

**GLAST LAT Instrument**

*GLAST Monthly  
Mission Review  
June 6, 2007*



## **Monthly Mission Review**

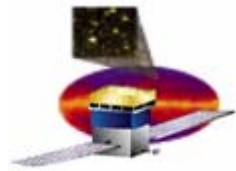
## **Project Status Overview**

**June 6, 2007**

**Ken Fouts**

**SLAC**

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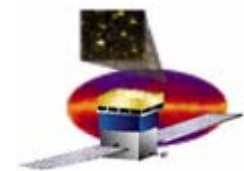


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# **LAT Project Status**

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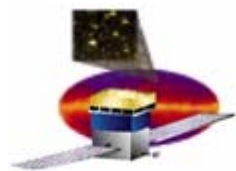
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- 5/7 LAT EMI Closeout complete**
  - 5/12-13 Supported Observatory Command/Telemetry trouble-shooting**
  - 5/14-17 Supporting Mission Simulation at GSFC**
  - 5/15 Supported USN Test**
  - 5/21-22 Supported Observatory Move to EMI Chamber**
  - 5/29 Supporting Observatory EMI Test**



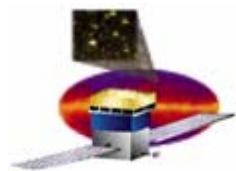
# **LAT Planned Milestones**

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<b><u>Activity</u></b>	<b><u>ECD</u></b>
<b>LAT FSW 0-10-1 Installation</b>	<b>TBD</b>
<b>LAT Radiator R&amp;R</b>	<b>6/19/07</b>
<b>LAT FSW 1-0-0 Delivery</b>	<b>6/26/07</b>
<b>Post EMI Radiator Removal</b>	<b>7/12/07</b>
<b>LAT FSW 1-0-0 Install</b>	<b>7/17/07</b>
<b>LAT Radiator Flight Install</b>	<b>8/1/07</b>

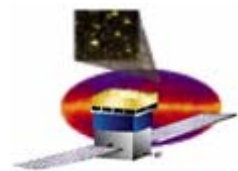


- ❑ **EMI started with LICOS 3.0.0**
  - **No issues**
- ❑ **Bent pipe updates**
  - **Rolled back to previous release due to a bug**
  - **Bug fixed, new release ready for installation**
- ❑ **LRS scripts and strip charts updated and installed at GD**
- ❑ **Configurations compatible with FSW B0-10-x can be produced from those for B0-9-x in a couple of days**
  - **On hold until LAT upload of B0-10-x**
  - **Preparing roll-back procedure**
- ❑ **Preparing configurations for compatibility with FSW B1-0-0**
  - **LPA configurations built (still need verification)**
  - **LCI configurations will make use of the new iterables**
- ❑ **Handling of APIDs other than LPA, LCI and M7 from SSR**
- ❑ **Online analyses system converted to process data using ISOC tools**
  - **Fixed long outstanding stability problem**
- ❑ **Various JIRAed bug fixes**



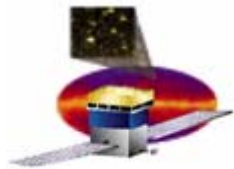
# Online JIRA issues (as of 6/4)

<b>Package</b>	<b>Issues opened since 4/30</b>	<b>Issues closed since 4/30</b>	<b>Total # of issues currently open</b>
<b>LICOS</b>	<b>5</b>	<b>17</b>	<b>12</b>
<b>LICOS_Config</b>	<b>1</b>	<b>3</b>	<b>4</b>
<b>LICOS_ETC</b>	<b>10</b>	<b>25</b>	<b>17</b>
<b>LICOS_Scripts</b>	<b>7</b>	<b>17</b>	<b>16</b>
<b>INT</b>	<b>5</b>	<b>8</b>	<b>19</b>
<b>LDF</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>LSF</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>E-Logbook</b>	<b>0</b>	<b>2</b>	<b>20</b>
<b>Totals</b>	<b>28</b>	<b>72</b>	<b>84</b>



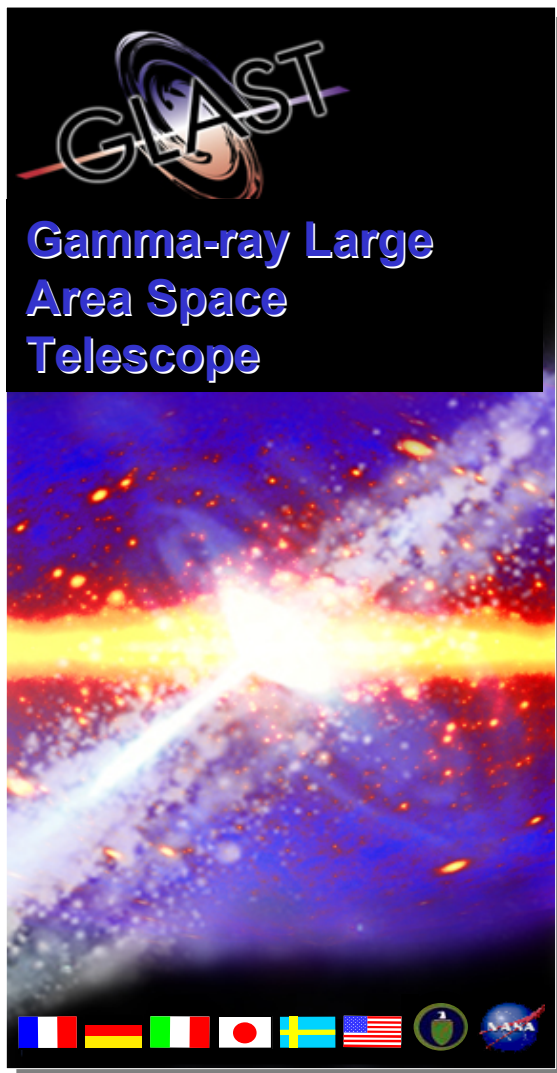
# **LAT Issues and Concerns**

- ❑ **LAT Watt-rod Cage Rework**
  - GD has outlined rework required
  - Who does the rework and where?
- ❑ **Radiator Removal and Replacement in EMI**
  - Procedure review held 6/6
- ❑ **LAT Test Time**
  - **Additional LAT test time availability during EMI testing**
    - Install FSW B0-10-0
    - Rerun Calibration runs
    - Install FSW B1-0-0
- ❑ **LAT Radiator Temp Sensor Troubleshoot**
  - **Scheduled for 7/12/07**



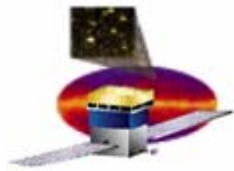
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## **Cost Reports for 4.1 LAT**

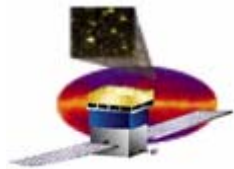
### **April 2007 Month End**



# Cost Status by Organization

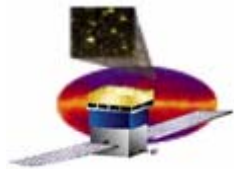
April 07 Month-End By Institution K\$	Current Period			Cumulative to Date			Budgeted at Completion
	Budgt'd Cost Work Scheduled	Actual Cost Work Performed	Cost Variance	Budgt'd Cost Work Scheduled	Actual Cost Work Performed	Cost Variance	
DG *** GSFC	87	61	26	21,138	20,551	587	21,489
DH *** HEPL	15	119	-104	11,065	10,570	495	11,797
DL *** SLAC	600	465	135	106,104	105,421	683	109,489
DN *** NRL	178	159	19	34,371	34,333	37	35,456
DO *** Financial Plan Transfer/Sub Out	0	0	0	59	59	0	59
DS *** SSU	52	82	-30	3,627	3,374	253	3,937
DT *** Texas A&M	0	0	0	15	15	0	15
DU *** UCSC	27	32	-4	2,855	2,797	58	3,034
DW *** UW	10	6	4	470	370	100	538
Sub Total	969	924	45	179,705	177,491	2,214	185,813
Contingency							2,242
Total	969	924	45	179,705	177,491	2,214	188,055



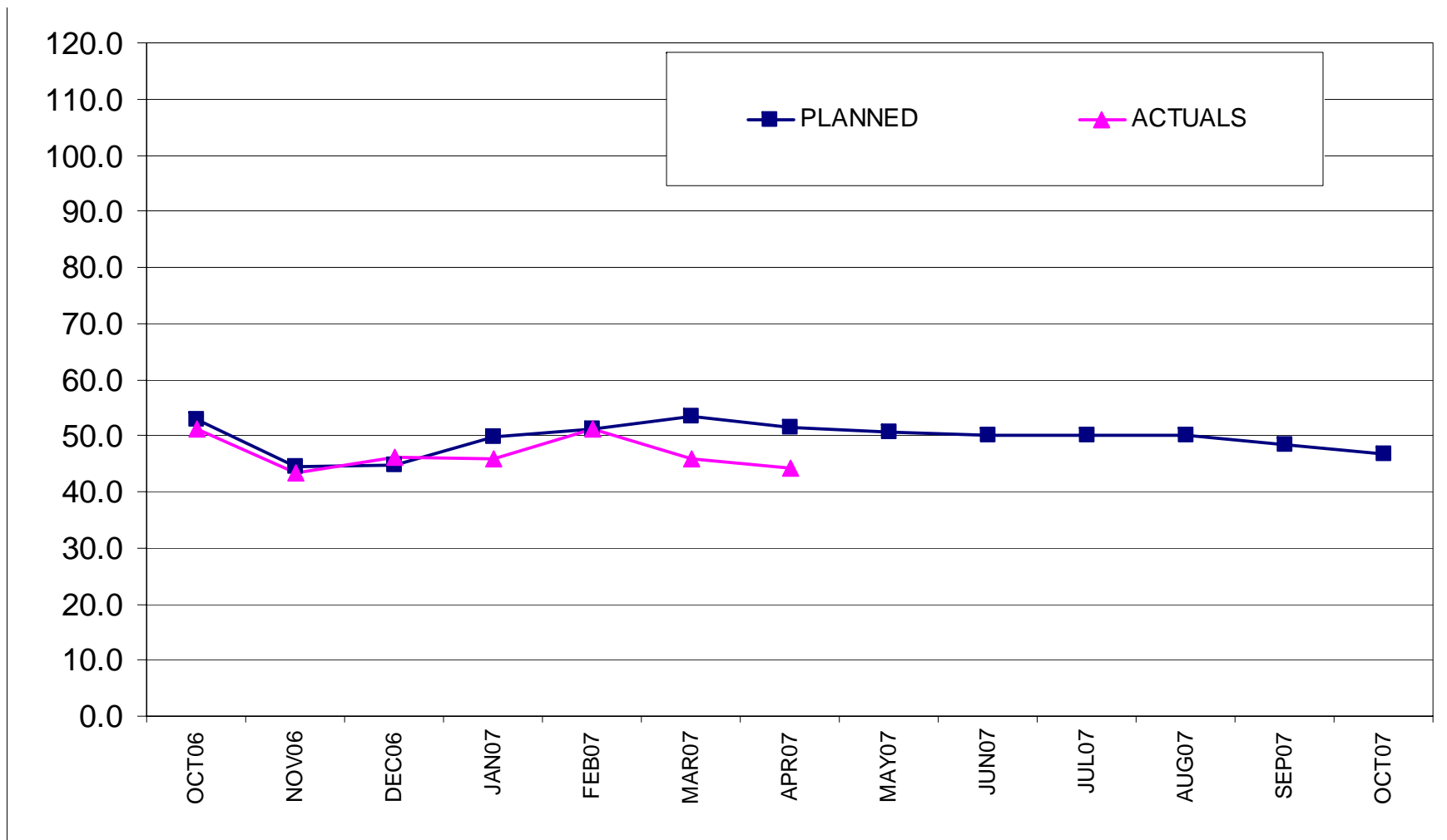


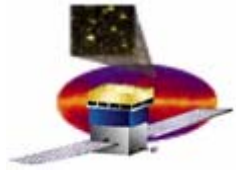
# Cost by Orgs with Variances ≥\$100K

April 07 Month-End By Institution & WBS Level 3 K\$	Current Period			Cumulative to Date			Budgeted at Completion
	Budgt'd Cost Work Scheduled	Actual Cost Work Performed	Cost Variance	Budgt'd Cost Work Scheduled	Actual Cost Work Performed	Cost Variance	
	DG *** GSFC						
4.1.1 INSTRUMENT MANAGEMENT	60	51	9	1,956	1,539	417	2,139
4.1.6 ANTICOINCIDENCE DETECTOR	0	0	0	17,479	17,482	-3	17,479
4.1.D SCIENCE ANALYSIS SOFTWARE	27	11	17	1,325	1,153	172	1,493
4.1.E SUBORBITAL FLIGHT TEST	0	0	0	378	378	0	378
OBSTotals:	87	61	26	21,138	20,551	587	21,489
DH *** HEPL							
4.1.1 INSTRUMENT MANAGEMENT	78	94	-16	3,510	3,309	201	4,051
4.1.2 SYSTEM ENGINEERING	-95	0	-95	2,681	2,638	43	2,681
4.1.4 TRACKER	0	0	0	1,475	1,475	0	1,475
4.1.7 ELECTRONICS	0	0	0	1,021	1,019	2	1,021
4.1.A PERFORM & SAFETY ASSURANCE	0	0	0	263	248	16	263
4.1.B INSTRUMENT SCIENCE OPS CENTER	0	0	0	258	257	0	258
4.1.D SCIENCE ANALYSIS SOFTWARE	32	25	7	1,398	1,164	234	1,588
4.1.E SUBORBITAL FLIGHT TEST	0	0	0	460	461	0	460
OBSTotals:	15	119	-104	11,065	10,570	495	11,797
DL *** SLAC							
4.1.1 INSTRUMENT MANAGEMENT	33	64	-31	14,306	14,282	24	14,495
4.1.2 SYSTEM ENGINEERING	151	142	9	8,604	8,536	68	9,643
4.1.4 TRACKER	0	0	0	18,144	18,097	47	18,144
4.1.5 CALORIMETER	0	0	0	721	718	2	721
4.1.6 ANTICOINCIDENCE DETECTOR	0	0	0	685	683	3	685
4.1.7 ELECTRONICS	102	100	2	28,149	28,212	-62	28,605
4.1.8 MECHANICAL SYSTEMS	0	0	0	17,441	17,417	25	17,441
4.1.9 INTEGRATION & TEST	267	146	121	13,083	12,430	654	14,566
4.1.A PERFORM & SAFETY ASSURANCE	47	14	33	4,906	4,989	-83	5,124
4.1.B INSTRUMENT SCIENCE OPS CENTER	0	0	0	59	59	0	59
4.1.C EDUCATION & PUBLIC OUTREACH	0	0	0	5	0	5	5
OBSTotals:	600	465	135	106,104	105,421	683	109,489
DS *** SSU							
4.1.C EDUCATION & PUBLIC OUTREACH	52	82	-30	3,627	3,374	253	3,937
OBSTotals:	52	82	-30	3,627	3,374	253	3,937
DW *** UW							
4.1.D SCIENCE ANALYSIS SOFTWARE	10	6	4	470	370	100	538
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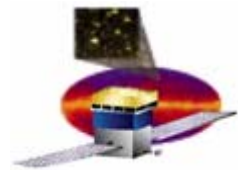
# FTE Report





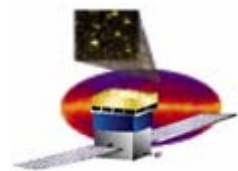
# **Proposal for LAT Final Calibration**

**J. Eric Grove  
LAT Instrument Commissioner**



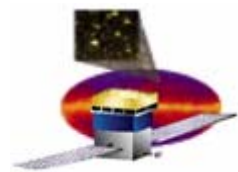
# Final LAT Ground Calibration

- **Need the following activities to appear on GD schedule**
- **Purpose of final calibration**
  - **Generate flight configurations based on post-environmental test LAT performance**
    - Upload these to EEPROM
  - **Generate calibration coeffs for L&EO science data analysis**
  - **Calibrate CAL (with LCI) based on lesson learned from CU beamtest unit**
    - Few-percent crosstalk effect discovered at beam test has not been measured on flight CALs. Needs to be done once, then not on orbit.
- **Acquire calibration data twice more. When and why?**
  - **TVAC cold plateau Obs CPT**
    - Similar to nominal flight thermal condition, so LAT performance is flight-like
    - Gives time to generate flight LATC configs and test (final Obs CPT) prior to shipment from GD
    - Primary/Redundant side is irrelevant, except for ACD
  - **Final ambient Observatory CPT**
    - Compare to cold calibration, but don't regenerate configurations



## □ High-level sequence

1. **Execute complete calib sequence with Obs CPT in TVAC Cycle 3 and Cycle 4 cold plateau**
2. **Analyze data during remainder of TVAC timeline**
3. **Generate flight configurations (LATC, LCI, filter params)**
4. **After return to ambient, test the flight configs from RAM**
  - Expect ACD and CAL to have atypical occupancy because of known temperature dependence of zero suppression thresholds
5. **Load flight configs to EEPROM**
6. **Execute complete calib sequence with final ambient Observatory CPT**
  - Can drop this if schedule pressure warrants
  - Schedule it now, with understanding that it may be deleted



# Test sequence and run times

- ❑ **Cold plateau 3**
  - **During Side A Obs CPT, add portion of LAT-07x (Calib)**
    - TkrThresholdCal\_SVAC 1.5 hrs
    - ACD Veto calibration with muons 1 hr
  - **TKR team will analyze and generate new GTFE thresholds**
- ❑ **Cold plateau 4**
  - **During Side B Obs CPT, add remainder of LAT-07x (Calib)**
    - TkrThrDispersion\_SVAC 1 hr
    - TkrTotGain\_SVAC 8 hrs
    - CalSuite\_calibGen (modified) 4 hrs (TBR)
    - LAT calibration with muons, LAT-71x 12 hrs
  - **Analyze data and generate new configurations**
- ❑ **After return to ambient, prior to final Obs CPT**
  - **Test new configurations from RAM**
    - LAT-22x Sci Ops Demo sequence 4 hrs
  - **Upload to EEPROM**
    - Load new configs to both Sides 8 hrs
  - **During Side A Obs CPT, add complete LAT-07x (Calib)**
    - Repeat all steps from Cold 3 and 4 28 hrs