GLAST Large Area Telescope:
I & T Input to Monthly
Technical/Cost/Schedule Review
06/30/04

Elliott Bloom
SU-SLAC
Subsystem Manager

Brian Grist
SU-SLAC
Subsystem Engineer

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650-926-2469                        650-926-2998
Last Month's Accomplishments

- EM-2 mini-tower assembly, testing and delivery (one time) to Electronics for spacecraft Power Regulation Unit (PRU) testing at SLAC in early July.
  - Took Van de Graaff and cosmic ray data with EM-2 mini-tower.
  - Electronic logbook GUIs delivered to IFCT and used in EM-2.
- Held three Integration Readiness Peer Reviews:
  - Integration, Facilities, Configuration, and Test (IFCT)
  - Mechanical Ground Support Equipment (MGSE)
  - Particle Test.
- Completed online ACD veto counter support. Still need FSW contribution to deliver to ACD.
- 90% of MGSE drawings needed for two tower integration are completed, 50% released and 40% in signoff.
- Held SVAC LAT Collaboration workshop at SLAC.
- Supported Italian LAT collaboration meeting in Bari, Italy.
Minitower Connected to Testbed
All positions have been filled

Integration and Test
Elliott Bloom, Manager (SU-SLAC)
Ken Fouts, I&T Engineering Manager (SU-SLAC)
Brian Grist, I&T Engineer (SU-SLAC)

Integration, Facilities, Configuration, and Test
Larry Wai, Manager (SU-SLAC)
Thomas Borden, IFCT Engineer (SU-SLAC)

Brian Horwitz
Electrical Engineer

John Canfield, S&E Associate - Electrical
Toan Le, S&E Technician - Electrical
Joel Bratman, S&E Technician - Electrical

Eliazar Ortiz
Mechanical Engineer

Mark Molin, S&E Associate - Mechanical
Leo Manger, S&E Associate - Mechanical
Dave Kiehl, S&E Technician - Mechanical
Tom Neiland, S&E Technician - Mechanical

4.1.9 - Integration and Test

Subsystem I&T Support
ACD - Dave Thompson
Calorimeter - Eric Grove
DAQ - Mike Huffer
Elec - Dave Neslon
FSW - Mike DeKlotz
Mechanical - Marc Campell
SAS - Richard Dubois
Tracker - Hiro Tajima

4.1.9.9 - Science Verification, Analysis, and Calibration
Eduardo do Couto e Silva, Manager (SU-SLAC)

Mission
Elliott Bloom, Manager (SU-SLAC)

LAT Collaboration
I&T Coordination

23 JUN 2004
I&T Overview to Start of Integration (1 and 2 tower) / 
Key-Milestones for Next 3 Months

- Requirements
  - LAT-MD-02730
  - 6/10/04 *
  - I&T Plan for Review
    - LAT-MD-01376
    - 5/3/04
  - Survey Plan
    - 5/1/04 draft (done)
    - 5/31/04 final

- LATTE v.3.0
  - 4/1/04

- EGSE Hwr Deliveries
  - 6/1/04 → 7/7/04

- I&T Functional Test Scripts
  - 6/1 - 7/1/04

- Subsystem Scripts
  - 5/1/04 → 5/15 to 6/21/04

- Electronics Test-Bed
  - 5/04 → 8/3/04

- EM 2
  - 6/9/04 – 7/7/04

- Training & Procedure Verification
  - 6/11/04 – 7/7/04

- I&T Mockup
  - 4/1/04

- Electronics Test Bed
  - 5/04 → 8/3/04

- IRR
  - 8/3/04

- Drawings
  - 5/1 → 6/7/04

- Fabrication
  - 6/14 → 8/20/04
  - Procurement Delays

- Proof Testing
  - 8/22/04

- Bldg 33 Cert
  - 6/18/04 → 6/30/04

- Particle Test Facilities
  - 6/18/04

- Receive Flight Hardware Start Integration

* Final though two tower CPT, releases to support integration procedure development

4.1.9 - Integration and Test
Science Verification, Analysis, and Calibration (SVAC) - Roadmap

- **SAS Calibration Algorithms** (May)
- **SAS Database** (May)
- **SAS Pipeline Infrastructure** (March - April)
- **SAS Geometry Review** (April)

**SVAC Acceptance and Test of SAS Algorithms** (June - July)

**SVAC Database and Calibration trending** (March - July)

**SVAC Data Pipeline** (June)

**1 & 2 Tower Geometry** (April – May)

**MC Datasets 1 & 2 tower** (May)

**Online / SVAC IRR** (8/?/04)

**Instrument Test Analysis** (March – July)

**EM 1 data analysis** (March - May)

**SVAC Workshops** (June and September)

**EM 2 data analysis** (July)
Priority Ordering for Online

1. Hardware Monitoring, Trending, and Power up.
   • Requires Ric to design – July 1 design done, and fair amount of implementation.
   • Requires FSW to provide interface – June 15 (not complete)
   • Full implementation (I&T online + ISOC) – July 15 (may be later)

2. Subsystem – I&T scripts ready to use by I&T on Flight Hardware and under configuration control.
   • Receive subsystem scripts
     • CAL – June 15
     • ELX – July 1
     • TKR – June 15
     • ACD – June 15
   • Modify subsystem scripts to I&T specification. (Delivery + 2 weeks) – Lester is gearing up for process with CAL pre-release scripts
   • Place scripts under configuration control (1 hour)

3. LATTE security against unauthorized software changes (August 1)

4. Method for full configuration tracking of all components
   • Provided method as part of the configuration files

5. V&V online system and Scripts (June 1- August 1)

6. Event “prescaling” in Event Server (done)

7. Transfer of LDF.fits, Run Configuration files, Run and Test Report files to persistent storage.
   • Transfer manually (done)
   • Transfer via OPUS (July 1 ?)

8. Electronic Logbook (July 1) – released, in review with IFCT

NO official delivery of scripts yet!
• Total MGSE Drawing Sheet Count ~ 282*
  – 141 Drawing Sheets Released
  – 94 drawing Sheets in Release Cycle by June 23
    • 43 of these in “Pre-Release” Review
  – 18 Drawing Sheets completed last year ready for release
    • For CAL Alignment Tool and Sight Gauges
  – 253 Drawing Sheets virtually Released
    • (141 + 94 + 18 = 253)
  – 29 Need to be worked, but far along in most cases
  – 1x4 Grid Update Drawing Sheet Count TBD
Summary of issues & concerns

- EM GASU ASAP
- Need another EM GASU from Gunther by the time of 2\textsuperscript{nd} tower integration into grid.
- ACD EM just after delivery of GASU (need GASU to test ACD).
- CAL EM for about a month, week after the delivery of the GASU.
- FSW enabling simple filtering for high rate test of EM soon after delivery of GASU – not currently in plan.
- Need of get approval of management documents from project:
  - LAT-MD-01376, I&T Test Plan. This has been out for signoff since May 3\textsuperscript{rd}. No feedback yet.
Open Design/Engineering model/manufacturing issues and closure plan for them

- Three peer reviews were held for I&T departments to prepare to the Integration Readiness Review:
  - Integration, Facilities, Configuration, and Test (IFCT)
    - 26 RFAs collected
  - Mechanical Ground Support Equipment (MGSE)
    - 13 RFAs collected
  - Particle Test.
    - 9 RFAs collected
- Two more peer reviews will be held next month:
  - Online
  - Science, Verification, Analysis, and Calibration (SVAC)
- The presentations and RFA’s can be viewed on the I&T website at:

### Status of Subsystem's Documentation (1 of 4)

#### Integration and Test Document Status for Integration Readiness Review

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4.1.9 - Integration and Test 12
## Status of Subsystem's Documentation (2 of 4)

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#### Mechanical Ground Support Equipment (MGSE) Documents, except drawings

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### Status of Subsystem's Documentation (4 of 4)

Integration and Test Document Status for Integration Readiness Review

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<th>Author</th>
<th>Document Number Assigned</th>
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<th>Internal Review Complete</th>
<th>Draft in LAT/Docs</th>
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<th>Signed by QA</th>
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Cost and Schedule Status

- **Cumulative Schedule Variance (end of May)**
  - Work Scheduled: 4057 k$
  - Work Performed: 3874 k$
  - Schedule Variance: -183k$ (-4.5%)
    - -120k$ in MGSE (1x4 lift fixture, LAT Grid Perimeter Ring and Attach Brackets, proof support stand, LAT lifting fixture, ground heat exchanger, shipping container for vib, other misc. MGSE). Change request on the CCB list for today to adjust schedule and funding.
    - -62k$ in IFCT department (test procedure development, grid preparations, install test stands, test installed stands, survey and alignments)

- **Cumulative Cost Variance (end of May)**
  - Work Performed: 3874 k$
  - Actual Cost: 3876 k$
  - Cost Variance: -2k$ (~0%)
4.1.9 Change Requests and Lien List

- Need to approve and implement change request LAT-XR-03452 to reschedule and re-plan MGSE. This CR is on the CCB list for today.
- Implement change requests for the items on the I&T lien list.

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