

Space Infrared Telescope Facility (SIRTF)

Origins Subcommittee Report

Presented by

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Cryogenic Telescope Assembly

Space Infrared Telescope Facility

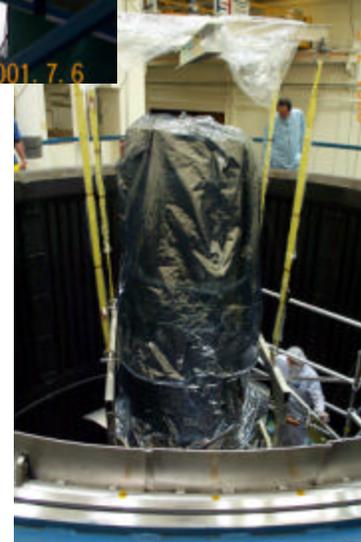


A NASA
Origins
Mission

- Final assembly of CTA Prior to Vibe Testing



- CTA in Preparation for the verification of optical and thermal models at cryogenic temperatures (Brutus Test)

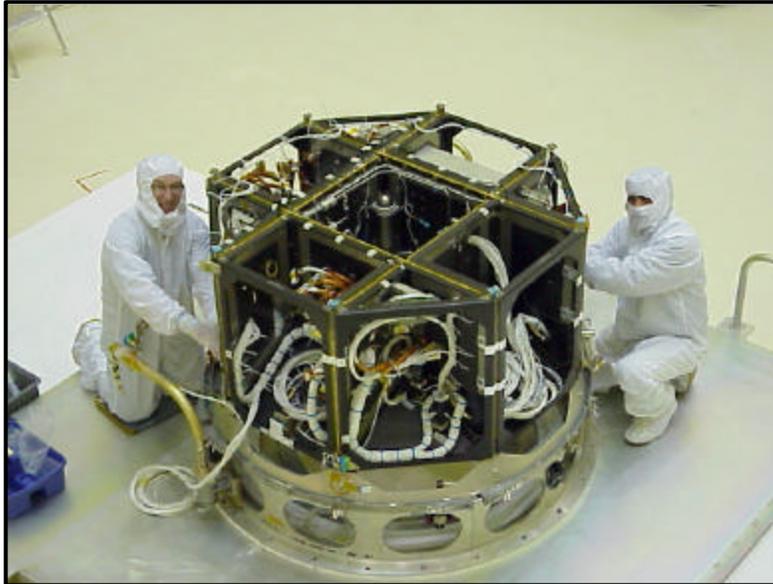


Spacecraft

Space Infrared Telescope Facility

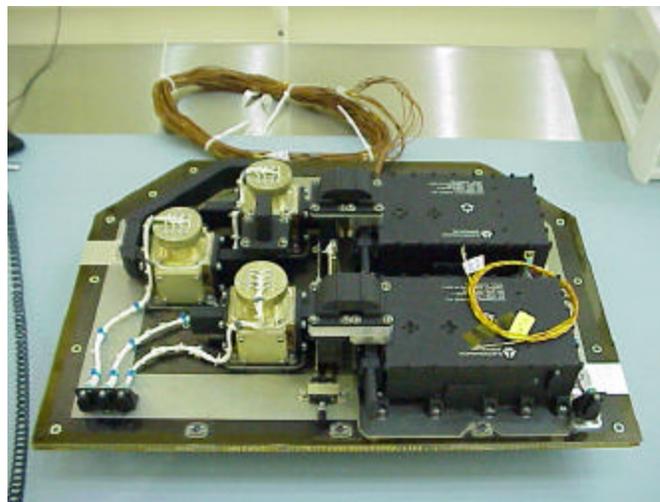


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Mission



- **Final Installation of Spacecraft Harness**

- **Spacecraft CDHU Installed and Connected**



- **Solid State Power Amplifier (SSPA) Assembly Completed**

SIRTF Status

- The Telescope has been completed.
 - Acceptance Review of telescope was successfully held - meets all specifications.
 - Science Instruments (IRAC, IRS, MIPS, and PCRS) were integrated into the Multi-Instrument Chamber (MIC). Instrument aliveness tests were successfully completed.
 - The Multi-Instrument Chamber was integrated with the cryostat.
 - CTA Integration completed.
 - CTA Vibration testing successfully completed.
 - CTA EMI/EMC testing completed - Still working 1 lien.
 - CTA System TV preparation underway.
- Spacecraft buildup continues.
 - Components received this year include: Flight batteries, PCRS, Solar Panel Shield Assy, Star Trackers, Command & Data Handling Unit, Solar Arrays.
 - First POWER ON of Spacecraft and loading of flight software into the CDHU was completed.
 - S/W builds delivered: Flight S/W Builds 2, 3, & 4; SSC delivered S3, S4 & S5.
 - Software Test Lab (STL) & Operational Software Test lab (OSTL) now on-line.
 - Standalone Capability added.
 - Completed Phase I of Flight S/W Independent Verification & Validation (IV&V).

SIRTF Status (Cont)

- Mission Operations System was reorganized.
 - New MOS Manager hired.
 - Delta CDR successfully completed 6/25/01.
- SIRTF Legacy Program selected.
 - Twenty-eight proposals submitted - 9/00.
 - Six proposals selected - 11/00 (Three Extragalactic & three Galactic).
- Project presented Replan slipping Launch to July 02 to HQ in 9/00. Approved by HQ in 10/00.
- Cryostat Overpressure Event following successful cool-down and cold testing of all four instruments.
 - Developed an ice plug which resulted in overpressure.
 - Series of events represented a major breakdown in procedures, GSE inspection/checkout, as well as availability of appropriate technical expertise.
 - Recovery from overpressure complete, but utilized built-in CTA Schedule Reserve.





IRS Filter Status

- The IRS Long-Low First Order (LL-1) filter base transmission has degraded to ~70%.
- Analysis resulted in the conclusion that the LL-1 filter is delaminating and degradation is closely tied to thermal cycles.
- Filter Performance currently deemed acceptable by all.
- Profound Science impact if Filter is completely lost.
- A SIRTF Tiger team, led by Mark Kahan (EIRR Board member) evaluated the technical issues associated with the filter.
 - Failure mode cannot be confirmed absolutely without removing filter.
 - Filter mount design, filter installation/alignment process, and filter coating process are all suspected causes or contributors to the failure.
 - CTA Vibration test (enveloping flight loads) resulted in ~1% additional degradation.
 - Catastrophic failure of filter would not result in significant contamination of the outside of the IRS LL Module. (Final Report Pending)



IRS Filter Status (Cont)

- Project recommendation to proceed with current IRS filter was made 6/21/01. HQ concurred on 6/22/01.
- If the Multi-Instrument Chamber has to be opened for any other reason, Project recommended changing the filter.
 - Replacement filters available.
 - Qualification plan for filter and mount is underway.
 - Seven (7) months are required to disassemble CTA, replace and requalify the IRS, reassemble CTA, and repeat environmental and functional testing.

SIRTF continues to overcome challenges and remains on track for a July 02 Launch.