Generic System Components of the Thiokol Ultrasonic RSRM Case-to-Insulation Bondline Inspection System Final Test Report

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Generic System Components of the Thiokol Ultrasonic RSRM Case-to-Insulation Bondline Inspection System Final Test Report

Test Planning and Reporting

Approved by:

[Signatures and dates of approval]
Qualification testing of the Ultrasonic Redesigned Solid Rocket Motor Bondline Inspection Systems (URBIS) was conducted at the Thiokol Nondestructive Evaluation Test Facility M337A and at the Rotation Process Storage Facility at Kennedy Space Center. The test was performed on portions of the URBIS that are generic to redesigned solid rocket motor case-to-insulation bondline inspections. Testing began on 13 Feb 1989 and was completed on 26 May 1989.

The main purpose of the test was to verify that each URBIS performed to the manufacturer's specifications in the same manner and to make any procedural changes necessary for specific redesigned solid rocket motor inspections. All five URBISs passed every stage of the qualification test. Each URBIS has now been qualified for use on redesigned solid rocket motors, and verifying that each URBIS obtained and analyzed data in a similar fashion has eliminated concerns about variations in data between the five systems.

The following recommendations have been made as a result of this test: 1) Each URBIS should be located within a stable environment. 2) An electronic preventative maintenance program should be established for each URBIS. 3) When the URBIS is being utilized to perform transducer analysis, the URBIS equipment setting should match the equipment setting noted on the manufacturer-supplied transducer certification sheet. 4) Optimum scan velocities for each inspection technique (clevis, capture feature, pinhole and membrane) should be determined through further testing.
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ACRONYMS AND ABBREVIATIONS

AD .... analog-digital
CRT .... cathode-ray tube
dc ...... direct current
EMI ...... electromagnetic interference
GHz ...... gigahertz
kHz ...... kilohertz
MHz ...... megahertz
NDE ...... nondestructive evaluation
PM ...... preventive maintenance
RF ...... radio frequency
RPSF .... Rotation Process Storage Facility
RSRM .... redesigned solid rocket motor
TPS ...... test preparation sheet
URBIS ... Ultrasonic RSRM Bondline Inspection System
VIP ...... volumetric inspection system
INTRODUCTION

This report presents the procedures, performance, and results of the qualification tests for the portions of Combustion Engineering's AMDATA Intraspect/98 Data Acquisition and Imaging System that are generic to redesigned solid rocket motor (RSRM) case-to-insulation bondline inspections. The Intraspect/98 system will be referred to as the Thiokol Ultrasonic RSRM Bondline Inspection System (URBIS) (C77-0479). The four bondline inspections are applied to the capture feature, clevis, pinholes, and membrane. The purpose of the URBIS is to execute scan sequences, gather and analyze data, and archive the data. Ultrasonic inspections specific to the capture feature, clevis, pinholes, and membrane will be qualified in the future per their own tests.

The test focused only on the performance of URBIS components that were independent of specific RSRM inspections. The qualification of each URBIS began with documentation of the calibration and checkout of the major URBIS components by Combustion Engineering personnel prior to Thiokol's receiving the URBIS. A recalibration and checkout by Thiokol Electronic Maintenance personnel was performed just prior to the qualification test. The qualification functional checks were then performed on the system, ultrasonic, mechanical, and computer portions of the system.

Testing was conducted in accordance with CTP-0100, "Qualification Test Plan For The Generic System Components Of The MTI Ultrasonic RSRM Bondline Inspection System (URBIS)." The objectives and procedures of CTP-0100 were derived from AMDATA manuals and specifications (referenced in Section 7.0, Applicable Documents). Testing was performed to ensure that each URBIS performed to the manufacturer-specified requirements and to note any changes needed for specific RSRM applications. It is recommended that CTP-0100 and the AMDATA manuals and specifications be referred to for further explanation of URBIS components and test procedures.

Five complete URBIS systems were qualified: 1) Thiokol Nondestructive Evaluation (NDE) Lab Inspection System (S/N S-A51866), 2) Thiokol RSRM Insulated Level Inspection System (S/N S-A51868), 3 and 4) Thiokol Final Assembly Loaded Level Inspection System (S/Ns S-A51865 and S-A51869), and 5) KSC Loaded Level Inspection System (P/N 2U129431-001).

The prequalification recalibration and checkout was performed at the Thiokol Electronic Maintenance Facility M-71 and at the Kennedy Space Center (KSC) Rotation Process Storage Facility (RPSF). The qualification testing was conducted at the Thiokol NDE Test Facility M337A and at the RPSF. Testing began on 13 Feb 1989 and was completed on 26 May 1989.
1.1 TEST ARTICLE DESCRIPTION

Test article configuration was controlled by applicable AMDATA drawings and CTP-0100. The URBIS (Amdata Inraspect/98 Data Acquisition and Imaging System) (Figures 1 through 3) consists of:

- Hewlett Packard 9836CS computer, color monitor and hard disk printers
- Amdata's volumetric inspection system (VIP) software
- Remote data acquisition system (RDAS)
- Motion or scan controller (SC5032)
- Remote pulser-preamplifier (RPP5RT)
- AMAPS scanner (Model 2090)
- Remote receiver (RR4RT)
- Topaz uninterruptable power supply (UPS)
- Couplant supply system (Model 1010)
- 250-ft umbilical cable
- Communication set
- Membrane scanner

In addition to the URBIS components and associated test instrumentation (listed in Section 4.0), a 12- by 18-in. case/insulation sample was used for the electromagnetic interference (EMI) and later tests. Also, a Parker Contour Probe (Model DA-400) was used to impose extreme EMI levels on the data acquisition cables.
Figure 1. Ultrasonic RSRM Bondline Inspection System (URBIS)
Figure 3. AMAPS 2090 Scanner—Transducer Fixture for RSRM Membrane Scanning (side view)
OBJECTIVES

The following test objectives were derived from AMDATA manuals and specifications referenced in Section 7.0, Applicable Documents.

A. Verify that the system components perform as specified by the vendor.
B. Verify that the band pass filters, generic transducer analysis software, and analog-digital (AD) converter are working properly as well as the shielding of the data acquisition cables against EMI.
C. Verify that the Y-axis transducer positions accurately.
D. Verify that the X-axis transducer positions accurately.
E. Verify that the manufacturer-specified Y-axis scan velocity allows data to be digitized and displayed in both the peak detection and radio frequency (RF) modes.
F. Verify that the manufacturer-specified X-axis scan velocity allows data to be digitized and displayed in both the peak detection and RF modes.
G. Verify that, in the event of a power failure, the URBIS will provide the operator with enough time to shut down a scan and store all data that had been accumulated up to the point of the power failure.
H. Verify cathode-ray tube (CRT) color scale accuracy and display clarity.
I. Verify that the color scale presentation on the CRT is the same as the colors produced on the printer.
J. Verify that data file transfers from the URBIS hard disk to the data tape cartridge and then back do not compromise the data. (This additional objective was added by nondestructive engineering after the completion of CTP-0100.)
EXECUTIVE SUMMARY

3.1 SUMMARY

This section contains an executive summary of the key results from test data evaluation. Additional information and details can be found in Section 6, Results and Discussion.

Qualifying the generic components of the five URBISs consisted of two major efforts: 1) a prequalification electronic and mechanical maintenance/recalibration, and 2) a series of qualification tests to check out the electrical, mechanical, and software limitations of each system. Except where testing was unique to RSRM hardware, all testing was performed to baseline inspection procedures (per CTP-0100) from the manufacturer and vendor, Combustion Engineering.

Operating instructions from the manufacturer were for more simplified inspections than for the RSRM. Testing determined that these operating procedures required some alterations to allow for RSRM compatibility; the most significant change was to the scan velocity. The manufacturer recommends one scan velocity for all inspections, but it was determined that different scan velocities are necessary for each type of RSRM scan. A minimum scan velocity for all RSRM inspections was obtained during this test.

The main purpose of the test was to verify that each URBIS performed to the manufacturer's specifications in the same manner and to make any procedural changes necessary for specific RSRM inspections. Each URBIS passed every stage of the qualification test, and the results from all tests were very encouraging. Each URBIS has now been qualified for use on RSRMs, and verifying that each URBIS obtained and analyzed data in a similar fashion has eliminated concerns about variations in data between the five systems. This test also provided many insights into other areas of concern such as the URBIS working environment, preventative maintenance, and matching of equipment.

3.2 CONCLUSIONS

The following columns list the conclusions as they relate specifically to the objectives. Additional information to support each objective and conclusion can be found in Section 6.2, Test Description, Results, and Discussion.
Objective

A. Verify that the system components perform as specified by the manufacturer.

B. Verify that the band pass filters, generic transducer analysis software, and AD converter are working properly, as well as the shielding of the data acquisition cables against EMI.

C. Verify that the Y-axis transducer positions accurately.

D. Verify that the X-axis transducer positions accurately.

E. Verify that the manufacturer-specified Y-axis scan velocity allows data to be digitized and displayed in both the peak detection and RF modes.

Conclusion

Verified. Each URBIS passed the system diagnostic self-test, which verified that each component was properly configured and properly interfaced with all other components. Each URBIS also passed the system validation test, which verified that all parameters that could affect data interpretation were within tolerance.

Verified in each case:

The band pass filters for each URBIS performed per manufacturer specifications, allowing only waveforms within specific frequencies to be displayed.

The generic transducer analysis software for each URBIS performed per manufacturer specifications. It was verified that the data sampling rate should be at least four times the specified frequency for each particular transducer.

Each URBIS successfully completed the analog/digital converter verification test, which determined the maximum amount of data that could be digitized at various scan speeds.

All URBIS shielded data acquisition cables withstood manufacturer-specified EMI limits with no degradation in performance. A magnetic probe was used to subject cabling to intense EMI fields.

Verified. The Y-axis accuracy of each URBIS transducer was within manufacturer-specified limits.

Verified. The X-axis positioning accuracy of each URBIS transducer was within manufacturer-specified limits.

Initial attempts to obtain data using the manufacturer-specified scan velocity (4.0 in./sec) failed for both the peak detect and RF mode tests. It became evident that RSRM hardware differs significantly from hardware that was used to obtain the vendor-specified scan velocity. New scan velocities were tried, and each URBIS then passed testing. It was determined that a maximum, reliable scan velocity of 2.5 in./sec should be used simultaneously in both the X and Y directions. Scan velocity should be lowered as the amount of data retrieval increases.
Objective

F. Verify that the manufacturer-specified X-axis scan velocity allows data to be digitized and displayed in both the peak detection and RF modes.

G. Verify that, in the event of a power failure, the URBIS will provide the operator with enough time to shut down a scan and store all data that had been accumulated up to the point of the power failure.

H. Verify CRT color scale accuracy and display clarity.

I. Verify that the color scale presentation on the CRT is the same as the colors produced on the printer.

Additional Objective

J. Verify that data file transfers from the URBIS hard disk to the data tape cartridge and then back do not compromise the data. (This additional objective was added by nondestructive engineering after the completion of CTP-0100.)

Conclusion

Initial attempts to obtain data using the manufacturer-specified scan velocity (4.0 in./sec) failed for both the peak detect and RF mode tests. It became evident that RSRM hardware differs significantly from hardware that was used to obtain the vendor-specified scan velocity. New scan velocities were tried, and each URBIS then passed testing. It was determined that a maximum, reliable scan velocity of 2.5 in./sec should be used simultaneously in both the X and Y directions. Scan velocity should be lowered as the amount of data retrieval increases.

Verified. Each URBIS performed and passed the uninterruptable power supply tests as specified by the manufacturer.

Verified. The CRT display clarity and color were within manufacturer-specified parameters.

Verified. The CRT and printer hard copy display clarity and color matched and were within manufacturer-specified parameters.

Verified. Each URBIS performed and passed the data file integrity verification test with no degradation to the data.

3.3 RECOMMENDATIONS

As a result of the generic system components of the URBIS qualification test, the following recommendations have been made:

1. Each URBIS should be located within a stable environment. Erratic fluctuations in temperature and/or humidity will degrade URBIS performance. Although each URBIS qualification test was performed in an environmentally controlled laboratory, systems in use (particularly at Thiokol Final Assembly) have experienced output problems due to heat. Because the URBIS generates large amounts of heat, ambient temperature should be 75° ± 5°F, and relative humidity should be less than 60 percent. All URBIS components should be positioned to allow maximum air circulation and ventilation.
An electronic preventative maintenance (PM) program should be established for each URBIS. This program would require that each URBIS be routinely checked after every 125 hr of operation or every 6 months, whichever comes first. The PM would follow the manufacturer's suggested maintenance procedures (identical to the prequalification procedures), which include electronic recalibration, hardware cleaning, and inspecting for wear.

When the URBIS is being utilized to perform transducer analysis, the URBIS equipment setting should match the equipment setting noted on the manufacturer-supplied transducer certification sheet. The manufacturer-provided URBIS aluminum reference standard shall be used during transducer analysis. The first full backwall reflection from the reference standard shall be used in the analysis. The analysis should not contain more than five half-cycles of the backwall reflection. Unless otherwise specified, the URBIS shall digitize the signal at a sampling rate of at least four times the specified frequency of the transducer. The primary pulse width shall be the inverse of two times the resonant frequency of the transducer. The pulse width shall then be adjusted to obtain the highest amplitude response. Also, all transducers should be recertified at least every six months, depending on use.

Optimum scan velocities for each inspection technique (clevis, capture feature, pinhole and membrane) need to be determined. The amount of data taken and the component velocities for the X and Y axes govern optimum scan velocities. NDE design engineering is currently working to obtain these optimum scanning velocities.
Test instruments were electrically zeroed and calibrated in accordance with MIL-STD-45662. In addition to the URBIS, the following equipment was used during testing:

**Instrumentation**

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<tr>
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<td>Generic transducer analysis software verification</td>
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<tr>
<td>Marconi Instruments 10 kHz-1 GHz Signal Generator, 2022C</td>
<td>Band pass filter verification</td>
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<tr>
<td>Tektronix SC 504 Oscilloscope</td>
<td>Band pass filter verification, electronic maintenance</td>
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<tr>
<td>AMDATA Aluminum Reference Standard</td>
<td>System validation, generic transducer analysis software verification</td>
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<td>Hewlett Packard 9000 Terminal</td>
<td>Electronic maintenance</td>
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<td>Fluke 8025B Multimeter</td>
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<td>AMDATA DTM-98 (Diagnostic Test Module)</td>
<td>Electronic maintenance</td>
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<tr>
<td>Hewlett Packard 3468A RF Voltmeter</td>
<td>Electronic maintenance and calibration</td>
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<tr>
<td>11096B High-Frequency Probe</td>
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PHOTOGRAPHY

Still color photographs of the test setup were taken. Copies of the photographs taken (negative series 111325) are available from the Thiokol photographic services department.
RESULTS AND DISCUSSION

Testing was conducted in accordance with CTP-0100, "Qualification Test Plan For The Generic System Components Of The MTI Ultrasonic RSRM Bondline Inspection System (URBIS)." The test procedures of CTP-0100 were derived from AMDATA manuals and specifications (referenced in Section 7.0, Applicable Documents). It is recommended that CTP-0100 and the AMDATA manuals and specifications be referred to for further explanation of URBIS components and test procedures.

6.1 TEST ARTICLE ASSEMBLY

Each URBIS was delivered from the vendor/manufacturer with the components listed in Section 1.1, Test Article Description. URBIS assembly was not required prior to testing. Each URBIS remained as a single unit; no interchanging of components occurred.

6.2 TEST DESCRIPTION, RESULTS, AND DISCUSSION

Five complete URBIS systems were qualified: 1) Thiokol NDE Lab Inspection System (S/N S-A51866), 2) Thiokol RSRM Insulated Level Inspection System (S/N S-A51868), 3 and 4) Thiokol Final Assembly Loaded Level Inspection System (S/Ns S-A51865 and S-A51869), and 5) KSC Loaded Level Inspection System (P/N 2U129431-001).

The qualification of each URBIS included documentation of the calibration and checkout of the major URBIS components by Combustion Engineering personnel prior to Thiokol's receiving of the URBIS, and then a recalibration and checkout by Thiokol's Electronic Maintenance personnel prior to the qualification test.

Testing at KSC was performed per a test preparation sheet (TPS) (per NASA requirements for ground support equipment) instead of directly following CTP-0100. The TPS outlined the same procedures as CTP-0100, and the post-test TPS is included in Appendix A. Thiokol Electronic Maintenance and NDE design engineering personnel were sent to KSC to perform that portion of URBIS qualification at the RPSF.

Each URBIS at Thiokol's Space Operations was individually rotated off the production line for qualification testing. These URBISs were delivered to the Electronic Maintenance Facility M-71 for prequalification electronic and mechanical maintenance/recalibration and then transferred to the NDE lab M-337A for qualification testing. Results of the four URBIS tests performed at Space Operations are included in Appendix B.
A summary of each test, as applied to each URBIS, follows:

6.2.1 System Diagnostic Test. (Appendix B, Form A)

Each URBIS passed the system diagnostic self-test as specified in AMDATA engineering specification No. 870128, Section 3.0. The self-test verified that each URBIS component was properly configured and interfaced with all other URBIS components.

6.2.2 System Validation Test. (Appendix B, Form B)

Each URBIS passed the system validation test as specified in AMDATA engineering specification No. 870128, Section 3.0. The system validation tests were performed on the manufacturer-supplied aluminum reference standard. These tests verified that all parameters which could affect data interpretation were within tolerance. The major system validation tests performed were system gain repeatability, distance amplitude correction, time-of-flight software, system noise level, and transient response.

6.2.3 Ultrasonic Electronic Functional Tests

6.2.3.1 Band Pass Filter Verification Test. (Appendix A, TPS Item 2.0; Appendix B, Form C). The band pass filters for each URBIS performed per manufacturer specifications, allowing only wave forms within specific frequencies to be displayed. A sine wave was sent from a Marconi Instruments Signal Generator (Model 2022C) into each URBIS receiver unit; the wave was then digitized and real-time displayed. Each band pass filter was individually activated. The frequency of the input signal was increased from just below the band pass filter's specified frequency to a frequency well above the specified frequency. The amplitude of the sine wave versus each specific input frequency was then recorded. Three band-pass filters were tested: a 0.5-MHz high-pass filter, a 4.0-MHz low-pass filter, and an 8.0-MHz low-pass filter.

6.2.3.2 Analog/Digital Converter Verification Test. (Appendix A, TPS Item 3.0; Appendix B, Form D). Each URBIS successfully completed the analog/digital converter verification test per manufacturer specifications. This test determined the maximum amount of data that could be digitized at various scan speeds and A-gate widths. (The A-gate determines the amount of data to be digitized.)

6.2.3.3 Generic Transducer Analysis Software Verification Test. (Appendix A, TPS Item 4.0; Appendix B, Form E). The generic transducer analysis software for each URBIS performed per manufacturer specifications (Figures 4 and 5). It was verified that the data sampling rate should be at least four times the manufacturer-specified frequency for each particular transducer. This test also utilized the manufacturer-supplied aluminum reference standard to obtain the required signal response. It is essential that the URBIS equipment be set up to match the parameters of the particular transducer equipment; otherwise, the data received will not match the original transducer data. Transducer parameters are listed on each transducer's certification sheet.
Figure 4. URBIS Generic Transducer Analysis Software Verification Test—Screen Presentation
6.2.3.4 Shielded Data Acquisition Cable EMI Test. (Appendix A, TPS Item 5.0; Appendix B, Form F). All shielded data acquisition cables withstood manufacturer-specified EMI limits with no degradation in performance. In order to subject each URBIS to a more intense EMI field than the worst-case field existing in proximity to the M-111 autoclave, a Parker Contour Probe (Model DA-400) was used (Figure 6). To assure maximum EMI penetration, the magnetic probe was used in the dc mode. Flux density was approximately 68,000 lines of flux per in.² at 4-in. pole spacing.

6.2.4 Mechanical Functional Tests

6.2.4.1 Y-Axis Transducer Positioning Accuracy Test. (Appendix A, TPS Item 6.0; Appendix B, Form G). Y-axis positioning accuracy of each URBIS transducer was within manufacturer-specified limits. Because large regions on the RSRM are scanned at one time, positioning accuracy is essential. The ability to return to an unbond and measure its size is a necessity. This test verified that each URBIS has this capability.

6.2.4.2 X-Axis Transducer Positioning Accuracy Test. (Appendix A, TPS Item 7.0; Appendix B, Form H). X-axis positioning accuracy of each URBIS transducer was within manufacturer-specified limits. Because large regions on the RSRM are scanned at one time, positioning accuracy is essential. The ability to return to an unbond and measure its size is a necessity. This test verified that each URBIS has this capability.

6.2.4.3 Y-Axis Scan Velocity Test. (Appendix A, TPS Item 8.0; Appendix B, Form I). Initial attempts to obtain data using the vendor-specified scan velocity (4.0 in./sec) failed for both the peak detect and RF mode tests. It became evident (through discussions with the manufacturer) that RSRM hardware differs significantly from hardware that was used to obtain the manufacturer-specified scan velocity. New scan velocities were tried, and each URBIS then passed testing. It was determined that a maximum reliable scan velocity of 2.5 in./sec should be used simultaneously in both the X and Y directions. Scan velocity should be lowered as the amount of data retrieval increases.

6.2.4.4 X-Axis Scan Velocity Test. (Appendix A, TPS Item 9.0; Appendix B, Form J). Initial attempts to obtain data using the vendor-specified scan velocity (4.0 in./sec) failed for both the peak detect and RF mode tests. It became evident (through discussions with the manufacturer) that RSRM hardware differs significantly from hardware that was used to obtain the vendor-specified scan velocity. New scan velocities were tried, and each URBIS then passed testing. It was determined that a maximum reliable scan velocity of 2.5 in./sec should be used simultaneously in both the X and Y directions. Scan velocity should be lowered as the amount of data retrieval increases.
Figure 6. EMI Test on URBIS Data Acquisition Cable
6.2.5 Computer Systems Functional Tests

6.2.5.1 Uninterruptable Power Supply Test. (Appendix A, TPS Item 10.0; Appendix B, Form K). Each URBIS performed and passed the uninterruptable power supply tests as specified in AMDATA engineering specification No. 870128, p 73. The purpose of this test was to verify that, if facility power was lost during scanning operations, the uninterruptable power supply would provide enough electricity to allow for data storage and equipment shutdown.

6.2.5.2 CRT Display and Hard Copy Accuracy Test. (Appendix A, TPS Item 11.0; Appendix B, Form L). Each URBIS completed the CRT display and hard copy test within the manufacturer-specified parameters. Because analysis of the RSRM case-to-insulation bondline requires color scale use on both URBIS CRTs and hardcopy printouts, display clarity and color scale accuracy are essential. The CRT and hardcopy display clarity and color were also verified against the manufacturer specifications.

6.2.5.3 Data File Integrity Verification Test. (Appendix A, TPS Item 12.0; Appendix B, Form M). Each URBIS performed and passed the data file integrity verification test with no degradation to the data. This test determined if data file transfers from the URBIS hard disk to the data tape and then back compromised the data.
### APPLICABLE DOCUMENTS

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<td>MIL-STD-45662</td>
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<td>Skewing System Operating Manual (AMDATA engineering specification)</td>
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<tr>
<td>870128</td>
<td>Intraspect/98 Volumetric Inspection System (VIP) Operating Manual (AMDATA engineering specification)</td>
</tr>
<tr>
<td>870819</td>
<td>RF Receiver Calibration Procedure (AMDATA engineering specification)</td>
</tr>
<tr>
<td>871231</td>
<td>Model 1010 Couplant Supply System Operating Manual (AMDATA engineering specification)</td>
</tr>
<tr>
<td>EQ076</td>
<td>Topaz-Uninterruptable Power Source (AMDATA engineering specification)</td>
</tr>
</tbody>
</table>
Appendix A

TEST PREPARATION SHEET AND RESULTS FOR THE ULTRASONIC QUALIFICATION TEST AT KSC

(includes AMDATA engineering specification No. 870128, "Intraspect/98 VIP Operating Manual")
**TEST PREPARATION SHEET**

**TYPE:**
- A CONFIGURATION CHANGE
- B NON-CONFIGURATION

**TPS SHORT TITLE:**
ULTRASONIC QUALIFICATION TEST

**PREPARED BY:**
J. Yunk

**ORG.:** THI-QE
**EXT. DATE:** 4/3/89
**CONSTR. NEED DATE:** NONE

**DRAWINGS/DOCUMENTS:** N/A

**ITEM NO.**

**DESCRIPTION (print or type):**

1.0 INFORMATION:

1.1 REFERENCED INSTRUCTIONS: N/A

1.2 COMPUTER SYSTEM: N/A

1.3 SPECIAL TOOLS, EQUIPMENT AND MATERIALS:

- MARCONI INSTRUMENT
- 55 THE SIGNAL GENERATOR 2022C SN. Y-802746
- AMPERE METER/MEMBRANE SCANNER 3/0.45
- 5.4% TRANSFORMER SN. 5-REV12070
- STEEL/POREMEMBRANE SAMPLE

**PARTS WEIGHT:**

**RECORDS:**

**APPROVALS - REFER TO LOCAL PROCEDURES**

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<td>Janet A. Yunk</td>
<td>THI-QE</td>
<td>4/10/89</td>
<td>Robert Patterson</td>
<td>THI-GSE</td>
<td>4/12/89</td>
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<tr>
<td>Marcia L. Smith</td>
<td>THI-LS</td>
<td>4/11/89</td>
<td>Tracy D. Johnson</td>
<td>TV-MSS-24</td>
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**KSC FORM 4-124F (REV. 3/88)**
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PREPARED BY ORG. EXT. DATE PAGE ACCEPTANCE CONTR GOVT. DATE

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KSC FORM 4-124A (REV. 7/82)
**TEST PREPARATION SHEET**

**TYPE**
- A: CONFIGURATION CHANGE
- B: NON-CONFIGURATION

**PAGE**
- 1 OF 1

**MOD SHEET NUMBER**
- 001

**TPS SHORT TITLE/REASON**
- ULTRASONIC QUALIFICATION TEST

**PREPARED BY**
- Bob Patterson

**ORG.**

**I-DET SHEET NUMBER**
- NON-CONFIGURATION

**ITEM NO.**

**DESCRIPTION (print or type)**

**1.0** DELETE SEQUENCE 3.1 AND 14.0 WITH VERIFY CSRQ 028

**2.0** CLOSE THIS MOD

**CRITICAL SKILLS**
- YES

**RETEST REQUIRED**
- NO

**PARTS WEIGHT**

**APPROVALS - REFER TO LOCAL PROCEDURES**

**NAME**
- Robert Patterson
- Janet Jin
- Grace Underman

**ORG.**
- THL
- GSE
- TV-M54-2

**DATE**
- 4/13/89
- 4/13/89
- 4/13/89
### 1.4 SUPPORT TOOLS, EQUIPMENT AND MATERIALS:

12 in. Scale divided in 0.1 in.
Hex Wrench 9/64 in.

### 1.5 CRITICAL HANDBOOK:

CSR-028: ELECTRICAL CONNECTOR MALE/DE-MATE

### 1.6 SAFETY REGIMENTS: N/A

### 1.7 SPECIAL INSTRUCTIONS:

Status may be worked out of sequence per OE direction.
FIGURES 1-4 SHOWN FOR TEST SET-UP.

### 1.8 OMES REQUIREMENTS SATISFIED BY THIS TPS: N/A

---

**PREPARED BY**

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**LOCAL PROCEDURES**

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### TEST PREPARATION SHEET

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<th>CONTR.</th>
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<tbody>
<tr>
<td>2.0 VERIFICATION OF BAND PASS FILTERS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Connect the Marconi Instruments, 2020C Wave Form Generator to the Remote Pulsar Preamplifier (RPP) in the Channel 1 Reception. Turn the power on.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Place the UREIS in the Pitch-Catch mode (Page 5-6 of the Master Form).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Set the number of waves averaged as 1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4 Place the I-PP in A-scope mode.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 Set the gain to 17.0 db</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6 Make sure a signal response is being obtained of the A-scope.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7 Switch the three Band Pass Filter to follows:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5 MHz High Pass Filter - ON</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0 MHz Low Pass Filter - OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0 MHz Low Pass Filter - OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PREPARED BY**

J. YUN / J. PICO

**ORG.** THI-2E

**EXT.** 5851

**DATE** 4-MC-89

**APPROVALS – REFER TO LOCAL PROCEDURES**

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<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**PAGE** 3

**OF** 25
### Item Description

2.8 Sweep the signal on the Nu cry Instruments, 20000 Signal Generator per the following table. Plot the Amplitude Response (in %FSH) at right.

<table>
<thead>
<tr>
<th>Frequency (kHz)</th>
<th>Amplitude Response</th>
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</thead>
<tbody>
<tr>
<td>250.0</td>
<td>2.3</td>
</tr>
<tr>
<td>700.0</td>
<td>3.1</td>
</tr>
<tr>
<td>1500.0</td>
<td>7.0</td>
</tr>
<tr>
<td>4000.0</td>
<td>15.6</td>
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<td>6000.0</td>
<td>32.0</td>
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<td>8000.0</td>
<td>57.6</td>
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<td>12000.0</td>
<td>82.8</td>
</tr>
<tr>
<td>20000.0</td>
<td>95.3</td>
</tr>
<tr>
<td>24000.0</td>
<td>96.1</td>
</tr>
<tr>
<td>25000.0</td>
<td>98.0</td>
</tr>
<tr>
<td>250.0</td>
<td>98.4</td>
</tr>
</tbody>
</table>

QE NOTE: 250kHz - 0%FSH 300kHz - 0%FSH 800kHz - 93.0%FSH

2.9 Did the 0.5 MHz High Pass Filter perform properly?

**YES**

### Approvals - Refer to Local Procedures

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<th>Name</th>
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<td>J. YUN / J. FICO</td>
<td>THI-DE</td>
<td>6251</td>
<td>4-02-89</td>
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<tr>
<td>GS</td>
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<td></td>
<td>12 Dec 88</td>
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<td></td>
<td></td>
<td></td>
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<td>Buzz Halton</td>
<td>TV-MSD-CC</td>
<td></td>
<td>A-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Original Page is of Poor Quality**
2.10 Switch the three Band Pass Filters as follows:

- 0.5 MHz High Pass Filter - OFF
- 4.0 MHz Low Pass Filter - ON
- 8.0 MHz Low Pass Filter - OFF

2.11 Sweep the signal on the Marconi Instruments, 2000 Signal Generator per the following table. Record the Amplitude Response (in %FSH) at right.

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Amplitude Response</th>
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</thead>
<tbody>
<tr>
<td>1.00</td>
<td>100.0</td>
</tr>
<tr>
<td>1.50</td>
<td>100.0</td>
</tr>
<tr>
<td>2.00</td>
<td>100.0</td>
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<tr>
<td>2.50</td>
<td>97.7</td>
</tr>
<tr>
<td>3.00</td>
<td>99.2</td>
</tr>
<tr>
<td>3.50</td>
<td>98.4</td>
</tr>
<tr>
<td>4.00</td>
<td>78.9</td>
</tr>
<tr>
<td>4.50</td>
<td>78</td>
</tr>
<tr>
<td>5.00</td>
<td>1.6</td>
</tr>
<tr>
<td>5.50</td>
<td>1.6</td>
</tr>
<tr>
<td>6.00</td>
<td>1.6</td>
</tr>
<tr>
<td>6.50</td>
<td>1.6</td>
</tr>
<tr>
<td>7.00</td>
<td>1.6</td>
</tr>
</tbody>
</table>

OE NOTE: 5.50 - 70 MHz Reading - 45% - 0% FSH
<table>
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<td>2.12</td>
<td>Did the 4.0 MHz Low Pass Filter perform properly?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.13</td>
<td>Switch the three Band Pass Filters as follows:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5 Mhz High Pass Filter - OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.0 Mhz Low Pass Filter - OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.0 Mhz Low Pass Filter - ON</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.14</td>
<td>Sweep the signal on the Marconi Instruments, 2022G Signal Generator per the following table. Record the Amplitude Response (in VFSH) at right.</td>
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<td></td>
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</tbody>
</table>

<table>
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<tr>
<th>Frequency</th>
<th>Amplitude Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.00 MHz</td>
<td>87.8</td>
</tr>
<tr>
<td>5.50 MHz</td>
<td>94.5</td>
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<tr>
<td>6.00 MHz</td>
<td>93.0</td>
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<tr>
<td>6.50 MHz</td>
<td>93.8</td>
</tr>
<tr>
<td>7.00 MHz</td>
<td>93.8</td>
</tr>
<tr>
<td>7.50 MHz</td>
<td>88.3</td>
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<tr>
<td>8.00 MHz</td>
<td>68.8</td>
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<tr>
<td>8.50 MHz</td>
<td>26.6</td>
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<tr>
<td>9.00 MHz</td>
<td>8.6</td>
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<tr>
<td>9.50 MHz</td>
<td>3.9</td>
</tr>
<tr>
<td>10.00 MHz</td>
<td>1.6</td>
</tr>
<tr>
<td>10.50 MHz</td>
<td>1.0</td>
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PREPARED BY: J. YUN / J. PICO
ORG: THI-GE
EXT: 6251
DATE: 4-02-69
PAGE ACCEPTANCE: 1
CONTR.: 1
GOVT.: 1
DATE: 11/13/72

APPROVALS - REFER TO LOCAL PROCEDURES

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<td></td>
</tr>
<tr>
<td></td>
<td>TV-MED-2</td>
<td></td>
<td>12/12/73</td>
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<td></td>
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ORIGINAL PAGE IS OF POOR QUALITY
2.15 Did the 8.0 MHz Low Pass Filter perform properly?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

2.16 If any of the Band Pass Filters did not perform as expected, verify that all connections unique to this test are properly hooked up and that all settings on the appropriate equipment are correct. Then reperform the steps for the failed filter, and record comments and data below.

Data and comments: ____________________________________________

Not performed 4/10/87

2.17 Turn the power OFF from the Marconi Instrument.

VERIFY CSR - 028

2.18 Disconnect Channel 1 from the Marconi Instrument Receive Port and connect back to the RF.

3.0 VERIFICATION OF THE A/D CONVERTER:

3.1 Disconnect 2090 scanner from the 250 FT. cable and install:

WAGSATCH 2090 scanner to the 250 FT. cable.

3.2 Connect the 10 in. arm with the 5 MHz transducer provided and connect channel 1.

3.3 Place the 2090 scanner on the magnetic track.

3.4 Set up the coolant pump per QE's direction.

(!) Note: All testing and to delete item 3.1! Noted R. PATTISON ENG.

PREPARED BY: J. YUN / J. PICO

ORG. EXT. DATE PAGE ACCEPTANCE CONTR GOVT. DATE

THI-GE 62S1 4-02-69

APPROVALS - REFER TO LOCAL PROCEDURES

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<td>11/14/87</td>
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<td>TV-MSL-24</td>
<td>11/30/86</td>
<td>A-9</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>
3.5 Perform setting the following information as shown below:

A. Set A/D sampling rate to 20 MHz.
B. Set sampling increment to 0.1 in.
C. Set the stepper motor scanning velocity to maximum. X
D. Place the system in the RF Data Acquisition mode.
E. Set the A-gate as follows:
   - A-gate delay: 35 microseconds
   - A-gate width: 25 microseconds
F. Set the C-gate as follows:
   - C-gate delay: 41 microseconds
   - C-gate width: 15 microseconds
G. Set the scan area to 5.0 in circumferentially and 0.7 in axially.

3.6 If the scan velocity is excessive, the scan will terminate prematurely. If that happens, decrease the scanning velocity by 0.5 in/sec increments and attempt the scan again until the scan is completed. Record comments below:

Comments:

3.7 Execute the scan sequence.

3.8 Verify that data has been taken in the C-scan.

3.9 Verify that the 5.0 MHz waveform has been accurately digitized and displayed in the C-scan, make a hard copy of the C-scan and attach to this TPS, record the scanning speed below.

Scanning Speed: \( x = 10 \text{ in/s} \), \( y = 1.8 \text{ in/s} \)
### Test Preparation Sheet

**Item No.** 3.10

If the waveform is not digitized properly, decrease the scanning speed by 0.5 in./sec. increments and re-scan. Record the scanning speed below.

<table>
<thead>
<tr>
<th>Scanning Speed:</th>
<th>Not Performed</th>
</tr>
</thead>
</table>

**Item No.** 4.0

**Transducer Analysis Software Verification Test Utilizing VIP 4.0 Software:**

4.1 Place the 2090 scanner on/vicinity to the test block per SE's direction using the magnetic track.

4.2 Manually adjust the X-Y axis arms so to place the transducer's transmitting face in the center of the aluminum test block.

4.3 Place the URBIS in the A-scope mode, using a set form created from MSTEPF. Record the set form name below.

| Form Name: | OCD045X |

4.4 Set pulse width using the formula shown below:

\[
P.W. = \frac{1}{F_{RF}} \times \frac{1}{F_{TR}}\]

where:

- **P. W.** Pulse Width
- **F_{RF}** Resonant Transducer Frequency

\[
P.W. = 100\,\mu s\]

4.5 Adjust pulse voltage so noise is not above 7% FSH, and set the sampling rate to 40.0 MHz.

---

**Prepared By:** J. YUN / J. FICO

**Org.** THI-QE

**Ext.** 6251

**Date** 4-02-89

**Page Acceptance**

**Contr.** GOVT.

**Date**

---

**Approvals - Refer to Local Procedures**

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<td>09-12-89</td>
</tr>
<tr>
<td>Brian Needham</td>
<td>THI-QSE</td>
<td>10-10-89</td>
</tr>
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</table>

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**Page 5 of 25**

**Mod Sheet No.** 4A156

**Control No.** 077-0477-00-001

**TPS No.** 077-0477-00-001-0003
4.6 Using sufficient A-gate, adjust the C-gate to capture the first complete back surface reflection off the aluminum test block. Adjust the gain to achieve the signal amplitude of 80% FSH. Record the gain below.

GAIN: 8.0 dB

4.7 Perform the transducer analysis.

4.8 Verify following information are shown on transducer analysis software verification test, make a hard copy of the transducer analysis and attach to this T.P.S:

A. Sampling rate
B. Peak magnitude
C. Peak frequency
D. Upper and lower 6 dB limits
E. Band width center frequency
F. Band width
G. Time-based response
H. Spectral response

5.0 ELECTROMAGNETIC INTERFERENCE SHIELDING DATA ACQUISITION CABLE VERIFICATION TEST:

5.1 Place the system in the A-Mode mode, set the A-scan gate to 5.0 microseconds and the sampling rate to 20.0 MHz.

5.2 Position the scanner over a bonded region on the calibration block, set signal to 75% FSH off the eight multiple back wall reflection.
### Test Preparation Sheet

**Test Preparation Sheet (Word Processor Continuation)**

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<th>TECH.</th>
<th>CONTR</th>
<th>GOVT.</th>
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<tr>
<td>5.3</td>
<td>Set the scan area to 10.0 in. axially by 5.0 in. circumferentially.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4</td>
<td>Perform the scan and record the signal response from each case below.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Pass Number</strong></td>
<td><strong>Signal Response (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>36.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>40.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>37.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>41.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td>Verify that the signal response does not vary by more than 10% at any time during the test. Check correct response below.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Less than 10%:</td>
<td>More than 10%:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.6</td>
<td>If the signal response vary by more than 10% at any time during the test, reperform the signal response test.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Pass Number</strong></td>
<td><strong>Signal Response (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.7</td>
<td>Take a strong magnet (at least 20 lbs. lifting force) and place the RDAS, RRF, Scan Controller, and cabling to magnetic force.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.8</td>
<td>Verify the EMI shielding is performing properly, by viewing the A-scope presentation. Record comments below.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>comments:</td>
<td><strong>NO NOTICEABLE EFFECT ON SIGNAL</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Prepared By**

J. YUN / J. PICO

**Organizational Ext.**

THI-OE

**Page No.**

6051

**Date**

4-92-99

**Approval**

- REFER TO LOCAL PROCEDURES

### Approvals

<table>
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<td>TV-MSD-24</td>
<td>9/12</td>
</tr>
</tbody>
</table>

**Prepared By**

J. YUN / J. PICO

**Organizational Ext.**

THI-OE

**Page No.**

6051

**Date**

4-92-99

**Approval**

- REFER TO LOCAL PROCEDURES
6.0 Y-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST:

6.2 Zero the encoders with the transducer in the extreme -Y position. 

   **NOTE**

   Mark the membrane sample to represent the transducers centerline perpendicular to the Y-axis.

6.3 Using the scanner position option in the scanner menu, instruct the 2090 scanner to move the transducer 0.0 in. in the +Y direction.

6.4 Place a mark on the membrane sample where the scan terminated.

   **NOTE**

   The mark on the membrane sample will represent the transducers centerline perpendicular to the Y-axis.

6.5 With a ruler divided into 0.1 in. increments, measure the distance between the two marks, and read the indicated Y-axis position from the screen presentation. Record following information below.

<table>
<thead>
<tr>
<th>Indicated Y-axis position</th>
<th>Actual Y-axis position</th>
<th>Delta position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run 1</td>
<td>7.0 in</td>
<td>7.006 in</td>
</tr>
<tr>
<td>Run 2</td>
<td>7.0 in</td>
<td>6.993 in</td>
</tr>
<tr>
<td>Run 3</td>
<td>7.0 in</td>
<td>7.009 in</td>
</tr>
</tbody>
</table>

   Final steps/inch: N/A
   Counts/inch: N/A

PREPARED BY
J. YUN / J. PICO

APPROVALS - REFER TO LOCAL PROCEDURES

ORIGINAL PAGE IS OF POOR QUALITY
If the difference between the indicated and actual Y-axis position is greater than 0.1 in., perform and change the steps/inch of the stepper motor, or counts/inch of the encoder until the difference between the indicated and actual values is within 0.1 in. Record below as shown.

<table>
<thead>
<tr>
<th>Run</th>
<th>Indicated Y-axis position</th>
<th>Actual Y-axis position</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>_________________________</td>
<td>______________________</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>_________________________</td>
<td>______________________</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>_________________________</td>
<td>______________________</td>
<td></td>
</tr>
</tbody>
</table>

Final steps/inch: ______________________
Counts/inch: ______________________

Not Performed 4/4/97

**X-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST:**

7.1 Zero the encoders with the transducer in the extreme -X position, and with enough room to move 1.0 in. in the +X direction, at a sampling increment of 0.1 inch and sampling rate at 20.0 MHz.

7.2 Using the scanner position option in the scanner menu, instruct the 2090 scanner to move the transducer 1.0 in. in the +X-axis, mark the transducer centerline perpendicular to the Y-axis. Perform the scan by encoder being zeroed.

7.3 Place a mark on the membrane sample where the scan terminated.

**NOTE**

The mark on the membrane sample will represent the transducers centerline perpendicular to the X-axis.
### TEST PREPARATION SHEET

**ITEM NO.**
**DESCRIPTION (print or type)**
**INSPECT.**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION (print or type)</th>
<th>TECH.</th>
<th>CONTR</th>
<th>GOVT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.4</td>
<td>With a ruler divided into 0.1 in. increments, measure the distance between the two marks, and read the indicated X-axis position from the screen presentation. Record following information below.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indicated X-axis position</td>
<td>Actual X-axis position</td>
<td>Delta</td>
<td></td>
</tr>
<tr>
<td>Run 1</td>
<td>16.0 IN.</td>
<td>16.065 IN.</td>
<td>0.065 IN.</td>
<td></td>
</tr>
<tr>
<td>Run 2</td>
<td>16.0 IN.</td>
<td>16.0 IN.</td>
<td>0.0 IN.</td>
<td></td>
</tr>
<tr>
<td>Run 3</td>
<td>16.0 IN.</td>
<td>16.0 IN.</td>
<td>0.0 IN.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final steps: N/A</td>
<td>Counts/inch: N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td>If the difference between the indicated and actual position is greater than 0.1 in., reperform and change the steps/in. of the stepper motor, or counts/in. of the encoder until the difference between the indicated and actual values is within 0.1 in.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indicated X-axis position</td>
<td>Actual X-axis position</td>
<td>Delta</td>
<td></td>
</tr>
<tr>
<td>Run 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Run 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Run 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final steps:</td>
<td>Counts/inch:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Performed</td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**PREPARED BY**
J. YUN / J. FIGO

**ORG.**

**EXT.**

**DATE**
4-02-89

**PAGE ACCEPTANCE**

**APPROVALS - REFER TO LOCAL PROCEDURES**

<table>
<thead>
<tr>
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<th>ORG</th>
<th>DATE</th>
<th>NAME</th>
<th>ORG</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ORIGINAL PAGE IS OF POOR QUALITY**
Y-AXIS SCANNING VELOCITY VERIFICATION TESTS PEAK DETECT AND RF MODES:

8.1 Perform the followings for Y-axis scanning velocity verification test Peak Detect, and record below:

A. Set Y-axis scan velocity to 4.0 in./sec.
B. Set A/D converter sampling rate to 20.0 MHz.
C. Set A-scan delay to 15.0 microsecond.
D. Set A-scan Width to 12.0 microsecond.
E. Set sampling increment to 0.1 inch.
F. Place system in Peak Detect mode.
G. Set signal response level off the eight multiple back-wall reflection to 75 % FS.
H. Position transducer over zero mark on membrane sample.
I. Activate a stop watch at the same time the scanner begins moving.
J. When the transducer crosses the 12.0 in. mark on the membrane sample, terminate the stop watch.

8.2 Perform the scan velocity Peak Detect, verify the difference between the entered and actual scan speeds is in +/- 0.5 inch. If the screen data presentation is acceptable, make a hard copy of the screen and attach to this T.F.S.

<table>
<thead>
<tr>
<th>Time</th>
<th>Velocity (4.0 in./time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run 1</td>
<td>1.56 s 3.95 in/s</td>
</tr>
<tr>
<td>Run 2</td>
<td>1.49 s 4.03 in/s</td>
</tr>
<tr>
<td>Run 3</td>
<td>1.58 s 3.80 in/s</td>
</tr>
</tbody>
</table>

Scan velocity: Entered 4.0 in/s Actual 3.89 in/s

Not Performed /A/
### TEST PREPARATION SHEET

**ITEM NO.**

<table>
<thead>
<tr>
<th>DESCRIPTION (print or type)</th>
</tr>
</thead>
</table>

8.3 If the difference is greater than 0.6 in., increment down by 0.5 in./sec. until an acceptable scan is obtained. Make a hard copy of the screen and attach to this T.P.S.

<table>
<thead>
<tr>
<th>Time</th>
<th>Velocity (12.0 in./time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run 1</td>
<td>________</td>
</tr>
<tr>
<td>Run 2</td>
<td>________</td>
</tr>
<tr>
<td>Run 3</td>
<td>________</td>
</tr>
</tbody>
</table>

Final scan velocity: ________

*Not Performed*

8.4 Perform the above substeps A through J of the step 8.1 on Y-axis scanning velocity verification test: RF Mode and except for the following.

1. Place system in RF mode.
2. Set C-scan gate delay to 20.0 microseconds.
3. Set C-scan gate width to 3.0 microseconds.

<table>
<thead>
<tr>
<th>Time</th>
<th>Velocity (12.0 in./time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run 1</td>
<td>1.485</td>
</tr>
<tr>
<td>Run 2</td>
<td>1.515</td>
</tr>
<tr>
<td>Run 3</td>
<td>1.475</td>
</tr>
</tbody>
</table>

Scan velocity: \( \text{PERCENTI}\text{D} 4.0 \% \)

*ACTUAL (AVERAGE) > 4.03*
If the difference is greater than \( +\ 0.5 \) inch, increment down by 0.5 in./sec. until an acceptable scan is obtained. Make a hard copy of the screen and attach to this TPS.

Time

<table>
<thead>
<tr>
<th>Run</th>
<th>Velocity (12.0 in./time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Final scan velocity: Not Performed

---

9.0 X-AXIS SCANNING VELOCITY VERIFICATION TESTS PEAK DETECT AND RF MODES:

9.1 Perform the followings for X-axis scanning velocity verification, Peak Detect, and record below:

A. Set X-axis scan velocity to 4.0 in./sec.
B. Set A/D converter sampling rate to 20.0 MHz.
C. Set A-scan delay to 15.0 microsecond.
D. Set A-scan Width to 12.0 microsecond.
E. Set sampling increment to 0.1 inch.
F. Place system in Peak Detect mode.
G. Set signal response level at the right multiple back-wall reflection to 35 % FSH.
H. Position transducer over zero mark on membrane sample.
I. Activate a stop watch at the same time the scanner begins moving.
J. When the transducer crosses the \( \frac{25}{64} \) in. mark or the membrane sample, terminate the stop watch.

---

PREPARED BY
J. YUN / J. PICO
THI-GE
4-22-85

APPROVALS - REFER TO LOCAL PROCEDURES

<table>
<thead>
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<th>Name</th>
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<th>Name</th>
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<th>DATE</th>
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<tr>
<td>GS</td>
<td>THI-GE</td>
<td>12-89</td>
<td>THI-GE</td>
<td>11-89</td>
<td></td>
</tr>
<tr>
<td>A-19</td>
<td>THI-GE</td>
<td>10-89</td>
<td>THI-GE</td>
<td>10-89</td>
<td></td>
</tr>
</tbody>
</table>
Perform the scan velocity Peak Detect, verify the difference between the entered and actual scan speeds is in +/- 0.5 inch. If the screen data presentation is acceptable, make a hard copy of the screen and attach to this T.P.S.

<table>
<thead>
<tr>
<th>Time</th>
<th>Velocity (16.0 in./time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run 1</td>
<td>2.06</td>
</tr>
<tr>
<td>Run 2</td>
<td>1.98</td>
</tr>
<tr>
<td>Run 3</td>
<td>2.10</td>
</tr>
</tbody>
</table>

Scan velocity: ENTERED A0.4 K
ACTUAL (AV D128) = 3.87 in/s

Not Performed N/A

If the difference is greater than +/- 0.5 inch, increment down by 0.5 in/sec, until an acceptable scan is obtained. Make a hard copy of the screen and attach to this T.P.S.

<table>
<thead>
<tr>
<th>Time</th>
<th>Velocity (12.0 in./time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run 1</td>
<td>______</td>
</tr>
<tr>
<td>Run 2</td>
<td>______</td>
</tr>
<tr>
<td>Run 3</td>
<td>______</td>
</tr>
</tbody>
</table>

Final scan velocity: ______
Not Performed ______

PREPARED BY J. YUN / J. FICO ORG. THI-QE EXT. 6251 DATE 4-02-83

APPROVALS - REFER TO LOCAL PROCEDURES

<table>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A-20
### Item 9.4
Perform the above substeps A through J of the step 9.1 on X-axis scanning velocity verification test RF Mode and except for the following.

1. Place system in RF mode.
2. Set C-scan gate delay to 20.0 microseconds.
3. Set C-scan gate width to 5.0 microseconds.

<table>
<thead>
<tr>
<th>Time</th>
<th>Velocity (16.0 in./time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run 1</td>
<td>2.085</td>
</tr>
<tr>
<td>Run 2</td>
<td>2.105</td>
</tr>
<tr>
<td>Run 3</td>
<td>1.955</td>
</tr>
</tbody>
</table>

Scan velocity: 3.92 in/s

### Item 9.5
If the difference is greater than +/- 0.5 inch, increment down by 0.5 in./sec. until an acceptable scan is obtained. Make a hard copy of the screen and attach to this T.P.S.

<table>
<thead>
<tr>
<th>Time</th>
<th>Velocity (16.0 in./time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run 1</td>
<td></td>
</tr>
<tr>
<td>Run 2</td>
<td></td>
</tr>
<tr>
<td>Run 3</td>
<td></td>
</tr>
</tbody>
</table>

Final scan velocity: Not Performed

---

**Prepared by:** J. YUN / J. PICO
**Ext:** TH-DIM/4251
**Date:** 4-02-89

---

**Approvals - Refer to Local Procedures**

<table>
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<th>Date</th>
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</thead>
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<td>TH-DIM</td>
<td>11/11/89</td>
</tr>
<tr>
<td>B. Padma</td>
<td>TH-DIM</td>
<td>06/05/89</td>
</tr>
</tbody>
</table>

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**Org. Ext. Date**

<table>
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<tr>
<th>Date</th>
<th>Preparer</th>
<th>Approver</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-02-89</td>
<td>J. YUN / J. PICO</td>
<td></td>
</tr>
</tbody>
</table>
# UNINTERRUPTIBLE POWER SUPPLY VERIFICATION TEST:

10.1 Set up the URBIS to perform a membrane scan as follows:

- **A.** Use 10" scanner arm.
- **B.** Set the scanner velocity to 10.0 in/sec.
- **C.** Set the scan area to 10.0 in. axially by 5.0 in. circumferentially.
- **D.** Set the A-gate Delay to 15.0 microseconds.
- **E.** Set the A-gate Width to 12.0 microseconds.
- **D.** Set the C-gate Delay to 20.0 microseconds.
- **E.** Set the C-gate Width to 3.75 microseconds.
- **F.** Set the system for RF mode.
- **G.** The filename is SETFWRI

10.2 As the system is scanning, disconnect the main power line to the system.

10.3 Complete shutting the system down in accordance with AMDATA Engineering Specification Number B74-1.8 section 1.6, subsection "Uninterruptible Power Systems" (UPS) and line filter. (Attachment 1)

10.4 Power the system back up, and verify that all data up to the point of power failure has been properly stored. This is verified by checking that a date file of the information that was taken during the test exists, and that no information is missing from either the A or C scans. This is Fun 1.
10.5 Perform two more runs and complete the following table:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Run 1</th>
<th>Run 2</th>
<th>Run 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.5</td>
<td>FILENAME</td>
<td>SETFW1</td>
<td>SETFW2</td>
<td>SETFW3</td>
</tr>
<tr>
<td></td>
<td>PROPER DATA STORAGE ACHIEVED</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>WAS DATA FILE ACCESSIBLE?</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>WERE A AND C SCAN PRESENTATIONS</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>COMPLETE?</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

10.6 Attach a printout of both the B and C scans for each run to this TPS.

11.0 CRT DISPLAY AND HARD COPY VERIFICATION TEST:

11.1 Set up the URBIS as follows:

   A. Use the 10.0 inch arm with 5.0 MHz transducer.
   B. Set the sampling increment to 0.10 inch.
   C. Set the system for RF mode.
   D. Set the A-gate delay to 15.0 microseconds.
   E. Set the A-gate width to 30.0 microseconds.
   F. Set the C-gate delay to 20.0 microseconds.
   G. Set the C-gate delay to 5.00 microseconds.
   H. Set the system to scan an area that is 4.0 inches axially by 4.0 inches circumferentially.

PREPARED BY

J. YUN / J. PICO

ORG DATE

THI-06 | 6/25 | 4/5-2-89

APPROVALS - REFER TO LOCAL PROCEDURES

1

THI-06E | 4/12 | 19

2

THI-06E | 4/12 | 19
### TEST PREPARATION SHEET

**ITEM NO.** | **DESCRIPTION (print or type)** | **TECH.** | **CONTR.** | **GOVT.**
---|---|---|---|---
11.2 | Set the color palette in the Master Form per AMDATA Engineering Specification S70126, Rev E, page 77, subsection "Color Palette" (Attachment 2). | QE | OE | 07/10/77
11.3 | Perform test sequence. | | | |
11.4 | Call up C scan to verify that proper color assignment was achieved. This will appear as a color legend in the upper right hand corner of the screen. Also note the clarity of the colors on the screen presentation. The characters should be sharply defined and easy to read. | | | |
11.5 | Make a hard copy presentation of the C-scan obtained from the above test sequence. | | | |
11.6 | Compare the two presentations to verify that the same color legend appears on both and that all the characters are sharply defined and easy to read. | | | |
11.7 | Record whether or not the two presentations match. (YES/NO) | | | |

Did the two presentations match? **YES**

---

### APPROVALS – REFER TO LOCAL PROCEDURES

<table>
<thead>
<tr>
<th>NAME</th>
<th>ORG</th>
<th>DATE</th>
<th>NAME</th>
<th>ORG</th>
<th>DATE</th>
</tr>
</thead>
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<td>9/1/77</td>
<td>OC</td>
<td>THI-GE</td>
<td>9/1/77</td>
</tr>
<tr>
<td>GS</td>
<td>THI-GE</td>
<td>9/1/77</td>
<td>OC</td>
<td>THI-GE</td>
<td>9/1/77</td>
</tr>
</tbody>
</table>


Approved by: Local Procedures

KSC FORM 4-124D (REV. 7/86)
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION (print or type)</th>
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</thead>
<tbody>
<tr>
<td>12.0</td>
<td>DATA FILE INTEGRITY VERIFICATION TEST:</td>
</tr>
<tr>
<td>12.1</td>
<td>Set up the UFRIS as follows:</td>
</tr>
<tr>
<td></td>
<td>A. Use the 10.0 inch arm.</td>
</tr>
<tr>
<td></td>
<td>B. Use the 5.0 MHz transducer.</td>
</tr>
<tr>
<td></td>
<td>C. Set the sampling increment to 0.10 inch.</td>
</tr>
<tr>
<td></td>
<td>D. Set the system for RF mode.</td>
</tr>
<tr>
<td></td>
<td>E. Set the A-gate delay to 15.0 microseconds.</td>
</tr>
<tr>
<td></td>
<td>F. Set the A-gate width to 12.0 microseconds.</td>
</tr>
<tr>
<td></td>
<td>G. Set the C-gate delay to 20.0 microseconds.</td>
</tr>
<tr>
<td></td>
<td>H. Set the C-gate width to 5.0 microseconds.</td>
</tr>
<tr>
<td></td>
<td>I. Set the system for a 2 inch arm that is 4.0 inches in diameter.</td>
</tr>
<tr>
<td></td>
<td>J. Set the filament to 2 mm.</td>
</tr>
<tr>
<td></td>
<td>K. Insure the printer is configured properly.</td>
</tr>
<tr>
<td>12.2</td>
<td>Make sure a new data tape is present.</td>
</tr>
<tr>
<td>12.3</td>
<td>Perform the scan.</td>
</tr>
<tr>
<td>12.4</td>
<td>Save data to hard disk.</td>
</tr>
<tr>
<td>12.5</td>
<td>Record below whether all data has been stored properly to hard disk.</td>
</tr>
</tbody>
</table>

PREPARED BY: J. YUN / J. PICO
ORG: THI-PE
EXT: 6251
DATE: 4-12-87

APPROVALS - REFER TO LOCAL PROCEDURES

<table>
<thead>
<tr>
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<th>NAME</th>
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</thead>
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<td>JUN</td>
<td>45</td>
<td>4/12/87</td>
<td>H. CHEN</td>
<td>THI-PE</td>
<td>4/12/87</td>
</tr>
<tr>
<td>LEE</td>
<td>626</td>
<td>4/12/87</td>
<td></td>
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PREPARED FOR USE BY: USAF
Kennedy Space Center/Vandenberg Air Force Base

MOD SHEET NO.: A156
CONTROL NO.: TPS NO.: 077-0479-00-001-0005

PAGE OF 25
<table>
<thead>
<tr>
<th>ITEM NO.</th>
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<th>TECH.</th>
<th>CONTR.</th>
<th>GOVT.</th>
</tr>
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<tbody>
<tr>
<td>12.6</td>
<td>Obtain a hard copy of the C-scan, B-scan and Spectral C-scan.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.7</td>
<td>Was all required data present on each hard copy per AMDATA Engineering Specification B7012E, Section 10, and Appendix 09 (ATTACHMENT 3)</td>
<td>Y 2/6/72</td>
<td>OEE 2/6/72</td>
<td>OEE 2/6/72</td>
</tr>
<tr>
<td>12.8</td>
<td>Transfer all the data files stored on the hard disk to tape.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.9</td>
<td>Verify that the data files are on the tape.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.10</td>
<td>Transfer all the data files stored on the tape to hard disk and verify that the data files are on the hard disk.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.11</td>
<td>Obtain a hard copy of the C-scan, B-scan and Spectral C-scan.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.12</td>
<td>Was all required data present on each hard copy per AMDATA Engineering Specification B7012E, Section 10, and Appendix 09 (ATTACHMENT 3)</td>
<td>Y 2/6/72</td>
<td>OEE 2/6/72</td>
<td>OEE 2/6/72</td>
</tr>
<tr>
<td>12.13</td>
<td>Compare the hard copies obtained on step 12.7 against the hard copies obtained on step 12.11.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.14</td>
<td>Record below if there were any differences in amplitude response on the A and C-scans.</td>
<td>NONE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


APPROVALS – REFER TO LOCAL PROCEDURES

<table>
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<td>THI-DE</td>
<td>1-12-77</td>
<td></td>
<td>THI-DE</td>
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<th>CONTR</th>
<th>GOVT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.15</td>
<td>Record below if there were any differences in phase response on the A-scans.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.16</td>
<td>Record below if there were any differences in frequency response on the B, C and spectral C-scans.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.17</td>
<td>Record below if there were any differences in color scales and display clarity.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.18</td>
<td>Label and attach all hard copies taken during steps 12.17 and 12.11 to this TPS.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.0</td>
<td>Disconnect the couplant bubb.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.0</td>
<td>Disconnect the Nacatch 2090 Scanner from the 250 ft umbilical cord, and install KSC 2090 Scanner.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0</td>
<td>Disconnect the 10in. scanner arm and the transducer from the 2090 scanner.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.0</td>
<td>Clean the calibration standard.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.0</td>
<td>Secure all UT items back to the UT storage area.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.0</td>
<td>Close this T.P.S.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PREPARED BY
J. Yun / J. Figo
THI-GE / 6421
J. 12-86

APPROVALS – REFER TO LOCAL PROCEDURES

<table>
<thead>
<tr>
<th>NAME</th>
<th>ORG</th>
<th>DATE</th>
<th>NAME</th>
<th>ORG</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Bulshka</td>
<td>THI-GE</td>
<td>12/12</td>
<td>Janet A. Yun</td>
<td>THI-GE</td>
<td>10/16</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
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</table>

KSC FORM 4-1240 (REV. 7/86)
Chapter 1

INTRODUCTION

This manual provides the information necessary to set up and operate the IntraSpect/98 Ultrasonic Inspection System (I/98) using the Volumetric Inspection Package (VIP).

DESCRIPTION OF I/98

The I/98 consists of a scanner and scan controller, four-channel data acquisition system, fully programmable ultrasonic front end, data storage and analysis system.

I/98 VIP is Amdata's most advanced system for acquisition, imaging and analysis of ultrasonic data. Turn to page 1-2 for a block diagram of the system. A photograph of the system setup is on page 1-3.

Major System Components

1. AMAPS 2090 ultrasonic scanner
2. Scan Controller 5032
   a. RF receiver
3. Remote data acquisition system
4. HP 9836SC computer
   a. RGB monitor
   b. CPU/floppy disks, keyboard
   c. Hard drive
   d. Tape backup system
5. Dot matrix printer
6. Remote pulser preamplifier
7. IntraSpect 9836 APS software package
8. Uninterruptable power supply
9. 250-foot umbilical cable
10. Document package
11. Interconnection cables

Optional

- RS-232 communications computer interface
IntraSpect/98 Data Acquisition and Imaging System
## OTHER REFERENCES

For more detailed information, refer to the following:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>AMDATA PART NUMBER</th>
<th>DOCUMENT NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMAPS 2090 Scanner Operating Manual</td>
<td>35095</td>
<td>841812</td>
</tr>
<tr>
<td>SC5032 Scan Controller User Manual</td>
<td>64500</td>
<td>850111</td>
</tr>
<tr>
<td>Remote Data Acquisition System (RDAS) Operating Manual</td>
<td>63170</td>
<td>850108</td>
</tr>
<tr>
<td>HP 9836SC Computer S/System</td>
<td>65021</td>
<td>EQ077</td>
</tr>
<tr>
<td>uninterruptable Power Supply</td>
<td>35131</td>
<td>EQ76</td>
</tr>
<tr>
<td>Remote Pulser Preamplifier (RPP4RT) Operating Manual</td>
<td>63700</td>
<td>850201</td>
</tr>
<tr>
<td>Remote Receiver (RR4RT) Operating Manual</td>
<td>63600</td>
<td>850202</td>
</tr>
<tr>
<td>Umbilical Cable</td>
<td>64203</td>
<td>---</td>
</tr>
<tr>
<td>Intercom Assembly</td>
<td>63005</td>
<td>EQ078</td>
</tr>
<tr>
<td>Instructions for Installation of 360-Degree Track</td>
<td>35141</td>
<td>850115</td>
</tr>
<tr>
<td>Packing Cases</td>
<td>35083</td>
<td>---</td>
</tr>
<tr>
<td>Intraspect/98 VIP Rev. C Software Package</td>
<td>13688</td>
<td>---</td>
</tr>
</tbody>
</table>
PERSONNEL QUALIFICATION

Before operating this equipment, personnel should be trained by Amdata or other qualified personnel in the following areas:

- IntraSpect/98 operation
- AMAPS scanner operation

The IntraSpect/98 operation is divided into the following subtopics:

- Test Record Format
- Recording Conventions
- IntraSpect/98 Test Checkout
- Calibration Procedures
- Scanning Procedures
- Data Interpretation
COMPONENTS AND EQUIPMENT

System Weights and Measurements

The weight of the system components, including the case and case size, are summarized below:

<table>
<thead>
<tr>
<th>Weight (pounds)</th>
<th>Size (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case #1: HP 9836 C and display</td>
<td>142...25</td>
</tr>
<tr>
<td>Case #2: UPS</td>
<td>86...24</td>
</tr>
<tr>
<td>Case #3: Scan controller</td>
<td>150...26</td>
</tr>
<tr>
<td>Case #4: AMAPS scanner</td>
<td>32...15</td>
</tr>
<tr>
<td>Case #5: Cable 250'</td>
<td>132...35</td>
</tr>
<tr>
<td>Case #6: Remote pulser preamp</td>
<td>45...23</td>
</tr>
<tr>
<td>Case #7: 360-degree tracks to fit</td>
<td>70...15</td>
</tr>
<tr>
<td>Case #8: Printer (dot matrix)</td>
<td>35...9</td>
</tr>
</tbody>
</table>

Note: Fuses are taped to the back of the units.

System Modules

To operate and checkout the following components without the HP 9836SC minicomputer in operation, connect a separate terminal with a 9600 baud RS-232C interface (optional equipment) to system modules.

- Scan controller
- Remote data acquisition system (RDAS)
- Receiver
- Remote pulser/receiver

The HP diagnostics are included with the Pascal 3.0 software package.
SCANNING SUBSYSTEM

Scanner and search unit

Scan controller and RF receiver

Guide track assembly
Scanner

The scanner mounts on a guide track assembly. The wheels of the scanner magnetically couple to the guide track and installation usually takes less than five minutes. The scanner can locate ultrasonic targets within +/-0.03 inch and repeat the measurement within +/-0.06 inch.

A profile of a scanner installed on a pipe and the examination area it covers is shown below.

A: 6.05" max.
B: 3.7" max.
Scan Controller Function

Amdata's scan controller provides slaved or remote control of the scanner. The controller accepts input from an examination operator using a joystick or an RS-232 communications computer interface. The controller operates the scanner motors and accomplishes all scanner-related functions. It maintains count of encoder outputs from the scanner and relays the information to the computer.

The sync output from the controller provides a timing signal that drives other devices, such as the pulser, oscilloscope, data-acquisition system, or other accessory. The 9,600-baud, RS-232C interface is used for communication between the controller and the computer.

The scan controller and power module are packaged in a Tektronix TM 515 power module that operates on 48 to 60 Hz and 90 to 132 or 180 to 260 volts. It weighs approximately 30 pounds, and measures approximately 15 inches wide, 6.8 inches high, and 20 inches deep.

The operator in the examination area can read the scanner position scales and the operator in the control area can observe the encoder position readouts at the controller.

Track

The flexible, mild-steel, guide track adapts to the surface of virtually any geometry and curvature. Because of the flexibility of the track the scanner can be installed on a wide variety of surfaces.
Setup

Use the push-button control to position the scanner. Mark off the opposite diagonals of a scan rectangle. Alternatively, only the starting point need be indicated.
Poor Lighting/Track Locator

Installation can be accomplished in near darkness. The modular design of the track and scanner facilitates installation in poorly lighted areas. The track locator shown below has tactile markings to aid in positioning the lightweight track. Usually the weld crown can be found in poor light.

The track locator is used to start the scan at the weld centerline.

Tether

The tether is a safety cord provided as a precaution in the event the scanner slips off the track. One end attaches to the scanner and the other attaches to a nearby support structure. The tether hook should be attached to the scanner with its open side up to allow maximum clearance of the hook from the scanner trucks. Adjust the tether length so it is long enough to allow free scanner motion but short enough to keep the scanner from impacting on a hard surface if it falls.
ULTRASONIC INSTRUMENTATION

The ultrasonic subsystem is designed to operate with commercial components. A computer-controlled pulser/receiver is located in the examination area and a computer-controlled receiver is located in the control area. Headphones are used for communication between the examination and control areas.

REMOTE DATA ACQUISITION SYSTEM (RDAS)

The RDAS coordinates the scan controller and the ultrasonic subsystem to produce ultrasonic waveform samples at specific scan grid points. It operates as a slave to the master computer and provides data to the HP 9836. The speed of the system is substantially increased by requiring the HP to set up the scan and thereafter only store and image the data.

The RDAS contains a high-speed, analog-to-digital (A/D) converter (20 MHz transient recorder) and a microprocessor that controls the synchronization between scanner motion and the A/D function. This is accomplished via the respective sync pulses.

UNINTERRUPTABLE POWER SYSTEM (UPS) AND LINE FILTER

In the event the main power is lost, the Topaz UPS 84864 supplies a load of 800 VA for nine minutes. The measured load of 3.85A allows operation for up to 25 minutes. This permits the operator to terminate the operation and save data before the system must be shut down. The system should be shut down as soon as possible to avoid totally discharging the UPS.

The Topaz UPS 84864 has an AC line filter that provides at least 40 dB attenuation at a frequency of 100 kHz. It operates automatically when used properly, connecting the AC line whenever the line voltage is above 85% of nominal. Operation requires the ON/OFF switch be on (the indicator light illuminates when power is at the output receptacle). The audible alarm beeps at 8-second intervals and sounds whenever the inverter is running.

Do not leave the UPS on line when the system is unattended (switch the UPS off). Otherwise the unit can discharge if the facility power is lost. It requires 16 hours to fully recharge the unit after being totally discharged.

Rev. C, 4/10/87, ECN 0645 1-12
### COLOR PALETTE

**Colors 1 - 3**

<table>
<thead>
<tr>
<th>Display, (R,G,B)</th>
<th>BLACK</th>
<th>BROWN</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seiko</td>
<td>0</td>
<td>0.45</td>
<td>0.8</td>
</tr>
<tr>
<td>PJ (R,G,B)</td>
<td>0</td>
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**Colors 4 - 6**

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<th>ORAN-YELLOW</th>
<th>YELLOWORAN</th>
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<tr>
<td>Seiko</td>
<td>1</td>
<td>0.40</td>
<td>0.98</td>
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<td>PJ (R,G,B)</td>
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**Colors 7 - 9**

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</thead>
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<td>1.0</td>
</tr>
<tr>
<td>PJ (R,G,B)</td>
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<td>1.0</td>
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### AMPLITUDE MAP

Amplitude units **BINARY**

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</thead>
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<th>YELLOWORAN</th>
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<td>48</td>
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<table>
<thead>
<tr>
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<th>SATURATED</th>
</tr>
</thead>
<tbody>
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<td>Seiko</td>
<td>56</td>
<td>64</td>
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**POLARITY MAP** (Threshold 5% FSH)

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<th>Negative phase</th>
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<th>RED</th>
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</thead>
<tbody>
<tr>
<td>Seiko</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Positive phase</th>
<th>SATURATED</th>
<th>RED</th>
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<tbody>
<tr>
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<td>128</td>
<td>254</td>
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*Page 11*

---

*Page 12*
INTRODUCTION

The Spectral C-scan is a data analysis method that displays the frequency content of each waveform in a selected scan region. The sum of the energy in up to four frequency bands are color coded and displayed either in a separate C-scan window or superimposed on the standard C-scan. The form has been modified to support four user defined frequency bands and nine-color spectral mapping.

REQUIREMENTS

Prerequisite options required: None

Option revision: 1.0
Revision history: Released as an option to VIP
Revision D.

Software revision required: VIP Revision D

Form revision required: E

RDAS revision required: E18

Scan controller revision required: C

References: I/98 VIP Operating Manual, General Information on the C-scan display and Transducer Analysis option in the appendices.


CAPABILITIES

Spectral C-scans may be performed on any rectangular region of waveforms that is displayed on the screen in a standard C-scan. A rectangular zoom cursor is used to define the analysis region. The Fast Fourier Transform (FFT) is performed on each waveform in the region. Frequency components within four frequency ranges specified in the form are summed and the resulting value is color coded and displayed using the form Spectral Color Map (Figure 1). The color map gives the magnitude ranges that map to each color.
The FFT is an implementation of the radix-2 Cooley-Tukey algorithm performed in-place. As is the case for other I/98 analysis methods, the C-gate is used to select a portion of the waveform for analysis. However, this FFT algorithm requires that the number of digital samples transformed is a power of two. If necessary, the waveform in the C-gate is padded at the tail end with DC (binary 128) to meet the power of two requirement.

The spectral analysis region is defined by positioning and sizing the rectangular zoom cursor. After a region is analyzed, the system automatically switches to spectral mode, displays the spectral content of the region and outlines it with a white border in order to distinguish analyzed from unanalyzed regions. Cursor outlines are permanently affixed to the C-scan to identify analyzed regions.

At this point, additional analysis regions may be selected on the same C-scan. These regions may be separate, adjacent or overlapping. A set of such regions may be selected and assembled to provide a spectral mosaic which efficiently covers areas of interest only. Overlapping regions should be avoided whenever possible because: (a) the program will unnecessarily recompute the FFT for each overlapped waveform and (b) the white outline will obscure spectral data in another region.

Above the C-scan, the system displays:

1. The state of the Spectral C-scan toggle, either ON or OFF. When it is OFF, the underlying C-scan is displayed. When it is ON, all spectral analysis regions are outlined and filled according to the Spectral Color Map. The unanalyzed regions are unchanged. These two display states may be rapidly alternated in order to compare and contrast corresponding regions in the C-scan.

2. The horizontal and vertical dimensions of the zoom cursor and the horizontal and vertical magnification factors.

3. The Spectral C-scan color legend. This legend displays the nine-color code used to map the total energy contained in all four frequency bands. The mapping of color to energy is determined by the Spectral Color Map page of the form.

The results of the spectral analysis are automatically saved to disk and may be displayed again if desired. Spectral files are listed in the directory with a .Sn extension and may be acted upon by the relevant file utility programs, for example, copied from hard disk to floppy disk.
ALGORITHMS/FORMULAS

The FORTRAN program, FOUREA, in Chapter 1.1 of Programs for Digital Signal Processing served as the model for the FFT implementation.

The magnitude of a single frequency component is equal to the square root of the sum of the squares of the real and imaginary parts:

\[ \text{Magnitude} = \sqrt{\text{Real}^2 + \text{Imaginary}^2} \]

SPECIAL KEYS USED

From the C-scan Zoom menu, four functions are available to support Spectral C-scans. They are:

- **Analyze**: <k3> Performs spectral analysis on the contents of the zoom window, display and automatically saves results on disk (to FORMNAME.Sn).
- **Toggle**: <k4> Toggle Spectral C-scan display on and off.
- **Read**: <k5> Read and display the data in the spectral (from FORMNAME.Sn) disk file.
- **Stop**: <CLR_I/O> Stop spectral analysis computation.

In discussion below these functions are referred to by name.

ERROR MESSAGES

**No data in enclosed region**

This message is displayed if the zoom cursor contains no valid data points because it is positioned entirely outside the C-scan region.

**Spectral frequency band error**

This message is displayed if:

1. The spectral analysis frequency bands are negative or greater than 1/2 the sampling rate.
2. A revision of the form is used which does not contain spectral frequency bands.

**RF data file not found; cannot compute spectra**

The Spectral C-scan is an analysis method that requires the RF waveform data (.Dn). This message is displayed when spectral analysis is attempted on a data set which contains only peak data.

**Spectral data file not found; cannot retrieve spectra**

This message is displayed if the corresponding .Sn file is not found.
RESTRICTIONS AND LIMITATIONS

The time to compute the Spectral C-scan depends upon the number of waves within the zoom cursor and the number of samples per wave. Waveforms with fewer samples will be processed significantly faster. Therefore:

1. The analysis region defined by the zoom cursor should be as small as possible to avoid lengthy processing delays.

2. The number of samples in the C-gate should be as small as possible and equal to a power of 2. The number of samples is the product of the C-gate width and the sampling rate.

SAMPLE WORK SESSION

Load a form which contains RF data, for example, system test form MSTPAUS. Then select C-scan from the Data Analysis menu.

A multi-stroke C-scan is displayed with a green stroke cursor covering the first stroke. Invoke the C-scan Zoom. A white, rectangular cursor, the zoom cursor, is displayed in the lower left hand corner of the C-scan. Initially, it encompasses a one pixel region. Select the zoom cursor sizing option (from the Zoom Help menu, <SHIFT>+<RECALL>). The <LEFT>/<RIGHT> and <UP>/<DOWN> arrow keys are used to change the horizontal and vertical dimensions, respectively, of the zoom cursor.

A white outlined rectangular magnification window is displayed directly above the C-scan. Select the magnification window sizing option (from the Zoom Help menu) and then use the arrow keys to adjust either the horizontal or vertical dimensions of the magnification window.

For example, expand the zoom cursor horizontally to 8 and vertically to 5 such that it encloses to 40 pixels region. Expand the magnification window by a factor of 24 horizontally and 32 vertically. The magnification window then contains 192 (8x24) x 160 (5x32) pixels.

While in the Zoom menu, press <SHIFT>+<ARROWKEY> to move the zoom cursor. Note that the C-scan area enclosed by the zoom cursor is simultaneously displayed above the C-scan in the magnification window.

Next, position to the lower left corner of the zoom cursor to the scanner coordinates 0.0, -2.0. The corresponding C-scan graphics screen image shown in Figure 2. Select the analyze function to initiate the spectral analysis. As the FFT is performed on each RF waveform, a spectral color is assigned and displayed, both in the zoom cursor and the magnification window.
Move the zoom cursor, resize it and the magnification window, and analyze another region by again selecting the analyze function. Alternate between spectral display on and off by repeatedly selecting the toggle function.

While the data for Spectral C-scan is being calculated, it is also written to disk as a .Sn file. Exit the C-scan display and re-enter it from the Data Analysis menu. Note that the spectral analysis regions are no longer displayed when the spectral mode is toggled on and off. To retrieve from disk and display the spectral data that has already been computed, select the read function. If desired, additional regions may be analyzed and appended to the existing spectral data file stored on disk. In this manner, it is possible to perform incremental analysis of a data set over several analysis sessions.
MOCE = NORMAL
CURSOR YLENGTH = 0.5 INCHES
CLSROR XLENGTH = 0.8 INCHES
XMAGNIFICATION = 24 TIMES
YMAGNIFICATION = 32 TIMES

SPECTRAL

Figure 1
TEST SET UP

MAGNETIC TRACK

2090 SCANNER

(+) Y

(-) X

TRANSDUCER EXTREME (-) Y POSITION, 5 MHZ

MARK IDENTIFYING WHERE SCAN BEGINS

CASE/INSULATION SAMPLE

MARK IDENTIFYING WHERE SCAN ENDS

10.0" LONG SCANNER ARM

CASE/INSL. SAMPLE

FIGURE 1: Y-AXIS TRANSFORMER POSITION ACCURACY

GS 49 12/22/89

CONTROL NO. 4A156
TPS NO. C77-0479-00-001-0005
TEST SET UP

CASE/INSL. SAMPLE

MARK IDENTIFYING WHERE SCAN BEGINS

MARK IDENTIFYING WHERE SCAN ENDS

MAGNETIC TRACK

2090 SCANNER

(-) X

(+) Y

18.0"

12.0"

FIGURE 2: X-AXIS TRANSDUCER POSITION ACCURACY

DEL HARRIS 12/09

CONTROL NO. 4A156
TPS NO. C77-0479-00-001-0005

GS 49 12/AUG/84

QE 08 09
SCAN SET UP

START OF SCAN

SCAN DIRECTION

AREA OF SCANNER
10' x 5'

CASE/INSL. SAMPLE

18.0" 12.0"

MAGNETIC TRACK

(-) X

(+) Y

FIGURE 3: SCAN PEA

DATE: 11/86

DRAWN: BILL HENDRICK

CONTROL NO. 4A156
TPS NO. 077-0479-00-001-0005
Figure 4: Membrane Tool
STEP 5.6
RF MODE

Run 1

Run 2

PRECEDING PAGE BLANK NOT FILMED
RF MODE
Run 3

ORIGINAL PAGE
COLOR PHOTOGRAPH

PRECEDING PAGE BLANK NOT FILMED

A-57
PEAK DETECT

RUN 3
K-SCANNING VELOCITY VERIFICATION (PEAK MODE)

RUN #1

RUN #2
K-Spanning Velocity Verification (Peak Mode)

Run #3
X-axis scanning velocity verification (Ref. node)

RUN #1

RUN #2

ORIGINAL PAGE
COLOR PHOTOGRAPH
X-Axis Spanning Velocity Verification (RF Mode)

Run #3

ORIGINAL PAGE
COLOR PHOTOGRAPH

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<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Seiko</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>PJ (R,G,B)</td>
<td>4</td>
<td>6</td>
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**Type: ALPHA**

**Minimum: n/a**

**Maximum: n/a**

**COLOR PALETTE**

**Colors 1 - 3**

- **Display (R,G,B)**: BLACK
- **Seiko**: BLACK
- **PJ (R,G,B)**: 4

**Color Palette**

- RED
- BROWN
- BLACK
- MAGENTA
- BLUE
- RED

**Colors 4 - 6**

- **Display (R,G,B)**: ORANGE
- **Seiko**: ORANGE
- **PJ (R,G,B)**: 52

**Color Palette**

- YELLO/ORANGE
- WHITE
- RED

**Colors 7 - 9**

- **Display (R,G,B)**: YELLOW
- **Seiko**: YELLOW
- **PJ (R,G,B)**: 89

**Color Palette**

- SATURATED
- WHITE
- MAGENTA

**Page: 11**

**ORIGINAL PAGE**

**COLOR PHOTOGRAPH**

**A-79**

**PRECEDING PAGE BLANK NOT FILMED**
STEP: 12.4
Appendix B

RESULTS OF THE GENERIC URBIS COMPONENTS QUALIFICATION TEST AT THIOKOL SPACE OPERATIONS
### GENERIC SYSTEM QUALIFICATION
### URBIS COMPONENT ASSIGNMENT

**LOCATION:** M337A

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*WARNING*:
*INTERCHANGING OF THESE COMPONENTS WITH OTHER URBIS COMPONENTS DURING THIS SYSTEM'S QUALIFICATION TESTING WILL INVALID THE TEST. IF EXCHANGING OF COMPONENTS IS NECESSARY, CONTACT EXTENSION 8992 TO OBTAIN CONCURRENCE.*
**GENERIC SYSTEM QUALIFICATION**
**URBIS COMPONENT ASSIGNMENT**

**LOCATION:** M111 ANNEX

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***WARNING***

*INTERCHANGING OF THESE COMPONENTS WITH OTHER URBIS COMPONENTS DURING THIS SYSTEM'S QUALIFICATION TESTING WILL INVALID THE TEST. IF EXCHANGING OF COMPONENTS IS NECESSARY, CONTACT EXTENSION 8992 TO OBTAIN CONCURRENCE.*
**GENERIC SYSTEM QUALIFICATION**  
**URBIS COMPONENT ASSIGNMENT**

**LOCATION: FINAL ASSEMBLY (SOUTH)**

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WARNING

* INTERCHANGING OF THESE COMPONENTS WITH OTHER URBIS COMPONENTS *  
* DURING THIS SYSTEM'S QUALIFICATION TESTING WILL INVALID THE *  
* TEST. IF EXCHANGING OF COMPONENTS IS NECESSARY, CONTACT *  
* EXTENSION 8992 TO OBTAIN CONCURRENCE. *
**GENERIC SYSTEM QUALIFICATION**  
**URBIS COMPONENT ASSIGNMENT**

**LOCATION**: FINAL ASSEMBLY (NORTH)

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**************************************************************************WARNING**************************************************************************
* INTERCHANGING OF THESE COMPONENTS WITH OTHER URBIS COMPONENTS *
* DURING THIS SYSTEM'S QUALIFICATION TESTING WILL INVALID THE *
* TEST. IF EXCHANGING OF COMPONENTS IS NECESSARY, CONTACT *
* EXTENSION 8992 TO OBTAIN CONCURRENCE.
**************************************************************************WARNING**************************************************************************
SYSTEM DIAGNOSTIC TEST

DATE: Feb 7, 1989
OPERATOR: [Signature]
VERIFIED BY: [Signature]

SYSTEM SERIAL NUMBER: S-AS 1866
DELIVERY DATE: January 1987
SOFTWARE VERSION NUMBER: 4.0

1) DID SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY?
   CIRCLE ONE: YES NO
   IF YES, PROCEED TO SYSTEM VALIDATION TEST SEQUENCE, OTHERWISE PROCEED TO STEP 2 OF THIS FORM.

2) WHICH DIAGNOSTIC TEST(S) FAILED? LIST IN SPACE BELOW.
   FAILED DIAGNOSTIC TEST(S) ____________________________
   ____________________________
   ____________________________

3) WERE ALL CONNECTIONS CHECKED TO VERIFY PROPER Hook UP?
   CIRCLE ONE: YES NO
   IF NO, CHECK CONNECTIONS.

4) DID THE SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY UPON REBOOTING THE SYSTEM?
   CIRCLE ONE: YES NO
   IF YES, NOTE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, THEN PROCEED TO SYSTEM VALIDATION TEST.
   CORRECTIVE ACTION(S) ____________________________
   ____________________________
SYSTEM DIAGNOSTIC TEST

(4 CONT.) IF NO, NOTE IN THE SPACE BELOW WHICH DIAGNOSTIC TEST(S) FAILED.

FAILED DIAGNOSTIC TEST(S) __________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

5) DID INDIVIDUAL SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY?

CIRCLE ONE: YES NO

IF YES, COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).

IF NO, NOTE IN THE SPACE BELOW WHICH SYSTEM DIAGNOSTIC TEST(S) FAILED.

FAILED SYSTEM DIAGNOSTIC TEST(S) ________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).
SYSTEM DIAGNOSTIC TEST

DATE: ________________

OPERATOR: ________________

VERIFIED BY: ________________

SYSTEM SERIAL NUMBER: ________________

DELIVERY DATE: ________________

SOFTWARE VERSION NUMBER: ________________

1) DID SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY?

CIRCLE ONE: (YES  NO)

IF YES, PROCEED TO SYSTEM VALIDATION TEST SEQUENCE, OTHERWISE PROCEED TO STEP 2 OF THIS FORM.

2) WHICH DIAGNOSTIC TEST(S) FAILED? LIST IN SPACE BELOW.

FAILED DIAGNOSTIC TEST(S) ____________________________________________

________________________________________

3) WERE ALL CONNECTIONS CHECKED TO VERIFY PROPER HOOK UP?

CIRCLE ONE: YES  NO

IF NO, CHECK CONNECTIONS.

4) DID THE SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY UPON REBOOTING THE SYSTEM?

CIRCLE ONE: YES  NO

IF YES, NOTE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, THEN PROCEED TO SYSTEM VALIDATION TEST.

CORRECTIVE ACTION(S) ____________________________________________

________________________________________
SYSTEM DIAGNOSTIC TEST

(4 CONT.) IF NO, NOTE IN THE SPACE BELOW WHICH DIAGNOSTIC TEST(S) FAILED.

FAILED DIAGNOSTIC TEST(S) ________________
_________________________
_________________________
_________________________

5) DID INDIVIDUAL SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY?

CIRCLE ONE: YES NO

IF YES, COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).

IF NO, NOTE IN THE SPACE BELOW WHICH SYSTEM DIAGNOSTIC TEST(S) FAILED.

FAILED SYSTEM DIAGNOSTIC TEST(S) ________________
_________________________
_________________________
_________________________

COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).
SYSTEM DIAGNOSTIC TEST

DATE: 8/27/85
OPERATOR: Paul Jenkins
VERIFIED BY:

SYSTEM SERIAL NUMBER: 3C165
DELIVERY DATE: Jan 87
SOFTWARE VERSION NUMBER:

1) DID SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY?
CIRCLE ONE: YES NO

IF YES, PROCEED TO SYSTEM VALIDATION TEST SEQUENCE, OTHERWISE PROCEED TO STEP 2 OF THIS FORM.

2) WHICH DIAGNOSTIC TEST(S) FAILED? LIST IN SPACE BELOW.
FAILED DIAGNOSTIC TEST(S)

3) WERE ALL CONNECTIONS CHECKED TO VERIFY PROPER HOOK UP?
CIRCLE ONE: YES NO

IF NO, CHECK CONNECTIONS.

4) DID THE SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY UPON REBOOTING THE SYSTEM?
CIRCLE ONE: YES NO

IF YES, NOTE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, THEN PROCEED TO SYSTEM VALIDATION TEST.
CORRECTIVE ACTION(S)

CTP-0100
Page 34
SYSTEM DIAGNOSTIC TEST

(4 CONT.) IF NO, NOTE IN THE SPACE BELOW WHICH DIAGNOSTIC TEST(S) FAILED.

FAILED DIAGNOSTIC TEST(S) ____________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

5) DID INDIVIDUAL SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY?

CIRCLE ONE: YES NO

IF YES, COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).

IF NO, NOTE IN THE SPACE BELOW WHICH SYSTEM DIAGNOSTIC TEST(S) FAILED.

FAILED SYSTEM DIAGNOSTIC TEST(S) ________________________________

_____________________________________________________________________

_____________________________________________________________________

COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).
SYSTEM DIAGNOSTIC TEST

DATE: 18 May 97
OPERATOR: [Name]
VERIFIED BY: [Name]

SYSTEM SERIAL NUMBER: [Number]
DELIVERY DATE: [Date]
SOFTWARE VERSION NUMBER: [Version]

1) DID SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY?
CIRCLE ONE: YES NO
IF YES, PROCEED TO SYSTEM VALIDATION TEST SEQUENCE, OTHERWISE PROCEED TO STEP 2 OF THIS FORM.

2) WHICH DIAGNOSTIC TEST(S) FAILED? LIST IN SPACE BELOW.
FAILED DIAGNOSTIC TEST(S) ____________________________
________________________
________________________

3) WERE ALL CONNECTIONS CHECKED TO VERIFY PROPER HOOK UP?
CIRCLE ONE: YES NO
IF NO, CHECK CONNECTIONS.

4) DID THE SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY UPON REBOOTING THE SYSTEM?
CIRCLE ONE: YES NO
IF YES, NOTE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, THEN PROCEED TO SYSTEM VALIDATION TEST.
CORRECTIVE ACTION(S) ____________________________
SYSTEM DIAGNOSTIC TEST

(4 CONT.) IF NO, NOTE IN THE SPACE BELOW WHICH DIAGNOSTIC TEST(S) FAILED.

FAILED DIAGNOSTIC TEST(S) ____________________________________________

________________________________________

________________________________________

________________________________________

5) DID INDIVIDUAL SYSTEM DIAGNOSTIC TESTS PERFORM PROPERLY?

CIRCLE ONE: YES NO

IF YES, COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).

IF NO, NOTE IN THE SPACE BELOW WHICH SYSTEM DIAGNOSTIC TEST(S) FAILED.

FAILED SYSTEM DIAGNOSTIC TEST(S) _______________________________________

________________________________________

________________________________________

________________________________________

COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).
SYSTEM VALIDATION TEST

DATE: 2/14/89

OPERATOR: Brad Cushing

VERIFIED BY: D. M.

SYSTEM SERIAL NUMBER: 5-A51B66
CAL. BLOCK SERIAL NUMBER: 07015 001 (membrane)
SOFTWARE VERSION NUMBER: 4.0

1) DID ALL SYSTEM VALIDATION TESTS STAY WITHIN THE SPECIFIED TOLERANCES SET FORTH IN AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 3.0?

CIRCLE ONE: YES NO

IF YES, PROCEED TO BAND PASS FILTER VERIFICATION TEST.

IF NO, LIST BELOW THE TEST(S) THAT DEVIATED OUTSIDE OF THE SPECIFIED TOLERANCES AND BY HOW MUCH.

FAILED SYSTEM VALIDATION TEST(S)

_________________________________________________________
_________________________________________________________
_________________________________________________________

2) WERE CONNECTIONS AND INSTRUCTIONS FOR PERFORMING THE SYSTEM VALIDATION TEST REVERIFIED?

CIRCLE ONE: YES NO

IF YES, PROCEED TO STEP 3 OF THIS FORM.

IF NO, REVERIFY ALL INSTRUCTIONS AND CONNECTIONS UNIQUE TO THIS TEST.
SYSTEM VALIDATION TEST

3) UPON RE-PERFORMING THE SYSTEM VALIDATION TEST SEQUENCE, DID EACH INDIVIDUAL TEST STAY WITHIN TOLERANCE?

CIRCLE ONE: YES  NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, THEN PROCEED TO BAND PASS FILTER VERIFICATION TEST.

CORRECTIVE ACTION(S)

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

IF NO, NOTE IN THE SPACE BELOW WHICH TEST(S) FAILED AND BY HOW MUCH. ALSO, COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).
SYSTEM VALIDATION TEST

DATE: [Date] OPERATOR: [Operator]

VERIFIED BY: [Verifier]

SYSTEM SERIAL NUMBER: [Serial Number]

CAL. BLOCK SERIAL NUMBER: [Block Serial Number]

SOFTWARE VERSION NUMBER: [Version Number]

1) DID ALL SYSTEM VALIDATION TESTS STAY WITHIN THE SPECIFIED TOLERANCES SET FORTH IN AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 3.0?

CIRCLE ONE: (YES) NO

IF YES, PROCEED TO BAND PASS FILTER VERIFICATION TEST.

IF NO, LIST BELOW THE TEST(S) THAT DEVIATED OUTSIDE OF THE SPECIFIED TOLERANCES AND BY HOW MUCH.

FAILED SYSTEM VALIDATION TEST(S) __________________________

__________________________

__________________________

__________________________

2) WERE CONNECTIONS AND INSTRUCTIONS FOR PERFORMING THE SYSTEM VALIDATION TEST REVERIFIED?

CIRCLE ONE: YES NO

IF YES, PROCEED TO STEP 3 OF THIS FORM.

IF NO, REVERIFY ALL INSTRUCTIONS AND CONNECTIONS UNIQUE TO THIS TEST.
SYSTEM VALIDATION TEST

3) UPON RE-PERFORMING THE SYSTEM VALIDATION TEST SEQUENCE, DID EACH INDIVIDUAL TEST STAY WITHIN TOLERANCE?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, THEN PROCEED TO BAND PASS FILTER VERIFICATION TEST.

CORRECTIVE ACTION(S) ____________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

IF NO, NOTE IN THE SPACE BELOW WHICH TEST(S) FAILED AND BY HOW MUCH. ALSO, COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).
SYSTEM VALIDATION TEST

DATE: 8th March E4
OPERATOR: [Redacted]
VERIFIED BY: [Redacted]

SYSTEM SERIAL NUMBER:
CAL. BLOCK SERIAL NUMBER:
SOFTWARE VERSION NUMBER:

1) DID ALL SYSTEM VALIDATION TESTS STAY WITHIN THE SPECIFIED TOLERANCES SET FORTH IN AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 3.0?

CIRCLE ONE: YES NO

IF YES, PROCEED TO BAND PASS FILTER VERIFICATION TEST.

IF NO, LIST BELOW THE TEST(S) THAT DEVIATED OUTSIDE OF THE SPECIFIED TOLERANCES AND BY HOW MUCH.

FAILED SYSTEM VALIDATION TEST(S)

2) WERE CONNECTIONS AND INSTRUCTIONS FOR PERFORMING THE SYSTEM VALIDATION TEST REVERIFIED?

CIRCLE ONE: YES NO

IF YES, PROCEED TO STEP 3 OF THIS FORM.

IF NO, REVERIFY ALL INSTRUCTIONS AND CONNECTIONS UNIQUE TO THIS TEST.
SYSTEM VALIDATION TEST

3) UPON RE-PERFORMING THE SYSTEM VALIDATION TEST SEQUENCE, DID EACH INDIVIDUAL TEST STAY WITHIN TOLERANCE?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, THEN PROCEED TO BAND PASS FILTER VERIFICATION TEST.

CORRECTIVE ACTION(S) ______________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

IF NO, NOTE IN THE SPACE BELOW WHICH TEST(S) FAILED AND BY HOW MUCH. ALSO, COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).
SYSTEM VALIDATION TEST

DATE: 13 May 89
OPERATOR: [Signed]
VERIFIED BY: [Signed]

SYSTEM SERIAL NUMBER: [Number]
CAL. BLOCK SERIAL NUMBER: [Number]
SOFTWARE VERSION NUMBER: [Number]

1) DID ALL SYSTEM VALIDATION TESTS STAY WITHIN THE SPECIFIED TOLERANCES SET FORTH IN AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 3.0?

CIRCLE ONE: YES NO

IF YES, PROCEED TO BAND PASS FILTER VERIFICATION TEST.

IF NO, LIST BELOW THE TEST(S) THAT DEVIATED OUTSIDE OF THE SPECIFIED TOLERANCES AND BY HOW MUCH.

FAILED SYSTEM VALIDATION TEST(S) _______________________________________________________

2) WERE CONNECTIONS AND INSTRUCTIONS FOR PERFORMING THE SYSTEM VALIDATION TEST REVERIFIED?

CIRCLE ONE: YES NO

IF YES, PROCEED TO STEP 3 OF THIS FORM.

IF NO, REVERIFY ALL INSTRUCTIONS AND CONNECTIONS UNIQUE TO THIS TEST.
SYSTEM VALIDATION TEST

3) UPON RE-PERFORMING THE SYSTEM VALIDATION TEST SEQUENCE, DID EACH INDIVIDUAL TEST STAY WITHIN TOLERANCE?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, THEN PROCEED TO BAND PASS FILTER VERIFICATION TEST.

CORRECTIVE ACTION(S)

IF NO, NOTE IN THE SPACE BELOW WHICH TEST(S) FAILED AND BY HOW MUCH. ALSO, COMPLETE A FAILURE/PROBLEM REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO DESCRIBE THE SPECIFIC PROBLEM(S).
BAND PASS FILTER VERIFICATION TEST

DATE: 
OPERATOR: 
VERIFIED BY: 
SOFTWARE VERSION NUMBER: 

SYSTEN SERIAL NUMBER: S - A7 1866
OSCILLOSCOPE SERIAL NUMBER: V - 6003401
WAVE FORM GENERATOR SERIAL NUMBER: V - B03348

1) COMPLETE THE FOLLOWING CHECK LIST:
   a) Connect the Marconi Instruments, 2022C Wave Form Generator to the Remote Pulser Preamplifier (RPP).
   b) Intraspect 9836 APS is in A-scope mode.
   c) A continuous wave pulse is being sent into the RPP.
   d) A signal response is being obtained of the A-scope.
   e) Gain is set to 17.0 dB.
   f) Record frequency versus amplitude when incrementing the frequency up (page 3, 4, & 5 of this form).

2) Did the band pass filters perform properly?
   Circle one: [ ] Yes [ ] No

If yes, proceed to A/D convertor verification test.

If no, verify that all connections unique to this verification test are properly hooked up, and note in the space provided below, which filter(s) failed.

Failed Band Pass Filter(s)
3) Upon re-performing this test, did the band pass filters perform properly?

Circle one: Yes  No

If yes, note in the space below, what was done to correct the problem.

Corrective Action(s)

If no, complete a Problem/Failure Report, Form N, and notify MTI Electronic Maintenance.

***NOTE: Be prepared to describe the specific problem(s).
## Band Pass Filter Verification Test

### Amplitude Versus Frequency Response

#### 0.5 MHz High Pass Filter

<table>
<thead>
<tr>
<th>Frequency (kHz)</th>
<th>Amplitude Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>250.00</td>
<td>6</td>
</tr>
<tr>
<td>300.00</td>
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</tr>
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<tr>
<td>950.00</td>
<td>15.3</td>
</tr>
<tr>
<td>1.00 MHz</td>
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</tr>
</tbody>
</table>
## Band Pass Filter Verification Test

### Amplitude Versus Frequency Response

**4.0 MHz Low Pass Filter**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Amplitude Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>90.6</td>
</tr>
<tr>
<td>1.50</td>
<td>84.8</td>
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<td>6.50</td>
<td>1.6</td>
</tr>
<tr>
<td>7.00</td>
<td>1.6</td>
</tr>
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</table>

**Amplitude Response:**

<table>
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<tr>
<th>Value</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>89.1</td>
<td>11.7</td>
</tr>
<tr>
<td>90.6</td>
<td></td>
</tr>
<tr>
<td>89.1</td>
<td>17.6</td>
</tr>
<tr>
<td>89.1</td>
<td>27.3</td>
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<tr>
<td>69.5</td>
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<tr>
<td>66.9</td>
<td></td>
</tr>
<tr>
<td>66.9</td>
<td></td>
</tr>
<tr>
<td>53.1</td>
<td></td>
</tr>
<tr>
<td>43.6</td>
<td></td>
</tr>
<tr>
<td>28.4</td>
<td></td>
</tr>
</tbody>
</table>
### Band Pass Filter Verification Test

#### Amplitude Versus Frequency Response

**8.0 MHz Low Pass Filter**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Amplitude Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.00</td>
<td>6.5</td>
</tr>
<tr>
<td>5.50</td>
<td>6.0</td>
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<td>4.0</td>
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<td>8.50</td>
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<td>9.00</td>
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<tr>
<td>10.50</td>
<td>1.0</td>
</tr>
<tr>
<td>11.00</td>
<td>0.5</td>
</tr>
</tbody>
</table>
BAND PASS FILTER VERIFICATION TEST

DATE: 21 Feb 89
OPERATOR: Brad Cushing
VERIFIED BY: 
SOFTWARE VERSION NUMBER: 1.0
SYSTEM SERIAL NUMBER: 5A S1868
OSCILLOSCOPE SERIAL NUMBER: U-BOO3401
WAVE FORM GENERATOR SERIAL NUMBER: U-BOO3348

1) COMPLETE THE FOLLOWING CHECK LIST:

   a) Connect the Marconi Instruments, 2022C Wave Form Generator to the Remote Pulser Preamplifier (RPP). .................. Q/K.

   b) Intraspect 9836 APS is in A-scope mode. ... BSC

   c) A continuous wave pulse is being sent into the RPP. .................. BSC

   d) A signal response is being obtained of the A-scope. .................. Q/K.

   e) Gain is set to 17.0 dB. .................. Q/K.

   f) Record frequency versus amplitude when incrementing the frequency up (page 3, 4, & 5 of this form). .................. Q/K.

2) Did the band pass filters perform properly?

   Circle one: Yes  No

   If yes, proceed to A/D convertor verification test.

   If no, verify that all connections unique to this verification test are properly hooked up, and note in the space provided below, which filter(s) failed.

   Failed Band Pass Filter(s) ____________________________________________

   ____________________________________________

   ____________________________________________

   ____________________________________________
3) Upon re-performing this test, did the band pass filters perform properly?

Circle one: Yes No

If yes, note in the space below, what was done to correct the problem.

Corrective Action(s) ____________________________
______________________________
______________________________
______________________________
______________________________

If no, complete a Problem/Failure Report, Form N, and notify MTI Electronic Maintenance.

***NOTE: Be prepared to describe the specific problem(s).
## BAND PASS FILTER VERIFICATION TEST
### AMPLITUDE VERSUS FREQUENCY RESPONSE
#### 0.5 MHz HIGH PASS FILTER

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>AMPLITUDE RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>250.00 kHz</td>
<td>0</td>
</tr>
<tr>
<td>300.00 kHz</td>
<td>0</td>
</tr>
<tr>
<td>350.00 kHz</td>
<td>0</td>
</tr>
<tr>
<td>400.00 kHz</td>
<td>3.9</td>
</tr>
<tr>
<td>450.00 kHz</td>
<td>7.8</td>
</tr>
<tr>
<td>500.00 kHz</td>
<td>9.8 14.1</td>
</tr>
<tr>
<td>550.00 kHz</td>
<td>18.8</td>
</tr>
<tr>
<td>600.00 kHz</td>
<td>19.5</td>
</tr>
<tr>
<td>650.00 kHz</td>
<td>20.3</td>
</tr>
<tr>
<td>700.00 kHz</td>
<td>21.1</td>
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<tr>
<td>750.00 kHz</td>
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<tr>
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<td>21.9</td>
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<tr>
<td>950.00 kHz</td>
<td>21.9</td>
</tr>
<tr>
<td>1.00 MHz</td>
<td>21.9</td>
</tr>
</tbody>
</table>
**BAND PASS FILTER VERIFICATION TEST**

**AMPLITUDE VERSUS FREQUENCY RESPONSE**

**4.0 MHz LOW PASS FILTER**

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>AMPLITUDE RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 MHz</td>
<td>21.9</td>
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<tr>
<td>1.50 MHz</td>
<td>21.9</td>
</tr>
<tr>
<td>2.00 MHz</td>
<td>22.7</td>
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<tr>
<td>2.50 MHz</td>
<td>21.1</td>
</tr>
<tr>
<td>3.00 MHz</td>
<td>19.5</td>
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<tr>
<td>3.50 MHz</td>
<td>18.0</td>
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<tr>
<td>4.00 MHz</td>
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<tr>
<td>4.50 MHz</td>
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<td>0</td>
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<td>5.50 MHz</td>
<td>0</td>
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<td>6.00 MHz</td>
<td>0</td>
</tr>
<tr>
<td>6.50 MHz</td>
<td>0</td>
</tr>
<tr>
<td>7.00 MHz</td>
<td>0</td>
</tr>
</tbody>
</table>
## BAND PASS FILTER VERIFICATION TEST
### AMPLITUDE VERSUS FREQUENCY RESPONSE
#### 8.0 MHz LOW PASS FILTER

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>AMPLITUDE RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.00 MHz</td>
<td>90.5</td>
</tr>
<tr>
<td>5.50 MHz</td>
<td>82.0</td>
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<tr>
<td>6.00 MHz</td>
<td>73.4</td>
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<tr>
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</tr>
<tr>
<td>10.50 MHz</td>
<td>1.6</td>
</tr>
<tr>
<td>11.00 MHz</td>
<td>0</td>
</tr>
</tbody>
</table>
1) COMPLETE THE FOLLOWING CHECK LIST:

   a) Connect the Marconi Instruments, 2022C Wave Form Generator to the Remote Pulser Preamplifier (RPP). ....................
   
   b) Intraspect 9836 APS is in A-scope mode. ....
   
   c) A continuous wave pulse is being sent into the RPP. ................................
   
   d) A signal response is being obtained of the A-scope. ..............................
   
   e) Gain is set to 17.0 dB. ......................
   
   f) Record frequency versus amplitude when incrementing the frequency up (page 3, 4, & 5 of this form). ..............................

   2) Did the band pass filters perform properly?

   Circle one: Yes No

   If yes, proceed to A/D convertor verification test.

   If no, verify that all connections unique to this verification test are properly hooked up, and note in the space provided below, which filter(s) failed.

   Failed Band Pass Filter(s) ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
3) Upon re-performing this test, did the band pass filters perform properly?

Circle one: Yes  No

If yes, note in the space below, what was done to correct the problem.

Corrective Action(s) ____________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

If no, complete a Problem/Failure Report, Form N, and notify MTI Electronic Maintenance.

***NOTE: Be prepared to describe the specific problem(s).
BAND PASS FILTER VERIFICATION TEST
AMPLITUDE VERSUS FREQUENCY RESPONSE
0.5 MHz HIGH PASS FILTER

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>AMPLITUDE RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>250.00 kHz</td>
<td>0</td>
</tr>
<tr>
<td>300.00 kHz</td>
<td>2.3</td>
</tr>
<tr>
<td>350.00 kHz</td>
<td>4.7</td>
</tr>
<tr>
<td>400.00 kHz</td>
<td>10.9</td>
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<tr>
<td>450.00 kHz</td>
<td>25.0</td>
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<td>500.00 kHz</td>
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<td>550.00 kHz</td>
<td>78.8</td>
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<td>950.00 kHz</td>
<td>89.0</td>
</tr>
<tr>
<td>1.00 MHz</td>
<td>89.8</td>
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</table>
## Band Pass Filter Verification Test

### Amplitude Versus Frequency Response

**4.0 MHz Low Pass Filter**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Amplitude Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>90.6</td>
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<td>1.50</td>
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</table>
**BAND PASS FILTER VERIFICATION TEST**

**AMPLITUDE VERSUS FREQUENCY RESPONSE**

**8.0 MHz LOW PASS FILTER**

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>AMPLITUDE RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.00 MHz</td>
<td>25.8</td>
</tr>
<tr>
<td>5.50 MHz</td>
<td>75.0</td>
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<td>6.00 MHz</td>
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<tr>
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<td>7.00 MHz</td>
<td>68.0</td>
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<tr>
<td>7.50 MHz</td>
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<tr>
<td>10.50 MHz</td>
<td>0</td>
</tr>
<tr>
<td>11.00 MHz</td>
<td>0</td>
</tr>
</tbody>
</table>
BAND PASS FILTER VERIFICATION TEST

DATE: 26 May 89

OPERATOR: J. Leeching

VERIFIED BY: E. G. Lee

SOFTWARE VERSION NUMBER: 4.0

SYSTEM SERIAL NUMBER: SA-51867

OSCILLOSCOPE SERIAL NUMBER: SA-51867 U-B003401

WAVE FORM GENERATOR SERIAL NUMBER: U-B03348

1) COMPLETE THE FOLLOWING CHECK LIST:

a) Connect the Marconi Instruments, 2022C Wave Form Generator to the Remote Pulser Preamplifier (RPP). ...................... BSC

b) Intraspect 9836 APS is in A-scope mode. ................ BSC

c) A continuous wave pulse is being sent into the RPP. ............................. BSC

d) A signal response is being obtained of the A-scope. ............................ BSC

e) Gain is set to 17.0 dB. ................................. BSC

f) Record frequency versus amplitude when incrementing the frequency up (page 3, 4, & 5 of this form). ................................. BSC

2) Did the band pass filters perform properly?

Circle one: Yes NO

If yes, proceed to A/D convertor verification test.

If no, verify that all connections unique to this verification test are properly hooked up, and note in the space provided below, which filter(s) failed.

Failed Band Pass Filter(s) _____________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

CTP-0100
Page 38
3) Upon re-performing this test, did the band pass filters perform properly?

Circle one: Yes  No

If yes, note in the space below, what was done to correct the problem.

Corrective Action(s) ____________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

If no, complete a Problem/Failure Report, Form N, and notify MTI Electronic Maintenance.

***NOTE: Be prepared to describe the specific problem(s).
### Band Pass Filter Verification Test

**Amplitude Versus Frequency Response**

**0.5 MHz High Pass Filter**

<table>
<thead>
<tr>
<th>Frequency (kHz)</th>
<th>Amplitude Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>250.00</td>
<td>0.0</td>
</tr>
<tr>
<td>300.00</td>
<td>0.0</td>
</tr>
<tr>
<td>350.00</td>
<td>3.9</td>
</tr>
<tr>
<td>400.00</td>
<td>10.2</td>
</tr>
<tr>
<td>450.00</td>
<td>23.4</td>
</tr>
<tr>
<td>500.00</td>
<td>48.8</td>
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<tr>
<td>550.00</td>
<td>59.4</td>
</tr>
<tr>
<td>600.00</td>
<td>64.1</td>
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<td>650.00</td>
<td>65.6</td>
</tr>
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<td>700.00</td>
<td>68.0</td>
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<td>750.00</td>
<td>68.8</td>
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<td>850.00</td>
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<tr>
<td>950.00</td>
<td>72.7</td>
</tr>
<tr>
<td>1.00 MHz</td>
<td>74.2</td>
</tr>
</tbody>
</table>
BAND PASS FILTER VERIFICATION TEST
AMPLITUDE VERSUS FREQUENCY RESPONSE
4.0 MHz LOW PASS FILTER

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>AMPLITUDE RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 MHz</td>
<td>84.6  95.0  74.2</td>
</tr>
<tr>
<td>1.50 MHz</td>
<td>46.6  67.0  74.2</td>
</tr>
<tr>
<td>2.00 MHz</td>
<td>25.6  25.0  74.2</td>
</tr>
<tr>
<td>2.50 MHz</td>
<td>60.6  67.0  71.9</td>
</tr>
<tr>
<td>3.00 MHz</td>
<td>66.8  100.0 71.1</td>
</tr>
<tr>
<td>3.50 MHz</td>
<td>100.0 100.0 68.0</td>
</tr>
<tr>
<td>4.00 MHz</td>
<td>100.0  88.0  51.0</td>
</tr>
<tr>
<td>4.50 MHz</td>
<td>100.0  10.4  7.0</td>
</tr>
<tr>
<td>5.00 MHz</td>
<td>1.4    0.0</td>
</tr>
<tr>
<td>5.50 MHz</td>
<td>0.0    0.0</td>
</tr>
<tr>
<td>6.00 MHz</td>
<td>0.0    0.0</td>
</tr>
<tr>
<td>6.50 MHz</td>
<td>0.0    0.0</td>
</tr>
<tr>
<td>7.00 MHz</td>
<td>0.0    0.0</td>
</tr>
<tr>
<td>FREQUENCY (MHz)</td>
<td>AMPLITUDE RESPONSE</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>5.00</td>
<td>69.0</td>
</tr>
<tr>
<td>5.50</td>
<td>68.8</td>
</tr>
<tr>
<td>6.00</td>
<td>68.0</td>
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<td>6.50</td>
<td>68.8</td>
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<td>7.00</td>
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<td>68.0</td>
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<tr>
<td>8.00</td>
<td>57.8</td>
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<td>17.2</td>
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<td>5.5</td>
</tr>
<tr>
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<td>0.0</td>
</tr>
<tr>
<td>10.00</td>
<td>0.0</td>
</tr>
<tr>
<td>10.50</td>
<td>0.0</td>
</tr>
<tr>
<td>11.00</td>
<td>0.0</td>
</tr>
</tbody>
</table>
A/D CONVERTER VERIFICATION TEST

DATE: 2/7/84
OPERATOR:

SYSTEM SERIAL NUMBER: 5A51866
VERIFIED BY:

SOFTWARE VERSION NUMBER: 4.0

1) COMPLETE THE FOLLOWING CHECK LIST

   a) Set A/D converter sampling rate to 20 MHz.
   b) Set sampling increment to 0.10 in.
   c) Set Y-axis stepper motor velocity to maximum.
   d) Place system in data acquisition mode.
   e) A-scan gate delay at 9.0 microseconds
   f) A-scan gate width at 50.0 microseconds
   g) C-scan gate delay at 41.0 microseconds
   h) C-scan gate width at 15.0 microseconds

2) Has the C-scan presentation been accurately displayed?
   Circle one: Yes No

   If yes, make a hard copy of the screen presentation, attach it to this form, and proceed to the transducer verification tests.

   If no, make a hard copy presentation of the screen display, re-verify above check lists, and re-perform scan.

3) Has the C-scan presentation been accurately displayed?
   Circle one: Yes No
If yes, note in the space below what was done to correct the problem, and proceed to the Transducer Verification Tests.

If no, make a hard copy presentation of the screen, and begin incrementing upward using the system default values, until a properly digitized signal is obtained. Proceed to step 4.

CORRECTIVE ACTION(S) ____________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

4) If a properly digitized wave form is not obtained with any of the system default values, complete a Failure/Problem Report, FORM N, and notify MTI Electronic Maintenance.

***NOTE: Be prepared to describe specific problem(s).

5) Note in the space below, what sampling rate provided an acceptable digitized wave (both A and C scan form). Attach hard copy of the screen presentation to this form.

ACCEPTABLE SAMPLING RATE: 20 MHz @ 2.0"/sec.

6) ATTACH HARD COPY HERE
__________________________________________________________

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Page 44

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A/D Converter Verification Test
Form D

Sampling Rate: 20 MHz
Y-Axis Scan Speed: 2.0"/sec.
A/D CONVERTER VERIFICATION TEST

DATE: 21 Feb 89
OPERATOR: Brad Lushing
SOFTWARE VERSION NUMBER: 4.0

SYSTEM SERIAL NUMBER: 51868
VERIFIED BY: [Signature]

1) COMPLETE THE FOLLOWING CHECK LIST

   a) Set A/D converter sampling rate to 20 MHz. ........................................ BSC
   b) Set sampling increment to 0.10 in. ............ BSC
   c) Set Y-axis stepper motor velocity to maximum. ........................................ BSC
   d) Place system in data acquisition mode. .... BSC
   e) A-scan gate delay at 9.0 microseconds .... BSC
   f) A-scan gate width at 50.0 microseconds .... BSC
   g) C-scan gate delay at 40.35 microseconds ... BSC
   h) C-scan gate width at 15.0 microseconds .... BSC

2) Has the C-scan presentation been accurately displayed?

   Circle one: [Yes] No

   If yes, make a hard copy of the screen presentation, attach it to this form, and proceed to the transducer verification tests.

   If no, make a hard copy presentation of the screen display, re-verify above check lists, and re-perform scan.

3) Has the C-scan presentation been accurately displayed?

   Circle one: [Yes] No

PRECEDING PAGE BLANK NOT FILMED

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B-45
If yes, note in the space below what was done to correct the problem, and proceed to the Transducer Verification Tests.

If no, make a hard copy presentation of the screen, and begin incrementing upward using the system default values, until a properly digitized signal is obtained. Proceed to step 4.

**CORRECTIVE ACTION(S)**


4) If a properly digitized wave form is not obtained with any of the system default values, complete a Failure/Problem Report, FORM N, and notify MTI Electronic Maintenance.

***NOTE: Be prepared to describe specific problem(s).***

5) Note in the space below, what sampling rate provided an acceptable digitized wave (both A and C scan form). Attach hard copy of the screen presentation to this form.

**ACCEPTABLE SAMPLING RATE:**

6) **ATTACH HARD COPY HERE**
A/D Converter Verification
A/D CONVERTER VERIFICATION TEST

DATE: 8 March 89
OPERATOR: Brad Lushing
SOFTWARE VERSION NUMBER: 40

1) COMPLETE THE FOLLOWING CHECK LIST

   a) Set A/D converter sampling rate to 20 MHz. ................................................. BSC
   b) Set sampling increment to 0.10 in. ............ BSC
   c) Set Y-axis stepper motor velocity to maximum. .................................................. BSC
   d) Place system in data acquisition mode. ....... BSC
   e) A-scan gate delay at 9.0 microseconds ....... BSC
   f) A-scan gate width at 50.0 microseconds ....... BSC
   g) C-scan gate delay at 44.0 microseconds ....... BSC
   h) C-scan gate width at 15.0 microseconds ....... BSC

2) Has the C-scan presentation been accurately displayed?

   Circle one: Yes No

   If yes, make a hard copy of the screen presentation, attach it to this form, and proceed to the transducer verification tests.

   If no, make a hard copy presentation of the screen display, re-verify above check lists, and re-perform scan.

3) Has the C-scan presentation been accurately displayed?

   Circle one: Yes No
If yes, note in the space below what was done to correct the problem, and proceed to the Transducer Verification Tests.

If no, make a hard copy presentation of the screen, and begin incrementing upward using the system default values, until a properly digitized signal is obtained. Proceed to step 4.

CORRECTIVE ACTION(S)

4) If a properly digitized wave form is not obtained with any of the system default values, complete a Failure/Problem Report, FORM N, and notify MTI Electronic Maintenance.

***NOTE: Be prepared to describe specific problem(s).

5) Note in the space below, what sampling rate provided an acceptable digitized wave (both A and C scan form). Attach hard copy of the screen presentation to this form.

ACCEPTABLE SAMPLING RATE:

6) ATTACH HARD COPY HERE
A/D Converter Verification
A/D CONVERTER VERIFICATION TEST

DATE: 15 May 84
OPERATOR: [Signature]
SOFTWARE VERSION NUMBER: [Signature]

SYSTEM SERIAL NUMBER: [Signature]
VERIFIED BY: [Signature]

1) COMPLETE THE FOLLOWING CHECK LIST

   a) Set A/D converter sampling rate to 20 MHz. ................................
   b) Set sampling increment to 0.10 in. ............
   c) Set Y-axis stepper motor velocity to maximum. ................................
   d) Place system in data acquisition mode. ....
   e) A-scan gate delay at 0.0 microseconds ......
   f) A-scan gate width at 50.0 microseconds ....
   g) C-scan gate delay at 41.0 microseconds ....
   h) C-scan gate width at 15.0 microseconds ....

   COMPLETED (INITIALS)

2) Has the C-scan presentation been accurately displayed?
   Circle one: Yes No

   If yes, make a hard copy of the screen presentation, attach it to this form, and proceed to the transducer verification tests.
   If no, make a hard copy presentation of the screen display, re-verify above check lists, and re-perform scan.

3) Has the C-scan presentation been accurately displayed?
   Circle one: Yes No
If yes, note in the space below what was done to correct the problem, and proceed to the Transducer Verification Tests.

If no, make a hard copy presentation of the screen, and begin incrementing upward using the system default values, until a properly digitized signal is obtained. Proceed to step 4.

CORRECTIVE ACTION(S) ____________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

4) If a properly digitized wave form is not obtained with any of the system default values, complete a Failure/Problem Report, FORM N, and notify MTI Electronic Maintenance.

***NOTE: Be prepared to describe specific problem(s).

5) Note in the space below, what sampling rate provided an acceptable digitized wave (both A and C scan form). Attach hard copy of the screen presentation to this form.

ACCEPTABLE SAMPLING RATE: ____________________________

6) ATTACH HARD COPY HERE

________________________________________________________
**TRANSDUCER VERIFICATION TESTS**

**DATE:** 2/15/89  
**OPERATOR:** Brad Fushing  
**VERIFIED BY:** T. Harris

**SYSTEM SERIAL NUMBER:** S-451866  
**TRANSDUCER SERIAL NUMBER:** 78358  
**SOFTWARE VERSION NUMBER:** 4.0

1) Does the vendor's Transducer Characteristic Analysis Sheet contain the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Check if Listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Customer name</td>
<td>✅</td>
</tr>
<tr>
<td>b) Vendor performing the test</td>
<td>✅</td>
</tr>
<tr>
<td>c) Date performed</td>
<td>✅</td>
</tr>
<tr>
<td>d) Analyst performing the test</td>
<td>✅</td>
</tr>
<tr>
<td>e) Target material</td>
<td>✅</td>
</tr>
<tr>
<td>f) Water travel distance</td>
<td>✅</td>
</tr>
<tr>
<td>g) Peak frequency</td>
<td>✅</td>
</tr>
<tr>
<td>h) Band width center frequency</td>
<td>✅</td>
</tr>
<tr>
<td>i) Band width at -6 dB</td>
<td>✅</td>
</tr>
<tr>
<td>j) Sensitivity (Loop Gain)</td>
<td>✅</td>
</tr>
<tr>
<td>k) Photograph of oscilloscope</td>
<td>✅</td>
</tr>
<tr>
<td>l) O Frequency spectrum</td>
<td></td>
</tr>
<tr>
<td>m) O RF envelope</td>
<td></td>
</tr>
<tr>
<td>n) Pulser/receiver used</td>
<td></td>
</tr>
<tr>
<td>o) Oscilloscope used</td>
<td></td>
</tr>
<tr>
<td>p) Spectrum analyzer used</td>
<td></td>
</tr>
<tr>
<td>q) Excitation voltage used</td>
<td></td>
</tr>
<tr>
<td>r) Attenuation used</td>
<td></td>
</tr>
<tr>
<td>s) Vertical scale description (dB and volts)</td>
<td></td>
</tr>
<tr>
<td>t) Horizontal scale description (frequency and time)</td>
<td></td>
</tr>
<tr>
<td>u) Gain used</td>
<td></td>
</tr>
<tr>
<td>v) Band width used</td>
<td></td>
</tr>
<tr>
<td>w) Transducer type</td>
<td></td>
</tr>
<tr>
<td>x) Transducer serial number</td>
<td></td>
</tr>
<tr>
<td>y) Active area</td>
<td></td>
</tr>
<tr>
<td>z) Transducer type</td>
<td></td>
</tr>
<tr>
<td>a) Type and length of cable used</td>
<td></td>
</tr>
<tr>
<td>b) Water couplant temperature</td>
<td></td>
</tr>
<tr>
<td>c) Sampling rate</td>
<td></td>
</tr>
</tbody>
</table>
2) Was there any damage seen to the transducer while performing the visual examination?

Circle one: Yes (No)

If no, proceed to step 3 of this form.

If yes, note in the space below what type of damage was seen. Send transducer back to vendor.

Observed Damage to Transducer

---

3) Complete the Following Check List

<table>
<thead>
<tr>
<th>Check</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) 3 in. x 3 in. x 1 in. glass block on bottom of immersion tank</td>
<td>[Initials]</td>
</tr>
<tr>
<td>b) At least six inches of water is covering the glass block target</td>
<td>[Initials]</td>
</tr>
<tr>
<td>c) Transducer is connected to Z-axis arm of immersion tank</td>
<td>[Initials]</td>
</tr>
<tr>
<td>d) Transmitting face of transducer is parallel to target material</td>
<td>[Initials]</td>
</tr>
<tr>
<td>e) Transducer is connected to the URBIS</td>
<td>[Initials]</td>
</tr>
<tr>
<td>f) Transducer face is 4 inches above the target material</td>
<td>[Initials]</td>
</tr>
<tr>
<td>g) Inspection system is in A-scope mode</td>
<td>[Initials]</td>
</tr>
</tbody>
</table>

4) Verify if water temperature is between 68° and 82° Fahrenheit. Note measured temperature below.

Measured Temperature: 78°F

5) Pulse the system and adjust the gain so the first complete back-wall reflection is at 80 percent full screen height. Note the gain needed.

Gain Reading: 80 dB
6) Does in house transducer characteristic analysis match vendor analysis?

Circle one: Yes [ ] No [ ]

If yes, attach the hard copy presentation of the analysis to this form and proceed to the verification test of the electromagnetic interference shielding of data acquisition cables.

If no, note in the space below what conditions were rejectable.

Rejectable Conditions: The rejectable condition does not reside with the 5-98 transducer analysis software, but do to low quality fabrication of the transducer itself.

7) Did the in house transducer characteristic analysis match the vendor's sheet on the retry?

Circle one: Yes [ ] No [ ]

If yes, note in the space below what was done to correct the problem, and proceed to the verification test of the electromagnetic interference shielding of data acquisition cables.

Actions Taken to Correct Problem:

If no, complete a Problem/Failure Report, FORM N. Notify the vendor, send the transducer, copy of the Problem/Failure Report, and a copy of the in house analysis back to the vendor.
TRANSDUCER ANALYSIS Test

GENERAL INFORMATION
FORM NAME SETPHRI
SAMPLING RATE 80.00 MHZ
MANUFACTURER C. E.
MODEL TS-196
SERIAL NUMBER T8358

CALCULATED FEATURES
PEAK MAG. 2145.61
PEAK FREQ. 3.75 MHZ
LOWER 6dB FREQ. 2.93 MHZ
UPPER 6dB FREQ. 4.80 MHZ
BAND CENTER FREQ. 3.87 MHZ
BANDWIDTH 48.48 %

AMDATA INC., (C) 1987
PC-TEC TRANSDUCER EVALUATION REPORT

--- power spectrum (Mhz) ---

MORTHOL

Test Date: JUL 1, 1987 (14:00:20)
Report Date: JUL 1, 1987 (14:52:47)

PULSER/RECEIVER PARAMETERS
Model: 59050FR
Gain (db): 40
Attenu. (db): 40
Damping: 0
HF Filt.: OUT
BF Filt.: N/A

TRANSDUCER PARAMETERS
Model: TS-196
Diameter: .750
Center Freq.: 5.0 MHZ
Shoe Type: N/A
Couplant: WATER

DATA COLLECTION PARAMETERS
Gate length (usec): 900

FEATURES
Gate width (Mhz): 40.000

Analytic Envelope
Low: 4.141
High: 5.703

Features
Gate width (Mhz): 4.922
Bandwidth (K): 31.748

Certified By
R.A. ( signatures)
Date: 7/1/87
Q.A. ( signatures)
Date: 7/1/87

Original page is of poor quality.
TRANSUDER VERIFICATION TESTS

DATE: 21 Feb 89
OPERATOR: B. Cushing
VERIFIED BY: J. Kramer

1) Does the vendor's Transducer Characteristic Analysis Sheet contain the following:

Check if Listed

a) Customer name ............................................. ✓
b) Vendor performing the test .................................. ✓
c) Date performed .............................................. ✓
d) Analyst performing the test ................................. ✓
e) Target material ............................................... ✓
f) Water travel distance ........................................ ✓
g) Peak frequency ............................................... ✓
h) Band width center frequency ............................... ✓
i) Band width at -6 dB ........................................ ✓
j) Sensitivity (Loop Gain) ...................................... ✓
k) Photograph of oscilloscope
   O Frequency spectrum ...................................... ✓
   O RF envelope ............................................... ✓
l) Pulser/receiver used ........................................ ✓
m) Oscilloscope used .......................................... ✓
n) Spectrum analyzer used ..................................... ✓
o) Excitation voltage used .................................... ✓
p) Attenuation used ............................................ ✓
q) Vertical scale description (dB and volts) ............... ✓
r) Horizontal scale description (frequency
   and time) .................................................... ✓
s) Gain used .................................................... ✓
t) Band width used ............................................ ✓
u) Transducer type ............................................. ✓
v) Transducer serial number .................................. ✓
w) Active area .................................................. ✓
x) Type and length of cable used ............................ ✓
y) Water couplant temperature .............................. ✓
z) Sampling rate ................................................
2) Was there any damage seen to the transducer while performing the visual examination?

Circle one: Yes  No

If no, proceed to step 3 of this form.

If yes, note in the space below what type of damage was seen. Send transducer back to vendor.

Observed Damage to Transducer

3) Complete the Following Check List

a) 3 in. x 3 in. x 1 in. glass block on bottom of immersion tank
   Completed (Initials)

b) At least six inches of water is covering the glass block target
   OK

c) Transducer is connected to Z-axis arm of immersion tank
   OK

d) Transmitting face of transducer is parallel to target material
   OK

e) Transducer is connected to the URBIS
   OK

f) Transducer face is 4 inches above the target material
   OK

g) Inspection system is in A-scope mode
   OK

4) Verify if water temperature is between 68° and 82° Fahrenheit. Note measured temperature below.

   Measured Temperature: 76°F

5) Pulse the system and adjust the gain so the first complete back-wall reflection is at 80 percent full screen height. Note the gain needed.

   Gain Reading: 10 dB

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Page 46
6) Does in house transducer characteristic analysis match vendor analysis?

Circle one: Yes  No

If yes, attach the hard copy presentation of the analysis to this form and proceed to the verification test of the electromagnetic interference shielding of data acquisition cables.

If no, note in the space below what conditions were rejectable.

Rejectable Conditions The rejectable condition does not reside with the T-98 transducer analysis software. It is due to low quality fabrication of the transducer itself.

7) Did the in house transducer characteristic analysis match the vendor’s sheet on the retry?

Circle one: Yes  No

If yes, note in the space below what was done to correct the problem, and proceed to the verification test of the electromagnetic interference shielding of data acquisition cables.

Actions Taken to Correct Problem

If no, complete a Problem/Failure Report, FORM N. Notify the vendor, send the transducer, copy of the Problem/Failure Report, and a copy of the in house analysis back to the vendor.
PC-TEES TRANSDUCER EVALUATION REPORT

--- power spectrum (Mhz) ---

MORTHOL

Test Date: Jul 7, 1987
Report Date: Jun 20, 1987

Diameter: 0.750
Shoe: 0.000
Couplant: WATER

Center Freq.: 5.0 MHZ

Data Collection Parameters
Gate length (used): 0.200

Features
Time waveforms
Analytic envelope

Certified by:
Q.A.

Address:
B-69

1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500
(203) 688-1911
Telex: 99297
1) Does the vendor's Transducer Characteristic Analysis Sheet contain the following:

Check if Listed

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Customer name</td>
<td>✔</td>
</tr>
<tr>
<td>b) Vendor performing the test</td>
<td>☑</td>
</tr>
<tr>
<td>c) Date performed</td>
<td>☑</td>
</tr>
<tr>
<td>d) Analyst performing the test</td>
<td>☑</td>
</tr>
<tr>
<td>e) Target material</td>
<td>✔</td>
</tr>
<tr>
<td>f) Water travel distance</td>
<td>☑</td>
</tr>
<tr>
<td>g) Peak frequency</td>
<td>✔</td>
</tr>
<tr>
<td>h) Bandwidth center frequency</td>
<td>☑</td>
</tr>
<tr>
<td>i) Bandwidth at -6 dB</td>
<td>☑</td>
</tr>
<tr>
<td>j) Sensitivity (Loop Gain)</td>
<td>☑</td>
</tr>
<tr>
<td>k) Photograph of oscilloscope</td>
<td>✔</td>
</tr>
<tr>
<td>l) Frequency spectrum</td>
<td>✔</td>
</tr>
<tr>
<td>m) RF envelope</td>
<td>✔</td>
</tr>
<tr>
<td>n) Pulser/receiver used</td>
<td>✔</td>
</tr>
<tr>
<td>o) Oscilloscope used</td>
<td>☑</td>
</tr>
<tr>
<td>p) Spectrum analyzer used</td>
<td>☑</td>
</tr>
<tr>
<td>q) Excitation voltage used</td>
<td>☑</td>
</tr>
<tr>
<td>r) Attenuation used</td>
<td>☑</td>
</tr>
<tr>
<td>s) Vertical scale description (dB and volts)</td>
<td>✔</td>
</tr>
<tr>
<td>t) Horizontal scale description (frequency and time)</td>
<td>☑</td>
</tr>
<tr>
<td>u) Gain used</td>
<td>☑</td>
</tr>
<tr>
<td>v) Bandwidth used</td>
<td>☑</td>
</tr>
<tr>
<td>w) Transducer type</td>
<td>☑</td>
</tr>
<tr>
<td>x) Transducer serial number</td>
<td>☑</td>
</tr>
<tr>
<td>y) Active area</td>
<td>☑</td>
</tr>
<tr>
<td>z) Type and length of cable used</td>
<td>☑</td>
</tr>
<tr>
<td>A) Water couplant temperature</td>
<td>☑</td>
</tr>
<tr>
<td>B) Sampling rate</td>
<td>✔</td>
</tr>
</tbody>
</table>
2) Was there any damage seen to the transducer while performing the visual examination?

Circle one: Yes [ ] No [ ]

If no, proceed to step 3 of this form.

If yes, note in the space below what type of damage was seen. Send transducer back to vendor.

Observed Damage to Transducer

3) Complete the Following Check List

   a) 3 in. x 3 in. x 1 in. glass block on bottom of immersion tank .................  

   b) At least six inches of water is covering the glass block target ...................  

   c) Transducer is connected to Z-axis arm of immersion tank ......................  

   d) Transmitting face of transducer is parallel to target material ...............  

   e) Transducer is connected to the URBIS ............  

   f) Transducer face is 4 inches above the target material .......................  

   g) Inspection system is in A-scope mode ............

4) Verify if water temperature is between 68° and 82° Fahrenheit. Note measured temperature below.

   Measured Temperature: 76 °

5) Pulse the system and adjust the gain so the first complete back-wall reflection is at 80 percent full screen height. Note the gain needed.

   Gain Reading: 15 dB
6) Does in house transducer characteristic analysis match vendor analysis?

Circle one:  Yes  No

If yes, attach the hard copy presentation of the analysis to this form and proceed to the verification test of the electromagnetic interference shielding of data acquisition cables.

If no, note in the space below what conditions were rejectable.

Rejectable Conditions: The rejectable condition does not reside with the I-98 transducer analysis software. It is due to low quality fabrication of the transducer itself.

7) Did the in house transducer characteristic analysis match the vendor's sheet on the retry?

Circle one:  Yes  No

If yes, note in the space below what was done to correct the problem, and proceed to the verification test of the electromagnetic interference shielding of data acquisition cables.

Actions Taken to Correct Problem __________________________

If no, complete a Problem/Failure Report, FORM N. Notify the vendor, send the transducer, copy of the Problem/Failure Report, and a copy of the in house analysis back to the vendor.
## TRANSUDER VERIFICATION TESTS

**DATE:** 25 May 84  
**OPERATOR:** L. L. \[lòng\]  
**VERIFIED BY:** \[lòng\]

**SYSTEM SERIAL NUMBER:** SA 51869  
**TRANSUDER SERIAL NUMBER:** RND-3 (78.05.1)  
**SOFTWARE VERSION NUMBER:** 4.0

1) Does the vendor's Transducer Characteristic Analysis Sheet contain the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Check if Listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Customer name</td>
<td>✅</td>
</tr>
<tr>
<td>b) Vendor performing the test</td>
<td>✅</td>
</tr>
<tr>
<td>c) Date performed</td>
<td>✅</td>
</tr>
<tr>
<td>d) Analyst performing the test</td>
<td>✅</td>
</tr>
<tr>
<td>e) Target material</td>
<td>NO</td>
</tr>
<tr>
<td>f) Water travel distance</td>
<td>❌</td>
</tr>
<tr>
<td>g) Peak frequency</td>
<td>✅</td>
</tr>
<tr>
<td>h) Band width center frequency</td>
<td>✅</td>
</tr>
<tr>
<td>i) Band width at -6 dB</td>
<td>❌</td>
</tr>
<tr>
<td>j) Sensitivity (Loop Gain)</td>
<td>✅</td>
</tr>
<tr>
<td>k) Photograph of oscilloscope</td>
<td></td>
</tr>
<tr>
<td>l) Frequency spectrum</td>
<td>NO</td>
</tr>
<tr>
<td>m) RF envelope</td>
<td>NO</td>
</tr>
<tr>
<td>n) Pulser/receiver used</td>
<td></td>
</tr>
<tr>
<td>o) Oscilloscope used</td>
<td>✅</td>
</tr>
<tr>
<td>p) Spectrum analyzer used</td>
<td>✅</td>
</tr>
<tr>
<td>q) Excitation voltage used</td>
<td>✅</td>
</tr>
<tr>
<td>r) Attenuation used</td>
<td>✅</td>
</tr>
<tr>
<td>s) Vertical scale description (dB and volts)</td>
<td>NO</td>
</tr>
<tr>
<td>t) Horizontal scale description (frequency and time)</td>
<td>❌</td>
</tr>
<tr>
<td>u) Gain used</td>
<td>✅</td>
</tr>
<tr>
<td>v) Band width used</td>
<td>✅</td>
</tr>
<tr>
<td>w) Transducer type</td>
<td>✅</td>
</tr>
<tr>
<td>x) Transducer serial number</td>
<td>✅</td>
</tr>
<tr>
<td>y) Active area</td>
<td>✅</td>
</tr>
<tr>
<td>z) Type and length of cable used</td>
<td>NO</td>
</tr>
<tr>
<td>a) Water couplant temperature</td>
<td>NO</td>
</tr>
<tr>
<td>b) Sampling rate</td>
<td></td>
</tr>
</tbody>
</table>
2) Was there any damage seen to the transducer while performing the visual examination?

Circle one: Yes  
No

If no, proceed to step 3 of this form.

If yes, note in the space below what type of damage was seen. Send transducer back to vendor.

Observed Damage to Transducer

3) Complete the Following Check List

   a) 3 in. x 3 in. x 1 in. glass block on bottom of immersion tank
   Aluminum Block
   
   b) At least six inches of water is covering the glass block target

   c) Transducer is connected to Z-axis arm of immersion tank

   d) Transmitting face of transducer is parallel to target material

   e) Transducer is connected to the URBIS

   f) Transducer face is 4 inches above the target material

   g) Inspection system is in A-scope mode

   Completed (Initials)

   BSC

4) Verify if water temperature is between 68° and 82° Fahrenheit. Note measured temperature below.

   Measured Temperature: 75°F

5) Pulse the system and adjust the gain so the first complete back-wall reflection is at 80 percent full screen height. Note the gain needed.

   Gain Reading: 13.0 db
6) Does in house transducer characteristic analysis match vendor analysis?

Circle one: Yes  No

If yes, attach the hard copy presentation of the analysis to this form and proceed to the verification test of the electromagnetic interference shielding of data acquisition cables.

If no, note in the space below what conditions were rejectable.

Rejectable Conditions: The rejectable condition does not reside with the T-98 transducer analysis software but due to low quality fabrication of transducer itself.

7) Did the in house transducer characteristic analysis match the vendor's sheet on the retry?

Circle one: Yes  No

If yes, note in the space below what was done to correct the problem, and proceed to the verification test of the electromagnetic interference shielding of data acquisition cables.

Actions Taken to Correct Problem: 

If no, complete a Problem/Failure Report, FORM N. Notify the vendor, send the transducer, copy of the Problem/Failure Report, and a copy of the in house analysis back to the vendor.
PC-TEC TRANSDUCER EVALUATION REPORT

- power spectrum (Mhz) -

MORTHOL


FILLET/RECEIVER PARAMETERS
- Banding: 4
- HP Filter: On
- BF Filter: N/A

TRANSUCER PARAMETERS
- Diameter: .750
- Center Freq.: 5.0 MHZ
- Couplant: WATER

DATA COLLECTION PARAMETERS
- Gate length (usec): .8 usec

FEATURES
- Time Waveform

Power Systems
Combustion Engineering, Inc.
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500
(203) 686-1911
Telex: 99297

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CERTIFIED BY
Q.A.

DATE 6/30/87

DATE 7/1/87

PRECEDING PAGE BLANK NOT FILMED
ELECTROMAGNETIC INTERFERENCE SHIELDING
DATA ACQUISITION CABLE
VERIFICATION TEST

DATE: 2/17/89
OPERATOR: Brad Cushing
VOLTAGE OF LINE SYSTEM IS RUNNING ON: 240
VERIFIED BY: W. Haiker

SYSTEM SERIAL NUMBER: S-A51866
CABLE I.D. NUMBER: AWM-AWM-2493
TRANSUDER SERIAL NUMBER
SOFTWARE VERSION NUMBER:

1) COMPLETE CHECK LIST BEFORE PROCEEDING WITH VERIFICATION TEST

a) SYSTEM IS CONNECTED ON SAME ELECTRICAL LINES AS AUTOCLAVE(S) .................

b) 5.0 MHz TRANSDUCER IS BEING USED ..............

c) SYSTEM IS IN THE A-SCOPE MODE ...............

d) PEAK DETECTING OFF EIGHT MULTIPLE BACK-WALL REFLECTION .................

e) SIGNAL RESPONSE IS SET TO 35% FSH OFF A BONDED REGION .................

2) STATE THE TIME THE AUTOCLAVE CYCLING BEGAN:

3) NOTE SIGNAL RESPONSE EVERY HOUR ON THE HOUR IN THE SPACE PROVIDED BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>SIGNAL RESPONSE (% FSH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00</td>
<td>34.2</td>
</tr>
<tr>
<td>2:00</td>
<td>34.4</td>
</tr>
<tr>
<td>3:00</td>
<td>34.4</td>
</tr>
<tr>
<td>4:00</td>
<td>34.9</td>
</tr>
</tbody>
</table>
4) DID SIGNAL RESPONSE VARY BY MORE THAN 10% AT ANY TIME DURING THE TEST?

CIRCLE ONE: YES NO

IF NO, PROCEED TO Y-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

IF YES, NOTE IN THE SPACE PROVIDED BELOW, THE TIME(S) AT WHICH THIS DEVIATION OCCURRED.

<table>
<thead>
<tr>
<th>TIME</th>
<th>SIGNAL RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ALSO COMPLETE A PROBLEM/FAILURE REPORT, FORM N. NOTIFY MTI ELECTRONIC MAINTENANCE OF THE DISCREPANCY.

***NOTE: BY PLACING THE INSPECTION SYSTEM IN THE VICINITY OF THE AUTOCLAVES REPRESENTS THE WORST CASE ELECTRONIC ENVIRONMENT THAT THE SYSTEM WILL EXPERIENCE.

*Note: System was run during auto clave operation. Also system was exposed to electromagnetic noise in tense electromagnetic interference by placing a magnetic yoke on various components of the system and on the umbilical cabling. No change in signal response was noted.*
ELECTROMAGNETIC INTERFERENCE SHIELDING
DATA ACQUISITION CABLE
VERIFICATION TEST

DATE:..............
OPERATOR:...........
VOLTAGE OF LINE SYSTEM IS RUNNING ON:......
VERIFIED BY:.........

SYSTEM SERIAL NUMBER: ...........
CABLE I.D. NUMBER: ...........
TRANSUDER SERIAL NUMBER: ...........
SOFTWARE VERSION NUMBER: ...........

1) COMPLETE CHECK LIST BEFORE PROCEEDING WITH VERIFICATION TEST

a) SYSTEM IS CONNECTED ON SAME ELECTRICAL LINES AS AUTOCLAVE(S) .................... BSC
b) 5.0 MHZ TRANSDUCER IS BEING USED ............... BSC
c) SYSTEM IS IN THE A-SCOPE MODE ............... BSC
d) PEAK DETECTING OFF EIGHT MULTIPLE BACK-WALL REFLECTION ...................... BSC
e) SIGNAL RESPONSE IS SET TO 35% FSH OFF A BONDED REGION ......................... BSC

2) STATE THE TIME THE AUTOCLAVE CYCLING BEGAN:

3) NOTE SIGNAL RESPONSE EVERY HOUR ON THE HOUR IN THE SPACE PROVIDED BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>SIGNAL RESPONSE (% FSH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36:30</td>
<td>36.2</td>
</tr>
<tr>
<td>38:30</td>
<td>35.9</td>
</tr>
<tr>
<td>36:30</td>
<td>36.2</td>
</tr>
<tr>
<td>36:20</td>
<td>36.2</td>
</tr>
</tbody>
</table>

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4) DID SIGNAL RESPONSE VARY BY MORE THAN 10% AT ANY TIME DURING THE TEST?

CIRCLE ONE: YES  NO

IF NO, PROCEED TO Y-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

IF YES, NOTE IN THE SPACE PROVIDED BELOW, THE TIME(S) AT WHICH THIS DEVIATION OCCURRED.

<table>
<thead>
<tr>
<th>TIME</th>
<th>SIGNAL RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ALSO COMPLETE A PROBLEM/FAILURE REPORT, FORM N. NOTIFY MTI ELECTRONIC MAINTENANCE OF THE DISCREPANCY.

***NOTE: BY PLACING THE INSPECTION SYSTEM IN THE VICINITY OF THE AUTOCLAVES REPRESENTS THE WORST CASE ELECTRONIC ENVIRONMENT THAT THE SYSTEM WILL EXPERIENCE.

Note - System was run during autoclave operation. However, it was also exposed to EMI by means of a magnetic yoke. This had no effect on signal response.
ELECTROMAGNETIC INTERFERENCE SHIELDING
DATA ACQUISITION CABLE
VERIFICATION TEST

DATE: 9 March 89
OPERATOR: Brad Lushing
VOLTAGE OF LINE SYSTEM IS RUNNING ON: 110
VERIFIED BY: 

SYSTEM SERIAL NUMBER: SAS1865
CABLE I.D. NUMBER: AWM-3493
TRANSUDER SERIAL NUMBER: RD-3
SOFTWARE VERSION NUMBER: 4.0

1) COMPLETE CHECK LIST BEFORE PROCEEDING WITH VERIFICATION TEST

a) SYSTEM IS CONNECTED ON SAME ELECTRICAL LINES AS AUTOCLAVE(S) ......................... BSC
b) 5.0 MHz TRANSUDER IS BEING USED ............. BSC
c) SYSTEM IS IN THE A-SCOPE MODE ............... BSC
d) PEAK DETECTING OFF EIGHT MULTIPLE BACK-WALL REFLECTION .................. BSC
e) SIGNAL RESPONSE IS SET TO 35% FSH OFF A BONDED REGION .................. BSC

2) STATE THE TIME THE AUTOCLAVE CYCLING BEGAN:

3) NOTE SIGNAL RESPONSE EVERY HOUR ON THE HOUR IN THE SPACE PROVIDED BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>SIGNAL RESPONSE (% FSH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:20</td>
<td>35.9</td>
</tr>
<tr>
<td>10:20</td>
<td>36.1</td>
</tr>
<tr>
<td>11:20</td>
<td>36.1</td>
</tr>
<tr>
<td>12:20</td>
<td>36.2</td>
</tr>
</tbody>
</table>
4) DID SIGNAL RESPONSE VARY BY MORE THAN 10% AT ANY TIME DURING THE TEST?

CIRCLE ONE: YES ☐ NO ☐

IF NO, PROCEED TO Y-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

IF YES, NOTE IN THE SPACE PROVIDED BELOW, THE TIME(S) AT WHICH THIS DEVIATION OCCURRED.

<table>
<thead>
<tr>
<th>TIME</th>
<th>SIGNAL RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ALSO COMPLETE A PROBLEM/FAILURE REPORT, FORM N. NOTIFY MTI ELECTRONIC MAINTENANCE OF THE DISCREPANCY.

***NOTE: BY PLACING THE INSPECTION SYSTEM IN THE VICINITY OF THE AUTOCLAVES REPRESENTS THE WORST CASE ELECTRONIC ENVIRONMENT THAT THE SYSTEM WILL EXPERIENCE.

*Note: System was run during autoclave operation. However it was also exposed to intense electromagnetic interference by placing a magnetic yoke by system components and labeling. This had no affect on signal response.
DATE: 23 May 89
OPERATOR: B. Lushong
VOLTAGE OF LINE SYSTEM IS RUNNING ON: 110
VERIFIED BY: [Signature]

SYSTEM SERIAL NUMBER: SA51869
CABLE I.D. NUMBER: SA51869 (AMU29493)
TRANSUDER SERIAL NUMBER: RND-3
SOFTWARE VERSION NUMBER: 4.0

1) COMPLETE CHECK LIST BEFORE PROCEEDING WITH VERIFICATION TEST
   a) SYSTEM IS CONNECTED ON SAME ELECTRICAL LINES AS AUTOCLAVE(S) .................. BSC
   b) 5.0 MHz TRANSDUCER IS BEING USED ................ BSC
   c) SYSTEM IS IN THE A-SCOPE MODE ..................... BSC
   d) PEAK DETECTING OFF EIGHT MULTIPLE BACK-WALL REFLECTION ............................... BSC
   e) SIGNAL RESPONSE IS SET TO 35% FSH OFF A BONDED REGION ................................. BSC

2) STATE THE TIME THE AUTOCLAVE CYCLING BEGAN: ________________

3) NOTE SIGNAL RESPONSE EVERY HOUR ON THE HOUR IN THE SPACE PROVIDED BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>SIGNAL RESPONSE (% FSH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1000</td>
<td>35.0</td>
</tr>
<tr>
<td>1100</td>
<td>35.2</td>
</tr>
<tr>
<td>1200</td>
<td>35.4</td>
</tr>
<tr>
<td>1300</td>
<td>35.2</td>
</tr>
<tr>
<td>1400</td>
<td></td>
</tr>
</tbody>
</table>
4) DID SIGNAL RESPONSE VARY BY MORE THAN 10% AT ANY TIME DURING THE TEST?

CIRCLE ONE: YES (NO)

IF NO, PROCEED TO Y-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

IF YES, NOTE IN THE SPACE PROVIDED BELOW, THE TIME(S) AT WHICH THIS DEVIATION OCCURRED.

<table>
<thead>
<tr>
<th>TIME</th>
<th>SIGNAL RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ALSO COMPLETE A PROBLEM/FAILURE REPORT, FORM N. NOTIFY MTI ELECTRONIC MAINTENANCE OF THE DISCREPANCY.

***NOTE: BY PLACING THE INSPECTION SYSTEM IN THE VICINITY OF THE AUTOCLAVES REPRESENTS THE WORST CASE ELECTRONIC ENVIRONMENT THAT THE SYSTEM WILL EXPERIENCE.

Note - System was run during autoclave operation. However, it was also exposed to intense E.M.I by placing a magnetic yoke near system components and labeling. This had no effect on signal response.
Y-AXIS TRANSDUCER POSITIONING ACCURACY
VERIFICATION TEST

DATE: 2/7/89
OPERATOR: [Signature]
VERIFIED BY: [Signature]

SYSTEM SERIAL NUMBER: S-A5-1866
TRANSDUCER SERIAL NUMBER: T5-196

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST
SEQUENCE.

a) 5.0 MHz TRANSDUCER IS BEING USED ............
COMPleted

b) 20.0 in. LONG SCANNER ARM IS CONNECTED
TO AMAPS 2090 SCANNER .....................

(c) SAMPLING INCREMENT IS 0.10 in. .............

(d) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED
   AS SO PROPER TEST SET-UP IS ACHIEVED ....

(e) ENCODERS HAVE BEEN ZEROED AT START LOCATION

(f) THE AMAPS 2090 SCANNER HAS BEEN PROGRAMED TO
   MOVE 16.0 in. IN THE +Y DIRECTION. ..........

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>RUN</th>
<th>INDICATED Y-AXIS POSITION</th>
<th>ACTUAL Y-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16.6</td>
<td>15.2</td>
<td>1.4</td>
</tr>
<tr>
<td>2</td>
<td>16.6</td>
<td>15.2</td>
<td>1.4</td>
</tr>
<tr>
<td>3</td>
<td>16.6</td>
<td>15.2</td>
<td>1.4</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL VALUES
WERE WITHIN 0.1 INCH, PROCEED TO X-AXIS TRANSDUCER POSITIONING
ACCURACY VERIFICATION TEST.
(3 CONT.) IF ANY OF THE RUNS FAILED, RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO THE FORM, RE-PERFORM TEST. RECORD RESULTS BELOW.

<table>
<thead>
<tr>
<th>INDICATED Y-AXIS POSITION</th>
<th>ACTUAL Y-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL Y-AXIS POSITIONS ARE WITHIN 0.1 INCH, RECORD IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. PROCEED TO X-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

CORRECTIVE ACTION(S)  | CHANGED RESOLUTION VALUE |
------------------------|---------------------------|

IF THE DIFFERENCE BETWEEN THE TWO READINGS ARE STILL OUT OF TOLERANCE, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE SPECIFIC INFORMATION CONCERNING THIS PROBLEM.
Y-AXIS TRANSDUCER POSITIONING ACCURACY
VERIFICATION TEST

DATE: 21 Feb 89
OPERATOR: B. Cushing
VERIFIED BY: J. James

SYSTEM SERIAL NUMBER: SA-51868
TRANSDUCER SERIAL NUMBER: T8363

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST SEQUENCE.

a) 5.0 MHz TRANSDUCER IS BEING USED ............ BSC
b) 20.0 in. LONG SCANNER ARM IS CONNECTED TO AMAPS 2090 SCANNER ................. BSC
c) SAMPLING INCREMENT IS 0.10 in. ............... BSC
d) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ...... BSC
e) ENCODERS HAVE BEEN ZEROED AT START LOCATION BSC
f) THE AMAPS 2090 SCANNER HAS BEEN PROGRAMED TO MOVE 16.0 in. IN THE +Y DIRECTION. ........ BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>RUN</th>
<th>INDICATED Y-AXIS POSITION</th>
<th>ACTUAL Y-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>0&quot;</td>
<td>Same</td>
<td>0</td>
</tr>
<tr>
<td>RUN 2</td>
<td>0&quot;</td>
<td>Same</td>
<td>0</td>
</tr>
<tr>
<td>RUN 3</td>
<td>0&quot;</td>
<td>Same</td>
<td>0</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL VALUES WERE WITHIN 0.1 INCH, PROCEED TO X-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

Scan parameters are 0"-5" y and 0"-5" x at 0.10 increments. Ran scan three times and noted where y position was at the end of each scan.
(3 CONT.) IF ANY OF THE RUNS FAILED, RE-CHECK ALL CONNECTIONS
AND VALUES ENTERED INTO THE FORM, RE-PERFORM TEST. RECORD
RESULTS BELOW.

<table>
<thead>
<tr>
<th>RUN</th>
<th>INDICATED Y-AXIS POSITION</th>
<th>ACTUAL Y-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>_________________________</td>
<td>______________________</td>
<td>______</td>
</tr>
<tr>
<td>RUN 2</td>
<td>_________________________</td>
<td>______________________</td>
<td>______</td>
</tr>
<tr>
<td>RUN 3</td>
<td>_________________________</td>
<td>______________________</td>
<td>______</td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL Y-AXIS
POSITIONS ARE WITHIN 0.1 INCH, RECORD IN THE SPACE BELOW
WHAT WAS DONE TO CORRECT THE PROBLEM. PROCEED TO X-AXIS
TRANSUDER POSITIONING ACCURACY VERIFICATION TEST.

CORRECTIVE ACTION(S) _______________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

IF THE DIFFERENCE BETWEEN THE TWO READINGS ARE STILL OUT OF
TOLERANCE, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND
NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE SPECIFIC INFORMATION CONCERNING
THIS PROBLEM.
Y-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST

DATE: 9 May 89
SYSTEM SERIAL NUMBER: SAE1865
OPERATOR: Brad Cushing
VERIFIED BY:

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST SEQUENCE.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............

   b) 20.0 in. LONG SCANNER ARM IS CONNECTED TO AMAPS 2090 SCANNER ...........

   c) SAMPLING INCREMENT IS 0.10 in. ............

   d) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ....

   e) ENCODERS HAVE BEEN ZEROED AT START LOCATION

   f) THE AMAPS 2090 SCANNER HAS BEEN PROGRAMED TO MOVE 16.0 in. IN THE +Y DIRECTION.

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>INDIcATED Y-AXIS POSITION</th>
<th>ACTUAL Y-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1 16.0&quot;</td>
<td>16.0&quot;</td>
<td>None</td>
</tr>
<tr>
<td>RUN 2 16.0&quot;</td>
<td>16.0&quot;</td>
<td>None</td>
</tr>
<tr>
<td>RUN 3 16.0&quot;</td>
<td>16.0&quot;</td>
<td>None</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL VALUES WERE WITHIN 0.1 INCH, PROCEED TO X-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

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(3 CONT.) IF ANY OF THE RUNS FAILED, RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO THE FORM, RE-PERFORM TEST. RECORD RESULTS BELOW.

<table>
<thead>
<tr>
<th>INDICATED Y-AXIS POSITION</th>
<th>ACTUAL Y-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL Y-AXIS POSITIONS ARE WITHIN 0.1 INCH, RECORD IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. PROCEED TO X-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

CORRECTIVE ACTION(S) ____________________________________________
________________________________________________________________
________________________________________________________________
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________________________________________________________________

IF THE DIFFERENCE BETWEEN THE TWO READINGS ARE STILL OUT OF TOLERANCE, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE SPECIFIC INFORMATION CONCERNING THIS PROBLEM.
Y-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST

DATE: 18 May

OPERATOR: [Name]

VERIFIED BY: [Name] / 6/89

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST SEQUENCE.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............ [INITIALS]

   b) 20.0 in. LONG SCANNER ARM IS CONNECTED TO AMAPS 2090 SCANNER .................... [INITIALS]

   c) SAMPLING INCREMENT IS 0.10 in. ............ [INITIALS]

   d) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ...... [INITIALS]

   e) ENCODERS HAVE BEEN ZEROED AT START LOCATION [INITIALS]

   f) THE AMAPS 2090 SCANNER HAS BEEN PROGRAMED TO MOVE 16.0 in. IN THE +Y DIRECTION. ........ [INITIALS]

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>INDICATED Y-AXIS POSITION</th>
<th>ACTUAL Y-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>RUN 2</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>RUN 3</td>
<td>16.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL VALUES WERE WITHIN 0.1 INCH, PROCEED TO X-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.
(3 CONT.) IF ANY OF THE RUNS FAILED, RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO THE FORM, RE-PERFORM TEST. RECORD RESULTS BELOW.

<table>
<thead>
<tr>
<th>RUN</th>
<th>INDICATED Y-AXIS POSITION</th>
<th>ACTUAL Y-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>_________________________</td>
<td>______________________</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td>_________________________</td>
<td>______________________</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td>_________________________</td>
<td>______________________</td>
<td></td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL Y-AXIS POSITIONS ARE WITHIN 0.1 INCH, RECORD IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. PROCEED TO X-AXIS TRANSDUCER POSITIONING ACCURACY VERIFICATION TEST.

CORRECTIVE ACTION(S)

______________________________
______________________________
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IF THE DIFFERENCE BETWEEN THE TWO READINGS ARE STILL OUT OF TOLERANCE, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE SPECIFIC INFORMATION CONCERNING THIS PROBLEM.
X-AXIS TRANSDUCER POSITIONING ACCURACY
VERIFICATION TEST

DATE: 2/7/84
OPERATOR:
VERIFIED BY:

SYSTEM SERIAL NUMBER:
TRANSducer SERIAL NUMBER:

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST SEQUENCE.

a) 5.0 MHz TRANSDUCER IS BEING USED ............
   COMPLETED (INITIALS)

b) 10.0 IN. LONG SCANNER ARM IS CONNECTED TO AMAPS 2090 SCANNER ...........
   

c) SAMPLING INCREMENT IS 0.10 INCHES ............
   

d) SAMPLING RATE IS 20.0 MHz ..............
   

e) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ............
   

f) ENCODERS HAVE BEEN ZEROED AT START LOCATION
   

g) THE AMAPS 2090 SCANNER HAS BEEN PROGRAMED TO MOVE 16.0 INCHES IN THE +X DIRECTION ...
   

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>INDICATED X-AXIS POSITION</th>
<th>RECORDED X-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1 16.0</td>
<td>15.97</td>
<td>0.03</td>
</tr>
<tr>
<td>RUN 2 16.0</td>
<td>16.03</td>
<td>0.03</td>
</tr>
<tr>
<td>RUN 3 16.0</td>
<td>16.08</td>
<td>0.08</td>
</tr>
</tbody>
</table>
3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL VALUES WERE WITHIN 0.1 INCH, PROCEED TO Y-AXIS SCAN VELOCITY VERIFICATION TEST. IF ANY OF THE RUNS FAILED, RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO THE MASTER FORM, RE-PERFORM TEST. RECORD RESULTS BELOW.

<table>
<thead>
<tr>
<th>RUN</th>
<th>INDICATED X-AXIS POSITION</th>
<th>ACTUAL X-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>_________________________</td>
<td>______________________</td>
<td>______</td>
</tr>
<tr>
<td>RUN 2</td>
<td>_________________________</td>
<td>______________________</td>
<td>______</td>
</tr>
<tr>
<td>RUN 3</td>
<td>_________________________</td>
<td>______________________</td>
<td>______</td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL X-AXIS POSITIONS ARE WITHIN 0.1 INCH, RECORD IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. PROCEED TO Y-AXIS SCAN VELOCITY VERIFICATION TEST.

CORRECTIVE ACTION(S) ____________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

IF THE DIFFERENCE BETWEEN THE TWO READINGS FROM ANY ONE OF THE THREE RUNS IS STILL OUT OF TOLERANCE COMPLETE A PROBLEM/ FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE SPECIFIC INFORMATION CONCERNING THIS PROBLEM.
X-AXIS TRANSDUCER POSITIONING ACCURACY
VERIFICATION TEST

DATE: 21 Feb 89
OPERATOR: Brad Cushing
VERIFIED BY: [Signature]

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST SEQUENCE.

- a) 5.0 MHz TRANSDUCER IS BEING USED .......... \_\_\_[BSC]
- b) 10.0 IN. LONG SCANNER ARM IS CONNECTED TO AMAPS 2090 SCANNER ................... \_\_\_[BSC]
- c) SAMPLING INCREMENT IS 0.10 INCHES ............ \_\_\_[BSC]
- d) SAMPLING RATE IS 20.0 MHz .................... \_\_\_[BSC]
- e) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ........ \_\_\_[BSC]
- f) ENCODERS HAVE BEEN ZEROED AT START LOCATION \_\_\_[BSC]
- g) THE AMAPS 2090 SCANNER HAS BEEN PROGRAMED TO MOVE 16.0 INCHES IN THE +X DIRECTION \_\_\_[BSC]

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>INDICATED X-AXIS POSITION</th>
<th>RECORDED X-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1 16.0</td>
<td>16.1</td>
<td>.1</td>
</tr>
<tr>
<td>RUN 2 16.0</td>
<td>16.1</td>
<td>.1</td>
</tr>
<tr>
<td>RUN 3 16.0</td>
<td>16.1</td>
<td>.1</td>
</tr>
</tbody>
</table>
3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL VALUES WERE WITHIN 0.1 INCH, PROCEED TO Y-AXIS SCAN VELOCITY VERIFICATION TEST. IF ANY OF THE RUNS FAILED, RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO THE MASTER FORM, RE-PERFORM TEST. RECORD RESULTS BELOW.

<table>
<thead>
<tr>
<th>RUN</th>
<th>INDICATED X-AXIS POSITION</th>
<th>ACTUAL X-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL X-AXIS POSITIONS ARE WITHIN 0.1 INCH, RECORD IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. PROCEED TO Y-AXIS SCAN VELOCITY VERIFICATION TEST.

CORRECTIVE ACTION(S) ____________________________

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_______

IF THE DIFFERENCE BETWEEN THE TWO READINGS FROM ANY ONE OF THE THREE RUNS IS STILL OUT OF TOLERANCE COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE SPECIFIC INFORMATION CONCERNING THIS PROBLEM.
X-AXIS TRANSDUCER POSITIONING ACCURACY
VERIFICATION TEST

DATE: 9 March 89
OPERATOR: Brad Lushing
VERIFIED BY: 

SYSTEM SERIAL NUMBER: SA51865
TRANSUCER SERIAL NUMBER: RD-3

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST SEQUENCE.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............ BSC
   b) 10.0 IN. LONG SCANNER ARM IS CONNECTED TO AMAPS 2090 SCANNER ................. BSC
   c) SAMPLING INCREMENT IS 0.10 INCHES ............ BSC
   d) SAMPLING RATE IS 20.0 MHz .................... BSC
   e) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ........ BSC
   f) ENCODERS HAVE BEEN ZEROED AT START LOCATION BSC
   g) THE AMAPS 2090 SCANNER HAS BEEN PROGRAMED TO MOVE 16.0 INCHES IN THE +X DIRECTION .. BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>INDICATED X-AXIS POSITION</th>
<th>RECORDED X-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1 16&quot;</td>
<td>16&quot;</td>
<td>None</td>
</tr>
<tr>
<td>RUN 2 16&quot;</td>
<td>16&quot;</td>
<td>None</td>
</tr>
<tr>
<td>RUN 3 16&quot;</td>
<td>16&quot;</td>
<td>None</td>
</tr>
</tbody>
</table>
3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL VALUES WERE WITHIN 0.1 INCH, PROCEED TO Y-AXIS SCAN VELOCITY VERIFICATION TEST. IF ANY OF THE RUNS FAILED, RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO THE MASTER FORM, RE-PERFORM TEST. RECORD RESULTS BELOW.

<table>
<thead>
<tr>
<th>INDICATED X-AXIS POSITION</th>
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<tr>
<td>RUN 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL X-AXIS POSITIONS ARE WITHIN 0.1 INCH, RECORD IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. PROCEED TO Y-AXIS SCAN VELOCITY VERIFICATION TEST.

CORRECTIVE ACTION(S) __________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

IF THE DIFFERENCE BETWEEN THE TWO READINGS FROM ANY ONE OF THE THREE RUNS IS STILL OUT OF TOLERANCE COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE SPECIFIC INFORMATION CONCERNING THIS PROBLEM.
X-AXIS TRANSDUCER POSITIONING ACCURACY
VERIFICATION TEST

DATE: 15 May 89
OPERATOR: B. Bushing
VERIFIED BY: B. Bushing

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST SEQUENCE.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............ BSC
   b) 10.0 IN. LONG SCANNER ARM IS CONNECTED TO AMAPS 2090 SCANNER ................... BSC
   c) SAMPLING INCREMENT IS 0.10 INCHES ........... BSC
   d) SAMPLING RATE IS 20.0 MHz ..................... BSC
   e) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ........ BSC
   f) ENCODERS HAVE BEEN ZEROED AT START LOCATION BSC
   g) THE AMAPS 2090 SCANNER HAS BEEN PROGRAMMED TO MOVE 16.0 INCHES IN THE +X DIRECTION .. BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>INDICATED X-AXIS POSITION</th>
<th>RECORDED X-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>RUN 2</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>RUN 3</td>
<td>16.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>
3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL VALUES WERE WITHIN 0.1 INCH, PROCEED TO Y-AXIS SCAN VELOCITY VERIFICATION TEST. IF ANY OF THE RUNS FAILED, RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO THE MASTER FORM, RE-PERFORM TEST. RECORD RESULTS BELOW.

<table>
<thead>
<tr>
<th>INDICATED X-AXIS POSITION</th>
<th>ACTUAL X-AXIS POSITION</th>
<th>DELTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL X-AXIS POSITIONS ARE WITHIN 0.1 INCH, RECORD IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. PROCEED TO Y-AXIS SCAN VELOCITY VERIFICATION TEST.

CORRECTIVE ACTION(S) __________________________________________________________

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IF THE DIFFERENCE BETWEEN THE TWO READINGS FROM ANY ONE OF THE THREE RUNS IS STILL OUT OF TOLERANCE COMPLETE A PROBLEM/Failure REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE SPECIFIC INFORMATION CONCERNING THIS PROBLEM.
Y-AXIS SCANNING VELOCITY
VERIFICATION TESTS
PEAK DETECT AND RF MODES

DATE: 16 Feb 84
OPERATOR: Brad Lushing
VERIFIED BY: 
SOFTWARE VERSION NUMBER: 4.0

SYSTEM SERIAL NUMBER: SA 51866
TRANSDUCER SERIAL NUMBER: 78359
STOP WATCH MANUFACTURER: 

PART I. Y-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

a) 5.0 MHz TRANSDUCER IS BEING USED ............

b) 12.0 IN. LONG SCANNER ARM IS BEING USED ....

c) SAMPLING INCREMENT IS 0.10 IN. ..............

d) Y-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ................................

e) A/D SAMPLING RATE IS AT 20.0 MHz ...........

f) SYSTEM IS PEAK DETECTING OFF THE EIGHTH MULTIPLE BACK-WALL REFLECTION ..............

g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ..........

h) PRINTER IS CONFIGURED PROPERLY .........

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>RUN</th>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.13</td>
<td>3.13</td>
</tr>
<tr>
<td>2</td>
<td>3.18</td>
<td>3.18</td>
</tr>
<tr>
<td>3</td>
<td>3.13</td>
<td>3.13</td>
</tr>
</tbody>
</table>

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ORIGINAL PAGE IS OF POOR QUALITY
3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, PROCEED TO PART 2 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD THE INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>________________________</td>
</tr>
<tr>
<td>RUN 2</td>
<td>________________________</td>
</tr>
<tr>
<td>RUN 3</td>
<td>________________________</td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN, ATTACH IT TO THIS FORM, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO PART 2 OF THIS FORM.

CORRECTIVE ACTION(S) ____________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, (B) ATTACH IT TO THIS FORM, (C) COMPLETE A PROBLEM /FAILURE REPORT, FORM N, AND (D) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 2. Y-AXIS SCANNING VELOCITY (PEAK DETECT @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) Y-AXIS SCAN VELOCITY IS PROGRAMMED TO
       2.5 IN./SEC. .............................................
       REMAINING PARAMETERS FROM PART 1 OF THIS
       FORM HAVE NOT BEEN CHANGED .......................  
       [Signature] BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

   TIME                  VELOCITY (12.0 IN./TIME)
   RUN 1  4.47 sec       2.2 in/sec
   RUN 2  11.44 sec      2.2 in/sec
   RUN 3  11.44 sec      2.2 in/sec

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN
   VELOCITIES ARE WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA
   PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN
   PRESENTATION, ATTACH IT TO THIS FORM, AND PROCEED TO PART 3
   OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK
   ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM
   TEST.

4) RECORD INFORMATION FROM THREE RUNS IN SPACE BELOW.

   TIME                  VELOCITY (12.0 IN./TIME)
   RUN 1  ................ [Blank]
   RUN 2  ................ [Blank]
   RUN 3  ................ [Blank]

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5) If the difference between the indicated and actual scan velocities is within ± 0.5 in./sec., and the screen presentation is acceptable, (A) make a hard copy of the screen presentation, (B) attach it to this form, (C) note in the space below what was done to correct the problem, and (D) proceed Part 3 of this form.

If the difference is still un-resolvable, (A) complete a problem/failure report, Form N, and (B) notify MTI Electronic Maintenance.

***Note: Be prepared to give the specifics of the problem.

PART 3. Y-AXIS SCANNING VELOCITY VERIFICATION TEST (RF MODE)

1) Perform steps 1 through 5 of the Y-axis scanning velocity verification test (peak detect) except for the following:

   A) place system in RF mode
   B) set C-scan gate delay to 20 microseconds
   C) set C-scan gate width to 30 microseconds

2) Complete the following check list before performing test.

   a) 5.0 MHz transducer is being used ............
   b) 12.0 in. long scanner arm is being used ........
   c) sampling increment is 0.10 in. ..............
   d) y-axis scan velocity is programmed to 4.0 in./sec. .............
   e) A/D sampling rate is at 20.0 MHz ...........
   f) system is in RF mode ......................
   g) C-scan gate delay is 20.0 microseconds ......
   h) C-scan gate width is 30.0 microseconds .......
   i) figure 1 of this form has been reviewed so proper test set-up is achieved ...........
   j) printer is configured properly .............

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3) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>3.1 sec</td>
</tr>
<tr>
<td>RUN 2</td>
<td>3.17 sec</td>
</tr>
<tr>
<td>RUN 3</td>
<td>3.16 sec</td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, AND (B) PROCEED TO PART 4 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM, RE-CHECK TEST.

5) RECORD INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>___________</td>
</tr>
<tr>
<td>RUN 2</td>
<td>___________</td>
</tr>
<tr>
<td>RUN 3</td>
<td>___________</td>
</tr>
</tbody>
</table>

6) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO PART 4 OF THIS FORM.

CORRECTIVE ACTION(S) 
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, MAKE A HARD COPY OF THE SCREEN DISPLAY, ATTACH IT TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 4. Y-AXIS SCANNING VELOCITY (RF MODE @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECKLIST BEFORE PERFORMING TEST.

(a) Y-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ......................... COMPLETED (INITIALS) 
   \( BSC \)

(b) REMAINING PARAMETERS FROM PART 3 OF THIS FORM HAVE NOT BEEN CHANGED ............ \( BSC \)

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>1 1/3 sec</td>
</tr>
<tr>
<td>RUN 2</td>
<td>1 1/2 sec</td>
</tr>
<tr>
<td>RUN 3</td>
<td>1 1/4 sec</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE X-AXIS SCAN VELOCITY VERIFICATION TESTS.

CORRECTIVE ACTION(S) ____________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

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4) RECORD THE INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>________________________</td>
</tr>
<tr>
<td>RUN 2</td>
<td>________________________</td>
</tr>
<tr>
<td>RUN 3</td>
<td>________________________</td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE X-AXIS SCAN VELOCITY VERIFICATION TESTS.

CORRECTIVE ACTION(S) __________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.***
Peak 2.5 ips

Y-Axis Scan Velocity

ORIGINAL PAGE
COLOR PHOTOGRAPH

PRECEDING PAGE BLANK NOT FILMED
Peak 4.0 ips

y-Axis Scan Velocity
DATE: 1 Feb 89  
OPERATOR: Brad Cushing  
VERIFIED BY:  
SOFTWARE VERSION NUMBER: HC  
SYSTEM SERIAL NUMBER: SA 51868  
TRANSUDER SERIAL NUMBER: 78353  
STOP WATCH MANUFACTURER: Citizen  

PART 1. Y-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT)  

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.  

Completed (Initials)  
a) 5.0 MHz TRANSDUCER IS BEING USED ......... BSC  
b) 12.0 IN. LONG SCANNER ARM IS BEING USED .... BSC  
c) SAMPLING INCREMENT IS 0.10 IN. .............. BSC  
d) Y-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ................................ BSC  
e) A/D SAMPLING RATE IS AT 20.0 MHz ............... BSC  
f) SYSTEM IS PEAK DETECTING OFF THE EIGHTH MULTIPLE BACK-WALL REFLECTION .............. BSC  
g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ............. BSC  
h) PRINTER IS CONFIGURED PROPERLY ............... BSC  

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.  

TIME  VELOCITY (12.0 IN./TIME)  
RUN 1  3.2  3.12 \( \text{in./sec} \)  
RUN 2  3.2  3.12 \( \text{in./sec} \)  
RUN 3  3.1  3.15 \( \text{in./sec} \)  

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3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, PROCEED TO PART 2 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD THE INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>RUN 1</th>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RUN 2</th>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RUN 3</th>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN, ATTACH IT TO THIS FORM, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO PART 2 OF THIS FORM.

CORRECTIVE ACTION(S) ________________________________________________________________

__________________________________________________________

__________________________________________________________

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, (B) ATTACH IT TO THIS FORM, (C) COMPLETE A PROBLEM /FAILURE REPORT, FORM N, AND (D) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 2. Y-AXIS SCANNING VELOCITY (PEAK DETECT @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   COMPLETED
   (INITIALS)

   a) Y-AXIS SCAN VELOCITY IS PROGRAMMED TO
      2.5 IN./SEC. ................................ BSC

   b) REMAINING PARAMETERS FROM PART 1 OF THIS
      FORM HAVE NOT BEEN CHANGED .................... BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

   TIME          VELOCITY (12.0 IN./TIME)
   RUN 1       4.5                2.2 in/sec
   RUN 2       4.4                2.2 in/sec
   RUN 3       4.5                2.2 in/sec

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN
   VELOCITIES ARE WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA
   PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN
   PRESENTATION, ATTACH IT TO THIS FORM, AND PROCEED TO PART 3
   OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK
   ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM
   TEST.

4) RECORD INFORMATION FROM THREE RUNS IN SPACE BELOW.

   TIME          VELOCITY (12.0 IN./TIME)
   RUN 1       4.5
   RUN 2       4.5
   RUN 3

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5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED PART 3 OF THIS FORM.

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.

PART 3. Y-AXIS SCANNING VELOCITY VERIFICATION TEST (RF MODE)

1) PERFORM STEPS 1 THROUGH 5 OF THE Y-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT) EXCEPT FOR THE FOLLOWING:

   A) PLACE SYSTEM IN RF MODE
   B) SET C-SCAN GATE DELAY TO 20 MICROSECONDS
   C) SET C-SCAN GATE WIDTH TO 30 MICROSECONDS

2) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............  BSC
   b) 12.0 IN. LONG SCANNER ARM IS BEING USED _5 _
   c) SAMPLING INCREMENT IS 0.10 IN. .......... BSC
   d) Y-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ........................................ BSC
   e) A/D SAMPLING RATE IS AT 20.0 MHz .......... BSC
   f) SYSTEM IS IN RF MODE ......................... BSC
   g) C-SCAN GATE DELAY IS 20.0 MICROSECONDS ...
      \[22.9\]
   h) C-SCAN GATE WIDTH IS 30.0 MICROSECONDS ...
      \[1.5\]
   i) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED
      SO PROPER TEST SET-UP IS ACHIEVED ........ BSC
   j) PRINTER IS CONFIGURED PROPERLY .......... CTP-0100

                             B-132
3) Perform test three times and record results in space below.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>3.2</td>
</tr>
<tr>
<td>RUN 2</td>
<td>3.2</td>
</tr>
<tr>
<td>RUN 3</td>
<td>3.3</td>
</tr>
</tbody>
</table>

4) If the difference between the indicated and actual scan velocities is within ± 0.5 IN./SEC., and the screen data presentation is acceptable, (A) make a hard copy of the screen and attach it to this form, and (B) proceed to Part 4 of this form.

If the difference is greater than ± 0.5 IN., re-check all connections and values entered into set form. Re-check test.

5) Record information from the three runs in space below.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

6) If the difference between the indicated and actual scan velocities is within ± 0.5 IN./SEC., and the screen data presentation is acceptable, (A) make a hard copy of the screen, (B) attach it to this form, (C) note in the space below what was done to correct the problem, and (D) proceed to Part 4 of this form.

Corrective action(s)

If the difference was still un-resolvable, make a hard copy presentation of the screen display, attach it to this form, complete a problem/failure report, Form N, and notify MTI Electronic Maintenance.

***Note: Be prepared to give the specifics of the problem.

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PART 4. Y-AXIS SCANNING VELOCITY (RF MODE @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECKLIST BEFORE PERFORMING TEST.

\( \text{(a) Y-AXIS SCAN VELOCITY IS PROGRAMMED TO} \) 
\( \text{2.5 IN./SEC.} \) 
\( \text{COMPLETED (INITIALS)} \) 
\( \text{BSL} \)

\( \text{(b) REMAINING PARAMETERS FROM PART 3 OF THIS} \) 
\( \text{FORM HAVE NOT BEEN CHANGED} \) 
\( \text{BSL} \)

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (±0.5 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>4.6</td>
</tr>
<tr>
<td>RUN 2</td>
<td>4.6</td>
</tr>
<tr>
<td>RUN 3</td>
<td>4.6</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE X-AXIS SCAN VELOCITY VERIFICATION TESTS.

CORRECTIVE ACTION(S) __________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.
4) RECORD THE INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE X-AXIS SCAN VELOCITY VERIFICATION TESTS.

CORRECTIVE ACTION(S)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.***
Y-Axis Scan Velocity

Peak 4.0 i.p.s.

Peak 2.5 i.p.s.
Y-Axis Scan Velocity

R.F. 4.0 ips

R.F. 2.5 ips
PART 1. Y-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

a) 5.0 MHz TRANSDUCER IS BEING USED ...........................[COMPLETED (INITIALS)]
b) 12.0 IN. LONG SCANNER ARM IS BEING USED ........[BSC]
c) SAMPLING INCREMENT IS 0.10 IN. ..........................[BSC]
d) Y-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ...................................................[BSC]
e) A/D SAMPLING RATE IS AT 20.0 MHZ ............................[BSC]
f) SYSTEM IS PEAK DETECTING OFF THE EIGHTH MULTIPLE BACK-WALL REFLECTION ........................[BSC]
g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ............[BSC]
h) PRINTER IS CONFIGURED PROPERLY ..............................[BSC]

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>RUN 1</th>
<th>TIME</th>
<th>VELOCITY (IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.3</td>
<td>3.0 m/s</td>
</tr>
<tr>
<td>RUN 2</td>
<td>3.1</td>
<td>3.2 m/s</td>
</tr>
<tr>
<td>RUN 3</td>
<td>3.3</td>
<td>3.0 m/s</td>
</tr>
</tbody>
</table>
PART 1 CONT."

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, PROCEED TO PART 2 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD THE INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN, ATTACH IT TO THIS FORM, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO PART 2 OF THIS FORM.

CORRECTIVE ACTION(S) ____________________________________________

______________________________________________________________

______________________________________________________________

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, (B) ATTACH IT TO THIS FORM, (C) COMPLETE A PROBLEM /FAILURE REPORT, FORM N, AND (D) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM. **
PART 2. Y-AXIS SCANNING VELOCITY (PEAK DETECT @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) Y-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ................................
      COMPLETED (INITIALS)

   b) REMAINING PARAMETERS FROM PART 1 OF THIS FORM HAVE NOT BEEN CHANGED ........
      COMPLETED (INITIALS)  

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

   TIME VELOCITY (12.0 IN./TIME)
   RUN 1  4.5  2.2 in/sec
   RUN 2  4.5  2.2 in/sec
   RUN 3  4.6  2.1 in/sec

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES ARE WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN PRESENTATION, ATTACH IT TO THIS FORM, AND PROCEED TO PART 3 OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD INFORMATION FROM THREE RUNS IN SPACE BELOW.

   TIME VELOCITY (12.0 IN./TIME)
   RUN 1  
   RUN 2  
   RUN 3  

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5) If the difference between the indicated and actual scan velocities is within ± 0.5 in./sec., and the screen presentation is acceptable, (A) make a hard copy of the screen presentation, (B) attach it to this form, (C) note in the space below what was done to correct the problem, and (D) proceed Part 3 of this form.

If the difference is still un-resolvable, (A) complete a problem/failure report, Form N, and (B) notify MTI Electronic Maintenance.

***Note: Be prepared to give the specifics of the problem.

Part 3. Y-Axis Scanning Velocity Verification Test (RF Mode)

1) Perform steps 1 through 5 of the Y-Axis Scanning Velocity Verification Test (Peak Detect) except for the following:

   A) Place system in RF mode
   B) Set C-scan gate delay to 20 microseconds
   C) Set C-scan gate width to 30 microseconds

2) Complete the following check list before performing test.

   a) 5.0 MHz transducer is being used ...........  
   b) 12.0 in. long scanner arm is being used ......  
   c) Sampling increment is 0.10 in. ............  
   d) Y-axis scan velocity is programmed to 4.0 in./sec. ........................................  
   e) A/D sampling rate is at 20.0 MHz ...........  
   f) System is in RF mode ..........................  
   g) C-scan gate delay is 20.0 microseconds ...  
   h) C-scan gate width is 30.0 microseconds ...  
   i) Figure 1 of this form has been reviewed so proper test set-up is achieved ...........  
   j) Printer is configured properly ............  

   Completed (initials)  
   BSC
3) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>3.1</td>
</tr>
<tr>
<td>RUN 2</td>
<td>3.1</td>
</tr>
<tr>
<td>RUN 3</td>
<td>3.0</td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, AND (B) PROCEED TO PART 4 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-CHECK TEST.

5) RECORD INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

6) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO PART 4 OF THIS FORM.

CORRECTIVE ACTION(S) ____________________________________________________________

_____________________________________________________________________________

_____________________________________________________________________________

_____________________________________________________________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, ATTACH IT TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.***
PART 4. Y-AXIS SCANNING VELOCITY (RF MODE @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECKLIST BEFORE PERFORMING TEST.

(a) Y-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. 
(b) REMAINING PARAMETERS FROM PART 3 OF THIS FORM HAVE NOT BEEN CHANGED

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>RUN 1</th>
<th>TIME</th>
<th>VELOCITY (IN./SEC.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4</td>
<td></td>
<td>2.2</td>
</tr>
<tr>
<td>RUN 2</td>
<td>4.4</td>
<td>2.2</td>
</tr>
<tr>
<td>RUN 3</td>
<td>4.4</td>
<td>2.2</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE X-AXIS SCAN VELOCITY VERIFICATION TESTS.

CORRECTIVE ACTION(S) ____________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.
4) RECORD THE INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE X-AXIS SCAN VELOCITY VERIFICATION TESTS.

CORRECTIVE ACTION(S) ____________________________________________

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________________________________________

________________________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
y-Axis Scan Velocity

RF 40 ips

RF 25 ips
y-Axis Scan Velocity

Peak 4.0 ips

Peak 2.5 ips. Gain was reduced for better r-scan display
Y-AXIS SCAN VELOCITY TEST SET UP

MAGNETIC TRACK

2090 SCANNER

MARK IDENTIFYING WHERE SCAN BEGINS

18.0"

MARK IDENTIFYING WHERE SCAN ENDS

12.0"

12.0"

TRANSDUCER EXTREME (-) Y POSITION, 5 MHz

CASE/INSULATION SAMPLE

12.0"

SCANNER ARM

COUPLANT CATCH BASIN

(-) X

(+) Y

FIGURE 1
Y-AXIS SCANNING VELOCITY VERIFICATION TESTS
PEAK DETECT AND RF MODES

DATE: 13 May 89
OPERATOR: [Name]
VERIFIED BY: [Name]
SOFTWARE VERSION NUMBER: [Version]
SYSTEM SERIAL NUMBER: [Serial]
TRANSDUCER SERIAL NUMBER: [Serial]
STOP WATCH MANUFACTURER: [Manufacturer]

PART 1. Y-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

a) 5.0 MHz TRANSDUCER IS BEING USED ............. [B.C]
b) 12.0 IN. LONG SCANNER ARM IS BEING USED .... [B.C]
c) SAMPLING INCREMENT IS 0.10 IN. .............. [B.C]
d) Y-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. .................. [B.C]
e) A/D SAMPLING RATE IS AT 20.0 MHz ........... [B.C]
f) SYSTEM IS PEAK DETECTING OFF THE EIGHTH MULTIPLE BACK-WALL REFLECTION ........ [B.C]
g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ........ [B.C]
h) PRINTER IS CONFIGURED PROPERLY .......... [B.C]

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>2.71</td>
</tr>
<tr>
<td>RUN 2</td>
<td>2.67</td>
</tr>
<tr>
<td>RUN 3</td>
<td>2.22 2.65</td>
</tr>
</tbody>
</table>

CTP-0100
Page 56
PART 1 CONT.

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, PROCEED TO PART 2 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD THE INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>______________________</td>
</tr>
<tr>
<td>RUN 2</td>
<td>______________________</td>
</tr>
<tr>
<td>RUN 3</td>
<td>______________________</td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN, ATTACH IT TO THIS FORM, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO PART 2 OF THIS FORM.

CORRECTIVE ACTION(S) ________________________________

________________________________________________________________

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________________________________________________________________

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, (B) ATTACH IT TO THIS FORM, (C) COMPLETE A PROBLEM /FAILURE REPORT, FORM N, AND (D) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 2. Y-AXIS SCANNING VELOCITY (PEAK DETECT @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) Y-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ................................  
      b) REMAINING PARAMETERS FROM PART 1 OF THIS FORM HAVE NOT BEEN CHANGED ..............

   COMPLETED (INITIALS)

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>3.65</td>
</tr>
<tr>
<td>RUN 2</td>
<td>3.66</td>
</tr>
<tr>
<td>RUN 3</td>
<td>3.61</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES ARE WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN PRESENTATION, ATTACH IT TO THIS FORM, AND PROCEED TO PART 3 OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>
5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED PART 3 OF THIS FORM.

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/Failure REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.

PART 3. Y-AXIS SCANNING VELOCITY VERIFICATION TEST (RF MODE)

1) PERFORM STEPS 1 THROUGH 5 OF THE Y-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT) EXCEPT FOR THE FOLLOWING:

   A) PLACE SYSTEM IN RF MODE
   B) SET C-SCAN GATE DELAY TO 20 MICROSECONDS
   C) SET C-SCAN GATE WIDTH TO 30 MICROSECONDS

2) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............
   b) 12.0 IN. LONG SCANNER ARM IS BEING USED ..
   c) SAMPLING INCREMENT IS 0.10 IN. ............
   d) Y-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ..............................
   e) A/D SAMPLING RATE IS AT 20.0 MHZ ...........
   f) SYSTEM IS IN RF MODE ..........................
   g) C-SCAN GATE DELAY IS 20.0 MICROSECONDS ...
   h) C-SCAN GATE WIDTH IS 30.0 MICROSECONDS ...
   i) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ........
   j) PRINTER IS CONFIGURED PROPERLY ............

   COMPLETED (INITIALS) ..........................
3) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

```
<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>2.52</td>
</tr>
<tr>
<td>RUN 2</td>
<td>2.64</td>
</tr>
<tr>
<td>RUN 3</td>
<td>2.61</td>
</tr>
</tbody>
</table>
```

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, AND (B) PROCEED TO PART 4 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-CHECK TEST.

5) RECORD INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

```
<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>
```

6) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO PART 4 OF THIS FORM.

CORRECTIVE ACTION(S)

__________________________
__________________________
__________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, ATTACH IT TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 4. Y-AXIS SCANNING VELOCITY (RF MODE @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECKLIST BEFORE PERFORMING TEST.

   (a) Y-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ....................
       COMPLETED (INITIALS) BSC

   (b) REMAINING PARAMETERS FROM PART 3 OF THIS FORM HAVE NOT BEEN CHANGED ........
       BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

   TIME          VELOCITY (12.0 IN./TIME)
   RUN 1  4.39  2.2 ips
   RUN 2  4.43  2.2 ips
   RUN 3  4.45  2.2 ips

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE X-AXIS SCAN VELOCITY VERIFICATION TESTS.

   CORRECTIVE ACTION(S)

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.
4) RECORD THE INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (12.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>_______________________</td>
</tr>
<tr>
<td>RUN 2</td>
<td>_______________________</td>
</tr>
<tr>
<td>RUN 3</td>
<td>_______________________</td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE X-AXIS SCAN VELOCITY VERIFICATION TESTS.

CORRECTIVE ACTION(S) ____________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
Y-Axis Scan Velocity

Peak 2.5 ips

Peak 4.0 ips
y-Axis Scan Velocities

R.F. 4.0 ips unable to complete scan

R.F. 2.5 ips

ORIGINL PAGE
COLOR PHOTOGRAPH
PRECEDING PAGE BLANK NOT FILMED
X-AXIS SCANNING VELOCITY VERIFICATION TESTS
PEAK DETECT AND RF MODES

DATE: 16 Feb 89
SYSTEM SERIAL NUMBER: SA-51866
TRANSUDER SERIAL NUMBER: 18359
STOP WATCH MANUFACTURER: Citizen
SOFTWARE VERSION NUMBER: 4.0

PART 1. X-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED .......... BSC
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .... BSC
   c) SAMPLING INCREMENT IS 0.10 IN. .......... BSC
   d) X-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. .......... BSC
   e) A/D SAMPLING RATE IS AT 20.0 MHz .......... BSC
   f) SYSTEM IS PEAK DETECTING OFF THE EIGHTH MULTIPLE BACK-WALL REFLECTION .......... BSC
   g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED .......... BAC
   h) PRINTER IS CONFIGURED PROPERLY .......... BAC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>5.88 sec</td>
</tr>
<tr>
<td>RUN 2</td>
<td>5.94 sec</td>
</tr>
<tr>
<td>RUN 3</td>
<td>5.91 sec</td>
</tr>
</tbody>
</table>
3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, PROCEED TO PART 2 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD THE INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN, ATTACH IT TO THIS FORM, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO PART 2 OF THIS FORM.

CORRECTIVE ACTION(S) __________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, (B) ATTACH IT TO THIS FORM, (C) COMPLETE A PROBLEM /FAILURE REPORT, FORM N, AND (D) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 2. X-AXIS SCANNING VELOCITY (PEAK DETECT @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) X-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ....................
   COMPLETED (INITIALS) \\
   b) REMAINING PARAMETERS FROM PART 1 OF THIS FORM HAVE NOT BEEN CHANGED ................

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>2.12</td>
</tr>
<tr>
<td>RUN 2</td>
<td>2.03</td>
</tr>
<tr>
<td>RUN 3</td>
<td>2.12</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES ARE WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN PRESENTATION, ATTACH IT TO THIS FORM, AND PROCEED TO PART 3 OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>
5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN $\pm 0.5$ IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED PART 3 OF THIS FORM.

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.

PART 3. X-AXIS SCANNING VELOCITY VERIFICATION TEST (RF MODE)

1) PERFORM STEPS 1 THROUGH 5 OF THE X-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT) EXCEPT FOR THE FOLLOWING:

   A) PLACE SYSTEM IN RF MODE
   B) SET C-SCAN GATE DELAY TO 20 MICROSECONDS
   C) SET C-SCAN GATE WIDTH TO 30 MICROSECONDS

2) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED ..
   c) SAMPLING INCREMENT IS 0.10 IN ............
   d) X-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ........................................
   e) A/D SAMPLING RATE IS AT 20.0 MHZ ............
   f) SYSTEM IS IN RF MODE ..........................
   g) C-SCAN GATE DELAY IS 20.0 MICROSECONDS ...
   h) C-SCAN GATE WIDTH IS 30.0 MICROSECONDS ...
   i) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ...........
   j) PRINTER IS CONFIGURED PROPERLY ............

   COMPLETED (INITIALS)  

   B-174
3) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>5.56 sec</td>
</tr>
<tr>
<td>RUN 2</td>
<td>6.80 sec</td>
</tr>
<tr>
<td>RUN 3</td>
<td>4.75 sec</td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, AND (B) PROCEED TO PART 4 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-CHECK TEST.

5) RECORD INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

6) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO PART 4 OF THIS FORM.

CORRECTIVE ACTION(S) After a lengthy conversation with AMDATA Engineering, it was determined that the original target values in this CTM had exceeded the system limitations. Therefore, this test was executed in a manner to find the maximum reliable scan speed that could be obtained.

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, ATTACH IT TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.***
PART 4. X-AXIS SCANNING VELOCITY (RF MODE @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECKLIST BEFORE PERFORMING TEST.

(a) X-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ........................................

(b) REMAINING PARAMETERS FROM PART 3 OF THIS FORM HAVE NOT BEEN CHANGED ..............

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>7.53 sec</td>
</tr>
<tr>
<td>RUN 2</td>
<td>7.49 sec</td>
</tr>
<tr>
<td>RUN 3</td>
<td>7.45 sec</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE UNINTERRUPTABLE POWER SUPPLY VERIFICATION TEST.

CORRECTIVE ACTION(S) ________________________________

__________________________________________________

__________________________________________________

__________________________________________________

__________________________________________________

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.
4) RECORD THE INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE UNINTERRUPTABLE POWER SUPPLY VERIFICATION TEST.

CORRECTIVE ACTION(S)

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
Peak 4.0 ips

X-Axis Scan Velocity

Peak 2.5 ips
X-AXIS SCANNING VELOCITY VERIFICATION TESTS
PEAK DETECT AND RF MODES

DATE: 21 Feb 89
OPERATOR: Brad Lushing
VERIFIED BY: 
SOFTWARE VERSION NUMBER: 4.0
SYSTEM SERIAL NUMBER: SA 51868
TRANSODER SERIAL NUMBER: T8353
STOP WATCH MANUFACTURER: Citizen

PART 1. X-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............... BSC
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .... BSC
   c) SAMPLING INCREMENT IS 0.10 IN. .................. BSC
   d) X-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ............... BSC
   e) A/D SAMPLING RATE IS AT 20.0 MHz ............... BSC
   f) SYSTEM IS PEAK DETECTING OFF THE EIGHTH MULTIPLE BACK-WALL REFLECTION .................. BSC
   g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ............... BSC
   h) PRINTER IS CONFIGURED PROPERLY ............... BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>5.9</td>
</tr>
<tr>
<td>RUN 2</td>
<td>5.9</td>
</tr>
<tr>
<td>RUN 3</td>
<td>6.0</td>
</tr>
</tbody>
</table>
3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, PROCEED TO PART 2 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD THE INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN, ATTACH IT TO THIS FORM, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO PART 2 OF THIS FORM.

CORRECTIVE ACTION(S) __________________________________________

____________________________________________________________________

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, (B) ATTACH IT TO THIS FORM, (C) COMPLETE A PROBLEM /FAILURE REPORT, FORM N, AND (D) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.***
PART 2. X-AXIS SCANNING VELOCITY (PEAK DETECT @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) X-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ................................
      COMPLETED (INITIALS)  

   b) REMAINING PARAMETERS FROM PART 1 OF THIS FORM HAVE NOT BEEN CHANGED ........

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

   TIME VELOCITY (16.0 IN./TIME)
   RUN 1  7.5  _ 2.1  
   RUN 2  7.5  _ 2.1  
   RUN 3  7.6  _ 2.1  

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES ARE WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN PRESENTATION, ATTACH IT TO THIS FORM, AND PROCEED TO PART 3 OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD INFORMATION FROM THREE RUNS IN SPACE BELOW.

   TIME VELOCITY (16.0 IN./TIME)
   RUN 1  __________  __________
   RUN 2  __________  __________
   RUN 3  __________  __________
5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED PART 3 OF THIS FORM.

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.

PART 3. X-AXIS SCANNING VELOCITY VERIFICATION TEST (RF MODE)

1) PERFORM STEPS 1 THROUGH 5 OF THE X-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT) EXCEPT FOR THE FOLLOWING:

   A) PLACE SYSTEM IN RF MODE
   B) SET C-SCAN GATE DELAY TO 20 MICROSECONDS
   C) SET C-SCAN GATE WIDTH TO 30 MICROSECONDS

2) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............ BSC
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .. BSC
   c) SAMPLING INCREMENT IS 0.10 IN. ............... BSC
   d) X-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ........................................ BSC
   e) A/D SAMPLING RATE IS AT 20.0 MHz ........... BSC
   f) SYSTEM IS IN RF MODE ............................ BSC
   g) C-SCAN GATE DELAY IS 20.0 MICROSECONDS ... BSC
   h) C-SCAN GATE WIDTH IS 30.0 MICROSECONDS ... BSC
   i) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ........... BSC
   j) PRINTER IS CONFIGURED PROPERLY ............ BSC

   COMPLETED (INITIALS)

   CTP-0100
   Page 68
3) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>6.0</td>
</tr>
<tr>
<td>RUN 2</td>
<td>5.9</td>
</tr>
<tr>
<td>RUN 3</td>
<td>5.9</td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, AND (B) PROCEED TO PART 4 OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-CHECK TEST.

5) RECORD INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

6) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO PART 4 OF THIS FORM.

   CORRECTIVE ACTION(S) After conversation with Amdata engineering it was determined that the original target values in this test plan had exceeded the system limitations. Therefore, this test was executed in a manner to find max scan speed for given parameters.

   IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, ATTACH IT TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

   ***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 4. X-AXIS SCANNING VELOCITY (RF MODE @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECKLIST BEFORE PERFORMING TEST.

   (a) X-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ....................... \( \text{COMPLETED} \) (INITIALS) BSC

   (b) REMAINING PARAMETERS FROM PART 3 OF THIS FORM HAVE NOT BEEN CHANGED ................. BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

   \begin{tabular}{|c|c|}
   \hline
   TIME & VELOCITY (16.0 IN./TIME) \\
   \hline
   RUN 1 & 7.5 \hspace{1cm} 2.1 \\
   \hline
   RUN 2 & 7.5 \hspace{1cm} 2.1 \\
   \hline
   RUN 3 & 7.6 \hspace{1cm} 2.1 \\
   \hline
   \end{tabular}

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE UNINTERRUPTABLE POWER SUPPLY VERIFICATION TEST.

   CORRECTIVE ACTION(S) \\
   \hline
   \hline
   \hline
   \hline

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.
4) RECORD THE INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE UNINTERRUPTABLE POWER SUPPLY VERIFICATION TEST.

CORRECTIVE ACTION(S) ____________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
Note - darkened areas of scan are due to a loss of couplant caused by tilting xducer.

X-Axis Scan Velocity

R.F. 4.0 ips

R.F. 2.5 ips
X-AXIS SCANNING VELOCITY
VERIFICATION TESTS
PEAK DETECT AND RF MODES

PART 1. X-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ...............  
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .......  
   c) SAMPLING INCREMENT IS 0.10 IN. ....................  
   d) X-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC.  ......................  
   e) A/D SAMPLING RATE IS AT 20.0 MHz .................  
   f) SYSTEM IS PEAK DETECTING OFF THE EIGHTH MULTIPLE BACK-WALL REFLECTION ..................  
   g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ...............  
   h) PRINTER IS CONFIGURED PROPERLY ...................  

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (10.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>3.7</td>
</tr>
<tr>
<td>RUN 2</td>
<td>3.7</td>
</tr>
<tr>
<td>RUN 3</td>
<td>3.6</td>
</tr>
</tbody>
</table>

B-199
3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM. PROCEED TO PART 2 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD THE INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
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<tbody>
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</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN, ATTACH IT TO THIS FORM, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO PART 2 OF THIS FORM.

CORRECTIVE ACTION(S) ____________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, (B) ATTACH IT TO THIS FORM, (C) COMPLETE A PROBLEM /FAILURE REPORT, FORM N, AND (D) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 2. X-AXIS SCANNING VELOCITY (PEAK DETECT @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) X-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ................................

   b) REMAINING PARAMETERS FROM PART 1 OF THIS FORM HAVE NOT BEEN CHANGED ...........

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (±0.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>4.6</td>
</tr>
<tr>
<td>RUN 2</td>
<td>4.8</td>
</tr>
<tr>
<td>RUN 3</td>
<td>4.7</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES ARE WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN PRESENTATION, ATTACH IT TO THIS FORM, AND PROCEED TO PART 3 OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
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<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
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<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>
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IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.

PART 3. X-AXIS SCANNING VELOCITY VERIFICATION TEST (RF MODE)

1) PERFORM STEPS 1 THROUGH 5 OF THE X-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT) EXCEPT FOR THE FOLLOWING:

   A) PLACE SYSTEM IN RF MODE
   B) SET C-SCAN GATE DELAY TO 20 MICROSECONDS
   C) SET C-SCAN GATE WIDTH TO 30 MICROSECONDS

2) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST:

   a) 5.0 MHz TRANSDUCER IS BEING USED .......... BSC
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .. BSC
   c) SAMPLING INCREMENT IS 0.10 IN. .......... BSC
   d) X-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ................. BSC
   e) A/D SAMPLING RATE IS AT 20.0 MHz ........ BSC
   f) SYSTEM IS IN RF MODE ......................... BSC
   g) C-SCAN GATE DELAY IS 20.0 MICROSECONDS ... BSC
   h) C-SCAN GATE WIDTH IS 30.0 MICROSECONDS ... BSC
   i) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ......... BSC
   j) PRINTER IS CONFIGURED PROPERLY ............ BSC
3) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>3.6</td>
</tr>
<tr>
<td>RUN 2</td>
<td>3.6</td>
</tr>
<tr>
<td>RUN 3</td>
<td>3.7</td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, AND (B) PROCEED TO PART 4 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-CHECK TEST.

5) RECORD INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

6) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO PART 4 OF THIS FORM.

CORRECTIVE ACTION(S): After conversation with AMDADA engineering it was determined that the original target values in this test plan had exceeded the system limitations. Therefore this test was executed in a manner to find max scan speed for given parameters.

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, ATTACH IT TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 4. X-AXIS SCANNING VELOCITY (RF MODE @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECKLIST BEFORE PERFORMING TEST.

(a) X-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ....................... [COMPLETED (INITIALS) BSC]

(b) REMAINING PARAMETERS FROM PART 3 OF THIS FORM HAVE NOT BEEN CHANGED ............ [BSC]

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>RUN</th>
<th>TIME</th>
<th>VELOCITY (IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>4.7</td>
<td>2.1</td>
</tr>
<tr>
<td>RUN 2</td>
<td>4.7</td>
<td>2.1</td>
</tr>
<tr>
<td>RUN 3</td>
<td>4.8</td>
<td>2.0</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE UNINTERRUPTABLE POWER SUPPLY VERIFICATION TEST.

CORRECTIVE ACTION(S) ____________________________________________
................................................................................
................................................................................
................................................................................
................................................................................

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.
4) RECORD THE INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>________________________</td>
</tr>
<tr>
<td>RUN 2</td>
<td>________________________</td>
</tr>
<tr>
<td>RUN 3</td>
<td>________________________</td>
</tr>
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</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE UNINTERRUPTABLE POWER SUPPLY VERIFICATION TEST.

CORRECTIVE ACTION(S) ____________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
X-Axis Scan Velocity

Target

R.F. 40 ips (Actual 27.9 ips)

R.F. 25 ips
X-Axis Scan Velocity

Peak 4.0 ips

Peak 2.5 ips (dark areas due to loss of couplant)
X-AXIS SCANNING VELOCITY
VERIFICATION TESTS
PEAK DETECT AND RF MODES

DATE: 23 May 84
OPERATOR: B. Lushay
VERIFIED BY: L. J. D.
SOFTWARE VERSION NUMBER: 4.0

SYSTEM SERIAL NUMBER: 3A51867
TRANSUDER SERIAL NUMBER: RND-3
STOP WATCH MANUFACTURER: L. J. D.

PART 1. X-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............. BSC
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .... BSC
   c) SAMPLING INCREMENT IS 0.10 IN. ............... BSC
   d) X-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. .................. BSC
   e) A/D SAMPLING RATE IS AT 20.0 MHz ............ BSC
   f) SYSTEM IS PEAK DETECTING OFF THE EIGHTH MULTIPLE BACK-WALL REFLECTION .......... BSC
   g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED AS SO PROPER TEST SET-UP IS ACHIEVED ........ BSC
   h) PRINTER IS CONFIGURED PROPERLY ............. BSC

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

   TIME    VELOCITY (16.0 IN./TIME)
   ----    ----------------------
   RUN 1   5.84                  2.7 ips
   RUN 2   5.93                  2.7 ips
   RUN 3   5.88                  2.7 ips

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3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM. PROCEED TO PART 2 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD THE INFORMATION FROM THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>______________________</td>
</tr>
<tr>
<td>RUN 2</td>
<td>______________________</td>
</tr>
<tr>
<td>RUN 3</td>
<td>______________________</td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN, ATTACH IT TO THIS FORM, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO PART 2 OF THIS FORM.

CORRECTIVE ACTION(S) __________________________________________

___________________________________________________________

___________________________________________________________

___________________________________________________________

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, (B) ATTACH IT TO THIS FORM, (C) COMPLETE A PROBLEM / FAILURE REPORT, FORM N, AND (D) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 2. X-AXIS SCANNING VELOCITY (PEAK DETECT @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) X-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. .........................
      COMPLETED (INITIALS)

   b) REMAINING PARAMETERS FROM PART 1 OF THIS FORM HAVE NOT BEEN CHANGED
      ............

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

   TIME | VELOCITY (16.0 IN./TIME)
   -----|-------------------------
   RUN 1 | 7.55  2.1 μs
   RUN 2 | 7.62  2.1 μs
   RUN 3 | 7.55  2.1 μs

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES ARE WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, MAKE A HARD COPY OF THE SCREEN PRESENTATION, ATTACH IT TO THIS FORM, AND PROCEED TO PART 3 OF THIS FORM.

   IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.

4) RECORD INFORMATION FROM THREE RUNS IN SPACE BELOW.

   TIME | VELOCITY (16.0 IN./TIME)
   -----|-------------------------
   RUN 1 |                       
   RUN 2 |                       
   RUN 3 |                       

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5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED PART 3 OF THIS FORM.

IF THE DIFFERENCE IS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.

PART 3. X-AXIS SCANNING VELOCITY VERIFICATION TEST (RF MODE)

1) PERFORM STEPS 1 THROUGH 5 OF THE X-AXIS SCANNING VELOCITY VERIFICATION TEST (PEAK DETECT) EXCEPT FOR THE FOLLOWING:

   A) PLACE SYSTEM IN RF MODE
   B) SET C-SCAN GATE DELAY TO 20 MICROSECONDS
   C) SET C-SCAN GATE WIDTH TO 30 MICROSECONDS

2) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............ [COMPLETED (INITIALS) BSC]
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .... [BSC]
   c) SAMPLING INCREMENT IS 0.10 IN. ............ [BSC]
   d) X-AXIS SCAN VELOCITY IS PROGRAMED TO 4.0 IN./SEC. ........................................ [BSC]
   e) A/D SAMPLING RATE IS AT 20.0 MHZ ............ [BSC]
   f) SYSTEM IS IN RF MODE .......................... [BSC]
   g) C-SCAN GATE DELAY IS 20.0 MICROSECONDS ... [BSC]
   h) C-SCAN GATE WIDTH IS 30.0 MICROSECONDS ... [BSC]
   i) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO PROPER TEST SET-UP IS ACHIEVED ............ [BSC]
   j) PRINTER IS CONFIGURED PROPERLY ............ [BSC]

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3) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>5.80</td>
</tr>
<tr>
<td>RUN 2</td>
<td>5.83</td>
</tr>
<tr>
<td>RUN 3</td>
<td>5.78</td>
</tr>
</tbody>
</table>

4) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN AND ATTACH IT TO THIS FORM, AND (B) PROCEED TO PART 4 OF THIS FORM.

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-CHECK TEST.

5) RECORD INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td></td>
</tr>
<tr>
<td>RUN 2</td>
<td></td>
</tr>
<tr>
<td>RUN 3</td>
<td></td>
</tr>
</tbody>
</table>

6) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN DATA PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO PART 4 OF THIS FORM.

CORRECTIVE ACTION(S) After conversation with Amdtate engineering, it was determined that the original target values in the test plan had exceeded the system limitations. Therefore, this test was executed in a manner to find max scan speed for given parameters.

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, MAKE A HARD COPY PRESENTATION OF THE SCREEN DISPLAY, ATTACH IT TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
PART 4. X-AXIS SCANNING VELOCITY (RF MODE @ 2.5 IN./SEC.)

1) COMPLETE FOLLOWING CHECKLIST BEFORE PERFORMING TEST.

(a) X-AXIS SCAN VELOCITY IS PROGRAMMED TO 2.5 IN./SEC. ..............................................
(b) REMAINING PARAMETERS FROM PART 3 OF THIS FORM HAVE NOT BEEN CHANGED ......................

2) PERFORM TEST THREE TIMES AND RECORD RESULTS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>7.50 2.1 in.</td>
</tr>
<tr>
<td>RUN 2</td>
<td>7.47 2.1 in.</td>
</tr>
<tr>
<td>RUN 3</td>
<td>7.53 2.1 in.</td>
</tr>
</tbody>
</table>

3) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE UNINTERRUPTABLE POWER SUPPLY VERIFICATION TEST.

CORRECTIVE ACTION(S) ___________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

IF THE DIFFERENCE IS GREATER THAN ± 0.5 IN./SEC., RE-CHECK ALL CONNECTIONS AND VALUES ENTERED INTO SET FORM. RE-PERFORM TEST.
4) RECORD THE INFORMATION FROM THE THREE RUNS IN SPACE BELOW.

<table>
<thead>
<tr>
<th>TIME</th>
<th>VELOCITY (16.0 IN./TIME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN 1</td>
<td>________________________</td>
</tr>
<tr>
<td>RUN 2</td>
<td>________________________</td>
</tr>
<tr>
<td>RUN 3</td>
<td>________________________</td>
</tr>
</tbody>
</table>

5) IF THE DIFFERENCE BETWEEN THE INDICATED AND ACTUAL SCAN VELOCITIES IS WITHIN ± 0.5 IN./SEC., AND THE SCREEN PRESENTATION IS ACCEPTABLE, (A) MAKE A HARD COPY OF THE SCREEN PRESENTATION, (B) ATTACH IT TO THIS FORM, (C) NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND (D) PROCEED TO THE UNINTERRUPTABLE POWER SUPPLY VERIFICATION TEST.

CORRECTIVE ACTION(S) ________________________________

______________________________
______________________________
______________________________

IF THE DIFFERENCE WAS STILL UN-RESOLVABLE, (A) COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND (B) NOTIFY MTI ELECTRONIC MAINTENANCE.

***NOTE: BE PREPARED TO GIVE THE SPECIFICS OF THE PROBLEM.
X-Axis Scan Velocity

Peak 40 ps

Peak 25 ps
UNINTERUPTABLE POWER SUPPLY
VERIFICATION TEST

DATE: 11/8/84
OPERATOR: A. Cushing
VERIFIED BY: \\
SOFTWARE VERSION NUMBER: 4C

SYSTEM SERIAL NUMBER: 5.2F7F6C
TOPAZ SERIAL NUMBER: 5-H57836-5
TRANSDUCER SERIAL NUMBER: T5359

1) COMPLETE THE CHECK LIST BEFORE PERFORMING THE TEST.

- 5.0 MHz TRANSDUCER IS BEING USED
- 10.0" LONG SCANNER ARM IS BEING USED
- TOPAZ UNINTERUPTABLE POWER SUPPLY HAS BEEN SUFFICIENTLY CHARGED
  ***NOTE: IF THE TOPAZ HAS NOT BEEN CHARGED PROPERLY, THIS TEST WILL TERMINATE HERE UNTIL THE TOPAZ IS PROPERLY CHARGED.
- SYSTEM IS IN THE RF MODE
- C-SCAN GATE DELAY IS AT 20.0 MICROSECONDS
- C-SCAN GATE WIDTH IS AT 36.0 MICROSECONDS
- FIGURE 1 OF THIS FORM HAS BEEN REVIEW AS SO A PROPER TEST CONFIGURATION IS ACHIEVED
- OPERATOR IS FAMILIAR WITH AMDATA ENGINEERING SPECIFICATION 870128, SECTION 1.0, SUB SECTION "UNINTERUPTABLE POWER SYSTEM (UPS) AND LINE FILTER.
- SCAN WILL COVER A 16.0" AXIAL BY 10.0" CIRCUMFERENTIAL AREA

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2) THERE WILL BE THREE RUNS OF THIS TEST, FILE NAMES WILL BE:

<table>
<thead>
<tr>
<th>TEST RUN #</th>
<th>FILE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SETPWR1</td>
</tr>
<tr>
<td>2</td>
<td>SETPWR2</td>
</tr>
<tr>
<td>3</td>
<td>SETPWR3</td>
</tr>
</tbody>
</table>

Power shutdown at 10°C
Power shutdown at 35°C
Power shutdown at 80°C

3) BEGIN SCAN, ALLOW AT LEAST 5 PASSES OF THE TRANSDUCER OVER THE MEMBRANE SAMPLE BEFORE DISCONNECTING THE MAIN ELECTRICAL LINE.

4) COMPLETE EACH PART OF THIS CHART IN ACCORDANCE WITH THE TEST RUN NUMBER. ALSO PROVIDE A HARD COPY OF BOTH THE B AND C SCANS FROM EACH TEST RUN.

***NOTE: IF ANY ONE OF THE THREE TEST RUNS DOES NOT PRODUCE A DATA FILE WITH PROPERLY STORED A AND C SCANS, COMPLETE THE FOLLOWING:

a) CHECK ALL CONNECTIONS

b) CHECK ALL ENTRIES INTO THE SET FORMS

c) VERIFY THAT NONE OF THE UPS LIMITATIONS HAVE BEEN EXCEEDED PER AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 1.0, RE-PERFORM TEST.

d) IF PROBLEM STILL PERSISTS, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.
<table>
<thead>
<tr>
<th>Test Run Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Data Storage Achieved</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Was Data File Able To Be Re Accessed</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Were A and C Scan Presentations Complete</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

Remark on any corrective actions taken to resolve problems during any of the three test runs: N/A
Setpurl Power shutdown at 4:07
Setpur II Power shut off at 3.0 Y
Setpur II Power shut off at 30" y
Setpur III  Power shutoff at 20' y
UNINTERRUPTABLE POWER SUPPLY (UPS) VERIFICATION TEST

DATE: 21 Feb 89
OPERATOR: Brad Cushing
VERIFIED BY: [Signature]
SOFTWARE VERSION NUMBER: 4.0

SYSTEM SERIAL NUMBER: 5A-51868
TOPAZ SERIAL NUMBER: 5A51868-1
TRANSUDER SERIAL NUMBER: 5A51868-9 7B353

1) COMPLETE THE CHECKLIST BEFORE PERFORMING THE TEST.

a) 5.0 MHz TRANSDUCER IS BEING USED ........................... BSC
b) 10.0 IN. LONG SCANNER ARM IS BEING USED ................ BSC
c) TOPAZ UPS HAS BEEN SUFFICIENTLY CHARGED ................ BSC

***NOTE: IF THE TOPAZ HAS NOT BEEN CHARGED PROPERLY, THIS TEST WILL TERMINATE HERE UNTIL THE TOPAZ IS PROPERLY CHARGED.

d) SYSTEM IS IN THE RF MODE ..................................... BSC
e) C-SCAN GATE DELAY IS AT 22.9 MICROSECONDS .......... BSC
f) C-SCAN GATE WIDTH IS AT 1.5 MICROSECONDS .......... BSC
g) FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO A PROPER TEST CONFIGURATION IS ACHIEVED ............... BSC

h) OPERATOR IS FAMILIAR WITH AMDATA ENGINEERING SPECIFICATION 870128, SECTION 1.0, SUBSECTION "UNINTERRUPTABLE POWER SYSTEM (UPS) AND LINE FILTER" ............................. BSC

i) SCAN WILL COVER A 16-0 IN. AXIAL BY 16-0 IN. CIRCUMFERENTIAL AREA ................................. BSC

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2) There will be three runs of this test, file names will be:

<table>
<thead>
<tr>
<th>Test Run #</th>
<th>File Name</th>
<th>Power Shutdown At</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SETPWR1</td>
<td>4.0&quot;</td>
</tr>
<tr>
<td>2</td>
<td>SETPWR2</td>
<td>3.0&quot;</td>
</tr>
<tr>
<td>3</td>
<td>SETPWR3</td>
<td>2.0&quot;5&quot;</td>
</tr>
</tbody>
</table>

3) Begin scan, allow at least 5 passes of the transducer over the membrane sample before disconnecting the main electrical line.

4) Complete each part of this chart in accordance with the test run number. Also provide a hard copy of both the B and C scans from each test run.

***Note: If any one of the three test runs does not produce a data file with properly stored A and C scans, complete the following:

a) Check all connections

b) Check all entries into the set forms

c) Verify that none of the UPS limitations have been exceeded per AMDATA engineering specification number 870128, section 1.0, re-perform test.

d) If problem still persists, complete a problem/failure report, form N, and notify MTI electronic maintenance.
### TEST RUN NUMBER
(CIRCLE YES OR NO)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPER DATA STORAGE ACHIEVED</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>WAS DATA FILE ABLE TO BE RE ACCESSED</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>WERE A AND C SCAN PRESENTATIONS COMPLETE</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

Remark on any corrective actions taken to resolve problems during any of the three test runs.

---

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Page 76
Set test (setpu3) Powershedown - Data Saved
2) THERE WILL BE THREE RUNS OF THIS TEST, FILE NAMES WILL BE:

<table>
<thead>
<tr>
<th>TEST RUN #</th>
<th>FILE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SETPWR1 power shutdown at 40&quot;</td>
</tr>
<tr>
<td>2</td>
<td>SETPWR2 power shutdown at 30&quot;</td>
</tr>
<tr>
<td>3</td>
<td>SETPWR3 power shutdown at .5&quot; data saved</td>
</tr>
</tbody>
</table>

3) BEGIN SCAN, ALLOW AT LEAST 5 PASSES OF THE TRANSDUCER OVER THE MEMBRANE SAMPLE BEFORE DISCONNECTING THE MAIN ELECTRICAL LINE.

4) COMPLETE EACH PART OF THIS CHART IN ACCORDANCE WITH THE TEST RUN NUMBER. ALSO PROVIDE A HARD COPY OF BOTH THE B AND C SCANS FROM EACH TEST RUN.

***NOTE: IF ANY ONE OF THE THREE TEST RUNS DOES NOT PRODUCE A DATA FILE WITH PROPERLY STORED A AND C SCANS, COMPLETE THE FOLLOWING:

a) CHECK ALL CONNECTIONS

b) CHECK ALL ENTRIES INTO THE SET FORMS

c) VERIFY THAT NONE OF THE UPS LIMITATIONS HAVE BEEN EXCEEDED PER AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 1.0, RE-PERFORM TEST.

d) IF PROBLEM STILL PERSISTS, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.
### TEST RUN NUMBER
(CIRCLE YES OR NO)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROPER DATA STORAGE ACHIEVED</strong></td>
<td>🟢YES</td>
<td>🟢YES</td>
<td>🟢YES</td>
</tr>
<tr>
<td><strong>WAS DATA FILE ABLE TO BE RE-ACCESSSED</strong></td>
<td>🟢YES</td>
<td>🟢YES</td>
<td>🟢YES</td>
</tr>
<tr>
<td><strong>WERE A AND C SCAN PRESENTATIONS COMPLETE</strong></td>
<td>🟢YES</td>
<td>🟢YES</td>
<td>🟢YES</td>
</tr>
</tbody>
</table>

**REMARK ON ANY CORRECTIVE ACTIONS TAKEN TO RESOLVE PROBLEMS DURING ANY OF THE THREE TEST RUNS.**

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UNINTERUPTABLE POWER SUPPLY
VERIFICATION TEST

DATE: 26 May 89
OPERATOR: Brad Lushing
VERIFIED BY: 
SOFTWARE VERSION NUMBER: 4.0

SYSTEM SERIAL NUMBER: SAS1869
TOPAZ SERIAL NUMBER: SAS1869
TRANSUDER SERIAL NUMBER: RND-3

1) COMPLETE THE CHECK LIST BEFORE PERFORMING THE TEST.

- 5.0 MHz TRANSDUCER IS BEING USED
- 10.0" LONG SCANNER ARM IS BEING USED
- TOPAZ UNINTERUPTABLE POWER SUPPLY HAS BEEN SUFFICIENTLY CHARGED
  ***NOTE: IF THE TOPAZ HAS NOT BEEN CHARGED PROPERLY, THIS TEST WILL TERMINATE HERE UNTIL THE TOPAZ IS PROPERLY CHARGED.
- SYSTEM IS IN THE RF MODE
- C-SCAN GATE DELAY IS AT 43.65 MICROSECONDS
- C-SCAN GATE WIDTH IS AT 4.0 MICROSECONDS
- FIGURE 1 OF THIS FORM HAS BEEN REVIEWED SO A PROPER TEST CONFIGURATION IS ACHIEVED
- OPERATOR IS FAMILIAR WITH AMDATA ENGINEERING SPECIFICATION 870128, SECTION 1.0, SUB SECTION "UNINTERUPTABLE POWER SYSTEM (UPS) AND LINE FILTER.
- SCAN WILL COVER A 16.0" AXIAL BY 10.0" CIRCUMFERENTIAL AREA
2) THERE WILL BE THREE RUNS OF THIS TEST, FILE NAMES WILL BE:

<table>
<thead>
<tr>
<th>TEST RUN #</th>
<th>FILE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SETPWR1- Data Saved</td>
</tr>
<tr>
<td>2</td>
<td>SETPWR2- Data Saved</td>
</tr>
<tr>
<td>3</td>
<td>SETPWR3- Data Saved</td>
</tr>
</tbody>
</table>

3) BEGIN SCAN, ALLOW AT LEAST 5 PASSES OF THE TRANSDUCER OVER THE MEMBRANE SAMPLE BEFORE DISCONNECTING THE MAIN ELECTRICAL LINE.

4) COMPLETE EACH PART OF THIS CHART IN ACCORDANCE WITH THE TEST RUN NUMBER. ALSO PROVIDE A HARD COPY OF BOTH THE B AND C SCANS FROM EACH TEST RUN.

***NOTE: IF ANY ONE OF THE THREE TEST RUNS DOES NOT PRODUCE A DATA FILE WITH PROPERLY STORED A AND C SCANS, COMPLETE THE FOLLOWING:

a) CHECK ALL CONNECTIONS
b) CHECK ALL ENTRIES INTO THE SET FORMS
c) VERIFY THAT NONE OF THE UPS LIMITATIONS HAVE BEEN EXCEEDED PER AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 1.0, RE-PERFORM TEST.
d) IF PROBLEM STILL PERSISTS, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.
(4 CONT.)

## TEST RUN NUMBER

(CIRCLE YES OR NO)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPER DATA STORAGE ACHieved</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>WAS DATA FILE ABLE TO BE RE ACCESSED</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>WERE A AND C SCAN PRESENTATIONS COMPLETE</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

REMARK ON ANY CORRECTIVE ACTIONS TAKEN TO RESOLVE PROBLEMS DURING ANY OF THE THREE TEST RUNS.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
U.P.S Verification Setpwr 2

L-Scan

B-Scan
U.S. Verification Setpwr3

L-Scan

B-Scan

PRECEDING PAGE BLANK NOT FILMED

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CRT DISPLAY AND HARD COPY VERIFICATION TESTS

DATE: 13 Feb 59
OPERATOR: Blakely
VERIFIED BY: Trace
SOFTWARE VERSION NUMBER: 14
SYSTEM SERIAL NUMBER: SA 51866
PRINTER SERIAL NUMBER: SA 51866-7
TRANSUDER SERIAL NUMBER: TB 359

SECTION 1:

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED ...
   c) SAMPLING INCREMENT IS 0.10 IN. .............
   d) SYSTEM IS IN RF MODE ........................
   e) A-SCAN GATE DELAY 9.0 MICROSECONDS .......
   f) A-SCAN GATE WIDTH 51.0 MICROSECONDS .....  
   g) C-SCAN GATE DELAY IS 20.0 MICROSECONDS ...
   h) C-SCAN GATE WIDTH IS 30.0 MICROSECONDS ...
   i) COLOR PALETTE IN THE MASTER FORM HAS BEEN SET UP IN ACCORDANCE WITH AMDATA ENGINEERING SPECIFICATION NUMBER 870128, PAGE 73, "COLOR PALETTE". ..........  
   j) SCAN WILL COVER AN AREA THAT IS 16.0 IN.
      AXIALLY BY 10.0 IN. CIRCUMFERENTIALLY. ..... 

2) PERFORM SCAN.

3) WAS PROPER COLOR ASSIGNMENT AND DISPLAY CLARITY ACHIEVED?

   CIRCLE ONE: [ ] YES  [ ] NO
IF YES, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, RETURN TO THE MASTER FORM AND CHECK THE NUMBERS ENTERED INTO THE COLOR PALETTE FORM.

4) RE-PERFORM SCAN.

5) WAS PROPER COLOR ASSIGNMENT AND DISPLAY CLARITY ACHIEVED?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, OF THIS QUALIFICATION PLAN AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S)

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SECTION 2:

1) RECALL THE SCREEN PRESENTATION FROM SECTION 1 OF THIS FORM AND MAKE A HARD COPY OF IT ON THE HEWLETT/PACKARD PAINTJET PRINTER.

2) COMPARE THE HARD COPY TO THE SCREEN PRESENTATION TO VERIFY THAT THE SAME COLOR LEGEND APPEARS AND THE ALL THE CHARACTERS ARE SHARPLY DEFINED AND EASY TO READ.

IF THE HARD COPY PRESENTATION MATCHES THE SCREEN PRESENTATION, ATTACH THE HARD COPY TO THIS FORM AND PROCEED TO DATA FILE INTEGRITY VERIFICATION TEST.

IF THE TWO PRESENTATIONS DON'T MATCH IN EITHER COLOR OR CLARITY, CHECK ALL CONNECTIONS, VERIFY THAT THE PRINTER IS CONFIGURED PROPERLY.

3) RE-PERFORM TEST.
4) DID THE TWO PRESENTATIONS MATCH?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, ATTACH THE HARD COPY TO THIS FORM, AND PROCEED TO THE DATA FILE INTEGRITY VERIFICATION TEST.

IF NO, COMPLETE A PROBLEM FAILURE REPORT, FORM N, OF THIS QUALIFICATION PLAN, ATTACH THE HARD COPY TO THIS FORM AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S)  ________________________________

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Figure 1

CASE/INSUL SAMPLE

START OF SCAN

SCAN DIRECTION

MAGNETIC TRACK

(-) X

(+) Y

COUPLANT CONTAINMENT RESERVOIR

COUPLANT CATCH BASIN

AREA OF COVERAGE: 18.0" X 12.0"

18.0"

12.0"

NOTE: HOLE MARKED DOW NOT FILLED

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CRT DISPLAY AND HARD COPY
VERIFICATION TESTS

DATE: 23 Feb 89

OPERATOR: Brad Rushing

VERIFIED BY: [Signature]

SOFTWARE VERSION NUMBER: 4.0

SECTION I:

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED .................. [BSC]
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .......... [BSC]
   c) SAMPLING INCREMENT IS 0.10 IN. .................... [BSC]
   d) SYSTEM IS IN RF MODE ................................. [BSC]
   e) A-SCAN GATE DELAY 20.0 MICROSECONDS ........... [BSC]
   f) A-SCAN GATE WIDTH 51.0 MICROSECONDS ............ [BSC]
   g) C-SCAN GATE DELAY IS 22.9 MICROSECONDS ....... [BSC]
   h) C-SCAN GATE WIDTH IS 36.6 MICROSECONDS ....... [BSC]
   i) COLOR PALETTE IN THE MASTER FORM HAS BEEN SET UP IN ACCORDANCE WITH AMDATA ENGINEERING SPECIFICATION NUMBER 870128, PAGE 73, "COLOR PALETTE". .................. [BSC]
   j) SCAN WILL COVER AN AREA THAT IS 16.0 IN. AXIALLY BY 10.0 IN. CIRCUMFERENTIALLY. .... [BSC]

2) PERFORM SCAN.

3) WAS PROPER COLOR ASSIGNMENT AND DISPLAY CLARITY ACHIEVED?

   CIRCLE ONE: [YES] NO
IF YES, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, RETURN TO THE MASTER FORM AND CHECK THE NUMBERS ENTERED INTO THE COLOR PALETTE FORM.

4) RE-PERFORM SCAN.

5) WAS PROPER COLOR ASSIGNMENT AND DISPLAY CLARITY ACHIEVED?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, OF THIS QUALIFICATION PLAN AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S) ____________________________________________
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SECTION 2:

1) RECALL THE SCREEN PRESENTATION FROM SECTION 1 OF THIS FORM AND MAKE A HARD COPY OF IT ON THE HEWLETT/PACKARD PAINTJET PRINTER.

2) COMPARE THE HARD COPY TO THE SCREEN PRESENTATION TO VERIFY THAT THE SAME COLOR LEGEND APPEARS AND THE ALL THE CHARACTERS ARE SHARPLY DEFINED AND EASY TO READ.

IF THE HARD COPY PRESENTATION MATCHES THE SCREEN PRESENTATION, ATTACH THE HARD COPY TO THIS FORM AND PROCEED TO DATA FILE INTEGRITY VERIFICATION TEST.

IF THE TWO PRESENTATIONS DON'T MATCH IN EITHER COLOR OR CLARITY, CHECK ALL CONNECTIONS, VERIFY THAT THE PRINTER IS CONFIGURED PROPERLY.

3) RE-PERFORM TEST.
4) DID THE TWO PRESENTATIONS MATCH?

CIRCLE ONE:  YES  NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, ATTACH THE HARD COPY TO THIS FORM, AND PROCEED TO THE DATA FILE INTEGRITY VERIFICATION TEST.

IF NO, COMPLETE A PROBLEM FAILURE REPORT, FORM N, OF THIS QUALIFICATION PLAN, ATTACH THE HARD COPY TO THIS FORM AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S)  

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CRT DISPLAY AND HARD COPY VERIFICATION TESTS

DATE: 1 March 84
OPERATOR: [Signature]
VERIFIED BY: [Signature]
SOFTWARE VERSION NUMBER: [Number]

SYSTEM SERIAL NUMBER: SAS1865
PRINTER SERIAL NUMBER: SAS1866
TRANSDUCER SERIAL NUMBER: RD-3

SECTION 1:

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED .............. [BSC]
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED .... [BSC]
   c) SAMPLING INCREMENT IS 0.10 IN. ............... [BSC]
   d) SYSTEM IS IN RF MODE .......................... [BSC]
   e) A-SCAN GATE DELAY 9.0 MICROSECONDS ....... [BSC]
   f) A-SCAN GATE WIDTH 51.0 MICROSECONDS ....... [BSC]
   g) C-SCAN GATE DELAY IS 20.0 MICROSECONDS .... [BSC]
   h) C-SCAN GATE WIDTH IS 30.0 MICROSECONDS .... [BSC]
   i) COLOR PALETTE IN THE MASTER FORM HAS BEEN SET UP IN ACCORDANCE WITH AMDATA ENGINEERING SPECIFICATION NUMBER 870128, PAGE 73, "COLOR PALETTE". ......................... [BSC]
   j) SCAN WILL COVER AN AREA THAT IS 16.0 IN. AXIALLY BY 10.0 IN. CIRCUMFERENTIALLY. .... [BSC]

2) PERFORM SCAN.

3) WAS PROPER COLOR ASSIGNMENT AND DISPLAY CLARITY ACHIEVED?

CIRCLE ONE: [ ] YES [ ] NO

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IF YES, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, RETURN TO THE MASTER FORM AND CHECK THE NUMBERS ENTERED INTO THE COLOR PALETTE FORM.

4) RE-PERFORM SCAN.

5) WAS PROPER COLOR ASSIGNMENT AND DISPLAY CLARITY ACHIEVED?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, OF THIS QUALIFICATION PLAN AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S)

SECTION 2:

1) RECALL THE SCREEN PRESENTATION FROM SECTION 1 OF THIS FORM AND MAKE A HARD COPY OF IT ON THE HEWLETT/PACKARD PAINTJET PRINTER.

2) COMPARE THE HARD COPY TO THE SCREEN PRESENTATION TO VERIFY THAT THE SAME COLOR LEGEND APPEARS AND THE ALL THE CHARACTERS ARE SHARPLY DEFINED AND EASY TO READ.

IF THE HARD COPY PRESENTATION MATCHES THE SCREEN PRESENTATION, ATTACH THE HARD COPY TO THIS FORM AND PROCEED TO DATA FILE INTEGRITY VERIFICATION TEST.

IF THE TWO PRESENTATIONS DON'T MATCH IN EITHER COLOR OR CLARITY, CHECK ALL CONNECTIONS, VERIFY THAT THE PRINTER IS CONFIGURED PROPERLY.

3) RE-PERFORM TEST.
4) DID THE TWO PRESENTATIONS MATCH?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, ATTACH THE HARD COPY TO THIS FORM, AND PROCEED TO THE DATA FILE INTEGRITY VERIFICATION TEST.

IF NO, COMPLETE A PROBLEM FAILURE REPORT, FORM N, OF THIS QUALIFICATION PLAN, ATTACH THE HARD COPY TO THIS FORM AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S) ____________________________________________
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CRT DISPLAY AND HARD COPY
VERIFICATION TESTS

DATE: 23 May 84
OPERATOR: B. Lushing
VERIFIED BY: 7/13/84
SOFTWARE VERSION NUMBER: 4.0

SYSTEM SERIAL NUMBER: SA51867
PRINTER SERIAL NUMBER: SA51867
TRANSDUCER SERIAL NUMBER: RND-3

SECTION I:

1) COMPLETE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHz TRANSDUCER IS BEING USED ............
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED ......
   c) SAMPLING INCREMENT IS 0.10 IN. ............
   d) SYSTEM IS IN RF MODE ......................
   e) A-SCAN GATE DELAY 40.0 MICROSECONDS ........
   f) A-SCAN GATE WIDTH 54.0 MICROSECONDS .......
   g) C-SCAN GATE DELAY IS 47.25 MICROSECONDS ....
   h) C-SCAN GATE WIDTH IS 49.0 MICROSECONDS ....
   i) COLOR PALETTE IN THE MASTER FORM HAS
       BEEN SET UP IN ACCORDANCE WITH AMDATA
       ENGINEERING SPECIFICATION NUMBER 870128,
       PAGE 73, "COLOR PALETTE". ...................
   j) SCAN WILL COVER AN AREA THAT IS 16.0 IN.
       AXIALLY BY 10.0 IN. CIRCUMFERENTIALLY. ....

COMPLETED (INITIALS) BSC

2) PERFORM SCAN.

3) WAS PROPER COLOR ASSIGNMENT AND DISPLAY CLARITY ACHIEVED?

   CIRCLE ONE:  [YES]  NO
IF YES, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, RETURN TO THE MASTER FORM AND CHECK THE NUMBERS ENTERED INTO THE COLOR PALETTE FORM.

4) RE-PERFORM SCAN.

5) WAS PROPER COLOR ASSIGNMENT AND DISPLAY CLARITY ACHIEVED?

CIRCLE ONE: YES  NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, OF THIS QUALIFICATION PLAN AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S)    

SECTION 2:

1) RECALL THE SCREEN PRESENTATION FROM SECTION 1 OF THIS FORM AND MAKE A HARD COPY OF IT ON THE HEWLETT/PACKARD PAINTJET PRINTER.

2) COMPARE THE HARD COPY TO THE SCREEN PRESENTATION TO VERIFY THAT THE SAME COLOR LEGEND APPEARS AND THE ALL THE CHARACTERS ARE SHARPLY DEFINED AND EASY TO READ.

IF THE HARD COPY PRESENTATION MATCHES THE SCREEN PRESENTATION, ATTACH THE HARD COPY TO THIS FORM AND PROCEED TO DATA FILE INTEGRITY VERIFICATION TEST.

IF THE TWO PRESENTATIONS DON'T MATCH IN EITHER COLOR OR CLARITY, CHECK ALL CONNECTIONS, VERIFY THAT THE PRINTER IS CONFIGURED PROPERLY.

3) RE-PERFORM TEST.
4) DID THE TWO PRESENTATIONS MATCH?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, ATTACH THE HARD COPY TO THIS FORM, AND PROCEED TO THE DATA FILE INTEGRITY VERIFICATION TEST.

IF NO, COMPLETE A PROBLEM FAILURE REPORT, FORM N, OF THIS QUALIFICATION PLAN, ATTACH THE HARD COPY TO THIS FORM AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S) ______________________________________
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DATA FILE INTEGRITY VERIFICATION TEST

DATE: 10/23/89
OPERATOR:
VERIFIED BY:
SOFTWARE VERSION NUMBER:

SYSTEM SERIAL NUMBER:
TRANSUDER SERIAL NUMBER:
DATA TAPE SERIAL NUMBER:

SECTION 1

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

a) 5.0 MHZ TRANSDUCER IS BEING USED
b) 10.0 IN. LONG SCANNER ARM IS BEING USED
c) SAMPLING INCREMENT IS 0.10 IN.
d) SYSTEM IS IN RF MODE
e) A-SCAN GATE DELAY 9.0 MICROSECONDS
f) A-SCAN GATE WIDTH 51.0 MICROSECONDS
g) C-SCAN GATE DELAY 20.0 MICROSECONDS
h) C-SCAN GATE WIDTH 30.0 MICROSECONDS
i) SCAN WILL COVER AN AREA THAT IS 16.0 IN. AXIALLY BY 10.0 IN. CIRCUMFERENTIALLY
j) A NEW DATA TAPE HAS BEEN ACQUIRED
k) PRINTER IS CONFIGURED PROPERLY
l) NAME DATA FILE SETDIVT

2) PERFORM SCAN.

3) SAVE DATA TO HARD DISK.
4) HAS ALL DATA BEEN STORED PROPERLY TO HARD DISK?
CIRCLE ONE: YES NO
IF YES, PROCEED TO STEP 6 OF THIS FORM.
IF NO, CHECK ALL CONNECTIONS, AND INFORMATION ON SET FORM, PROCEED TO STEP 4.

5) RE-PERFORM SCAN.

6) WAS RE-SCAN DATA PROPERLY SAVED AND RETRIEVABLE?
CIRCLE ONE: YES NO
IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO STEP 6 OF THIS FORM.
IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S)  


7) OBTAIN A HARD COPY OF THE C-SCAN, B-SCAN, AND SPECTRAL C-SCAN.

8) WAS ALL REQUIRED DATA PRESENT ON EACH HARD COPY PER AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 10, AND APPENDIX O.
CIRCLE ONE: YES NO
IF YES, DO NOT DISCARD HARD COPY INFORMATION, PROCEED TO SECTION 2 OF THIS FORM.
IF NO, CHECK CONNECTIONS TO PRINTER, VERIFY THAT THE SYSTEM AND PRINTER ARE CONFIGURED PROPERLY.

9) OBTAIN C, B, SPECTRAL C-SCAN HARD COPIES.
10) WAS ALL REQUIRED DATA PRESENT.

CIRCLE ONE: [ ] YES [ ] NO

IF YES, NOTE IN SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. DO NOT DISCARD THE HARD COPIES, PROCEED TO SECTION 2.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

SECTION 2

1) TRANSFER THE DATA FILES STORED ON THE HARD DISK TO TAPE.

2) VERIFY THAT DATA FILES ARE ON THE TAPE.

IF THE TRANSFER WAS SUCCESSFUL, PROCEED TO STEP 5 OF THIS FORM.

IF THE TRANSFER WAS UNSUCCESSFUL, VERIFY THAT THE PROPER SEQUENCE OF STEPS WAS PERFORMED TO TRANSFER DATA FROM ONE MEDIA TO ANOTHER. CHECK CASSETTE TO VERIFY THAT THE "SAFE" SWITCH IS IN THE OFF POSITION, AND PROCEED TO STEP 3 OF THIS FORM.

3) PERFORM "DATA FILE TRANSFER" SEQUENCE AGAIN.

4) VERIFY THAT DATA FILES ARE ON THE TAPE.

IF TRANSFER WAS SUCCESSFUL, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, PROCEED TO STEP 5 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S) ____________________________________________

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5) TRANSFER DATA FILES FROM TAPE BACK TO HARD DISK AND VERIFY DATA FILES WERE SUCCESSFUL TRANSFERRED.

IF YES, PROCEED TO STEP 6 OF THIS FORM.

IF NO, PROCEED WITH STEPS 3 AND 4 OF THIS SECTION AGAIN, THIS TIME CONCERNING DATA FILE TRANSFER FROM TAPE TO DISK.

CORRECTIVE ACTION(S)

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6) PERFORM STEPS 6 THROUGH 9 OF SECTION 1 OF THIS FORM. MAKE COMMENTS CONCERNING DEVIATIONS DURING EXECUTION OF THE ABOVE SET OF INSTRUCTIONS IN THE SPACE BELOW.

COMMENTS

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7) COMPARE THE HARD COPIES OBTAINED FROM SECTION 1 OF THIS FORM AGAINST THE HARD COPIES OBTAINED FROM SECTION 2 OF THIS FORM.

8) WERE THE AMPLITUDE RESPONSES ON THE A AND C-SCANS THE SAME?

CIRCLE ONE: [YES  NO]

IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.

DIFFERENCES IN AMPLITUDE RESPONSE

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9) WERE THE PHASE RESPONSES ON THE A-SCANS THE SAME?
CIRCLE ONE:  ☐ YES  ☐ NO

IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN PHASE RESPONSE

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10) WERE THE FREQUENCY RESPONSES ON THE B, C, SPECTRAL C-SCANS THE SAME?
CIRCLE ONE:  ☐ YES  ☐ NO

IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN FREQUENCY RESPONSE

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11) WERE THE COLOR SCALES AND DISPLAY CLARITY SAME?
CIRCLE ONE:  ☐ YES  ☐ NO

IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN COLOR SCALE AND DISPLAY CLARITY

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***NOTE: IF THE HARD COPIES OBTAINED FROM SECTION 1 DO NOT MATCH THE HARD COPIES FROM SECTION 2, THERE WAS A COMPROMISE IN DATA FILE INTEGRITY DURING TRANSFER. ASSEMBLE ALL HARD COPIES TOGETHER, ATTACH TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.
DATA FILE INTEGRITY
VERIFICATION TEST

DATE:
xx Feb 89

OPERATOR:
Brad Lushing

VERIFIED BY:

SOFTWARE VERSION NUMBER:
4.0

SYSTEM SERIAL NUMBER:
SA 51868
TRANSDUCER SERIAL NUMBER:
T8353
DATA TAPE SERIAL NUMBER:
TQ2229

SECTION I

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHZ TRANSDUCER IS BEING USED ....................

   b) 10.0 IN. LONG SCANNER ARM IS BEING USED ...........

   c) SAMPLING INCREMENT IS 0.10 IN. .....................

   d) SYSTEM IS IN RF MODE ................................

   e) A-SCAN GATE DELAY 20.0 MICROSECONDS ............

   f) A-SCAN GATE WIDTH 22.9 MICROSECONDS ............

   g) C-SCAN GATE DELAY 20.0 MICROSECONDS ............

   h) C-SCAN GATE WIDTH 90.0 MICROSECONDS ............

   i) SCAN WILL COVER AN AREA THAT IS 8.0 IN.
      AXIALLY BY 5.0 IN. CIRCUMFERENTIALLY ...........

   j) A NEW DATA TAPE HAS BEEN ACQUIRED ...............

   k) PRINTER IS CONFIGURED PROPERLY ...................

   l) NAME DATA FILE SETDIVT ...........................


2) PERFORM SCAN.

3) SAVE DATA TO HARD DISK.

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4) HAS ALL DATA BEEN STORED PROPERLY TO HARD DISK?

CIRCLE ONE: YES NO

IF YES, PROCEED TO STEP 6 OF THIS FORM.

IF NO, CHECK ALL CONNECTIONS, AND INFORMATION ON SET FORM, PROCEED TO STEP 4.

5) RE-PERFORM SCAN.

6) WAS RE-SCAN DATA PROPERLY SAVED AND RETRIEVABLE?

CIRCLE ONE: YES NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO STEP 6 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S) N/A

7) OBTAIN A HARD COPY OF THE C-SCAN, B-SCAN, AND SPECTRAL C-SCAN.

8) WAS ALL REQUIRED DATA PRESENT ON EACH HARD COPY PER AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 10, AND APPENDIX O.

CIRCLE ONE: YES NO

IF YES, DO NOT DISCARD HARD COPY INFORMATION, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, CHECK CONNECTIONS TO PRINTER, VERIFY THAT THE SYSTEM AND PRINTER ARE CONFIGURED PROPERLY.

9) OBTAIN C, B, SPECTRAL C-SCAN HARD COPIES.
10) WAS ALL REQUIRED DATA PRESENT.

CIRCLE ONE: **YES** NO

IF YES, NOTE IN SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. DO NOT DISCARD THE HARD COPIES, PROCEED TO SECTION 2.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

SECTION 2

1) TRANSFER THE DATA FILES STORED ON THE HARD DISK TO TAPE.

2) VERIFY THAT DATA FILES ARE ON THE TAPE.

   IF THE TRANSFER WAS SUCCESSFUL, PROCEED TO STEP 5 OF THIS FORM.

   IF THE TRANSFER WAS UNSUCCESSFUL, VERIFY THAT THE PROPER SEQUENCE OF STEPS WAS PERFORMED TO TRANSFER DATA FROM ONE MEDIA TO ANOTHER. CHECK CASSETTE TO VERIFY THAT THE "SAFE" SWITCH IS IN THE OFF POSITION, AND PROCEED TO STEP 3 OF THIS FORM.

3) PERFORM "DATA FILE TRANSFER" SEQUENCE AGAIN.

4) VERIFY THAT DATA FILES ARE ON THE TAPE.

   IF TRANSFER WAS SUCCESSFUL, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, PROCEED TO STEP 5 OF THIS FORM.

   IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S) __________________________________________________________
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5) TRANSFER DATA FILES FROM TAPE BACK TO HARD DISK AND VERIFY DATA FILES WERE SUCCESSFUL TRANSFERRED.

IF YES, PROCEED TO STEP 6 OF THIS FORM.

IF NO, PROCEED WITH STEPS 3 AND 4 OF THIS SECTION AGAIN, THIS TIME CONCERNING DATA FILE TRANSFER FROM TAPE TO DISK.

CORRECTIVE ACTION(S) ____________________________________________
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6) PERFORM STEPS 6 THROUGH 9 OF SECTION 1 OF THIS FORM. MAKE COMMENTS CONCERNING DEVIATIONS DURING EXECUTION OF THE ABOVE SET OF INSTRUCTIONS IN THE SPACE BELOW.

COMMENTS ______________________________________________________
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7) COMPARE THE HARD COPIES OBTAINED FROM SECTION 1 OF THIS FORM AGAINST THE HARD COPIES OBTAINED FROM SECTION 2 OF THIS FORM.

8) WERE THE AMPLITUDE RESPONSES ON THE A AND C-SCANS THE SAME?

CIRCLE ONE:  YES  NO

IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.

DIFFERENCES IN AMPLITUDE RESPONSE ________________________________
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9) WERE THE PHASE RESPONSES ON THE A-SCANS THE SAME?
CIRCLE ONE: [YES] [NO]
IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN PHASE RESPONSE

10) WERE THE FREQUENCY RESPONSES ON THE B, C, SPECTRAL C-SCANS THE SAME?
CIRCLE ONE: [YES] [NO]
IF NO, MAKE COMMENTS NOTING DIFFERENCES IS SPACE BELOW.
DIFFERENCES IN FREQUENCY RESPONSE

11) WERE THE COLOR SCALES AND DISPLAY CLARITY SAME?
CIRCLE ONE: [YES] [NO]
IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN COLOR SCALE AND DISPLAY CLARITY

***NOTE: IF THE HARD COPIES OBTAINED FROM SECTION 1 DO NOT MATCH THE HARD COPIES FROM SECTION 2, THERE WAS A COMPROMISE IN DATA FILE INTEGRITY DURING TRANSFER. ASSEMBLE ALL HARD COPIES TOGETHER, ATTACH TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.
Spectral C-Scan "on"

ZOOM CURSOR X, Y: 1.0, 1.0 Inches
NEG WINDOW X, Y: 23, 18 Times

SPECTRAL = ON

Spectral C-Scan "off"

ZOOM CURSOR X, Y: 1.0, 1.0 Inches
NEG WINDOW X, Y: 23, 18 Times

SPECTRAL = OFF
Set div† recalled from tape

INTRASPECT/88 U/L REV D R5AS H03 SCS032 D ANDATA INC. (C) 1987
ANDATA TEST BLOCK
FORM: SETDVC CH: 1 02/22/88 19:01-19:10
X: 0.00 - 5.00 / 0.10 AXIAL SCAN MINUS VERTICLE GAIN 8.00 dB
Y: 0.00 - 5.00 / 0.10 AND: 0.00 D/C OFF GATE DELAY WIDTH
AMP: 2 FSN FP: A SOL: 0.00 TRG: OFF A (US) 20.00 20.00
TDF: US OP: A C (US) 22.00 1.80
SC(X,Y)= (0.00, 0.00) T (US) 2.00 1.00
100-100%

INTRASPECT/88 U/L REV D R5AS H03 SCS032 D ANDATA INC. (C) 1987
ANDATA TEST BLOCK
FORM: SETDVC CH: 1 02/22/88 19:01-19:10
X: 0.00 - 5.00 / 0.10 AXIAL SCAN MINUS VERTICLE GAIN 8.00 dB
Y: 0.00 - 5.00 / 0.10 AND: 0.00 D/C OFF GATE DELAY WIDTH
AMP: 8.862 FSN FP: 2.28 SOL: 0.00 TRG: OFF A (US) 20.00 20.00
TDF: 52.36 L8 OP: 0.76 C (US) 22.30 1.95
SC(X,Y)= (2.50, 3.00) SOL: 0.00 1/3 2 V T (US) 2.00 1.00
61-93%

100%

B-337
Spectral L-Scan off

ZOOM CURSOR H20 1.0, 1.0 Inches
MAG WINDOW H20 23, 18 Times

Spectral L-Scan on

ZOOM CURSOR H20 1.0, 1.0 Inches
MAG WINDOW H20 23, 18 Times
DATA FILE INTEGRITY
VERIFICATION TEST

DATE: 9 March 84
OPERATOR: [Signature]
VERIFIED BY: [Signature]
SOFTWARE VERSION NUMBER: 4.0

SYSTEM SERIAL NUMBER: 5A51865
TRANSDUCER SERIAL NUMBER: RD-3
DATA TAPE SERIAL NUMBER: 763894

SECTION 1
1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

   a) 5.0 MHZ TRANSDUCER IS BEING USED ... [Initials]
   b) 10.0 IN. LONG SCANNER ARM IS BEING USED ... [Initials]
   c) SAMPLING INCREMENT IS 0.10 IN. ... [Initials]
   d) SYSTEM IS IN RF MODE ... [Initials]
   e) A-SCAN GATE DELAY 9.0 MICROSECONDS ... [Initials]
   f) A-SCAN GATE WIDTH 51.0 MICROSECONDS ... [Initials]
   g) C-SCAN GATE DELAY 29.0 MICROSECONDS ... [Initials]
   h) C-SCAN GATE WIDTH 30.0 MICROSECONDS ... [Initials]
   i) SCAN WILL COVER AN AREA THAT IS 16.0 IN. AXIALLY BY 10.0 IN. CIRCUMFERENTIALLY ... [Initials]
   j) A NEW DATA TAPE HAS BEEN ACQUIRED ... [Initials]
   k) PRINTER IS CONFIGURED PROPERLY ... [Initials]
   l) NAME DATA FILE SETDIVT ... [Initials]

2) PERFORM SCAN.

3) SAVE DATA TO HARD DISK.
4) HAS ALL DATA BEEN STORED PROPERLY TO HARD DISK?
CIRCLE ONE: \(\text{YES} \quad \text{NO}\)
IF YES, PROCEED TO STEP 6 OF THIS FORM.
IF NO, CHECK ALL CONNECTIONS, AND INFORMATION ON SET FORM, PROCEED TO STEP 4.

5) RE-PERFORM SCAN.

6) WAS RE-SCAN DATA PROPERLY SAVED AND RETRIEVABLE?
CIRCLE ONE: \(\text{YES} \quad \text{NO}\)
IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO STEP 6 OF THIS FORM.
IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.
CORRECTIVE ACTION(S)

7) OBTAIN A HARD COPY OF THE C-SCAN, B-SCAN, AND SPECTRAL C-SCAN.

8) WAS ALL REQUIRED DATA PRESENT ON EACH HARD COPY PER AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 10, AND APPENDIX O.
CIRCLE ONE: \(\text{YES} \quad \text{NO}\)
IF YES, DO NOT DISCARD HARD COPY INFORMATION, PROCEED TO SECTION 2 OF THIS FORM.
IF NO, CHECK CONNECTIONS TO PRINTER, VERIFY THAT THE SYSTEM AND PRINTER ARE CONFIGURED PROPERLY.

9) OBTAIN C, B, SPECTRAL C-SCAN HARD COPIES.
10) WAS ALL REQUIRED DATA PRESENT.

CIRCLE ONE: YES NO

IF YES, NOTE IN SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. DO NOT DISCARD THE HARD COPIES, PROCEED TO SECTION 2.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

SECTION 2

1) TRANSFER THE DATA FILES STORED ON THE HARD DISK TO TAPE.

2) VERIFY THAT DATA FILES ARE ON THE TAPE.

IF THE TRANSFER WAS SUCCESSFUL, PROCEED TO STEP 5 OF THIS FORM.

IF THE TRANSFER WAS UNSUCCESSFUL, VERIFY THAT THE PROPER SEQUENCE OF STEPS WAS PERFORMED TO TRANSFER DATA FROM ONE MEDIA TO ANOTHER. CHECK CASSETTE TO VERIFY THAT THE "SAFE" SWITCH IS IN THE OFF POSITION, AND PROCEED TO STEP 3 OF THIS FORM.

3) PERFORM "DATA FILE TRANSFER" SEQUENCE AGAIN.

4) VERIFY THAT DATA FILES ARE ON THE TAPE.

IF TRANSFER WAS SUCCESSFUL, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, PROCEED TO STEP 5 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S)
5) Transfer data files from tape back to hard disk and verify data files were successful transferred.

If yes, proceed to step 6 of this form.

If no, proceed with steps 3 and 4 of this section again, this time concerning data file transfer from tape to disk.

Corrective action(s)

6) Perform steps 6 through 9 of section 1 of this form. Make comments concerning deviations during execution of the above set of instructions in the space below.

Comments

7) Compare the hard copies obtained from section 1 of this form against the hard copies obtained from section 2 of this form.

8) Were the amplitude responses on the A and C-scans the same?

Circle one: [ ] Yes  [X] No

If no, make comments noting differences in space below.

Differences in amplitude response
9) WERE THE PHASE RESPONSES ON THE A-SCANS THE SAME?
CIRCLE ONE:  \( \square \) YES  \( \square \) NO
IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN PHASE RESPONSE

10) WERE THE FREQUENCY RESPONSES ON THE B, C, SPECTRAL C-SCANS THE SAME?
CIRCLE ONE:  \( \square \) YES  \( \square \) NO
IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN FREQUENCY RESPONSE

11) WERE THE COLOR SCALES AND DISPLAY CLARITY SAME?
CIRCLE ONE:  \( \square \) YES  \( \square \) NO
IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN COLOR SCALE AND DISPLAY CLARITY

***NOTE: IF THE HARD COPIES OBTAINED FROM SECTION 1 DO NOT MATCH THE HARD COPIES FROM SECTION 2, THERE WAS A COMPROMISE IN DATA FILE INTEGRITY DURING TRANSFER. ASSEMBLE ALL HARD COPIES TOGETHER, ATTACH TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.
DATA FILE INTEGRITY
VERIFICATION TEST

DATE: 23 May 89
OPERATOR: Bradushing
VERIFIED BY: 
SOFTWARE VERSION NUMBER: 4.0
SYSTEM SERIAL NUMBER: SA51869
TRANSUDER SERIAL NUMBER: RND-3
DATA TAPE SERIAL NUMBER: 57183/6891

SECTION 1

1) COMPLETE THE FOLLOWING CHECK LIST BEFORE PERFORMING TEST.

a) 5.0 MHZ TRANSDUCER IS BEING USED ............ BSC
b) 10.0 IN. LONG SCANNER ARM IS BEING USED ...... BSC
c) SAMPLING INCREMENT IS 0.10 IN. ................ BSC
d) SYSTEM IS IN RF MODE ........................ BSC
e) A-SCAN GATE DELAY 44.0 MICROSECONDS .......... BSC
f) A-SCAN GATE WIDTH 51.0 MICROSECONDS .......... BSC
g) C-SCAN GATE DELAY 29.0 MICROSECONDS .......... BSC
h) C-SCAN GATE WIDTH 30.0 MICROSECONDS .......... BSC
i) SCAN WILL COVER AN AREA THAT IS 16.0 IN.
   AXIALLY BY 8.0 IN. CIRCUMFERENTIALLY .......... BSC
j) A NEW DATA TAPE HAS BEEN ACQUIRED ............ BSC
k) PRINTER IS CONFIGURED PROPERLY ................ BSC
l) NAME DATA FILE SETB-I-V-T ..................... BSC

COMPLETED
(INITIALS)

2) PERFORM SCAN.

3) SAVE DATA TO HARD DISK.
4) HAS ALL DATA BEEN STORED PROPERLY TO HARD DISK?

CIRCLE ONE: ✔ YES  NO

IF YES, PROCEED TO STEP 6 OF THIS FORM.

IF NO, CHECK ALL CONNECTIONS, AND INFORMATION ON SET FORM, PROCEED TO STEP 4.

5) RE-PERFORM SCAN.

6) WAS RE-SCAN DATA PROPERLY SAVED AND RETRIEVABLE?

CIRCLE ONE: ✔ YES  NO

IF YES, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, AND PROCEED TO STEP 6 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S) _______________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

7) OBTAIN A HARD COPY OF THE C-SCAN, B-SCAN, AND SPECTRAL C-SCAN.

8) WAS ALL REQUIRED DATA PRESENT ON EACH HARD COPY PER AMDATA ENGINEERING SPECIFICATION NUMBER 870128, SECTION 10, AND APPENDIX O.

CIRCLE ONE: ✔ YES  NO

IF YES, DO NOT DISCARD HARD COPY INFORMATION, PROCEED TO SECTION 2 OF THIS FORM.

IF NO, CHECK CONNECTIONS TO PRINTER, VERIFY THAT THE SYSTEM AND PRINTER ARE CONFIGURED PROPERLY.

9) OBTAIN C, B, SPECTRAL C-SCAN HARD COPIES.
10) WAS ALL REQUIRED DATA PRESENT.

CIRCLE ONE: YES NO

IF YES, NOTE IN SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM. DO NOT DISCARD THE HARD COPIES, PROCEED TO SECTION 2.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

SECTION 2

1) TRANSFER THE DATA FILES STORED ON THE HARD DISK TO TAPE.

2) VERIFY THAT DATA FILES ARE ON THE TAPE.

IF THE TRANSFER WAS SUCCESSFUL, PROCEED TO STEP 5 OF THIS FORM.

IF THE TRANSFER WAS UNSUCCESSFUL, VERIFY THAT THE PROPER SEQUENCE OF STEPS WAS PERFORMED TO TRANSFER DATA FROM ONE MEDIA TO ANOTHER. CHECK CASSETTE TO VERIFY THAT THE "SAFE" SWITCH IS IN THE OFF POSITION, AND PROCEED TO STEP 3 OF THIS FORM.

3) PERFORM "DATA FILE TRANSFER" SEQUENCE AGAIN.

4) VERIFY THAT DATA FILES ARE ON THE TAPE.

IF TRANSFER WAS SUCCESSFUL, NOTE IN THE SPACE BELOW WHAT WAS DONE TO CORRECT THE PROBLEM, PROCEED TO STEP 5 OF THIS FORM.

IF NO, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.

CORRECTIVE ACTION(S)
5) TRANSFER DATA FILES FROM TAPE BACK TO HARD DISK AND VERIFY DATA FILES WERE SUCCESSFUL TRANSFERRED.

IF YES, PROCEED TO STEP 6 OF THIS FORM.

IF NO, PROCEED WITH STEPS 3 AND 4 OF THIS SECTION AGAIN, THIS TIME CONCERNING DATA FILE TRANSFER FROM TAPE TO DISK.

CORRECTIVE ACTION(S) ____________________________________________

_________________________________________________________________

_________________________________________________________________

6) PERFORM STEPS 6 THROUGH 9 OF SECTION 1 OF THIS FORM. MAKE COMMENTS CONCERNING DEVIATIONS DURING EXECUTION OF THE ABOVE SET OF INSTRUCTIONS IN THE SPACE BELOW.

COMMENTS ______________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

7) COMPARE THE HARD COPIES OBTAINED FROM SECTION 1 OF THIS FORM AGAINST THE HARD COPIES OBTAINED FROM SECTION 2 OF THIS FORM.

8) WERE THE AMPLITUDE RESPONSES ON THE A AND C-SCANS THE SAME?

CIRCLE ONE:  YES  NO

IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.

DIFFERENCES IN AMPLITUDE RESPONSE _______________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

CTP-0100
Page 87

B-362
9) WERE THE PHASE RESPONSES ON THE A-SCANS THE SAME?
CIRCLE ONE: YES  NO
IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN PHASE RESPONSE

10) WERE THE FREQUENCY RESPONSES ON THE B, C, SPECTRAL C-SCANS THE SAME?
CIRCLE ONE: YES  NO
IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN FREQUENCY RESPONSE

11) WERE THE COLOR SCALES AND DISPLAY CLARITY SAME?
CIRCLE ONE: YES  NO
IF NO, MAKE COMMENTS NOTING DIFFERENCES IN SPACE BELOW.
DIFFERENCES IN COLOR SCALE AND DISPLAY CLARITY

***NOTE: IF THE HARD COPIES OBTAINED FROM SECTION 1 DO NOT MATCH THE HARD COPIES FROM SECTION 2, THERE WAS A COMPROMISE IN DATA FILE INTEGRITY DURING TRANSFER. ASSEMBLE ALL HARD COPIES TOGETHER, ATTACH TO THIS FORM, COMPLETE A PROBLEM/FAILURE REPORT, FORM N, AND NOTIFY MTI ELECTRONIC MAINTENANCE.
Data File Integrity

B-Scan

C-Scan (Spectral)
Make a selection or press <SHIFT>+<RECALL> for a menu

PRECEDED PAGE BLANK NOT FILMED
Data File Integrity (From data tape)

L-Scan

ORIGINAL PAGE
COLOR PHOTOGRAPH

PREceding PAGE BLANK NOT FILMED
Data File Integrity (From Data Tape)

B-Scan

C-Scan (Spectral)
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