(a) Optical Test Configurations for Mirrors with Power

Fixed 72-Inch-Diameter Plano

(b) Plano-Mirror Test Configurations

Figure 6.1-1. Mirror Test Configurations
Figure 6.2-2. MOD II Twyman-Green Interferometer Schematic
Figure 6.2-4. Williams Interferometer Schematic
Figure 6.2-6. Photographic Test Equipment
Figure 6.2-7. Photographic Target Format

Each Target
8mm x 8mm

Edge of Film Format

\[ Y_{max} \]

\[ 0.7 Y_{max} \]

\[ 0.38 Y_{max} \]
Figure 6.2-8. Optical Measurement of Image Smear.
Figure 6.2-15. Profiling Spherometer on Pyroceram Master
Figure 6.3-1. MMTHM Assembly Schematic

LMTS
Tracking Mirror Assembly
FSTS
MM Aft Shell
OA THN

Sta 590
Sta 518
Sta 345
Sta 75

secret

Handle via BYEMAN
Control System Only
Figure 6.4-1. Mission Module Aft Section Isothermal Optical Quality Test Configuration in Chamber III
Figure 6.4-2. Tracking Mirror Thermo-Optical Tests
Figure 6.4-3. MMAS Thermal/Optical Test Configuration Chamber A
Figure 6.4-4. Sub-Aperture Optical Test Configuration

- Tracking Mirror Stable Arm
- Monochromatic On-Axis Interferometer
- MM Supported at 2 Degrees from Vertical
- Primary Mirror ('n Air Bag)
- Vertical Mirror Support Structure Attached to the MM
- System Apertures With Sub-Aperture Interference Pattern Superimposed (Typical Location)
Figure 6.4-5. MM Vacuum Test Configuration in Chamber A
Figure 6.5-1. Test Facility - High Bay Area
Figure 6.5-2. Chamber I

Housing
Reflective Null Corrector
Mirror Mount Location
and 33 Inch Diameter
Reflective Plano

Instrument Shelf for
Optical Testing of
82-Inch-Diameter

Instrument Shelf for
Refractive Null
Corrector

Protective Cover

Mirror Being Tested

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(Control Number)

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Figure 6.5-3. Chamber I

Handle via BYEMAN Control System Only
Figure 6.5-4b. Chamber Ig

Handle via BYEMAN
Control System Only
Figure 6.5-5. Chamber II

Optical Instrument Location

52-Inch- or 62-Inch-Diameter Reference Sphere

Mirror Being Tested

Optical Instrument Location

Handle via BYEMAN Control System Only
Figure 6.5-6. Chamber IIg
Figure 6.4-7. Chambers IIIa and b
Figure 6.5-8. Chamber A
Figure 6.5-9. Chamber A
Figure 6.5-10. MM Acoustic Vibration Test Configuration

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Control System Only
Figure 6.5-11. Acoustic Test Chamber
Figure 6.5-12. Acoustic Test Facility
Figure 6.6-1. Positioner Dolly, Chamber IIEM

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Control System Only
Figure 6.6-2. Upright Adjustable Mirror Support, Chamber I EM
Figure 6.6-3. Instrumentation Processor Test Set
Front Panel View
6-109
Handle via BYEMAN
Control System Only
Figure 6.6-4. Layout Drawing of Sensor Test System.
Figure 6.6-6. Horizontal Test Stand Setup
Figure 6.6-7. Checkout Cradle and Cantilever Catwalk
(With SDM Aft Structure)
Figure 6.6-8. Data Management System
Control Computer (IBM)

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SECRET D
Figure 6.6-9. Data Acquisition Equipment Breadboard (Systems Engineering Laboratories), Shown Being applied in Thermocouple Calibration.
Figure 6.6-10. Mission Module Assembly Stand Scale Model
Figure 6.6-11. Test Body Transporter and Scaffolding Unit
\( \alpha_o \) - magnitude of \( \tilde{q}_o \), and
\( \tilde{q}_o \) - unit vector defining the direction of \( q_o \).

The unit vector \( \tilde{q}_o \) is given by:

\[
\tilde{q}_o = \begin{bmatrix} \sin \theta_o \\ -\cos \theta_o \sin \phi_o \\ \cos \theta_o \cos \phi_o \end{bmatrix}.
\]  
Equation A.2-1

A.2.2 Vehicle Coordinate System (VCS)

The VCS is defined in Figure A.2-2.

![Diagram of Vehicle Coordinate System](image)

Figure A.2-2
Vehicle Coordinate System
Figure A.2-3
Optical Sensor Coordinate System

Figure A.2-4
Tracking Mirror Gimbal Angles