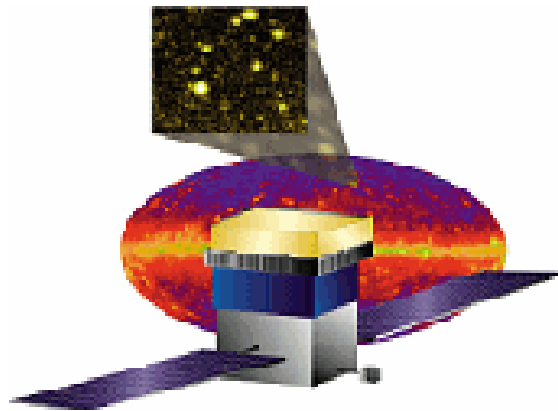


Monthly Progress Report

(Month Ending October 2005)

GLAST Large Area Telescope (LAT)



LAT-MR-07638-01

November 30, 2005

1.0 Introduction

This monthly progress report is submitted to the GLAST Project Office at the Goddard Space Flight Center and the Department of Energy SLAC Site Office. The report summarizes LAT project status as of the end of October, 2005.

2.0 Recent Progress and Status

4.1.4 Tracker

Sixteen flight modules are integrated into the grid. Several modules were found to have occasional out-of-spec noise occupancy in isolated layers. The noise is transient, and generally not repeatable. Study is underway to determine root cause. Long-duration tests on a spare module are planned. The observed problem, however, was determined to be insignificant with respect to science operations. Cable qualification testing is still in progress.

4.1.7 Electronics, Data Acquisition, and Flight Software

The flight power distribution unit (PDU) has been completed. The spare PDU's boards have undergone conformal coating, have been integrated into the enclosure, and wiring has commenced. The final box for the GASU flight unit was received. All tests of the flight GASU have been completed, except for the EMI testing and the thermal-vacuum testing.

Environmental testing of the qualification crate for the spacecraft interface unit (SIU) was completed; mass and center of gravity have been measured. The first two flight SIU/EPU crates have been integrated and environmental testing has been completed. The third and fourth crates will complete testing in mid-November; the fifth crate is expected early December; and the spares in late December.

Five harness interconnect boxes have been assembled, and two of the five have been vibration-tested. The first heater control box is undergoing quality testing; the two boxes will be completed in late November.

Flight software version 5.1 was completed. Multiple hours of system runs have been made. The Flight Software contributions to the virtual physics interface are complete. Test script development/closure is pending VPI closure. No known development roadblocks are anticipated for version 5.2 which includes all the science data formats needed for the test suites.

Twenty of the 46 test scripts were run to successful completion. Completion of 17 of the scripts awaits finalization of the science data format; the remaining nine scripts are in process or awaiting other development liens. Formal dry runs with software quality assurance have begun. The dataflow lab priorities have been shifted from core development to testing and fixes.

4.1.8 Mechanical Systems

The grid box assembly was shipped to the static load testing facility, and the test readiness review was conducted. Test preparations are well underway at the facility: the large baseplate was received, all the load frame configurations were checked, a tent was erected over the test area, data acquisition channels are being programmed, and installation of the grid and flexure strain gages is nearly complete. A minor rework of the cross-LAT plate strongback support equipment was made, and is being inspected. The radiator flight multi-layer insulation blankets are complete. The two-point radiator lift sling is being proof-tested.



Figure 1: Second grid at test facility.

4.1.9 Integration & Test (I&T)

The four remaining Trackers were received and installed, completing the installation of 16 towers in the grid. Sixteen-tower baseline tests with engineering model electronics were performed. Test instrumentation and downspout heat pipes (DSHP), EMI shields and connector panels, and available third-layer boxes are being installed in preparation for ACD installation & testing.



Figure 2: Sixteen installed towers.

4.1.B Instrument Science Operations Center (ISOC)

Requirements for receiving the 96-analog LAT data were submitted to the Mission Operations Center. Standardization of the 96-analog mnemonics was coordinated with the spacecraft vendor. A sample operations narrative procedure was drafted.

Software release 1.2 is on schedule for completion, in support of the next ISOC ground readiness test (GRT3) in mid-December. Acceptance test preparations continue.

Developed capability for file uploads to the test bed via ITOS (integrated test and operations system). ITOS displays to examine LAT housekeeping telemetry were developed. Physics data acquisition from the front-end simulator is being developed to support dataset construction for Ground Readiness Test 3. Database structures and parsing routines for TDRSS (tracking and data relay satellite system) scheduling and orbit-event products were created. Handling of multiple versions of telemetry & command information in the database schema was improved. Integration of the new science-interface packet format into CCSDS archive/retrieval code commenced. Decommulation code for flight software command-response and message packets was developed.

The LAT configuration database design is essentially completed, and preparations are being made for its integration with flight software and Online/LICOS.

Preparations for the second data challenge (DC2) are underway. Several reliability improvements were made to the pipeline, enabling the production of 500M background

events. A few upgrades are in progress to improve background rejection. Machinery for the background interleave with the DC2 signal is being set up.

Two new developers started this period. Facility construction work is being scheduled. Planning continues for the consolidation of ISOC operations staff in one location.

3.0 Schedule Status

The critical path for the project is through the flight software installation and checkout. There is currently six days' schedule float to the shipment of the LAT instrument.

The status of significant milestones is summarized in Attachments 1 and 2. Attachment 1 presents the status of the Level 1 and Level 2 milestones. The pre-environmental test review and pre-ship review milestones (1M1000700 and 1M1000120) have been delayed as a result of this critical path.

Attachment 2 shows the status of the remaining Level 3 milestones. The following level 3 milestones were completed during this reporting period:

Milestone Number	Description	Date Completed
1M1000271	Flight Tracker Tower 8	10/13/05
1M1000291	Flight Tracker Tower 12	10/05/05
1M1000300	Flight Tracker Tower 13	10/07/05
1M1000301	Flight Tracker Tower 14	10/11/05
1M1000310	Flight Tracker Tower 15	10/17/05
1M7942000	Flight PDU Box	10/24/05
1M7941110	Flight Harness	10/14/05
1M99040	Start 16- Tower Comprehensive Performance Test	10/19/05

Unfavorable variance projections greater than one week are discussed below, listed by responsible subsystem.

4.1.4 Tracker

The final Tracker module was received in early November.

4.1.7 Electronics

The following milestones have been delayed at the assembly vendor. The main issue was the quality of the solder assembly of the cPCI connectors onto the cPCI boards. The LAT project continued to work with the vendor to improve the situation. The issues have been resolved and the modules are all being assembled.

- Flight GASU Box (1M7941070)
- LCB Flight Units (1M7R050)
- Flight Event Processor Units (1M7941090)

- Flight EPU/SIUs (1M7R040, 1M7R010, 1M7R020, 1M7R030, 1M7941080)

Delays in flight software, and the addition of a Virtual Spacecraft Simulator to make LAT control/readout simpler for installation and test have led to the delay of the milestone for final electronics ground support equipment (1M7941440).

Effort required to complete the Science Test Data Output milestone (1M79510) was underestimated, complicated by the absence of a key resource. This milestone has been completed, but impacts the subsequent flight software milestones.

4.1.9 Integration & Test

Variances to the “Ready to Ship” and subsequent milestones are driven by the critical path for the project, as described above.

4.0 Financial Status

Attachment 3 depicts the costs, commitments, and performance through the end of the current reporting period.

Attachments 4 and 5 summarize the actual costs through the current period, by WBS level 3 and institution, respectively.

5.0 Performance Status (Comparison to Project Baseline)

Attachment 6 is a Cost Performance Report (CPR) for the end of the current reporting period, by WBS level 3. The CPR shows the time-phased budget to date (BCWS), the earned value (BCWP), and the actual costs through the end of the month (ACWP). Attachment 7 shows the same information for each participating DOE- and/or NASA-funded institution. The schedule variance is equal to the difference between the budget-to-date and the earned value and represents a measure of the ahead (positive) or behind (negative) schedule position. The cost variance is equal to the difference between the earned value and the actual costs.

Attachment 8 shows performance analysis (by WBS level 3), including trends in the schedule and cost variances from the previous period. Cumulative cost variances exceeding 10% of the BCWP and cumulative schedule variances exceeding 10% of BCWS (favorable and unfavorable) are discussed below.

The favorable cost variance in 4.1.C Education & Public Outreach is due to outstanding commitments which have not yet been costed. This is not a concern at this time.

6.0 Change Control and Contingency Analysis

A summary of change requests approved and implemented during this period (Level 3 and above), including the impacts on the LAT cost contingency, is below.

Change Request No.	Description	Submitted By	Contingency Impact ¹
LAT-XR-06577-01	Update of LAT Environmental Specification	L. Lee	N/A
LAT-XR-06839-02	LAT Outyears Cost Baseline	L. Klaisner	-\$7,220K
LAT-XR-07272-01	Changes to the LAT Flight Software Test Plan	M. DeKlotz	N/A
LAT-XR-07274-01	Mode Control Requirement Update	M. DeKlotz	N/A
LAT-XR-07311-01	Changes to the LAT Flight Software Management Plan	M. DeKlotz	N/A
LAT-XR-07403-01	Integration Sequence and Test Changes	E. Grove	N/A
LAT-XR-07498-01	Changes to the LAT Coordinate and Numbering Systems	R. Bright	N/A
LAT-XR-07527-01	4.1.B ISOC Closeout in PMCS	T. Boysen	\$-18K

The cost baseline through launch (August 2007), plus 60 days, is \$179,477K. Funding applicable to that baseline is \$188,055K; the resulting contingency is \$8,578K.

7.0 Staffing

Attachment 9 demonstrates the staffing plan funded by DOE/NASA, and reports of actual manpower received. This report includes contracted labor which is bookkept as M&S.

Actual incremental manpower for GSFC was not reported for this period, impacting the 4.1.1 Management manpower. Hardware delays have prevented the planned rampdown of 4.1.A Performance & Safety Assurance staff from occurring at this time. Hardware deliveries have also delayed the staffing increase at NRL for environmental test, leading to the variance in the 4.1.9 Integration & Test manpower.

¹ A positive number indicates a draw on contingency.

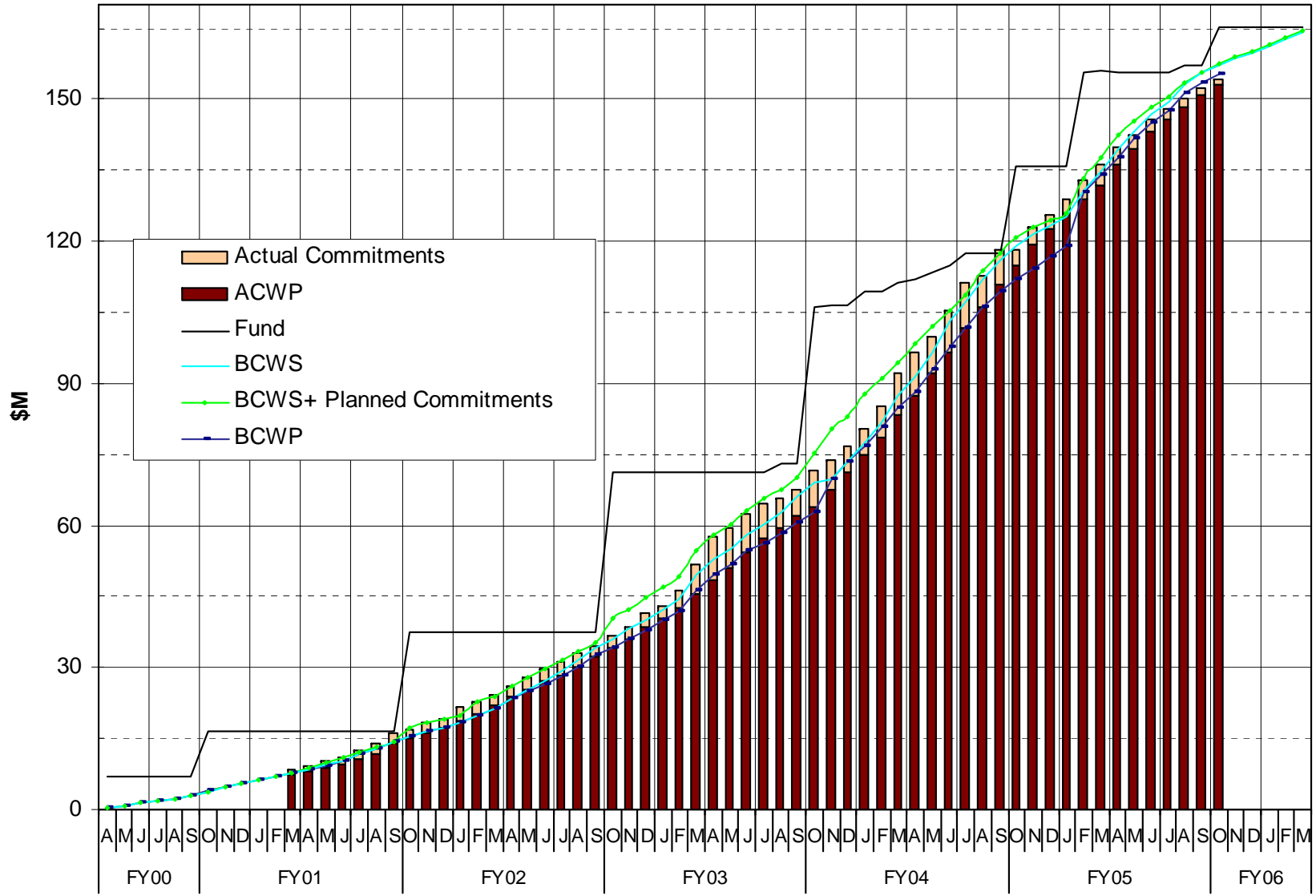
Attachment 1 Milestones, Levels 1-2

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	Timeline																															
					FY01				FY02				FY03				FY04				FY05				FY06											
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4								
DOE/NASA Joint Oversight Group (Level 1)																																				
1M1P00000	DOE Critical Decision (CD) 0 Approval	06/25/01A	0	06/25/01A			▼																													
1M1P00010	CD-1 Approval	07/23/02A	0	07/23/02A							▼																									
1M1P00020	CD-2 Approval	11/08/02A	0	11/08/02A								▼																								
1M1P00030	CD-3 Approval	09/03/03A	0	09/03/03A																																
1M1P00060	Flight GRID Complete	11/08/04A	0	11/08/04A																								▼								
1M1P00040	CD-4 Approval	03/15/06*	0	03/15/06*																									▼							
DOE/NASA Federal Project Managers (Level 2)																																				
1M1BF0000	Launch Balloon Flight	08/01/01A	0	08/01/01A			▼																													
1M1000100	Instrument Preliminary Design Review	01/08/02A	0	01/08/02A							▼																									
1M1000110	I-CDR (Critical Design Review)	05/16/03A	0	05/16/03A																																
1M1000740	Start LAT Integration	03/23/05	-5	03/30/05A																									▼							
1M1000700	Pre Environmental Testing Review	12/20/05	-15	01/19/06																									▼							
1M1000120	PSR-(Instrument Pre-Ship Review)	04/18/06	-25	05/23/06																									▼							
Run Date					11/22/05 13:37												G LAST LAT PROJECT Project Milestones (Level 1 and 2)												LATS LT_M St-2				Sheet 1 of 1			
© Primavera Systems, Inc.																																				

Attachment 2 Future Level 3 Milestones

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	AV	ND	FY05				FY06						
							Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4			
Instrument Project Office (Level 3)																	
4.1.1 Instrument Management																	
1M1001920	Pre-Environmental Test Review	12/20/05	-15	01/19/06	1												
4.1.4 Tracker																	
1M1000311	Flight Tracker Tower 16 RFI	09/22/05	-27	10/31/05	4	9											
4.1.7 Electronics																	
1M7941440	Final EGSE incl S/C Sim, FSW-Elec to I&T	04/01/05	-169	12/01/05	7	9											
1M7941070	Flight GASU Box -Elec to I&T	07/19/05	-93	11/30/05	7	9											
1M7R050	LCB Flight Units - Elec to Elec	07/20/05	-82	11/14/05	7	7											
1M7941090	Flight Event Processor Units -Elec to I&T	08/19/05	-54	11/04/05	7	9											
1M7R040	1st Flight EPU/SIU-Elec to I&T	08/19/05	-54	11/04/05	7	9											
1M7R010	2nd Flight EPU/SIU-Elec to I&T	08/24/05	-54	11/09/05	7	9											
1M7R020	3rd Flight EPU/SIU-Elec to I&T	08/26/05	-55	11/14/05	7	9											
1M79530	Release FSW for FQT - Phase 1	08/29/05	-54	11/14/05	7												
1M79630	Release FSW for FQT - Phase 2		0	12/09/05	7												
1M79540	FQT Scripts Complete - Phase 1	08/30/05	-56	11/17/05	7												
1M79640	FQT Scripts Complete - Phase 2		0	12/15/05	7												
1M7R030	4th Flight EPU/SIU-Elec to I&T	08/30/05	-59	11/22/05	7	9											
1M7941080	5th Flight EPU/SIU-Elec to I&T	09/02/05	-94	12/06/05	7	9											
1M79560	FQT Complete - Phase 1	09/15/05	-49	11/23/05	7												
1M79660	FQT Complete - Phase 2		0	12/20/05	7												
1M79610	FSW RFI to I&T	10/03/05	-41	12/01/05	7												
1M79620	Delta Test Readiness Review	11/18/05	-16	12/14/05	7												
4.1.9 I&T																	
1M1000130	LAT Ready to Ship to NRL for Env Test	12/20/05	-15	01/19/06	9	9											
1M19010	Ship LAT to NRL for Env Test	12/26/05	-24	01/22/06	9	9											
1M19020	LAT EMI/EMC Test	02/01/06	-40	03/13/06	9	9											
1M19030	LAT Sine Vibe	02/14/06	-1	02/15/06	9	9											
1M19040	LAT Acoustic Test	02/26/06	-24	03/22/06	9	9											
1M19050	LAT TVAC	04/15/06	-26	05/11/06	9	9											
1M19060	LAT Weight & CG	04/17/06	-35	05/22/06	9	9											
1M19070	Ship LAT to Spectrum Astro	04/23/06	-31	05/24/06	9	9											
4.1.B ISOC																	
1M1000112	Mission Operations Review	01/17/06*	0	01/17/06*	B	B											
Run Date: 11/22/05 13:41							GLAST LAT PROJECT				Sheet 1 of 1						
© Primavera Systems, Inc.							Project Milestones (Level 3)				LAT5 LTX - MS3 (planned) FLX1- MS (L3)						
Planned Milestones																	

Attachment 3 LAT Budget vs. Actuals vs. Performance



**Attachment 4
LAT Costs, through October 2005, by WBS**

Monthly Contractor Financial Management Report								Report for Month Ending: 10/31/2005		
To: Kevin Grady, GLAST Project Manager (NASA) Ev Valle, LAT Project Manager (DOE)					From: Tanya Boysen, LAT Project Controls Manager			Budget Value		
								Cost: 0	Fee: 0	
LAT3 GLAST LAT Project			Type:			Fund Limitation: 0				
Reporting Category	Cost Incurred				Estimated Cost			4/3/2000	Billing	
	During Month		Cum. to Date		Detail		Balance of Contract	Estimated Final Cost		Unfilled Orders Outstanding
	Actual	Planned	Actual	Planned	NOV05	DEC05		Contractor Estimate	Contract Value	
4.1.1 INSTRUMENT MANAGEMENT	494	368	17,858	18,180	403	348	8,048	26,656	26,656	
4.1.2 SYSTEM ENGINEERING	363	139	8,335	8,209	141	120	1,534	10,131	10,131	
4.1.4 TRACKER	218	55	21,253	22,103	54	4	1,018	22,330	22,330	
4.1.5 CALORIMETER	0	0	21,554	21,554	0	0	0	21,554	21,554	
4.1.6 ANTICOINCIDENCE DETECTOR	232	0	18,165	18,329	0	0	164	18,329	18,329	
4.1.7 ELECTRONICS	502	249	28,931	29,953	254	149	2,802	32,135	32,135	
4.1.8 MECHANICAL SYSTEMS	-50	38	17,069	17,444	39	33	1,142	18,284	18,284	
4.1.9 INTEGRATION & TEST	324	443	8,868	9,894	502	302	4,190	13,863	13,863	
4.1.A PERFORMANCE AND SAFETY ASSURANCE	74	107	4,105	4,004	109	75	1,164	5,452	5,452	
4.1.B LAT INSTRUMENT SCIENCE OPERATIONS	0	-17	317	317	0	0	0	317	317	
4.1.C EDUCATION AND PUBLIC OUTREACH	106	51	2,411	2,735	52	44	1,481	3,988	3,988	
4.1.D SCIENCE ANALYSIS SOFTWARE	176	80	2,981	3,017	80	68	1,984	5,114	5,114	
4.1.E SUBORBITAL FLIGHT TEST	0	0	1,325	1,325	0	0	0	1,325	1,325	
Gen. and Admin.	0	0	0	0	0	0	0	0	0	
Total	2,438	1,513	153,171	157,063	1,634	1,144	23,528	179,477	179,477	

Attachment 5
LAT Costs, through October 2005, by Organization and Cost Code

Monthly Contractor Financial Management Report								Report for Month Ending: 10/31/2005		
To: Kevin Grady, GLAST Project Manager (NASA) Ev Valle, LAT Project Manager (DOE)				From: Tanya Boysen, LAT Project Controls Manager				Budget Value		
								Cost:	Fee:	
								0	0	
LAT3	Type:							Fund Limitation:		
GLAST LAT Project								0		
Reporting Category	Cost Incurred				Estimated Cost			4/3/2000	Billing	
	During Month		Cum. to Date		Detail		Balance of Contract	Estimated Final Cost		Unfilled Orders Outstanding
	Actual	Planned	Actual	Planned	NOV05	DEC05		Contractor Estimate	Contract Value	
DG *** GSFC	364	59	19,979	20,276	59	48	1,567	21,653	21,653	
DH *** HEPL	279	107	8,445	8,780	114	97	3,373	12,029	12,029	
DL *** SLAC	1,431	854	92,385	94,852	875	561	11,717	105,538	105,538	
DN *** NRL	257	433	27,264	27,691	497	362	4,531	32,654	32,654	
DO *** Financial Plan Transfer/Sub Out	0	0	59	59	0	0	0	59	59	
DS *** SSU	106	50	2,387	2,704	51	43	1,456	3,937	3,937	
DT *** Texas A&M	0	0	15	15	0	0	0	15	15	
DU *** UCSC	0	1	2,384	2,397	29	24	617	3,054	3,054	
DW *** UW	2	9	253	289	9	8	267	538	538	
Gen. and Admin.	0	0	0	0	0	0	0	0	0	
Total	2,438	1,513	153,171	157,063	1,634	1,144	23,528	179,477	179,477	

Reporting Category	Cost Incurred/Hours Worked				Estimated Cost/Hours to Complete			Estimated Final Cost/Hours		Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of Contract	Contractor Estimate	Contract Value	
	Actual	Planned	Actual	Planned	NOV05	DEC05				
RL LABOR	1,115	1,094	72,717	73,283	1,134	759	14,221	88,831	88,831	
RT TRAVEL	34	54	1,851	2,165	56	45	1,623	3,575	3,575	
RM MATERIAL & SERVICES	1,240	362	76,168	79,005	442	337	7,282	84,229	84,229	
RX MPS & LAB TAX	49	3	2,435	2,610	3	3	402	2,843	2,843	
Gen. and Admin.	0	0	0	0	0	0	0	0	0	
Total	2,438	1,513	153,171	157,063	1,634	1,144	23,528	179,477	179,477	

Attachment 6
LAT Performance, through October 2005, by WBS

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:				Contract Type/No:				Project Name/No: GLAST LAT Project		Report Period: 9/30/2005 10/31/2005			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %	Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	0		0		0	0	0		0	0			
CAPW[3]	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance		Budgeted	Latest Revised Estimate	Variance
	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost			
Item	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
4.1.1 INSTRUMENT MANAGEMENT	368	368	494	0	-126	18,180	18,180	17,858	0	323	26,656	26,656	0
4.1.2 SYSTEM ENGINEERING	139	139	363	0	-224	8,209	8,209	8,335	0	-126	10,131	10,131	0
4.1.4 TRACKER	55	212	218	157	-6	22,103	22,103	21,253	0	850	22,330	22,330	0
4.1.5 CALORIMETER	0	0	0	0	0	21,554	21,554	21,554	0	0	21,554	21,554	0
4.1.6 ANTICOINCIDENCE DETECTOR	0	0	232	0	-232	18,329	18,329	18,165	0	164	18,329	18,329	0
4.1.7 ELECTRONICS	249	360	502	111	-142	29,953	29,178	28,931	-774	248	32,135	32,135	0
4.1.8 MECHANICAL SYSTEMS	38	38	-50	0	88	17,444	17,087	17,069	-356	18	18,284	18,284	0
4.1.9 INTEGRATION & TEST	443	407	324	-36	84	9,894	9,322	8,868	-573	454	13,863	13,863	0
4.1.A PERFORMANCE AND SAFETY ASSESSMENT	107	107	74	0	33	4,004	4,004	4,105	0	-101	5,452	5,452	0
4.1.B LAT INSTRUMENT OPERATIONS CONTROL	-17	-17	0	0	-17	317	317	317	0	0	317	317	0
4.1.C EDUCATION AND PUBLIC OUTREACH	51	51	106	0	-55	2,735	2,735	2,411	0	324	3,988	3,988	0
4.1.D SCIENCE ANALYSIS SOFTWARE	80	80	176	0	-96	3,017	3,017	2,981	0	36	5,114	5,114	0
4.1.E SUBORBITAL FLIGHT TEST	0	0	0	0	0	1,325	1,325	1,325	0	0	1,325	1,325	0
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0
Undist. Budget											0	0	0
Sub Total	1,513	1,745	2,438	232	-693	157,063	155,360	153,171	-1,703	2,189	179,477	179,477	0
Contingency											8,578	8,578	0
Total	1,513	1,745	2,438	232	-693	157,063	155,360	153,171	-1,703	2,189	188,055	188,055	0

Attachment 7
LAT Performance, through October 2005, by Organization

Cost Performance Report - Work Breakdown Structure															
Contractor: Location:				Contract Type/No:				Project Name/No: GLAST LAT Project		Report Period: 9/30/2005				#####	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %	Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling					
1	0		0		0	0	0		0	0					
OBS[1]	Current Period					Cumulative to Date					At Completion				
	Budgeted Cost		Actual Cost Work	Variance		Budgeted Cost		Actual Cost Work	Variance		Budgeted	Latest Revised Estimate	Variance		
	Work Scheduled	Work Performed		Schedule	Cost	Work Scheduled	Work Performed		Schedule	Cost					
Item	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)		
DG *** GSFC	59	59	364	0	-305	20,276	20,276	19,979	0	296	21,653	21,653	0		
DH *** HEPL	107	107	279	0	-172	8,780	8,780	8,445	0	336	12,029	12,029	0		
DL *** SLAC	854	1,123	1,431	269	-308	94,852	93,191	92,385	-1,661	805	105,538	105,538	0		
DN *** NRL	433	396	257	-37	139	27,691	27,649	27,264	-42	385	32,654	32,654	0		
DO *** Financial Plan	0	0	0	0	0	59	59	59	0	0	59	59	0		
DS *** SSU	50	50	106	0	-55	2,704	2,704	2,387	0	317	3,937	3,937	0		
DT *** Texas A&M	0	0	0	0	0	15	15	15	0	0	15	15	0		
DU *** UCSC	1	1	0	0	1	2,397	2,397	2,384	0	14	3,054	3,054	0		
DW *** UW	9	9	2	0	7	289	289	253	0	36	538	538	0		
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0		
Undist. Budget											0	0	0		
Sub Total	1,513	1,745	2,438	232	-693	157,063	155,360	153,171	-1,703	2,189	179,477	179,477	0		
Contingency											8,578	8,578	0		
Total	1,513	1,745	2,438	232	-693	157,063	155,360	153,171	-1,703	2,189	188,055	188,055	0		

Attachment 8 LAT Performance Analysis, October 2005

	WBS	BAC	BCWS	BCWP	ACWP	SV \$	CV \$	% BCWS	% BCWP	% ACWP	SPI Trend	CPI Trend	SPI	CPI	CPI Fcst	CpiSpi Fcst
1	4.1	179,477	157,063	155,360	153,171	-1,703	2,189	87.51	86.56	85.34	↑	↓	0.989	1.014	176,949	177,209
2	4.1.1	26,656	18,180	18,180	17,858	0	323	68.20	68.20	66.99	↔	↓	1.000	1.018	26,183	26,183
3	4.1.2	10,131	8,209	8,209	8,335	0	-126	81.03	81.03	82.28	↔	↓	1.000	0.985	10,286	10,286
4	4.1.4	22,330	22,103	22,103	21,253	0	850	98.98	98.98	95.18	↑	↔	1.000	1.040	21,471	21,471
5	4.1.5	21,554	21,554	21,554	21,554	0	0	100.00	100.00	100.00	↔	↔	1.000	1.000	21,554	21,554
6	4.1.6	18,329	18,329	18,329	18,165	0	164	100.00	100.00	99.11	↔	↓	1.000	1.009	18,165	18,165
7	4.1.7	32,135	29,953	29,178	28,931	-774	248	93.21	90.80	90.03	↑	↓	0.974	1.009	31,862	31,940
8	4.1.8	18,284	17,444	17,087	17,069	-356	18	95.40	93.46	93.36	↔	↑	0.980	1.001	18,265	18,290
9	4.1.9	13,863	9,895	9,322	8,868	-573	454	71.37	67.24	63.97	↔	↑	0.942	1.051	13,188	13,454
10	4.1.A	5,452	4,004	4,004	4,105	0	-101	73.43	73.43	75.28	↔	↑	1.000	0.975	5,590	5,590
11	4.1.B	317	317	317	317	0	0	100.00	99.99	99.92	↔	↓	1.000	1.001	317	317
12	4.1.C	3,988	2,735	2,735	2,411	0	324	68.58	68.58	60.46	↔	↓	1.000	1.134	3,516	3,516
13	4.1.D	5,114	3,017	3,017	2,981	0	36	59.00	59.00	58.30	↔	↓	1.000	1.012	5,053	5,053
14	4.1.E	1,325	1,325	1,325	1,325	0	0	100.00	100.00	99.98	↔	↔	1.000	1.000	1,325	1,325

LEGEND

BAC: Budget At Complete
 BCWS: Budgeted Cost of Work Scheduled (to date)
 BCWP: Budgeted Cost of Work Performed (to date)
 ACWP: Actual Cost of Work Performed (to date)

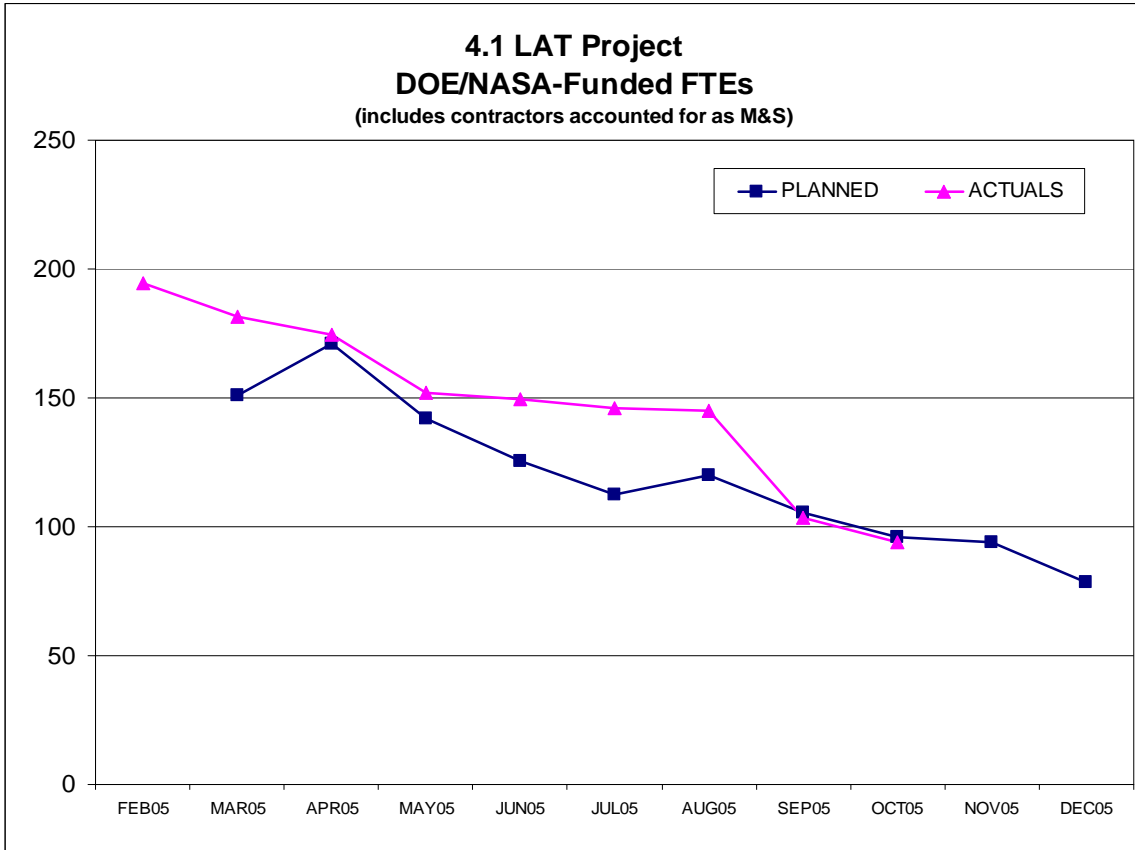
SV \$: Schedule Variance = BCWP - BCWS
 CV \$: Cost Variance = BCWP - ACWP
 SPI: Schedule Performance Index = BCWP/BCWS
 CPI: Cost Performance Index = BCWP/ACWP

% BCWS: Percent Scheduled = BCWS/BAC
 % BCWP: Percent Complete = BCWP/BAC
 % ACWP: Percent Spent = ACWP/BAC

Cpi_Fcst: CPI (to date) EAC Forecast = BAC / CPI
 CpiSpi_Fcst: Combination CPI and SPI EAC Forecast = ACWP + (BAC - BCWP) / (CPI * SPI)

	Worse than .85		Between .95 and 1.10
	Between .85 and .95		Better than 1.10
SPI and CPI Change Thresholds			

Attachment 9



FTEs BY SUBSYSTEM

FEB05 MAR05 APR05 MAY05 JUN05 JUL05 AUG05 SEP05 OCT05 NOV05 DEC05

		FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	OCT05	NOV05	DEC05
4.1.1 INSTRUMENT MANAGEMENT	PLANNED		19.2	19.2	19.2	18.7	19.4	11.2	14.0	19.5	24.3	24.4
	ACTUALS	19.7	23.4	19.2	18.4	16.8	23.2	17.9	15.1	15.7	0.0	0.0
4.1.2 SYSTEM ENGINEERING	PLANNED		10.2	10.3	10.3	10.3	10.3	15.1	14.3	9.8	9.9	8.9
	ACTUALS	10.5	10.1	9.8	8.8	9.6	9.7	17.5	15.7	11.7	0.0	0.0
4.1.4 TRACKER	PLANNED		16.8	16.6	12.7	10.7	9.9	9.2	10.2	9.4		
	ACTUALS	17.0	15.4	15.9	13.9	15.1	15.9	12.6	12.6	7.3		
4.1.5 CALORIMETER	PLANNED		18.7	19.6	13.4	9.9	7.6	8.1	7.4			
	ACTUALS	23.8	19.8	21.6	11.5	15.1	5.2	0.0	0.0			
4.1.6 ANTICOINCIDENCE DETECTOR	PLANNED		16.4	39.0	26.4	22.1	11.6	13.0	3.6			
	ACTUALS	36.2	33.1	29.8	37.1	28.2	27.3	35.7	0.0			
4.1.7 ELECTRONICS	PLANNED		28.8	22.9	22.8	18.3	15.4	26.8	21.1	18.8	20.0	13.3
	ACTUALS	36.7	35.2	32.5	27.8	24.5	27.5	25.6	23.4	20.0	16.9	0.0
4.1.8 MECHANICAL SYSTEMS	PLANNED		6.0	6.4	1.7	4.1	7.2	5.9	4.3	1.4	1.4	1.4
	ACTUALS	3.7	3.2	3.9	3.6	4.2	3.4	2.5	2.2	1.7	0.0	0.0
4.1.9 INTEGRATION & TEST	PLANNED		15.3	17.2	16.2	16.3	16.4	16.5	15.9	24.2	24.9	17.1
	ACTUALS	20.5	23.0	19.1	13.9	12.4	14.5	14.8	17.2	20.8	0.0	0.0
4.1.A PERFORMANCE AND SAFETY ASSURANCE	PLANNED		12.5	12.3	9.9	5.9	4.9	4.9	4.9	4.8	4.9	4.9
	ACTUALS	12.6	12.4	12.1	11.5	11.3	11.1	9.1	8.5	8.0	0.0	0.0
4.1.B LAT INSTRUMENT SCIENCE OPS CENTER	PLANNED		0.2	0.2	0.2	0.2	0.2	0.2	0.1			
	ACTUALS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
4.1.C EDUCATION AND PUBLIC OUTREACH	PLANNED		1.5	2.0	4.3	4.1	4.5	3.9	4.3	3.5	3.7	3.7
	ACTUALS	10.1	3.3	7.1	2.3	7.9	2.9	4.4	4.6	3.9	0.0	0.0
4.1.D SCIENCE ANALYSIS SOFTWARE	PLANNED		5.3	5.3	5.1	4.9	5.3	5.2	5.2	4.8	5.0	5.0
	ACTUALS	3.8	2.6	3.7	3.1	4.4	5.1	5.0	3.9	4.8	0.0	0.0
Grand Totals:	PLANNED		150.8	171.0	142.3	125.5	112.7	120.0	105.3	96.0	94.1	78.7
	ACTUALS	194.5	181.6	174.8	152.0	149.6	145.8	145.2	103.4	93.8		