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April 1996
REV. A

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GENCORP
AEROJET

**Advanced Microwave Sounding Unit-A
Performance Verification Plan**

**Contract No: NAS 5-32314
CDRL: 022**

Submitted to:

**National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771**

Submitted by:

**Aerojet
1100 West Hollyvale Street
Azusa, California 91702**

Aerojet

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APPENDIX

A	Integrated Manufacturing And Instrument Test Plan (IMITP)
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Section 1

SCOPE

1.1 Overview

In accordance with the performance verification requirements given in Section 3 of Performance Assurance Requirements (PAR) for EOS and METSAT Instruments, GSFC S-480-79, this document presents a Verification Plan for the AMSU-A instrument. This plan is submitted in response to Contract NAS 5-32314, CDRL 022..

Section 2

APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 National Aeronautics and Space Administration (NASA)

- | | |
|-----------------------------------|---|
| GSFC-S-480-80 | Performance and Operation Specification for the
EOS/METSAT Integrated Programs AMSU-A Instrument.
(POS) |
| GSFC-S-480-79 | Performance Assurance Requirements for the Earth
Observing System (EOS) & Meteorological Satellites
Project (METSAT) Advanced Microwave Sounding
Unit - A.
(PAR) |
| GSFC-422-11-12-01 | General Interface Requirements Document for EOS
Common Spacecraft/Instruments-EOS PM Project.
(GIRD) |
| GSFC-422-11-12-02 | Unique Instrument Interface Document for the AMSU-A-
EOS PM Project.
(UIID) |
| RCA IS-3267415 | METSAT General Instrument Interface Specification.
(GIIS) |
| RCA IS-2617547,
RCA-IS-2624483 | AMSU-A Unique Instrument Interface Specification.
(UIIS) |

2.2 Aerojet

- | | |
|----------|--|
| AE-26607 | Antenna Subsystem Specification |
| AE-26608 | Receiver Subsystem Specification |
| AE-26609 | Signal Processor and Power Distribution Subsystem
Specification |
| AE-26611 | Ground Support Equipment Specification |

verification method and the level of build-up at which the verification of each requirement in the POS, GIRD, UIID, UIIS, GIIS, and applicable sections of the PAR is accomplished.

3.1.2 Performance Verification Procedures

Verification Procedures (CDRL 412) shall be generated for all inspection, demonstration, and test requirements. Verification Procedures cover all inspections, demonstrations, and tests performed at the system and subsystem level, and detail the process required to verify that the system and subsystem requirements are met. AMSU-A Test Procedure and Process Specifications are shown in Figure 1.

3.1.3 Verification Analyses

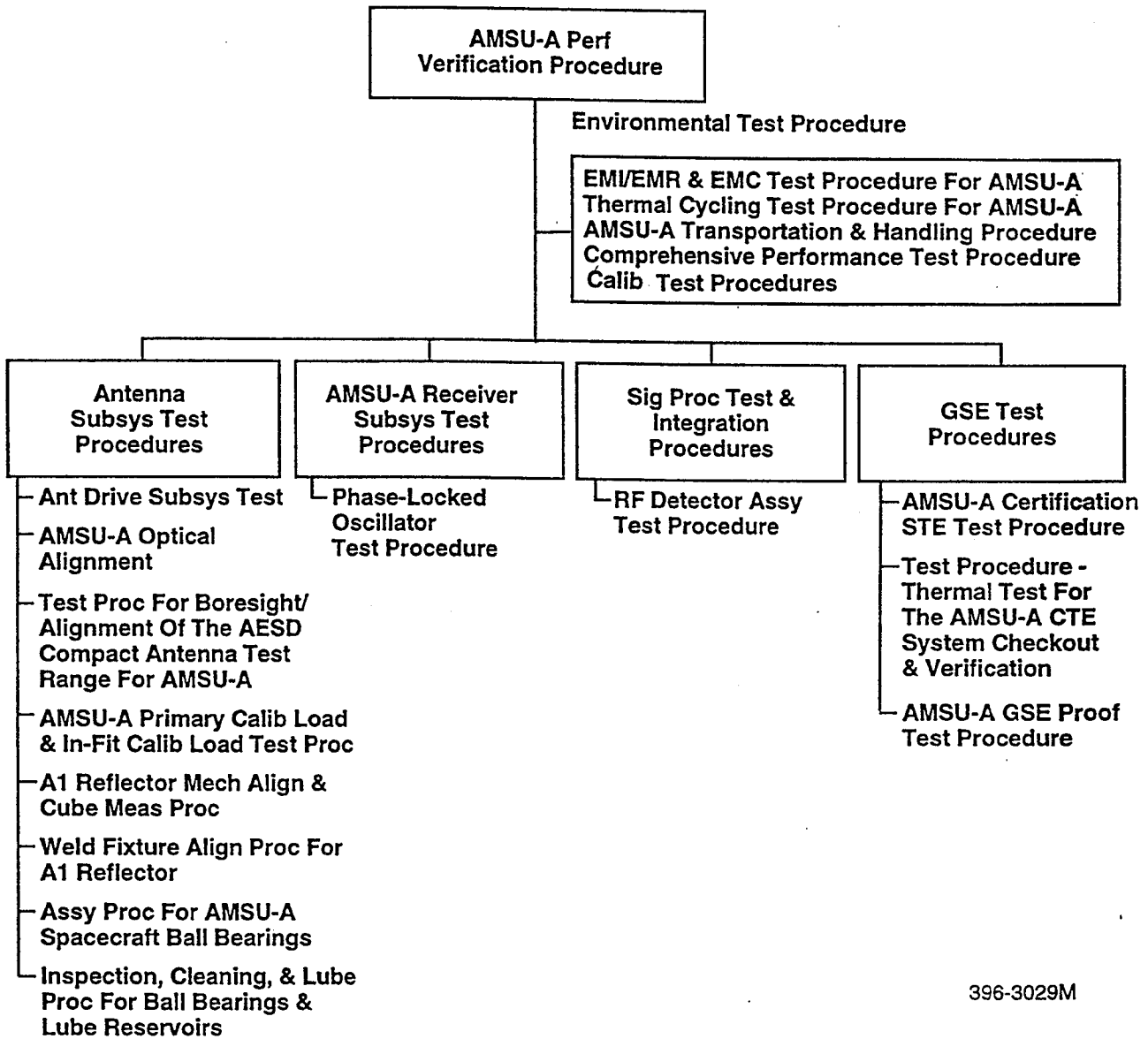
Analyses necessary to support Performance Verification are submitted under several major CDRL items well before the inspection, demonstration, and test activities to allow NASA ample review time. These analyses include: the Radiometric Math Model (CDRL 101), the Structural Math Model (CDRL 102), the Thermal Math Model (CDRL 103), Stress Analyses Reports (CDRL 113), and Worst-Case Analyses (CDRL 112). Miscellaneous analyses are submitted as Engineering Analyses Reports (CDRL 104). All analyses identified by the Performance Verification Matrix as required for verification will be submitted as a CDRL item.

3.1.4 Verification Reports

All Performance Verification inspections, demonstrations, and tests will be conducted under Quality Assurance witnessing. After an inspection, demonstration, or test is completed, a copy of the signed-off Data Sheet will be incorporated into the Performance Verification Report (CDRL 208). In most instances, the Verification Report is simply a cover sheet, brief overview of the results (including degree to which the objectives were accomplished, and other significant results), and the attached Data Sheet copies.

3.1.5 Final Verification Reporting

A compilation of the Performance Verification results on a unit will be assembled into a Final Verification Report and will be submitted with the unit at Pre-Ship Review as part of the Specification Compliance and Calibration Data Book.



396-3029M

Figure 1 AMSU-A Test Procedure and Process Specifications

Section 4

VERIFICATION TEST PLAN

4.1 General Test Flow Overview

The detailed hardware implementation flow diagram for the EOS/AMSU-A and METSAT/AMSU-A program is provided in IMIPT Attachment A. The simplified test sequence is shown in figure 2.

4.1.1 Subassembly and Subsystem Test Flow

After initial integration of the components into AMSU-A subsystems, the three subsystems will be independently verified. Verification requirements are provided in the subsystem verification specifications.

4.1.1.1 Antenna Subsystem - The comprehensive test flow shown in figure 3 will provide design, performance, and alignment verification of the Antenna Subsystem.

All component parts of the antenna assemblies will undergo initial visual inspection and mechanical dimensional measurements to eliminate obvious nonconformance conditions. Contour measurements will be performed on all reflector surfaces to ensure conformity to surface tolerance requirements.

RF component testing will be performed on the feedhorns, RF multiplexers, and warm loads to evaluate their performance before integration into higher-level assembly. VSWR tests will be performed on the multiplexer/feedhorn combinations to assure a proper match between the two components.

The drive assembly will be verified by conducting a series of tests including starting torque, motor commutation, back EMF, and speed characteristics to test procedures currently in existence. Final antenna drive subassembly tests will be performed at the system integration level with all related subassemblies installed and interconnected.

The reflectors, shrouds, feedhorns, warm loads, and drive motors will next be assembled onto the instrument mechanical structure, and optical alignment of the assembly will be performed to a detailed alignment procedure. This alignment will be used to optimize the position of each reflector's focal point relative to the phase center of its accompanying feedhorn. The alignment cube for each module will also be aligned and its position measured relative to the spacecraft mounting surface of the module.

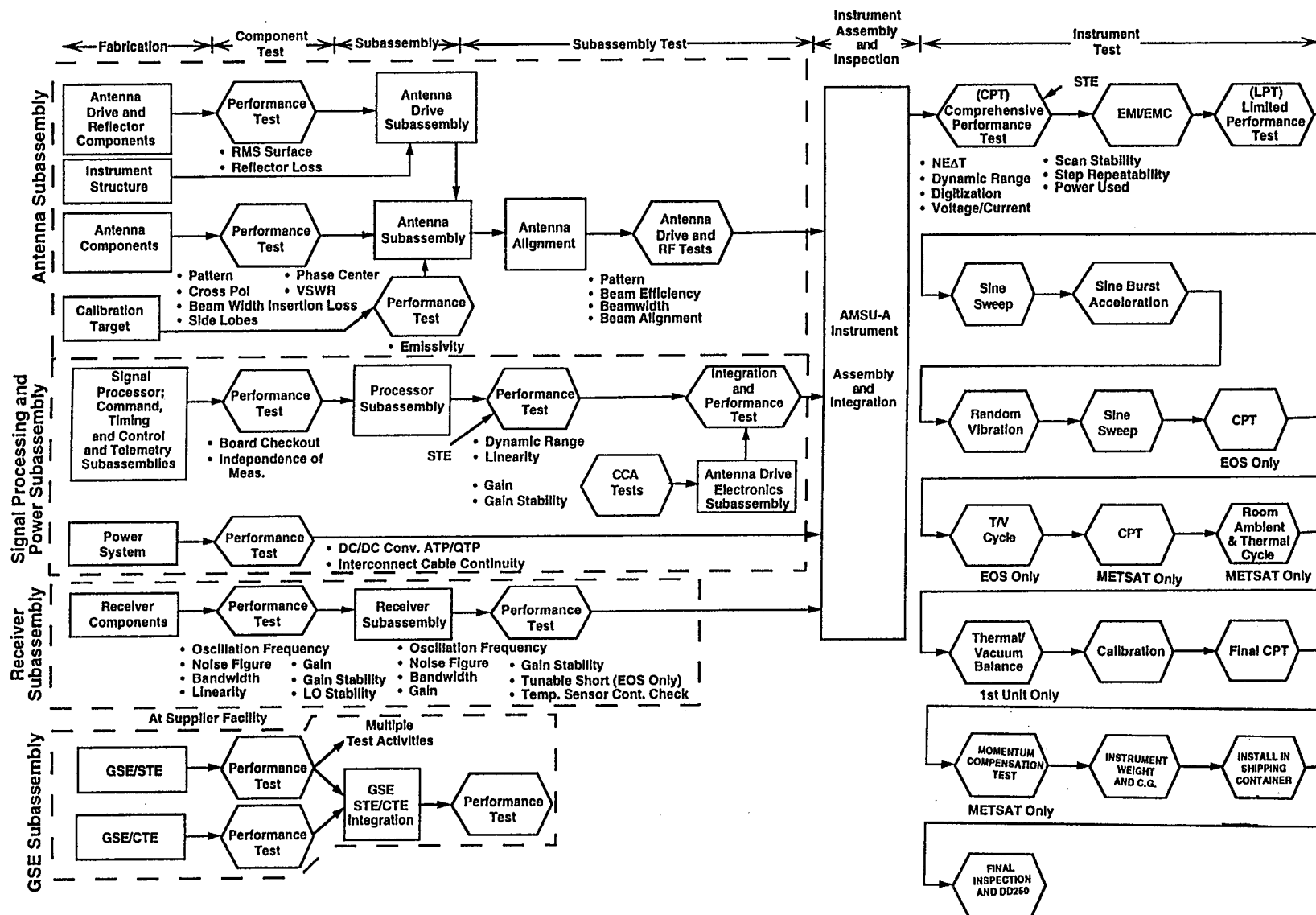
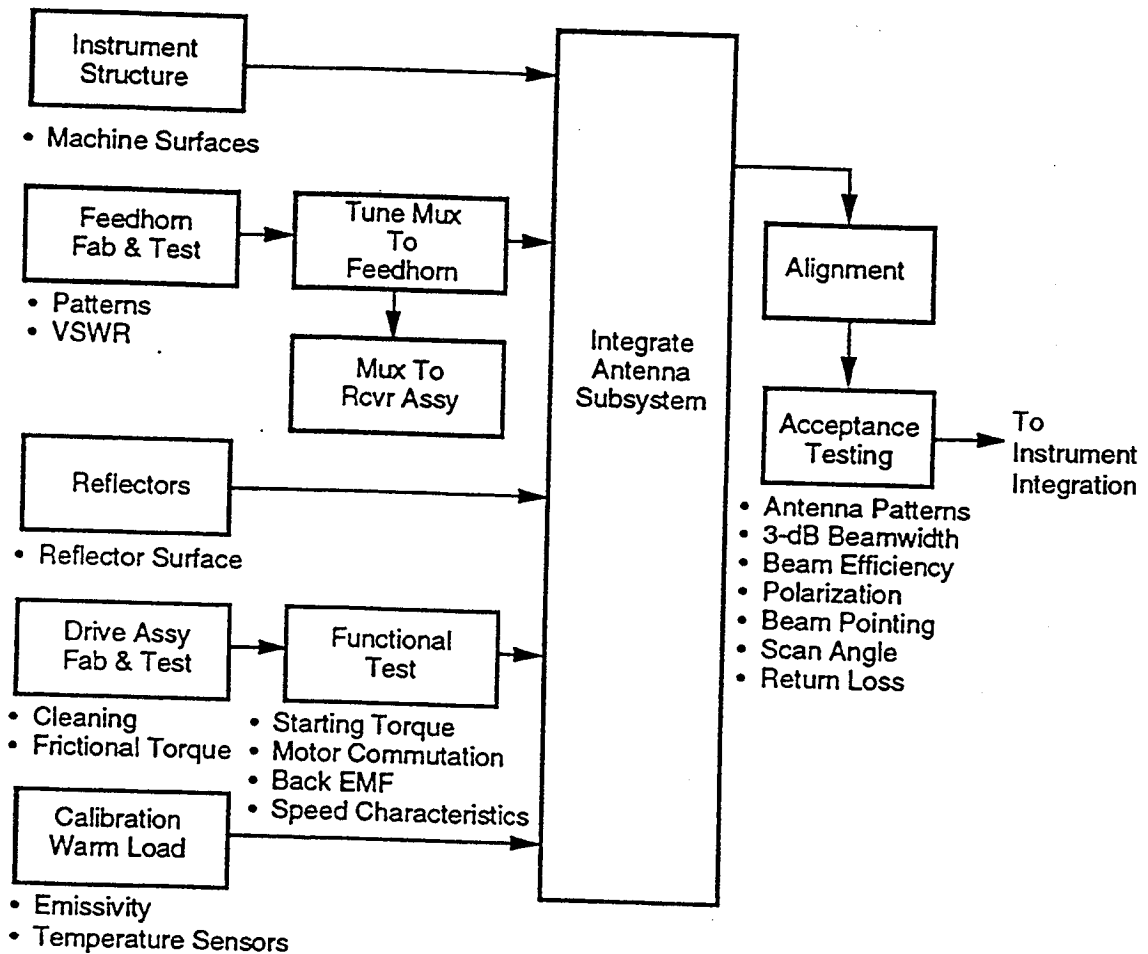


Figure 2 AMSU-A Verification Flow Diagram



594-3469M

Figure 3 Antenna Subsystem Test Flow

Acceptance testing of the antenna assembly consists of radiation pattern measurements, including beam width, beam pointing, and beam efficiency tests. A boresight and alignment procedure will be used to ensure that the beam pointing angle measurements conform to specification requirements.

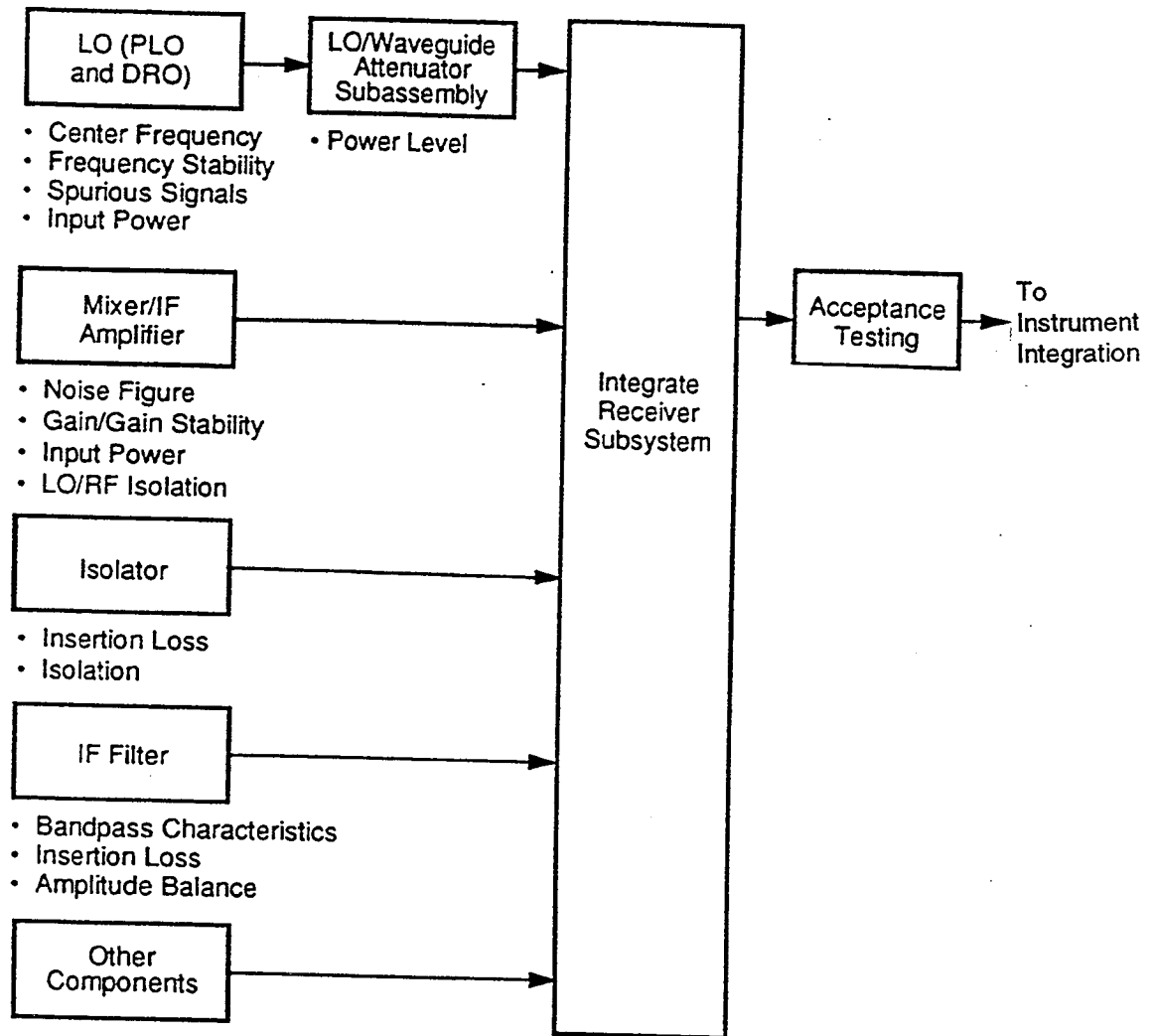
4.1.1.2 Receiver Subsystem - Verification of the performance of the Receiver subsystem begins at the part level with parts screening, burn-in, and destructive physical analyses (DPA). It then proceeds to the component level for performance verification testing, and ultimately to the assembly level for testing to ensure that performance satisfies all requirements. Tests required to verify the minimum performance of key receiver components are delineated in Figure 4. These performance characteristics will be verified prior to the integration of the receiver subassemblies into the AMSU-A1 and AMSU-A2 modules.

Once the Receiver subsystem assemblies are integrated, the performance tests will be conducted in accordance with the applicable test procedure. Once requirements are met, the receiver will be integrated into the instrument for further testing.

4.1.1.3 Signal Processing and Power Subassembly - Verification of Signal Processor performance is outlined in Figure 5. It will begin at the parts level with screening, burn-in, DPA in accordance with the subcontractor SOW (see Figure 6). Parts will then be assembled into circuit card assemblies (CCA). Using appropriate test fixtures, each CCA will then be individually tested to a dedicated test procedure to assure proper operation. CCAs will next be integrated with the signal processor card rack assembly and subsystem verification will then be performed. Final verification will be performed after integration of the subsystem.

RF detectors used in the analog signal processor will be screened and qualified for acceptance by the supplier. They will be tested for linearity and frequency response before integration. After characterization, the detector will be integrated into the detector/preamplifier subassemblies, then gain, offset, linearity, and response tests will be performed.

The power distribution portion of the subsystem will be verified as shown in figure 6.



594-3467M

Figure 4 Receiver Subsystem Test Flow

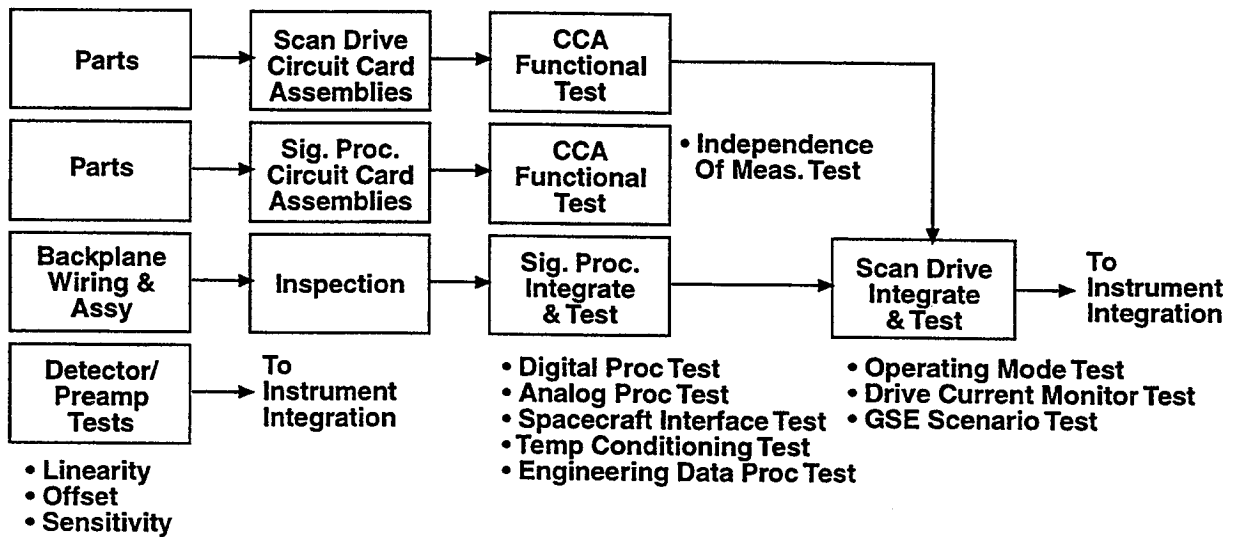
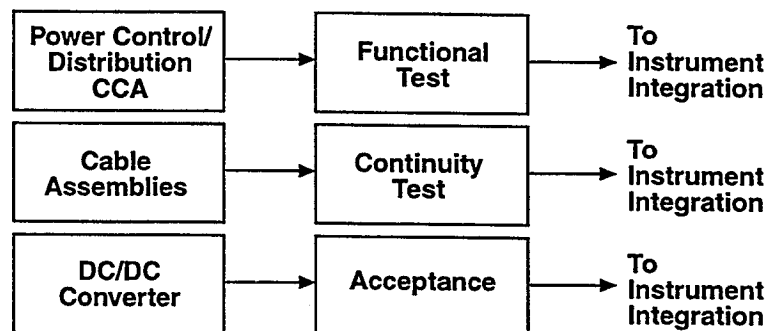


Figure 5 Signal Processor Test Flow



396-3033M

Figure 6 Power Subsystem Test Flow

Verification of the DC/DC Converter will be performed by the supplier and monitored by Aerojet.

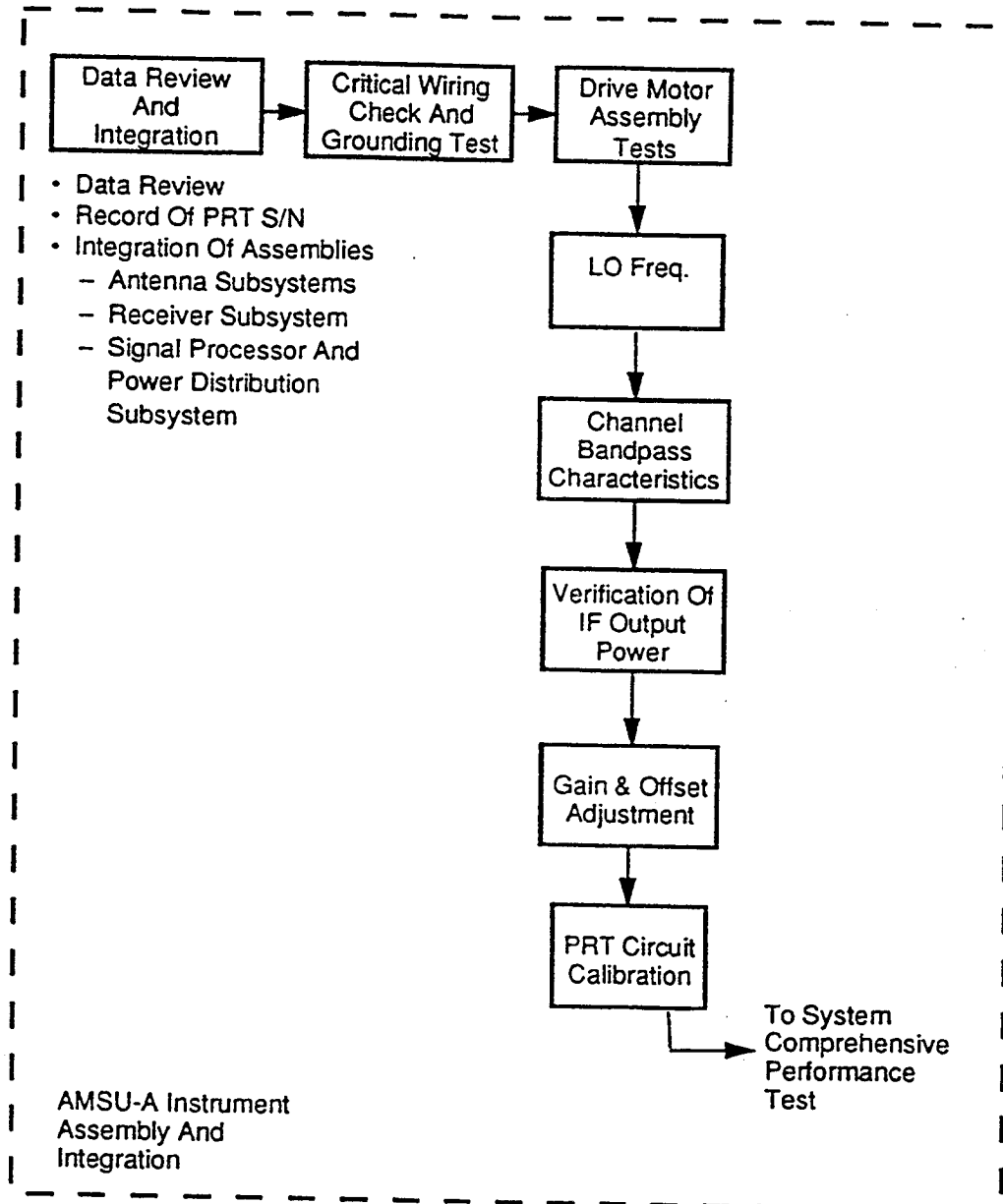
Interconnecting cables for the AMSU-A instrument will be subjected to continuity tests prior to integration. The cabling design will minimize the need for point-to-point wiring tests after integration.

A special test fixture will be constructed to test the power distribution and control assemblies. It will consist of a simple test panel that supplies simulated commands and reads status signals. It will work in conjunction with a DC/DC Converter emulator which replaces the DC/DC converter during initial system testing.

4.1.2 Instrument Test Flow

The instrument assembly and integration test flow is shown in Figure 7. The process will begin with a review of data collected on the parts and subassemblies prior to integration, then part numbers will be recorded and assemblies will be integrated. Next a critical wiring check and grounding test will be conducted. The drive motor assembly will be tested to verify multiple parameters. Several electronics characterization and calibration procedures will be completed before the instrument proceeds to CPT. CPT will consist of the elements shown in Figure 8. The instrument STE will interface with the instrument, providing power, commands, and real-time data evaluation. Instrument LPT (limited performance test) will be performed to verify performance of the instrument. LPT will consist of the element shown in Figure 9.

Instrument CPT will be followed by qualification/acceptance testing, with limited performance tests (LPT) performed between each set of tests as shown in the IMITP (Appendix-A).



594-3470M

Figure 7 Instrument Level Test Flow

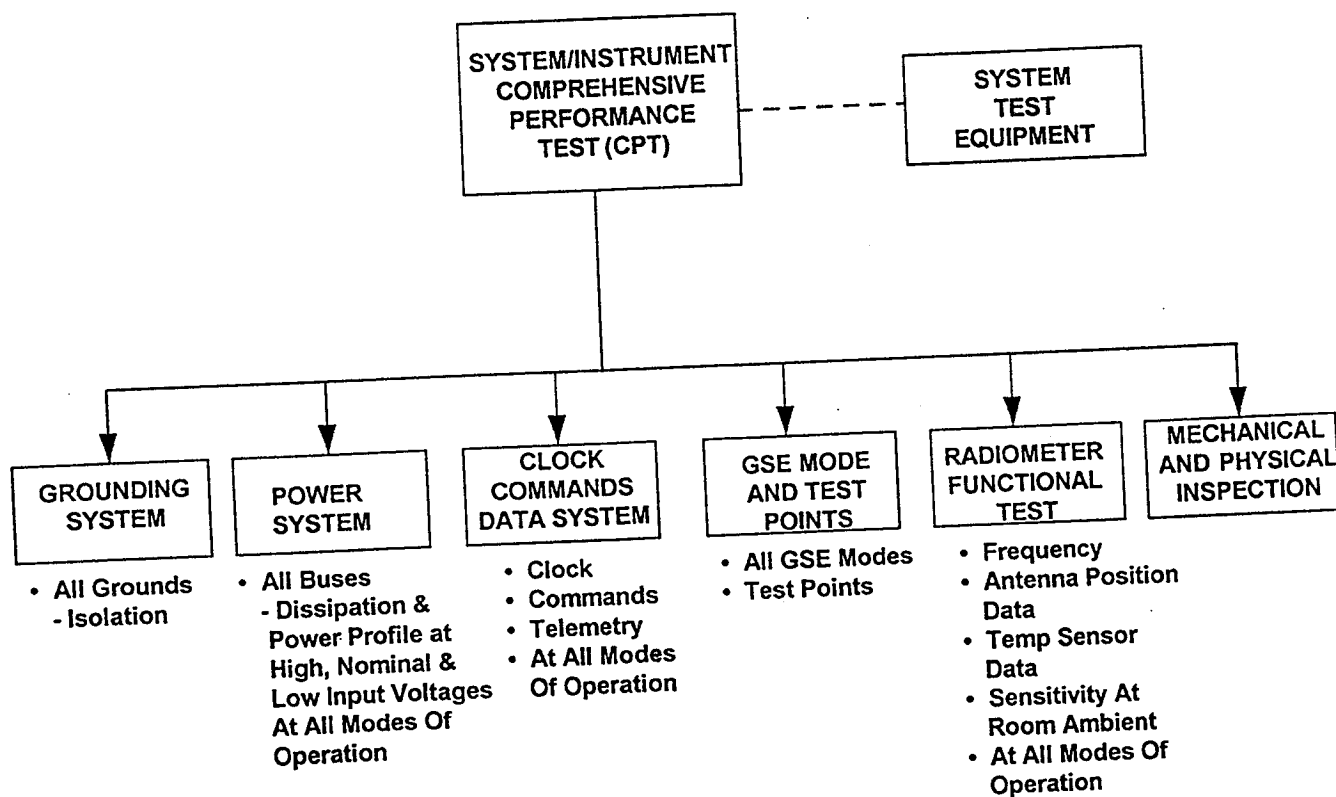


Figure 8 Instrument Comprehensive Performance Test

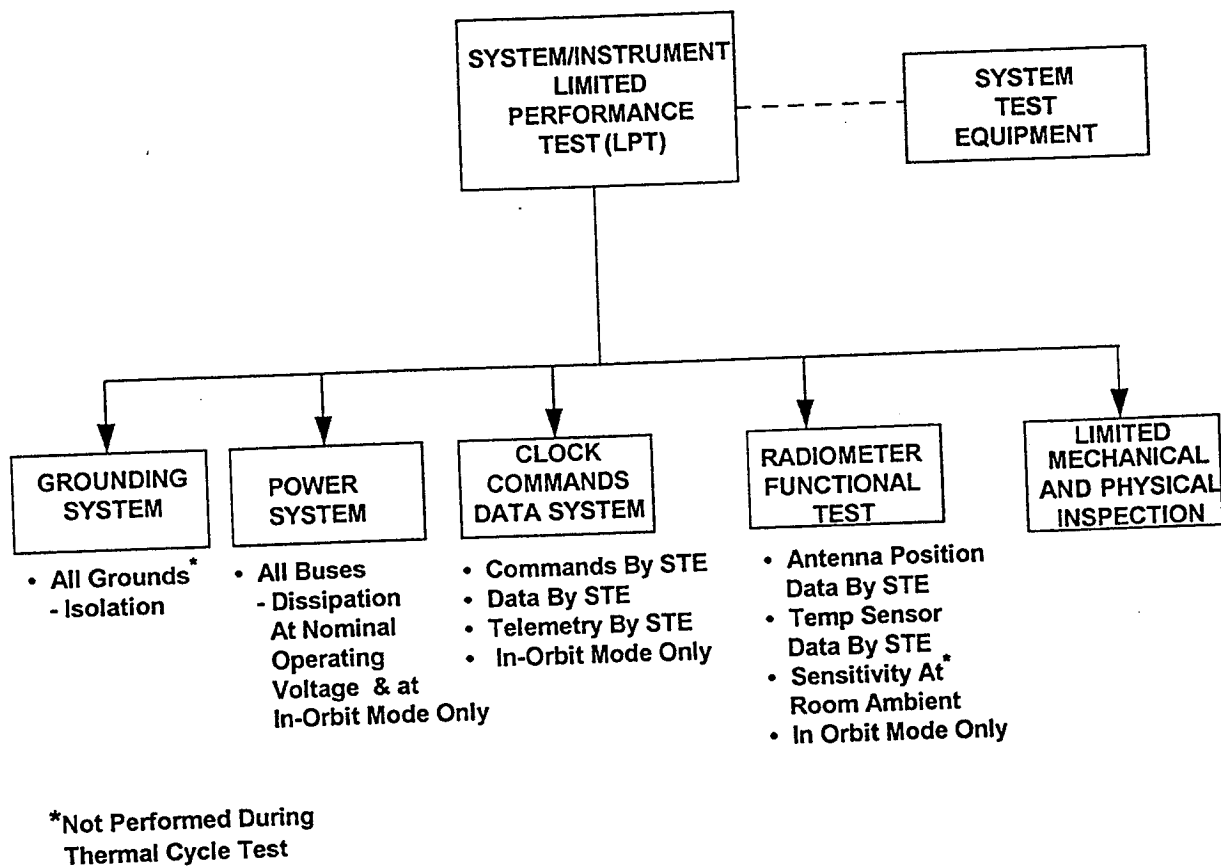


Figure 9 Instrument Limited Performance Test

4.1.3 Ground Support Equipment Test Flow

Ground Support Equipment Verification requirements are provided in the AMSU-A Ground Support Equipment Specification.

Self-test programs will be exercised, and the data produced by the data processing equipment will be compared with the expected results to verify their proper operation.

All significant AMSU-A signals can be displayed on the CRT by selecting them from the operator console. The input power will be measured by calibrated voltmeters.

The blackbody calibration targets will be inspected to verify that they are properly located to fill the instrument's field of view and are isolated from the instrument. The calculations of their effective emissivity will be provided for verification of the emissivity requirement. Their temperature accuracy and gradients will be measured to verify specification requirements.

4.1.3.1 Fixtures and Containers - Handling fixtures will be verified by proof tests as specified in the PAR. Test fixtures and shipping containers will be verified by inspection of the hardware versus the engineering drawings to which they were built.

Section 5

PERFORMANCE VERIFICATION MATRIX

This section presents a AMSU-A Performance Verification Matrix. The matrix is shown in Table I. It will be used throughout the program for identifying verification needs and tracking verification activities.

**Performance and
Operation Specification
S-480-80**

Table V Verification Matrix

POS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.0	Performance Requirements	X										
3.1	Operational Requirements	X										
3.1.1	Nominal Orbital Parameters	X										
3.1.2	Operational Modes	X										
3.2	Channel Assignments/Requirements	X										
3.2.1	Center Frequency					X	X		X	X	X	AE-26002/6 & AE-26516/1/2/7/8
3.2.2	Channel Bandwidth					X	X		X	X	X	AE-26002/6 & AE-26516/1/2/7/8
3.2.3	Out-of-Band Rejection					X	X			X	X	AE-26002/6
3.2.4	Stop-bands					X	X			X	X	AE-26002/6
3.2.5	Receiver Subsystem Implementation	X										
3.2.6	Gain Stability					X	X			X	X	AE-26002/6
3.2.7	Center Frequency Stability				X	X	X			X	X	AE-26002/6
3.3	Sample Period and Integration Time								X			AE-26156/3/4/9/10
3.4	Temperature Sensitivity - NEΔT					X				X	X	AE-26156/5/6/11/12
3.5	Calibration	X										
3.5.1	In-Flight Calibration				X	X	X			X	X	AE-26156/5/6/11/12

**Performance and
Operation Specification
S-480-80**

POS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.5.2	Calibration Accuracy and Repeatability	X										
3.5.2.1	General					X			X	X	X	AE-26156/5/6/11/12
3.5.2.2	Analyses				X				X	X	X	AE-26156/5/6/11/12
3.5.2.3	Calibration Algorithm				X				X	X	X	CAL. LOG BOOK
3.6	System Dynamic Range and Linearity					X			X	X	X	AE-26156/5/6/11/12 & CAL. LOG BOOK
3.7	Antenna System	X										
3.7.1	Beamwidth					X		X		X	X	AE-26002/4
3.7.2	Polarization					X		X		X	X	AE-26002/4
3.7.3	Beam Scanning	X										AE-26002/4
3.7.3.1	Cross-Track Scan		X	X				X		X	X	AE-26002/4
3.7.3.2	Scan Motion and Pattern		X			X		X		X	X	AE-26002/4
3.7.3.3	Scan Synchronization					X		X	X	X	X	AE-26002/1/2
3.7.3.4	Beam Pointing Accuracy					X		X		X	X	AE-26002/4
3.7.3.5	Beam Efficiency				X	X		X		X	X	AE-26002/4
3.8	Analog-to-Digital Electronics	X										
3.8.1	General					X	X	X	X			AE-26156/1/2/7/8

**Performance and
Operation Specification
S-480-80**

POS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.8.2	Multiplexer					X		X		X	X	AE-26659
3.8.3	Analog-to-Digital Converter					X		X		X	X	AE-26659
3.8.4	Independence of Measurements of Each Channel					X		X		X	X	AE-26659
3.9	Hardware Model Requirements	X										
3.9.1	Protoflight Model		X							X		Shop Order
3.9.2	Flight Model		X								X	Shop Order
3.9.3	Drill Template		X	X			X					Shop Order
3.10	Math Model Requirements	X										
3.10.1	Radiometric Math Model				X							CDRL 101
3.10.2	Structural Math Models				X							CDRL 102
3.10.3	Thermal Analytical Models				X							CDRL 103
4.0	AMSU-A Implementation	X										
4.1	General	X										
4.2	Life				X		X		X			Report #9831
4.2.1	Storage Life				X		X		X			Report #9831
4.2.2	Mission Life				X		X		X			Report #9831

**Performance and
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S-480-80**

POS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o r m a t i o n	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
4.3	Single-Point Failures				X				X			REPORT # 10378
4.4	Electrical Requirements	X										
4.4.1	Grounding and Shielding		X			X			X	X	X	AE-26156/1/2/7/8
4.4.2	Connector Requirements		X	X		X			X	X	X	AE-26156/3/4/9/10
4.4.3	Power System					X	X		X	X	X	AE26156/3/4/9/10
4.4.4	AMSU-A Clock and Command Requirements					X			X	X	X	AE26156/3/4/9/10
4.4.5	Data System					X			X	X	X	AE26156/3/4/9/10
4.4.6	Test Points					X			X	X	X	AE26156/3/4/9/10
4.5	Mechanical Requirements	X										
4.5.1	Mechanical Outline and Weight Limits		X	X		X			X	X	X	Shop Order
4.5.2	Mounting of the AMSU-A		X						X	X	X	Shop Order
4.5.3	Scan Mechanisms	X										AE-26002/1/2
4.5.3.1	Torque Margin				X		X			X	X	AE-26002/1/2
4.5.3.2	Motor Stall Vulnerability				X							REPORT
4.5.3.3	Motor Type		X				X			X	X	AE-26002/1/2
4.5.3.4	Shaft "Encoders"		X			X	X		X	X	X	AE-26002/1/2

**Performance and
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POS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
4.6.2.3	Environmental Fluxes				X				X	X	X	CDRL 103
4.6.3	Design Requirements	X										
4.6.3.1	Nominal Operating Temperatures				X	X			X	X	X	AE-26156/5/6/11/12
4.6.3.2	Nominal Relative Humidity Range											? Ely
4.6.3.3	Survivable Temperature Range				X	X	X		X	X	X	AE-26151/7
4.6.3.4	Standby and Launch Phase Mode Heating			X		X						AE-26151/7
4.6.3.5	Thermal Monitoring					X			X	X	X	AE-26156/3/4/9/10
4.6.3.6	Thermal Interface Control Drawings		X						X	X	X	1356863/1356012
4.7	Electromagnetic Interference				X	X			X	X	X	AE-26151/X
4.8	Space Radiation Dose Level			X								Report
4.9	AMSU-A/Spacecraft Interface	X										
5.0	Ground Support Equipment Requirements	X										
5.1	General	X										
5.2	Special Test Equipment	X										
5.2.1	General	X										
5.2.2	Requirements			X	X	X		X	X			AE-26157/AE-26156

**Performance and
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POS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.3	Calibration Test Equipment	X										
5.3.1	General	X										
5.3.2	Blackbody Calibration Targets	X										
5.3.2.1	General	X										
5.3.2.2	Requirements				X	X	X		X			AE-26002/5 & AE-26156/5/6/11/12
5.3.3	Blackbody Spacecraft Test Targets	X										
5.3.3.1	General	X										
5.3.3.2	Requirements				X	X	X					Report
5.3.4	Target Temperature Control Unit	X										
5.3.4.1	General	X										
5.3.4.2	Control Console				X	X	X		X			Report
5.3.4.3	Cables		X									Shop Order
5.4	Handling Fixture		X	X			X		X	X	X	Drawings
5.5	Test Fixtures		X	X			X		X	X	X	Drawings
5.6	Drill Jigs		X	X			X		X	X	X	Drawings
5.7	Shipping/Storage Containers		X						X	X	X	AE-26154/AE-26357

**Performance and
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S-480-80**

POS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
6.0	Performance Assurance Requirements	X										
6.1	General	X										
6.1.1	Test and Calibration Procedure	X										
6.1.2	Documentation of Tests and Calibrations	X										
6.1.3	Performance Checks	X										
6.1.4	Retesting	X										
6.1.5	Limits Programs	X										
6.2	System Performance Test Requirements	X										
6.2.1	General	X										
6.2.2	Functional Test Philosophy	X										
6.2.3	Band-Pass Characteristics					X	X			X	X	E-24937/AE-2486
6.2.4	System Linearity					X	X		X	X	X	AE-26156/5/6/11/12
6.2.5	Temperature Sensitivity - NEΔT					X			X	X	X	AE-26156/5/6/11/12
6.2.6	Antenna Pattern Measurements	X										
6.2.6.1	Pattern Center Frequency					X		X		X	X	AE-26002/4
6.2.6.2	Dynamic Range and Amplitude Accuracy				X	X						AE-26002/4

**Performance and
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POS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
6.2.6.3	Number of Planes					X		X		X	X	AE-26002/4
6.2.6.4	Measurement Polarization					X		X		X	X	AE-26002/4
6.2.6.5	Angular Range and Interval					X		X		X	X	AE-26002/4
6.2.6.6	Beam Positions Required					X		X		X	X	AE-26002/4
6.2.6.7	Tunable Short Test					X		X		X		AE-26002/4
6.2.7	Results of Tests	X										
6.2.8	Miscellaneous Test Requirements	X										
6.2.8.1	Life Testing	X										
6.2.8.2	Spacecraft Integration Test	X										
6.3	System Calibration Requirements	X										
6.3.1	General	X										
6.3.2	Results of Calibrations					X			X	X	X	AE-26156/5/6/11/12
6.3.3	System Calibration Test Requirements	X				X			X	X	X	AE-26156/5/6/11/12
6.3.3.1	General					X			X	X	X	AE-26156/5/6/11/12
6.3.3.2	Special Test Requirements					X			X	X	X	AE-26156/5/6/11/12
6.4	System Qualification/Acceptance Requirements	X										

**Performance and
Operation Specification
S-480-80**

Performance and Operation Specification S-480-80		Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
POS Para.	Requirements											
7.0	Software Requirements	X										
7.1	General		X						X	X	X	CDRL 008
7.2	Instrument Flight Software/Firmware					X			X	X	X	CDRL 306
7.3	In-Flight Operations Software					X			X			AE-26602
7.4	Instrument Ground Software					X			X			AE-26602
7.5	Command List and Description		X						X	X	X	CDRL 303
7.6	Software					X			X	X	X	AE-26156/5/6/11/12

**Unique Instrument
Interface Document
GFSC 422-12-12-02**

UIID Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.0 (16)	Survival Heater Redundancy		X	X					X	X	X	Shop Order
5.0 (17)	Instrument Mounting Orientation	X										
5.0 (18)	EMI/EMC Requirements	X										
5.0 (19)	RE03 Testing					X	X			X		AE-26151/5
5.0 (20)	Alignment Cube Location		X						X	X	X	Shop Order
5.0 (21)	Verification Limit Loads				X	X			X	X	X	AE-26151/1
5.0 (22)	CE06 Testing											AE-26151/5
5.0 (23)	RE02 Testing											AE-26151/5
5.0 (24)	RE02 Special Frequency Testing											AE-26151/5

**General Interface
Requirements Document
SFC 422-11-12-01**

GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.0	Mechanical Requirements	X										
3.1	Instrument Envelopes	X										
3.11	Instrument Launch Mode Envelope	X										
3.1.2	Instrument On-Orbit Envelope	X										
3.1.3	Instrument Envelope Documentation	X										
3.2	Fields of View	X										
3.2.1	Fields of View Allocation	X							X	X	X	
3.3	Mass Properties	X										
3.3.1	Instrument Mass Allocation	X										
3.3.2	Instrument Mass Documentation					X			X	X	X	Shop Order
3.3.3	Instrument Mass Variability	X										
3.3.3.1	Instrument Mass Variability Documentation	X			X							
3.3.3.2	Center of Mass Measurement and Documentation				X				X	X	X	Shop Order
3.3.4	Moments of Inertia	X										
3.3.4.1	Moments of Inertia Accuracy				X				X	X	X	Shop Order
3.3.4.2	Moments of Inertia Documentation	X										

**General Interface
Requirements Document
SFC 422-11-12-01**

GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.3.4.3	Moments of Inertia Variation Documentation	X										
3.4	Mounting	X										
3.4.1	Mounting Method	X										
3.4.1.1	Kinematic Mount Requirement	X										
3.4.2	Mounting Interface	X										
3.4.2.1	Mounting Interface Documentation	X										
3.4.2.2	Mounting Hole Coordinates and Dimensions	X										
3.4.2.3	Mounting Hole Position and Tolerance		X	X					X	X	X	Shop Order
3.4.3	Mounting Hardware	X										
3.4.3.1	Mounting Hardware Provider	X										
3.4.3.2	Kinematic Mount Provider	X										
3.4.3.3	Mounting Hardware Documentation	X										
3.4.3.4	Mounting Surface Requirements	X										
3.4.3.5	Shims	X										
3.4.3.6	Mounting Fasteners	X										
3.4.4	Mounting Location	X										

**General Interface
Requirements Document
SFC 422-11-12-01**

GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.4.4.1	Instrument Mounting Location											
3.4.4.2	Mounting Location Documentation											
3.4.5	Drill Templates	X										
3.4.5.1	Drill Template Usage		X						X	X	X	Shop Order
3.4.5.2	Drill Template Fabrication Requirements	X										
3.4.5.3	Drill Template Provider		X									Shop Order
3.5	Alignment	X										
3.5.1	Optical Cube Requirements		X				X					Shop Order
3.5.1.1	Optical Cube Surface Area		X				X			X	X	Shop Order
3.5.1.2	Optical Cube Surface Orthogonality		X				X			X	X	Shop Order
3.5.1.3	Optical Cube Documentation		X				X			X	X	Shop Order
3.5.1.4	Optical Cube Quality		X				X			X	X	Shop Order
3.5.1.5	Optical Cube Cover		X				X			X		Shop Order
3.5.2	Interface Alignment Cube (IAC)		X							X	X	Shop Order
3.5.3	Alignment Parameters				X	X		X		X	X	AE-26155
3.5.4	Alignment Responsibilities	X										

**General Interface
Requirements Document
SFC 422-11-12-01**

GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.5.5	Alignment Angles	X										
3.5.6	Pointing Definitions	X										
3.5.6.1	Pointing Accuracy	X										
3.5.6.2	Pointing Knowledge (Real Time or Post-processed)	X										
3.5.6.3	Pointing Stability	X										
3.6	General Structural Design Requirements	X										
3.6.1	Structural Support	X										
3.6.2	Instrument Structural Dynamics	X										
3.6.2.1	Minimum Fixed-Base Frequency					X			X	X	X	AE-26151/1
3.6.2.2	Low Mass Component Fixed-Base Frequency				X				X	X	X	CDRL 113
3.6.3	Interface Design Limit Loads Requirements	X										
3.6.3.1	Limit Loads Application				X				X	X	X	CDRL 113
3.6.3.2	Limit Loads Application Axis				X				X	X	X	CDRL 113
3.6.3.3	Interface Limit Loads				X				X	X	X	CDRL 113
3.6.3.3.1	Design Limit Loads				X				X	X	X	CDRL 113
3.6.3.3.2	Qualification Loads				X				X	X	X	CDRL 113

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.6.4	Combined Structural Dynamics Analysis	X										
3.6.4.1	Combined Structural Dynamics Analysis Responsib	X										
3.6.4.2	Combined Structural Dynamics Analysis Results	X										
3.6.4.3	Coupled Loads Analysis Results	X										
3.6.5	Pressurized System Design				X				X	X	X	CDRL 113
3.7	Finite Element Model				X				X	X	X	CDRL 102
3.8	Instrument Mass Model	X										
3.9	Instrument Mechanisms	X										
3.9.1	Caging During Test and Launch	X										
3.9.2	Captive Hardware		X						X	X	X	Shop Order
3.10	Instrument Disturbance Allocations	X										
3.10.1	Constant Disturbance Torque Limits				X				X			Report
3.10.2	Periodic Disturbance Torque Limits				X				X			Report
3.10.3	Periodic Disturbance Torque Limits for Linear Forces				X				X			Report
3.10.4	Torque Profile Documentation	X										
3.10.5	Thrust Direction Definition	X										

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SFC 422-11-12-01**

GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e t e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.10.5.1	Angular Momentum	X										
3.10.5.1.1	Allowable Angular Momentum				X				X			Report
3.10.5.1.2	Angular Momentum Documentation	X										Shop Order
3.11	Access	X										
3.11.1	Access Identification	X										
3.11.2	General Access		X						X	X	X	Shop Order
3.12	Handling Fixtures					X	X			X	X	AE-26196
3.13	Mounting Orientation		X						X	X	X	1356863/1356012
3.14	Instrument Spacecraft I&T Mounting		X						X	X	X	1356863/1356012
3.15	Non-Flight Equipment	X										
3.16	Launch Site Equipment Installation and Removal	X										
3.16.1	Non-Flight Equipment		X						X	X	X	Shop Order
3.16.2	Flight Equipment		X						X	X	X	Shop Order
4.0	Thermal Requirements	X										
4.1	Thermal Interface Description	X										CDRL 516
4.2	Thermal Design	X										

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
4.2.1	Instrument Thermal Design				X	X			X	X	X	CDRL 103
4.2.2	Instrument Survival				X				X	X	X	CDRL 103
4.3	Heat Transfer	X										
4.3.1	Heat Transfer to Spacecraft				X				X	X	X	CDRL 103
4.3.2	Segregation of Instrument Heat Sources	X										
4.3.3	Location of Thermal Control Hardware	X										
4.3.4	Environmental Heat Transfer				X				X	X	X	CDRL 103
4.4	Temperature	X										
4.4.1	Spacecraft Temperature Range				X				X	X	X	CDRL 103
4.4.2	Instrument Temperature Range	X										
4.50	Temperature Monitoring	X										
4.5.1	Mechanical Mounting Interface Temperature Monito	X										
4.5.2	Instrument Temperature Monitoring					X						Ae-26156
4.5.3	Temperature Sensor Location		X									Shop Order
4.6	Thermal Hardware	X										
4.6.1	Survival Heaters		X									Shop Order

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
4.6.1.1	Survival Heater Responsibility	X										
4.6.1.2	Survival Heater Control		X									Shop Order
4.6.1.3	Survival Heater Power					X			X	X	X	AE-26151/7
4.6.2	Thermal Control Hardware	X										
4.6.2.1	Thermal Control Hardware Responsibility		X									Shop Order
4.6.2.2	Thermal Control Hardware Documentation	X										
4.7	Thermal Models	X										
4.7.1	Surface Models				X				X	X	X	CDRL 103
4.7.2	Reduced Node Thermal Math Model				X				X	X	X	CDRL 103
4.7.3	Detailed Thermal Math Model				X				X	X	X	CDRL 103
5.0	Electrical Interface Requirements	X										
5.1	Electrical Interface Requirements	X										
5.1.1	Electrical Interfaces					X			X	X	X	AE-26156/9/10
5.1.2	Electrical Interface Definitions	X										
5.1.2.1	Power Interface					X			X	X	X	AE-26156/9/10
5.1.2.2	Quiet Power Bus					X			X	X	X	AE-26156/9/10

**General Interface
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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.1.2.3	Noisy Power Bus					X			X	X	X	AE-26156/9/10
5.1.2.4	Survival Heater Power Bus					X			X	X	X	AE-26156/9/10
5.2	Power Specifications					X			X	X	X	AE-26156/9/10
5.2.1	Instrument Power Harness		X						X	X	X	Shop Order
5.2.2	Average and Peak Power Consumption					X			X	X	X	AE-26156/9/10
5.2.3	Allocation of Instrument Power					X			X	X	X	AE-26156/9/10
5.2.4	Instrument Power-Level Documentation	X										
5.2.5	Power Characteristics					X			X	X	X	AE-26156/9/10
5.2.5.1	Voltage					X			X	X	X	AE-26156/9/10
5.2.5.1.1	Primary Instrument Voltage					X			X	X	X	AE-26156/9/10
5.2.5.1.2	Unannounced Removal of Power					X			X	X	X	AE-26156/9/10
5.2.5.1.3	Input Ripple					X			X	X	X	AE-26156/9/10
5.2.5.1.4	Abnormal Operation Steady-State Voltage Limits					X			X	X	X	AE-26156/9/10
5.2.5.1.5	Power Source Impedance					X			X	X	X	AE-26156/9/10
5.2.5.2	Current					X			X	X	X	AE-26156/9/10
5.2.5.2.1	Instrument Turn-on-Transients					X			X	X	X	AE-26156/9/10

**General Interface
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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.2.5.2.2	Instrument Turn-off Transients					X			X	X	X	AE-26156/9/10
5.2.5.2.3	Instrument Operational Transients					X			X	X	X	AE-26156/9/10
5.2.5.2.4	Instrument Reflected Ripple Current					X			X	X	X	AE-26156/9/10
5.2.5.2.5	Overcurrent Protection	X										
5.2.5.2.5.1	Overcurrent Protection Device Size	X										
5.2.5.2.5.2	Overcurrent Protection Device Size Documentation	X										
5.2.5.2.5.3	Instrument Internal Overcurrent Protection (none in AMSU-A)			X								
5.2.6	Power Control	X										
5.2.6.1	Power Connections					X			X	X	X	AE-26156/9/10
5.2.6.2	Instrument High-Voltage Restriction					X			X	X	X	AE-26156/9/10
5.2.6.3	Documentation of Instrument High-Voltage Restricti	X										
5.3	Grounds, Returns and References	X										
5.3.1	Grounding Responsibility					X			X	X	X	AE-26156/9/10
5.3.1.1	Power Harnessing	X										
5.3.1.1.1	Power Routing and Shielding	X										
5.3.2	Power Leads and Returns					X			X	X	X	AE-26156/9/10

**General Interface
Requirements Document
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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.3.2.1	Power Shield Bonding		X						X	X	X	Shop Order
5.3.2.1.1	Isolation					X			X	X	X	AE-26156/9/10
5.3.2.1.2	Power Input Isolation					X			X	X	X	AE-26156/9/10
5.3.2.1.3	Primary Power Isolation					X			X	X	X	AE-26156/9/10
5.3.2.1.4	Secondary Power Isolation					X			X	X	X	AE-26156/9/10
5.3.2.2	Power Reference	X										
5.3.2.2.1	Primary Power Reference	X										
5.3.2.2.2	Secondary Power Return					X			X	X	X	AE-26156/9/10
5.3.2.2.3	Secondary Power Reference					X			X	X	X	AE-26156/9/10
5.3.2.2.4	Isolated Secondary Referencing					X			X	X	X	AE-26156/9/10
5.3.3	Signal Reference					X			X	X	X	AE-26156/9/10
5.3.3.1	Signal Reference Connectivity					X			X	X	X	AE-26156/9/10
5.3.3.2	Signal Reference Constraints					X			X	X	X	AE-26156/9/10
5.3.4	Chassis Ground	X										
5.3.4.1	Instrument Ground Plane	X										
5.3.4.2	Component Grounding					X			X	X	X	AE-26156/9/10

**General Interface
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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o r m a t i o n	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.3.4.2.1	Component Ground Location	X										
5.3.4.2.2	Component Ground Connection	X										
5.3.4.2.3	Component Bonding Straps	X										
5.3.4.3	Connector Grounding					X			X	X	X	AE-26156/9/10
5.3.4.4	Chassis Ground Current					X			X	X	X	AE-26156/9/10
5.3.4.5	External Ground Tie Point		X						X	X	X	
5.3.5	Signal Reference Plane											
5.3.5.1	Instrument Ground Plane Connection	X										Shop Order
5.3.5.2	Thermal Blanket Grounding					X	X			X	X	Shop Order
5.3.5.2.1	Thermal Blanket Layer Interconnection		X			X	X			X	X	Shop Order
5.3.5.2.2	Thermal Blanket Chassis Grounding		X			X			X	X	X	Shop Order
5.4	Harnesses	X										
5.4.1	Harnesses Provider	X										
5.4.2	Harness Hardware Documentation	X										
5.4.3	Harness Wiring Requirements	X										
5.4.4	Tie Points	X										

**General Interface
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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.4.4.1	Tie Point Locations and Provider	X										
5.4.4.2	Tie Point Documentation	X										
5.4.5	Connectors	X										
5.4.5.1	Connector Clearance		X						X	X	X	Shop Order
5.4.5.2	Connector Location and Types	X										
5.4.5.3	Keying		X						X	X	X	Shop Order
5.4.5.4	Interface Connector Provider	X										
5.4.5.4.1	Harness Connectors	X										
5.4.5.4.2	Instrument Component Connectors		X						X	X	X	Shop Order
5.4.5.4.3	Connector Types		X						X	X	X	Shop Order
5.4.5.4.4	Connector Type Documentation	X										
5.4.5.5	Flight Plugs	X										
5.4.5.5.1	Flight Plug Installation	X										
5.4.5.5.2	Flight Plug Responsibility	X										
5.4.5.5.3	Flight Plug Documentation	X										
5.4.5.6	Connector Protective Covers								X	X	X	Shop Order

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.4.5.7	Test Connectors	X										
5.4.5.7.1	Test Connector Accessibility	X										
5.4.5.7.2	Test Connector Documentation	X										
5.4.5.8	Breakout Boxes	X										
5.4.5.9	Buffer Connectors and Connector Savers	X										
5.4.5.9.1	Connector Saver Utilization		X						X	X	X	Shop Order
5.4.5.9.2	Connector Saver Provider	X										
5.4.5.10	Electrical Connector Constraints		X						X	X	X	Shop Order
5.5	Electro-Explosive Devices (EEDs)	X										
5.5.1	Electro-Explosive Device Interface	X										
5.5.2	Selection of Devices	X										
5.5.3	Electro-Explosive Device Characteristics	X										
5.5.3.1	Electro-Explosive Device Current Load	X										
5.5.3.2	Electro-Explosive Device Use	X										
5.5.4	Safety Short	X										
5.5.5	Intra-Instrument Cabling	X										

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
5.5.6	Electro-Explosive Device Circuitry Protection	X										
5.5.7	Electro-Explosive Device Isolation	X										
5.5.8	Arming and Disarming	X										
5.5.9	Electro-Explosive Device Testing	X										
5.5.9.1	Electro-Explosive Device Circuitry Test Capability	X										
5.5.9.2	Electro-Explosive Device Test Capability	X										
5.6	Test Points	X										
5.6.1	Test Point Interfaces	X										
5.6.2	Test Point Interface Documentation	X										
5.7	Spacecraft/Instrument Interface Simulator	X										
6.0	Command and Handling Requirements	X										
6.1	Instrument Modes					X						AE-26156/9/10
6.1.1	Instrument Off Mode					X						AE-26156/9/10
6.1.2	Instrument Survival Mode					X						AE-26156/9/10
6.1.3	Instrument Operational Mode(s)					X						AE-26156/9/10
6.1.4	Instrument Mode Documentation	X										

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
6.2	General Electrical Interface Requirements											
6.2.1	Interface Conductors		X	X					X	X	X	Shop Order
6.2.2	Interface Circuitry Isolation					X			X	X	X	Shop Order
6.2.3	Interface Fault Tolerance				X							Report
6.3	Passive Analog Telemetry					X			X	X	X	AE-26156/9/10
6.3.1	Number of Passive Analog Telemetry Channels					X			X	X	X	AE-26156/9/10
6.3.2	Passive Analog Telemetry Signal Characteristics					X			X	X	X	AE-26156/9/10
6.4	Digital Data Convention					X			X	X	X	AE-26156/9/10
6.5	Command and Telemetry Bus Requirements	X										
6.5.1	Bus Functions					X			X	X	X	AE-26156/9/10
6.5.2	Bus Type					X			X	X	X	AE-26156/9/10
6.5.3	Bus Configuration					X			X	X	X	AE-26156/9/10
6.5.4	Number of Functionally Distinct Instrument Remote Terminals					X			X	X	X	AE-26156/9/10
6.5.5	General Bus Requirements											
6.5.5.1	Electrical Interface					X			X	X	X	AE-26156/9/10
6.5.5.2	Mode Codes					X			X	X	X	AE-26156/9/10

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
6.5.5.3	Status Word					X			X	X	X	AE-26156/9/10
6.5.5.4	Instrument RT Address Assignment					X			X	X	X	AE-26156/9/10
6.5.5.5	Instrument RT Subaddress Assignment					X			X	X	X	AE-26156/9/10
6.5.5.6	Data Wrap Around					X			X	X	X	AE-26156/9/10
6.5.5.7	Automatic Retry					X			X	X	X	AE-26156/9/10
6.5.5.8	Data Buffering					X			X	X	X	AE-26156/9/10
6.5.5.9	Remote Terminal Self Test					X			X	X	X	AE-26156/9/10
6.5.5.10	Instrument Timeout					X			X	X	X	AE-26156/9/10
6.5.5.11	Illegal Command Monitoring By Instrument RT					X			X	X	X	AE-26156/9/10
6.5.6	Instrument Commands and Memory Load	X										
6.5.6.1	Packetization for Commands and Memory Loads					X			X	X	X	AE-26156/9/10
6.5.6.2	Command and Memory Load Packet Length					X			X	X	X	AE-26156/9/10
6.5.6.3	Documentation	X										
6.5.6.4	Commands and Memory Loads Transfer					X			X	X	X	AE-26156/9/10
6.5.6.5	Command Constraints	X										
6.5.6.5.1	Toggle Commands					X			X	X	X	AE-26156/9/10

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
6.5.6.5.2	Critical Commands	X										
6.5.6.5.3	Bit Encoded Commands					X						AE-26156/9/10
6.5.6.5.4	Override of Automatically Triggered Functions					X						AE-26156/9/10
6.5.6.5.5	Command Sequence					X						AE-26156/9/10
6.5.6.5.6	Command Execution Verification					X						AE-26156/9/10
6.5.7	Time Marks and Time Code Data	X										
6.5.7.1	Time Mark Transfer					X						AE-26156/9/10
6.5.7.2	Time Code Data					X						AE-26156/9/10
6.5.7.2.1	Time Code Data Format					X						AE-26156/9/10
6.5.7.2.2	Time Code Data Transfer					X						AE-26156/9/10
6.5.7.2.3	Time Code Data Accuracy					X						AE-26156/9/10
6.5.7.2.4	Time Code Data Epoch					X						AE-26156/9/10
6.5.7.3	Missing Time Marks and Time Code Data					X						AE-26156/9/10
6.5.8	Instrument Engineering Data											
6.5.8.1	Definition of Instrument Engineering Data	X				X						AE-26156/9/10
6.5.8.2	Engineering Data Packetization					X						AE-26156/9/10

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
6.5.8.3	Engineering Data Constraints	X										
6.5.8.3.1	Content and Structure					X			X	X	X	AE-26156/9/10
6.5.8.3.2	Engineering Data Rate and Packet Size					X			X	X	X	AE-26156/9/10
6.5.8.3.3	Critical Engineering Data					X			X	X	X	AE-26156/9/10
6.5.8.4	Engineering Data Transfer					X			X	X	X	AE-26156/9/10
6.5.8.5	Sampling Rate, Data Transfer Cycle and Time Gap					X			X	X	X	
6.5.9	Low Rate Science Data	X										
6.5.9.1	Definition of Low Rate Science Data	X										
6.5.9.2	Low Rate Science Data Rate Allocation	X				X			X	X	X	AE-26156/9/10
6.5.9.3	Low Rate Science Data Packetization					X			X	X	X	AE-26156/9/10
6.5.9.4	Packet Segmentation					X			X	X	X	AE-26156/9/10
6.5.9.5	Low Rate Science Data Transfer					X			X	X	X	
6.5.9.6	Sampling Rate, Data Transfer Cycle and Time Gap	X										
6.5.10	Instrument Diagnostic Data	X										
6.5.10.1	Definition of Diagnostic Data	X										
6.5.10.2	Diagnostic Data Rate								X	X	X	AE-26156/9/10

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
6.5.10.3	Packetization of Diagnostic Data					X			X	X	X	AE-26156/9/10
6.5.10.4	Low Science Rate Instrument Diagnostic Data Transfer					X			X	X	X	AE-26156/9/10
6.6 - 6.6.10	High Rate Data Link					X			X	X	X	AE-26156/9/10
7.0	Contamination	X										
7.1	Contamination Control Requirements	X										
7.1.1	Documentation Requirements	X										
7.1.2	Verification of Cleanliness					X			X	X	X	Shop Order
7.2	Instrument Sources of Contamination	X										
7.3	Instrument Venting	X										
7.3.1	Instrument Venting Documentation	X										
7.3.2	Location of Vent Path	X										
7.3.3	Sealed Hardware	X										
7.4	Protective Covers		X						X	X	X	Shop Order
7.4.1	Responsibility for Covers	X										
7.5	Instrument Purge Requirements	X										
7.6	Instrument Inspection and Cleaning During I&T	X										

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
7.7	Contamination Analysis Requirements				X				X			CDRL 007
7.8	Spacecraft Contractor Supplied Analysis Inputs	X										
7.9	Atomic Oxygen Contamination				X							CDRL 007
7.10	Particulate and Molecular Cleanliness				X							CDRL 007
7.11	GSE Cleanliness Requirements		X									Shop Order
8.0	Software and EGSE Requirements	X					X					
8.1	Use of Operations Science Instrument Support (OASIS)											CDRL 306
8.2	Software Programming Language Requirements											CDRL 306
8.3	Instrument Flight Software Requirements		X									CDRL 306
8.3.1	Instrument Flight Software Version Control		X									CDRL 306
8.3.2	Instrument Flight Software Load		X									CDRL 306
8.3.3	Instrument Flight Software On-Orbit Installation and Verification				X				X	X	X	CDRL 033
8.4	Instrument Ground Support Equipment Software Requir	X										CDRL 306
8.5	Instrument GSE to Spacecraft I&T GSE Interface	X										
9.0	Spacecraft Reference Coordinate Frame	X										
9.1	Nominal Orbit	X										

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
10.0	Environmental Requirements	X										
10.1	Random Vibration					X			X	X	X	AE-26151/1
10.2	Sine Vibration					X			X	X	X	AE-26151/1
10.2.1	Design Strength Qualification					X			X	X		AE-26151/1
10.3	Acceleration					X			X	X	X	AE-26151/1
10.4	Shock					X			X	X	X	AE-26151/1
10.5	Launch Pressure Profile				X				X			Report
10.6	Acceptance Level Acoustics				X				X			Report
10.7	Qualification/Protoflight Level Acoustics				X				X			Report
10.8	Total Ionizing Dose Radiation Environment				X				X			Report
10.9	Cosmic Ray and High Energy Proton Environment				X				X			Report
10.9.1	Single Events Radiation Environment				X				X			Report
10.9.1.1	Galactic Cosmic Ray Linear Energy Transfer (LET) Spectrum				X				X			Report
10.9.1.2	High Energy Proton Fluence				X				X			Report
10.9.1.3	Peak Fluxes				X				X			Report
10.9.2	Displacement Damage				X				X			Report

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
10.10	Atomic Oxygen				X				X			Report
10.11	EMI/EMC and Magnetic Requirements	X										
10.11.1	Conducted Emission, Power Leads (CE01/CE03)					X	X		X	X	X	AE-26151/5
10.11.2	Conducted Emission, Antenna Terminal (CE06)											
10.11.3	Conducted Susceptibility, Power Leads (CS01/CS02)					X	X		X	X	X	AE-26151/5
10.11.4	Conducted Susceptibility, Spike, Power Leads (CS06)					X	X		X	X	X	AE-26151/5
10.11.5	Radiated Emission, Magnetic Field	X										
10.11.5.1	Radiated AC Magnetic Field Emissions (RE01/RE04)					X	X		X	X	X	AE-26151/5
10.11.5.2	Radiated DC Magnetic Field Emission					X	X		X	X	X	AE-26151/5
10.11.5.3	Magnetic Fields Documentation				X	X	X		X	X	X	AE-26151/5
10.11.6	Radiated Emission, Electric Field (RE02)	X										
10.11.6.1	Narrowband Emission					X	X		X	X	X	AE-26151/5
10.11.6.2	Broadband Emission					X	X		X	X	X	AE-26151/5
10.11.7	Radiated Susceptibility, Magnetic field	X										
10.11.7.1	Radiated AC Magnetic Field Susceptibility (RS01)					X	X		X	X	X	AE-26151/5
10.11.7.2	Radiated DC Magnetic Field Susceptibility					X	X		X	X	X	AE-26151/5

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GIRD Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
10.11.8	Radiated Susceptibility, Electric Field (RS03)					X	X		X	X	X	AE-26151/5
11.0	Model Requirements and Submittal Details		X						X			CDRL 102
11.1	Finite Element Model Submittal		X						X			CDRL 102
11.1.1	Model Representation		X						X			CDRL 102
11.1.2	Finite Element Model (FEM) Requirements		X						X			CDRL 102
11.1.3	Deliverable NASTRAN Model Data		X						X			CDRL 102
11.1.4	Deliverable Model Validity Checks		X						X			CDRL 102
11.1.5	NASTRAN Model Verification		X						X			CDRL 102
11.1.6	Model Delivery Schedule		X						X			CDRL 102
11.2	Thermal Math Model Submittal	X										
11.2.1	Instrument Thermal Math Models				X				X	X	X	CRDL 103
11.2.2	Surface Model Requirements				X				X	X	X	CRDL 103
11.2.3	Reduced Node Thermal Model Requirements											DELETED
11.2.4	Guidelines for the Detailed Instrument Thermal Model				X				X	X	X	CRDL 103

**Unique Instrument
Interface Specification
IS-2617547 / IS-2624483**

UIIS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o f l i g h t	F l i g h t	
3.1.3.2	+28V Main Bus					X			X	X	X	AE-26156/3/4
3.1.3.2.1	Power Dissipation					X			X	X	X	AE-26156/3/4
3.1.3.2.4	Transient Loads					X	X		X	X	X	AE-26156/3/4
3.1.3.3	+28V Analog Telemetry Bus					X			X	X	X	AE-26156/3/4
3.1.3.1(5)	Power Dissipation					X			X	X	X	AE-26156/3/4
3.1.3.3.2	Power Limiting	X										
3.1.3.3.3	Transient Loads (GIIS 3.1.3.2.6.3)					X			X	X	X	AE-26156/3/4
3.1.3.4	+28V Pulse Load Bus					X			X	X	X	AE-26156/3/4
3.1.3.1(5)	Power Dissipation					X			X	X	X	AE-26156/3/4
3.1.3.4.3	Transient Loads					X			X	X	X	AE-26156/3/4
3.1.3.5	+10V Interface Bus					X			X	X	X	AE-26156/3/4
3.1.3.1(5)	Power Dissipation					X			X	X	X	AE-26156/3/4
3.1.4	Input Timing & Control Signal					X			X	X	X	AE-26156/3/4
3.1.5.2	Digital A Data					X			X	X	X	AE-26156/3/4
3.1.5.3	Digital B Data					X			X	X	X	AE-26156/3/4
3.1.5.4	Analog Telemetry					X			X	X	X	AE-26156/3/4

**Unique Instrument
Interface Specification
IS-2617547 / IS-2624483**

UIIS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.1.6	Test Points					X			X	X	X	AE-26156/3/4
3.2.1.1	Demensions		X						X	X	X	Shop Order
3.2.1.2	Weight					X			X	X	X	Shop Order
3.2.1.3	Moments of Inertia				X	X			X	X	X	AE-26151
3.2.1.4	Disturbance Torque				X	X			X	X	X	AE-26151
3.2.1.5	Center of Gravity					X			X	X	X	Shop Order
3.2.2	Instrument Mounting	X										
3.2.2.1	Instrument Mounting Surface		X						X	X	X	Shop Order
3.2.2.2	Mounting Hole Position		X						X	X	X	Shop Order
3.2.4	Field of View	X										
3.2.5	Alignment	X										
3.2.5.1	Referenct Surfaces		X						X	X	X	Shop Order
3.1.2	Connectors	X										
3.1.2.2	Connector Allocation		X						X	X	X	Shop Order
3.1.2.3	Connector Mounting Hardware		X						X	X	X	Shop Order

**Unique Instrument
Interface Specification
IS-2617547 / IS2624483**

UIIS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.1.2.4	Connector Keying Requirements		X						X	X	X	Shop Order
3.1.2.5	Harness Mating Connectors		X						X	X	X	Shop Order
3.1.2.6	Pin Designations		X						X	X	X	Shop Order
3.1.2.8	Connector Location and Access		X						X	X	X	Shop Order
3.2.6	Protective Cover		X						X			Shop Order
3.2.7	Instrument Materials & Finishes	X										
3.2.8	S/C Harness Clamp Requirements	X										
3.2.9	Marking		X						X			Shop Order
3.3.2	General Requirements	X										
3.3.3	Instrument Temperature Requirements				X	X			X	X	X	CDRL 103
3.3.4	S/C (ESM) Temperature Specifcation				X				X			CDRL 103
3.3.5	Instrument Thermal Control Components	X										
3.3.5.1.1	Surface Finishes		X						X	X	X	Shop Order
3.3.5.1.2	Multilayered Insulation Blankets		X						X	X	X	Shop Order
3.3.5.1.3	Mounting		X						X	X	X	Shop Order
3.3.5.2.3	Survival Heaters					X			X	X	X	AE-26151/7
3.3.5.2.4	Safety Heaters					X			X			AE-26156/1/2

**General Instrument
Interface Specification
IS-2617547**

GIIS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.4.1	Magnetic Characteristics	X										
3.4.2	EMI				X	X			X		X	AE-26151/5
3.5.1	S/C Storage Requirements	X										
3.5.2	S/C Test Requirements	X										
3.5.3	S/C Operational Requirements	X										
4.0	S/C Instrument Integration, Test and Operational Requirements	X										

S/C = Space Craft Level

**General Instrument
Interface Specification
IS-3267415**

GIIS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.1.3.2.4	Over/Under Voltage Survival					X	X			X	X	AE-26156/3/4
3.1.3.2.5	Source Voltage Transient (Operational)					X			X	X	X	AE-26156/3/4
3.1.3.2.6	Instrument Feedback					X			X	X	X	AE-26156/3/4
3.1.3.2.6.1	Load Current Ripple					X			X	X	X	AE-26156/3/4
3.1.3.2.6.2	Load Current Rise Time UIIS-3.1.3.2.4(4)					X			X	X	X	AE-26156/3/4
3.1.3.2.6.3	Transient Load Current					X			X	X	X	AE-26156/3/4
3.1.3.2.6.4	Motor Start Up Current Loads (NA)					X			X	X	X	AE-26156/3/4
3.1.3.2.6.5	Instrument Turn On UIIS 3.1.3.2.4(3) Plus 3.1.3.4.1(3)					X				X	X	AE-26156/3/4
3.1.3.2.6.1	Load Current Ripple					X			X	X	X	AE-26156/3/4
3.1.3.2.6.2	Load Current Rise Time					X			X	X	X	AE-26156/3/4
3.1.3.3.1	Bus Characteristics					X			X	X	X	AE-26156/3/4
3.1.3.2.4	Over/Under Voltage Survival				X					X	X	AE-26156/3/4
3.1.3.2.5	Source Voltage Transient (Operational)					X			X	X	X	AE-26156/3/4
3.1.3.4.4	Over/Under Voltage Survival				X					X	X	AE-26156/3/4
3.1.3.4.5	Source Voltage Transient (Operational)					X				X	X	AE-26156/3/4
3.1.3.4.6	Instrument Feedback (Max. Current Load)					X			X	X	X	AE-26156/3/4

**General Instrument
Interface Specification
IS-3267415**

GIIS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.1.3.4.6.2	Instrument Feedback					X			X	X	X	AE-26156/3/4
3.1.3.5.4	Voltage Transient				X					X	X	AE-26156/3/4
3.1.3.5.5	Load Current Ripple					X			X	X	X	AE-26156/3/4
3.1.3.5.6	Transient Load Currents					X			X	X	X	AE-26156/3/4
3.1.3.5.7	Short Circuit Current Limit					X			X	X	X	AE-26156/1/2
3.1.6.2	Digital Housekeeping Telemetry (Digital B)				X		X			X	X	AE-26156/9/10
3.1.6.3	Analog Housekeeping Telemetry				X		X			X	X	AE-26156/9/10
3.1.6.4	Failure Mode Protection			X			X					Drawing
3.1.6.5	Telemetry Calibration					X				X	X	AE-26156/1/2
3.1.5	Standard Interface Circuits			X			X					Drawing
3.1.5.2	Ground Reference				X		X					Drawing
3.1.5.3	Noise Immunity				X		X					Drawing
3.1.5.4	COS/MOS Compatible Interfaces				X		X					Drawing
3.1.1	Grounds					X			X	X	X	AE-26156/3/4
3.1.2.2	Connector Use and Pin Allocation		X						X	X	X	Shop Order
3.6	Electromagnetic Interface	X										

**General Instrument
Interface Specification
IS-3267415**

GIIS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.6.1.6	Conducted Emission								X	X	X	AE-26151/5
3.6.1.2	Conducted Susceptibility					X			X	X	X	AE-26151/5
3.6.1.3	Conducted Transient Susceptibility					X			X	X	X	AE-26151/5
3.6.1.4	Radiated Emissions					X			X	X	X	AE-26151/5
3.6.1.5	Radiated Susceptibility					X			X	X	X	AE-26151/5
3.2.3.2	Alignment of the Optical Axes		X					X		X	X	Shop Order
3.2.3.3	Alignment Mirrors		X					X		X	X	Shop Order
3.2.3.4.1	Optical Axis to Mounting Hole Pattern		X					X		X	X	Shop Order
3.2.3.4.2	Optical Axis to Alignment Mirrors					X		X		X	X	Shop Order
3.2.3.4.3	Alignment Mirrors to S/C Coordinates	X										
3.2.11	Protective Covers		X						X	X	X	Shop Order
3.5.2	Instrument Generated Magnetic Fields					X			X	X	X	AE-26151/5
3.3.4.1	Finishes		X						X	X	X	Shop Order
3.3.7	Identification and Marking		X						X	X	X	Shop Order
3.3.3.1	Magnetic Materials		X		X		X					NSPAR
3.3.3.2	Outgassing Materials				X		X					NSPAR

**General Instrument
Interface Specification
IS-3267415**

GIIS Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.3.5.1	Fungus				X							NSPAR
3.3.5.2	Moisture				X							NSPAR
3.3.6.1	Corrosion				X							NSPAR
3.3.6.2	Electrolytic Corrosion				X							NSPAR
3.2.8	Experiment Load Design	X										
3.2.8.1	Load Paths	X										
3.2.8.2	Load Directions	X										
3.2.8.3	Dynamic Characteristics				X	X			X	X	X	AE-26151/1
3.3.8	Maintainability	X										
3.3.9	Storage		X						X	X	X	CDRL 024
3.3.10	Transportability		X						X	X	X	CDRL 406

**Performance Assurance
Requirements
S-480-79**
(EOS Unique Requirements)

PAR Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
2.3	GSFC Flight Assurance Review Program	X										
3.0	Performance Verification Requirements	X										
3.1	General Requirements	X										
3.2.1	Verification Plan	X										
3.2.2	Verification Specification	X										
3.4	Structural and Mechanical Requirements	X										
3.4.1	General Requirements				X	X			X	X	X	AE-26151/1/CDRL102
3.4.2	Requirements Summary				X	X			X	X	X	AE-26151/1/CDRL103
3.4.3	Structural Loads	X										
3.4.3.1	Verification for Design Qualification					X			X	X	X	AE-26151/1/CDRL102
3.4.3.2	Acceptance Requirements					X			X	X	X	AE-26151/1/CDRL103
3.4.4	Vibroacoustics	X										
3.4.4.1	Verification for Design Qualification				X				X			AE-26151/1/CDRL102
3.4.4.4	Acceptance Requirements				X				X			AE-26151/1/CDRL103
3.4.6	Mechanical Function	X										
3.4.6.1	Verification for Design Qualification				X				X			AE-26151/1/CDRL103

**Performance Assurance
Requirements
S-480-79**
(EOS Unique Requirements)

PAR Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.4.6.2	Acceptance Requirements				X				X			AE-26151/1&CDRL102
6.4.9	Sine Vibration	X										
3.4.9.1	Verification for Design Qualification					X			X	X		AE-26151/1&CDRL102
3.4.9.2	Acceptance Requirements					X			X		X	AE-26151/1&CDRL102
3.5.2	Requirements Summary	X				X						
3.5.2.1	The Range of Requirements					X			X		X	AE-26151/1&CDRL102
3.5.2.2	Basis of the Tests					X			X		X	AE-26151/1&CDRL102
3.6.2	Summary of Requirements											
3.6.3	Thermal Vacuum	X										
3.6.3.1	General Requirements					X			X	X	X	AE-26156/10/11
3.6.3.2	Acceptance Requirements					X			X	X	X	AE-26156/10/11
3.6.4	Thermal Balance				X	X			X	X	X	AE-26151/2
3.7	End-to-End Test Requirements	X										
3.7.1	Compatibility Test	X										
3.7.2	Mission Simulation	X										
5.2.4	Radiation Hardness				X		X			X		Report
9.3	Instrument Cross-Contamination				X							CDRL 007

**Performance Assurance
Requirements**

S-480-79

(METSAT Unique Requirements)

PAR Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
2.3	GSFC Flight Assurance Review Program	X										
3.0	Performance Verification Requirements	X										
3.1	General Requirements	X										
3.4	Structural and Mechanical Requirements	X										
3.4.1	General Requirements					X	X		X	X	X	AE-26151/1&CDRL102
3.4.2	Requirements Summary					X	X		X	X	X	AE-26151/1&CDRL102
3.4.3	Structural Loads	X										
3.4.3.1	Verification for Design Qualification					X			X	X	X	AE-26151/1&CDRL102
3.4.3.2	Acceptance Requirements					X			X	X	X	AE-26151/1&CDRL102
3.4.4	Vibroacoustics	X										
3.4.4.2	Random Verification					X			X	X	X	AE-26151/1&CDRL102
3.4.4.3	Acoustics Verification											
3.4.4.4	Acceptance Requirements				X				X	X	X	AE-26151/1&CDRL102
3.4.6	Mechanical Function	X										
3.4.6.1	Verification for Design Qualification					X		X		X	X	AE-26151/1&CDRL102
3.4.6.2	Acceptance Requirements	X										

**Performance Assurance
Requirements**

S-480-79

(METSAT Unique Requirements)

PAR Para.	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
		I n f o O n l y	I n s p e c t i o n	D e s i g n	A n a l y s i s	T e s t	S u b a s s e m b l y	S u b s y s t e m	I n s t r u m e n t	P r o t o f l i g h t	F l i g h t	
3.5.2	Requirements Summary	X										
3.5.2.1	The Range of Requirements	X										
3.6.3	Thermal Vacuum	X										
3.6.3.1	General Requirements					X			X	X	X	AE-26156/5/6

Performance Assurance Requirements

S-480-79

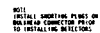
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PAR Para. Appendix E	Requirements	Verification Method					Verification Level			Unit		Test Procedures/ Specifications or Analysis Report
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1.1	Sine Sweep Test					X			X	X	X	AE-26151/1
1.2	Acceleration Test					X			X	X	X	AE-26151/1
1.3	Random Vibration Tests					X			X	X	X	AE-26151/1
1.4	Launch Phase Pressure Profile				X				X	X	X	Report
1.5	Acoustic Test Requirements				X							Report
1.6	Thermal Vacuum Qualification Test					X			X	X	X	AE-26156/5/6
1.7	Thermal Balance					X			X	X	X	AE-26151/2
1.7.1	Acceptance Requirements					X			X	X	X	AE-26151/2
1.8	Electromagnetic Compatibility					X			X	X	X	AE-26151/5
2.0	Flight Acceptance Testing											
2.1	Sine Sweep Test					X			X	X	X	AE-26151/1
2.2	Random Vibration					X			X	X	X	AE-26151/1
2.3	Acceleration Test (Static Load)					X			X	X	X	AE-26151/1
2.4	Thermal Cycle	X										AE-26151/7
2.4.1	Ambient Pressure Thermal Cycling											AE-26151/7
2.4.2	Vacuum Thermal Cycling											AE-26156/11/12
2.5	Electromagnetic Compatibility					X			X	X	X	AE-26151/5

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April 1996
REV. A

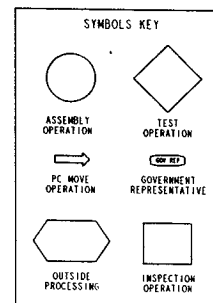
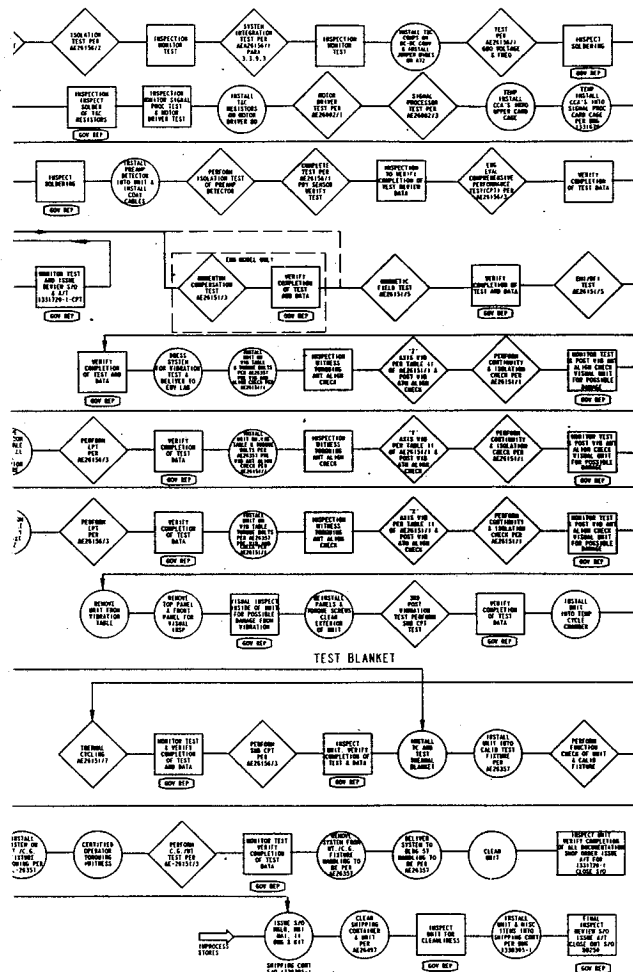
APPENDIX-A

Integrated Manufacturing And Instrument Test Plan (IMITP)





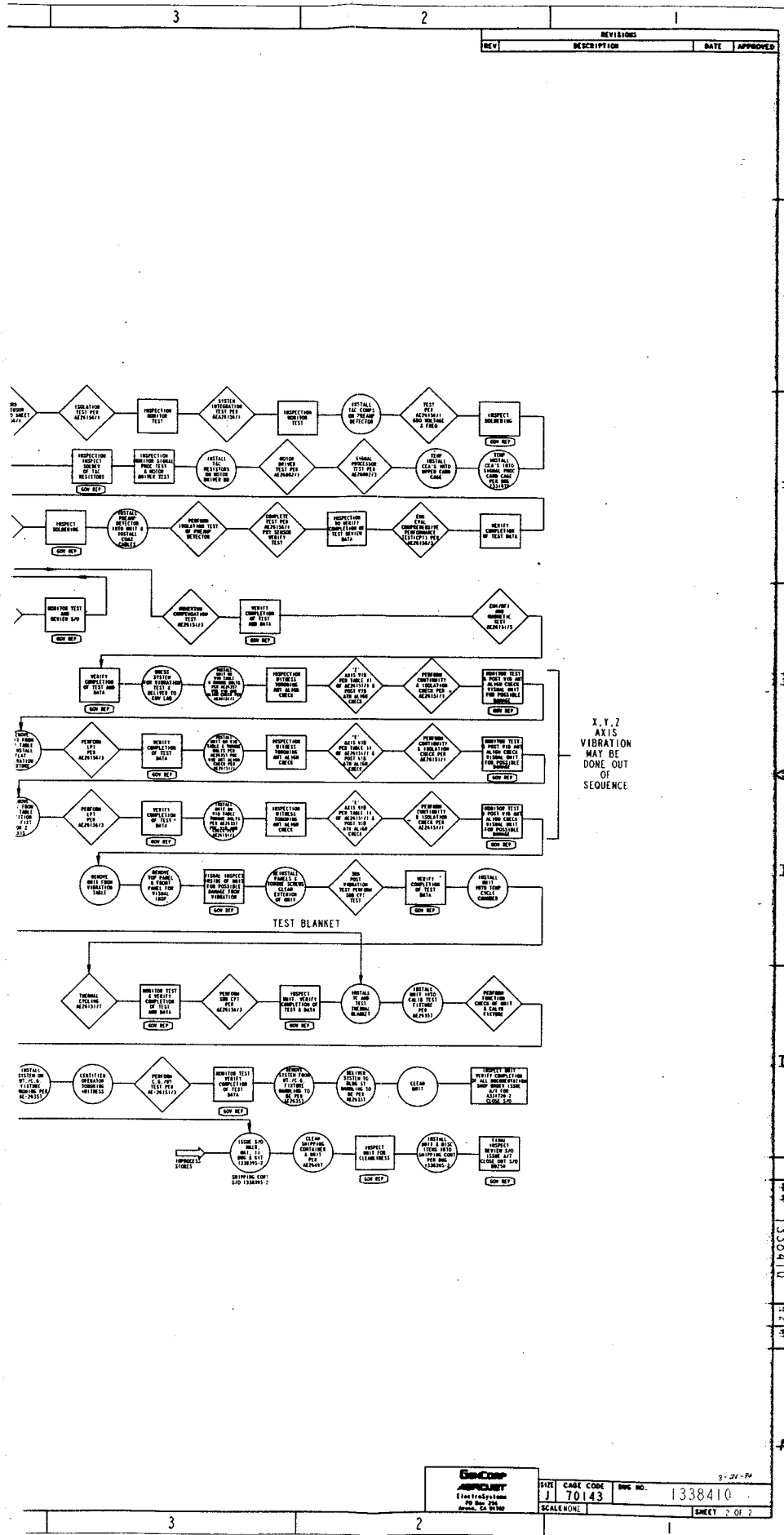
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REV	DESCRIPTION	DATE	APPROVED



DIMENSIONS ARE IN INCHES TOLERANCES .XX .XX .XX .XX .XX .XX .XX .XX .XX .XX .XX .XX SURFACE FINISH DO NOT SCALE DRAWING		CHECKED DESIGNED MANUFACTURED INSPECTED DATE		TITLE FLOW PAN, FABRICATION AND FINAL ASSEMBLY AMSU-A1	
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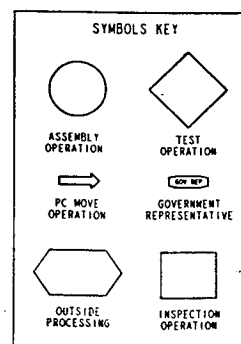
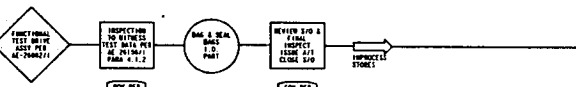
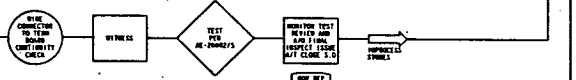
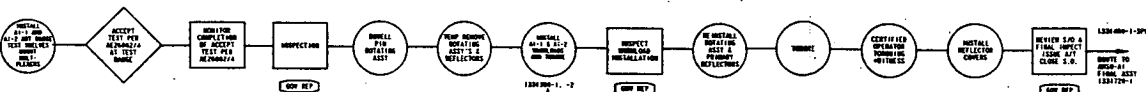
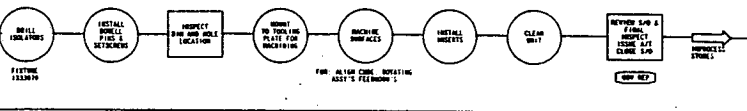
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NOTE
BY DETECTORS P/W 1331572-1, -2
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SHALL NOT BE INSTALLED UNTIL
COMPLETION OF WIRING, CONTINUIT
TEST AND PRELIMINARY ISOLATIO
TEST

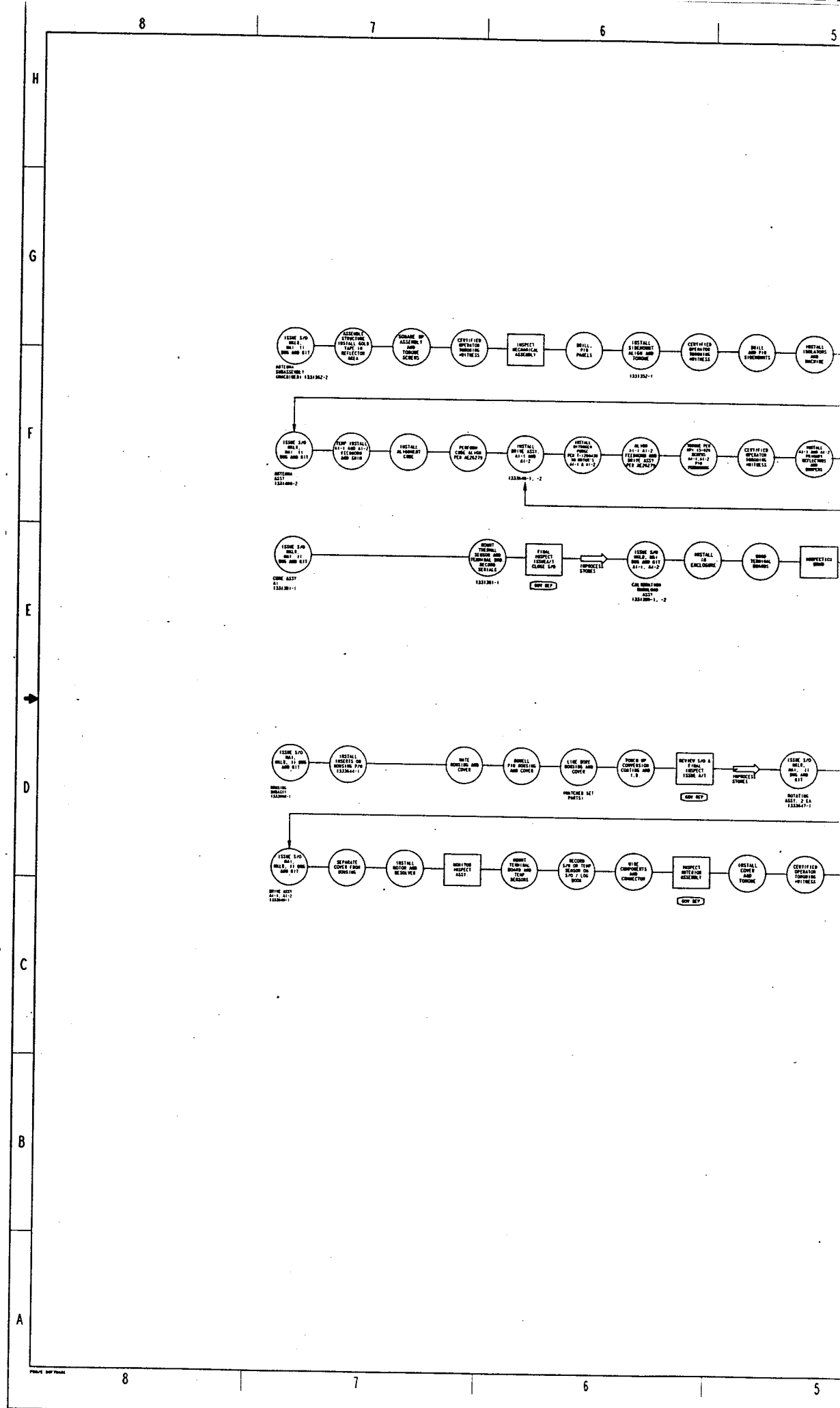


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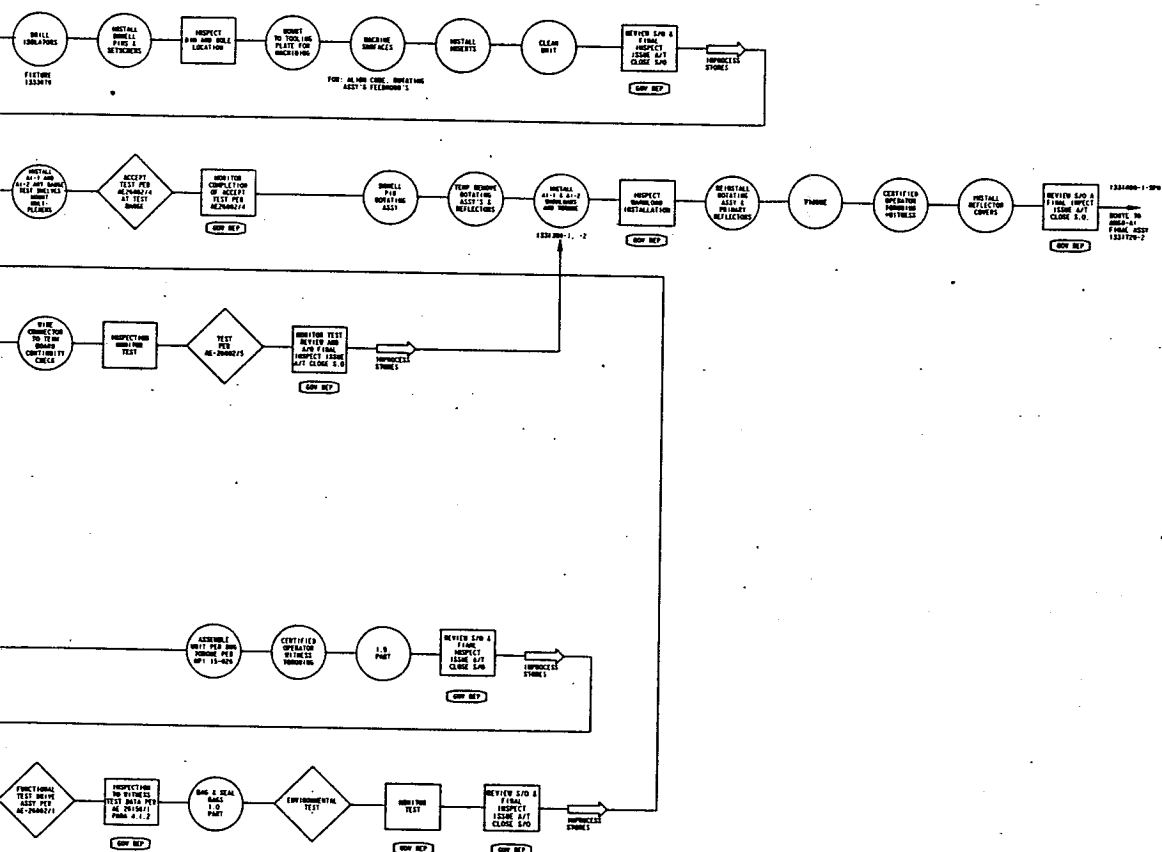
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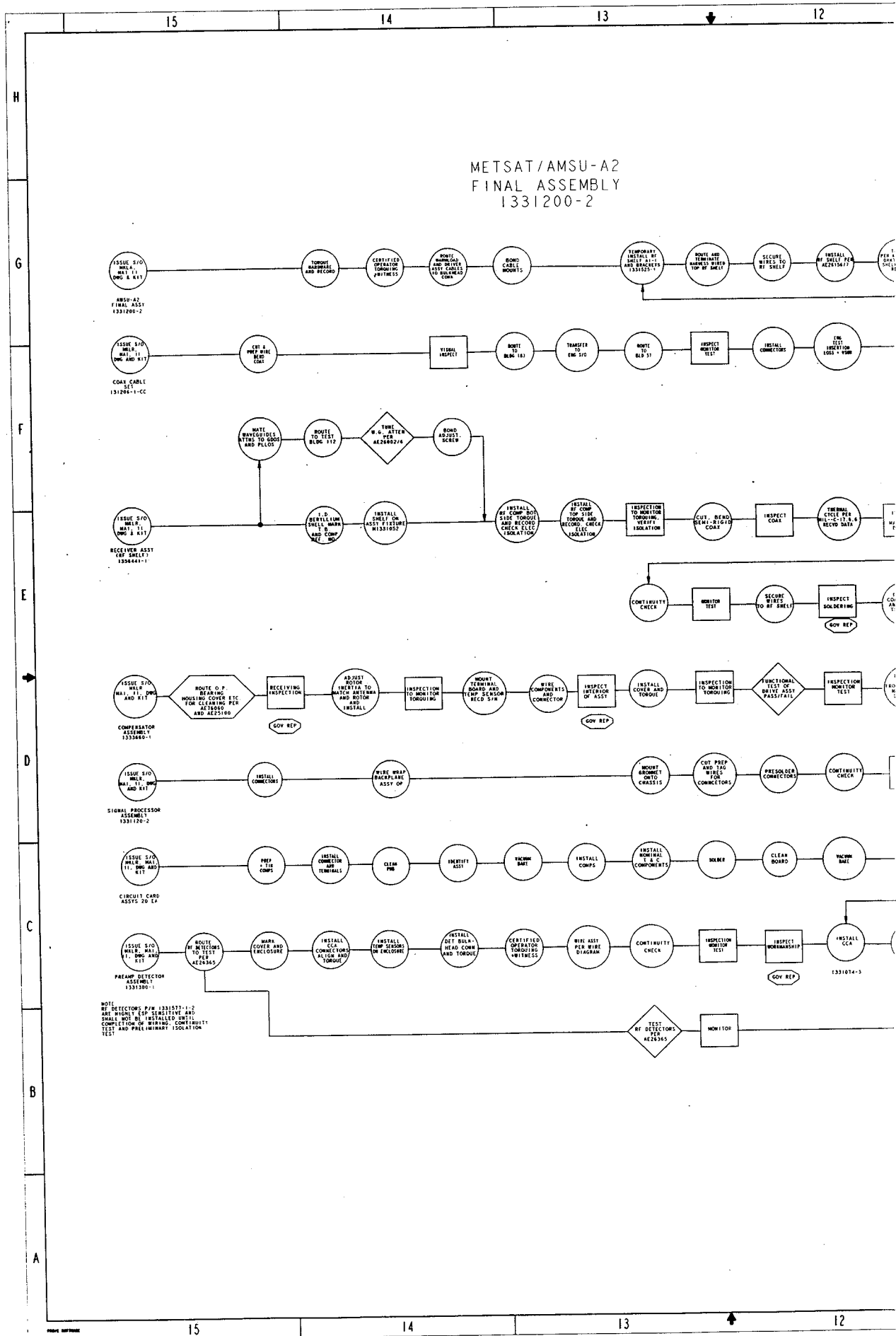


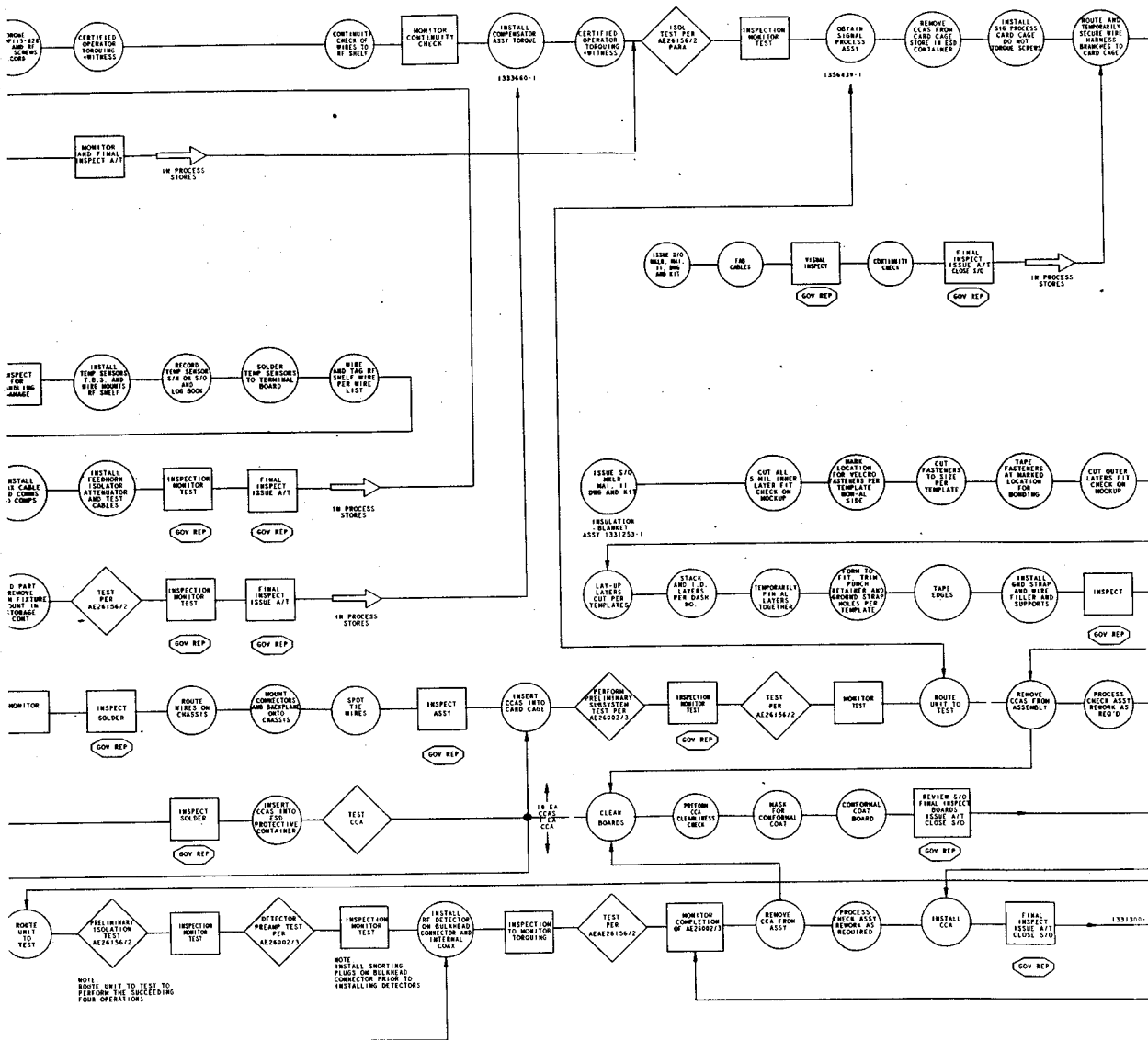
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				.XXX ± .010		MATERIALS			
				SURFACE FINISH		PRODUCTION			
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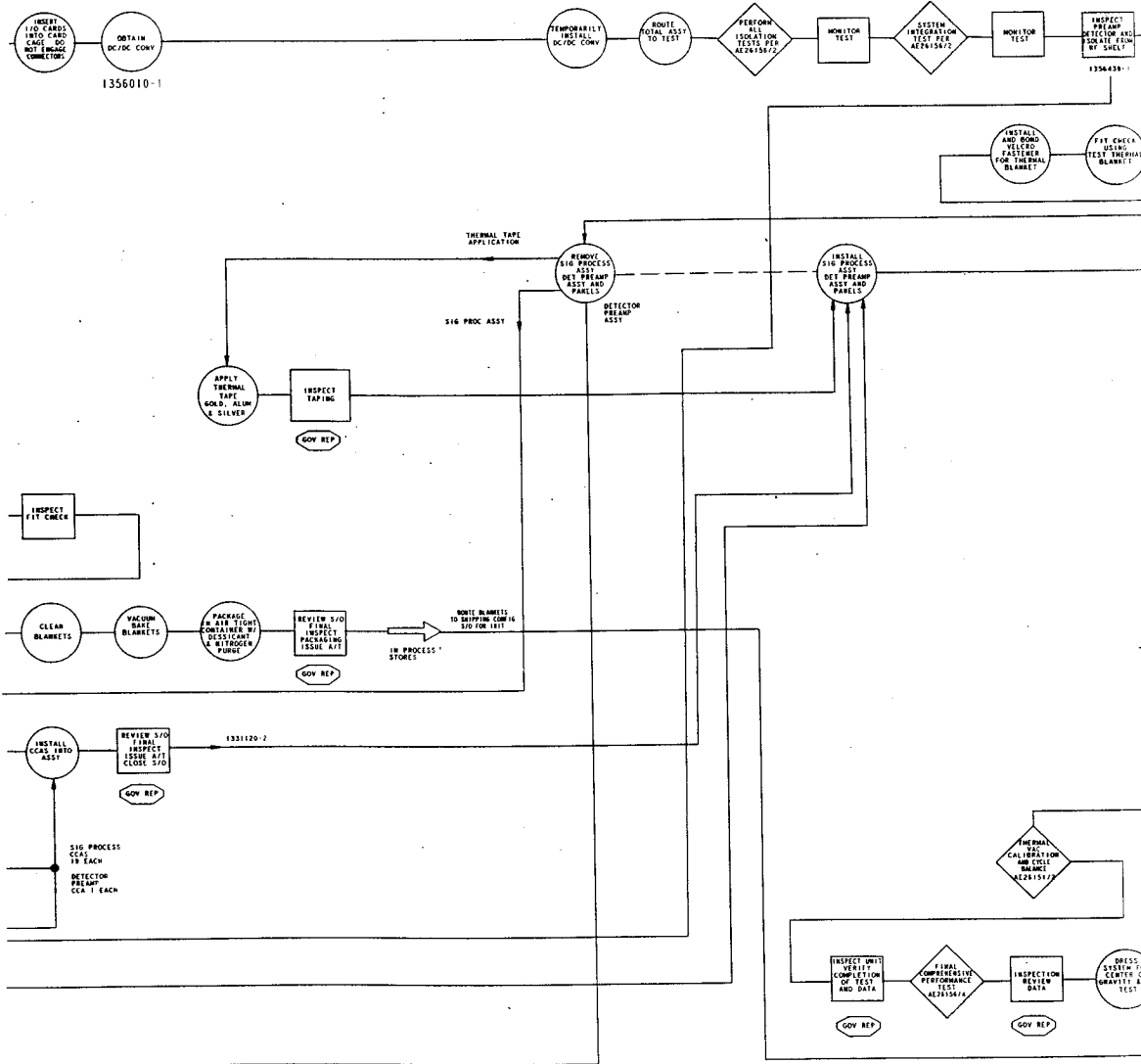


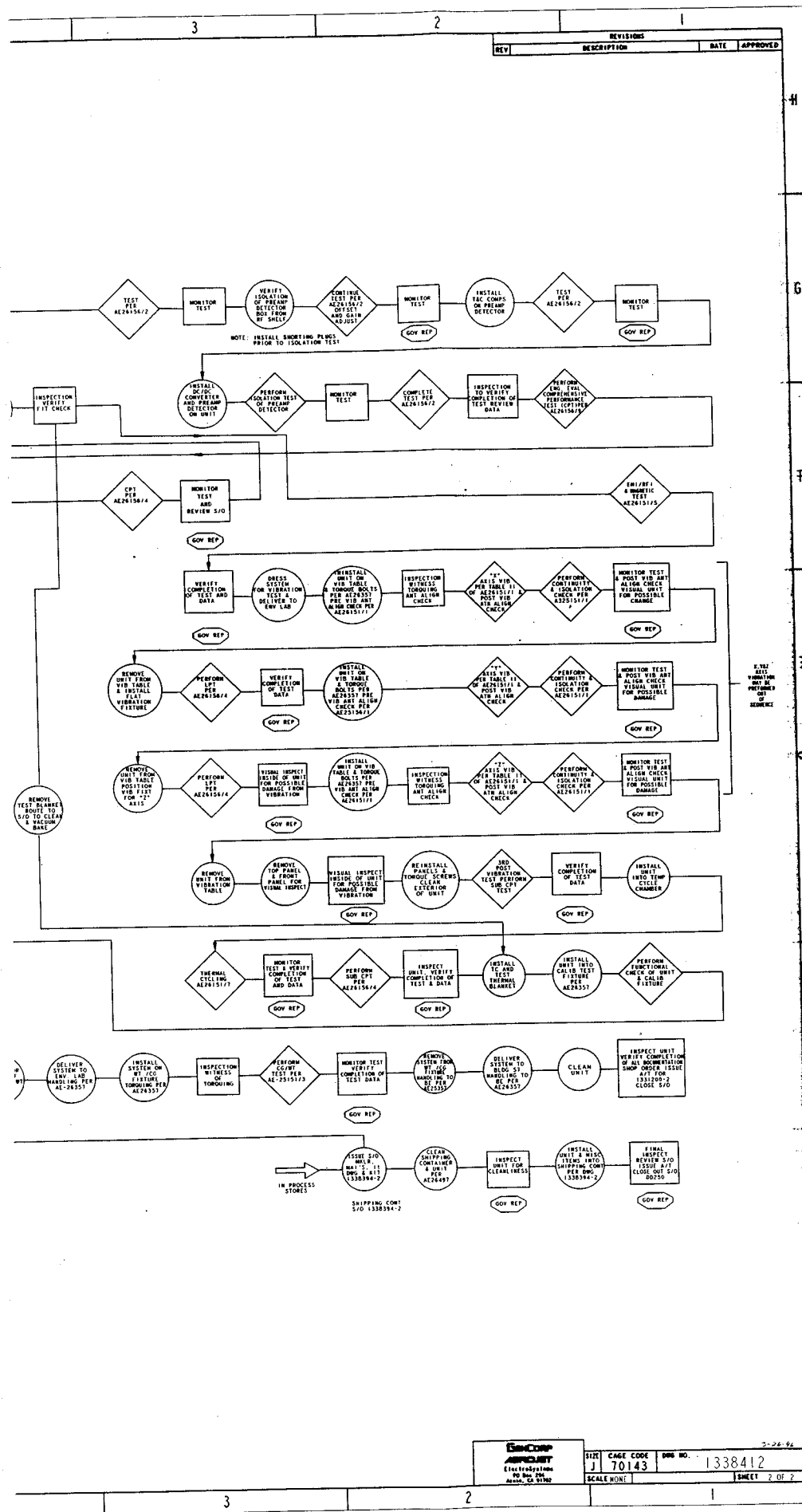
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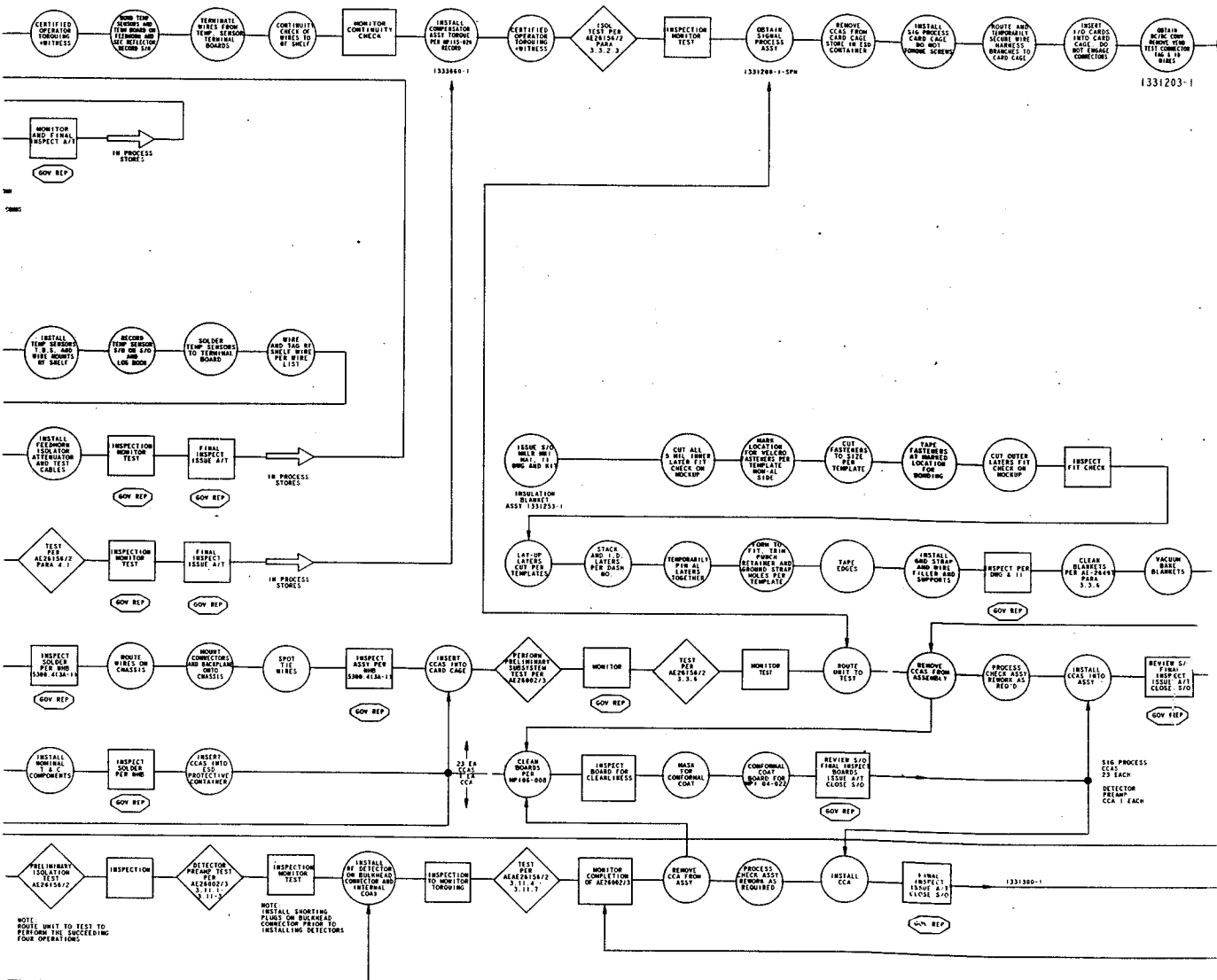




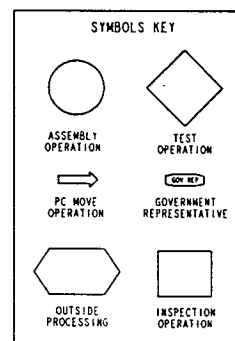
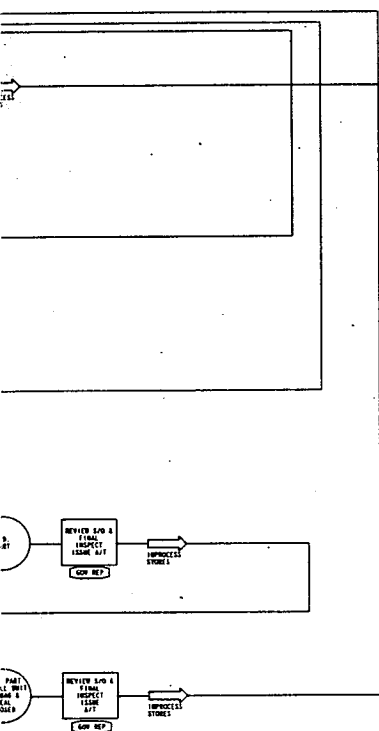
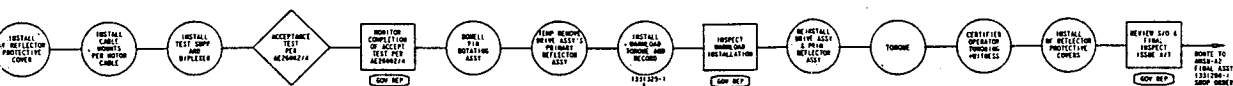




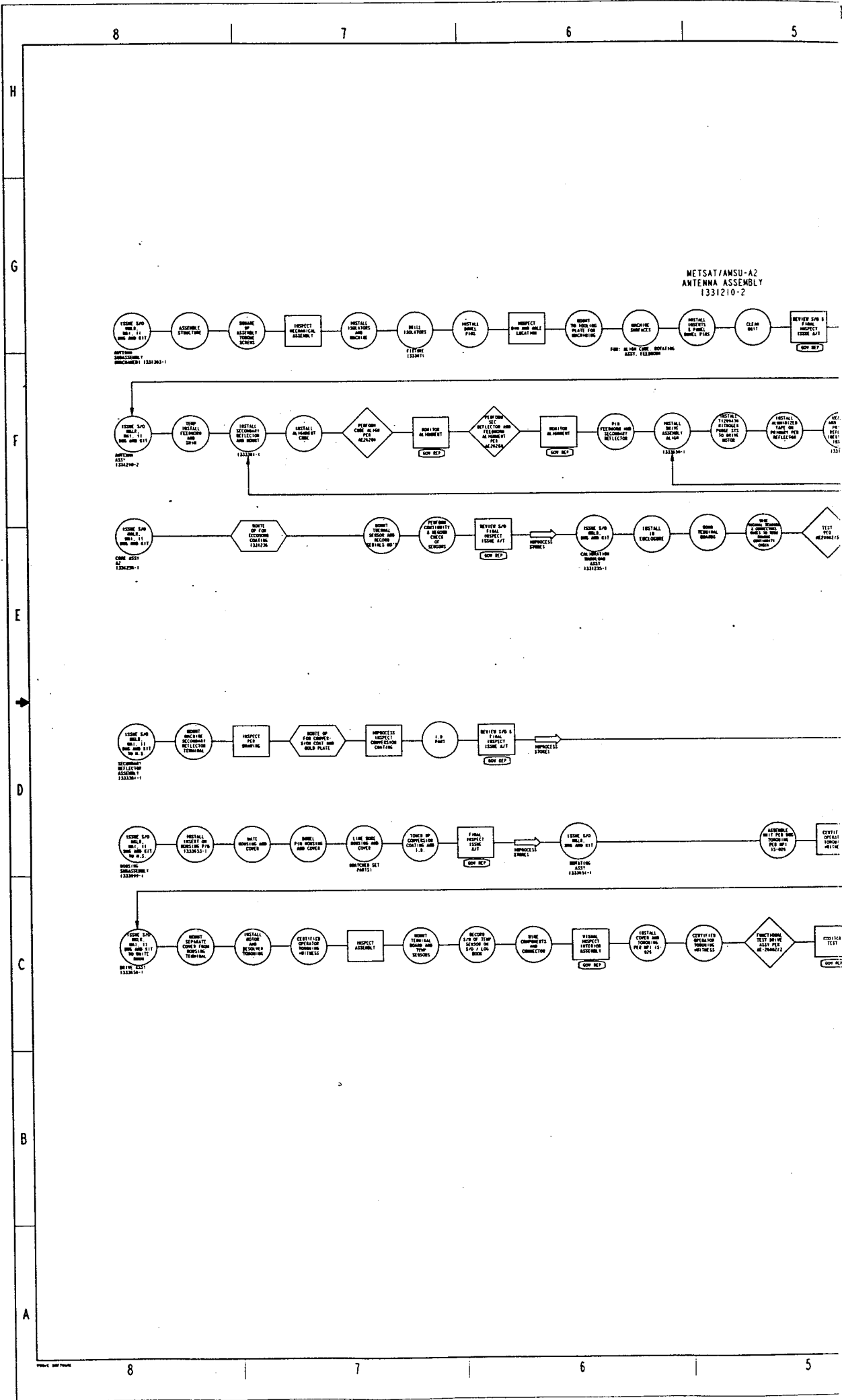




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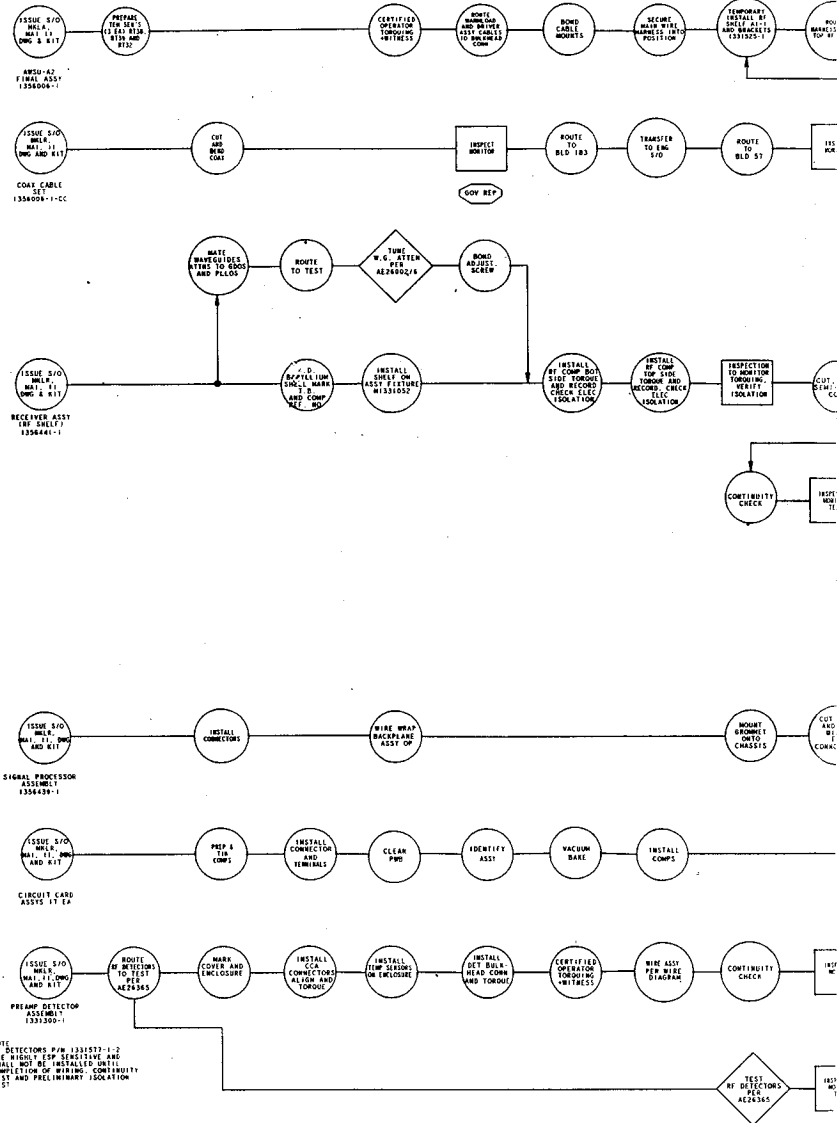


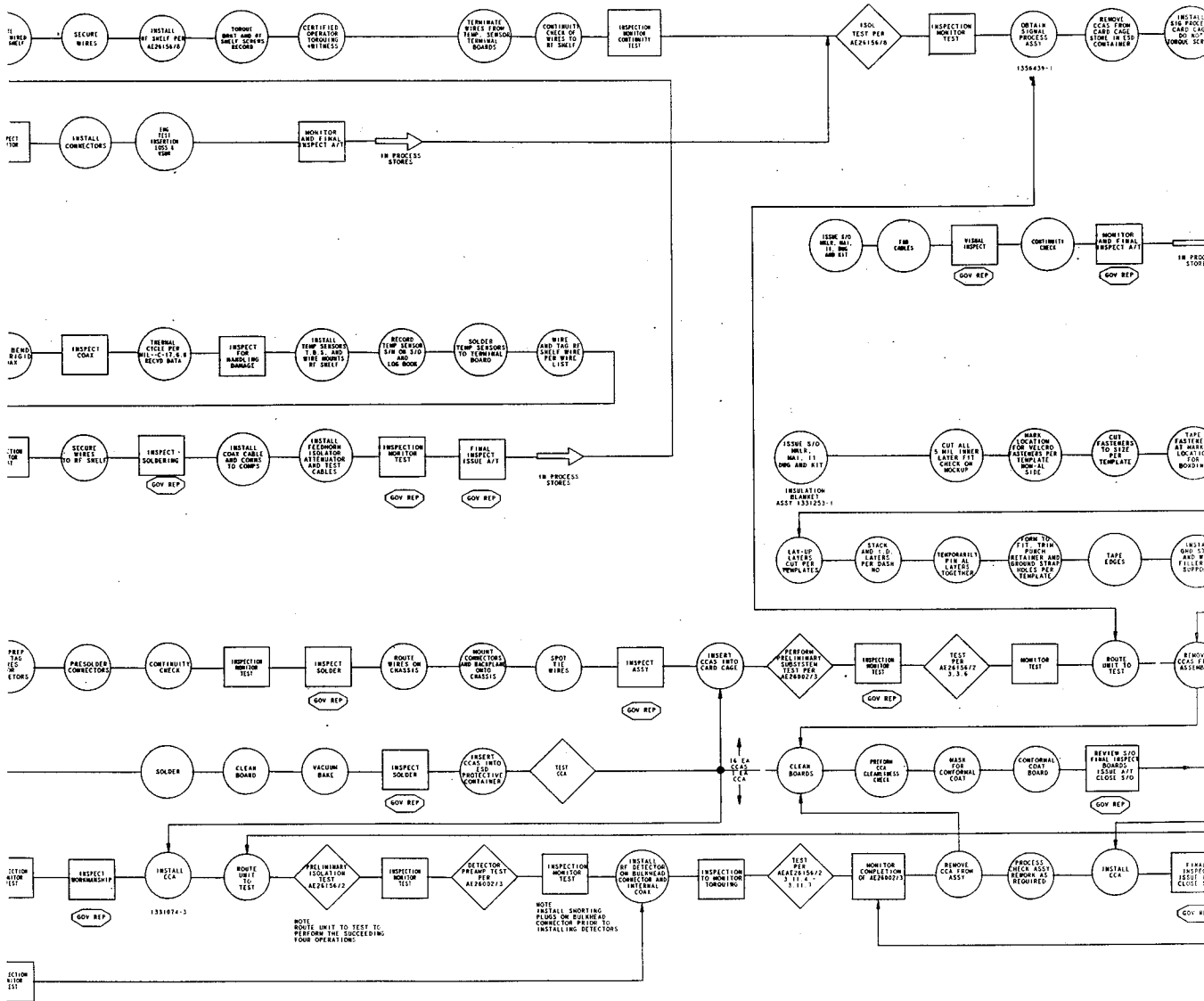
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DECIMALS ANGLES		CHECK		AMSU-A2	
.XX ± .03		STRESS			
.XX ± .010		MATERIAL			
SURFACE FINISH		PRODUCTION			
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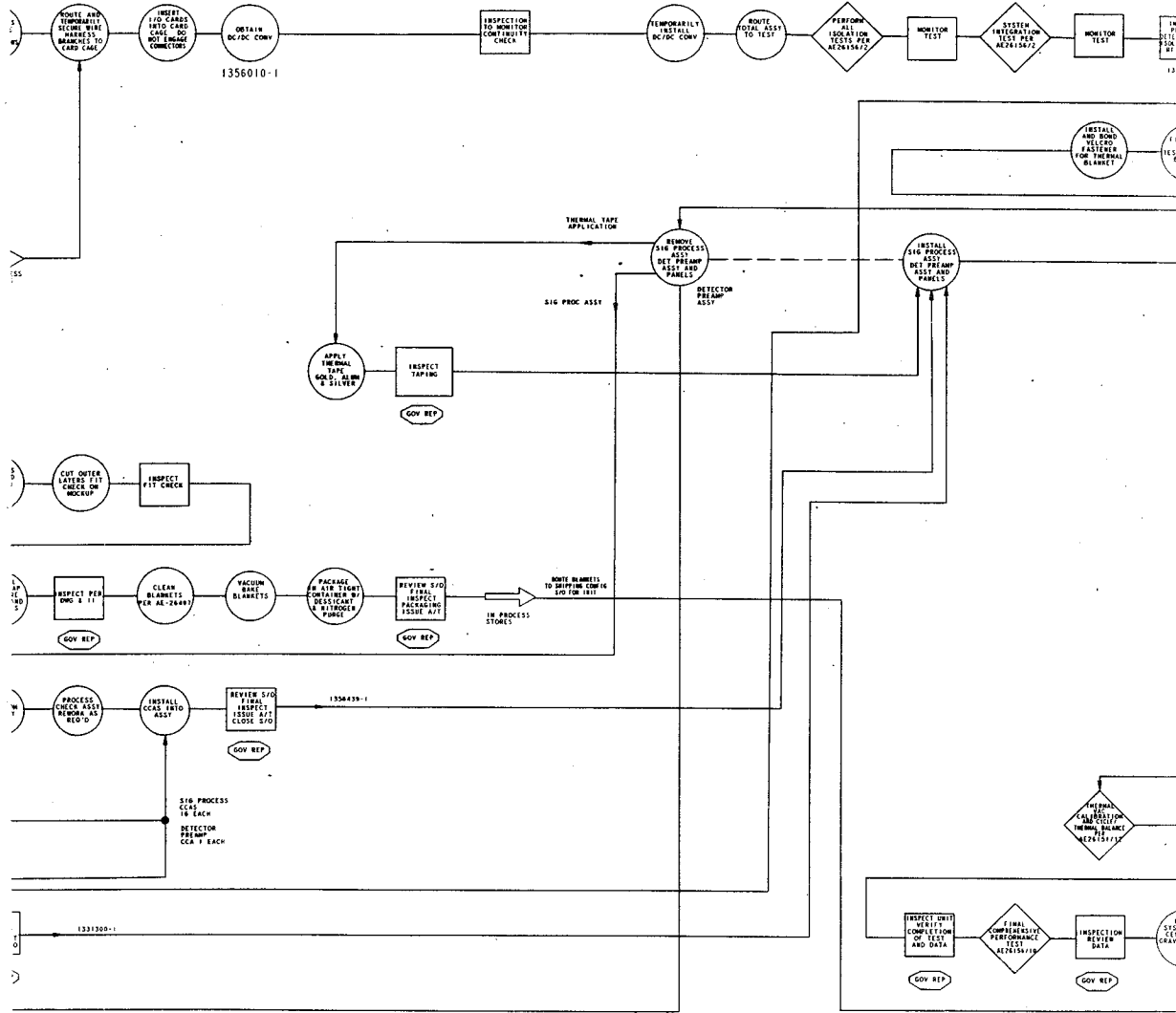


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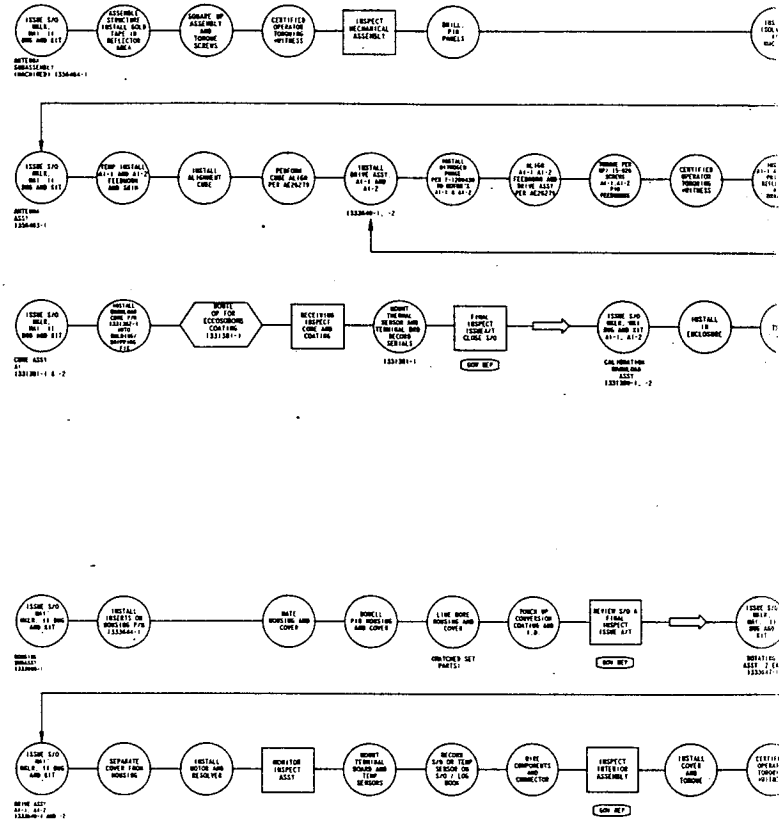
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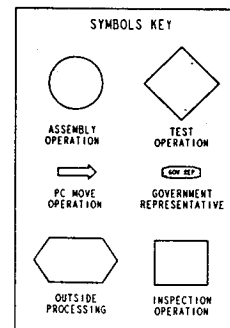






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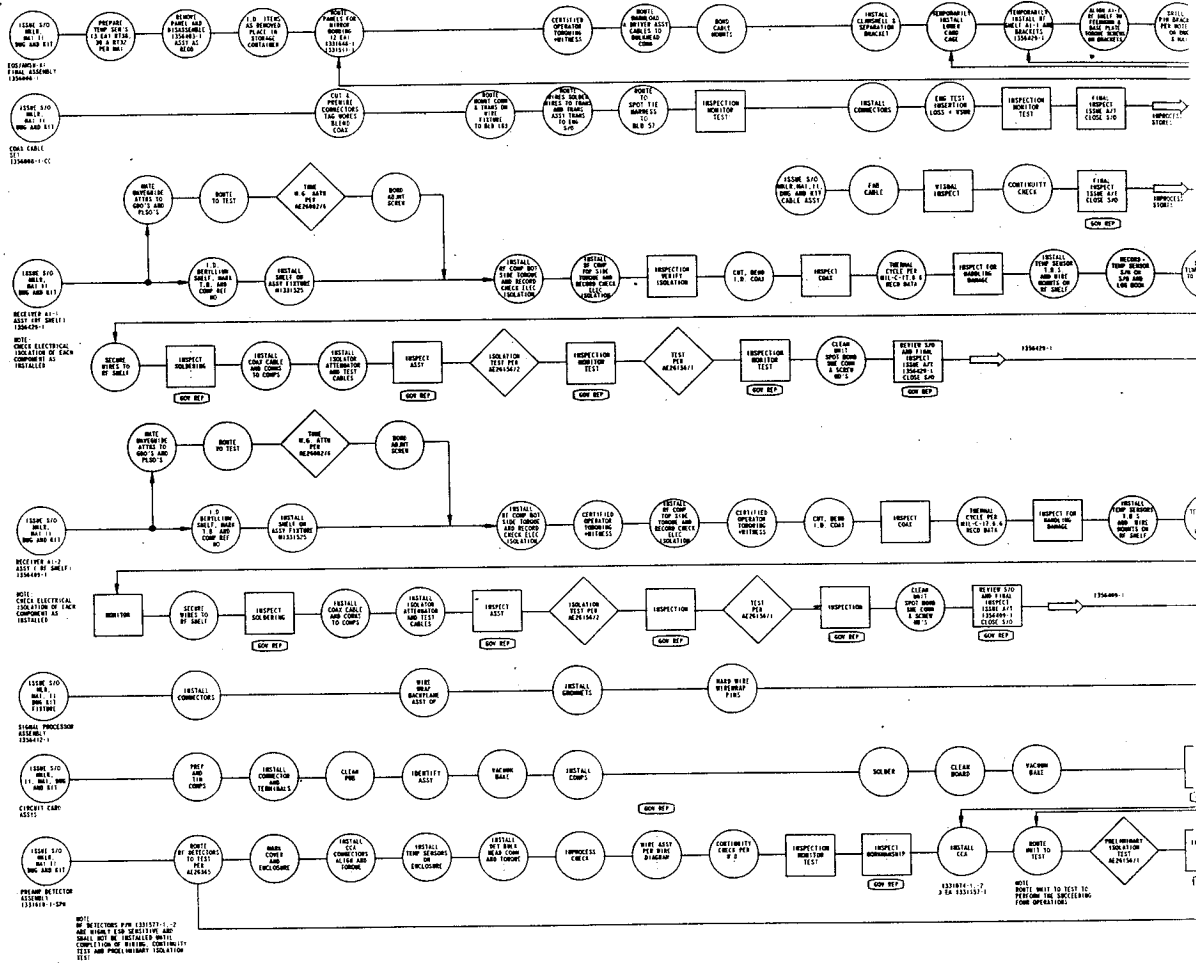


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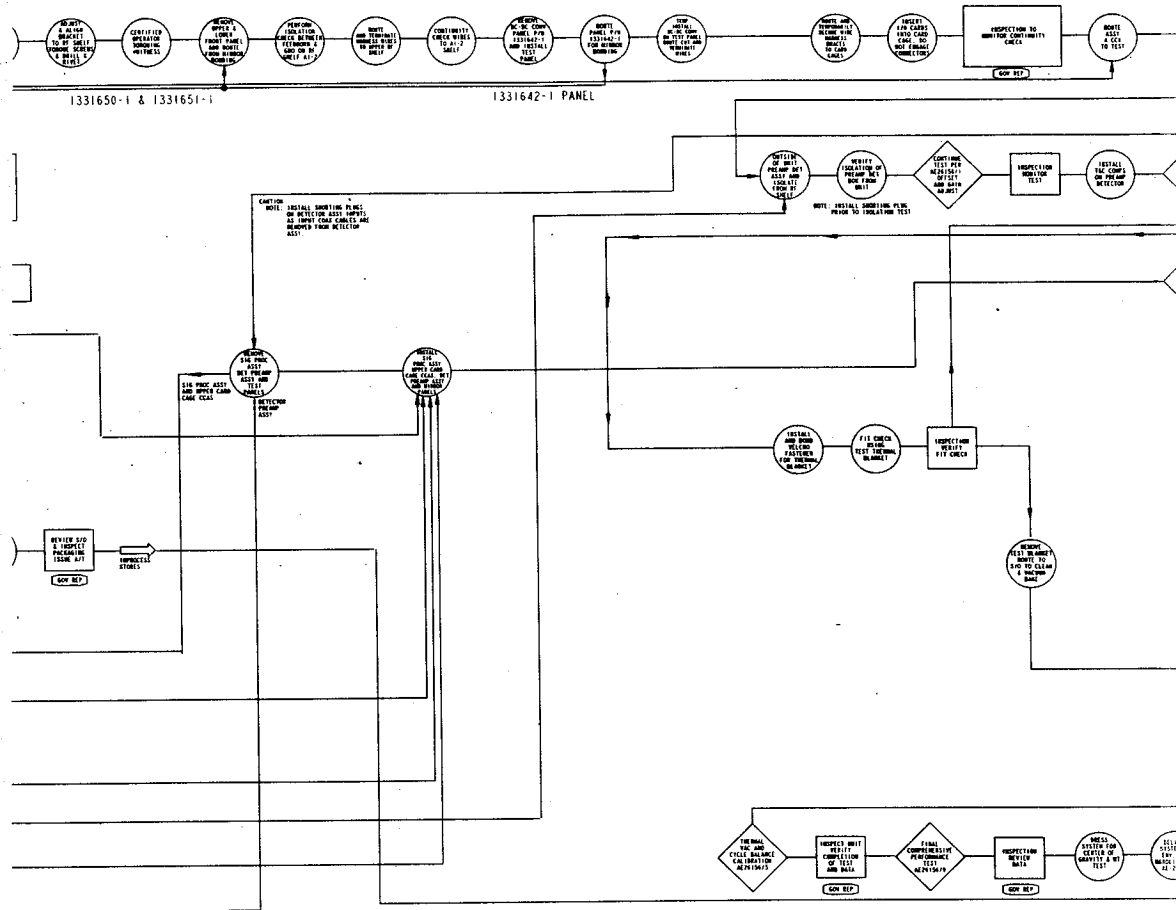
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.001 ± .010				✓		FINISH			
SURFACE FINISH				DO NOT SCALE DRAWING		MATERIALS			
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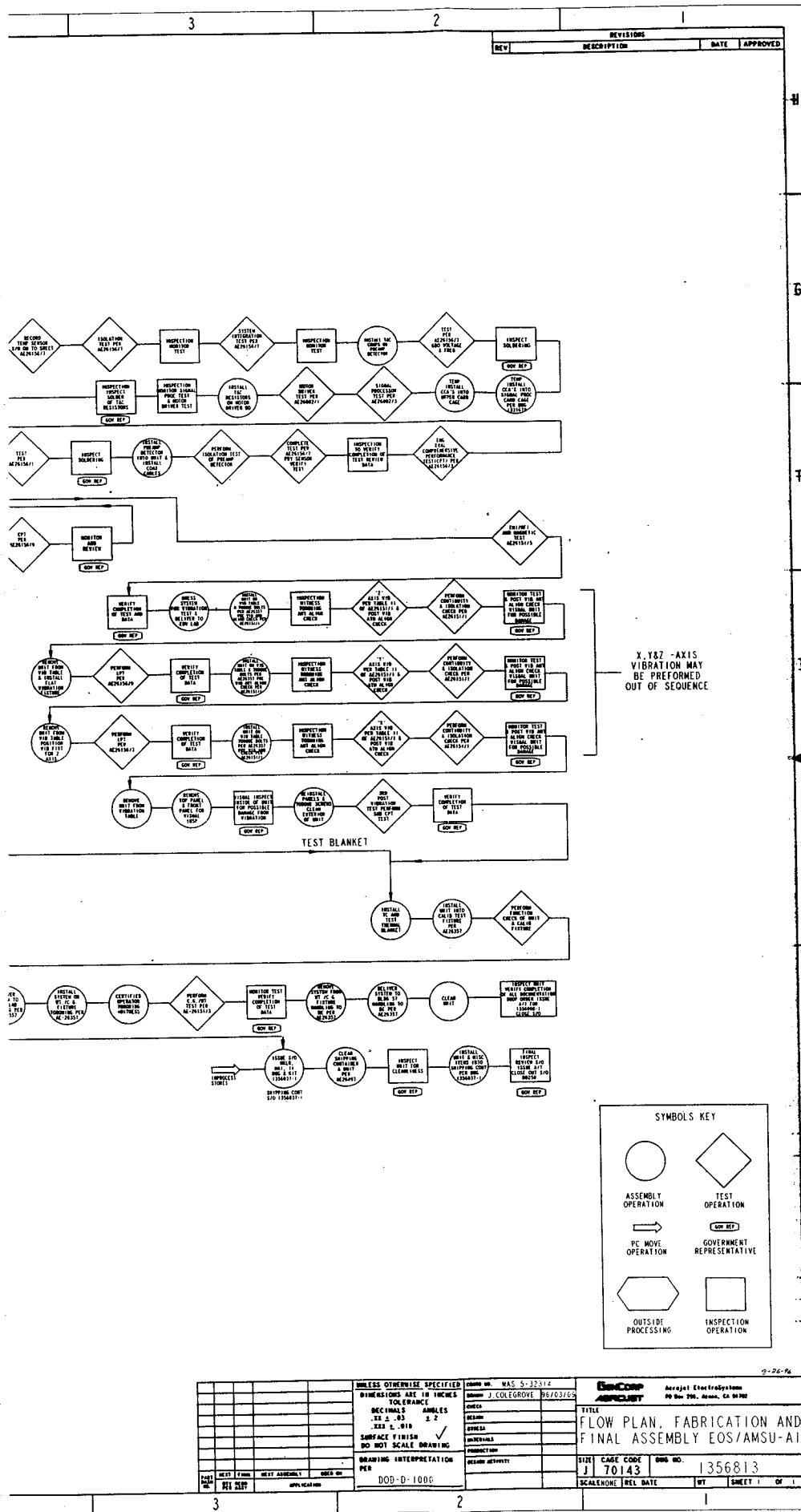
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EOS/AMSU-A1
FINAL ASSEMBLY



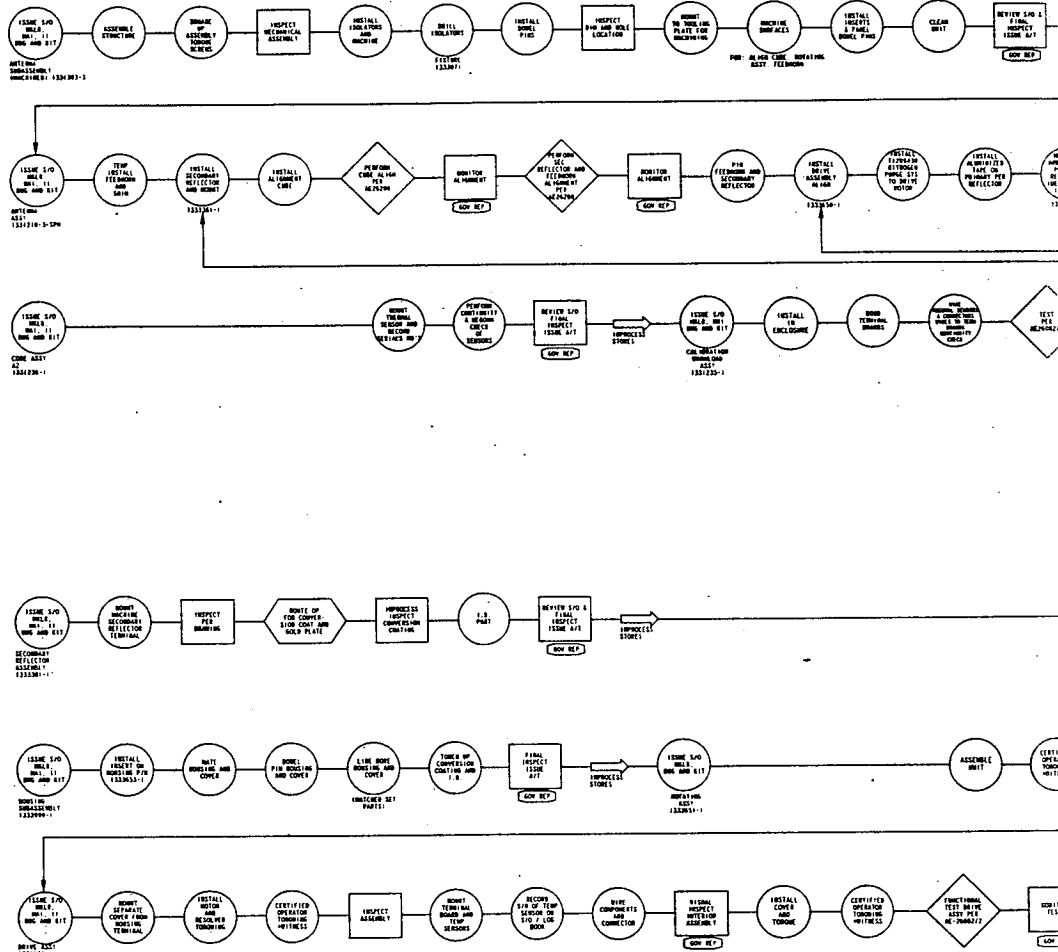


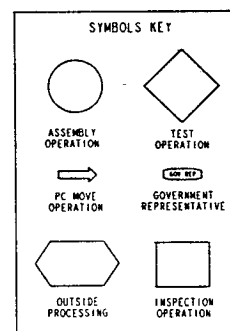




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EOS/AMSU-A2
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Report Documentation Page

1. Report No. ---	2. Government Accession No. ---	3. Recipient's Catalog No. ---	
4. Title and Subtitle Integrated Advanced Microwave Sounding Unit-A (AMSU-A), Performance Verification Plan		5. Report Date April 1996	
		6. Performing Organization Code ---	
7. Author(s) P. Patel		8. Performing Organization Report No. 10360A	
		10. Work Unit No. ---	
9. Performing Organization Name and Address Aerojet 1100 W. Hollyvale Azusa, CA 91702		11. Contract or Grant No. NAS 5-32314	
		13. Type of Report and Period Covered Final	
12. Sponsoring Agency Name and Address NASA Goddard Space Flight Center Greenbelt, Maryland 20771		14. Sponsoring Agency Code ---	
15. Supplementary Notes ---			
16. ABSTRACT (Maximum 200 words) This is the Performance Verification Plan for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A)			
17. Key Words (Suggested by Author(s)) EOS Microwave System		18. Distribution Statement Unclassified --- Unlimited	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of pages 65	22. Price ---

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4. TITLE AND SUBTITLE Integrated Advanced Microwave Sounding Unit -A (AMSU-A), Performance Verification Plan			5. FUNDING NUMBERS NAS 5-32314	
6. AUTHOR(S) P. Patel				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Aerojet 1100 W. Hollyvale Azusa, CA 91702			8. PERFORMING ORGANIZATION REPORT NUMBER CDRL 022 10360A April 1966	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) NASA Goddard Space Flight Center Greenbelt, Maryland 20771			10. SPONSORING/MONITORING AGENCY REPORT NUMBER ---	
11. SUPPLEMENTARY NOTES ---				
12a. DISTRIBUTION/AVAILABILITY STATEMENT ---			12b. DISTRIBUTION CODE ---	
13. ABSTRACT (Maximum 200 words) This is the Performance Verification Plan for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).				
14. SUBJECT TERMS EOS Microwave System			15. NUMBER OF PAGES 65	
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