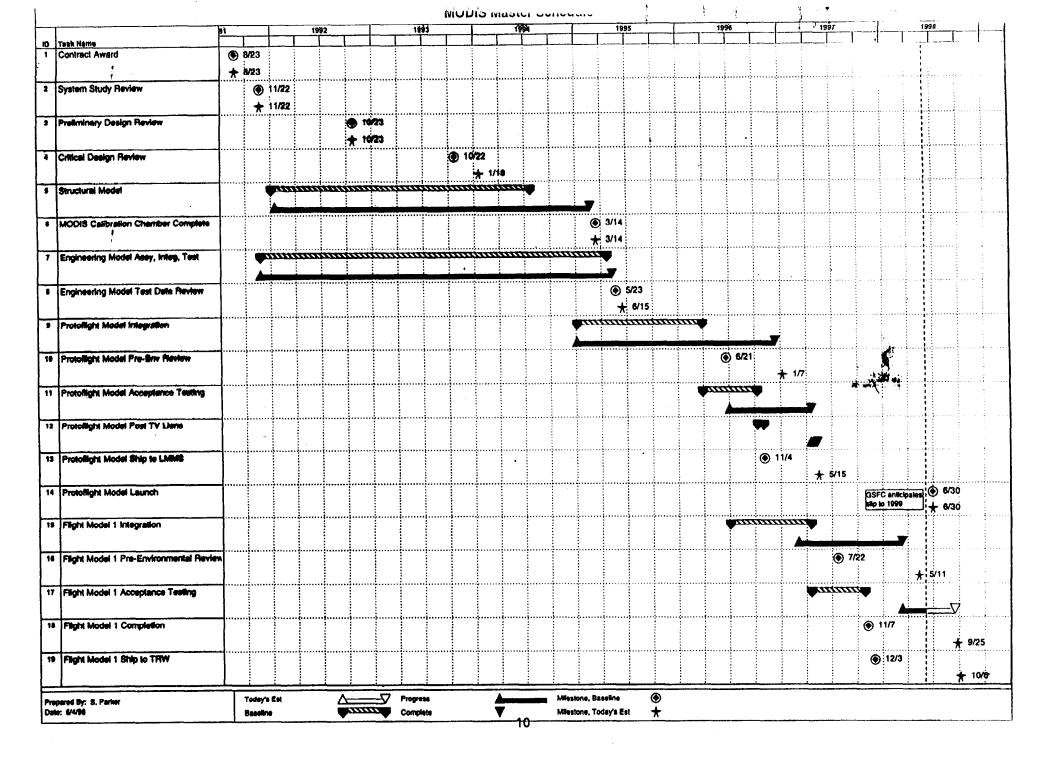


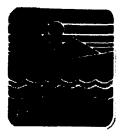
## Briefing on PFM and FM1 MODIS Sensor Status

## Presented to the Science Team At the Plenary for the Science Team Meeting 24-26 June 1998 MCST/Guenther



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# Managers Summary -PFM Sensor

- Completed spacecraft T/V testing
- Test program still active at Valley Forge
- Flight Date uncertain
- Detailed handling of launch slip still TBD
- Repaired power supply (control processor reset) on sensor

**REMAINING SENSOR CONCERNS** 

- SWIR Second Sub-frame now Electronic crosstalk
- Thermal Model and operating temperature
- EEPROMS



MCST MAJOR CONCERNS PFM UNFINISHED BUSINESS--Requiring SBRS Inputs 25 September 1997



- Stray light (OBC-BB and for high scan angles, +50 degrees and higher) -- RESOLVED AS RESULT OF FM1 TESTING, NOT A PROBLEM
- SWIR radiometric behavior -- TOPIC OF LATER BRIEFINGS
- SIS round robin measurements -- COMPLETED IN JUNE
- Improvements on B21 calibration -- WILL EXPERIMENT WITH USE OF LUNAR VIEWS THROUGHOUT THE MISSION
- SWIR focal plane will not phase delay for registration -- NOT A REQUIREMENT AND REMAINS UNDONE
- Software for maneuvers (not an SBRS issue; funding issue resolved 9/25) -- LISTED AS REQUIREMENT EVEN FOR THE N.A.B. FLIGHT COMMAND & CONTROL SOFTWARE



# Managers Summary -FM1 Sensor

- Significant rework completed
- Testing schedule
- Early results
- Issues
  - electronic crosstalk





• PFM

- Fixes have been implemented to eliminate the potential for blown fuses due to phantom commands. The fixes included a software change and re-wiring of two circuit card assemblies (CCAs) in the FAM.

• FM1

- A more substantial fix has been implemented to eliminate "phantom commands". This fix included, in addition to FAM re-wiring, re-work of CCAs in the MEM.

- The SWMIR out-of-band leak in the 5.3µm region has been eliminated; added blocking filter coating to cold window above SWMIR FPA. Verification of fix to occur in TV.





• FM1 (cont'd)

- SWMIR light leaks affecting Bands 24, 25, 26 and potentially Band 5 have been incorporated; painted four stripes on FPA mask and one stripe on the IFA mask near Band 6. IAC Spatial and NFR data sets verify that the fixes worked.

- The LWIR out-of-band leak in the 11 $\mu$  m region has also been eliminated; dark layer coating was applied to sides/ edges of Band 31 filter. IAC Spatial and NFR data sets verify that the fix was successful.

- LWIR B27/B33 light leak fix incorporated; painted one stripe between Bands 27 and 33. IAC Spatial and NFR data sets verify that the fix was successful.





• FM1 (cont'd)

- The capability to perform a SWMIR scan-direction timing adjustment has been incorporated.

- A reduced scatter Scan Mirror has been integrated.

- Rework on the FDDI CCAs has occurred to eliminate the High Rate Science Data (HRSD) anomaly seen on the PFM instrument at Valley Forge.

### **Environmental Test Plan Overview**

Ship MODIS to

HSC Bldg S2

Ship GSE to ESS

Bldg E2

Vibration Tests

@ HSC

Remove Ti KM's

Install TRW FM's

Random Vibe (A)

Sine Sweep



Ship MODIS to

Bldg E2

Counterweights

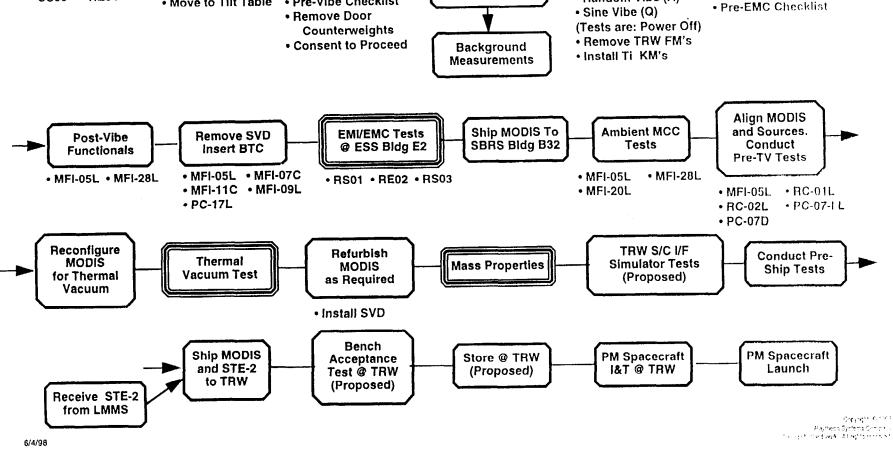
Install Door

Install witness

samples

#### Raytheon Move to Pre-Ship **EMI/EMC Tests** Container Functionals @ SBRS Base MFI-05L MFI-07C • CE01 • CE03 • Consent to Decon- • MFI-11C • MFI-28L • CS01 • CS02 figure from Rotab • PC-17L • CS06 • RE04 Move to Tilt Table Pre-Vibe Checklist Remove Door Counterweights Consent to Proceed

The survey of states and states



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## Relative Spectral Reponse Test Requests and Changes

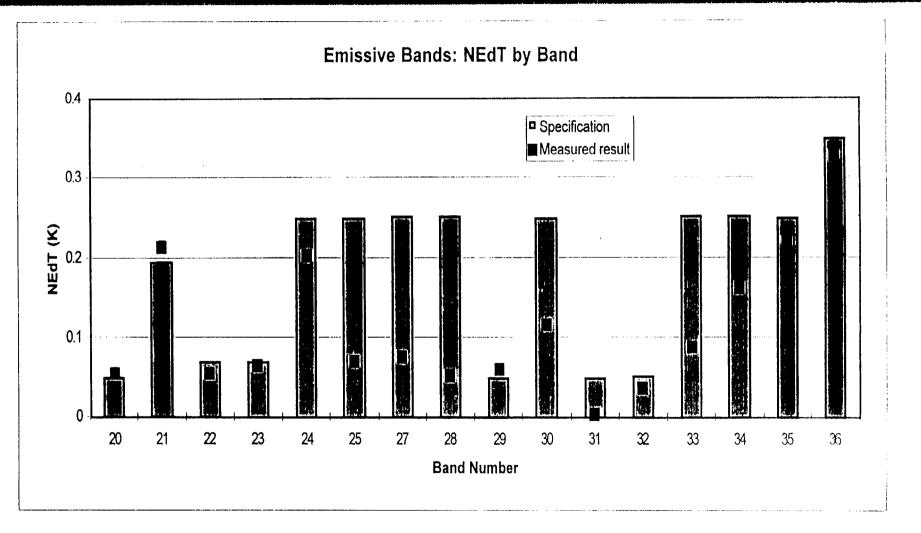
Improvements:

- ZnSe window at nadir port enables T/V measurements of all M/LWIR bands
- Bands 20 and 31 measured at Cold, Nom and Hot instrument temp plateaus
- All M/LWIR bands measured at FPA NLT (~79K) and 83K to determine  $d1/dT_{fpa}$
- Additional blocking filter for LWIR OOB-ND measurements Did not get:
- In-band RSR measurements at 2 temps for all M/LWIR bands
- Firm commitment to measure OOB-D at NLT to use enhanced responsivity at 79K to overcome ZnSe window transmission loss



### Preliminary NEdT Measurements Show Most Bands In Spec





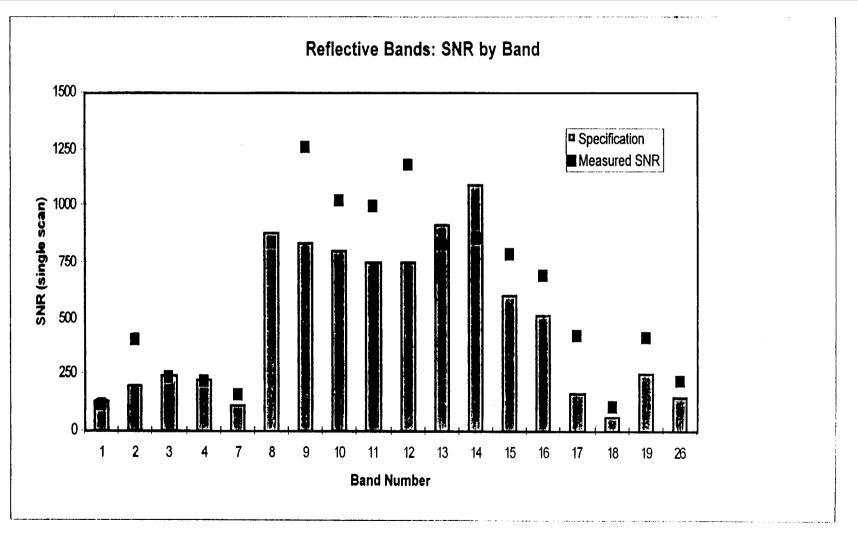
Waiver To Be Submitted If Necessary Pending TV Results

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### Preliminary SNR Data Shows Most Reflective Bands Meeting Spec





Waiver To Be Submitted If Necessary Pending TV Results



- Two-Cycle Timeline
  - Nominal Operating Temperature Extended +5C and -5C
  - Current Nominal Temp is 7° C TBR
- Optimized Spectral Tests Based On PFM Experience
- Increased Acquisitions During MFI-09 Blackbody Test
- Changes Currently In The Timeline (Need Final Approvals)
  - Repeat Band 20 and Band 31 Spectrals At Cold and Hot Plateaus
  - •Repeat MW/LW Spectrals At NLT, Nominal Plateau
  - 400 Scan BCS Collects (One-Time At Nominal Plateau)
- **Current Timeline at 46 Days**



### Summary of RVS performance

nance **Raytheon** 

- **FM 1 RVS performance characterization successful**
- **VIS / NIR / SWIR RVS characterization within internal spec**
- MWIR / LWIR RVS characterization better than expected but not within internal spec
- Data reduction / analysis not complete
  - Use repeat data
  - Complete side B data reduction
- **Continue with RVS uncertainty assessment**
- Compare with NPL reflectance data when available