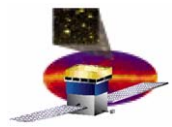


# **GLAST Large Area Telescope Instrument Science Operations Center**

**Monthly Status Review  
11 January 2007**

**Rob Cameron**



# ISOC Management

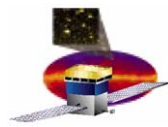
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## ❑ Operations Facility

- Construction completed
  - operations area and dataflow lab extension
- Furniture (mostly) installed in December
  - A few pieces still needed to complete cubicles
- Networks in place
- Most computers installed
- Will be ready and used to support ETE1

## ❑ Events

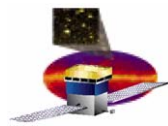
- AAS meeting: Jan 6-10
  - GLAST-specific oral session
  - 15 GLAST posters
- Operations TIM: Jan 30 – Feb 1 at GD



# Ops Narrative Procedure Development

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- ❑ **Total of 95 narrative procedures in development**
  - 91 for on-orbit operations (some also used for L&EO)
  - 4 for L&EO use only
  - Since last monthly review
    - Added 6 procedures for primary boot code contingency activities
    - Added 2 procedures for thermal control activities
    - Added 1 procedure for debugging compression
    - Deleted 1 L&EO procedure for a test that will not be run (SVAC Flight Config)
    - Deleted 4 L&EO procedures that are replaced by using existing on-orbit procedures
- ❑ **11 procedures have had PROCs developed and validated on the Testbed**
  - All PROCs to be run during ETE1 have been validated
- ❑ **31 procedures are ready for PROC development**
  - 27 on-orbit procedures
    - Includes all NPs needed for ETE2
  - 4 L&EO procedures

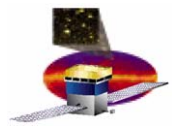


# Ops Narrative Procedure Status

| Status by ETE |        |                 |       |   |    |   |    |   |
|---------------|--------|-----------------|-------|---|----|---|----|---|
| ETE           | Date   | # of Procedures | Level |   |    |   |    |   |
|               |        |                 | 1     | 2 | 3  | 4 | 5  | 6 |
| ETE 1         | Jan-07 | 11              | 0     | 0 | 0  | 0 | 11 | 0 |
| ETE 2         | Mar-07 | 19              | 0     | 0 | 19 | 0 | 0  | 0 |
| ETE 3         | Apr-07 | 23              | 8     | 4 | 10 | 0 | 0  | 0 |
| ETE 4         | Jun-07 | 42              | 8     | 3 | 2  | 0 | 0  | 0 |
|               |        | 95              | 16    | 7 | 31 | 0 | 11 | 0 |

| Schedule |               |              |                 |                |
|----------|---------------|--------------|-----------------|----------------|
|          | Planned Draft | Draft Actual | Planned Level 3 | Level 3 Actual |
| Apr      | 3             | 4            | 0               | 0              |
| May      | 7             | 8            | 0               | 0              |
| Jun      | 9             | 5            | 0               | 0              |
| Jul      | 4             | 0            | 2               | 2              |
| Aug      | 6             | 8            | 1               | 1              |
| Sep      | 4             | 9            | 11              | 11             |
| Oct      | 6             | 7            | 12              | 11             |
| Nov      | 12            | 11           | 8               | 16             |
| Dec      | 13            | 12           | 2               | 1              |
| Jan      | 10            | 1            | 16              | 0              |
| Feb      | 10            | 0            | 16              | 0              |
| Mar      | 6             | 0            | 12              | 0              |
| Apr      | 5             | 0            | 10              | 0              |
| May      | 0             | 0            | 5               | 0              |
|          | 95            | 65           | 95              | 42             |

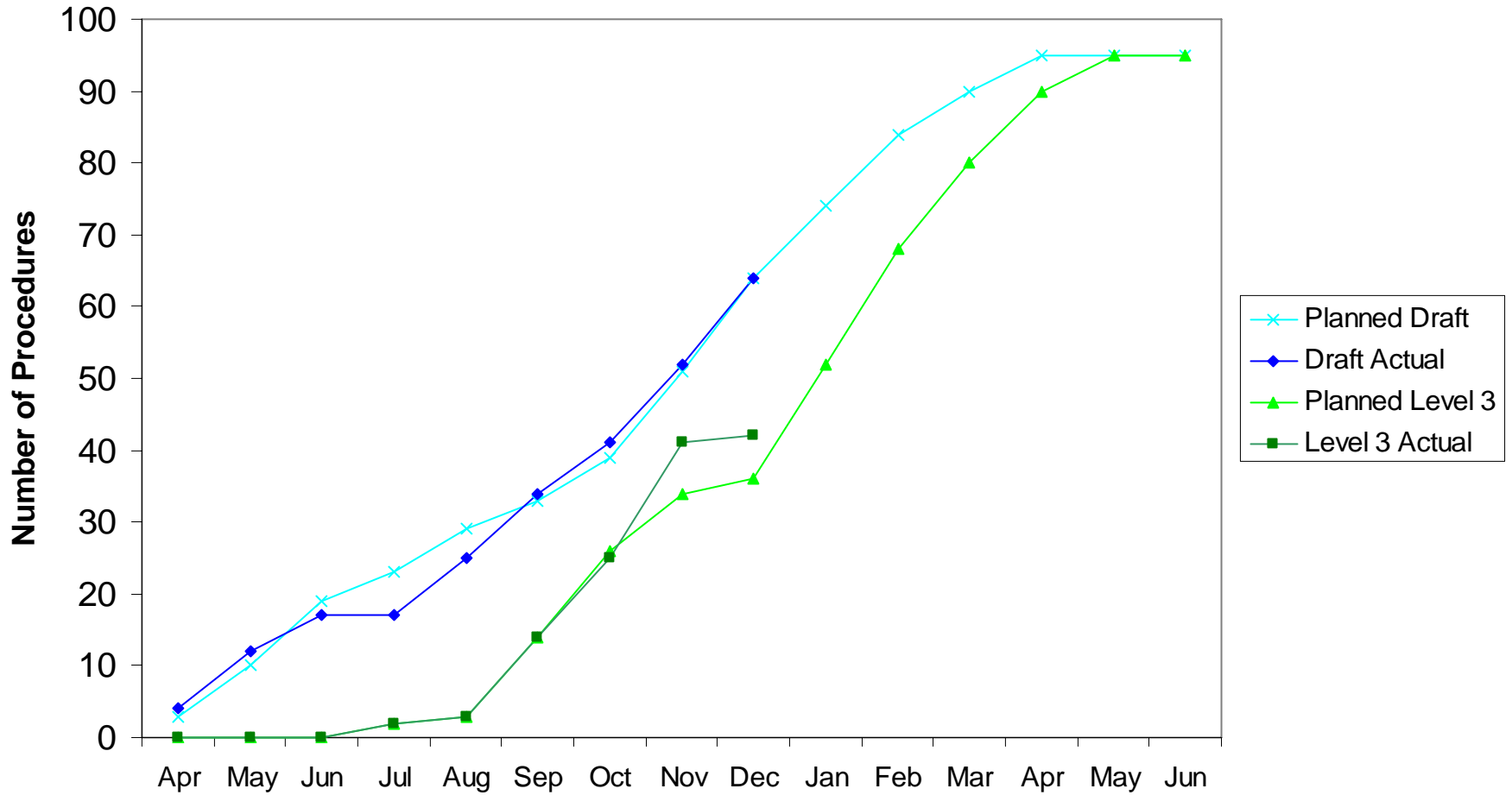
| Cumulative NP Progress |               |              |                 |                |
|------------------------|---------------|--------------|-----------------|----------------|
|                        | Planned Draft | Draft Actual | Planned Level 3 | Level 3 Actual |
| Apr                    | 3             | 4            | 0               | 0              |
| May                    | 10            | 12           | 0               | 0              |
| Jun                    | 19            | 17           | 0               | 0              |
| Jul                    | 23            | 17           | 2               | 2              |
| Aug                    | 29            | 25           | 3               | 3              |
| Sep                    | 33            | 34           | 14              | 14             |
| Oct                    | 39            | 41           | 26              | 25             |
| Nov                    | 51            | 52           | 34              | 41             |
| Dec                    | 64            | 64           | 36              | 42             |
| Jan                    | 74            | 65           | 52              | 42             |
| Feb                    | 84            |              | 68              |                |
| Mar                    | 90            |              | 80              |                |
| Apr                    | 95            |              | 90              |                |
| May                    | 95            |              | 95              |                |
| Jun                    | 95            |              | 95              |                |

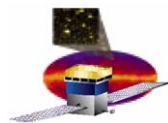


# Narrative Procedure Development Progress

## Cumulative NP Progress

December 2006

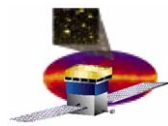




# PROC Validation

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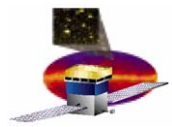
- The following PROCs have been validated successfully against the LAT testbed:
  - LAT\_1TASK\_MSG\_ENAB
  - LAT\_ALLTASK\_MSG\_ENAB
  - LAT\_CMD\_CONFIRM
  - LAT\_COPY\_FILE
  - LAT\_CREATE\_DIR
  - LAT\_DELETE\_DIR
  - LAT\_DELETE\_FILE
  - LAT\_DUMP\_DIR
  - LAT\_DUMP\_FIL
  - LAT\_DUMP\_MEM\_POOL
  - LAT\_NOOP
  - LAT\_TASK\_MSG\_DISA
  - (LAT\_DWELL\_TLM)
  - (LAT\_STOP\_DWELL\_TLM)



# End-to-End 1 Preparation Status

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- ❑ A half-day practice session prior to ETE1 for the LISOC real-time monitoring task is being planned
  - Housekeeping and diagnostic telemetry will be played-back
- ❑ LAT ISOC will be represented in the MOC for ETE1 (Cameron, TBD)
  - LAT personnel will have access to an ITOS workstation configured with relevant LAT displays
    - The exact content of the displays is currently being worked
  - ISOC has requested a two-week prior notice of test dates from the NASA MITT leads to arrange travel
- ❑ Access to a voice loop to discuss issues between LAT engineers in the MOC and LAT engineers at SLAC and GD is being worked

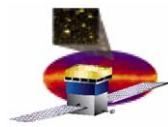


# End-to-End 1 Preparation Status

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- ❑ Elizabeth Ferrara + Shantha Condamoor validated two ITOS PROCs needed for ETE1 on 1/8/07 using the LAT testbed at SLAC.
- ❑ Two other PROCs need to be re-validated due to a minor name change
  - **LAT-DWELL-TLM, LAT-STOP-DWELL-TLM**
- ❑ A White Paper documenting the process to cross-validate ITOS-to-LICOS commands is drafted and circulated for review
- ❑ The LAT HK telemetry dropout issue has been identified as a lien against the ETE1 for LAT participation in ETE testing

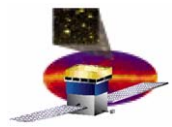




# ISOC Flight Operations (CHS) Software

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- ❑ **Working LICOS & ITOS telecommand binary equivalencies**
  - **Script generated to process LAT command sample through LICOS and capture binary output to ASCII file**
- ❑ **Software Releases**
  - **CHS release 2.2 code complete and tagged.**
    - **Testing in progress.**
    - **Provides Mission Planning database with GUI input for scheduling in support of Day-in-the-Life (DitL) #1 test.**
- ❑ **Supporting I&T**
  - **Completed configuration of EGSE at GD supporting data flow with LAT integrated to spacecraft (Lee).**
  - **Automatic processes in place to collect LAT SSR playback files from GD I&T filesystem, and transfer to SLAC**
- ❑ **Supporting ETE tests**
  - **Configured “production” FASTCopy receipt/data dispatch server (Lee, Tether).**
  - **Implement additional real-time display features in LICOS (Tether).**



# CHS: Software Development Activity

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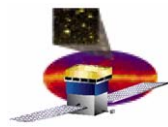
- ❑ **Supporting Service Challenges:**
  - **Implement code to import calibration results into the calibration trending database tables (Mitra).**
- ❑ **Supporting DITL1:**
  - **Implemented Mission Planning GUI with basic input features (Lee).**
- ❑ **Supporting CHS software testing:**
  - **Prepare test cases for Mission Planning system (Mitra).**



# LATc Register and Software Config Tools

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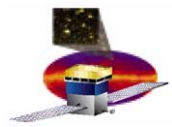
- ❑ **LATc verification tool developed**
  - **Included in latest MOOT v2.1 release**
- ❑ **LATC Register/Software Config Tools are to be used to populate the MOOT DB.**
  - **Existing online code retrieves from MOOT DB for LAT I&T ops.**
- ❑ **Next steps**
  - **Put ancillary files into MOOT DB**
  - **E. Charles working on ACD config fragments**
    - **will work with E. Grove (CAL) & H. Tajima (TKR) after ACD**
- ❑ **Later steps**
  - **Handle FSW config (OBF, LTC, LHK, ...)**
- ❑ **Deployment:**
  - **First stage: use tools to build full LATc blobs**
  - **Second stage: add OBF, LTC, LHK, ...**



# CHS Testing

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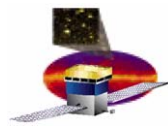
- ❑ **ISOC/CHS 2.2 acceptance testing status**
  - testing started 8 Jan (right after pre-test sw release tagged)
  - two of nine tests completed (passed) so far
  - three Jira issues reported so far (and already fixed)
    - ICS-74 (Daily report didn't report gaps in submitted data)
    - ICS-78 (Dev FASTCopy transfer failed)
    - IOL-3 (Dev log watcher doesn't show new entries)
- ❑ **2.2 release needed for Day-in-the-Life exercises**
  - mission planning functions to be exercised in DitL
  - DitL expected in Feb (was mid-Jan)
- ❑ **GRT6 preparations I/P (test date: 21 Feb)**
  - test procedure being reviewed/finalized
- ❑ **Reviewed plan for verification of remaining GSRD reqts**
  - 37 ISOC-related GSRD reqts still to be verified
  - to be verified in GRT6, GRT7 and Service Challenge(s)



# Science Operations

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- ❑ **SciOps task coordination and sharing between SLAC and other collaboration institutions being worked (Eduardo, Seth)**
  - **Coordination via weekly VRVS meetings**
- ❑ **Level 1 processing (Focke, Wai)**
  - **L1 design has been implemented in XML for Pipeline2**
  - **Pipeline2 scripts for L1 processing should be ready for ETE1**
- ❑ **LAT monitoring: test application is running in ISOC trending tool (Turri, Charles)**
- ❑ **SAA boundary determination and monitoring**
  - **Proposal to use TKR low-rate science counters during L&EO, and as necessary during mission deemed feasible by FSW/DAQ, SciOps/TKR, FltOps**
- ❑ **IRF development**
  - **Improving interpolation and normalization of parameterized PSF and energy dispersions**



# Requirements Tracking

| Requirement Category                             | Release Status & Plan (as of 01/09/07) |              |             |             |           |              |             |                |           | total |
|--|--|--------------|-------------|-------------|-----------|--------------|-------------|----------------|-----------|-------|
|  | 1<br>6/05                              | 1.2<br>11/05 | 1.3<br>2/06 | 1.4<br>5/06 | 2<br>7/06 | 2.1<br>10/06 | 2.2<br>1/06 | 3<br>3/07      | 4<br>5/07 |       |
|  | GRT2                                   | GRT3         |             |             | GRT5      | GRT6         | DITL        | GRT7<br>ETE2-3 | ETE4-6    |       |
| Misc (Facility, Redundancy, Security, Doc, etc.) | 3                                      | 1            |             | 2           | 7         | 2            | 4           | 16             | 27        | 62    |
| Mission Planning                                 | 2                                      | 2            |             |             |           |              | 30          | 16             | 3         | 53    |
| Telemetry Processing                             | 1                                      | 3            | 1           | 7           | 4         | 13           | 3           | 10             | 2         | 44    |
| Science Data Processing                          |  |              |             | 1           | 2         | 3            |             | 29             | 1         | 36    |
| Telemetry Monitoring                             |  | 1            | 1           | 2           | 1         | 15           | 1           | 10             | 2         | 33    |
| Logging  |  |              | 3           |             |           | 4            |             | 3              |           | 10    |
| Trending   |  |              | 12          |             | 6         | 3            |             | 1              |           | 22    |
| Anomaly Tracking & Notification                  |  |              |             |             |           | 6            | 3           | 7              | 1         | 17    |
| # new reqts verified                             | 6                                      | 7            | 17          | 12          | 20        | 46           | 41          | 92             | 36        | 277   |
| cumulative total                                 | 6                                      | 13           | 30          | 42          | 62        | 108          | 149         | 241            | 277       |       |

| Key: |   |
|------|---|
|      | Incremental release (only new requirements tested)        |
|      | Major release (all requirements satisfied to date tested) |

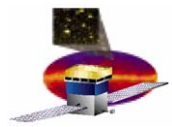


# SAS Status: Service Challenge

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- Service Challenge Work
  - Working to 3 near term goals
    - 1-year gtobssim run (late Jan)
      - Pointing
      - Include diffuse response and exposure cubes in pipeline
    - 1-day Gleam run with pointing
      - Pointing, new background interleave scheme
      - Backgrounds generated; rates extracted
      - Testing about to start
      - Leading to new 55 day run (end Feb)
    - L0 Gleam run (leading to single downlink runs)
      - L0 file simulation now being tested; first runs happening
      - L1 processing chain being updated
        - » Processing chain defined and input to pipeline
        - » Script work in progress
      - Trial instrument and ASP monitoring plots
      - Prototype ASP



# SAS: Sundry Items

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- ❑ **Ordered 50 TB disk**
  - **May be on the floor by end of February**
  - **Pressure on disk from GD has dropped off for now**
- ❑ **Looking to upgrade:**
  - **Linux, windows compilers**
    - **Some attention needed to build system - supply servers for RHEL4 builds**
  - **Root**
    - **Improvements to xrootd (tape archive, disk management)**
- ❑ **Xrootd**
  - **Should have demo of functionality by end January**
- ❑ **Starting work in France on running pipeline jobs at Lyon**