XMM Optical Monitor

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ASSEMBLY, INTEGRATION AND VERIFICATION PLAN FOR QM MODEL

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3	6 February 1997		

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1. INTRODUCTION

This document describes the integration and verification(AIV) processes for the QM of the Optical Monitor.

2. OBJECTIVE

It is the purpose of this procedure to identify and to document the integration and test procedures for the Optical Monitor. This document presents the overview for the QM. The details for each sub assembly will be issued as separate documents.

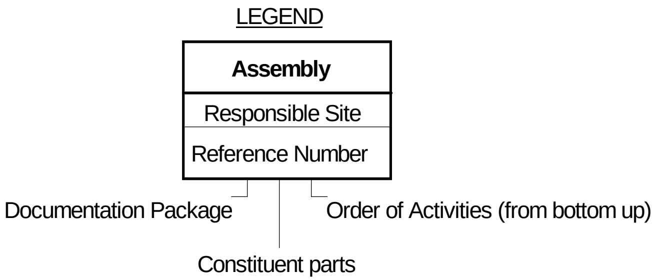
Wherever possible, common test equipment and philosophies will be used for alignment, calibration and acceptance testing.

3. REFERENCE DOCUMENTS

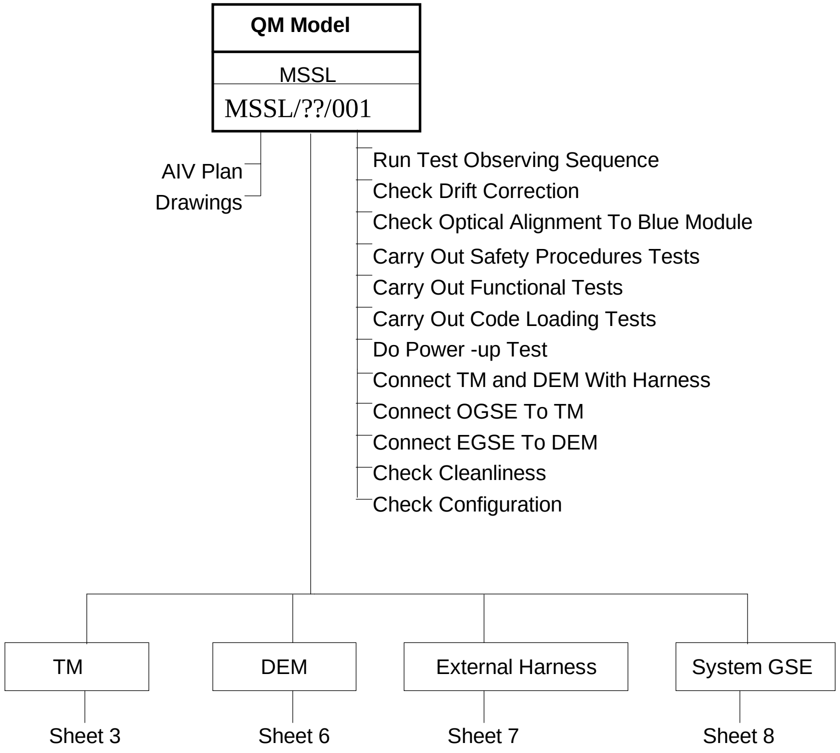
XMM-OM/MSSL/AD/0016	XMM-OM Schedules
XMM-OM/MSSL/NT/0012	XMM-OM Model Philosophy and Build Standards
XMM-OM/MSSL/SP/0027	XMM-OM Cleanliness Control Plan
XMM-OM/MSSL/SP/0031	XMM-OM Product Assurance Plan

4. PROCEDURE OVERVIEW

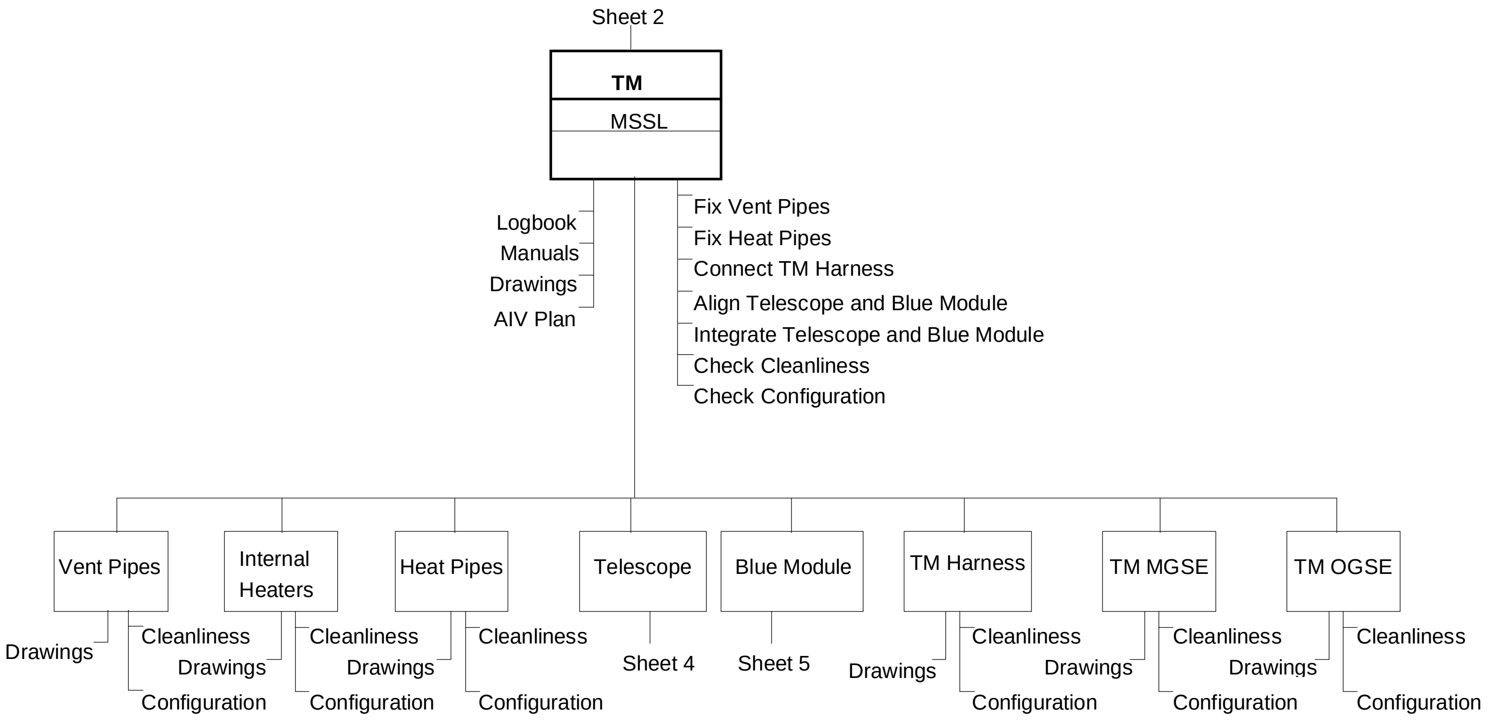
The overall relationships, together with the assembly and test processes, are shown in the following 9 sheets:-


LEGEND
Assembly
Responsible Site
Reference Number
Documentation Package
Order of Activities (from bottom up)
Constituent parts

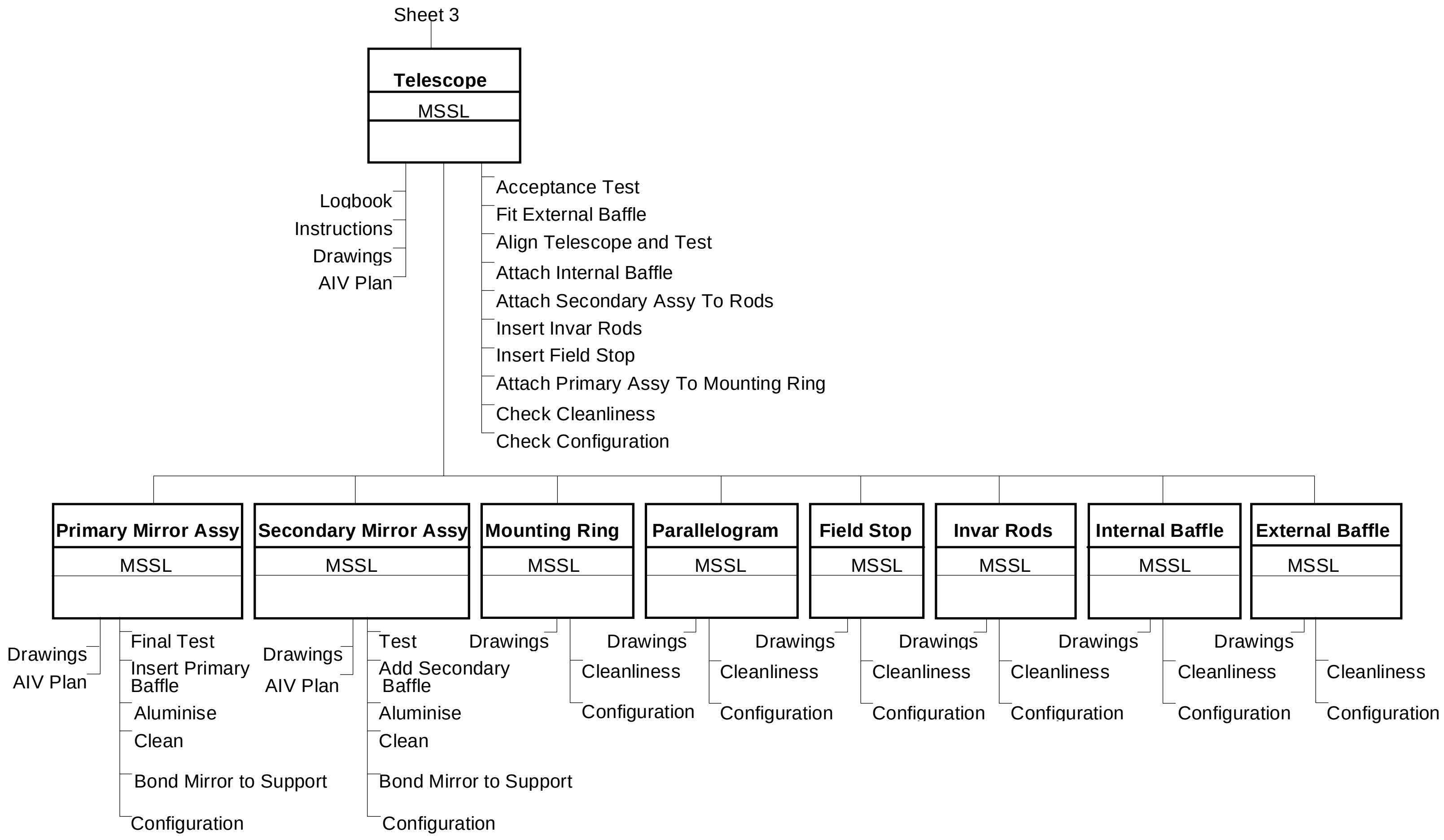
Sheet 1


QM Model
MSSL
MSSL/??/001
AIV Plan
Drawings
Run Test Observing Sequence
Check Drift Correction
Check Optical Alignment To Blue Module
Carry Out Safety Procedures Tests
Carry Out Functional Tests
Carry Out Code Loading Tests
Do Power -up Test
Connect TM and DEM With Harness
Connect OGSE To TM
Connect EGSE To DEM
Check Cleanliness
Check Configuration
TM
DEM
External Harness
System GSE
Sheet 3
Sheet 6
Sheet 7
Sheet 8

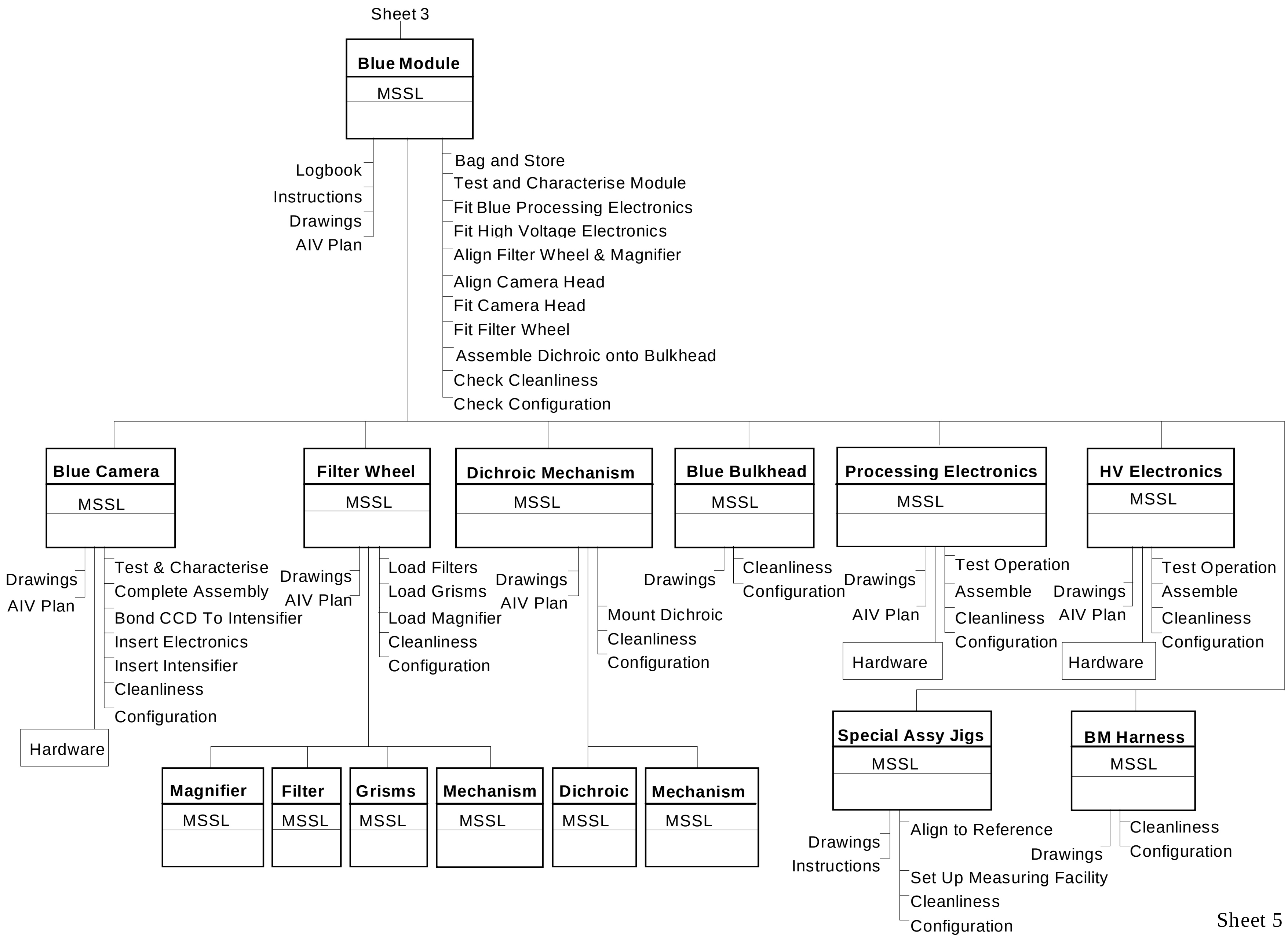
Sheet 2


Sheet 2
TM
MSSL
Logbook
Manuals
Drawings
AIV Plan
Fix Vent Pipes
Fix Heat Pipes
Connect TM Harness
Align Telescope and Blue Module
Integrate Telescope and Blue Module
Check Cleanliness
Check Configuration
Vent Pipes
Drawings
Cleanliness
Configuration
Internal Heaters
Cleanliness
Drawings
Configuration
Heat Pipes
Cleanliness
Drawings
Configuration
Telescope
Sheet 4
Blue Module
Sheet 5
TM Harness
Drawings
Cleanliness
Configuration
TM MGSE
Cleanliness
Drawings
Configuration
TM OGSE
Cleanliness
Drawings
Configuration

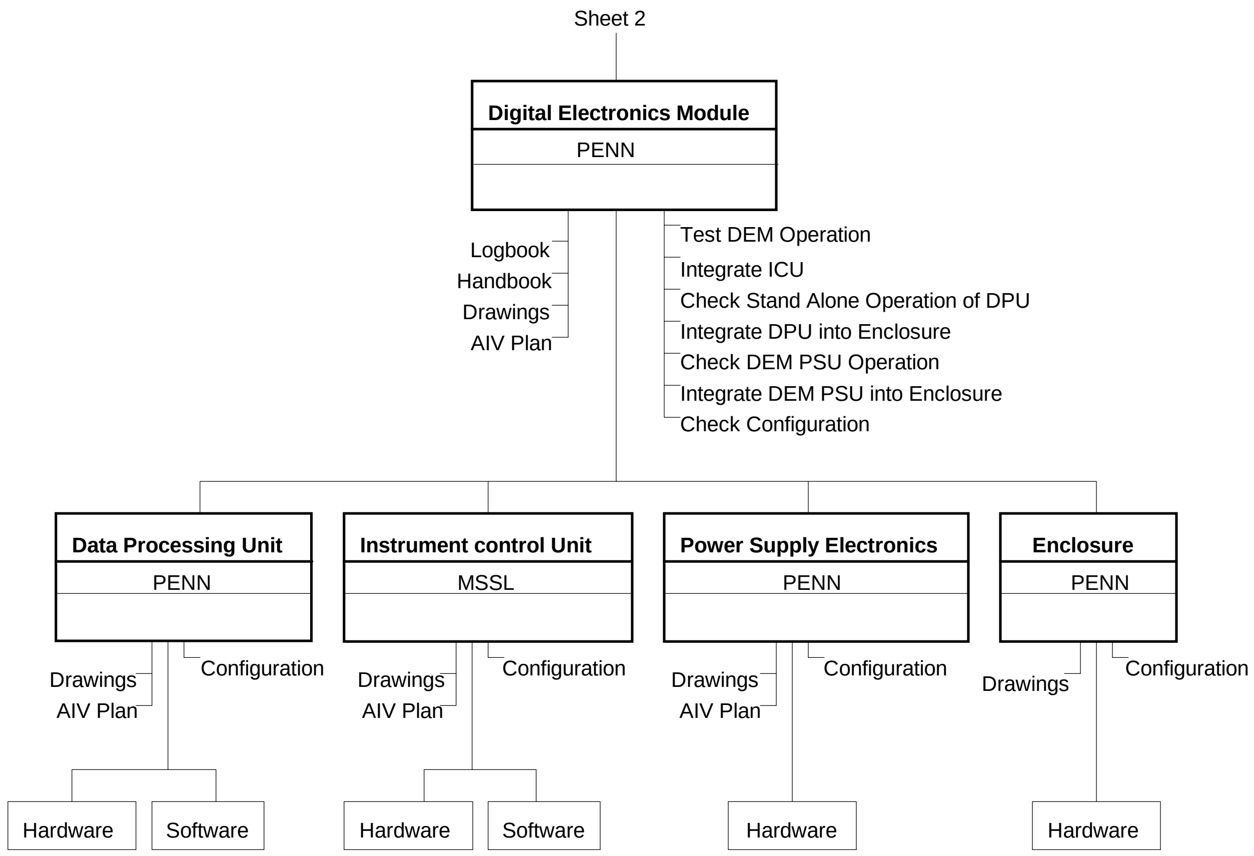
Sheet 3


Sheet 3
Telescope
MSSL
Logbook
Instructions
Drawings
AIV Plan
Acceptance Test
Fit External Baffle
Align Telescope and Test
Attach Internal Baffle
Attach Secondary Assy To Rods
Insert Invar Rods
Insert Field Stop
Attach Primary Assy To Mounting Ring
Check Cleanliness
Check Configuration
Primary Mirror Assy
MSSL
Drawings
AIV Plan
Final Test
Insert Primary Baffle
Aluminise
Clean
Bond Mirror to Support
Configuration
Secondary Mirror Assy
MSSL
Drawings
AIV Plan
Test
Add Secondary Baffle
Aluminise
Clean
Bond Mirror to Support
Configuration
Mounting Ring
MSSL
Drawings
Cleanliness
Configuration
Parallelogram
MSSL
Drawings
Cleanliness
Configuration
Field Stop
MSSL
Drawings
Cleanliness
Configuration
Invar Rods
MSSL
Drawings
Cleanliness
Configuration
Internal Baffle
MSSL
Drawings
Cleanliness
Configuration
External Baffle
MSSL
Drawings
Cleanliness
Configuration

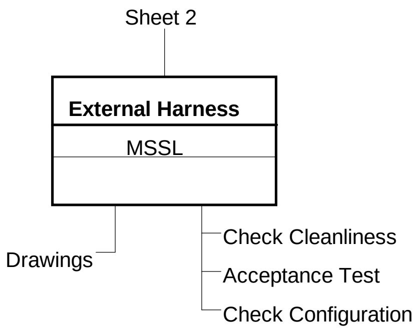
Sheet 4


Sheet 3
Blue Module
MSSL
Logbook
Instructions
Drawings
AIV Plan
Bag and Store
Test and Characterise Module
Fit Blue Processing Electronics
Fit High Voltage Electronics
Align Filter Wheel & Magnifier
Align Camera Head
Fit Camera Head
Fit Filter Wheel
Assemble Dichroic onto Bulkhead
Check Cleanliness
Check Configuration
Blue Camera
MSSL
Drawings
AIV Plan
Test & Characterise
Complete Assembly
Bond CCD To Intensifier
Insert Electronics
Insert Intensifier
Cleanliness
Configuration
Hardware
Filter Wheel
MSSL
Drawings
AIV Plan
Load Filters
Load Grisms
Load Magnifier
Cleanliness
Configuration
Dichroic Mechanism
MSSL
Drawings
AIV Plan
Mount Dichroic
Cleanliness
Configuration
Blue Bulkhead
MSSL
Drawings
Cleanliness
Configuration
Processing Electronics
MSSL
Drawings
AIV Plan
Test Operation
Assemble
Cleanliness
Configuration
Hardware
HV Electronics
MSSL
Drawings
AIV Plan
Test Operation
Assemble
Cleanliness
Configuration
Hardware
Magnifier
MSSL
Filter
MSSL
Grisms
MSSL
Mechanism
MSSL
Dichroic
MSSL
Mechanism
MSSL
Special Assy Jigs
MSSL
Drawings
Instructions
Align to Reference
Set Up Measuring Facility
Cleanliness
Configuration
BM Harness
MSSL
Drawings
Cleanliness
Configuration

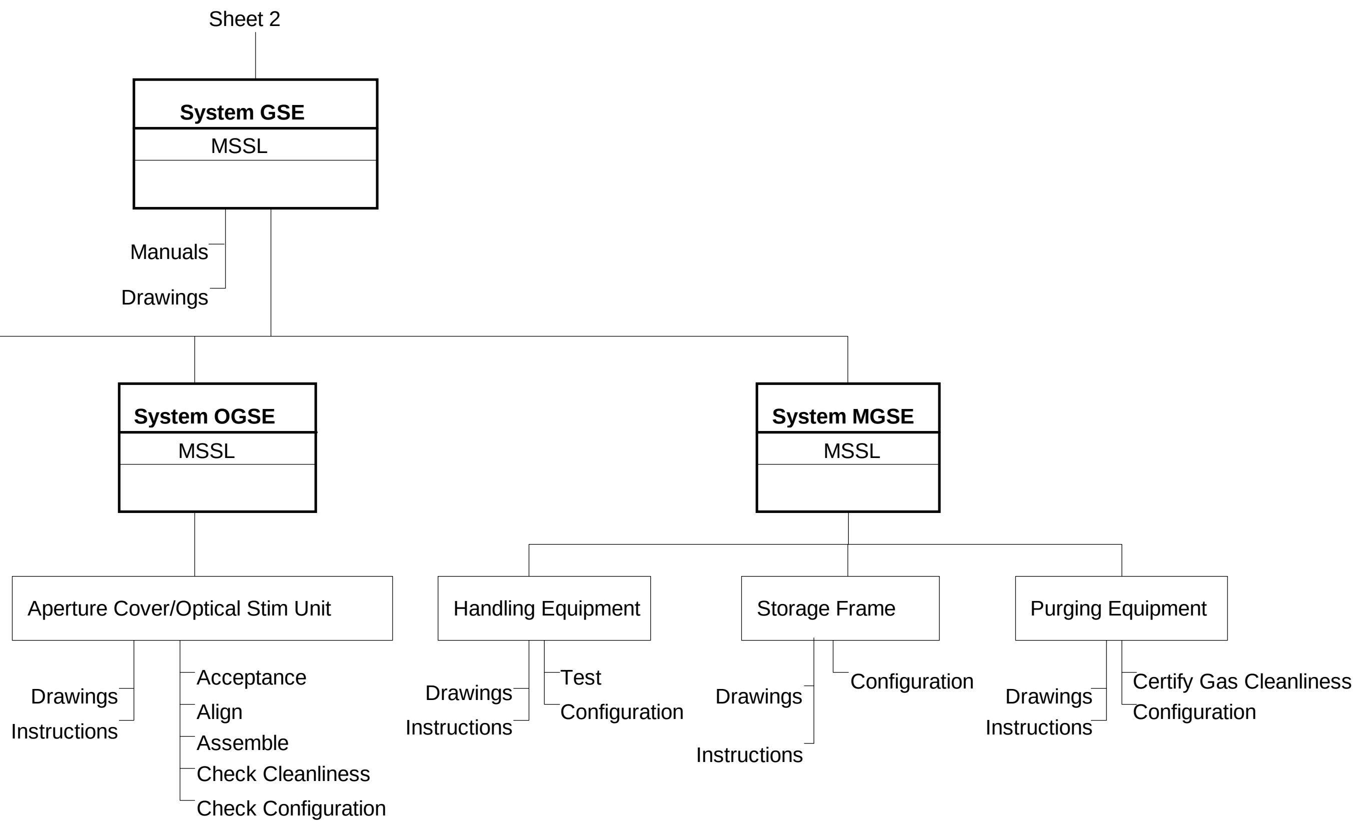
Sheet 5


Sheet 2
Digital Electronics Module
PENN
Logbook
Handbook
Drawings
AIV Plan
Test DEM Operation
Integrate ICU
Check Stand Alone Operation of DPU
Integrate DPU into Enclosure
Check DEM PSU Operation
Integrate DEM PSU into Enclosure
Check Configuration
Data Processing Unit
PENN
Drawings
AIV Plan
Configuration
Hardware
Software
Instrument control Unit
MSSL
Drawings
AIV Plan
Configuration
Hardware
Software
Power Supply Electronics
PENN
Drawings
AIV Plan
Configuration
Hardware
Enclosure
PENN
Drawings
Configuration
Hardware

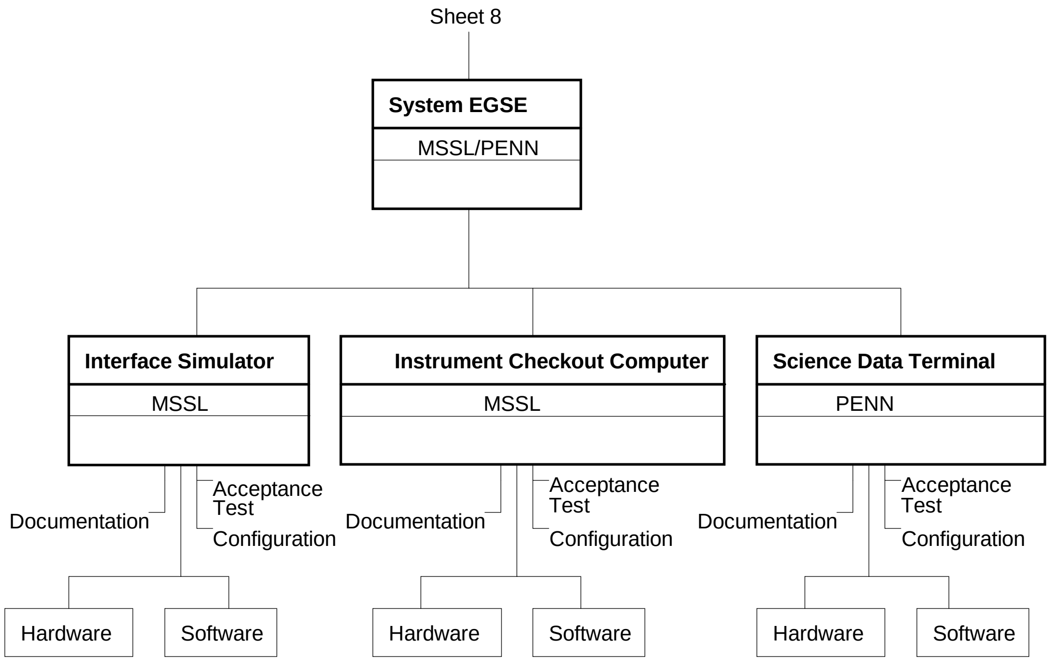
Sheet 6


Sheet 2
External Harness
MSSL
Drawings
Check Cleanliness
Acceptance Test
Check Configuration

Sheet 7


Sheet 2
System GSE
MSSL
Manuals
Drawings
System EGSE
MSSL/PENN
Sheet 9
System OGSE
MSSL
System MGSE
MSSL
Aperture Cover/Optical Stim Unit
Drawings
Instructions
Acceptance
Align
Assemble
Check Cleanliness
Check Configuration
Handling Equipment
Drawings
Instructions
Test
Configuration
Storage Frame
Drawings
Instructions
Configuration
Purging Equipment
Drawings
Instructions
Certify Gas Cleanliness
Configuration

Sheet 8


Sheet 8
System EGSE
MSSL/PENN
Interface Simulator
MSSL
Instrument Checkout Computer
MSSL
Science Data Terminal
PENN
Documentation
Acceptance Test
Configuration
Documentation
Acceptance Test
Configuration
Documentation
Acceptance Test
Configuration
Hardware
Software
Hardware
Software
Hardware
Software

Sheet 9

5. DETAILED PROCEDURES

These procedures are identified on an individual sub assembly basis The relationships of the sub assemblies can be reviewed through the family tree structure shown in par 4.

The individual procedures are published as separate documents.

6. SCHEDULES

The detailed schedules for AIV are shown in the Programme Master Schedule XMM-OM/MSSL/AD/0016.

7. Q.A. ACTIVITIES

Drawings used for the assembly and testing processes must be to the latest issue.

The cleanliness levels for the processes shall be included on the assembly drawings. These must be checked and adhered to.

Any piece of measuring equipment that requires calibration must be within its calibration date.

A test readiness review shall be held before any formal qualification or acceptance tests are conducted.

Equipment log books must be started for all operations and tests, starting with the final inspection of the hardware after the manufacturing/assembly phase.

NCR's will be raised as necessary during AIV and will be actioned as described in the XMM-OM Product Assurance Plan, XMM-OM/MSSL/SP/0031.