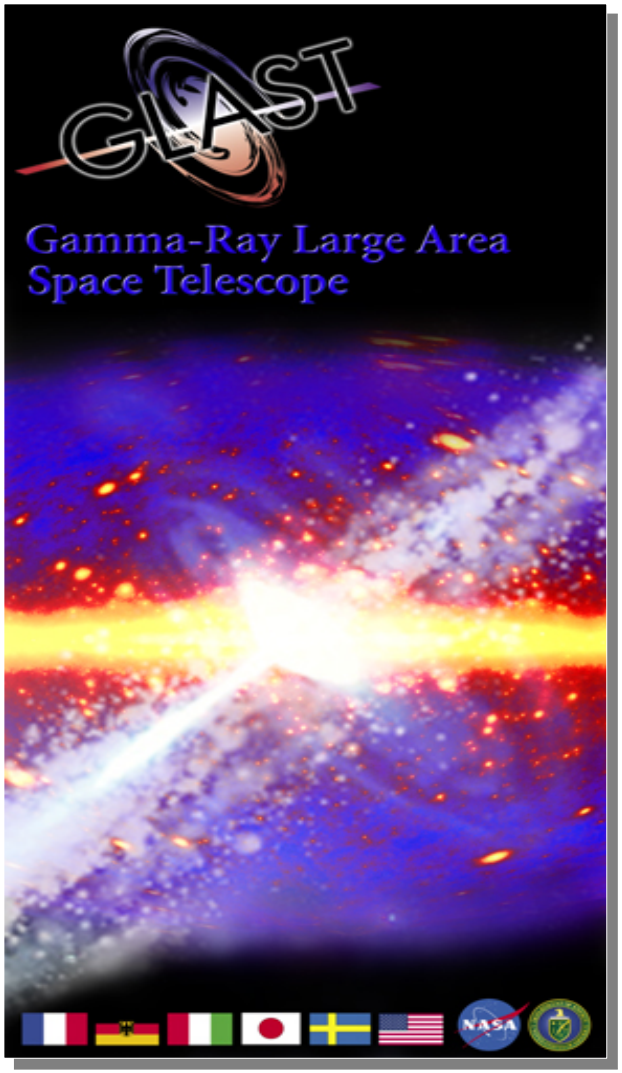
Thermal Engineering Activities



Thermal Engineering Activities – Completed 1/2

1. Design Engineering and Support

- LAT Instrumentation Plan, supported latest released version
- Held meeting with Spectrum Astro to define MLI Interfaces between LAT and S/C
- Conversations with ACD to define MLI Interfaces between LAT and ACD

2. LAT Level Thermal Analysis and Tests

- Thermal-Vacuum Test Plan: initiated update/revision
- Added EMI skirt to thermal math model
- Added S/C actual solar array to thermal math model

3. Subsystem Support and Oversight

- Electronic Box Detailed Thermal Analyses
  - * GASU completed, within specs
- Reviewed Proto-Flight Tower A TVAC Test Procedures
- Reviewed/approved final design for the inner guard shield for Tower A TVAC tests
- Revised test temperature limit for Tracker Subsystem Tray Panel Thermo Vacuum Test Procedure, 85C to 65C

Thermal Engineering Activities – Completed 2/2

4. LAT Thermal Control System

- TCS algorithm reviewed with LM and revised to simplify
- Grid top flange heat exchanger, design concept finalized

5. Lockheed-Martin Thermal Control System Hardware

- Witnessed Acceptance Test for VCHP Gas Charge Verification (Cold)

NASA Review of LAT Instrument Performance Verification Plan

- RFA #23 from CDR closed
- RFA # 7 from CDR closed (Wrote Explanation of TCS Performance Verification Plan)

Thermal Engineering Activities – Current 1/2

1. Design Engineering and Support

- Environmental Specification – change Tracker Acceptance Level Tests (35ºC to 40ºC)
- LAT MLI concept

2. LAT Level Thermal Analysis and Tests

- GRID geometric model

3. Subsystem Support and Oversight

- Electronic Box Detailed Thermal Analyses
  - * PDU in progress
- Tracker Tower A TVAC tests
  - * Test Plan and Test Procedures in preparation
  - * Thermal Math Model being used for predictions of test thermal profile
  - * Test orientation/setup for towers defined, MGSE for Tower A being fabricated; tests postponed indefinitely
- Grid top flange heat exchanger detailed design in progress

Thermal Engineering Activities – Current 2/2

4. LAT Thermal Control System

- Development tests for VCHP assembly/disassembly procedure, issue is thermal conductance at triple joint
- Update *LAT Test Thermal Requirements* –TD-00997; add description of auxiliary heat exchangers (X-LAT and Grid)

5. Lockheed Martin Thermal Control System Hardware

- Radiator thermal math model, TVAC test configuration
- Radiator Acceptance Test Plan

  *Overall testing concepts agreed by LM,SLAC and NASA/GSFC
- X-LAT Plate test procedures in preparation

Thermal Engineering Activities - Planned

1. Design Engineering and Support

- Finalize MLI interface to ACD, S/C and radiators in conjunction with MLI design concepts
- Detailed design and fabricate MLI blankets

2. LAT Level Thermal Analysis and Tests

- Thermal Math Model, Ver. 6.1, reduced node
- Thermal Math Model, Ver. 6.2, LAT TVAC test configuration
- LAT Thermal Vacuum Test Procedure
- Correlate integrated Thermal Math Model after LAT TVAC tests
- 200 Node Launch Vehicle Thermal Math Model

3. Subsystem Support and Oversight

- Flight Tracker Nos.1-16, thermal vacuum test configuration concept finished, detailed designs for MGSE to start in August
- Supervise TVAC tests of Tower A and first flight tracker

4. LAT Thermal Control System

- Preliminary verification in LM Radiator Acceptance Tests
- Verified in LAT TVAC tests, 8-10/05

5. Lockheed Martin Thermal Control System Hardware

- X-LAT Plate Test Plan final version
- X-LAT Plate Test Procedures
- Radiator TVAC Test Plan, TVAC Test Procedure