Thermal Engineering Activities – Completed 1/2

1. Design Engineering and Support

- LAT MLI concepts defined, being evaluated by Spectrum Astro.
- MLI Interface between LAT and ACD is defined.

2. LAT Level Thermal Analysis and Tests

- Thermal math model, Ver. 6 completed and verified. Many small changes, max. TKR temperature increase to 30.8C.
- Supported NASA/GSFC in their Observatory model STOP Cycle 3 analysis.
- Revised *LAT Test Thermal Requirements* (TD-00997) to incorporate new concepts for component test stands. Continued review of chiller/recirculating bath equipment to support LAT ground cooling requirements.
- Supported LAT Environmental Test TIM; updated LAT Instrumentation Plan – Flight Instrumentation List.

Thermal Engineering Activities – Completed 2/2

3. Subsystem Support and Oversight

- Reviewed survival/qualification/acceptance temperatures for the tracker and trays and recommended test level values.
- Finished developing Tracker A TVAC temperature profile. Test time is expected to require 8 days including bake out and cycles.
- Placed order to purchase TQCM to monitor out gassing during Tracker TVAC bake out.

4. LAT Thermal Control System

- Started developing a sequence of LAT Level Thermal Vacuum tests for the LAT Test Plan.
- Established yellow and red limits for thermal sensor measurements.

5. Lockheed Thermal Control System Hardware

- Reviewed X-LAT Plate and Radiator Design Specifications and updated TBDs.
- X-LAT Assembly Thermal Vacuum Test Plan in review.
- Radiator Assembly Thermal Vacuum Test Plan in review.
  - Overall testing concepts agreed by LM,SLAC and NASA/GSFC

Thermal Engineering Activities – Current 1/2

1. Design Engineering and Support

- Environmental Specification – change Tracker Acceptance Level Tests (35°C to 40°C)

2. LAT Level Thermal Analysis and Tests

- Analysis of LAT transition from Survival to Operating Mode
- Sequence of LAT test segments
- LAT TVAC Test Plan

3. Subsystem Support and Oversight

- Tracker Tower A TVAC tests
  - Test Plan and Test Procedures in review
  - Test orientation/setup for towers defined, MGSE for Tower A being fabricated; tests planned for beginning of Dec'04
- Correlated TKR EM Thermal Model – in LAT Docs

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 using mold release material.

5. Lockheed Thermal Control System Hardware

Thermal Engineering Activities – Planned 1/2

1. Design Engineering and Support

- Finalize MLI interface to ACD 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 Plan - Finalize
- 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, TVAC test configuration concept - finalize
  - detailed designs for MGSE
- Support TVAC tests of Towers A,B and flight trackers

Thermal Engineering Activities – Planned 2/2

4. LAT Thermal Control System

- Preliminary verification in LM Radiator Acceptance Tests
- Define LM TVAC tests for TCS
- TCS verified in LAT TVAC tests at NRL, Q3/05

5. Lockheed Thermal Control System Hardware

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