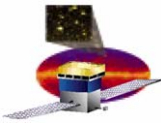


# GLAST Large Area Telescope Instrument Science Operations Center

## Monthly Status Review 1 August 2007

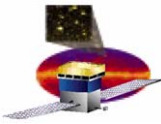
Rob Cameron  
ISOC Manager



# ISOC Highlights

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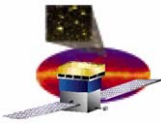
- ❑ **Recent Events**
  - **Mission Planning Exercise 2: 25 June – 13 July**
- ❑ **Current Events**
  - **LAT Collaboration Meeting: SLAC, 31 July – 3 August**
    - <http://glast.stanford.edu/collab0707/>
- ❑ **Upcoming Events**
  - **ETE 1&2 repeat: 8 August**
    - **LAT objectives**
      - LAT power-up (single tower)
      - Re-run of updated PROCs
  - **Instrument Commissioning Simulation #2: 15-16 August?**
  - **ETE3: September, pre-TVAC**
  - **ISOC Operations Sim1: October**
  - **GLAST Flight Operations Review: GSFC, 8-9 November**



# Narrative Procedure Development

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- ❑ **Total of 105 NPs identified**
  - 98 written (93%)
  - 90 reviewed at level 3 or higher (86%)
  - 35 have PROCs completed and tested in an ETE (33%)
- ❑ **Work on updating NPs**
  - Include B1-0-0 changes
  - Include references back to the PROCs developed from them
- ❑ **ETE3 status**
  - 29 of 30 NPs are ready for PROC development (level 3)
    - Remaining NP won't need a PROC because it just provides personnel with information about telemetry to look for when monitoring ToO completion during a ToO test

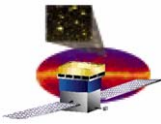


# Procedure Status

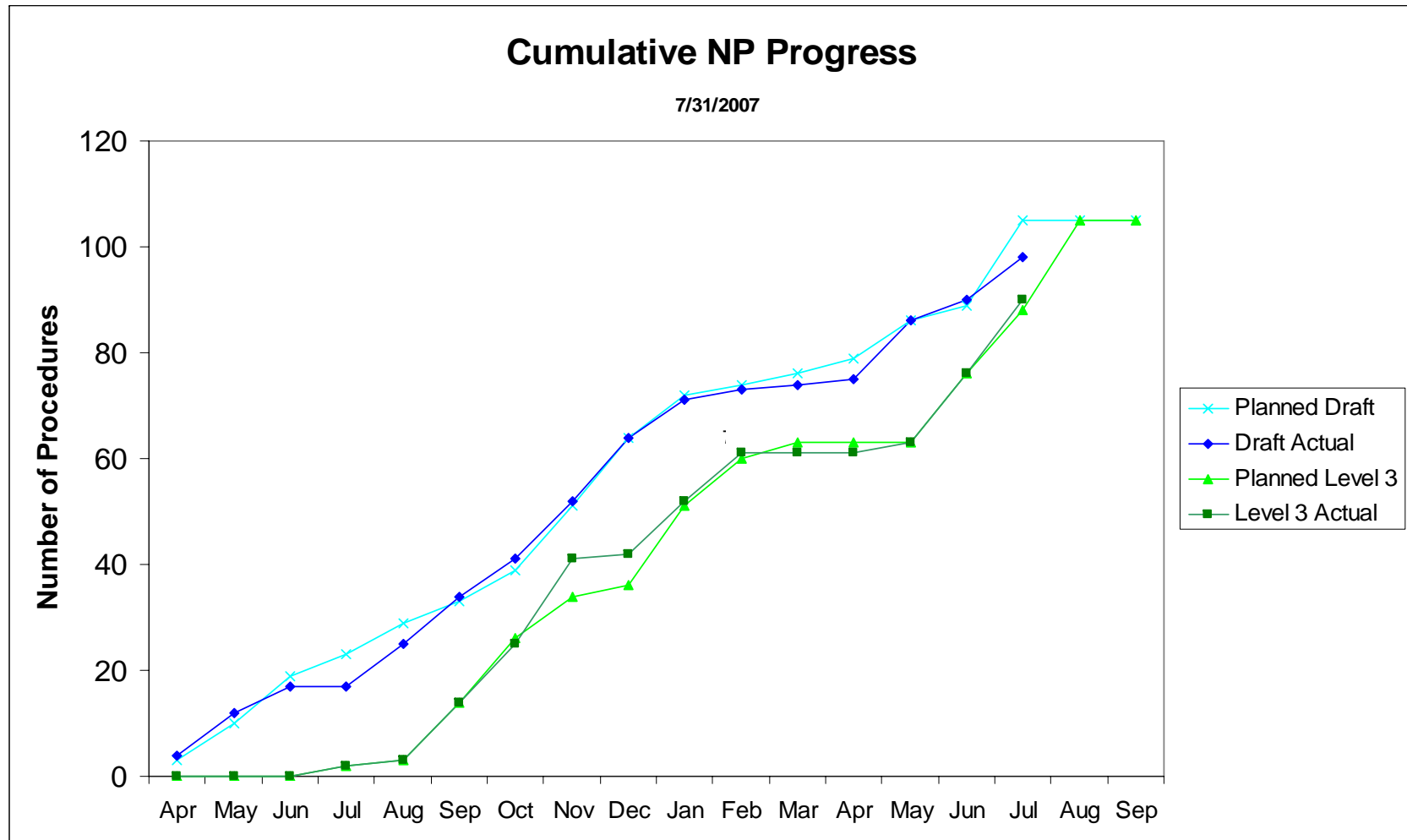
Status by ETE								
ETE	Date	# of Procedures	Level					
			1	2	3	4	5	6
ETE 1a	Apr-07	2	0	0	0	0	2	0
ETE 1b	Jul-07	8	0	0	0	0	8	0
ETE 2	Jul-07	20	0	0	0	20	0	0
ETE 3	Sep-07	30	1	0	25	4	0	0
ETE 4	Oct-07	45	7	0	30	1	0	0
		<b>105</b>	<b>8</b>	<b>0</b>	<b>55</b>	<b>25</b>	<b>10</b>	<b>0</b>

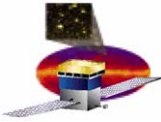
Schedule				
	Planned Draft	Draft Actual	Planned Level 3	Level 3 Actual
Apr	3	4	0	0
May	7	8	0	0
Jun	9	5	0	0
Jul	4	0	2	2
Aug	6	8	1	1
Sep	4	9	11	11
Oct	6	7	12	11
Nov	12	11	8	16
Dec	13	12	2	1
Jan	8	7	15	10
Feb	2	2	9	9
Mar	2	1	3	0
Apr	3	1	0	0
May	7	11	0	2
Jun	3	4	13	13
Jul	16	8	12	14
Aug	0	0	17	0
	<b>105</b>	<b>98</b>	<b>105</b>	<b>90</b>

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	72	71	51	52
Feb	74	73	60	61
Mar	76	74	63	61
Apr	79	75	63	61
May	86	86	63	63
Jun	89	90	76	76
Jul	105	98	88	90
Aug	105		105	



# Narrative Procedure Development Progress

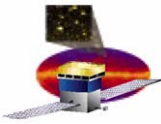




## Draft Plan for ETE3

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- ❑ **S/C PROC to power SIU**
- ❑ **LAT PROCs:**
  - **Command SIU to secondary boot**
  - **Fast turn-on of LAT (LTC on, EPU's on, all towers on, all freeboards on)**
  - **Fast CAL, TKR and ACD HV bias (all CAL, all TKR and all ACD)**
  - **CAL, TKR, ACD Counters**
  - **Configure GBM Interface Handling**
  - **Enable/disable GRB Messages**
  - **Set LPA Default File**
  - **Charge Injection Run**
  - **Enter ToO mode and abort ToO**
  - **All TCS commands**
  - **Memory write**
  - **Memory dumps (system symbol table and memory relative to symbol)**
  - **Dump power configuration**
  - **Dump detector configuration**
  - **Enter Hold mode and exit Hold mode**
  - **Power down LAT**

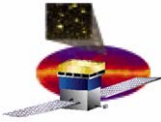


# PROC Development

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- ❑ From Elizabeth Ferrara, 1 August
  - PROC status rapidly changing in preparation for Aug 8 ETE test
- ❑ Ferrara will be at SLAC in mid-August for ETE3 PROC Verification on LAT testbed

PROC	Not Started	Draft	Not complete	Coded	Needs Update	Ready for test	Tested	Validated	Total
ETE1	0	0	0	0	0	1	0	12	13
ETE2	0	0	0	0	13	11	1	11	36
ETE3	13	9	1	0	2	2	6	0	33
ETE4	39	1	6	0	0	0	0	0	46
Total	52	10	7	0	15	14	7	23	128



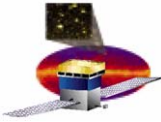
# Mission Planning Exercises

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## □ MPEx3

- Planned for late Sept, early Oct
- Goals
  - GSSC issue ToO PROC request (more complete than MPEx 2 test)
  - GSSC issue ToO cancel
  - ISOC send RPS file inputs to GSSC to request special LAT pointing and to identify periods where LAT will not be taking data
  - Mid-week timeline replan

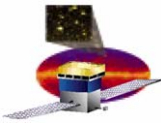




# Flight Operations Software Progress

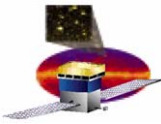
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- ❑ FOS release 3.2 expected ~8/13
  - To be in place for ETE 3
- ❑ FOS release 4.0 preparation
- ❑ In progress:
  - Web based Mission Plan Viewer
  - Web based Telemetry Table GUI
  - Mission Planning Tool updates
  - Mnemonic viewer
  - Protection against malformed data packets
  - Limit-set handling
  - Derived telemetry handling
  - Telemetry display configuration files
  - Strip chart configuration files
- ❑ Completed/upgraded:
  - Calibration trending tool
  - FASTCopy monitor
  - Protection against duplicate real-time data streams
- ❑ 2 computers ready for LAT use at the MOC
  - Plan is to ship them this week
- ❑ Current issues
  - Disruption to workflow by mini-ETE tests
  - Preparation for the LAT Ops Sim Tests
  - General DFI package ownership to handle extensions, updates and maintenance
  - DFI update to handle event-handler result-summary-data



## FOS JIRA issues (as of 7/30)

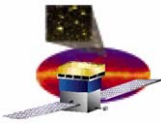
<b>Package</b>	<b>Issues opened since 7/10</b>	<b>Issues closed since 7/10</b>	<b>Total # of issues currently open</b>
<b>Core</b>	<b>57</b>	<b>56</b>	<b>68</b>
<b>Monitor: FASTcopy</b>	<b>0</b>	<b>2</b>	<b>4</b>
<b>Monitor: Logging</b>	<b>1</b>	<b>1</b>	<b>5</b>
<b>Ops Facility</b>	<b>4</b>	<b>4</b>	<b>1</b>
<b>Packages &amp; Installers</b>	<b>3</b>	<b>3</b>	<b>4</b>
<b>Trending: Calibration</b>	<b>0</b>	<b>1</b>	<b>3</b>
<b>Trending: Telemetry</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>LAT T&amp;C</b>	<b>0</b>	<b>2</b>	<b>1</b>
<b>Totals</b>	<b>66</b>	<b>71</b>	<b>89</b>



# Requirements Tracking

Requirement Category	Release Status & Plan (as of 07/31/07)											total
	1 6/05	1.2 11/05	1.3 2/06	1.4 5/06	2 7/06	2.1 10/06	2.2 2/06	3 6/07	3.1 7/07	3.2 8/07	4 9/07	
	GRT2	GRT3			GRT5	GRT6	ETE1 MPEX1	GRT7 MPEX2	ETE1b/2	ETE3	ETE4-6	
Misc (Facility, Redundancy, Security, Doc, etc.)	3	1		2	7	4	4		16	5	20	62
Mission Planning	2	2					30	9	2	2	5	52
Telemetry Processing	2	3	1	7	4	14	2	2	4	2	4	45
Science Data Processing		1		1	2	3			6	1	21	35
Telemetry Monitoring		1	1	2	1	15	1	5		6	1	33
Logging			3			4		1			2	10
Trending			12		6	3			1			22
Anomaly Tracking & Notification						6	3		5	2	1	17
# new reqts verified	7	8	17	12	20	49	40	17	34	18	54	276
cumulative total	7	15	32	44	64	113	153	170	204	222	276	

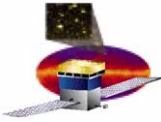
Key:	
	Incremental release (only new requirements tested)
	Major release (all requirements satisfied to date tested)



# Current Developments in Science Ops

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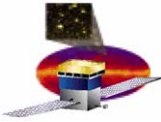
- ❑ For ETE2 processing, many monitoring tasks were integrated into the L1 pipeline and trending/plotting systems – for the first time
  - Monitoring tasks included: Fast (pre-digi) (INFN/Pisa), Time-dependent and end-of-run Digi and Recon (Pisa/SLAC)
  - These were tested with the ETE2.1 data set; and except for a ROOT bug (merging Digi files) the monitoring tasks ran as planned
- ❑ With event compression implemented in B1-0-1 of the FSW, quantitative estimates of the effects of the trigger and OBF on the bandwidth requirements now being made (Ohio State/SLAC)
  - Average (compressed) event sizes range from 2.0 kbits (electrons, earth albedo) to 5.0 kbits (heavy ions) in simulation
  - For the current background model, estimated rates are in the 1.0 Mbit/s range
  - TKR noise is probably overestimated (conservatively) in the simulation, increasing somewhat the compressed event sizes



## Current Developments in Science Ops (3)

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- **Plans for ISOC Operations Simulation 1 (October 8-12 at SLAC) have advanced to details of the data sets to be generated to simulate L&EO configurations, configuration updates, calibrations, and nominal operations**
  - **For the week, the plans amount to the equivalent of a day's worth of data (8 2-orbit downlinks)**
  - **The Operations Simulation will be 'end-to-end' within the ISOC: spanning data processing and monitoring all the way up to ASP tasks, as well as calibrations, configuration planning, and of course diagnosing errors**

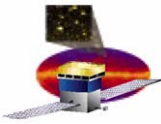


# SAS Status: Service Challenge



## □ Service Challenge Work

- 1-year gtobssim run out the door for Collab Mtg
- 55 day run out the door
  - Now that problems are resolved we expect to redo the 55 day run to original specs (with ARRs)
- PASS5 backgrounds analysis complete - “final” pre-launch
  - Reprocessing datasets now for analysis & IRF generation
- Problems encountered with interleave and SAA handling resolved
- 3 hr run, full simulation, pointed at vela
  - Compared to interleave version - looks good
  - Handed off to FSW which detected GRB in FoV and issued alert
  - Injecting into Level 1 pipeline



## SAS: Sundry Items

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- ❑ 50 TB disk & 240 compute cores
  - Expected to be available next week
- ❑ Data access tools being configured
  - Data Catalogue, LAT Data & Astro Servers
  - Tighter connection of Catalogue and Skimmer
- ❑ Xrootd
  - Working on devoting all new disk to xrootd
    - Will load balance disk usage
    - Tape archive
- ❑ Pipeline2 @ Lyon
  - Thought to be ready to go
  - Claudia Lavalley back in the saddle, so we can return to testing