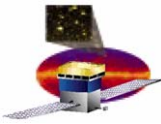


GLAST Large Area Telescope

WBS 4.1.B

**Instrument Science Operations Center
Monthly Status Review
26 July 2005**

**Rob Cameron
rac@slac.stanford.edu
650-926-2989**



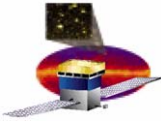
ISOC Management

- ❑ Transition of some FSW staff onto SLAC operations budget is starting
- ❑ Support for I&T
 - Provision of LAT configuration control/tracking, for Flight hardware + FSW testing, system tests, ...
 - Details later in presentation
- ❑ Biweekly SCCS-GLAST meetings are being expanded in scope to include Offline, FSW and I&T issues
 - Server upgrades and purchases
 - Windows and Linux support
 - Support for Linux-based online system at NRL, SASS
 - Preparations for DC2
 - Getting compute cycles for generating 10^9 events
 - Plans for 24x7 support within SCCS
 - OS support plans
 - COTS licenses
- ❑ ISOC staff hires
 - Search continuing for software developer and tester



Ground Readiness Tests (GRTs)

- ❑ **GRT 2 successfully completed**
 - ISOC test summary given at <http://confluence.slac.stanford.edu/display/ISOC/Ground+Readiness+Tests>
 - Only minor issues identified from ISOC perspective
- ❑ **Preparations for GRT 3, scheduled for October 2005**
 - Key new test element: Level 0 science data transport and processing to Level 1 data
 - Baseline plan for production and processing of Level 0 science dataset established through discussions between ISOC, FSW and Offline
 - OSU: event data to be produced with GLEAM, plus associated attitude+time data. FES/Testbed is not used.
 - FSW: package event data + attitude/time data into L0 CCSDS packets. About 2GB of packet data to be used, to simulate representative TDRSS pass data volume.
 - compression of event data is optional.
 - Offline: apply reconstruction to GLEAM data; generate L1 products.
 - Offline: Run L0 depacketize (& decompression) software as pipeline task. Reconstruct events to L1 data.
 - Data comparison/processing validation: compare system test histograms generated from Level1 data before and after transmission.
 - For detailed testing of GFEP+MOC L0 data handling and processing, the locally processed L1 data and L1 data produced from transmitted L0 data should be identical (except for timestamps?). The testbed is not used to generate L0 data from the FES (with associated possible non-deterministic "back-pressure" in the DAQ).
 - Issues:
 - Readiness of test elements: Level0 data to be delivered to project no later than 6 weeks before test date.
 - Delivery of FT1 FITS files to GSSC is not in baseline test plan, although could be accommodated by GSSC.
 - Production of associated spacecraft attitude and time for incorporation into Level0 data.



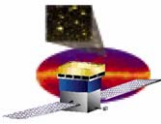
GOWG, GIMGOM Activity

- ❑ **GRT planning**
- ❑ **ICD review**
- ❑ **Ops TIM planned for September 14-15, 2005 at SLAC**
 - **Security status of ground system**
 - **Procedures development/validation**
 - **GLAST testing**
 - **Science Data Products ICD**
 - **Database management and control**
 - **Mission Planning – candidate tool demo**
 - **Planning for GRB alerts and diagnostics**
 - **Data management**
 - **L&EO**
 - **MOR planning**



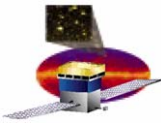
ISOC Software Development

- ❑ **ISOCV1R1P0 details available at**
 - <http://confluence.slac.stanford.edu/display/ISOC/Release+1>
- ❑ **Next release (ISOCV1R1P1) planned for 31 August 2005**
 - **Scoped to support GRT3, GRT4**
 - **Improved I&T support**
 - **Additions to Level 0 data handling and raw data archiving**
 - **FASTCopy monitoring via web application**
 - **FASTCopy database tables extended to support automated pipeline processing of delivered Level 0 data. Code added to scan for new data and inject pipeline processing runs.**
 - **Defined pipeline task and scripts to populate trending database from Level 0 raw archive. Interface to raw archive returns merged time-ordered sequence of CCSDS packets.**



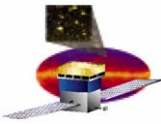
ISOC Database Activities

- ❑ **LAT Command and Telemetry database**
 - Reviewing LAT T&C DB as updates occur in conjunction with FSW releases
 - T&C DB ingested into ITOS and Oracle database tables; updated as needed
- ❑ **SASS telemetry database review**
 - Some issues identified in 96 LAT analog telemetry points contained in SASS T&C DB
- ❑ **Trending database improvements**
 - Interface has been demonstrated for community review
 - User authorization model is pathfinder for broader application to LAT data services through SLAC
 - Browser-based login process
 - Allows user “roles” with associated selected privileges



LAT Configuration Control and Tracking

- ❑ **Objective**
 - Use flight-ops-like config tracking system during I&T of FSW on LAT
- ❑ **Needed ISOC support clarified through F2F TIM on July 13 and subsequent meetings**
 - System in place by 1 October
 - Ready to support system tests starting 1 December
- ❑ **Goals, in priority order**
 - power up the LAT (minimum goal)
 - covers primary and secondary boot of FSW on SIU
 - load and verify single default config after power up
 - build, load and verify a single delta config
- ❑ **Other elements needed for LAT operation via FSW**
 - CCB process
 - Development/migration of I&T scripts to FSW operations
 - Configuration validation by data monitoring/processing



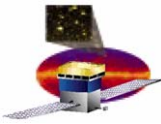
LAT Configuration Control and Tracking (cont.)

- ❑ **Requirements**
 - **Config control: build a configuration**
 - **Config tracking: retrieve a previous configuration**
 - **Reproducible config builds**
 - **Config verification methods**
- ❑ **Ground rules**
 - **Use existing tools wherever feasible**
 - **Avoid breaking existing software**
 - **use XML to the maximum extent possible to describe and carry configuration information**
 - **Portability: system must support LAT test activities at NRL, SASS, (GSFC?)**
- ❑ **Conceptual approach**
 - **Simplify the configuration task: abstract the LAT total configuration to fewer high-level elements**
 - **Mode (FSW mode, e.g. physics run)**
 - **Delegate (task within a mode, e.g. filter, hsk,)**
 - **Define relatively few top-level user-controllable parameters for defining config of a delegate. Parameters may point to files.**



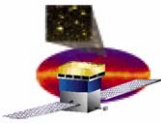
LAT Configuration Control and Tracking (cont.)

- ❑ **Core implementation**
 - RDBMS (probably MySQL)
 - Tables: Configs and History (TBR)
 - Indexed by config key; tracks mode, delegates, delegate parameters.
- ❑ **Development Stage and Schedule**
 - July: understand configs needed for I&T in Oct, Nov; summarize existing config tools (LATc, FMX,...) and interfaces
 - July, early August: list modes and delegates; first cut at delegate parameters for charge injection and physics event collection
 - Early August: peer review of design approach
 - Modes, delegates, parameters
 - Config RDBMS
 - Config flow diagram, with interfaces to existing/new tools
 - Identify development tasks and responsibilities
- ❑ **Issues**
 - Ambitious schedule
 - Validation of new config control system
- ❑ **Other elements of the solution**
 - Structuring of total LAT config into file system
 - Starting point: xml file structures developed for LATTE4
- ❑ **Progress Reports**
 - <http://confluence.slac.stanford.edu/display/ISOC/LATconfig>



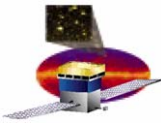
LAT Operations Planning Meetings

- ❑ **Related LAT Configuration Control Issues**
 - **Config ID tracking in FSW and ground operations**
 - **Use Run and Configuration Identifiers**
 - **Ground ID used in mission planning activities and keyed to config tracking and control RDBMS**
 - **Ground ID delivered to FSW via telecommand**
 - **Part of proposed compound Run ID constructed in FSW and delivered with science data**
- ❑ **Confluence space**
 - **<http://confluence.slac.stanford.edu/display/ISOC/Operations+Planning+Meetings>**

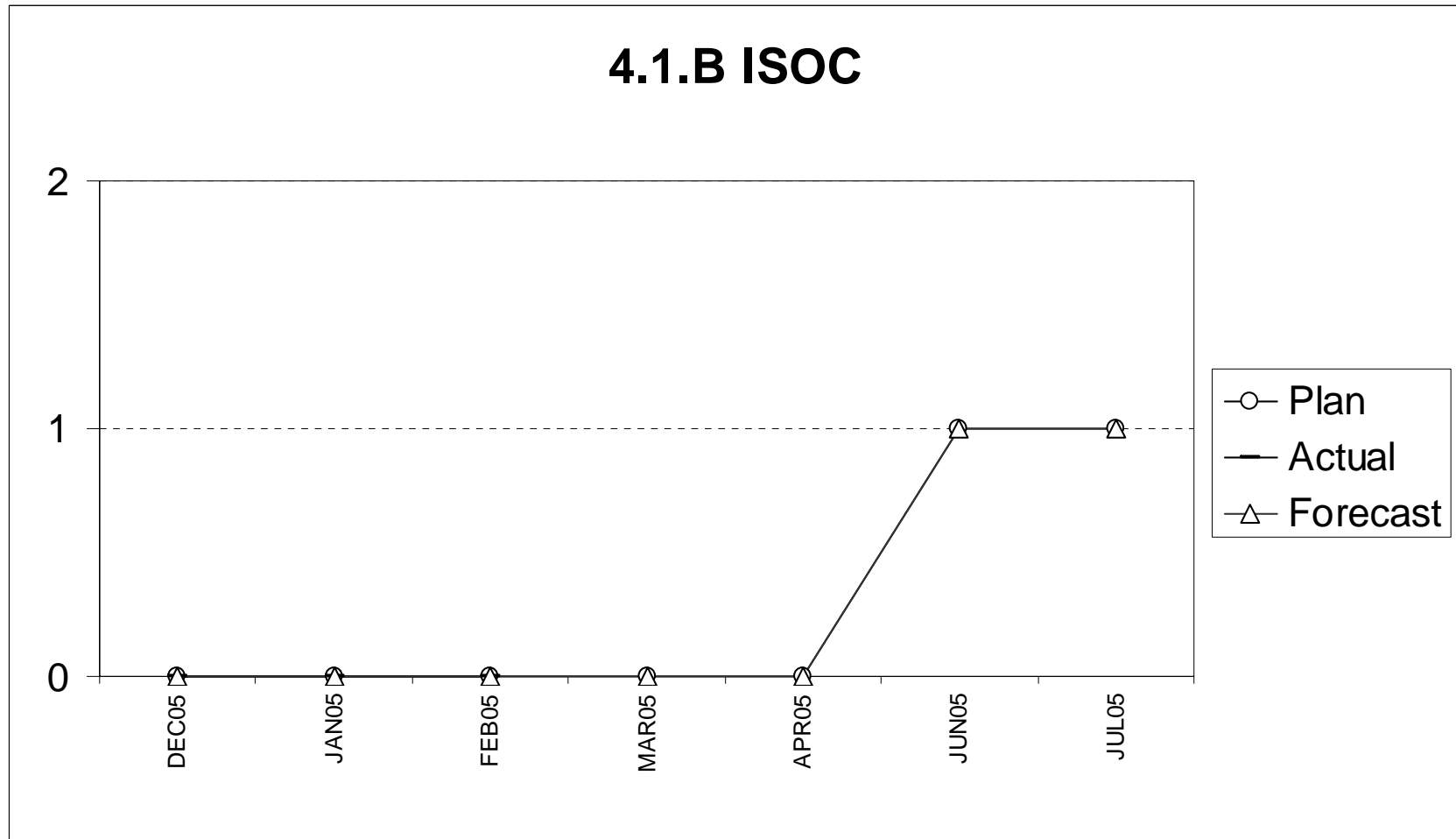


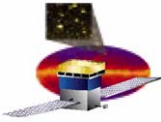
Near Future Activities

- ❑ **ISOC Software Release 1.1 – 31 August 2005**
- ❑ **Ops TIM – 14-15 September 2005**
- ❑ **GRT #3 – 25 October 2005 (may slip)**
- ❑ **MOR – 31 March 2006**



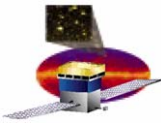
Level 3 Milestone Count





Milestone Variance Explanation

- ❑ **Schedule Impact**
- ❑ **Cost Impact**
- ❑ **Corrective Action**
 - **None required**



Cost Report

| Reporting Category | Cost Incurred/Hours Worked | | | | Estimated Cost/Hours to Comp | | | Estimated Final Cost/Hours | | Unfilled Orders |
|--|----------------------------|---------|--------------|---------|------------------------------|-------|---------------------|----------------------------|----------------|-----------------|
| | During Month | | Cum. to Date | | Detail | | Balance of Contract | Contract Estimate | Contract Value | Outstanding |
| | Actual | Planned | Actual | Planned | JUL05 | AUG05 | | | | |
| 4.1.B LAT INSTRUMENT SCIENCE OPERATIONS CENTER | | | | | | | | | | |
| 4.1.B.1 PROJECT MANAGEMENT | 2 | 5 | 169 | 176 | 5 | 5 | 9 | 188 | 188 | 0 |
| 4.1.B.2 PERFORMANCE ASSURANCE | -12 | 0 | 0 | 6 | 0 | 0 | 6 | 6 | 6 | 0 |
| 4.1.B.3 MISSION & OPERATIONS PLANNING | 0 | 0 | 101 | 101 | 0 | 0 | 0 | 101 | 101 | 0 |
| 4.1.B.4 LAT OPERATIONS FACILITY | 0 | 0 | 16 | 16 | 0 | 0 | 0 | 16 | 16 | 0 |
| 4.1.B.5 IOC TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.1.B.6 LAT PERFORMANCE VERIFICATION | 0 | 0 | 24 | 24 | 0 | 0 | 0 | 24 | 24 | 0 |
| CAPW[3]Totals: | -10 | 5 | 310 | 322 | 5 | 5 | 15 | 334 | 334 | 0 |