THE AEROSPACE CORPORATION

GUVI

MECHANICAL DESIGN

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MECHANICAL DESIGN REQUIREMENTS

(all requirements the same as shown at GUVI PDR plus one additional goal)

- Clear Field of View (CFOV) to be +85 degrees (anti-sun) to -62 degrees across track (Y direction) and +/- 10 degrees along track (X direction). Field of View (FOV) to be +80 degrees to -60 degrees across track and +/- 5.92 degrees along track. FOV origin to be identified on mechanical ICD (7366-0001).
- Alignment of spectrograph using an APL-supplied alignment cube. CFOV from two adjacent sides of the cube required during ground operations.

THE AEROSPACE CORPORATION

GUVI

MECHANICAL DESIGN REQUIREMENTS (cont.)

- Appropriate access for gaseous nitrogen purge fitting. (Swagelok 1/4 fitting)
- Flatness Requirement is .015 maximum.
- Locational tolerance of each package to be .028 max.
- GUVI instrument to clearly define an instrument origin on mechanical ICD.
- GUVI subsystem (minus electronics control unit) to fit within 30 inch payload adapter envelope and 11 inch height for launch configuration, 14 inch height for ground configuration.

MECHANICAL DESIGN REQUIREMENTS (cont.)

- Layout Restrictions: SIS electronics within 6 inches of scan motor. High Voltage Power Supply (HVPS) within 12 inches of both detector tube assemblies. Focal Plane Electronics (FPE) 1 and 2 within 4 inches of their respective tube assemblies. Electronics Control Unit (ECU) within 6 feet of GUVI subsystem.

ADDED GOAL SINCE PDR:

- If possible, with minimal design modification, deploy spectrograph cover to angle greater than 90 degrees due to scattered light concerns.

THE AEROSPACE CORPORATION

GUVI

CHANGES SINCE PDR

- Added thermal radiator (52 square inches).
- Added thermal strap assembly.
- Added redesigned detector tube assemblies.
- Modified and defined location of alignment cube. Cube is now 3/4 inches and will be supplied by spacecraft. Cube's furthest edge extends 1/4 inch further into launch vehicle keep-out area. Received verbal approval from spacecraft team.
- Located redesigned Focal Plane Electronics.
- Arranged to use SSUSI/NEAR motors.
- Arranged to use re-qualified MSX bellows motors.
- Added redesigned Electronics Control Unit.

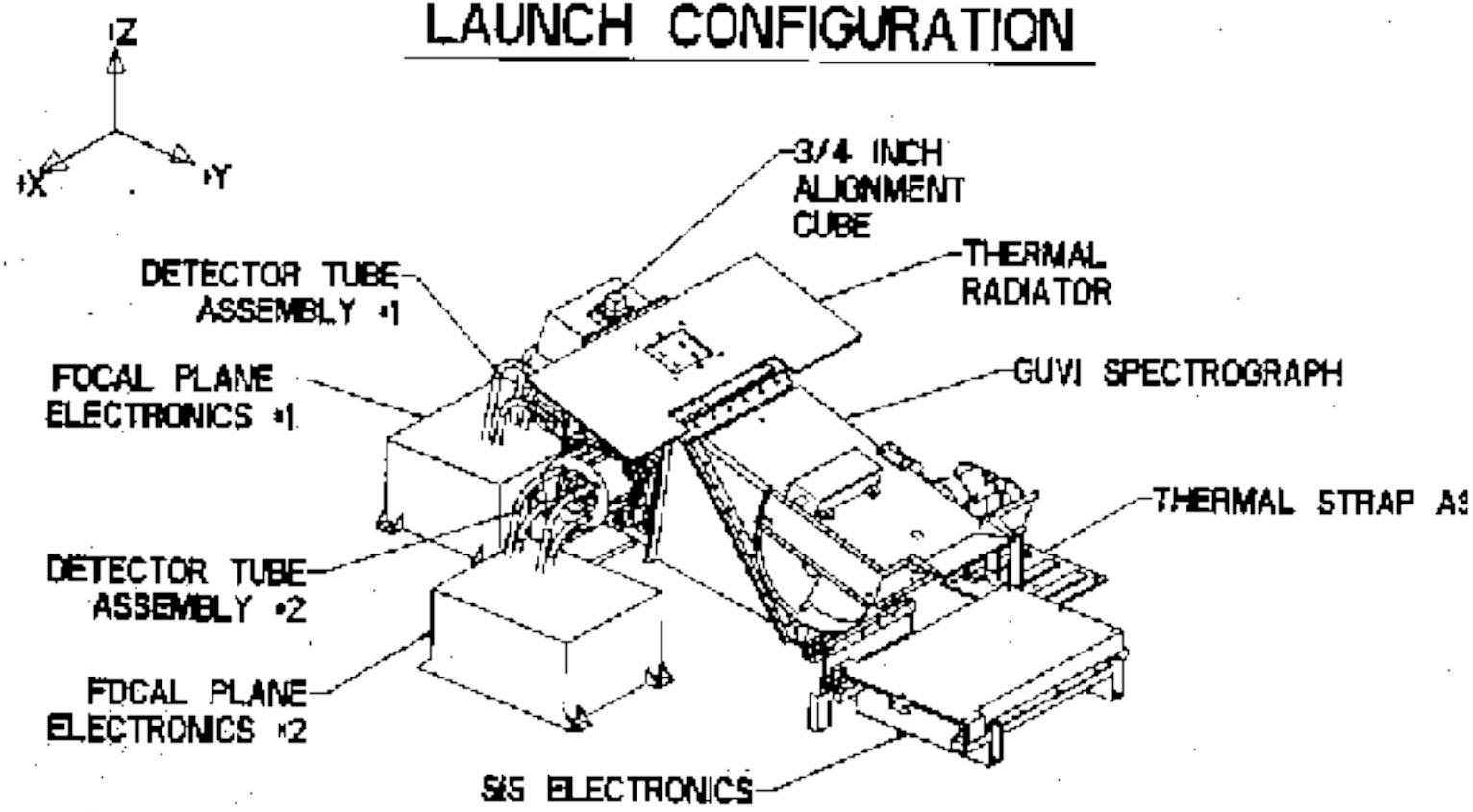
CHANGES SINCE PDR (cont.)

- Changed instrument origin coordinates on mechanical ICD to one of the mounting holes on the front foot of the spectrograph.
- Changed cover deployment angle to 105 degrees.
- In lieu of pinning the spectrograph, added one tight tolerance hole and one slotted hole.

THE AEROSPACE CORPORATION

GUVI

LAUNCH CONFIGURATION



GUVI CDR January 28, 1998

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GUVI CDR January 28, 1998

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GUVI

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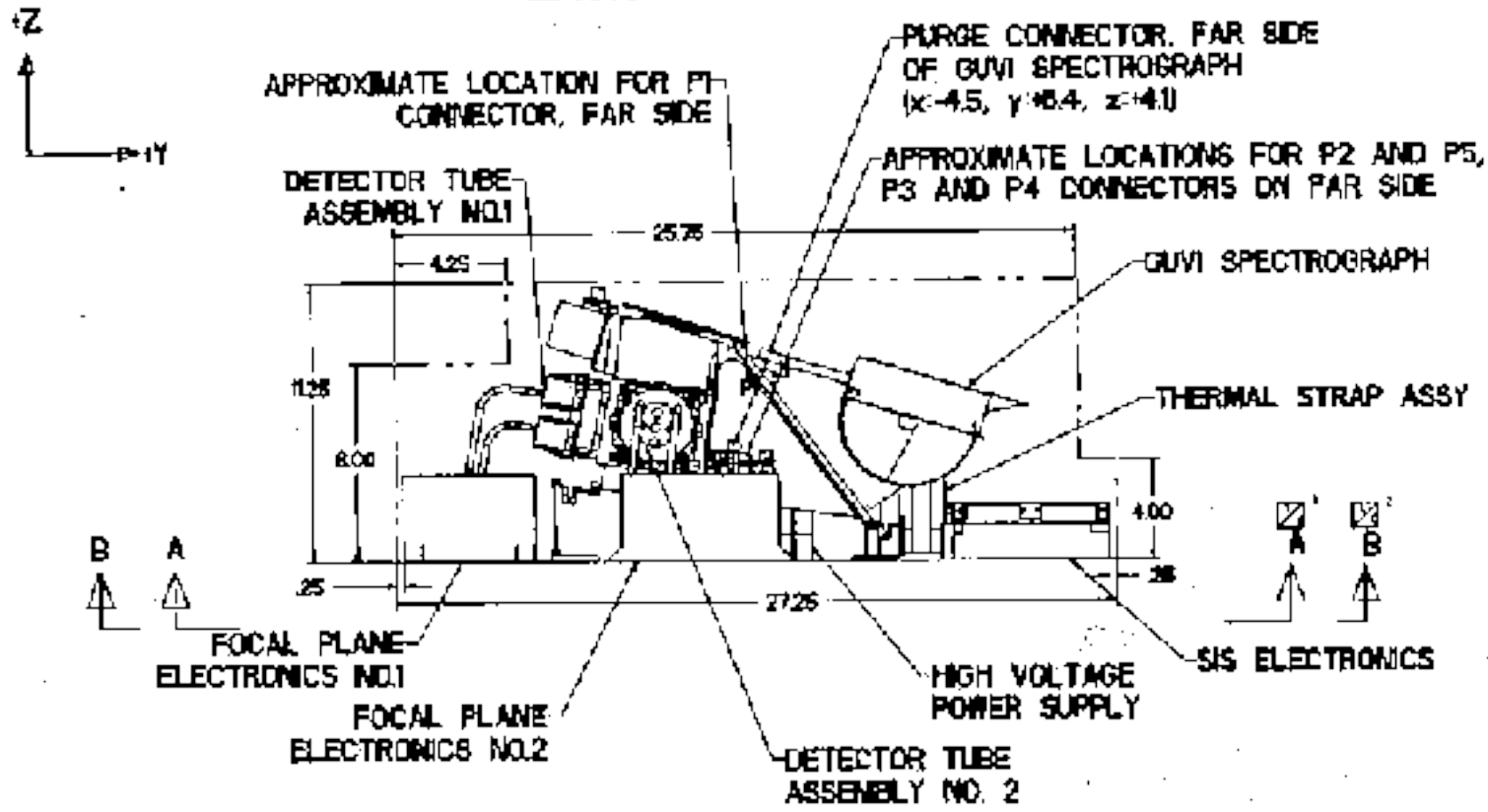

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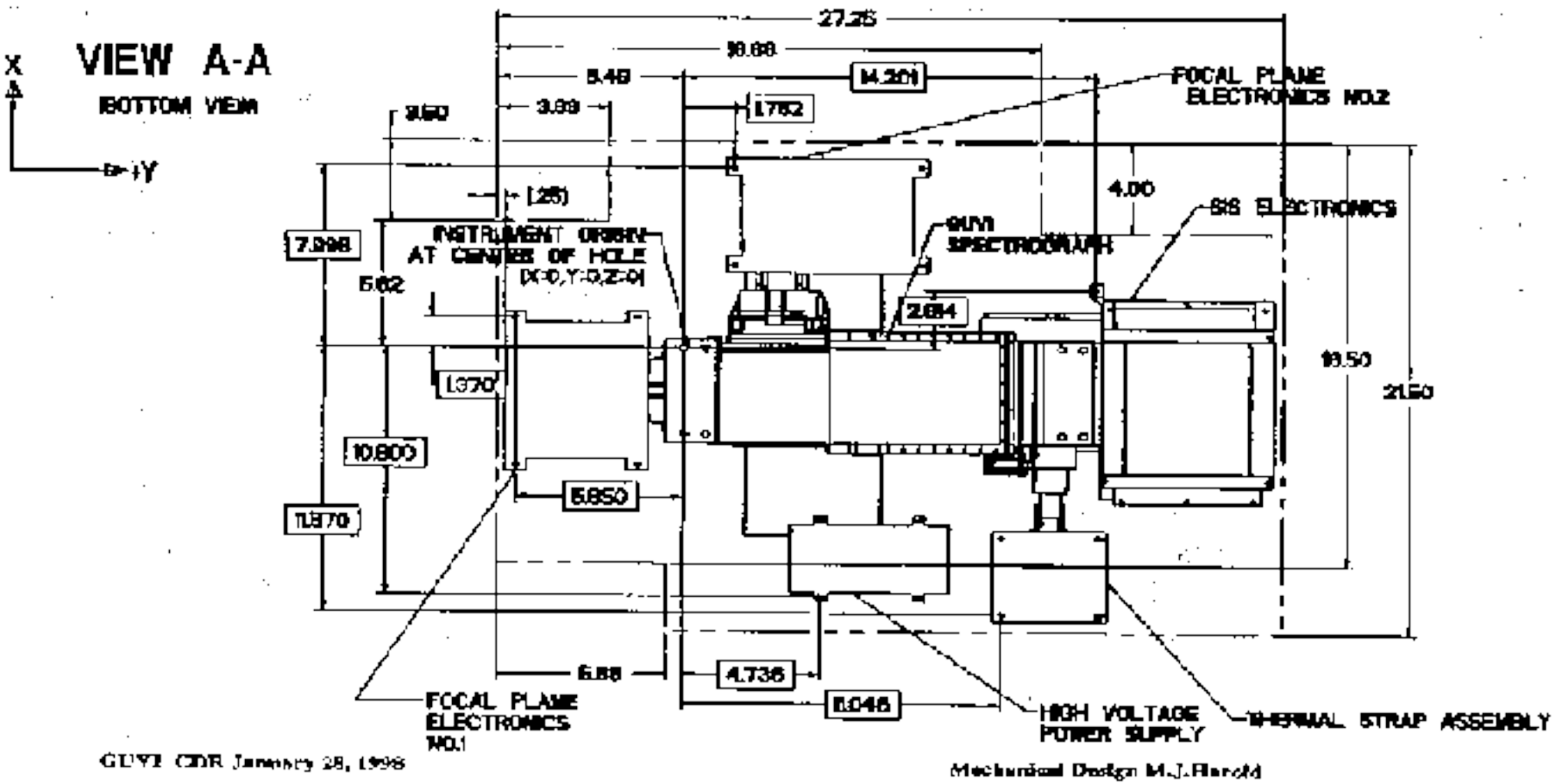

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GUVI CDR January 28, 1998

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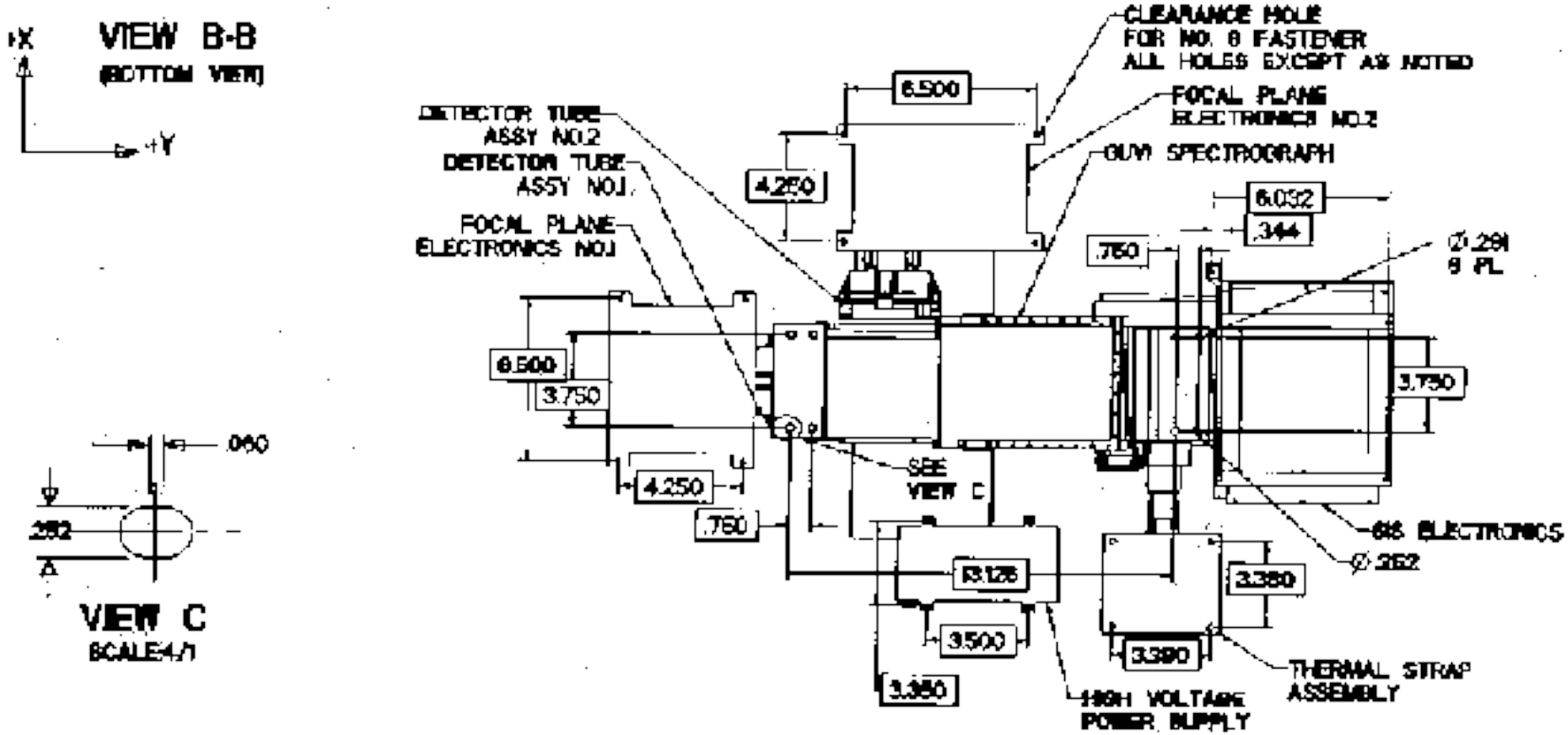

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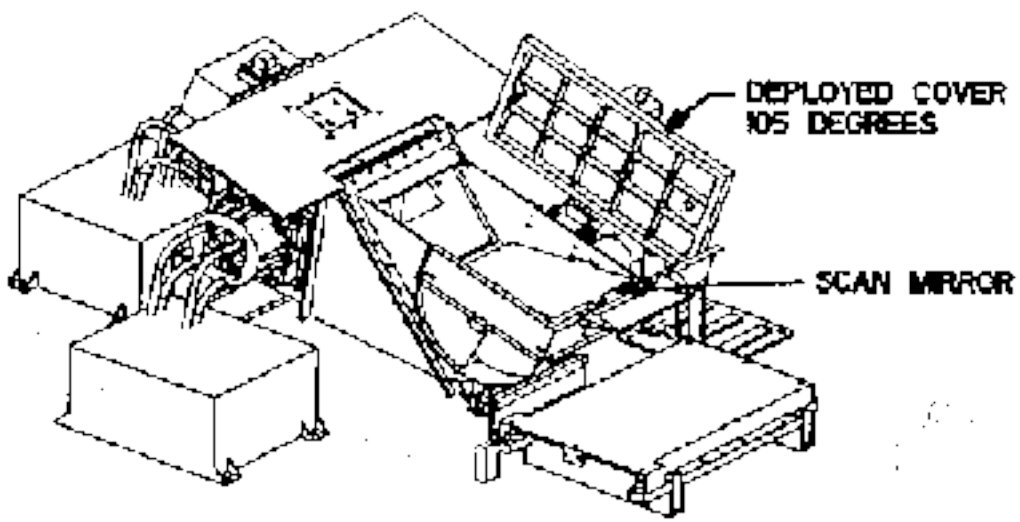
ORBITAL CONFIGURATION



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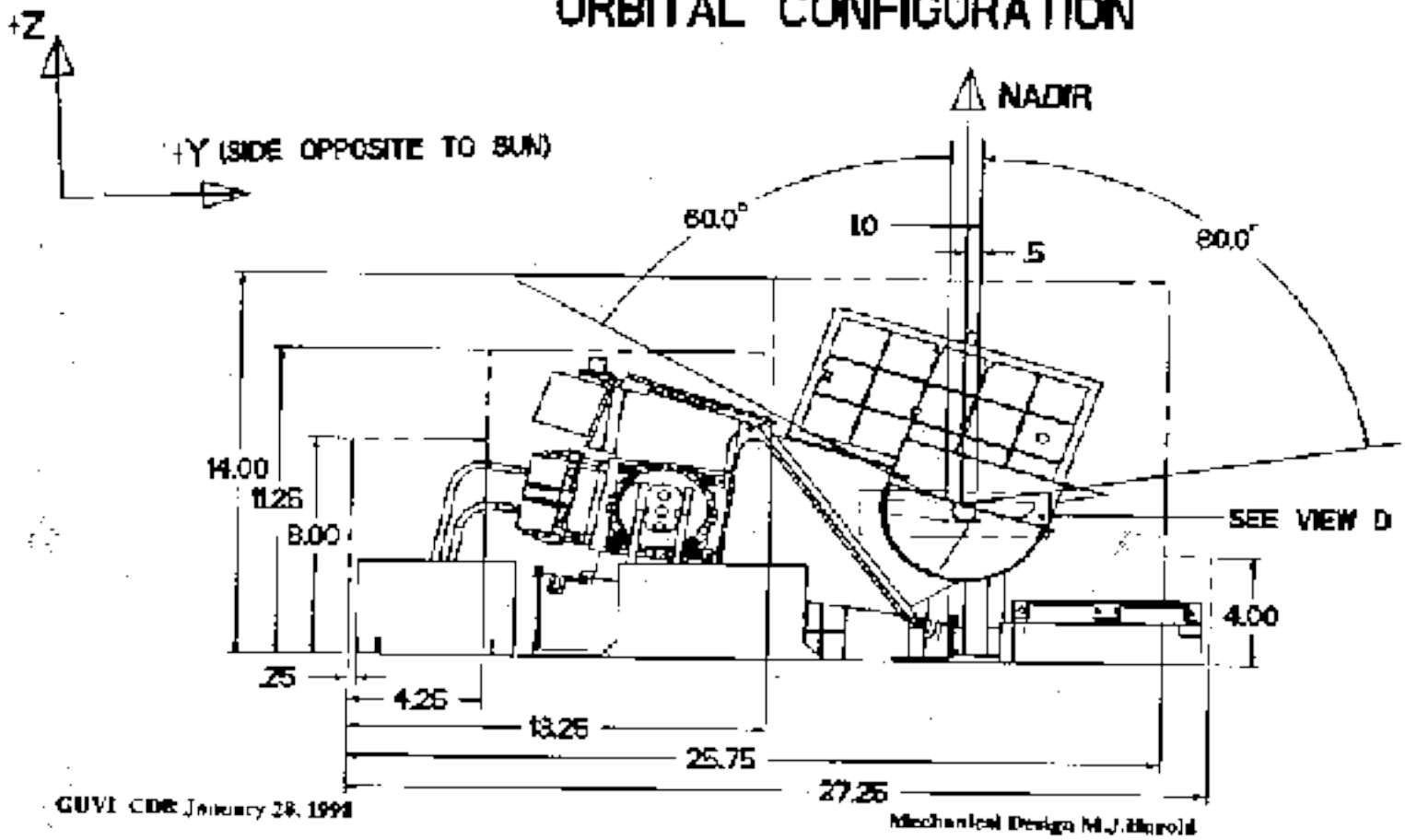
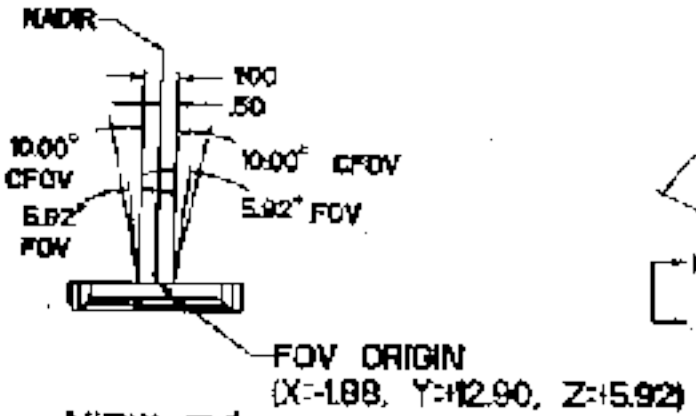
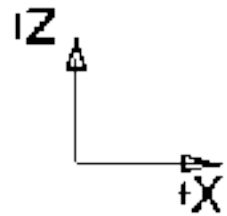
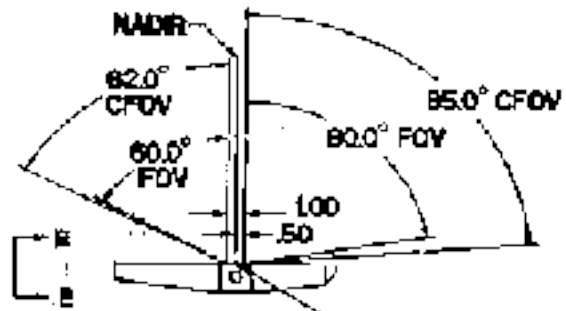


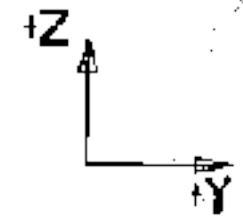


VIEW E-E

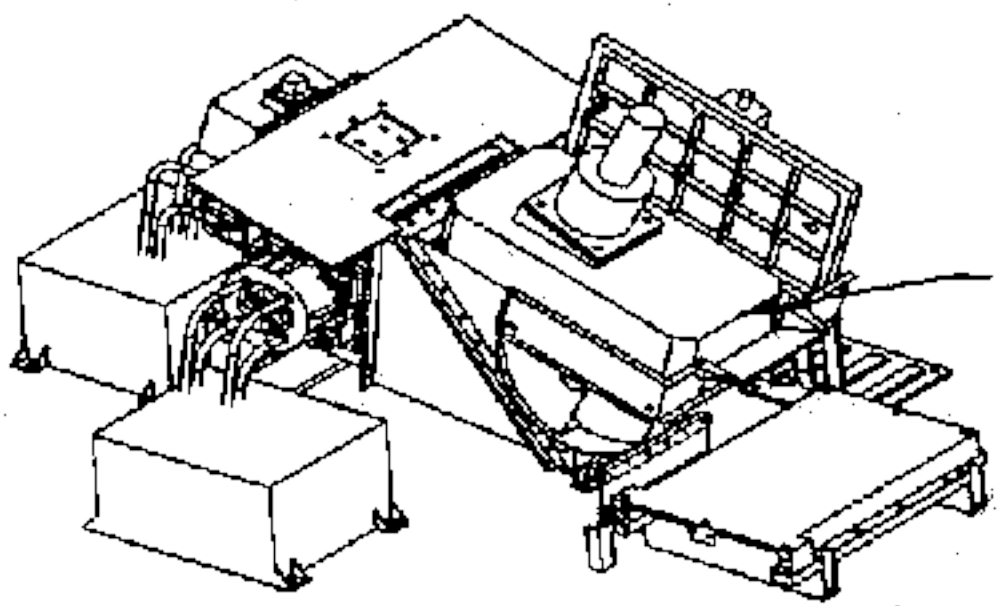




VIEW D
(ONLY SCAN MIRROR SHOWN FOR CLARITY)



GROUND CONFIGURATION



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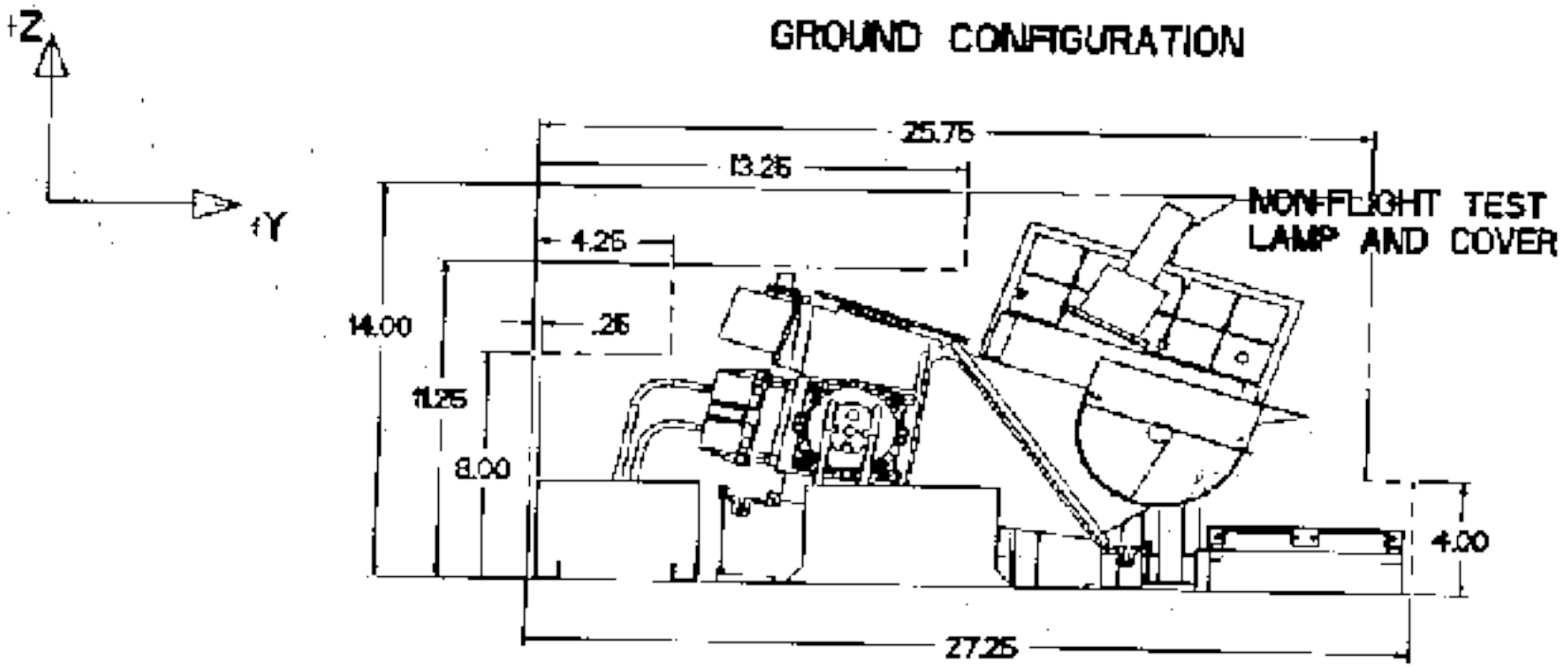
GROUND CONFIGURATION



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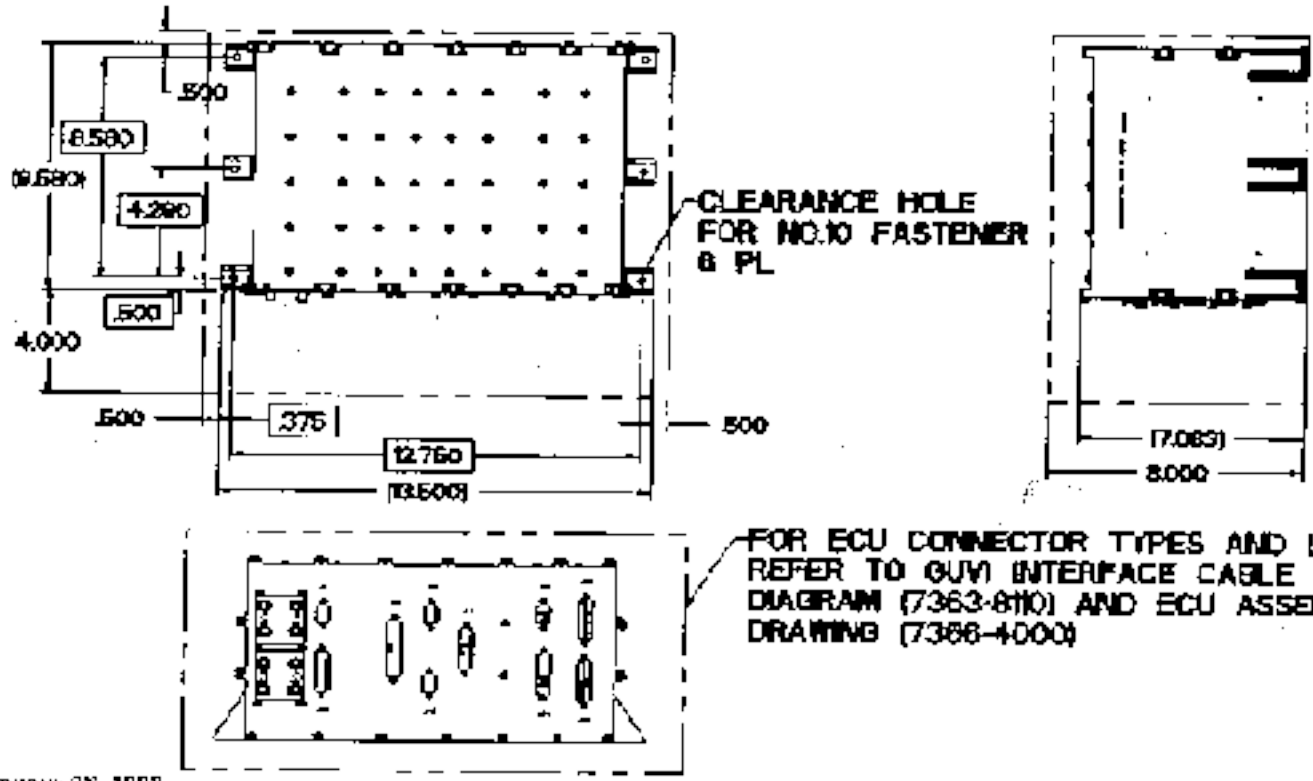
ELECTRONICS CONTROL UNIT

(LOCATED ON -X PANEL)



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GUVI GASEOUS NITROGEN PURGE SYSTEM

- 99.995% pure nitrogen, water 5.7 ppm, total hydrocarbons 15 ppm
- Flow rate to be 1 to 4 liters/minute
- Connector is for 1/4 tube, swagelok part number is A-410-1-2.
- Connector location is approximately X=-4.5, Y=+6.4, Z=+4.1.
- Maximum time without purge is 8 hours provided the flight or test cover is closed. Purge must be maintained while cover is open.