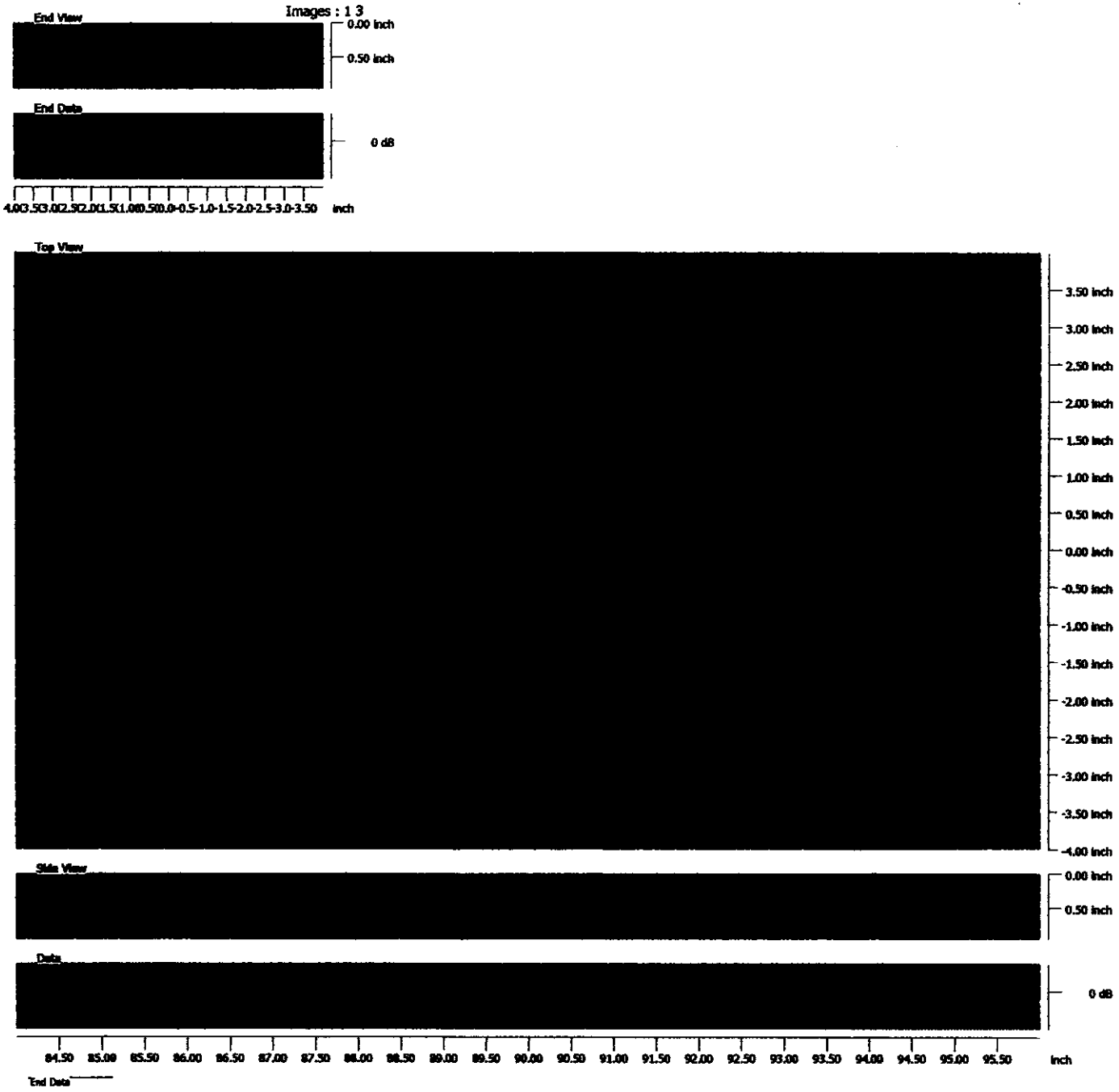
Images : 1 3

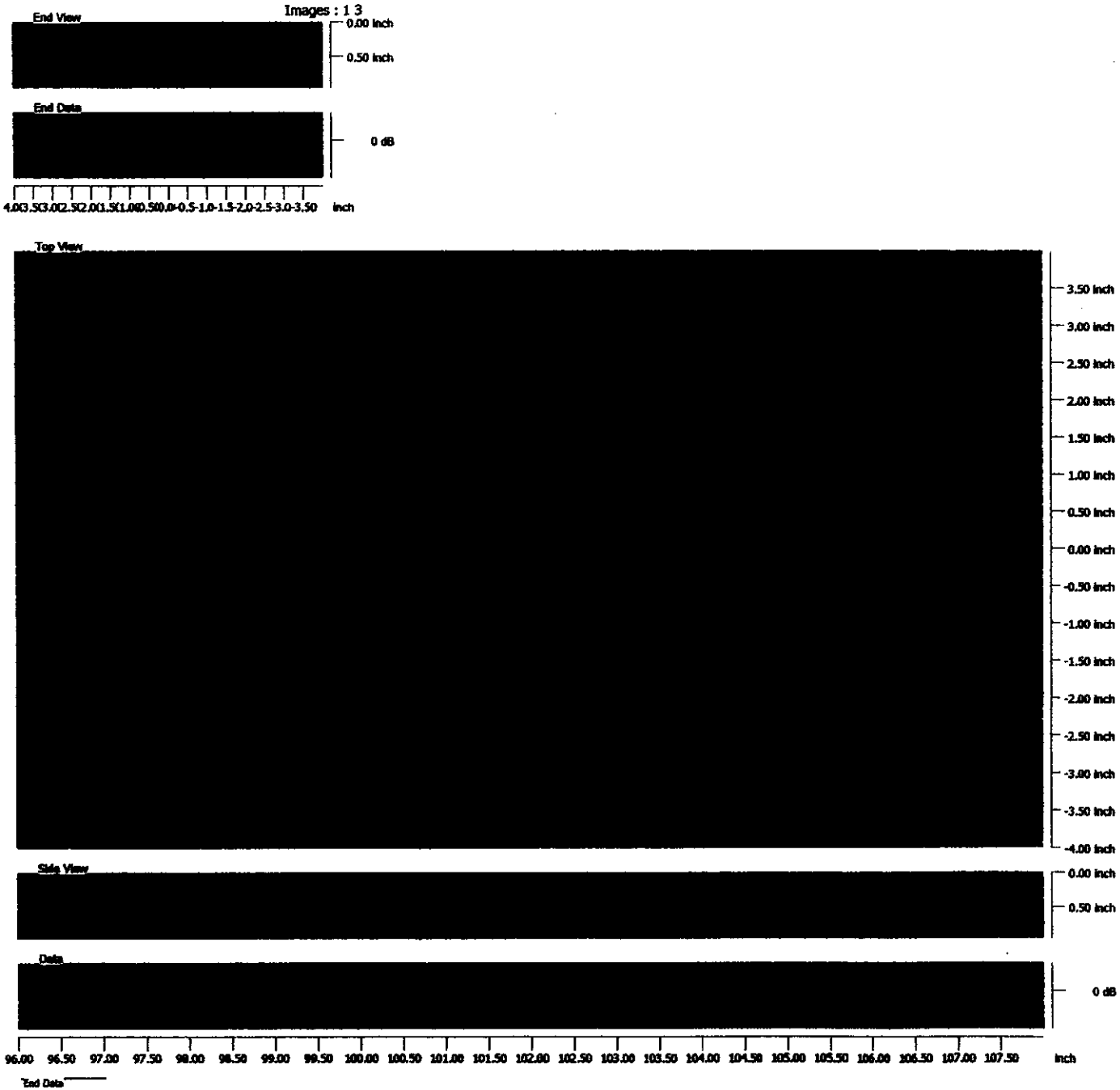


HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 14:00
Printed on 2000-8-7 at 20:06 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/2.

Images : 1 3



HOR./45/WD/P5/Knuckle1 — 1: P-scan, Images, p-scan data2, 6/27/00 14:00
WHN — 2: P-scan, Images, p-scan data2, 6/27/00 14:00
AP-107 — 3: P-scan, Images, p-scan data2, 6/27/00 14:00
Plate5/knuckle — 4: P-scan, Images, p-scan data2, 6/27/00 14:00
Printed on 2000-8-7 at 20:07 : P-scan pres.2 <2, 4> of Job : 45HOR./WD/2.

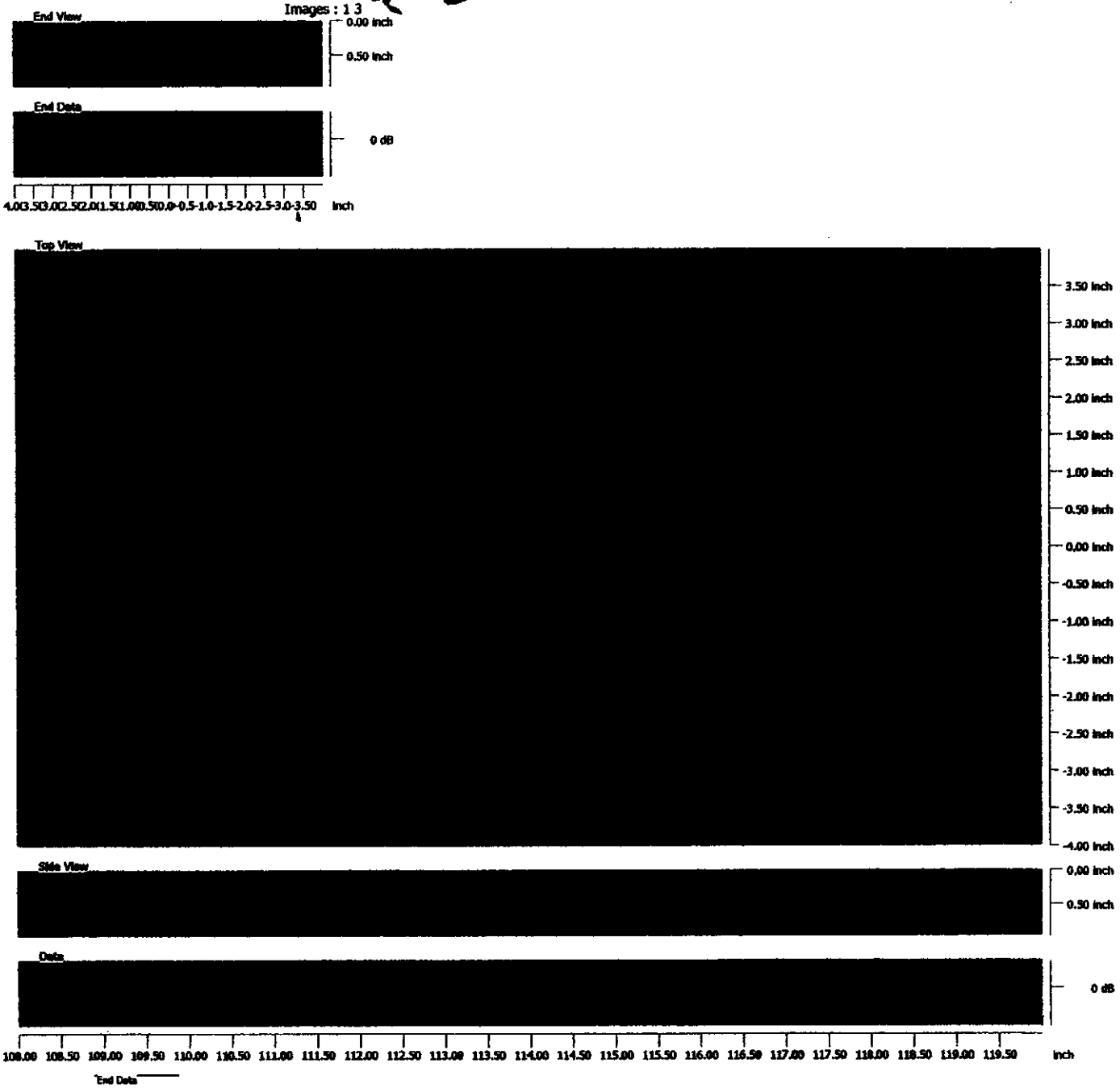


HOR./45/WD/P5/Knuckle1
WHN
AP-107
Plate5/knuckle

1: P-scan, Images, p-scan data2, 6/27/00 14:00
2: P-scan, Images, p-scan data2, 6/27/00 14:00
3: P-scan, Images, p-scan data2, 6/27/00 14:00
4: P-scan, Images, [redacted] 6/27/00 14:00

Printed on 2000-8-7 at 20:07 : P-scan pres.2 <2, 4> of Job [redacted]

Images : 1 3



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/28/00 9:30 | EXAM END: 17:27 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: KNUCKLE | TO: | CALIBRATED RANGE: 0" To 2.65" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | REF LEVEL CORRECTION (TRANS CORR): Ø DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: Ø | MATERIAL TYPE: ☐ SS ☒ CS OTHER .937" NOM. THICKNESS | | |
| FILE NAME/ITEM#: KNUCKLE SCAN 107 AP | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 0DEG ☒ ANGLE 45° | | |
| $X_0$ REF. POINT (Lo): 102.5" From 1st Vert Weld | $Y_0$ REF POINT (Wo): .5" BELOW HORZ. WELD | SCAN WIDTH: 5.9" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO CRACK-LIKE INDICATIONS
Vert. Weld At 102.5" To 103.5"

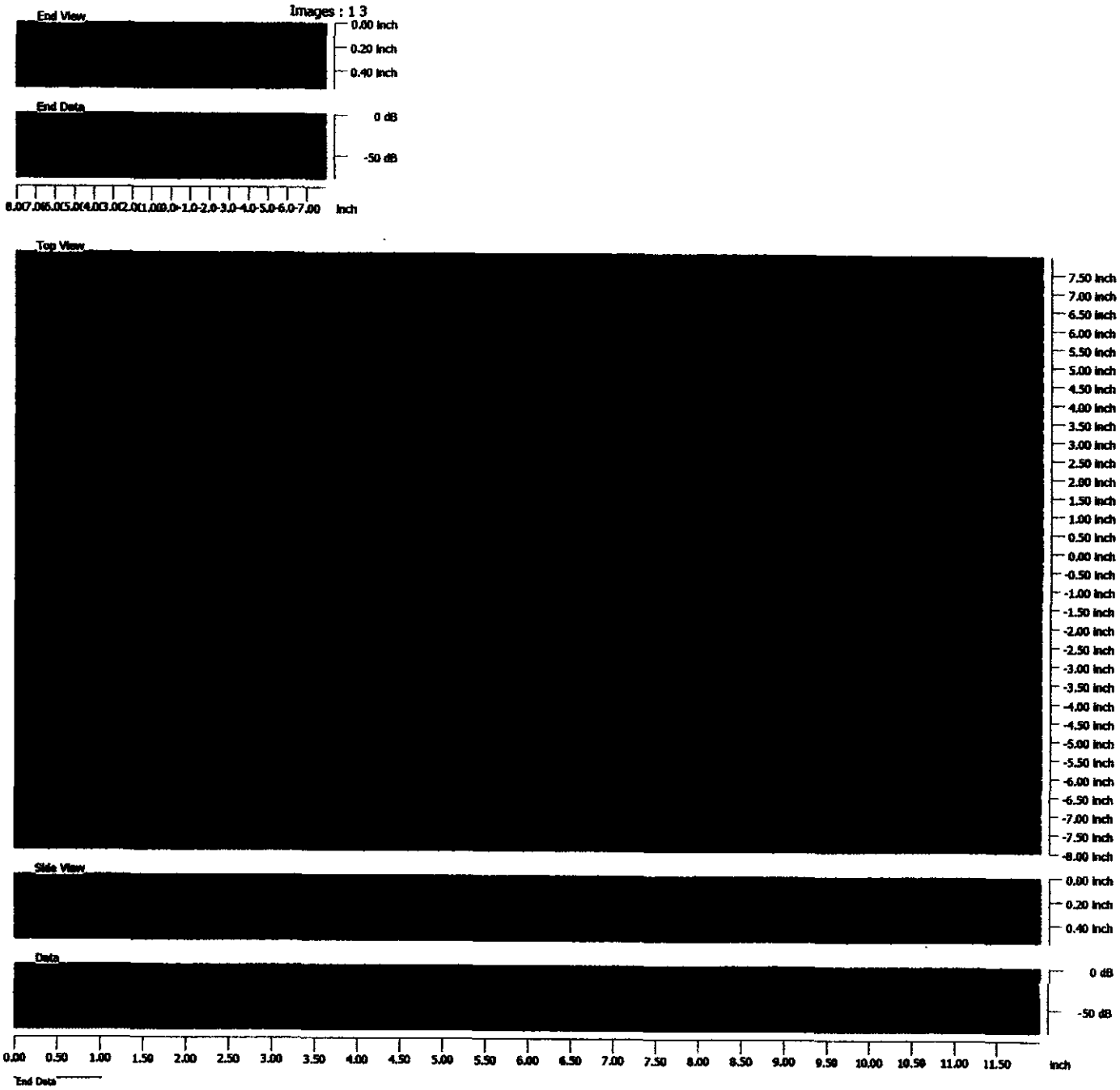
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/28/00 | [signature] Level III Date 8/2/00 | (N1) Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B. Elder

Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:49 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.

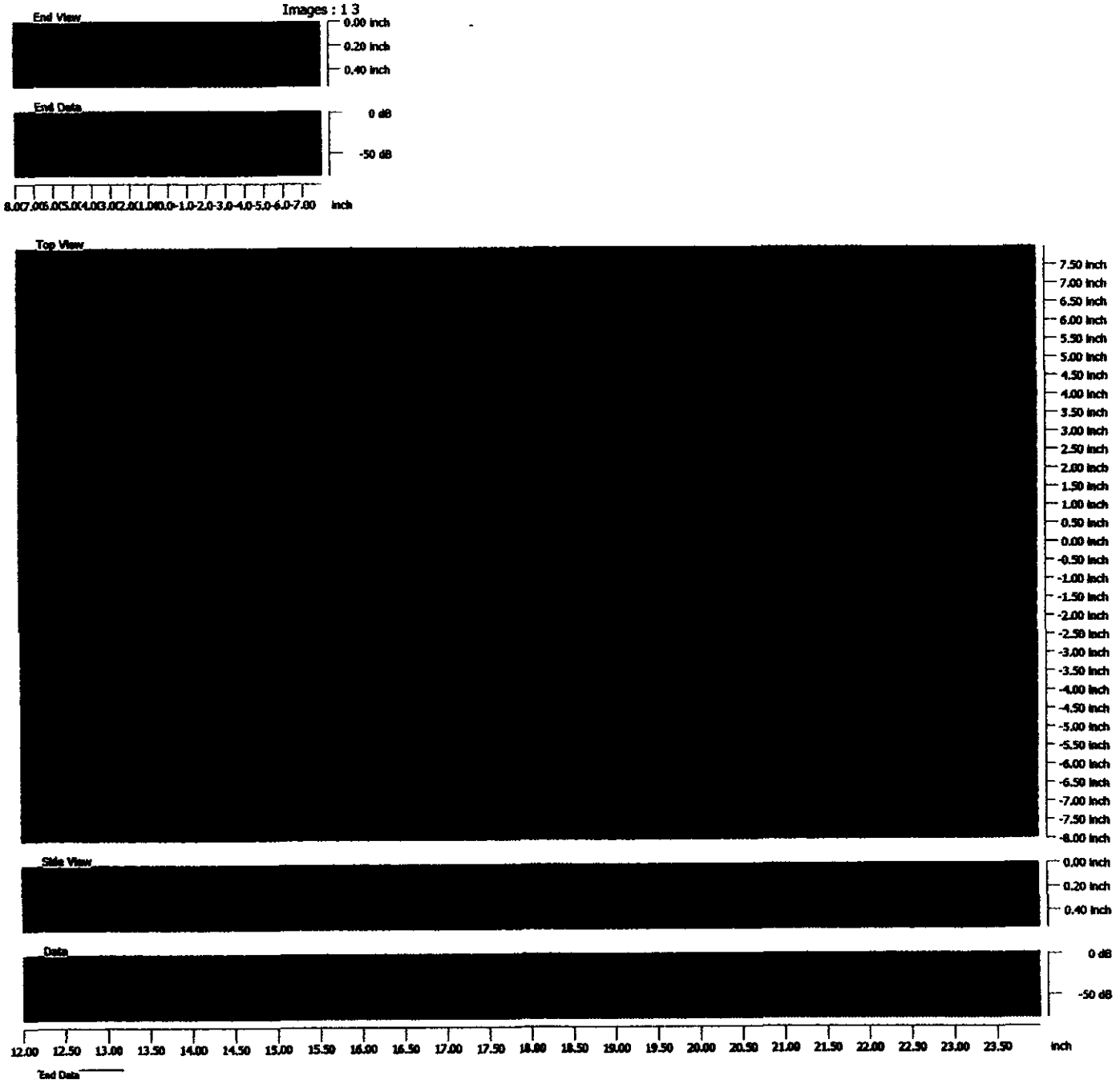


Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:50 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.

Images : 1 3

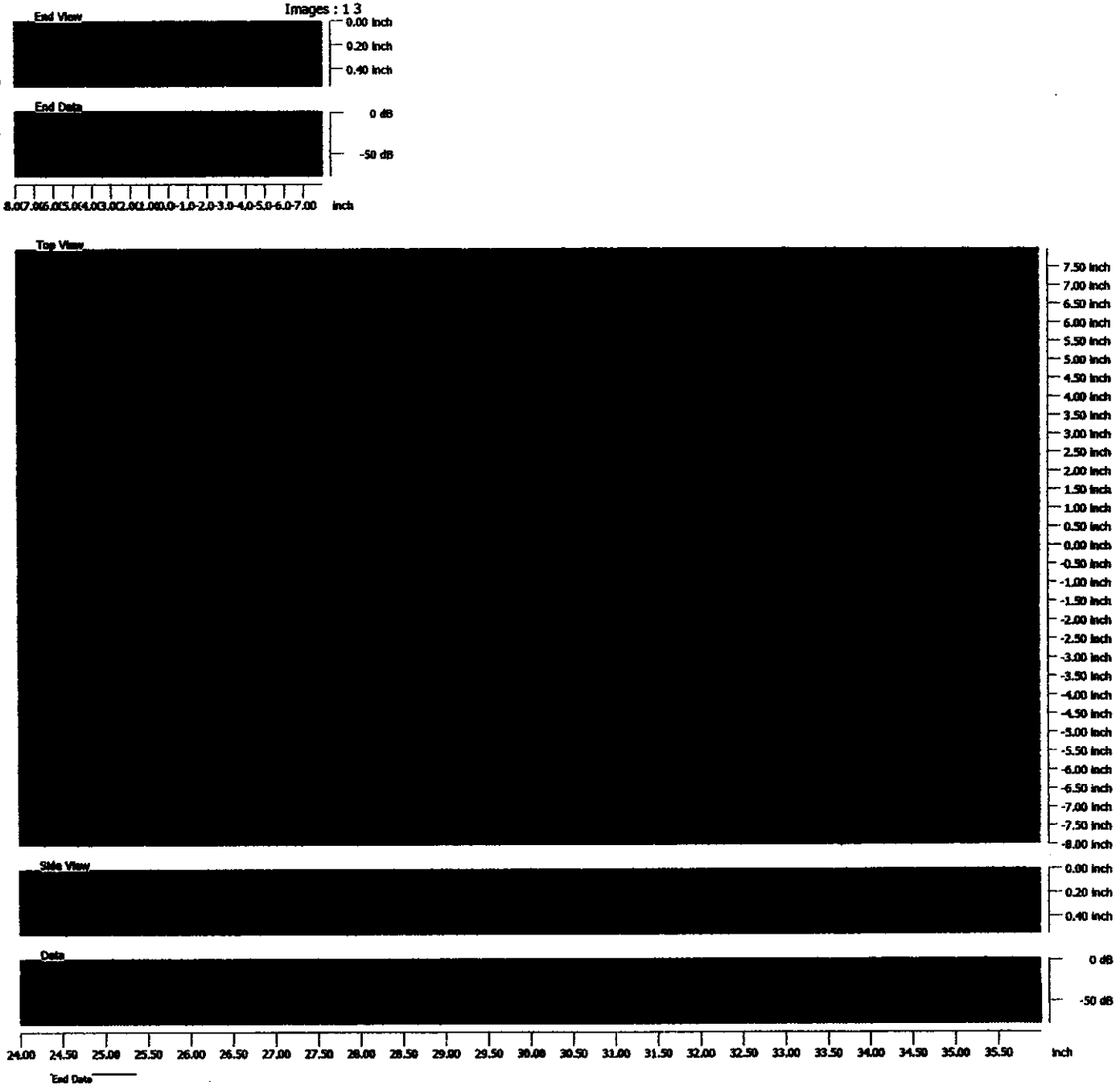


Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:50 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.

Images : 1 3



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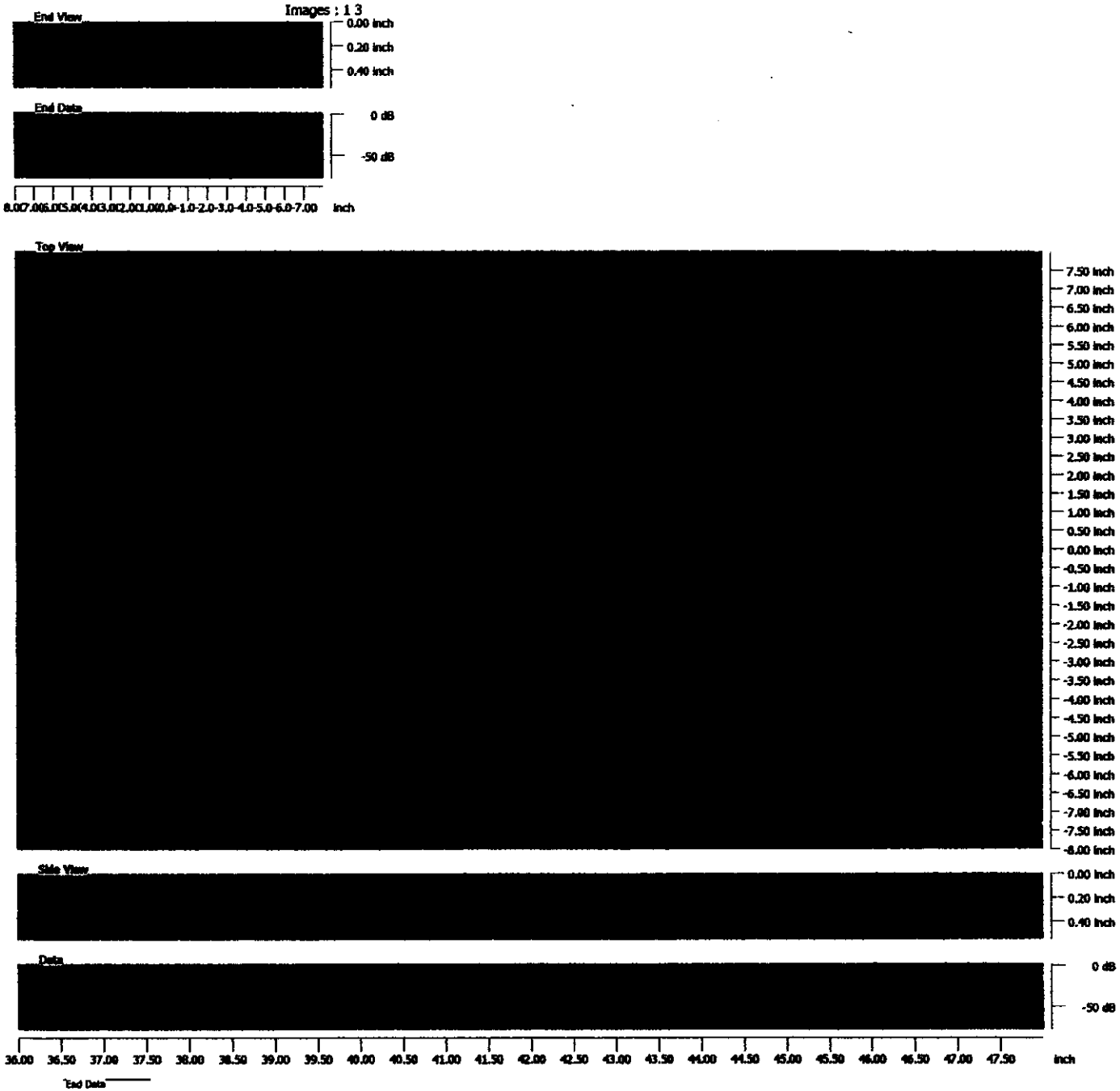
Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:50 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.

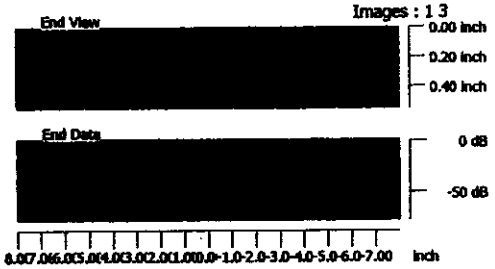


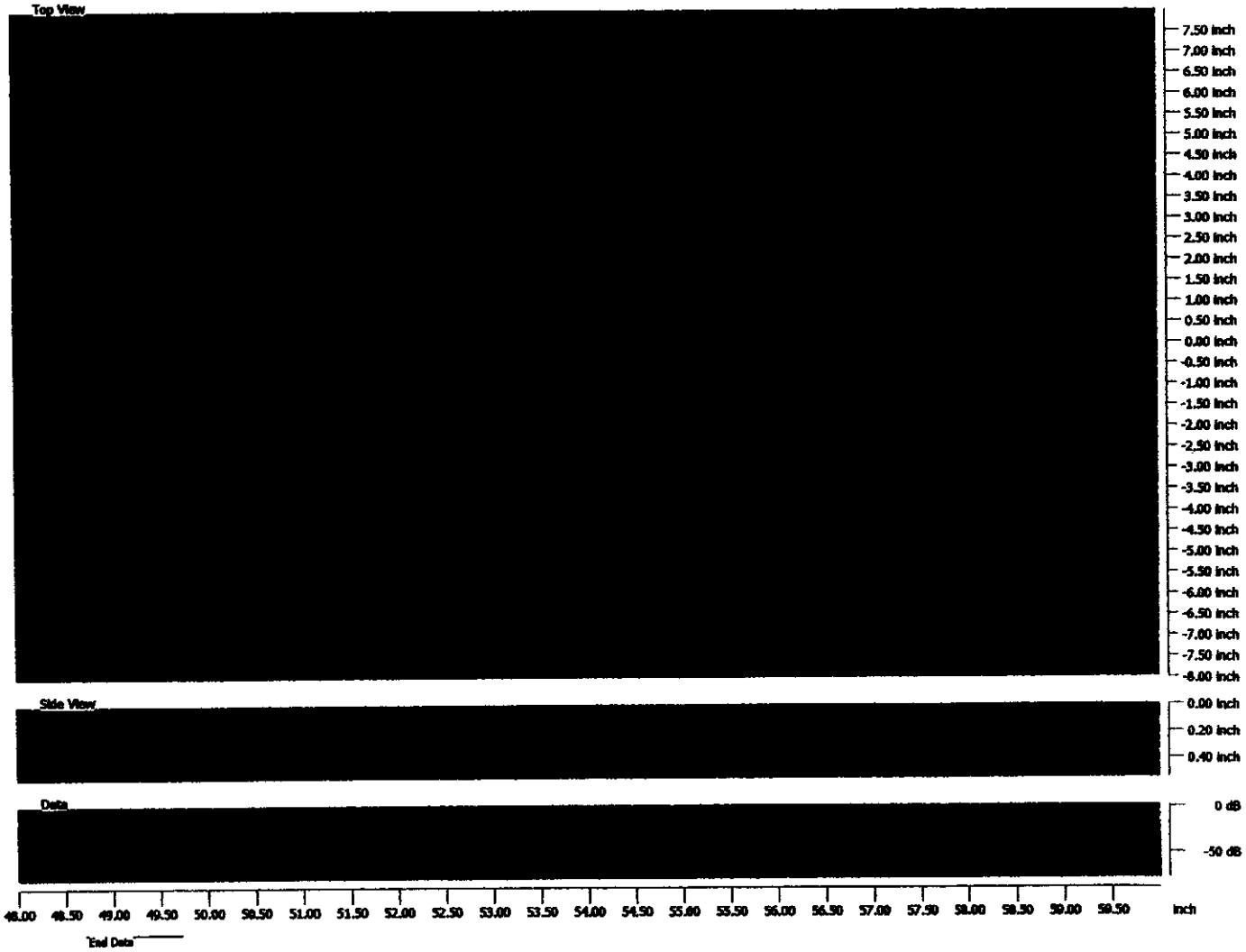
Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:50 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.

Images : 1 3



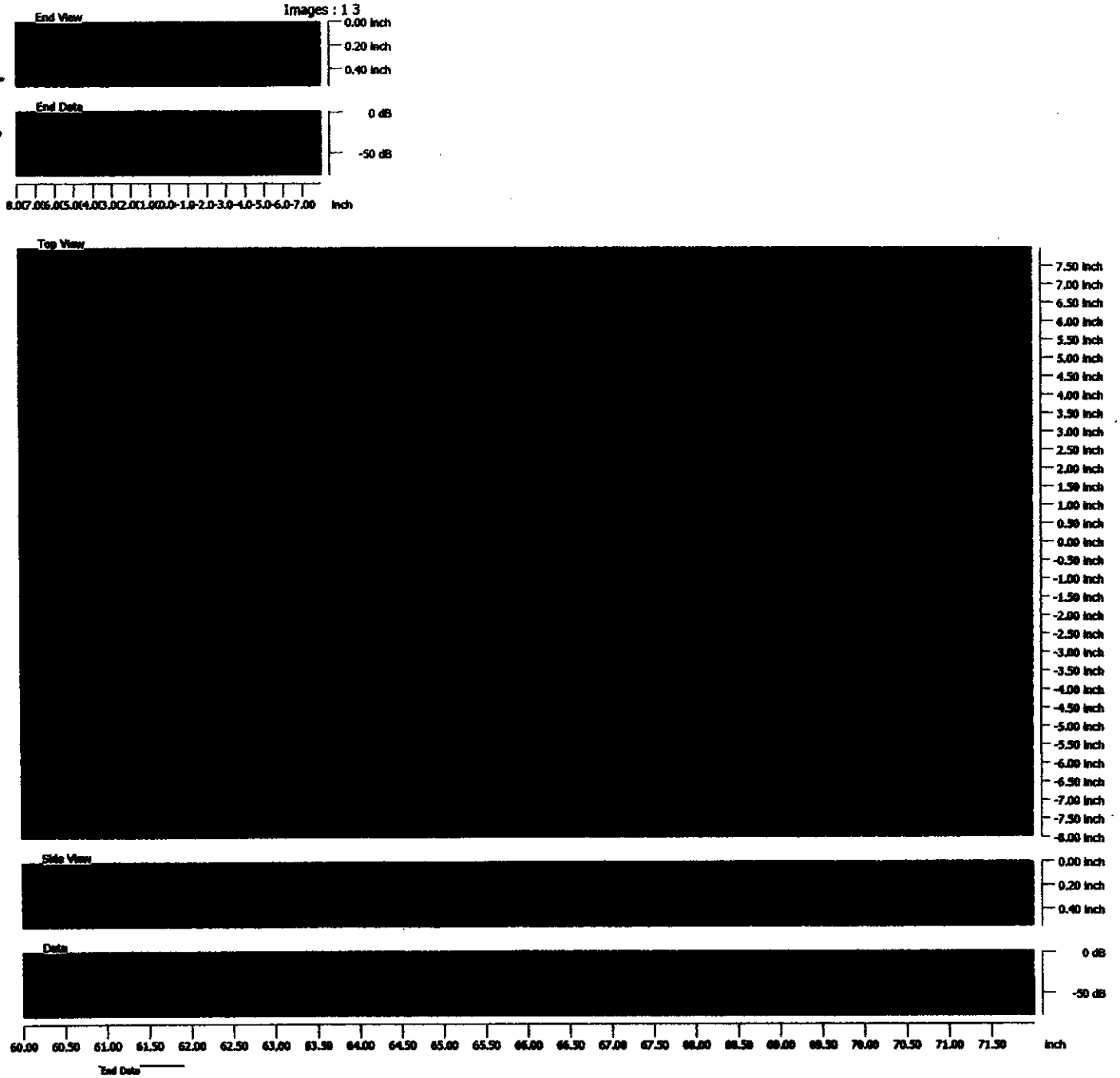



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:51 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.

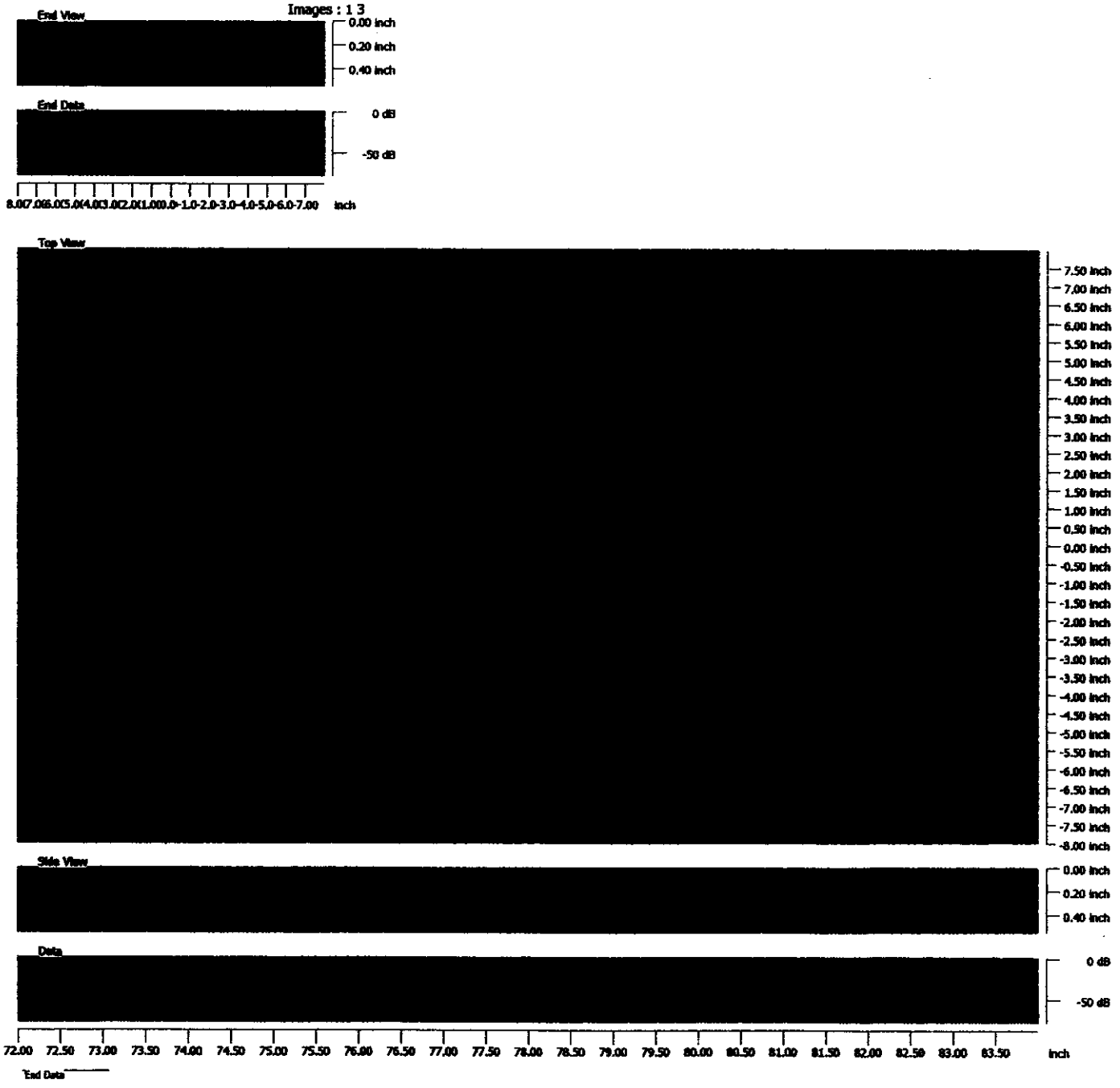
Images : 1 3



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:51 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.

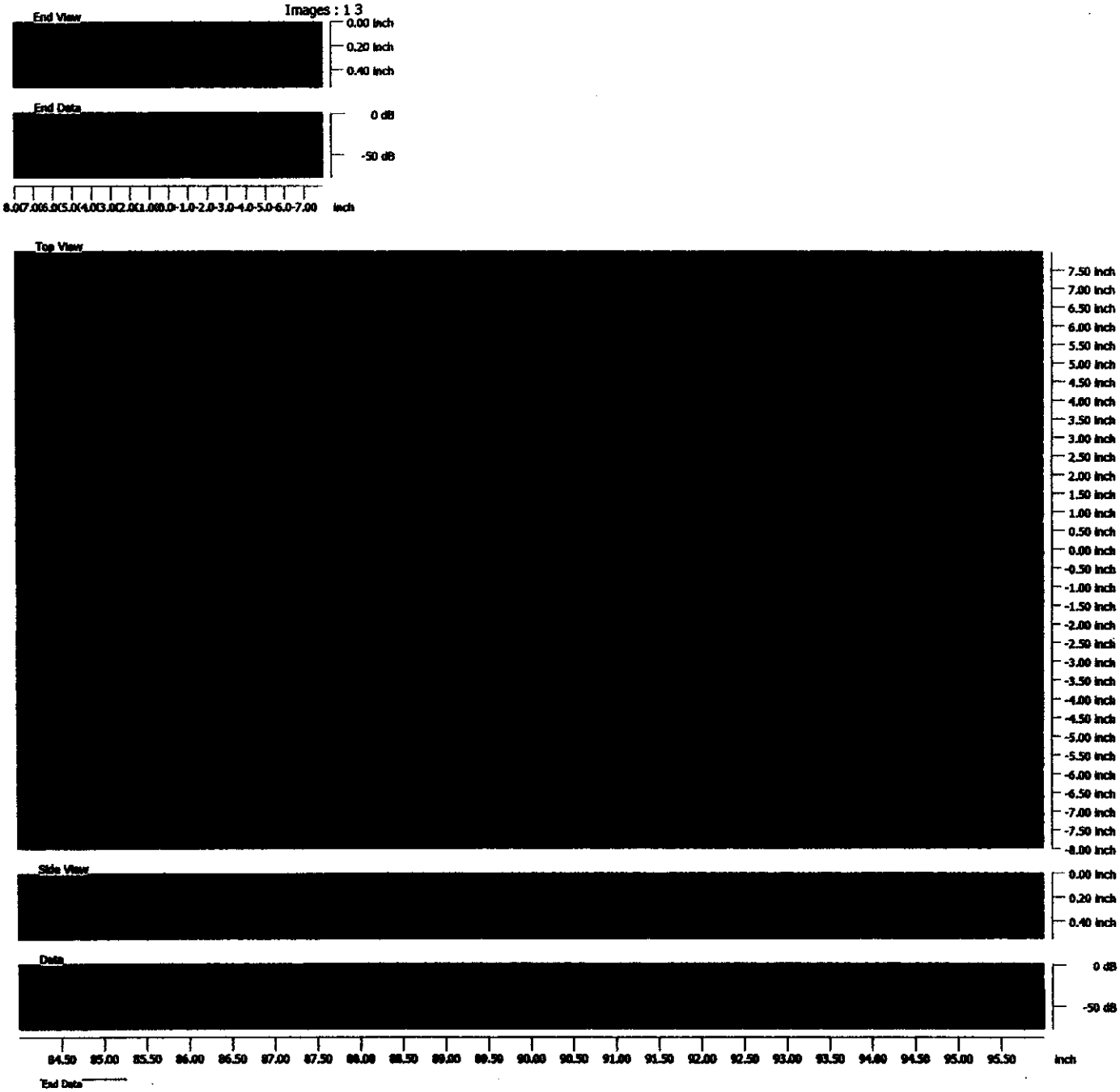


Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:51 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.

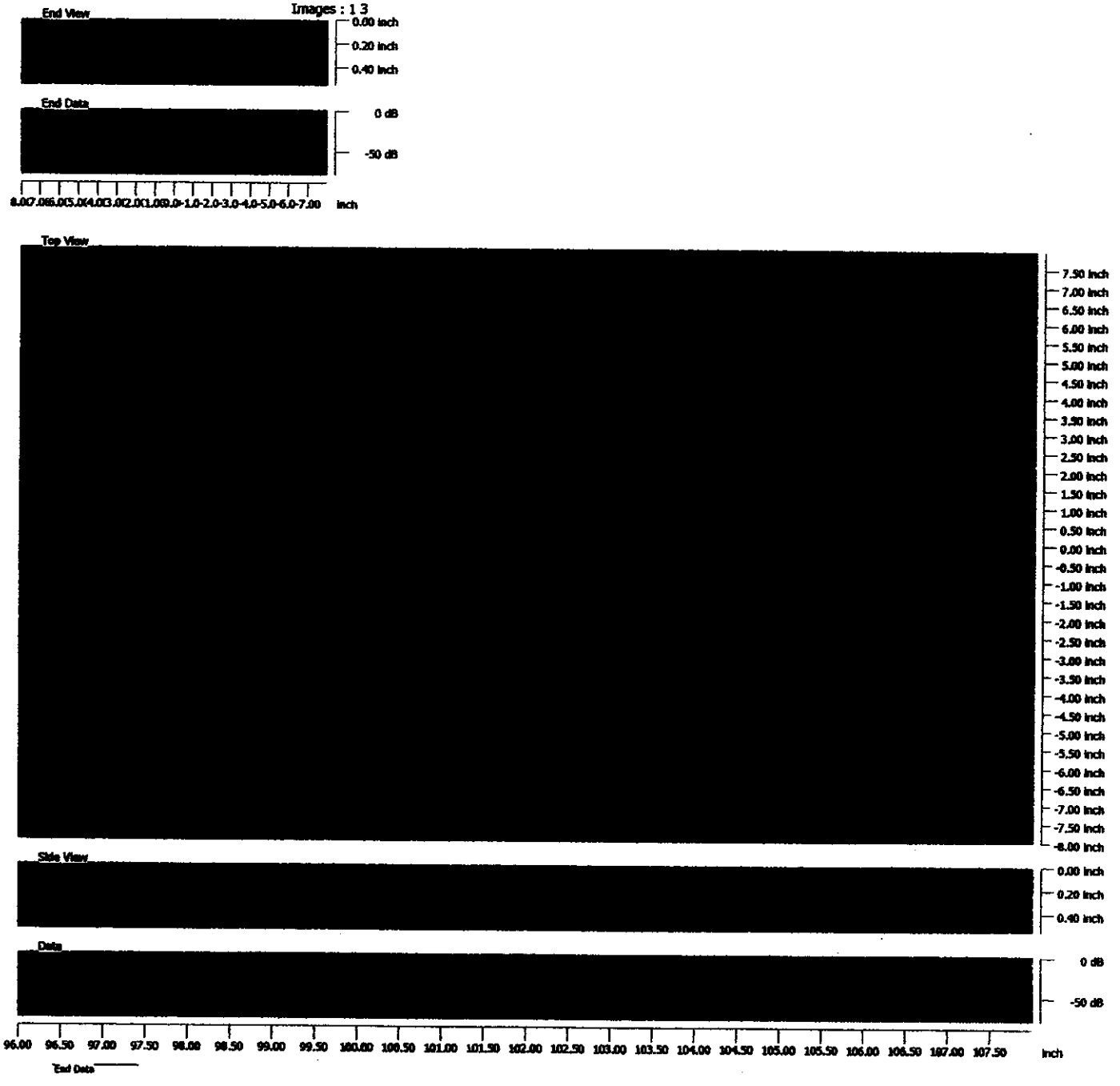
Images : 1 3



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

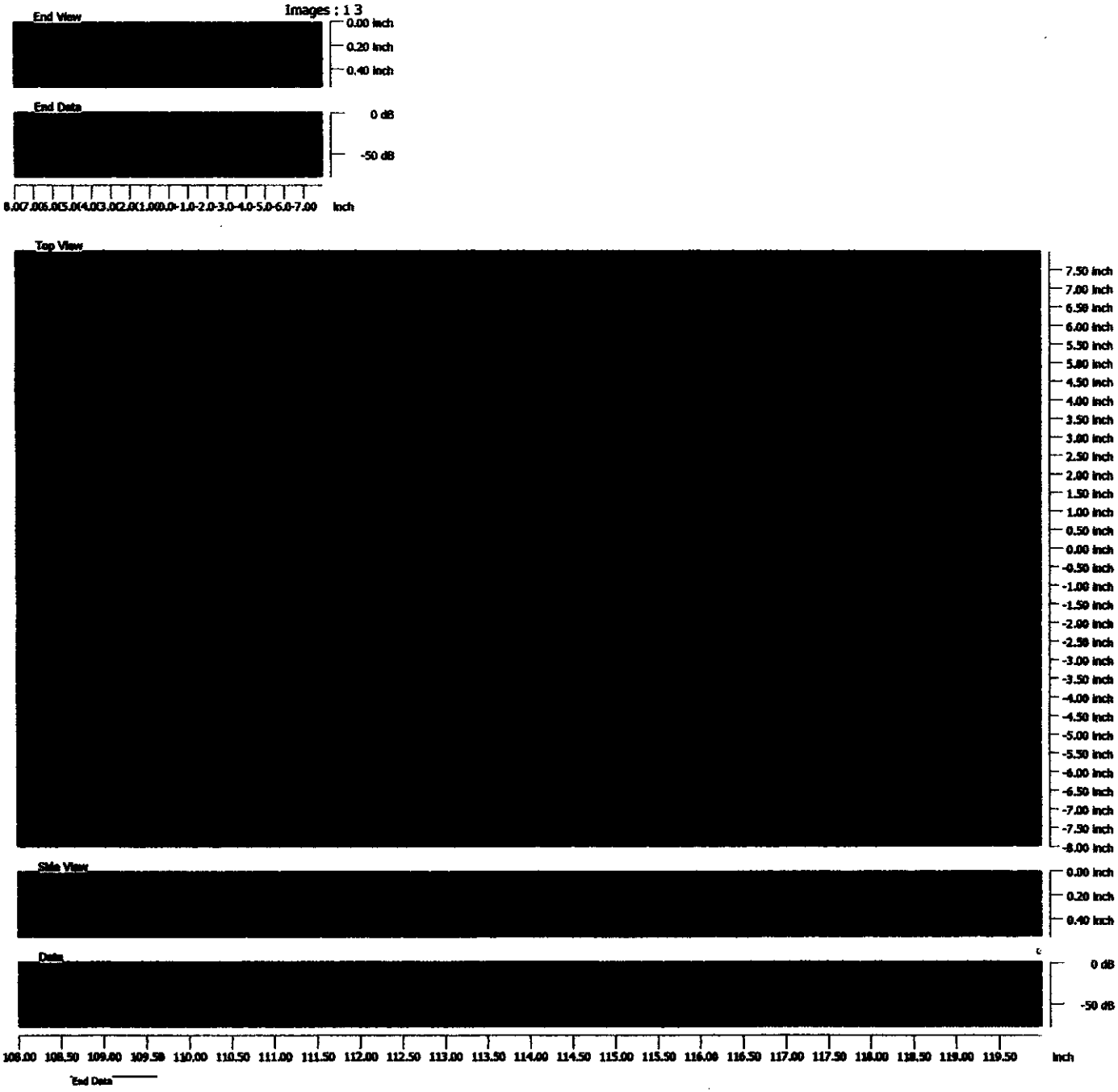
Printed on 2000-8-7 at 16:52 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 12:54
2: P-scan, Images, p-scan data1, 6/28/00 12:54
3: T-scan, Images, p-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:52 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP.



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/28/00 9:20 | EXAM END: 17:27 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .937" |
| CONFIGURATION: KNUCKLE | TO | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 120" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION |
| FILE NAME/ITEM#: KNUCKLE SCAN 107AP | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$): 1026" FROM 1ST VERT WELD | $Y_0$ REF. POINT ($W_0$): .5" BELOW HORZ WELD | SCAN WIDTH: 5.9" | | |

| PART #/ INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK. R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0 | 12 | | | .940" | .915" | | |
| | 12 | 24 | | | .937" | .925" | | |
| | 24 | 36 | | | .935" | .919" | | |
| | 36 | 48 | | | .935" | .910" | | |
| | 48 | 60 | | | .931" | .923" | | |
| | 60 | 72 | | | .930" | .923" | | |
| | 72 | 84 | | | .932" | .910" | | |
| | 84 | 96 | | | .936" | .920" | | |
| | 96 | 108 | | | .950" | .920" | | |
| | 108 | 120 | | | .952" | .937" | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| SUMMARY | | | | | | | | |

REMARKS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley H. Nelson | Wesley H. Nelson | (N1) | |
| Level III Date 6/28/00 | Level III Date 8/7/00 | Level ___ Date ___ | ___ of ___ |

(N1) See Attached Letter From J. B. Elder

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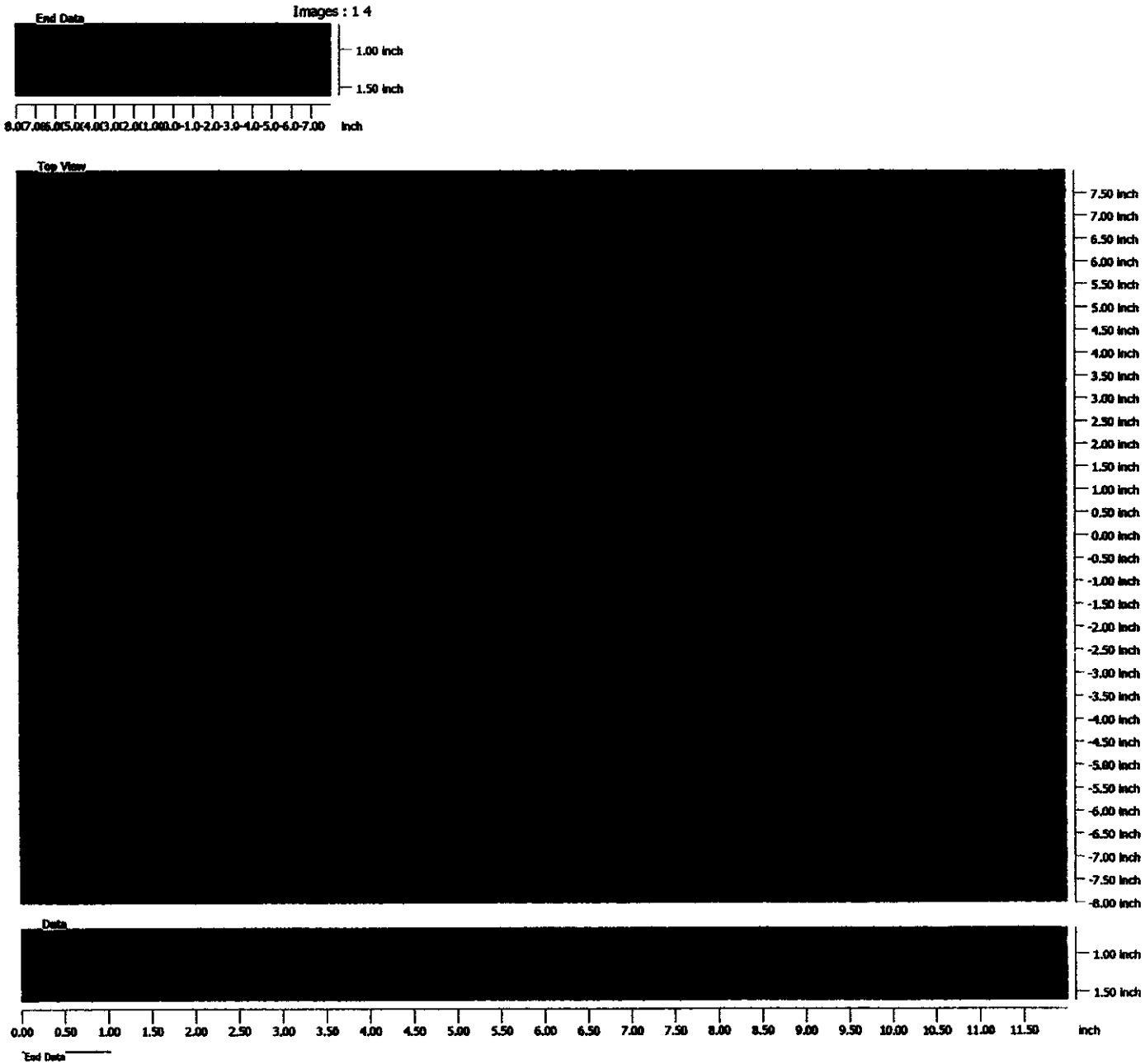
Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

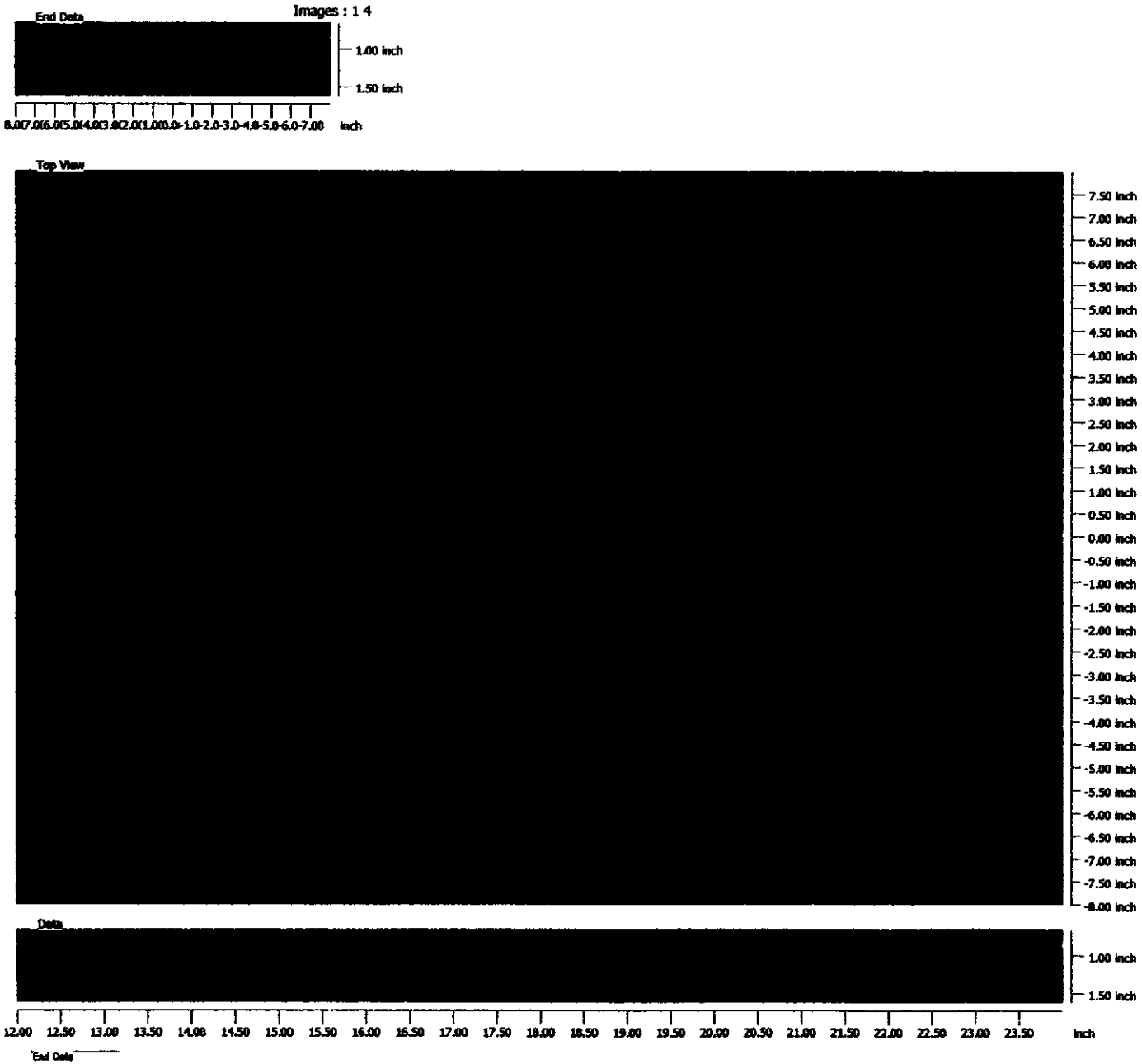
Printed on 2000-8-7 at 16:57 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

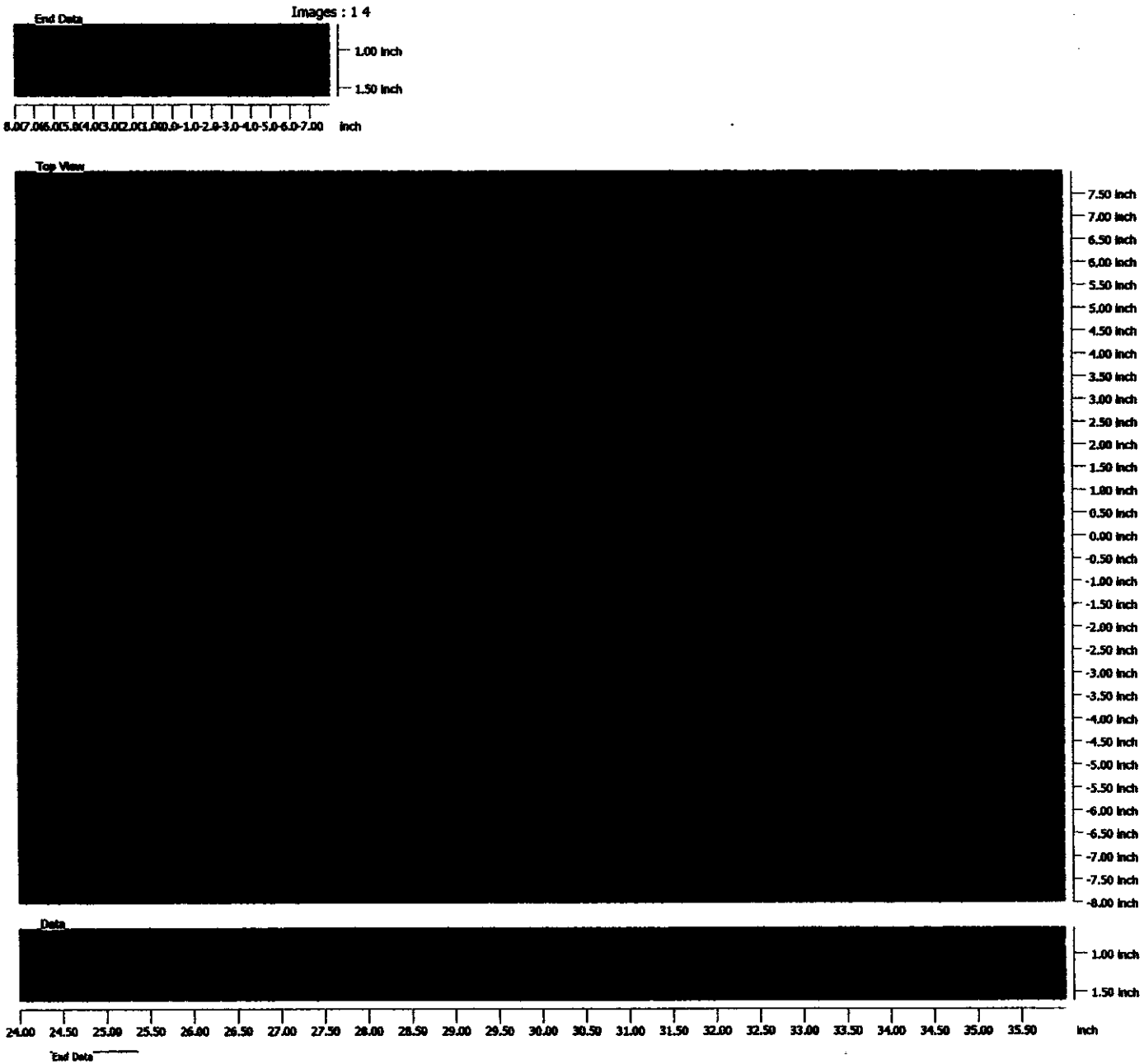
Printed on 2000-8-7 at 16:58 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

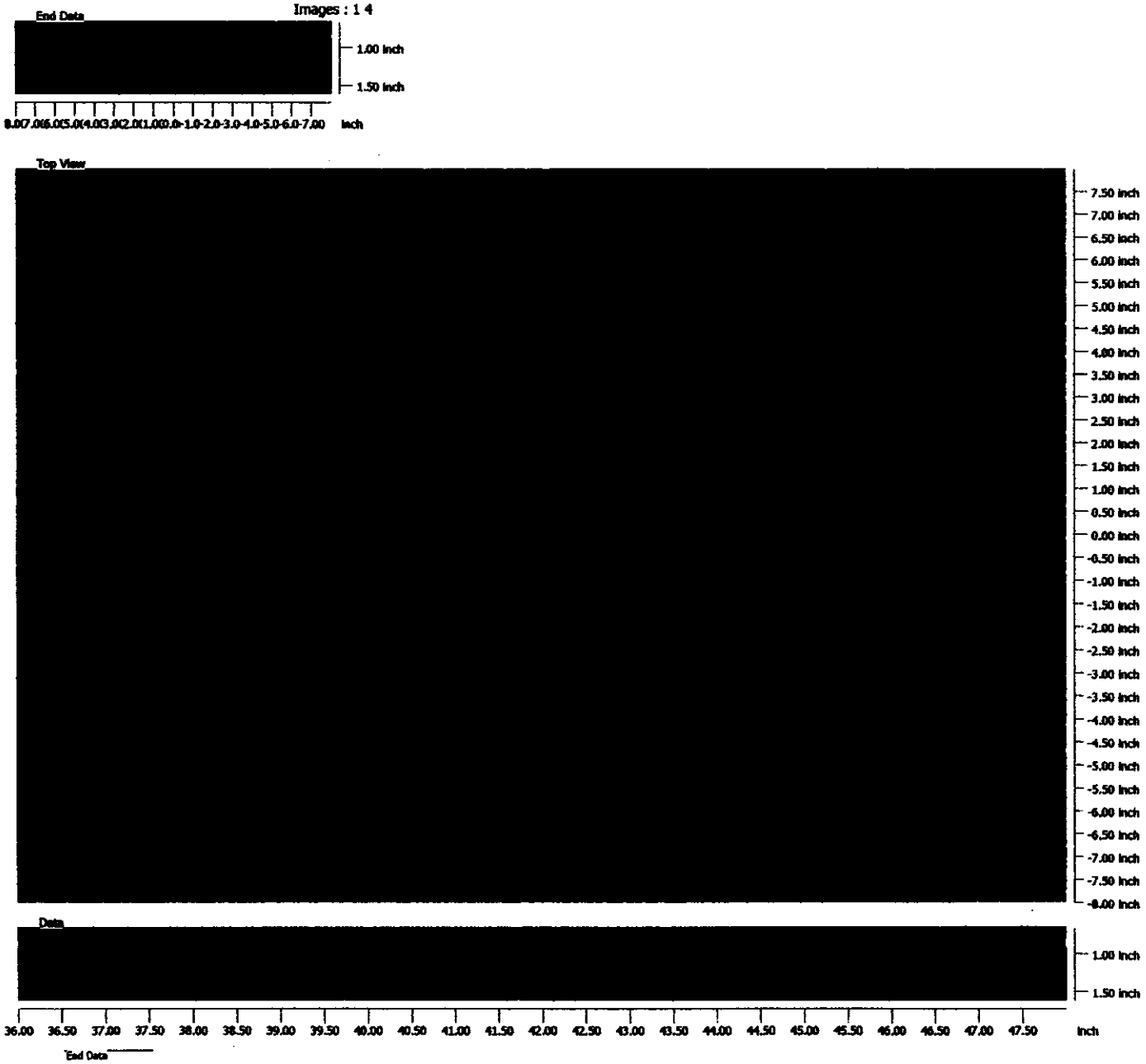
Printed on 2000-8-7 at 16:58 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:58 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

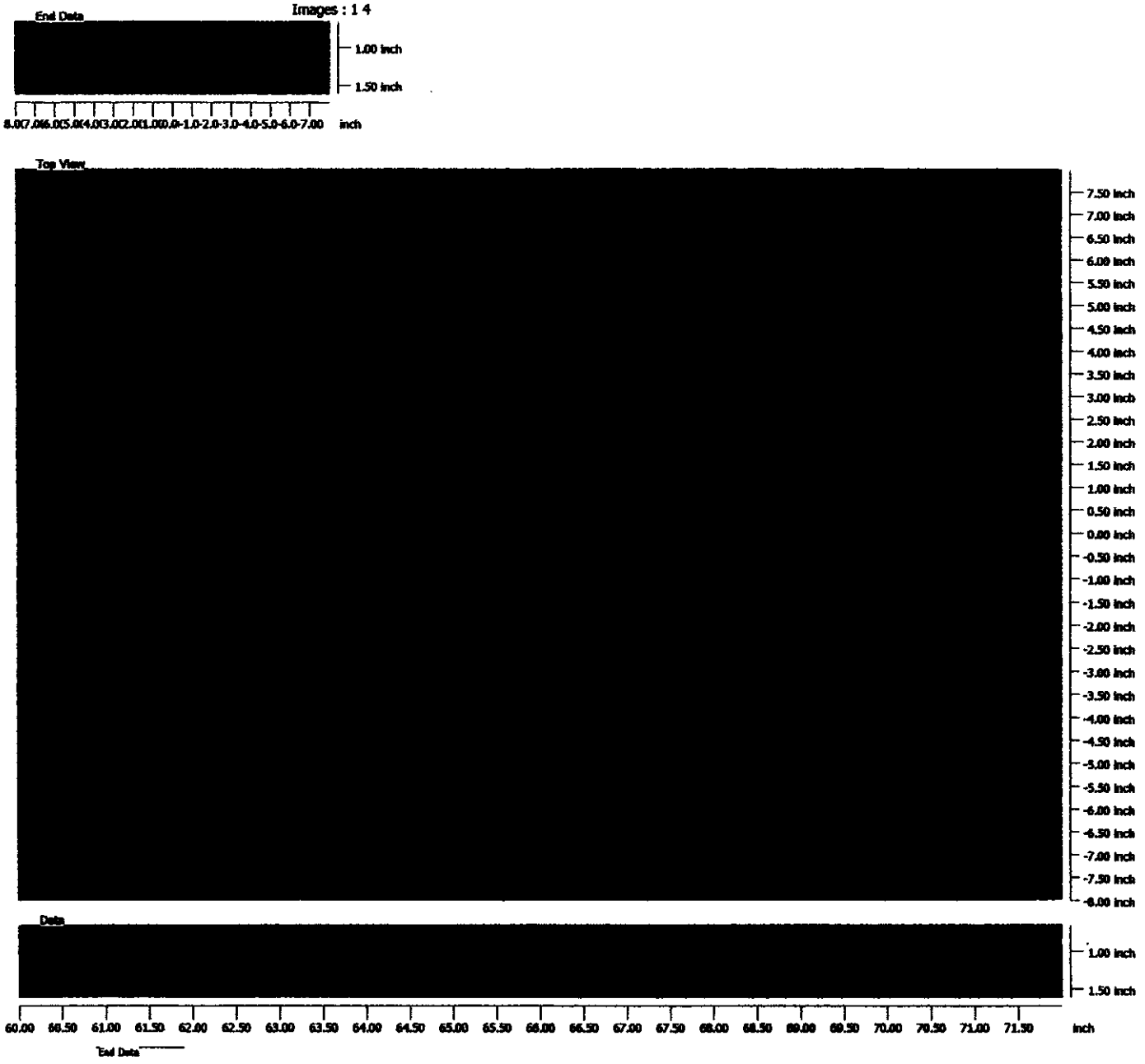
1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 16:58 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.

Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

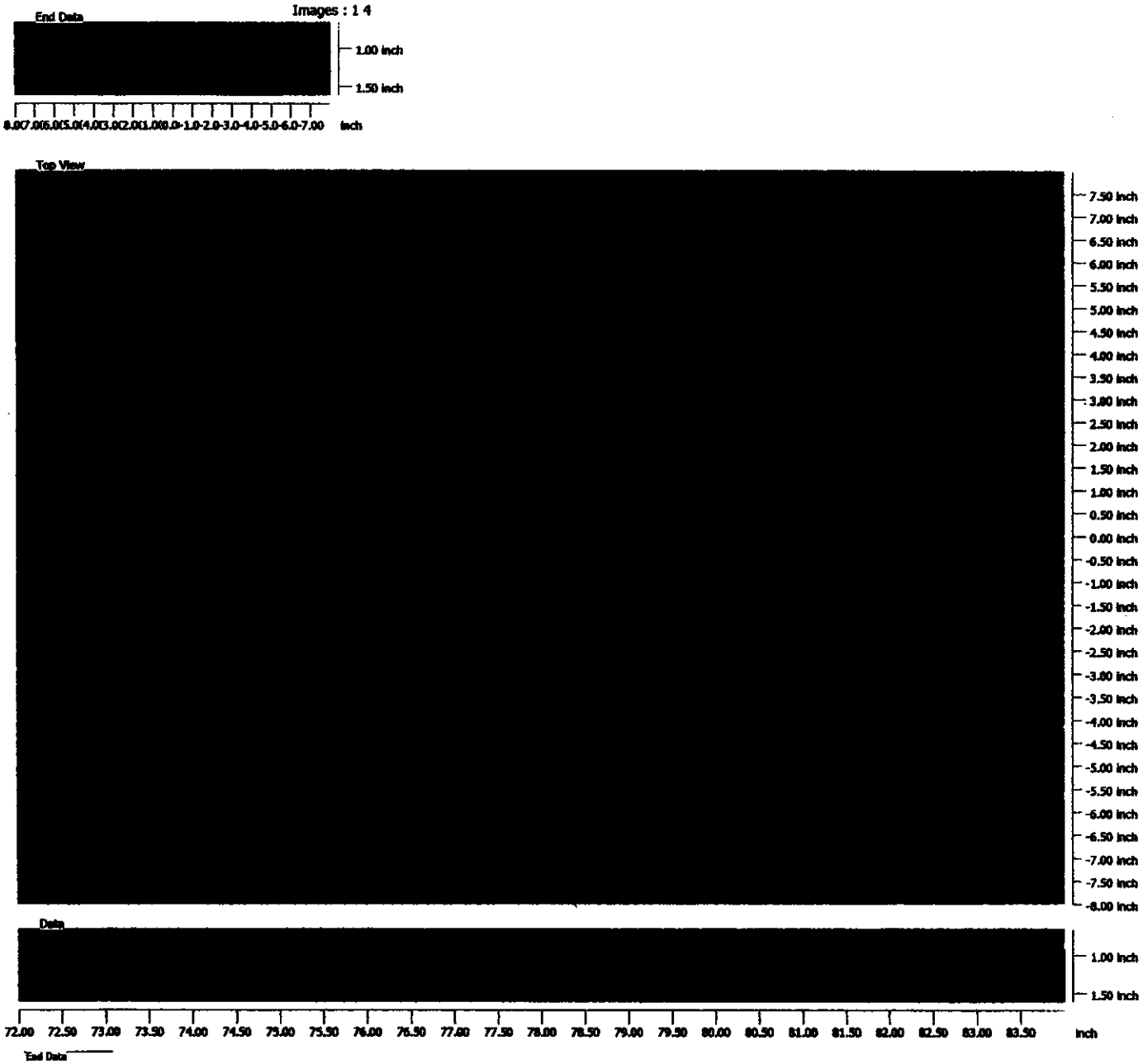
Printed on 2000-8-7 at 16:59 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

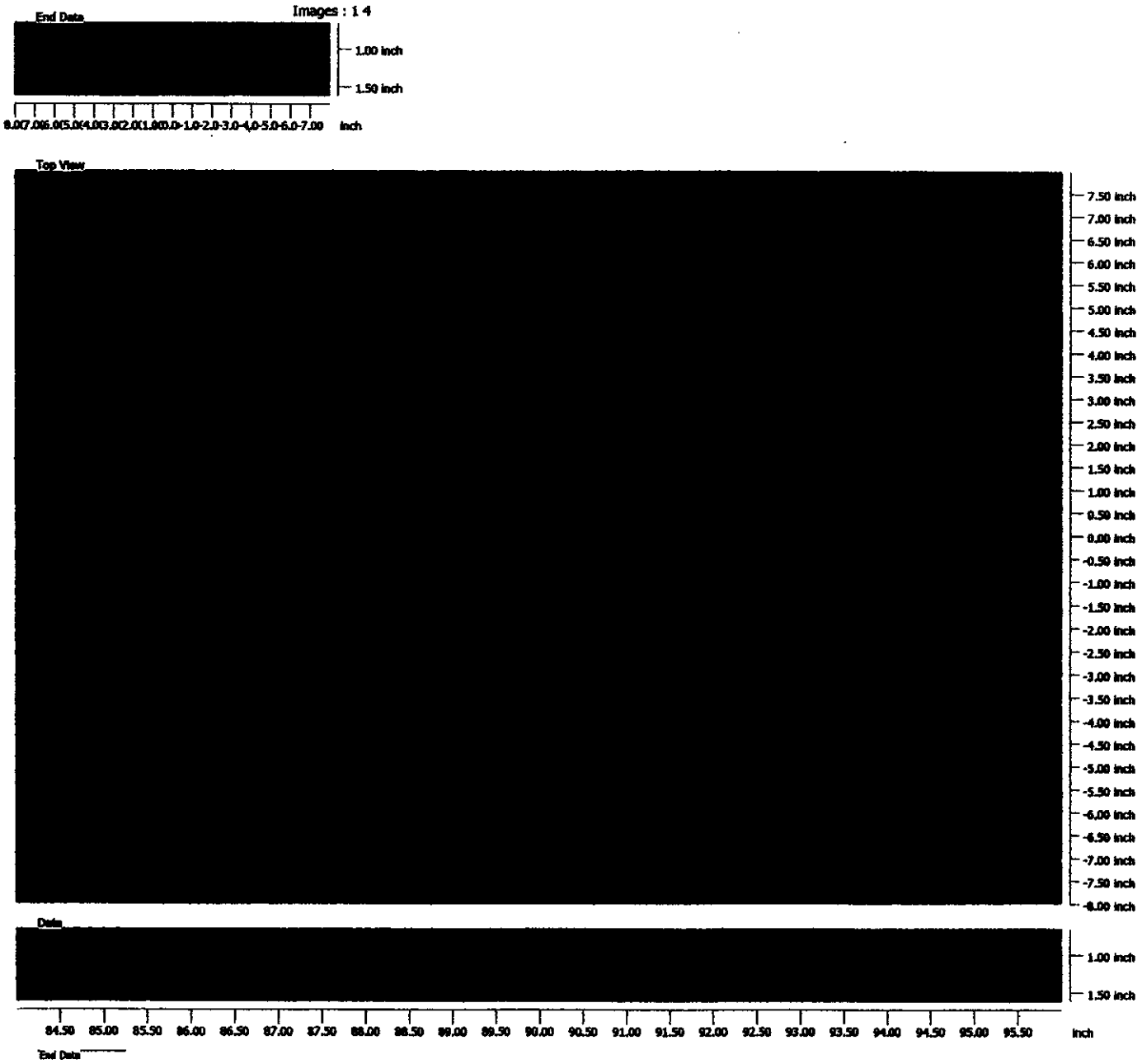
Printed on 2000-8-7 at 16:59 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

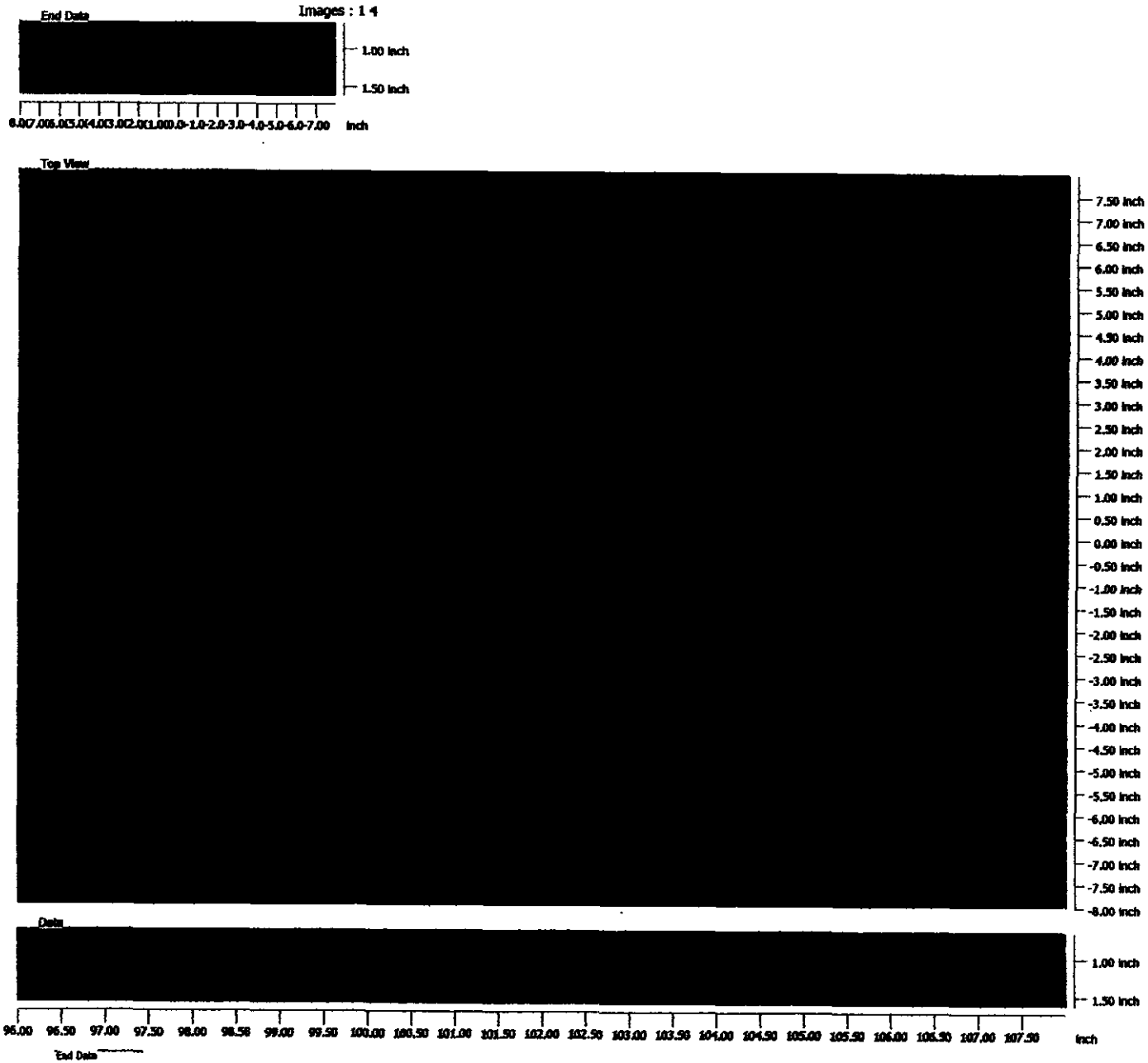
Printed on 2000-8-7 at 16:59 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

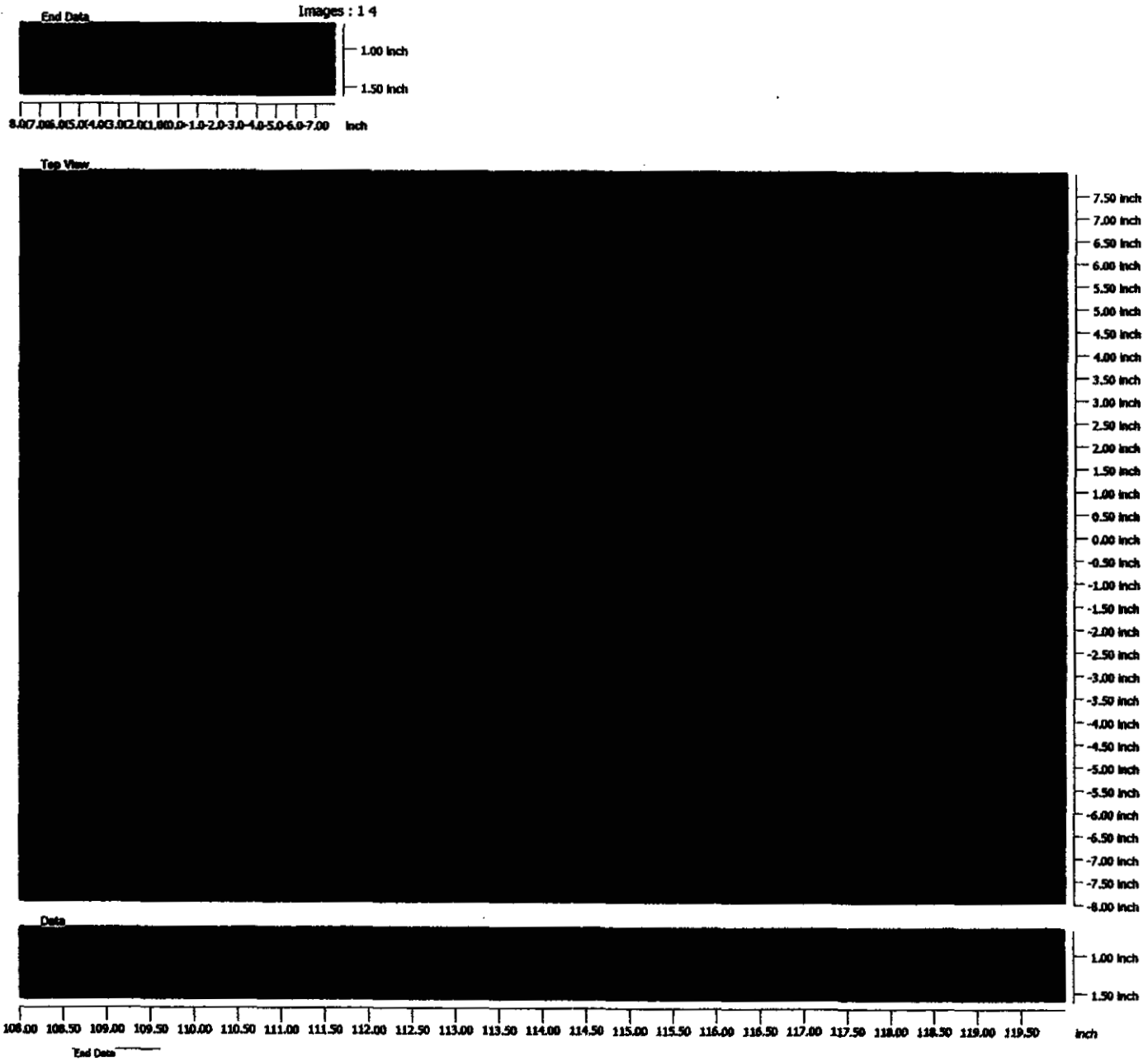
Printed on 2000-8-7 at 16:59 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



Knuckle Scan 107AP
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 12:54
2: P-scan, Images, t-scan data1, 6/28/00 12:54
3: T-scan, Images, t-scan data1, 6/28/00 12:54

Printed on 2000-8-7 at 17:00 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP.



4/00

# ULTRASONIC P-SCAN DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/24/00 9:30 | EXAM END: 11:27 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | CONDITION: |
| CONFIGURATION: KNUCKLE | TO: | CALIBRATED RANGE: 0" TO 2.65" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 125" | | REF LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER 937" NOM. THICKNESS | | |
| FILE NAME/ITEM#: KNUCKLE SCAN 107AP/A | | TRANSDUCER: ☐ DUAL ☒ SGL ☐ 00EG ☒ ANGLE 45° | | |
| $X_0$ REF POINT ($L_0$): See Knuckle 107AP Report | $Y_0$ REF POINT ($W_0$): .5" BELOW HORZ. WELD | SCAN WIDTH: 2.6" | | |

| | SIZING METHOD | ANGLE | REFERENCE CAL. SHEET | SET-UP |
|---|---|---|---|---|
| 1 | 45/60 DEGREE SHEAR | | | |
| 2 | AATT | | | |
| 3 | RATT | | | |
| 4 | DUAL 0 DEGREE | | | |

INDICATION INFORMATION

| IND | METHOD | WELD SIDE | DEPTH R. LIG. | MAX AMP | X1 | LENGTH | X2 | Y1 | WIDTH | Y2 | INDICATION TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

REMARKS
NO CRACK-LIKE INDICATIONS

| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| [signature] Level III Date 6/28/00 | [signature] Level III Date 6/7/00 | (N1) Level ___ Date ___ | ___ of ___ |

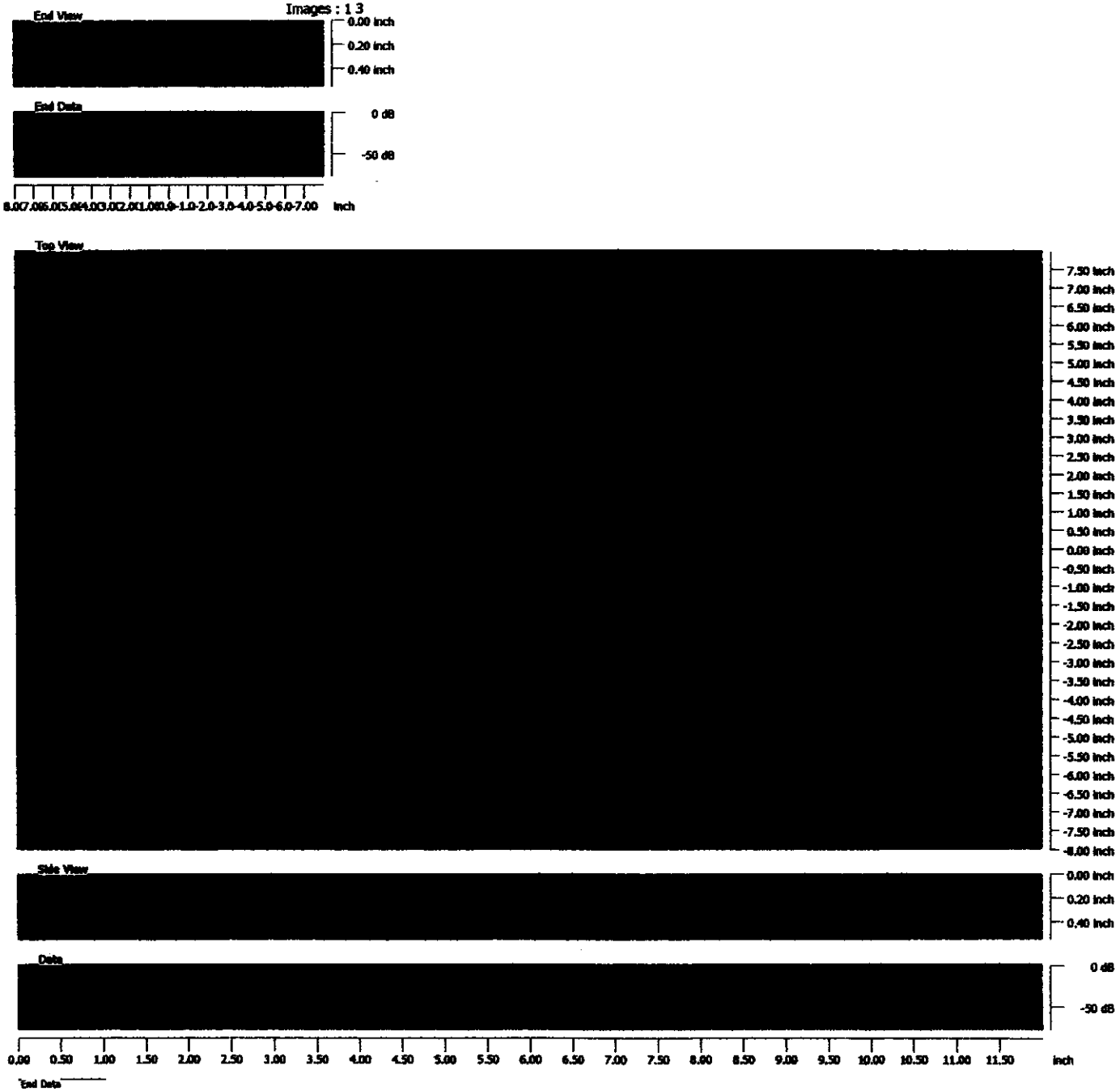
(N1) See Attached Letter from J. B Elder

Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
Knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:06 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

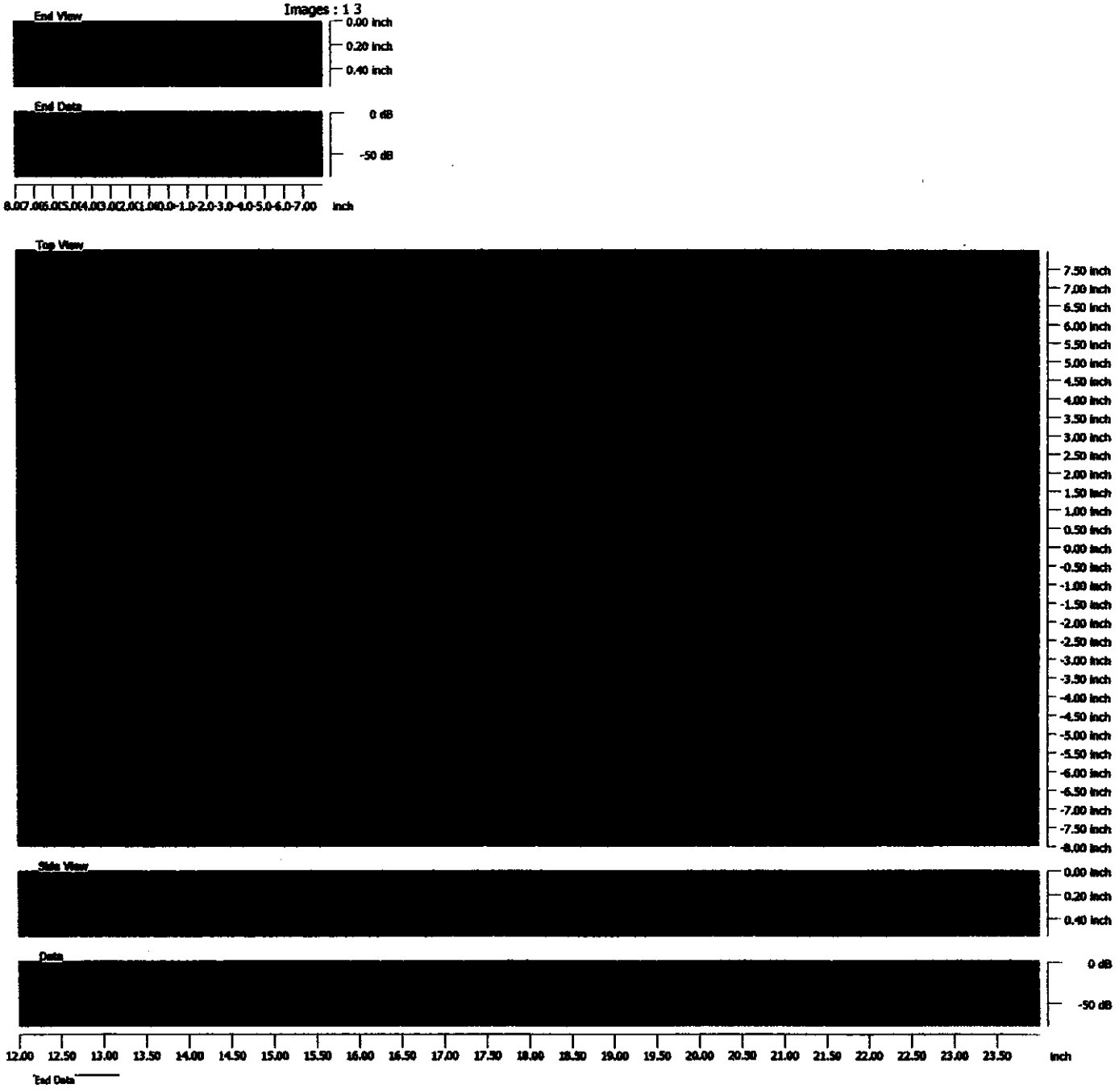
Images : 1 3



Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:06 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

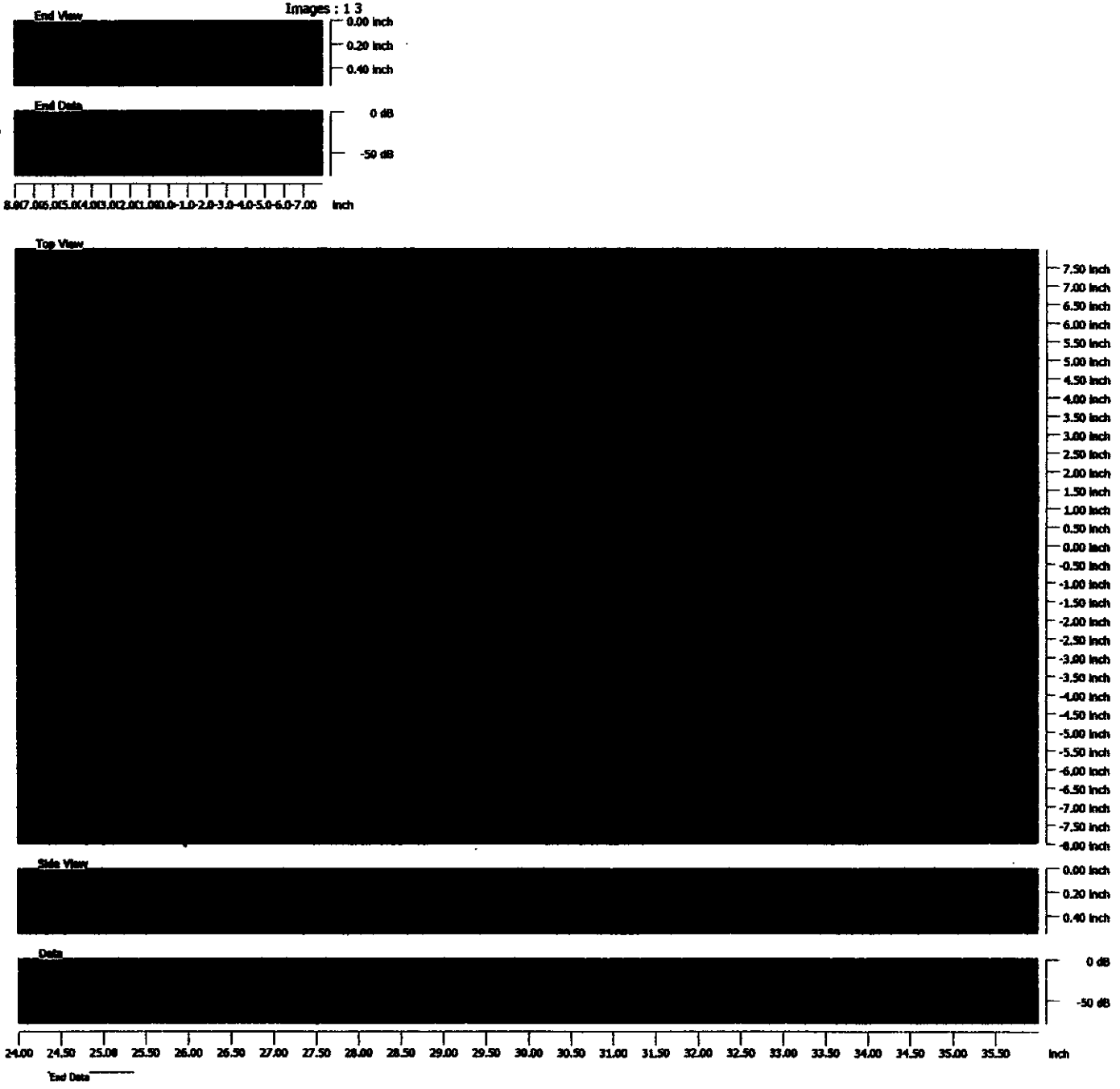


Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:07 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

Images : 1 3

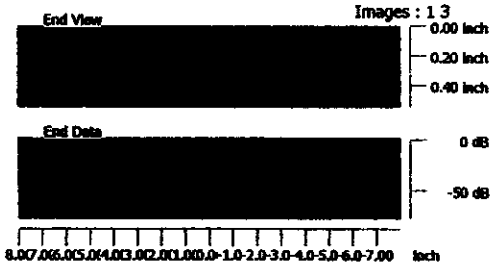


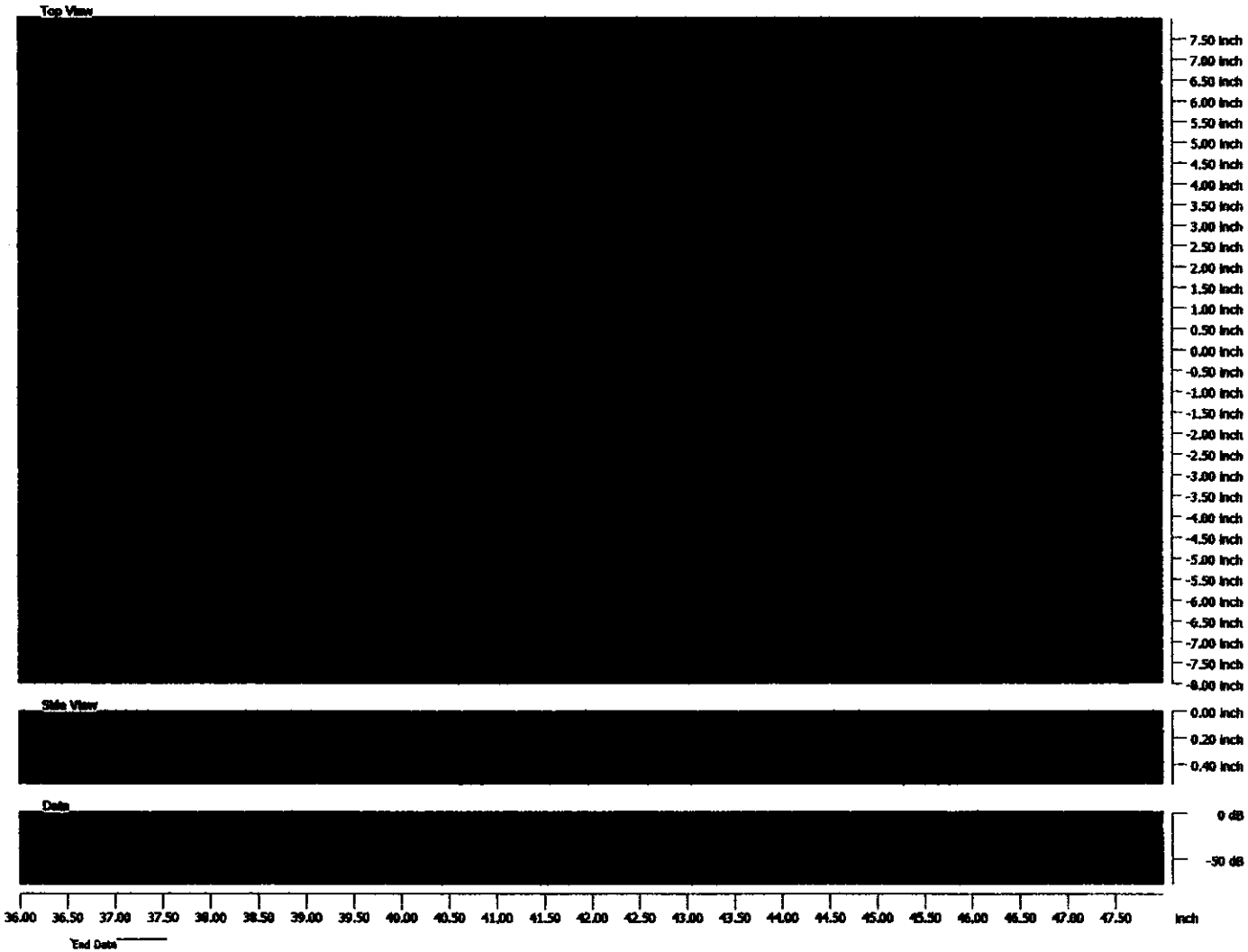
Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:10 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

Images : 1 3



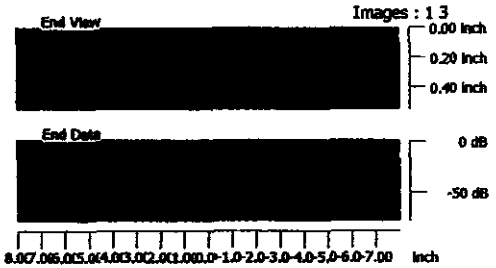



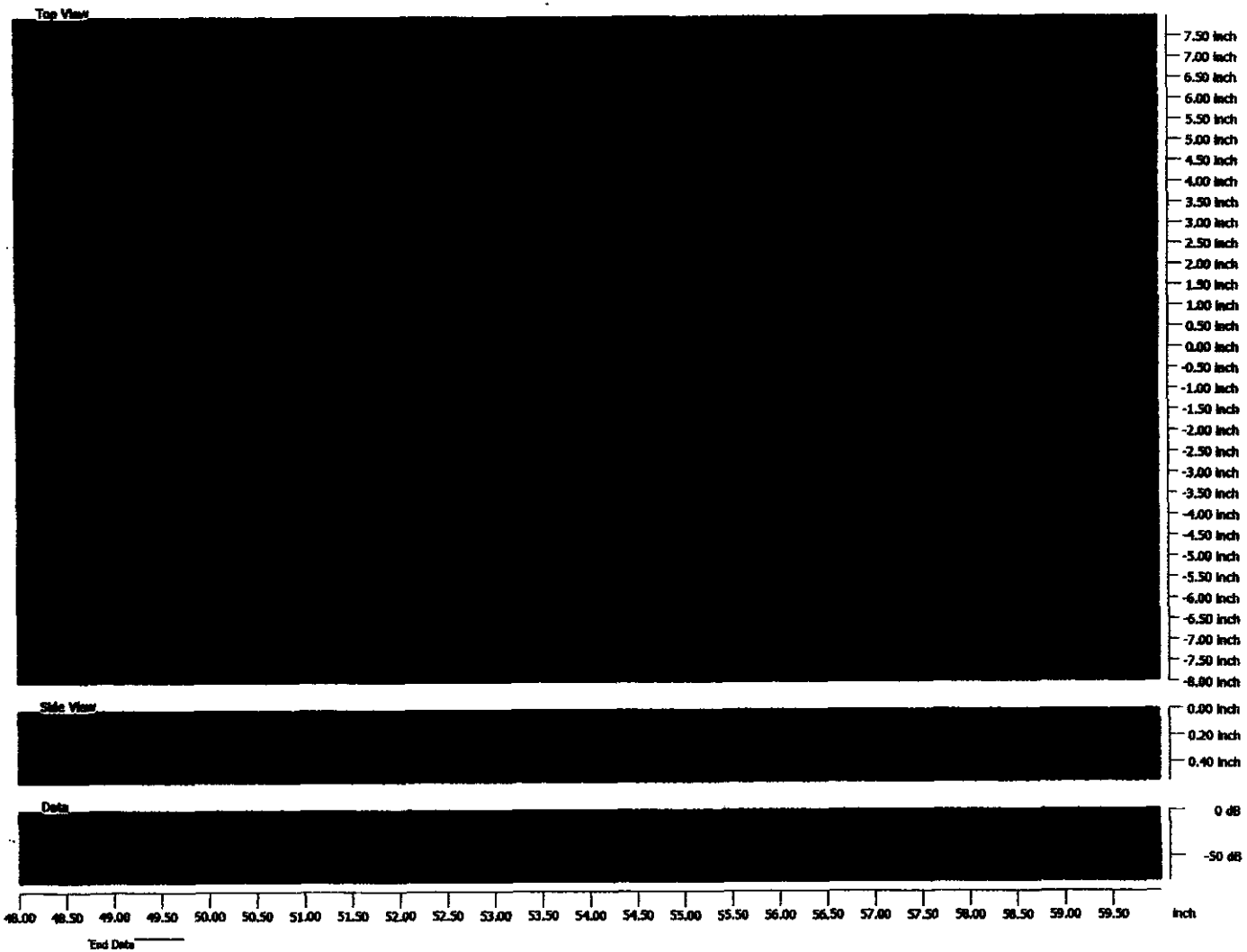
Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:10 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

Images : 1 3



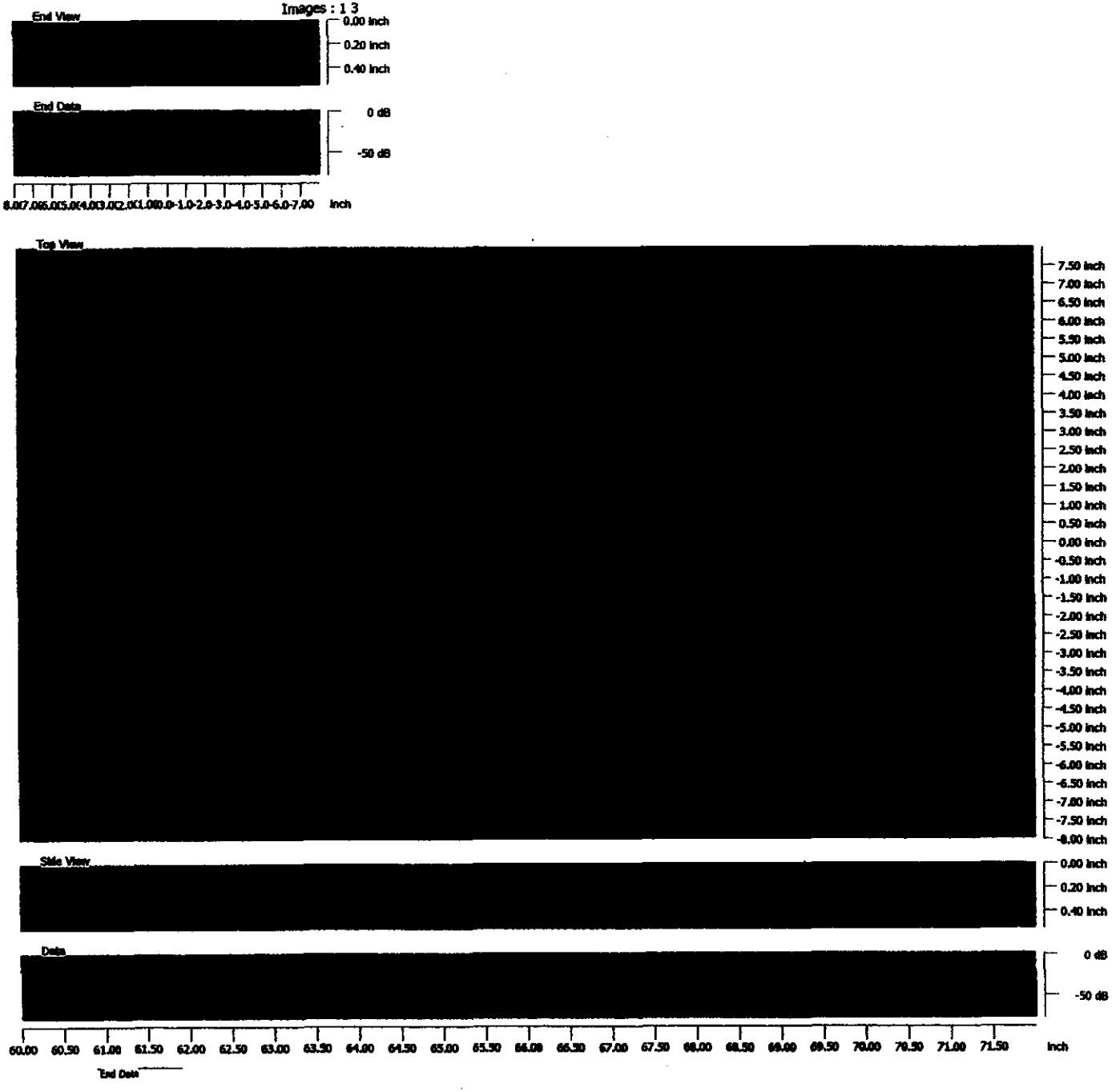



Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:11 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

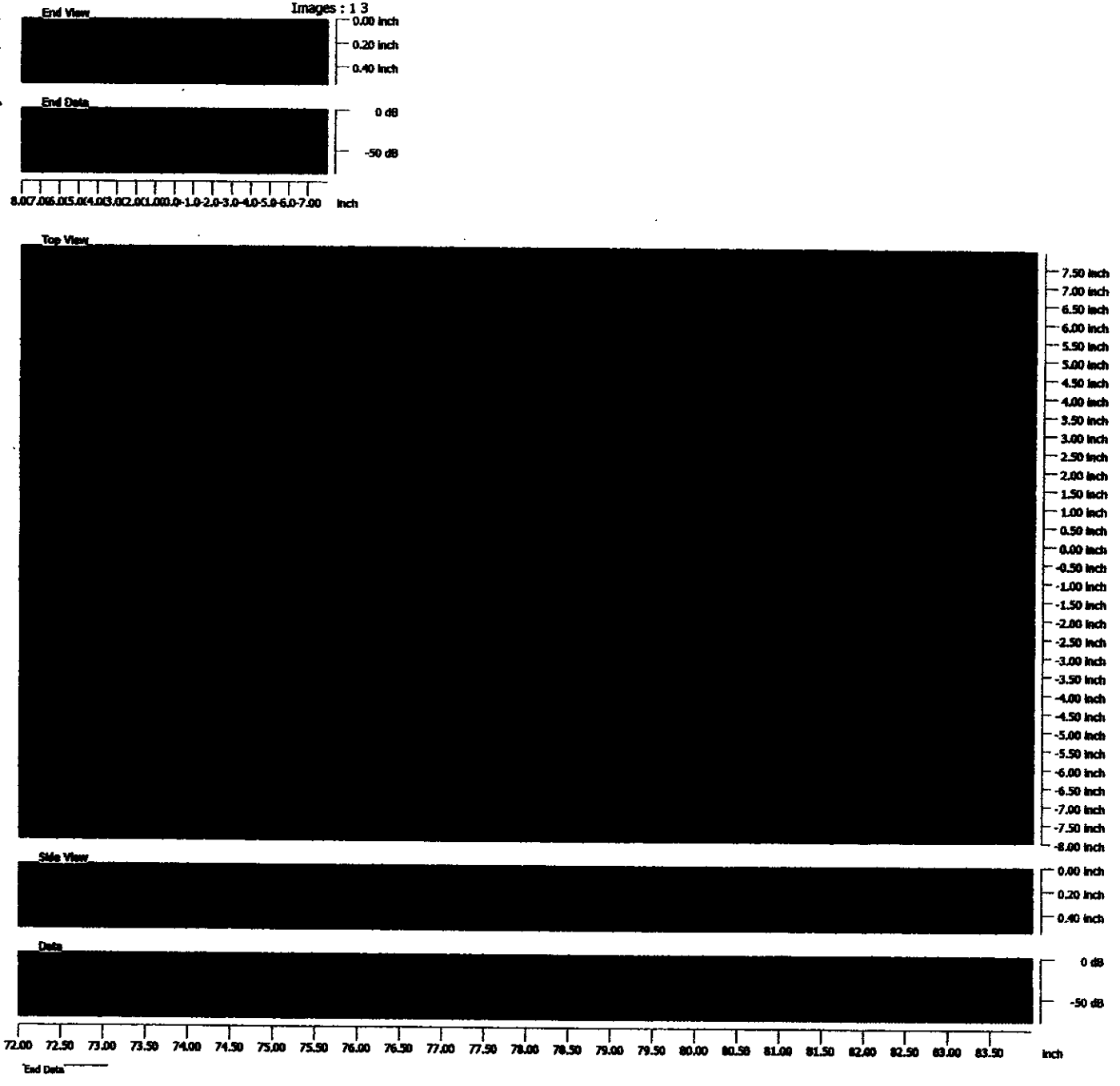
Images : 1 3



Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:11 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

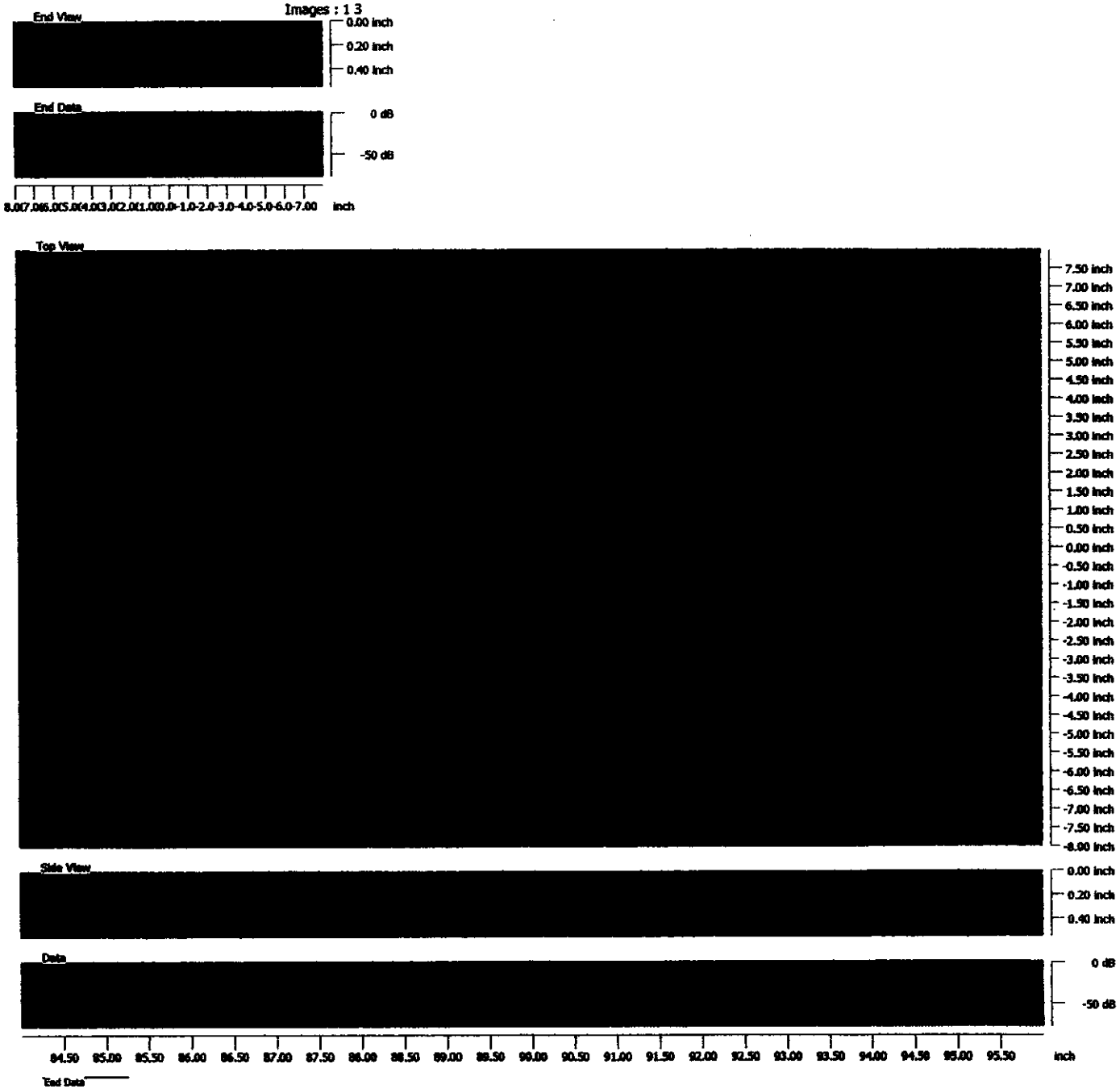


Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:11 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

Images : 1 3

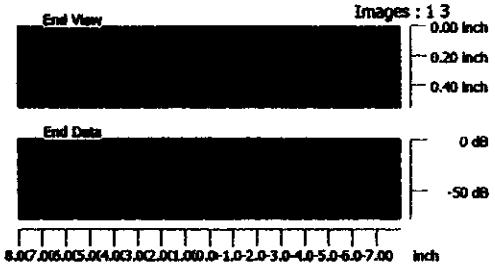


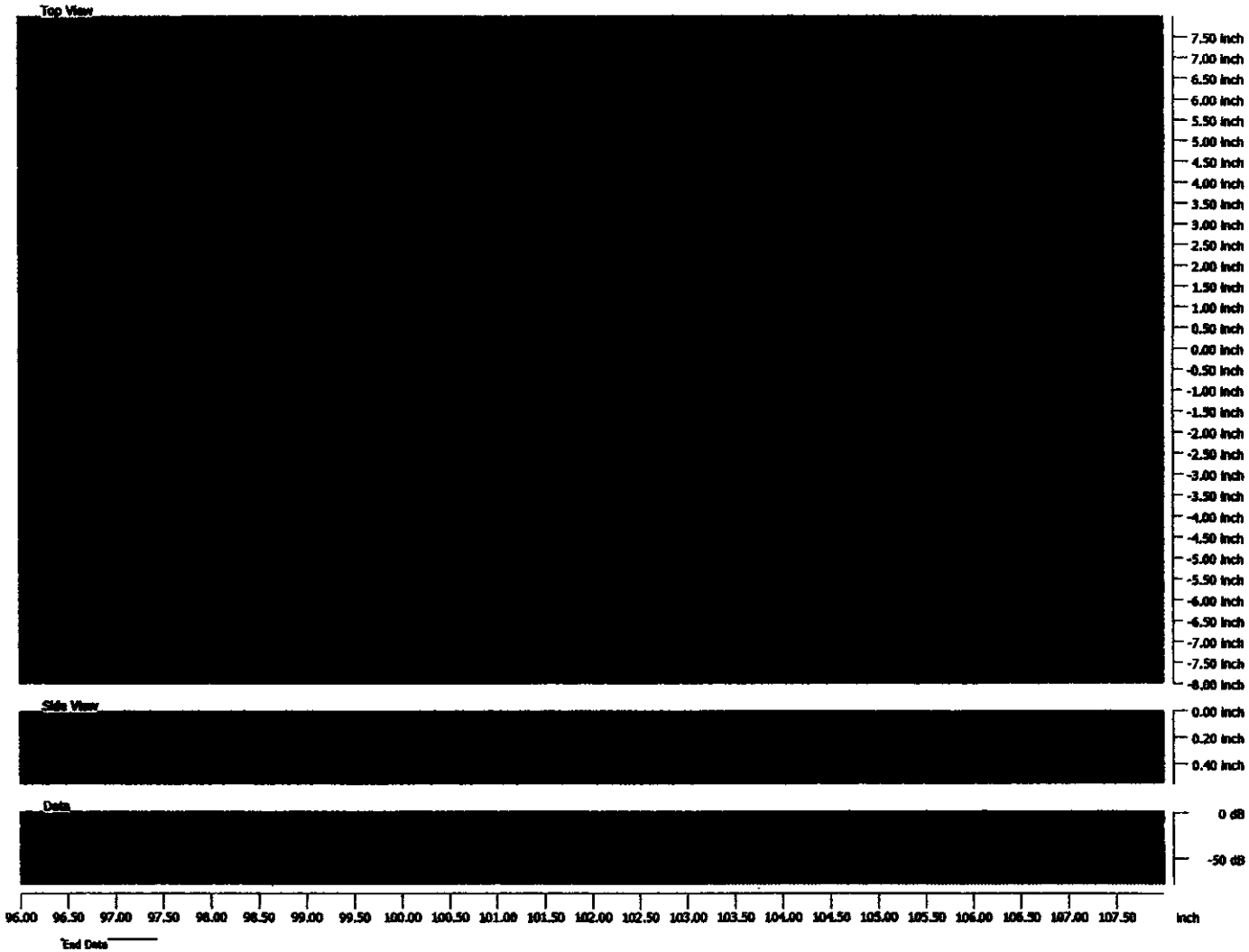
Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:11 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

Images : 1 3



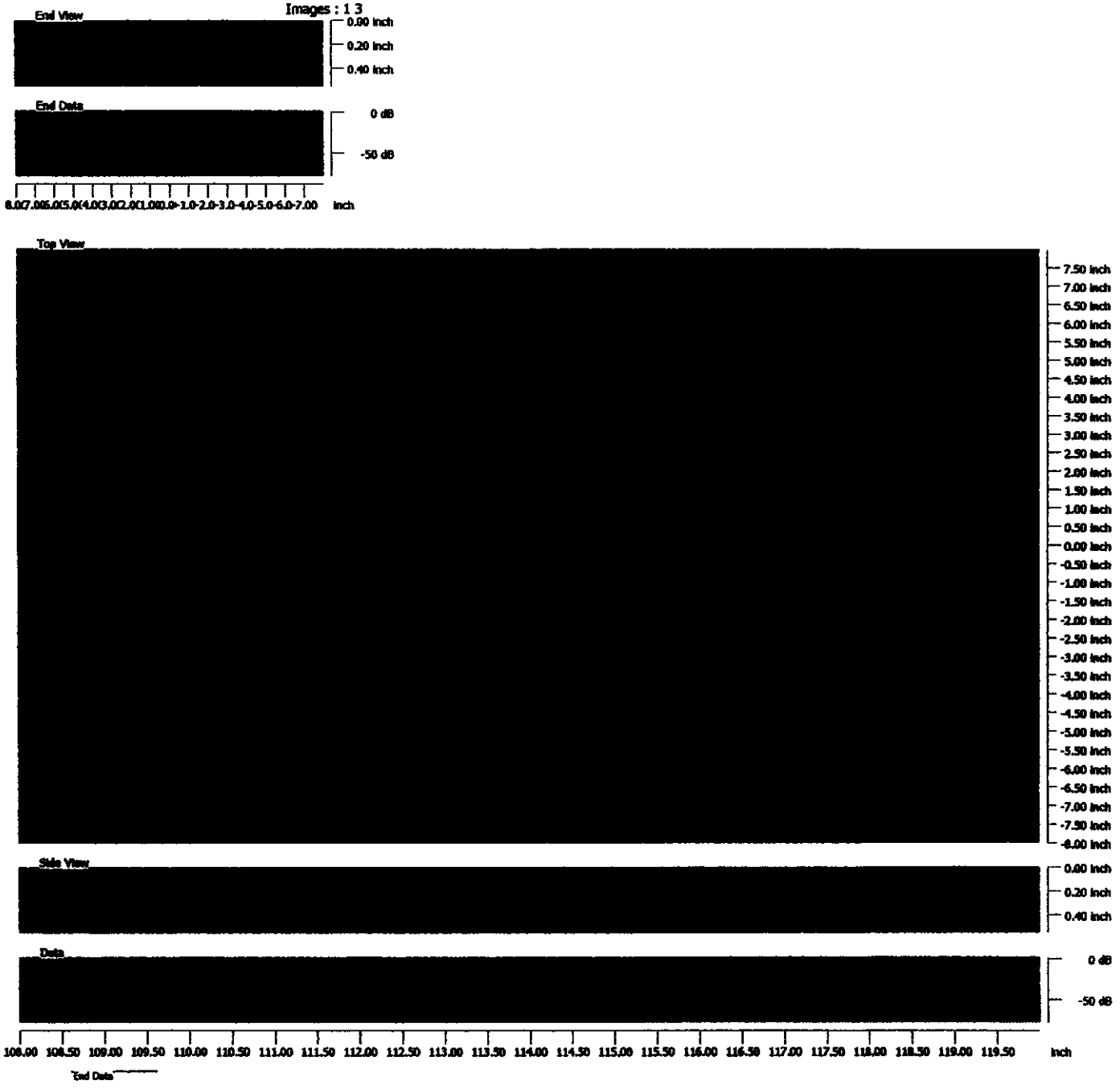



Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:11 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.

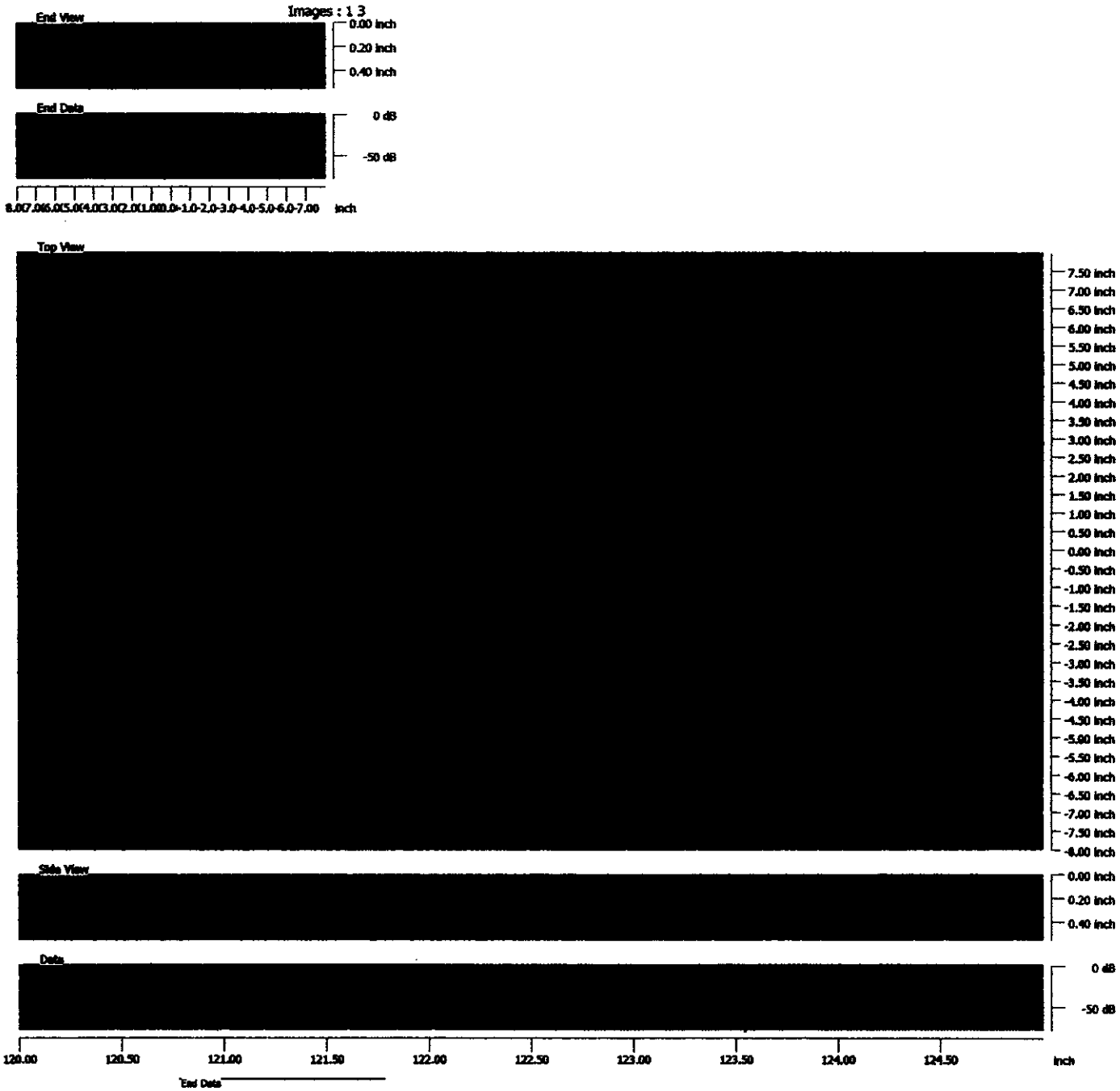
Images : 1 3



Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, p-scan data1, 6/28/00 14:25
2: P-scan, Images, p-scan data1, 6/28/00 14:25
3: T-scan, Images, p-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 18:24 : P-scan pres.1 <1, 2> of Job : Knuckle Scan 107AP/A.



4/00

# AUTOMATED ULTRASONIC THICKNESS DATA REPORT

| | | | | |
|---|---|---|---|---|
| LOCATION: 200 EAST TANK FARM | SYSTEM: PSP-4 | EXAM START: 6/28/00 9:20 | EXAM END: 17:27 | JOB #: 00-42 |
| COMPONENT ID: 107-AP DST | | EXAMINATION SURFACE: ☒ OD ☐ ID ☐ PAINTED | | NOM. THICKNESS: .937" |
| CONFIGURATION: KNUCKLE | TO | CALIBRATED RANGE: .3" TO 1.0" | | TEMP: 72 °F |
| CIRCUMFERENCE/TOTAL LENGTH EXAMINED: 185" ~~120"~~ WRA 8-7-00 | | REF. LEVEL CORRECTION (TRANS CORR): 0 DB | | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | REV: 0 | MATERIAL TYPE: ☐ SS ☒ CS OTHER ____ | | CONDITION: |
| FILE NAME/ITEM#: KNUCKLE SCAN 107AP/A | | TRANSDUCER: ☒ DUAL ☐ SGL ☒ 0DEG ☐ ANGLE ____ | | |
| $X_0$ REF. POINT ($L_0$): See Knuckle 107AP | $Y_0$ REF. POINT ($W_0$): .5" BELOW HORZ. WELD | SCAN WIDTH: 2.6" | | |

| PART # / INDICATION | X START | X STOP | Y START | Y STOP | AVE THK | MIN THK. R LIG | AREA REPORTABLE | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | 0 | 12 | | | .949" | .921" | | |
| | 12 | 24 | | | .949" | .923" | | |
| | 24 | 36 | | | .945" | .925" | | |
| | 36 | 48 | | | .945" | .925" | | |
| | 48 | 60 | | | .943" | .929" | | |
| | 60 | 72 | | | .943" | .924" | | |
| | 72 | 84 | | | .947" | .923" | | |
| | 84 | 96 | | | .950" | .933" | | |
| | 96 | 108 | | | .950" | .912" | | |
| | 108 | 120 | | | .940" | .915" | | |
| | 120 | 125 | | | .940" | .911" | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| SUMMARY | | | | | | | | |

REMARKS

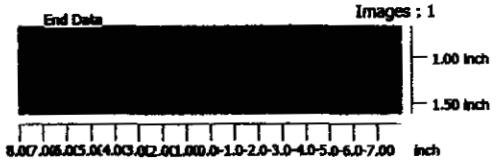
| Examiner | Analyst | Reviewer | Page |
|---|---|---|---|
| Wesley D Nelson | Wesley D Nelson | (N1) | |
| Level III Date 6/28/00 | Level III Date 8/2/00 | Level ___ Date ___ | ___ of ___ |

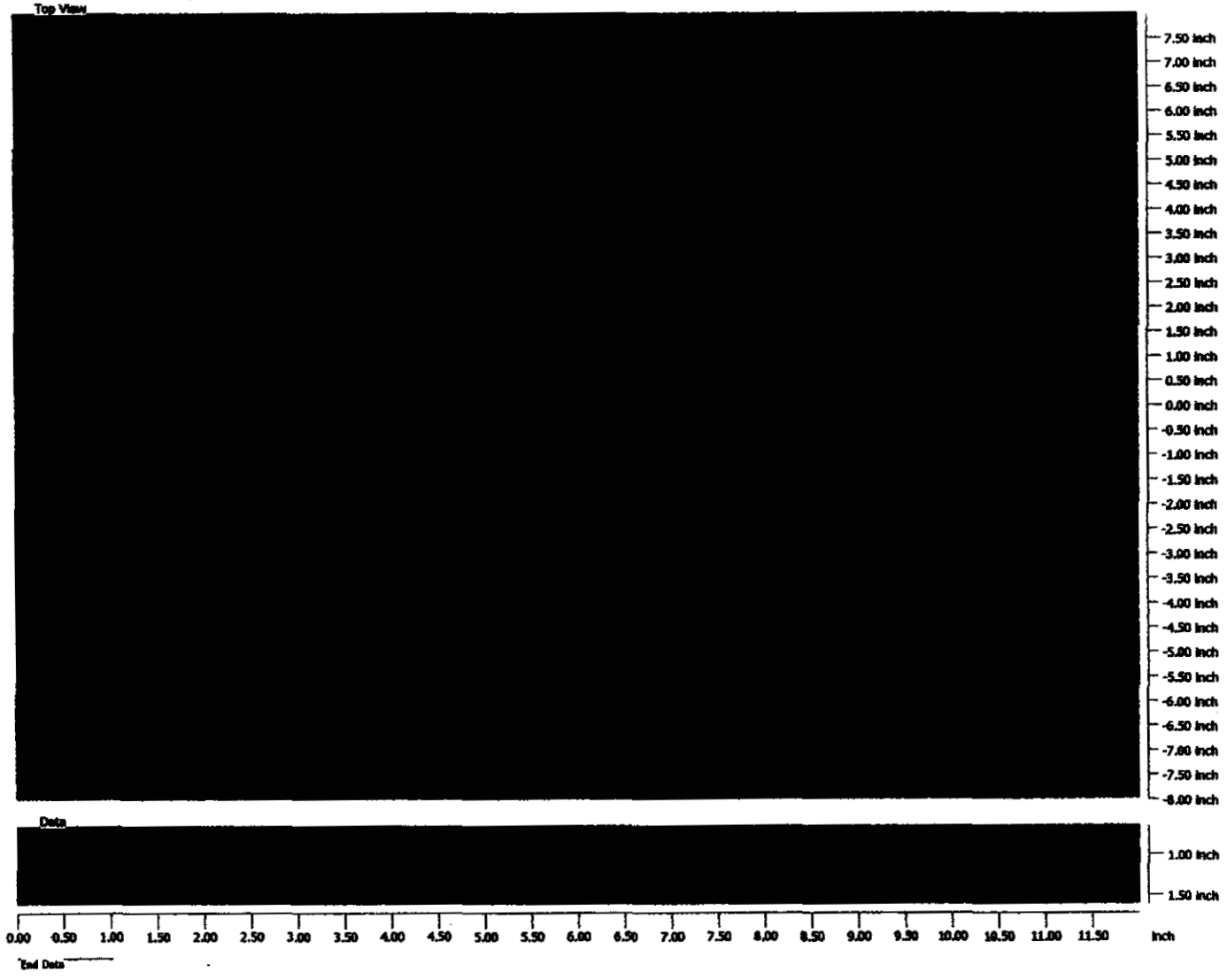
(N1) See Attached Letter From J.B. Elder

Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:17 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

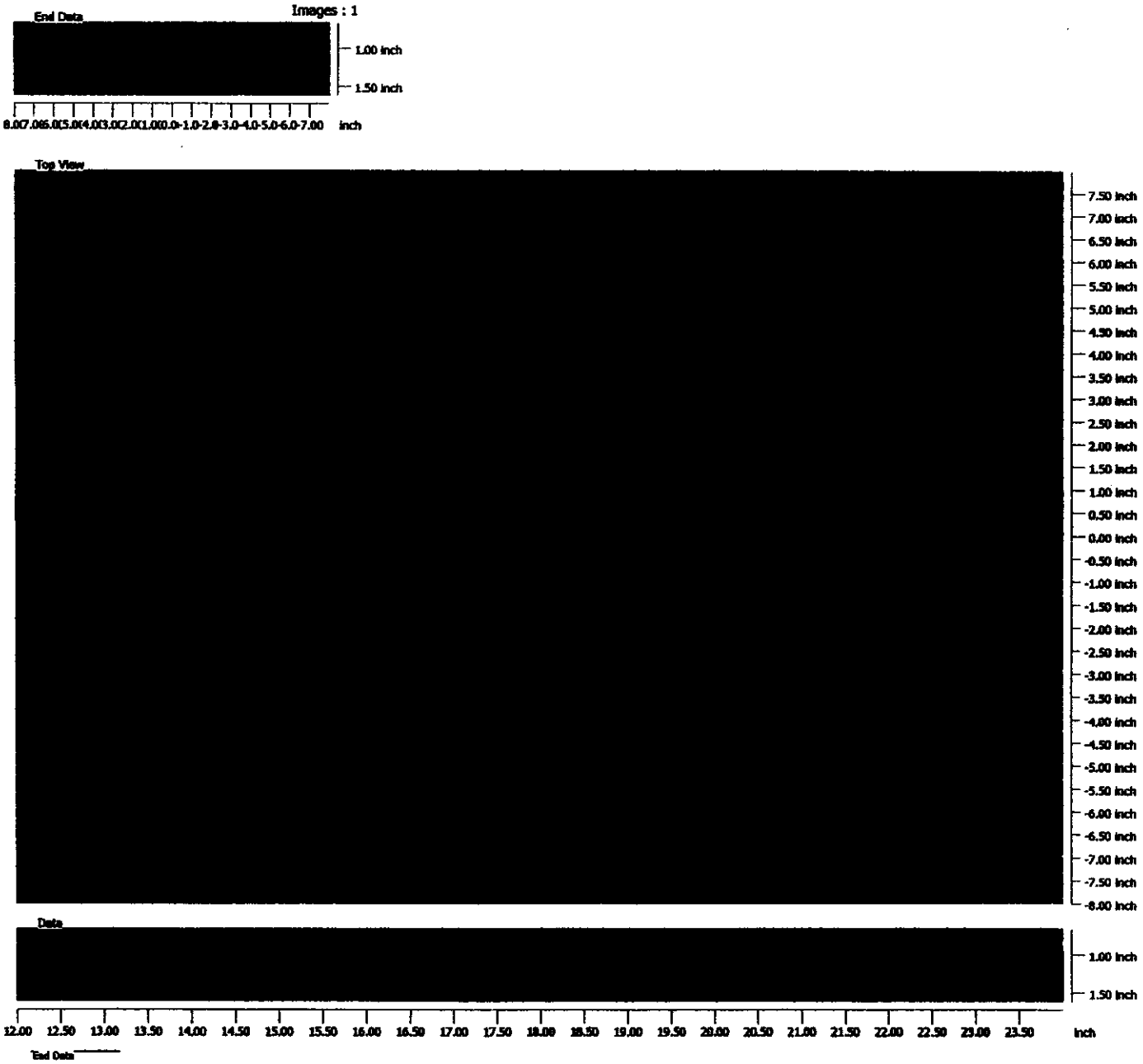


Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

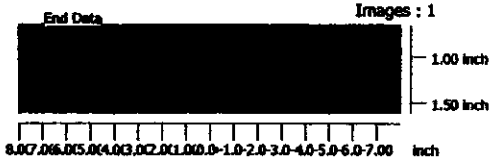
Printed on 2000-8-7 at 17:18 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

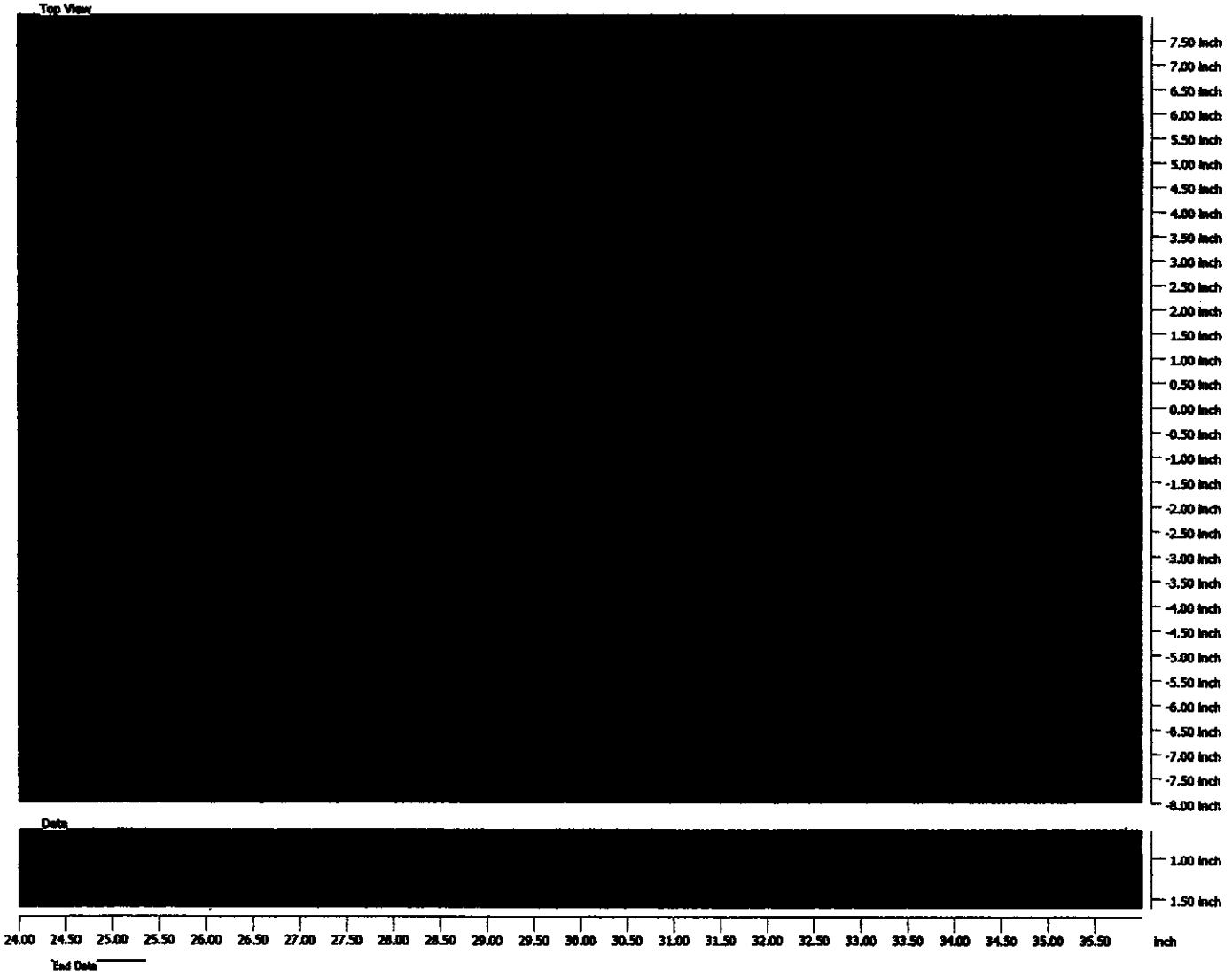


Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:19 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.



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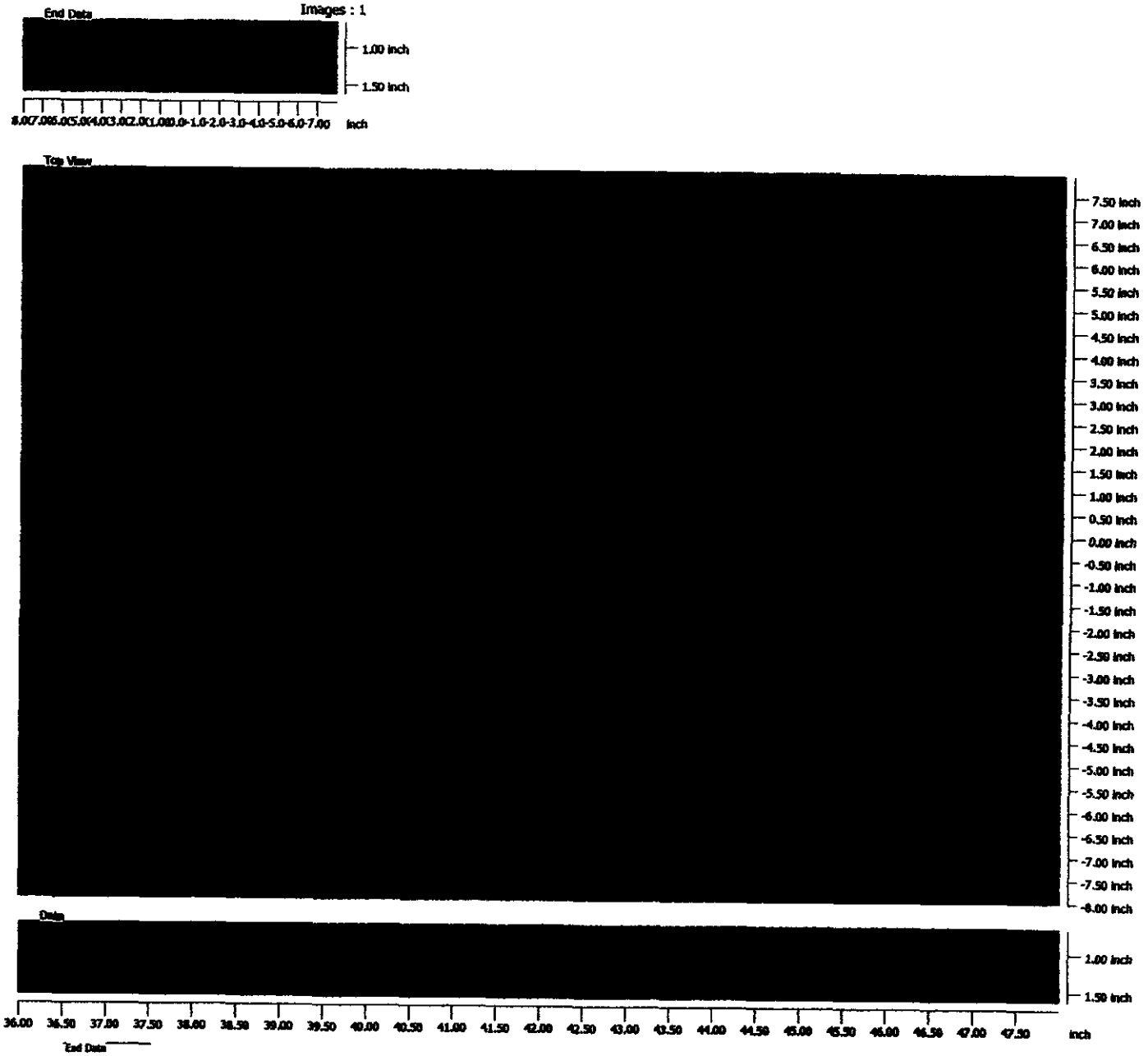
Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle
Printed on 2000-8-7 at 17:20 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25



Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:21 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:22 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

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Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

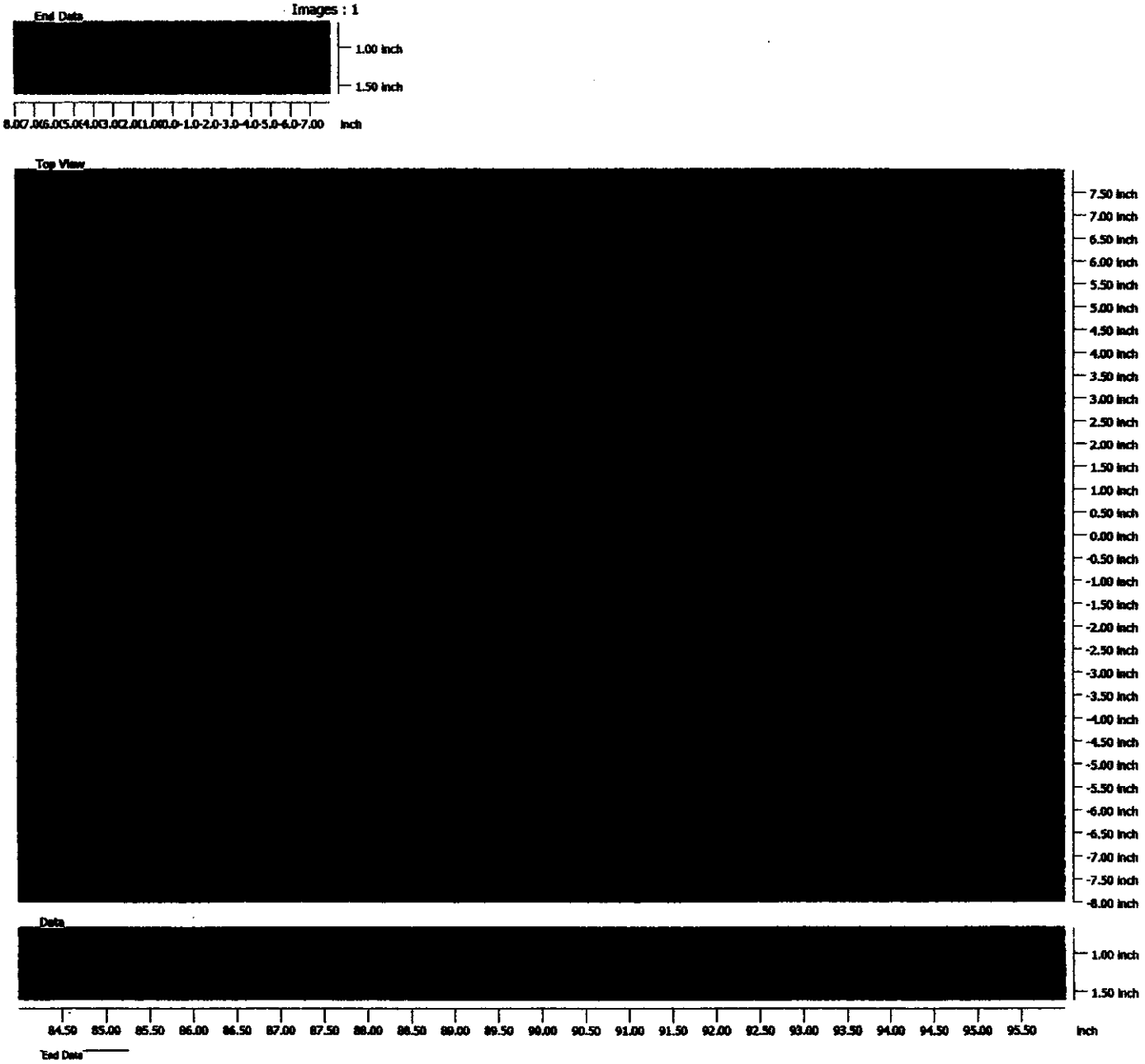
Printed on 2000-8-7 at 17:22 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:23 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

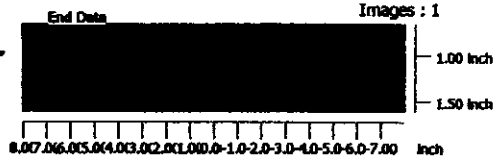
Images : 1

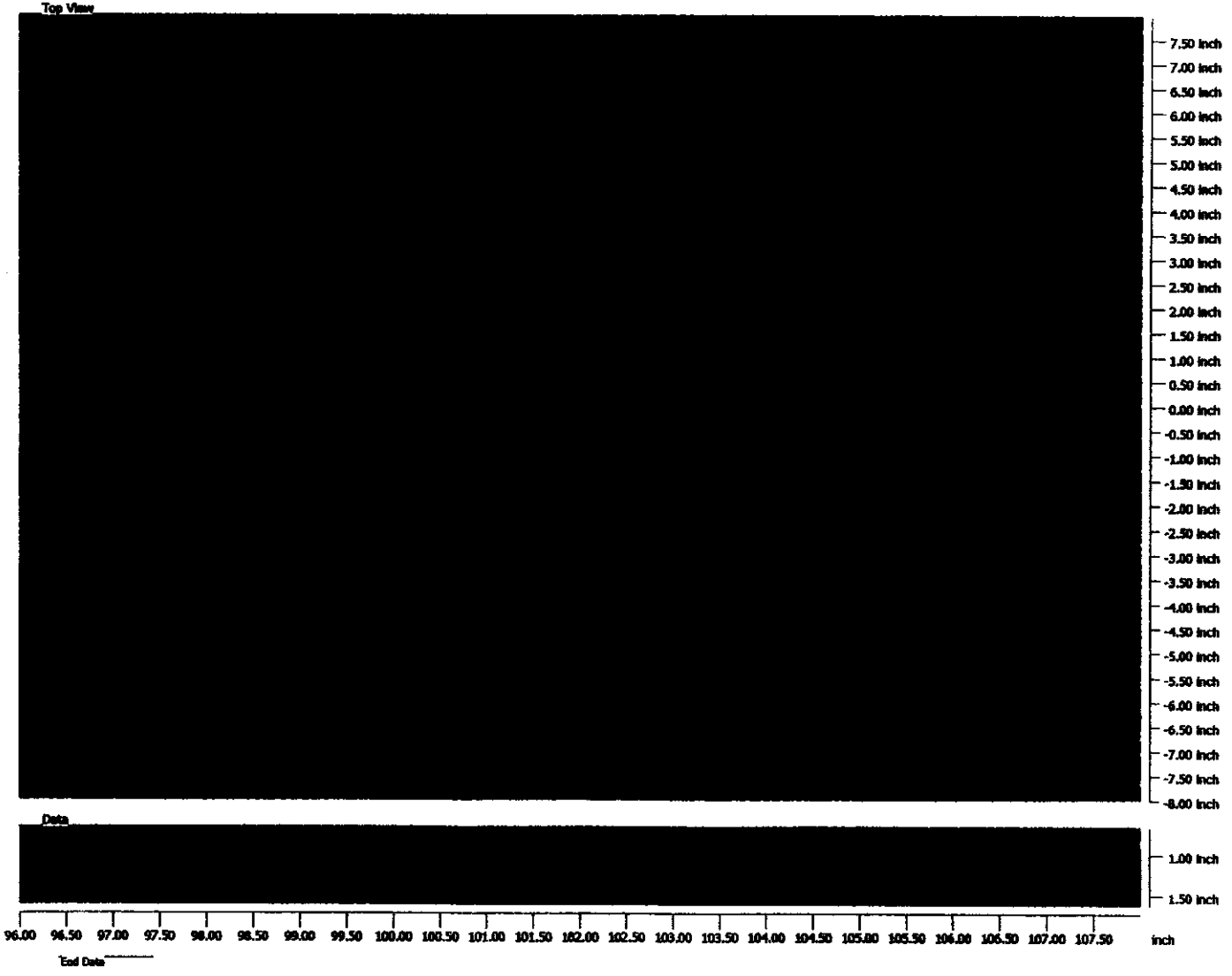


Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:23 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

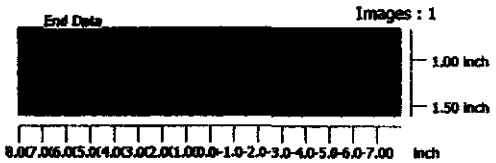


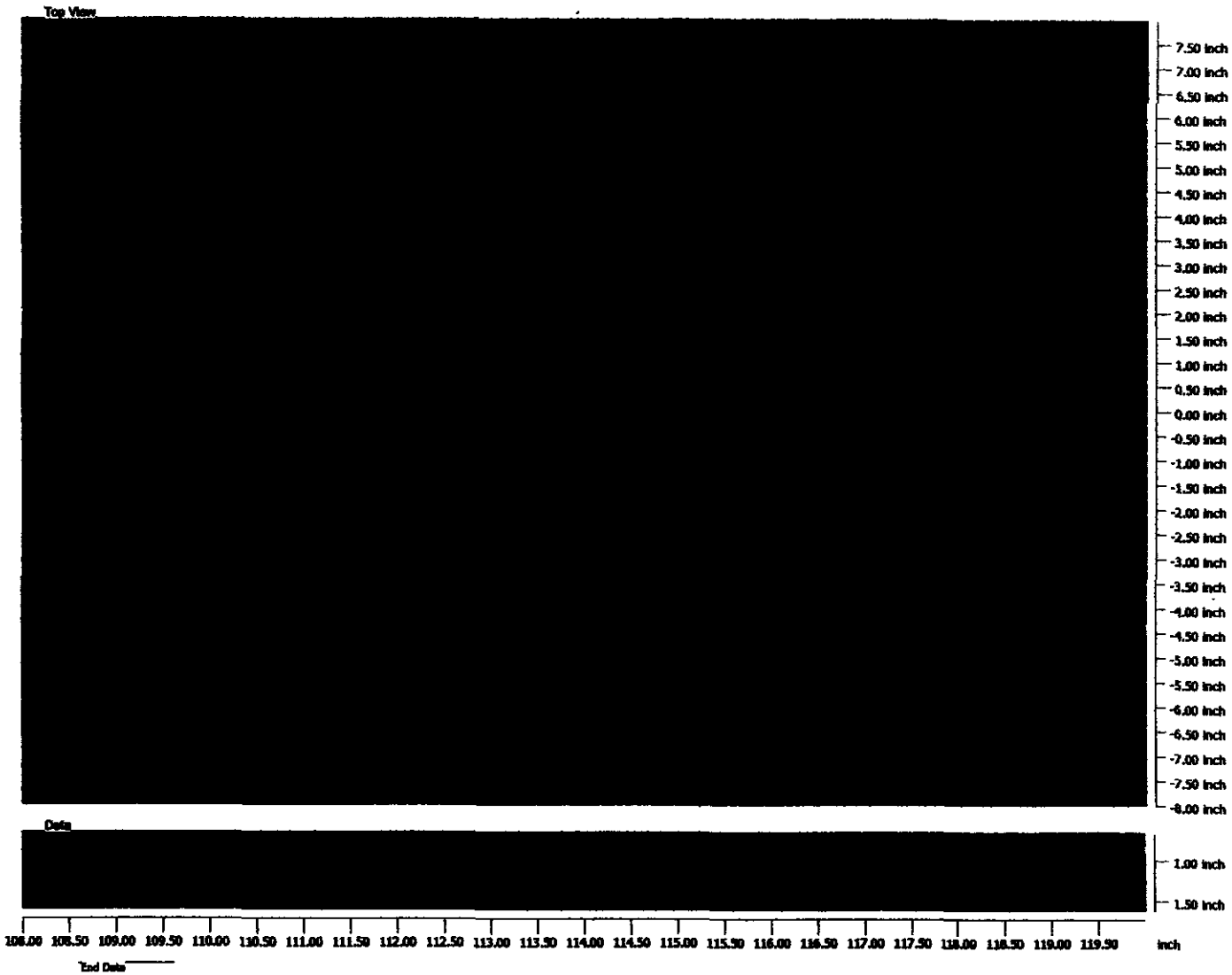



Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 17:23 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.

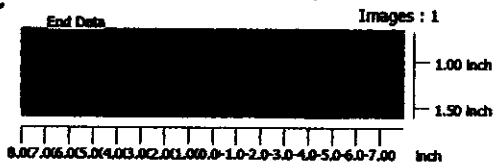


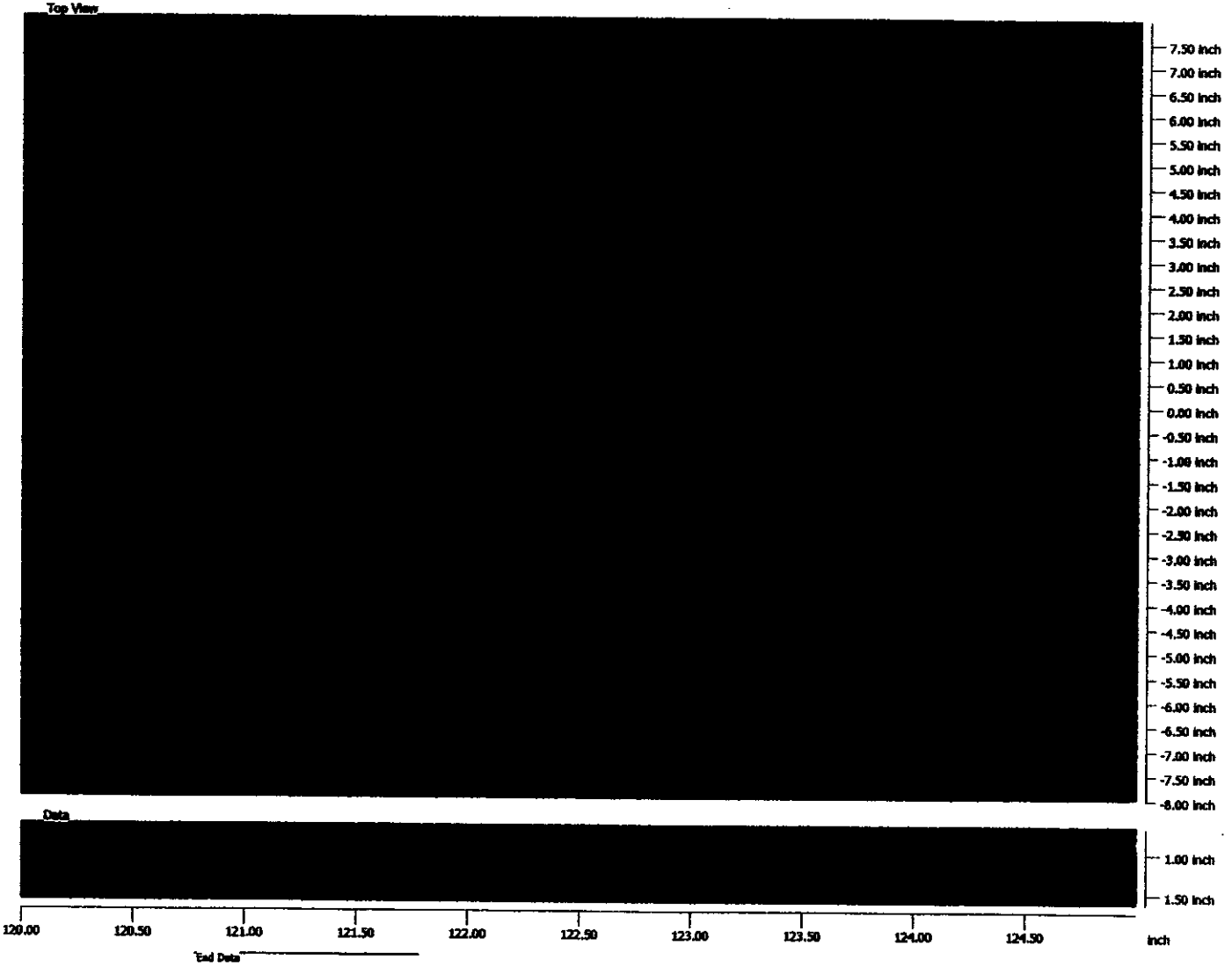



Knuckle Scan 107AP/A
WHN
AP / 200E TANK FARM
knuckle

1: P-scan, Images, t-scan data1, 6/28/00 14:25
2: P-scan, Images, t-scan data1, 6/28/00 14:25
3: T-scan, Images, t-scan data1, 6/28/00 14:25

Printed on 2000-8-7 at 18:10 : T-scan pres.1 <3> of Job : Knuckle Scan 107AP/A.



4/00

# AUTOMATED ULTRASONIC P-SCAN CALIBRATION SHEET

00-42

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST TANK Farm | SYSTEM: 107 AP DST | CALIBRATION BLOCK: Notch Block 584-99-30-146 | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | | THICKNESS: 1.0" | MATERIAL: C/S |
| UT SYSTEM: PSP-4 | SERIAL #: 206 | REFERENCE BLOCK: ROMPAS | |
| SOFTWARE VERSION: P-Scan Sys 4 1.2 | REV: Beta 3-6 | THICKNESS: 1.0" | MATERIAL: C/S |
| LINEARITY DUE DATE: 8/8/2000 | | REFERENCE BLOCK TEMP: AMB. °F | PYRO S/N: N/A |
| SCANNER TYPE: AWS-Sd | SERIAL #: 201 | COUPLANT: $H_2O$ | BATCH #: N/A |
| SCANNER CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |
| SIGNAL CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ MHz | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE NOM/ACT | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | KB | MWB | 4 | 8x9 mm | 3028 | | 45/45 | Stnd | |
| 2 | KB | MWB | 4 | 8x9 mm | 3022 | | 45/45 | Stnd | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |

DATA ON TAPE

| | | INITIAL CALIBRATION | CALIBRATION CHECKS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | 6/7/00 | 6/7/00 | 6/8/00 | 6/8/00 | 6/12/00 | 6/12/00 | 6/13/00 | 6/13/00 |
| TIME | | 12:51 | 22:44 | 09:43 | 21:50 | 13:35 | 21:00 | 09:25 | 20:24 |
| REFLECTOR / ORRIENTATION | | 0.050" Notch | 0.050" NOTCH | 0.050" Notch | 0.050" Notch | 0.050" NOTCH | 0.050" NOTCH | 0.050" Notch | 0.050" Notch |
| CH. 1 | AMPLITUDE | 80% | 80% | 80% | 80% | 80% | 80% | 80%/.2db | 80%/1.0db |
| | LOCATION | 1.412" | 1.417" | 1.414" | 1.408" | 1.409" | 1.398" | 1.419" | 1.401" |
| CH. 2 | AMPLITUDE | 80% | 80% | 80% | 80% | 80%/.5db | 80%/.8db | 80%/.5db | 80%/0db |
| | LOCATION | 1.414" | 1.419" | 1.410" | 1.401" | 1.417" | 1.414 | 1.408" | 1.393" |
| CH. 3 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| CH. 4 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

REMARKS

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| Level III Date [redacted] | Level ___ Date ___ | Level ___ Date ___ | ___ of ___ |

4/00

# AUTOMATED ULTRASONIC P-SCAN CALIBRATION SHEET

00-42

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST Tank Farm | SYSTEM: 107AP DST | CALIBRATION BLOCK: Notch Block 584-99-30-146 | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | | THICKNESS: 1.0" | MATERIAL: C/S |
| UT SYSTEM: PSP-4 | SERIAL #: 206 | REFERENCE BLOCK: ROMPAS | |
| SOFTWARE VERSION: P-Scan Sys 4 1.2 | REV: Beta 3-6 | THICKNESS: 1.0" | MATERIAL: C/S |
| LINEARITY DUE DATE: 8/8/2000 | | REFERENCE BLOCK TEMP: AMB. °F | PYRO SN: N/A |
| SCANNER TYPE: AWS-5d | SERIAL #: 201 | COUPLANT: $H_2O$ | BATCH #: N/A |
| SCANNER CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |
| SIGNAL CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ. MHz | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE NOM/ACT | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | KB | MWB | 4 | 8x9 mm | 3028 | | 45/45 | Stnd | DATA |
| 2 | KB | MWB | 4 | 8x9 mm | 3022 | | 45/45 | Stnd | See |
| 3 | | | | | | | | | Test |
| 4 | | | | | | | | | |

| | | INITIAL CALIBRATION | CALIBRATION CHECKS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | 6/14/00 | 6/14/00 | 6/21/00 | 6/21/00 | 6/22/00 | 6/22/00 | | |
| TIME | | 10:12 | 23:03 | 13:39 | 19:23 | 09:40 | 15:44 | | |
| REFLECTOR / ORRIENTATION | | 0.050" Notch | 0.050" Notch | 0.050" Notch | 0.050" NOTCH | 0.050" Notch | 0.050" Notch | 0.050" Notch | 0.050" Notch |
| CH. 1 | AMPLITUDE | 80%/-.5db | 80%/1.0db | 80%/.8db | 80%/1.5db | 80%/-.5db | 80%/-.5db | | |
| | LOCATION | 1.414" | 1.399" | 1.414" | 1.409" | 1.419" | 1.395" | | |
| CH. 2 | AMPLITUDE | 80%/.2db | 80%/2.0db | 80%/-.5db | 80%/0db | 80%/.8db | 80%/.8db | | |
| | LOCATION | 1.417" | 1.412" | 1.419 | 1.417" | 1.434" | 1.430" | | |
| CH. 3 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| CH. 4 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

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| Examiner | Examiner | Reviewer | Page |
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| [signature] Level II Date 6/14-22/00 | Level ___ Date ___ | Level ___ Date ___ | ___ of ___ |

4/00

# AUTOMATED ULTRASONIC P-SCAN CALIBRATION SHEET

00-42

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST THOK Farm | SYSTEM: 107 AP DST | CALIBRATION BLOCK: Notch Block | S84-99-30-146 |
| PROCEDURE: COGEMA-SVUT-INS-.007.3 | | THICKNESS: 1.0" | MATERIAL: C/S |
| UT SYSTEM: PSD-4 | SERIAL #: 206 | REFERENCE BLOCK: ROMPAS | |
| SOFTWARE VERSION: P.Scan SYS-4 1.2 | REV.: Beta 3-6 | THICKNESS: 1.0" | MATERIAL: C/S |
| LINEARITY DUE DATE: 8/8/2000 | | REFERENCE BLOCK TEMP: AMB. °F | PYRO SN: N/A |
| SCANNER TYPE: AWS-5d | SERIAL #: 201 | COUPLANT: $H_2O$ | BATCH #: N/A |
| SCANNER CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |
| SIGNAL CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ. MHz | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE NOM./ACT. | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | KB | MWB | 4 | 8x9 mm | 3022 | | 45/45 | Std | Data |
| 2 | KB | MWB | 4 | 8x9 mm | 3023 | | 45/45 | Std | Scan |
| 3 | KB | MWB | 4 | 8x9 mm | 3025 | | 45/45 | Std | Scan |
| 4 | KB | MWB | 4 | 8x9 mm | 3029 | | 45/45 | Std | Scan |

| | | INITIAL CALIBRATION | CALIBRATION CHECKS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | 6/22/00 | 6/22/00 | 6/24/00 | 6/24/00 | 6/27/00 | 6/27/00 | | |
| TIME | | 16:45 | 21:14 | 09:35 | 14:16 | 11:05 | 15:38 | | |
| REFLECTOR / ORRIENTATION | | 0.050" Notch | 0.050" NOTCH | 0.050" Notch | 0.050" Notch | 0.050" NOTCH | 0.050" NOTCH | | |
| CH. 1 | AMPLITUDE | 80%/0db | 80%/0db | 80%/.8db | 80%/-1db | 80%/0db | 80%/-1.2db | | |
| | LOCATION | 1.417" | 1.407" | 1.409" | 1.407" | 1.417" | 1.409" | | |
| CH. 2 | AMPLITUDE | 80%/0db | 80%/-.8db | 80%/.2db | 80%/-.5db | 80%/-.5db | 80%/-.5db | | |
| | LOCATION | 1.414" | 1.414" | 1.412" | 1.414" | 1.409" | 1.409" | | |
| CH. 3 | AMPLITUDE | 80%/0db | 80%/0db | 80%/0db | 80%/-.2db | 80%/0db | 80%/1.5db | | |
| | LOCATION | 1.417" | 1.409" | 1.417" | 1.414" | 1.407" | 1.409" | | |
| CH. 4 | AMPLITUDE | 80%/0db | 80%/1.5db | 80%/.2db | 80%/.8db | 80%/.2db | 80%/1.2db | | |
| | LOCATION | 1.411" | 1.398" | 1.419" | 1.416" | 1.408" | 1.414" | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

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| Examiner | Examiner | Reviewer | Page |
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# AUTOMATED ULTRASONIC P-SCAN CALIBRATION SHEET

00-42

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST TANK Farm | SYSTEM: 107AP DST | CALIBRATION BLOCK: NOTCH Block 584-99-30-146 | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | | THICKNESS: 1.0" | MATERIAL: C/S |
| UT SYSTEM: PSP-4 | SERIAL #: 206 | REFERENCE BLOCK: ROMPAS | |
| SOFTWARE VERSION: P-Scan SYS-4 1.2 | REV.: Beta 3-6 | THICKNESS: 1.0" | MATERIAL: C/S |
| LINEARITY DUE DATE: 8/8/2000 | | REFERENCE BLOCK TEMP: AmB. °F | PYRO SN.: N/A |
| SCANNER TYPE: MWS-5d | SERIAL #: 201 | COUPLANT: H2O | BATCH #: N/A |
| SCANNER CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |
| SIGNAL CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ. MHz | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE NOM./ACT. | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | KB | MWB | 4 | 8x9 mm | 3026 | | 45/45 | Stnd | See 3 |
| 2 | KB | MWB | 4 | 8x9 mm | 3027 | | 45/45 | Stnd | See 3 |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |

| | | INITIAL CALIBRATION | CALIBRATION CHECKS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | 6/28/00 | 6/28/00 | | | | | | |
| TIME | | 09:36 | 17:27 | | | | | | |
| REFLECTOR / ORRIENTATION | | ~~0.[illegible]~~ 0.080" Notch | 0.080" Notch | | | | | | |
| CH. 1 | AMPLITUDE | 80%/-2db | 80%/-2db | | | | | | |
| | LOCATION | 1.411" | 1.406" | | | | | | |
| CH. 2 | AMPLITUDE | 80%/-2db | 80%/-2db | | | | | | |
| | LOCATION | 1.417" | 1.410" | | | | | | |
| CH. 3 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| CH. 4 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

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4/00

# AUTOMATED ULTRASONIC P-SCAN CALIBRATION SHEET

00-42

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST TANK Farm | SYSTEM: 107 AP DST | CALIBRATION BLOCK: NOTCH Block 584-99-30-146 | |
| PROCEDURE: CDGEMA - SVUT- INS- 007.3 | | THICKNESS: 1.0" | MATERIAL: C/S |
| UT SYSTEM: PSP-4 | SERIAL #: 206 | REFERENCE BLOCK: KOMPAS | |
| SOFTWARE VERSION: P-Scan SYS-4 1.2 | REV: Beta 3-6 | THICKNESS: 1.0" | MATERIAL: C/S |
| LINEARITY DUE DATE: 8/8/2000 | | REFERENCE BLOCK TEMP: AmB. °F | PYRO SN: N/A |
| SCANNER TYPE: AWS-5d | SERIAL #: 201 | COUPLANT: $H_2O$ | BATCH #: N/A |
| SCANNER CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |
| SIGNAL CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ MHZ | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE NOM./ACT. | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | KB | MWB | 4 | 8x9 mm | 3018 | | 60/60 | Stnd | DATA |
| 2 | KB | MWB | 4 | 8x9 mm | 3016 | | 60/60 | Stnd | SCAN |
| 3 | KB | MWB | 4 | 8x9 mm | 3015 | | 60/60 | Stnd | LOG |
| 4 | | | | | | | | | |

| | | INITIAL CALIBRATION | CALIBRATION CHECKS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | 6/15/00 | 6/15/00 | 6/19/00 | 6/19/00 | 6/20/00 | 6/20/00 | 6/26/00 | 6/26/00 |
| TIME | | 10:30 | 21:30 | 12:15 | 22:30 | 09:30 | 20:00 | 16:30 | 21:30 |
| REFLECTOR / ORRIENTATION | | 0.050" Notch | 0.050" Notch | 0.050" Notch | 0.050" Notch | 0.050" Notch | 0.050" Notch | 0.050" Notch | 0.050" Notch |
| CH. 1 | AMPLITUDE | 80%/1db | 80%/1db | 80%/1db | 80%/1.5db | 80% | 80%/1.5db | 80%/.5db | 80%/2db |
| | LOCATION | 2.001" | 2.039" | 1.997" | 1.997" | 2.002" | 1.989" | 2.002" | 2.009" |
| CH. 2 | AMPLITUDE | 80%/0db | 80%/2db | 80%/1db | 80%/2.5db | 80% | 80%/.5db | 80%/.5db | 80%/2.2db |
| | LOCATION | 2.001" | 2.011" | 2.006" | 1.992" | 1.999" | 1.989" | 1.997" | 2.015" |
| CH. 3 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| CH. 4 | AMPLITUDE | | | | | | | | |
| | LOCATION | | | | | | | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

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4/00

# AUTOMATED ULTRASONIC THICKNESS CALIBRATION SHEET

00-42

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST Tank Farm | SYSTEM: 107-AP DST | CALIBRATION BLOCK: Step Block 584-99-30-145 | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | | THICKNESS: 0.1" TO 1.00" | MATERIAL: C/S |
| UT SYSTEM: PSP-4 | SERIAL #: 206 | REFERENCE BLOCK: N/A | |
| SOFTWARE VERSION: P-Scan Sys-4 1.2 | REV: Beta 3-6 | THICKNESS: N/A | MATERIAL: N/A |
| LINEARITY DUE DATE: 8/8/2000 | | REFERENCE BLOCK TEMP: AMB. °F | PYRO SN: N/A |
| SCANNER TYPE: AWS-5d | SERIAL #: 201 | COUPLANT: $H_2O$ | BATCH #: N/A |
| SCANNER CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |
| SIGNAL CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ MHz | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | See Data Sheet |
| 2 | | | | | | | | | |
| 3 | KB | MSEB | 5 | 8X2mm | 1719 | Peak | 0° | Stud | |
| 4 | KB | MSEB | 5 | 8X2mm | 1709 | Peak | 0° | Stud | |

| INITIAL CALIBRATION | | CALIBRATION CHECKS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | 6/15/00 | 6/15/00 | 6/19/00 | 6/19/00 | 6/20/00 | 6/20/00 | 6/21/00 | 6/21/00 |
| TIME | | 10:30 | 21:48 | 12:15 | 22:30 | 09:30 | 20:00 | 13:45 | 19:33 |
| REFLECTOR | | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" |
| CH. 1 | THK.1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 2 | THK.1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 3 | THK.1 | .295" | .285" | .301" | .306" | .302" | .295" | .304" | .302" |
| | THK. 2 | 80%/.997" | 80%/.981" | 80%/1.00" | 80%/.989" | 80%:5/1.00" | 80%/1.00" | 80%/1.00" | 80%/.994" |
| CH. 4 | THK.1 | .299" | .299" | .299" | .299" | .301" | .295" | | |
| | THK. 2 | 80%/1.00" | 80%/1.00" | 80%/1.00" | 80%/.989" | 80%/1.00" | 80%/.993" | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

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| Wesley D Nel | | | ___ of ___ |
| Level III Date 6/15-21/00 | Level ___ Date ___ | Level ___ Date ___ | |

4/00

# AUTOMATED ULTRASONIC THICKNESS CALIBRATION SHEET

00-42

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST Tank Farm | SYSTEM: 107-AP DST | CALIBRATION BLOCK: Step Block 584-99-30-145 | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | | THICKNESS: 0.1" TO 1.00" | MATERIAL: C/S |
| UT SYSTEM: PSP-4 | SERIAL #: 206 | REFERENCE BLOCK: N/A | |
| SOFTWARE VERSION: P-Scan Sys-4 1.2 | REV: Beta 3-6 | THICKNESS: N/A | MATERIAL: N/A |
| LINEARITY DUE DATE: 8/8/2000 | | REFERENCE BLOCK TEMP: AMB. °F | PYRO SN: N/A |
| SCANNER TYPE: AWS-5d | SERIAL #: 201 | COUPLANT: $H_2O$ | BATCH #: N/A |
| SCANNER CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |
| SIGNAL CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ MHZ | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | KB | MSEB | 5 | 8x2mm | 1709 | peak | 0° | stand | |
| 4 | | | | | | | | | |

| INITIAL CALIBRATION | | CALIBRATION CHECKS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | 6/7/00 | 6/7/00 | 6/8/00 | 6/8/00 | 6/12/00 | 6/12/00 | 6/13/00 | 6/13/00 |
| TIME | | 12:23 | 22:37 | 09:41 | 21:50 | 13:35 | 21:00 | 09:27 | 20:30 |
| REFLECTOR | | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" |
| CH. 1 | THK.1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 2 | THK.1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 3 | THK.1 | .301" | .295" | .304" | .306" | .304" | .302" | .308" | .302" |
| | THK. 2 | 80%/1.00" | 80%/.991" | 80%/1.0" | 80%/1.004" | 80%/1.00" | -5db/.994" | 0db/1.002" | 0db/.99" |
| CH. 4 | THK.1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

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| Wesley H Dahn | | | ___ of ___ |
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4/00

# AUTOMATED ULTRASONIC THICKNESS CALIBRATION SHEET

00-42

| | | | |
|---|---|---|---|
| LOCATION: 200 EAST Tank Farm | SYSTEM: 107-AP DST | CALIBRATION BLOCK: Step Block 584-99-30-145 | |
| PROCEDURE: COGEMA-SVUT-INS-007.3 | | THICKNESS: 0.1" TO 1.00" | MATERIAL: C/S |
| UT SYSTEM: PSP-4 | SERIAL #: 206 | REFERENCE BLOCK: N/A | |
| SOFTWARE VERSION: P-Scan Sys-4 1.2 | REV: Beta 3-6 | THICKNESS: N/A | MATERIAL: N/A |
| LINEARITY DUE DATE: 8/8/2000 | | REFERENCE BLOCK TEMP: AMB. °F | PYRO SN: N/A |
| SCANNER TYPE: AWS-5d | SERIAL #: 201 | COUPLANT: $H_2O$ | BATCH #: N/A |
| SCANNER CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |
| SIGNAL CABLE: COAX | | CABLE LENGTH: 246' | CABLE #: N/A |

| CHANNEL | TRANSDUCER MAKE | MODEL | FREQ MHZ | SIZE | SERIAL # | GATE EVAL METHOD | ANGLE | WEDGE TYPE | IMAGE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | KB | MSEB | 5 | 8x2mm | 1709 | Peak | 0° | Stud | |
| 4 | KB | MSEB | 5 | 8x2mm | 1719 | Peak | 0° | Stud | |

| INITIAL CALIBRATION | | CALIBRATION CHECKS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | 6/14/00 | 6/14/00 | 6/22/00 | 6/22/00 | 6/26/00 | 6/26/00 | 6/28/00 | 6/28/00 |
| TIME | | 10:12 | 23:02 | 09:45 | 15:44 | 17:00 | 21:30 | 09:20 | 17:27 |
| REFLECTOR | | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" | .3"/1.00" |
| CH. 1 | THK.1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 2 | THK.1 | | | | | | | | |
| | THK. 2 | | | | | | | | |
| CH. 3 | THK.1 | .304" | .301" | .306" | .299" | .301" | .295" | .306" | .295" |
| | THK. 2 | 80%/1.00" | 80%/.986" | -.5db/.998" | -.2db/.998" | 80%/1.00" | -.2db/.991" | 80%/.998" | 80%/.998" |
| CH. 4 | THK.1 | | | | | .299" | .293" | | |
| | THK. 2 | | | | | .2db/.998" | -1.5db/.998" | | |
| FILE # | | | | | | | | | |
| EXAMINER | | | | | | | | | |

REMARKS

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| [signature] Level III Date 6/14-28/00 | Level ___ Date ___ | Level ___ Date ___ | ___ of ___ |

**Swain Distribution Inc.**

P.O. Box 99
Searcy, AR. 72143-0099
(501) 268-5440
Fax (501) 279-2551

AUG 2000
RECEIVED
E.A. Nelson

August 10, 2000

Mr. Eric A. Nelson
COGEMA Engineering Corp.
2425 Stevens Center
Richland, WA. 99352

This letter is to certify that I have analyzed the P-scan automated ultrasonic data from Hanford waste tank 107 AP. The data I reviewed, which was collected by Mr. Nelson June 7th – 28th, 2000 is acceptable. The vertical strips, vertical and horizontal welds, lower knuckle weld and primary knuckle scans were analyzed to the requirements of COGEMA procedure SVUT-INS-007.3 Revision 0. There were no reportable indications. No cracking or pitting was detected and there was no reportable thinning.

Sincerely,

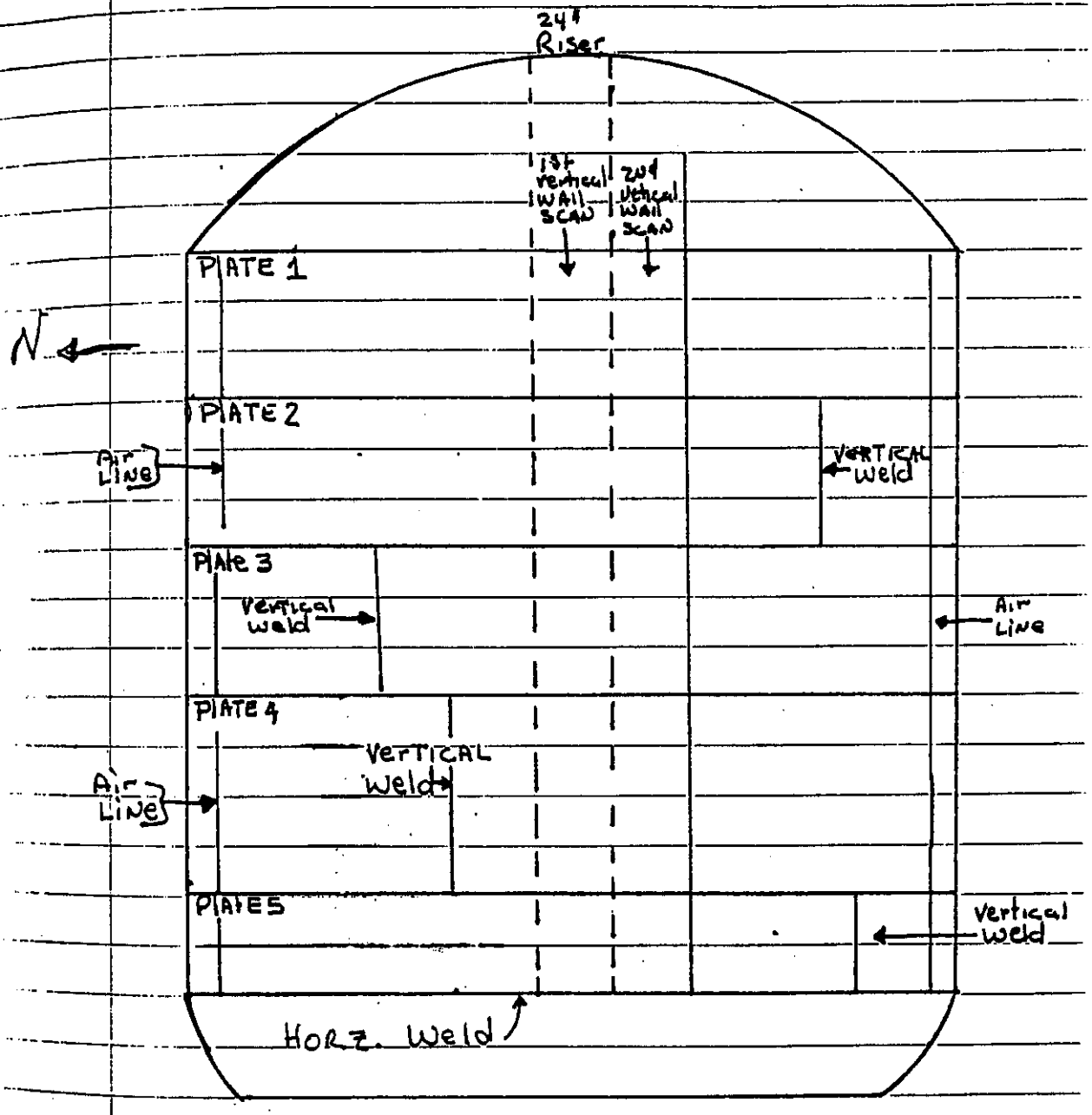
James B. Elder
UT Level III

CC: W. E. Swain – Swain Distribution
Mr. W. H. Nelson - COGEMA

JUNE 2000



107 AP



# ATTACHMENT 5

## PACIFIC NORTHWEST NATIONAL LABORATORY REVIEW OF ULTRASONIC DATA FROM DST 241-AP-107 PRIMARY WALL INSPECTION

**Pacific Northwest National Laboratory**
Operated by Battelle for the
U.S. Department of Energy

August 31, 2000

Mr. Chris E. Jensen
CH2M Hill Hanford Group, Inc.
P.O. Box 1500 – MS R1-04
Richland, WA 99352-1505

Dear Mr. Jensen,

Attached is a copy of the PNNL report describing the results of its third party evaluation of the data recorded by COGEMA on the ultrasonic examination of double shell Tank 241-AP-107. Details are given in the report. The ultrasonic measurements from the tank show no evidence of corrosion in the wall of the tank. No crack-like indications were detected in either the wall or the heat-affected zones of the areas inspected.

If there are questions or if additional information is needed, please contact Jerry Posakony or myself.

Sincerely,

Allan F. Pardini

Allan F. Pardini

Attachment: "Ultrasonic Examination of Double Shell Tank 241-AP-107"

cc: G.J. Posakony – PNNL
T.T. Taylor - PNNL

902 Battelle Boulevard • P.O. Box 999 • Richland, WA 99352

# Ultrasonic Examination of Double Shell Tank 241-AP-107

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August 2000

## Background

COGEMA Engineering Corporation (COGEMA), under a contract from CH2M Hill Hanford Group, Inc. (CHG), has performed an ultrasonic examination of selected portions of Tank 241-AP-107. The purpose of the examination was to provide information that could be used to evaluate the integrity of the primary tank wall. The requirements for the ultrasonic examination of Tank 241-AP-107 were to detect, characterize (identify, size, and locate) and record measurements made of wall thickness and pitting or cracking in the wall or in the heat-affected zone (HAZ) of welds of the primary tank. Any measurements that exceeded the requirements set forth in the Engineering Task Plan, RPP-5583 dated January 10, 2000, were to be reported to CHG for further evaluation. Measurements that are to be specifically reported include the following:

- Wall thinning that exceeds 10% of the nominal thickness of the plate
- Pits with depths that exceed 25% of the plate thickness
- Stress-corrosion cracks located on the inner wall of the primary tank or in the HAZ of welds that exceed a depth of 0.18 in.

The accuracy requirements for depth measurements for the different types of defects includes:

- Wall thinning—measure thickness within ±0.02 in.
- Pits—size depths within ±0.05 in.
- Cracks—size the depth of cracks on the inner wall surfaces within ±0.100 in.
- Location—locate all reportable indications within ±1.0 in.

Under the contract with CHG, all data is to be recorded on disk and hard copies of all measurements are to be provided to PNNL for third party evaluation. PNNL is responsible for preparing report(s) that describe the results of the COGEMA ultrasonic examinations.

Information contained in PNNL Letter Report, dated August 22, 2000, provide detailed information on requirements for personnel qualification, ultrasonic test procedure and ultrasonic test equipment that are to be used for the inspection of the double shell tanks.

## Ultrasonic Examination

The ultrasonic test system used for the examination of Tank 241-AP-107 consisted of a Force Industries, Inc. P-Scan Model PSP-4 ultrasonic instrument and an AWS-5D remotely controlled, magnetic-wheel mechanical crawler designed for remote inspections. The COGEMA ultrasonic test procedure, SVUT-INS-007.3 Revision 0, May 24, 2000, was used for the inspection of 241-AP-107. The personnel involved in the inspection were specifically qualified to perform inspections on the double shell tanks. To perform the ultrasonic examination, the AWS-5D crawler was inserted into the annulus

between the primary and secondary tank and positioned to attach to the wall of the primary tank. Ultrasonic data from two 15-in. wide scan paths spaced approximately 6-in apart provided wall thickness and crack detection measurements of the full height of the tank. Figure 1 shows the location of the two scan paths used for the inspection of the primary tank wall. To inspect welds in Plates #2, #3, #4, # 5 and the knuckle weld, the crawler was maneuvered over the weld to be inspected and the mechanical scanner was positioned to inspect welds in either the vertical or horizontal directions depending on the direction of the weld.

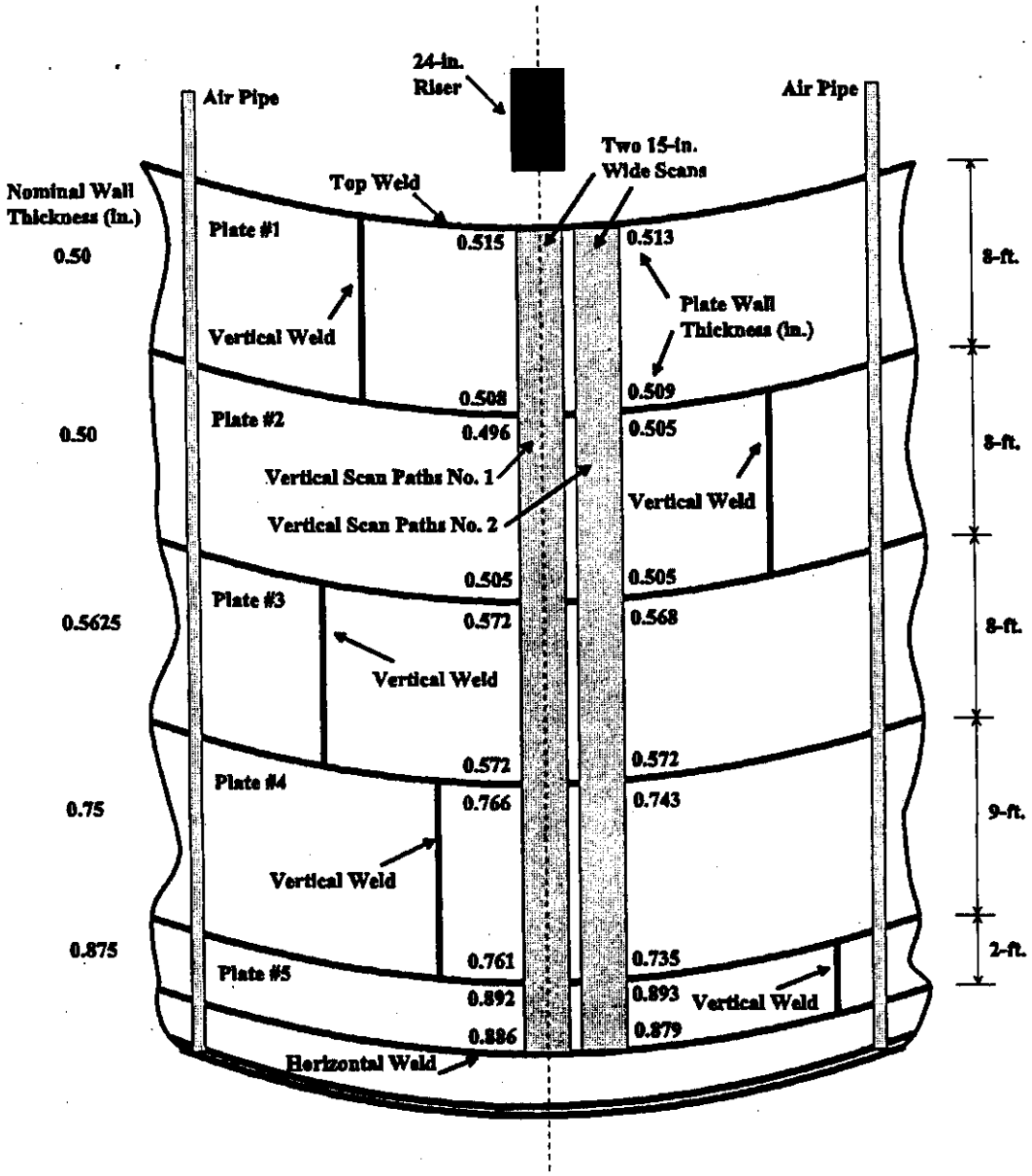


**Figure 1.** Sketch of Vertical Scan Paths No. 1 and 2 used for the Ultrasonic Examination of the Primary Wall of Tank 241-AP-107 [1]

[1] *All historical dimensioning for the design, development and construction of this tank are in English units; consequently, English units are the primary units used in this report. Use 1.0 in. equals 25.4 mm to convert to metric.*

The cylindrical section of 241-AP-107 is 35-ft high and consists of:

- two 8-ft wide plates with a nominal thickness of 0.500 in.
- one 8-ft wide plate with a nominal thickness of 0.5625 in.
- one 9-ft wide plate with a nominal thickness of 0.750 in.
- one 2-ft wide transition plate between the shell of the tank and the tank knuckle with a nominal thickness of 0.875 in.

The sketch also includes information on the wall thickness measurements made at the top and bottom of each plate showing the range of wall thickness measured for each plate. A review of the information in the "Automated Ultrasonic Thickness Data Reports" for wall thickness measurements in the wall of the primary tank (See Tables 1 through 5) shows little evidence of corrosion in this tank. No cracks were detected in either the wall or welds of the primary tank.

## Results from the Ultrasonic Examination of the Primary Tank Wall in 241-AP-107

The ultrasonic test procedure, established for the examination of the primary tank wall, required the following:

- a zero-degree transducer for detecting and sizing wall thinning/corrosion and pitting.
- two separate 45-degree angle beam transducers with opposing ultrasonic beams for detecting and sizing of any cracks that might be present in the plates.

For wall thickness measurements, the scanning bridge, which is incorporated into the AWS-5D magnetic-wheel crawler, translates the transducers over a 15-in. wide scan path. Upon completion of a full scan path, the crawler is indexed downward a distance of 0.030 in. and the scan is repeated. The P-Scan-Model PSP-4 ultrasonic system acquires measurement data every 0.030-in. (pixel) as the scanner traverses the bridge. The thickness value recorded in any 0.030-in. by 0.030-in. pixel is the minimum wall thickness in that pixel. Data from the traverse and index directions are recorded digitally on disks for post analysis.

The data in Tables 1 through 5 were taken from the "Automated Ultrasonic Thickness Data Report" prepared by the COGEMA analyst describing the results of the examination of the primary tank wall. The data that appears on the analyst's data report is the minimum value in any pixel recorded for a 15-in. by 12-in area. The first column in the tables describes the distance from the top weld of the primary tank (tank to dome). Wall thickness and results from the 45-degree angle beam tests are shown in the columns for Scan Paths No. 1 and 2.

In addition to these reports, hard copy C-scan (area) and B-scan (cross section) color printouts were provided for each vertical foot of the tank wall that was inspected. These printouts provide detailed information of location and size of any anomalies. The wall thickness values in the tables are taken from the analyst's report. To obtain detailed information, the procedure followed is to analyze the B-scan and C-scan hard copy records for each foot to the area inspected. Interpreting the data requires analysis of both the analyst's record and the B-scan and C-scan plots.

**Table 1.** Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #1

| Distance from the Top Weld (ft) | Results from the Ultrasonic Examination of Plate #1. Vertical Scan Path No. 1 | | Results from the Ultrasonic Examination of Plate #1. Vertical Scan Path No. 2 | |
|---|---|---|---|---|
| | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination |
| 0 to 1 | 0.515 | No crack-like indications were detected during the examination of this plate | 0.513 | No crack-like indications were detected during the examination of this plate |
| 1 to 2 | 0.510 | | 0.512 | |
| 2 to 3 | 0.520 | | 0.520 | |
| 3 to 4 | 0.515 | | 0.511 | |
| 4 to 5 | 0.499 | | 0.510 | |
| 5 to 6 | 0.510 | | 0.520 | |
| 6 to 7 | 0.515 | | 0.515 | |
| 7 to 8 | 0.508 | | 0.509 | |

The nominal thickness of this plate is 0.500 in. No corrosion is evident from the ultrasonic measurements made on this plate. There was no evidence of cracks in the plate wall.

**Table 2.** Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #2

| Distance from the Top Weld (ft) | Results from the Ultrasonic Examination of Plate #2. Vertical Scan Path No. 1 | | Results from the Ultrasonic Examination of Plate #2. Vertical Scan Path No. 2 | |
|---|---|---|---|---|
| | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination |
| 8 to 9 | 0.496 | No crack-like indications were detected during the examination of this plate | 0.505 | No crack-like indications were detected during the examination of this plate |
| 9 to 10 | 0.515 | | 0.509 | |
| 10 to 11 | 0.516 | | 0.510 | |
| 11 to 12 | 0.515 | | 0.500 | |
| 12 to 13 | 0.508 | | 0.500 | |
| 13 to 14 | 0.511 | | 0.512 | |
| 14 to 15 | 0.501 | | 0.509 | |
| 15 to 16 | 0.505 | | 0.505 | |

The nominal thickness of this plate is 0.500 in. No corrosion is evident from the ultrasonic measurements made on this plate. There was no evidence of cracks in the plate wall.

**Table 3.** Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #3

| Distance from the Top Weld (ft) | Results from the Ultrasonic Examination of Plate #3. Vertical Scan Path No. 1 | | Results from the Ultrasonic Examination of Plate #3. Vertical Scan Path No. 2 | |
|---|---|---|---|---|
| | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination |
| 16 to 17 | 0.572 | No crack-like indications were detected during the examination of this plate | 0.568 | No crack-like indications were detected during the examination of this plate |
| 17 to 18 | 0.574 | | 0.571 | |
| 18 to 19 | 0.576 | | 0.573 | |
| 19 to 20 | 0.579 | | 0.577 | |
| 20 to 21 | 0.579 | | 0.578 | |
| 21 to 22 | 0.577 | | 0.577 | |
| 22 to 23 | 0.576 | | 0.573 | |
| 23 to 24 | 0.572 | | 0.572 | |

The nominal thickness of this plate is 0.5625 in. No corrosion is evident from the ultrasonic measurements made on this plate. There was no evidence of cracks in the plate wall.

**Table 4.** Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #4

| Distance from the Top Weld (ft) | Results from the Ultrasonic Examination of Plate #4. Vertical Scan Path No. 1 | | Results from the Ultrasonic Examination of Plate #4. Vertical Scan Path No. 2 | |
|---|---|---|---|---|
| | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination |
| 24 to 25 | 0.766 | No crack-like indications were detected during the examination of this plate | 0.743 | No crack-like indications were detected during the examination of this plate |
| 25 to 26 | 0.763 | | 0.773 | |
| 26 to 27 | 0.770 | | 0.776 | |
| 27 to 28 | 0.774 | | 0.775 | |
| 28 to 29 | 0.774 | | 0.775 | |
| 29 to 30 | 0.765 | | 0.776 | |
| 39 to 31 | 0.772 | | 0.765 | |
| 31 to 32 | 0.768 | | 0.766 | |
| 32 to 33 | 0.761 | | 0.735 | |

The nominal thickness of this plate is 0.750 in. No corrosion is evident from the ultrasonic measurements made on this plate. There was no evidence of cracks in the plate wall.

**Table 5.** Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #5

| Distance from the Top Weld (ft) | Results from the Ultrasonic Examination of Plate #5. Vertical Scan Path No. 1 | | Results from the Ultrasonic Examination of Plate #5. Vertical Scan Path No. 2 | |
|---|---|---|---|---|
| | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination | Minimum Thickness Recorded in Area Scanned (in.) | 45-Degree Angle Beam Examination |
| 33 to 34 | 0.892 | * | 0.893 | * |
| 34 to 35 | 0.886 | * | 0.879 | * |

(*) There was no evidence of cracks in the plate wall. The nominal thickness of this plate is 0.875 in. No corrosion is evident from the ultrasonic measurements made on this plate.

## Results from the Ultrasonic Examination of Selected Welds in the HAZ of 241-AP-107

The HAZ of welds in the tank wall was defined in the ultrasonic test procedure as an area 1-in. wide and 3/4T (thickness) on the inner surface of the tank wall and on both sides of the weld. The HAZ is measured from the edge of the weld crown toward the parent plate material. Cracks to be detected (if present) initiate on the inner surface of the tank wall (see PNNL 11971).

For inspecting the HAZ of welds, the ultrasonic test procedure required use of three separate ultrasonic transducer configurations.

- a zero degree transducer was used to detect and size wall thinning/corrosion and pitting in the HAZ.
- two opposing 45-degree angle-beam transducers were used to detect and size cracks that lie perpendicular to the weld in the HAZ.
- one 60-degree transducer was used to detect and size cracks that lie parallel to the weld in the HAZ.

Wall thickness readings in the HAZ were recorded on the "Automated Ultrasonic Thickness Reports" prepared by the COGEMA analyst. Hard copy B-scan (cross section) and C-scan (area) color printouts were provided for all HAZ areas examined. Weld examinations were performed on vertical welds in Plates #2, 3, 4, and 5 as well a portion of the knuckle weld. No examination was done on the vertical weld in Plate #1. Summarizing the results of the examinations:

- Plate #2 - - 8 ft of vertical weld. The zero degree beam measurements showed values ranging from 0.488 to 0.496 in. No evidence of cracking was detected with either the 45-degree or 60-degree transducers.
- Plate #3 - - 8 ft of vertical weld. The zero degree beam measurements showed values ranging from 0.553 to 0.560 in. No evidence of cracking was detected with either the 45-degree or 60-degree transducers.
- Plate #4 - - 9 ft of vertical weld. The zero degree beam measurements showed values ranging from 0.730 to 0.747 in. No evidence of cracking was detected with either the 45-degree or 60 degree transducers.

- Plate #5 - - 2 ft of vertical weld. The zero degree beam measurements showed values ranging from 0.860 to 0.865 in. No evidence of cracking was detected with either the 45-degree or 60 degree transducers
- Primary Knuckle Weld - - 20 ft of weld. The zero degree beam measurements showed values ranging from 0.862 to 0.892 in. on the nominal 0.875 side of the weld, and from 0.915 to 0.942 in. on the nominal 0.937 side of the weld. No evidence of cracking was detected with either the 45-degree or 60-degree transducers.

## Summary

The ultrasonic measurements of wall thickness of the plates (#1 & #2) in the primary tank with the nominal 0.500-in. thickness ranged from 0.496 to 0.520. In Plate #3 (nominal thickness of 0.5625) the ultrasonic measurements of wall thickness ranged from 0.568 to 0.579 in. In Plate #4 (nominal thickness of 0.750) the ultrasonic measurements of wall thickness ranged from 0.735 to 0.776 in. In Plate #5 (2-ft section with a nominal thickness of 0.875) the ultrasonic measurements ranged from 0.879 to 0.893. Since these measurements are minimum values recorded in the tank wall, it would indicate no corrosion occurring in this tank. No crack-like indications were detected in the wall of the tank or in the HAZ of the welds inspected.

# ATTACHMENT 6

## COGEMA LEVEL III REVIEW OF ULTRASONIC DATA FOR DST 241-AP-107

COGEMA-00-1518

COGEMA
ENGINEERING CORP.

August 14, 2000

COGEMA-00-1518R1

Mr. Chris E. Jensen MSIN R1-04
CH2M Hill Hanford Group, Inc.
Post Office Box 1500
Richland, Washington 99352-1500

Dear Mr. Jensen:

AP-107 Double Shell Tank Ultrasonic Examination Data Reports

COGEMA Engineering, on Tuesday, August 8, 2000, delivered Ultrasonic Examination Calibration Sheets, Ultrasonic Data Reports, and the results from the independent Level III overview of the data to Allan Pardini of Pacific Northwest National Laboratory. Specifically this included, first and second wall scan reports, vertical weld scan reports, horizontal weld scan reports, and knuckle scan reports. Delivery of these reports completes activity 7552 identified on the DST Ultrasonic Exam Report project schedule.

A revised copy of the letter dated August 10, 2000 from the independent Level III overview, is enclosed for your information. The revision corrects the identity of the scanned tank.

Sincerely,

J. C. Krogness

J. C. Krogness, Manager
Nondestructive Examination

Enclosure

sj

cc: PNNL - A. F. Pardini K5-26

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Richland, Washington 99352-0840
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COGEMA
ENGINEERING CORP.

August 8, 2000

COGEMA-00-1518

Mr. Chris E. Jensen MSIN R1-04
CH2M Hill Hanford Group, Inc.
Post Office Box 1500
Richland, Washington 99352-1500

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Nondestructive Examination

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cc: PNNL - A. F. Pardini K5-26

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# ATTACHMENT 7

# UT INSPECTION DATA TABLES

Table 1 Primary Tank Vertical Wall Weld Scan - Plate 2 (Attachment 4 pg. 168 of data sheets)

| Location: 1 in. below horiz. weld @ centerline of weld. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.500 | 0.500 | 0.490 |
| 12 in. – 24 in. | 0.500 | 0.500 | 0.494 |
| 24 in. – 36 in. | 0.500 | 0.500 | 0.496 |
| 36 in. – 48 in. | 0.500 | 0.500 | 0.492 |
| 48 in. - 60 in. | 0.500 | 0.500 | 0.490 |
| 60 in. – 72 in. | 0.500 | 0.500 | 0.492 |
| 72 in. – 84 in. | 0.500 | 0.500 | 0.492 |
| 84 in. – 96 in. | 0.500 | 0.500 | 0.488 |

Table 2 Primary Tank Vertical Wall Weld Scan - Plate 3 (Attachment 4 pg. 195 of data sheets)

| Location: 1 in. below horiz. weld @ centerline of weld. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.563 | 0.570 | 0.554 |
| 12 in. – 24 in. | 0.563 | 0.570 | 0.558 |
| *0 in. – 12 in. | 0.563 | 0.570 | 0.556 |
| 12 in. – 24 in. | 0.563 | 0.575 | 0.560 |
| 24 in. – 36 in. | 0.563 | 0.575 | 0.558 |
| 36 in. – 48 in. | 0.563 | 0.575 | 0.559 |
| 48 in. – 60 in. | 0.563 | 0.575 | 0.558 |
| 60 in. – 70.5 in. | 0.563 | 0.570 | 0.553 |

* Restart of scan is continuation from end of previous scan

Table 3 Primary Tank Vertical Wall Weld Scan - Plate 4 (Attachment 4 pg. 222 of data sheets)

| Location: 1 in. below horiz. weld @ centerline of weld. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.750 | 0.750 | 0.741 |
| 12 in. – 24 in. | 0.750 | 0.750 | 0.744 |
| 24 in. – 36 in. | 0.750 | 0.750 | 0.747 |
| 36 in. – 48 in. | 0.750 | 0.750 | 0.730 |
| 48 in. - 60 in. | 0.750 | 0.750 | 0.746 |
| 60 in. – 72 in. | 0.750 | 0.750 | 0.740 |
| 72 in. – 84 in. | 0.750 | 0.750 | 0.737 |
| 84 in. – 96 in. | 0.750 | 0.750 | 0.735 |
| 96 in. – 105.3 in. | 0.750 | 0.750 | 0.742 |

Table 4 Primary Tank Vertical Wall Weld Scan - Plate 5 (Attachment 4 pg. 252 of data sheets)

| Location: 1 in. below horiz. weld @ centerline of weld. | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.875 | 0.866 | 0.860 |
| 12 in. – 20.4 in. | 0.875 | 0.873 | 0.865 |

Table 5 Primary Tank Horizontal Weld Plate to Knuckle Scan (Attachment 4 pg. 261 of data sheets)

| Location: 108 in. north from knuckle vertical weld * | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.875 | 0.896 | 0.877 |
| 12 in. – 24 in. | 0.875 | 0.897 | 0.879 |
| 24 in. – 36 in. | 0.875 | 0.897 | 0.882 |
| 36 in. – 48 in. | 0.875 | 0.896 | 0.879 |
| 48 in. – 60 in. | 0.875 | 0.896 | 0.877 |
| 60 in. – 72 in. | 0.875 | 0.896 | 0.872 |
| 72 in. – 84 in. | 0.875 | 0.895 | 0.875 |
| 84 in. – 96 in. | 0.875 | 0.895 | 0.875 |
| 96 in. – 108 in. | 0.875 | 0.895 | 0.892 |
| 108 in. – 120 in. | 0.875 | 0.895 | 0.879 |
| 120 in. – 122 in. | 0.875 | 0.895 | 0.872 |

Table 6 Primary Tank Horizontal Weld Plate to Knuckle Scan (Attachment 4 pg. 274 of data sheets)

| Location: continuation from 122" (Table 5) | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.875 | 0.895 | 0.878 |
| 12 in. – 24 in. | 0.875 | 0.895 | 0.877 |
| 24 in. – 36 in. | 0.875 | 0.897 | 0.879 |
| 36 in. – 48 in. | 0.875 | 0.895 | 0.877 |
| 48 in. - 60 in. | 0.875 | 0.895 | 0.878 |
| 60 in. – 72 in. | 0.875 | 0.898 | 0.883 |
| 72 in. – 84 in. | 0.875 | 0.897 | 0.877 |
| 84 in. – 96 in. | 0.875 | 0.902 | 0.877 |
| 96 in. – 108 in. | 0.875 | 0.892 | 0.883 |
| 108 in. – 120 in. | 0.875 | 0.887 | 0.862 |

*Scan begins at northern reach of scanner, scan south past first vertical weld at 108-in.

Table 7 Primary Tank Horizontal Weld Plate to Knuckle Scan (Attachment 4 pg. 285 of data sheets)

| Location: 108 in. north from first vertical weld* | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.938 | 0.950 | 0.939 |
| 12 in. – 24 in. | 0.938 | 0.945 | 0.921 |
| 24 in. – 36 in. | 0.938 | 0.945 | 0.935 |
| 36 in. – 48 in. | 0.938 | 0.940 | 0.930 |
| 48 in. – 60 in. | 0.938 | 0.940 | 0.921 |
| 60 in. – 72 in. | 0.938 | 0.940 | 0.930 |
| 72 in. – 84 in. | 0.938 | 0.940 | 0.920 |
| 84 in. – 96 in. | 0.938 | 0.940 | 0.915 |
| 96 in. – 108 in. | 0.938 | 0.945 | 0.926 |
| 108 in. – 120 in. | 0.938 | 0.960 | 0.937 |
| 120 in. – 122 in. | 0.938 | 0.960 | 0.942 |

Table 8 Primary Tank Horizontal Wall Weld Plate to Knuckle Scan (Attachment 4 pg. 297 of data sheets)

| Location: continuation from 122-in. (Table 7) | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.938 | 0.960 | 0.926 |
| 12 in. – 24 in. | 0.938 | 0.955 | 0.928 |
| 24 in. – 36 in. | 0.938 | 0.955 | 0.930 |
| 36 in. – 48 in. | 0.938 | 0.950 | 0.934 |
| 48 in. - 60 in. | 0.938 | 0.950 | 0.931 |
| 60 in. – 72 in. | 0.938 | 0.950 | 0.930 |
| 72 in. – 84 in. | 0.938 | 0.950 | 0.927 |
| 84 in. – 96 in. | 0.938 | 0.950 | 0.931 |
| 96 in. – 108 in. | 0.938 | 0.955 | 0.931 |
| 108 in. – 120 in. | 0.938 | 0.950 | 0.926 |

*Scan begins at northern reach of scanner, scan south past first vertical weld at 108-in.

Table 9 Primary Tank Knuckle Scan (Attachment 4 pg. 405 of data sheets)

| Location: 102.5 in. north from first vert. weld* | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.938 | 0.940 | 0.915 |
| 12 in. – 24 in. | 0.938 | 0.937 | 0.925 |
| 24 in. – 36 in. | 0.938 | 0.935 | 0.919 |
| 36 in. – 48 in. | 0.938 | 0.935 | 0.910 |
| 48 in. - 60 in. | 0.938 | 0.931 | 0.923 |
| 60 in. – 72 in. | 0.938 | 0.930 | 0.923 |
| 72 in. – 84 in. | 0.938 | 0.932 | 0.910 |
| 84 in. - 96 in. | 0.938 | 0.936 | 0.920 |
| 96 in. – 108 in. | 0.938 | 0.950 | 0.920 |
| 108 in. – 120 in. | 0.938 | 0.952 | 0.937 |

Table 10 Primary Tank Knuckle Scan (Attachment 4 pg.428 of data sheets)

| Location: continuation from 120-in (Table 9) | Design Nominal (in.) | Measured Average (in.) | Measured Minimum (in.) |
|---|---|---|---|
| 0 in. – 12 in. | 0.938 | 0.949 | 0.921 |
| 12 in. – 24 in. | 0.938 | 0.949 | 0.923 |
| 24 in. – 36 in. | 0.938 | 0.945 | 0.925 |
| 36 in. – 48 in. | 0.938 | 0.945 | 0.925 |
| 48 in. - 60 in. | 0.938 | 0.943 | 0.929 |
| 60 in. – 72 in. | 0.938 | 0.943 | 0.924 |
| 72 in. – 84 in. | 0.938 | 0.947 | 0.923 |
| 84 in. - 96 in. | 0.938 | 0.950 | 0.933 |
| 96 in. – 108 in. | 0.938 | 0.950 | 0.912 |
| 108 in. – 120 in. | 0.938 | 0.940 | 0.915 |
| 120 in. – 125 in. | 0.938 | 0.940 | 0.911 |

*Scan begins at northern reach of scanner, scan south past first vertical weld at 108-in.